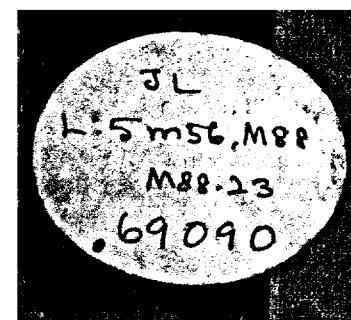




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EDITED BY

G. F. McCLEARY, M.D., D.P.H.,

Medical Officer of Health, Hampstead.

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THE FUTURE OF THE MEDICAL OFFICER OF HEALTH.

INDICATIONS are not wanting that the medical officer of health is in some danger of seeing not only the proper development of his work impeded, but also the actual transference of some of the functions he now exercises to other hands and to other authorities than his. We have, in fact, arrived at a critical point in the history of public health administration, and it behoves medical officers of health to use the utmost vigilance lest some of the most valuable parts of their work should be taken from them, and their influence thereby seriously impaired. The situation has been largely created by the report of the Poor Law Commission. The Commissioners in their inquiries into the causes of destitution had to take into account the influence of preventable disease, and were thus brought into close contact with public health work. Many medical officers of health gave evidence before the Commission, and an enormous mass of facts accumulated which showed that public health administration has been greatly developed and extended in recent years, has become more and more clinical in character, and has begun to include the treatment as well as the prevention of disease. It was, perhaps, not unnatural that the specialised students of destitution who formed the majority of the Commission, should take all this to mean that the medical officer of health has become concerned in matters that are beyond his proper scope: that he has, in fact, trespassed upon the field of Poor Law administration.

The recent development of public health administration is but little realised by the general public, which still regards the medical officer of health as chiefly concerned with the supervision of drains. In the early days of Chadwick and Simon this idea had some justi-

fication. Our predecessors were almost entirely concerned with external sanitation, the chief clinical measure of preventive administration at that time, vaccination, being in the hands of the Boards of Guardians. Gradually, however, the purely medical side of the work began to be developed. The notification of infectious diseases and the rapid multiplication of isolation hospitals were notable steps in advance, and made the treatment of disease an integral part of public health administration; for, except in London and a few of the largest provincial towns, the medical officer of health and the medical superintendent of the isolation hospital are one and the same person, and it is only in London that isolation hospitals are in any sense Poor Law institutions. The crusade against infant mortality, with the great extension of health visiting and associated agencies to which it has given rise, has led to a further important increase in the clinical side of public health work, and the same may be said of school hygiene and the prevention of tuberculosis. It is, however, unnecessary to labour the point further, for it must be obvious to all who have paid attention to the subject that the chief feature of modern public health administration is its extension into the field of personal hygiene. External sanitation alone has been found inadequate for the effective control of preventable disease.

In this connection two branches of our work call for special mention, viz., the prevention of tuberculosis and the arrangements for the treatment of school children found defective on medical inspection. In the campaign against tuberculosis a large and increasing number of public health authorities are providing sanatorium accommodation, and the tuberculosis dispensary promises to take its place in the organisation of a public health department. As to the treatment of school children, the school clinic, backed by high

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official sanction and the blessing of the British Medical Association, has already been introduced by several medical officers of health, and shows signs of rapid multiplication. But according to the Poor Law Commission both these important branches of work lie outside the proper scope of public health administration, and both should come under the Poor Law. On p. 275 of their report the Commission state "that phthisis cases needing aid from public funds should remain under the care of the public assistance authority"; while on the treatment of school children they make the following definite statement:—

The sanitary authorities, whose functions are mainly concerned with the prevention of infectious disease, would be responsible for the medical inspection of all children. On the other hand the public assistance authority, whose functions would be to provide medical treatment, would provide such treatment for all school children, so far as they require to be treated at the expense of the rates.

These recommendations, if carried into effect, would remove some of the most promising departments of public health work from the medical officer of health, and coming from a body wielding the influence of the Royal Commission on the Poor Law, they call for very serious consideration. But this is not all. Dr. Downes, who, from his official position and from the fact that he was the sole representative of the medical profession on the Commission, speaks with exceptional authority, goes further in the way of restriction, and actually recommends that the isolation hospitals should be transferred to the Poor Law. In his memorandum (p. 674 of the Report) he states his views thus:—

Where the relief administration is thus systematically organised it might properly take over the administration of the lunatic asylums and the fever hospitals. Both of these are essentially instruments of public relief, and there would be obvious advantage in consolidating the administration of these public institutions under one body specially equipped for such a duty. The experience of London has shown that the fever hospitals and the ambulance services may be admirably administered by such an authority, and the arrangement admits of many advantages that could not otherwise be secured.

We cannot help thinking that the effect which these proposed changes would have on the position of the medical officer of health has been but little appreciated by the medical

profession, and we find evidence of this in the leading article on "The Poor Law Report and the Sanitary Service" that appeared in the *British Medical Journal* of August 21st. In this article the effect of the Majority scheme on the position of the medical officer of health is discussed, and the conclusion arrived at is that "there is nothing in the scheme that would in any way injuriously affect his position." On Dr. Downes's scheme the following views are expressed: "Under Dr. Downes's scheme for a reformed 'board of guardians . . . it would 'probably be considered necessary to concentrate under the reformed board all the 'medical treatment now undertaken by the 'health committee, including the management 'of fever hospitals and sanatoriums, and to 'leave to the health committees only their strictly 'sanitary duties.* Dr. Downes is strongly of 'opinion that any amalgamation of the sanitary 'service with medical relief 'would be detrimental and contrary to the public interest.' 'With this reservation Dr. Downes's scheme 'would not touch the medical officer of health.' (The italics are ours.)

We confess to some surprise that the official organ of the British Medical Association should regard a recommendation to transfer the fever hospitals from the public health authorities to the Poor Law authorities as one that "would not touch the medical officer of health"; and we commend the whole subject to the earnest consideration of medical officers of health, who will be strangely indifferent to the public welfare and to the best traditions of their service if they fail to resist to the utmost any attempts to restrict their field of work and undermine their usefulness.

THE REPORT OF THE MIDWIVES ACT COMMITTEE.

THE Report of the Departmental Committee appointed to consider the working of the Midwives Act is a valuable and thoroughly practical document. The Committee's inquiries have been searching and to the point, and their recommendations cover a wide field, and will, we think, be found acceptable on the whole by those engaged in the administration of the Act. It is satisfactory to find that the

* Does this mean that the medical officer of health should stick to his drains?

Committee deprecate any postponement of the date upon which the Act comes into full operation; and after a perusal of the evidence it is difficult to see how any other conclusion could have been reached. The Committee, however, are not unmindful of the possibility of a deficiency in certain areas, and while loth to recommend any departure from uniformity, they think the matter might be left to the Central Midwives Board, who have power to exercise discretion in regulating the conditions under which midwives are admitted to the roll; and they suggest that the Board might properly consider the expediency of giving another opportunity of enrolment to such trained women as were qualified for admission under Section 2 of the Act but failed to apply before the appointed day (March 31st, 1905).

The Committee regard the provision and maintenance of an adequate supply of midwives mainly as a question of organization and distribution, which they think should be undertaken by the co-ordinated action of local authorities and voluntary agencies; and, as the most suitable machinery for giving effect to this recommendation, they advocate the establishment of county nursing associations, working in co-operation with the local supervising authorities, and affiliated, where possible, to some central body, such as Queen Victoria's Jubilee Institute, and they suggest that a hopeful basis of organization will be found in the formation of county training homes, and of emergency homes, from which midwives can be drafted temporarily to places where their services are required. The Committee recommend that county councils should be empowered to contribute to the training of midwives and that boards of guardians should be encouraged to exercise the powers they already possess of subscribing to the support of nursing associations in return for services rendered. The Committee think that in rural districts the practice of midwifery might be combined with district nursing, and that the possibility of combining with the functions of a district nurse-midwife, the duties of health visitor and perhaps also those of school nurse should be borne in mind by local authorities.

The important question of the remuneration of medical men called in on the advice of midwives was carefully considered by the Committee, who find that "the absence of general provision for the payment of medical fees has been a serious obstacle to the realisation of the full intention of the Act." Any doubts that

formerly existed as to the injustice suffered by the medical profession in this respect (and doubt is expressed in one of the documents submitted to the Committee) must be cleared up by the conclusive statement submitted by Dr. J. Howard Jones, Medical Officer of Health of Newport, which appears as Appendix XII. Dr. Jones has found that in Newport during the years 1905-1908 inclusive, twenty practitioners attended 559 cases in response to midwives' calls, and in 49.9 per cent. of the cases no payment whatever was received. In view of these facts and of a mass of similar evidence brought forward, it is not surprising to find the Committee recommending that a "secure expectation of payment should be given to a medical practitioner summoned on the advice of a midwife in a case of emergency." It is also recommended that the Local Government Board should fix a scale of fees; that the conditions coming under the category of emergency should be scheduled in the regulations; that a uniform fee covering any ordinary after-attendance should be adopted, with the addition, in scattered rural districts, of some allowance for mileage; and that a list of practitioners willing to respond to a midwife's call should be circulated in every area.

Unfortunately, the Committee recommend that the authority responsible for the payment of the fees should be the Poor Law authority and not the local supervising authority, as was recommended by the witnesses who gave evidence on behalf of the British Medical Association and the Society of Medical Officers of Health. In view of the excellent results secured in Liverpool and Manchester, where the fees are paid by the local supervising authority, and of the apathy displayed by boards of guardians in this matter, it is to be regretted that the Committee did not make their report in accordance with the evidence submitted to them.

The Committee recommend that the members of the Central Midwives Board should be increased from nine to twelve, and should include a representative of the British Medical Association and of the Society of Medical Officers of Health. They recommend that the Notification of Births Act should be generally adopted, that ophthalmia neonatorum should be made a notifiable disease, and that statutory provision should be made for the registration of still births. The Report is a valuable public health document, and it should be read by all who are engaged in public health work.

THE MORTALITY OF THE FIRST FIVE YEARS OF LIFE: AN ANALYSIS OF SOME REGISTERED DEATHS.

By A. W. TUXFORD, M.D., D.P.H.,
County School Medical Officer, Holland County Council.

THE following analysis is based on the deaths (3,746) of all children under the age of five years which were registered during the quinquennium 1901-1905 in an urban district with a population of about 112,000.

It is purely statistical, and the value of the conclusions drawn is, obviously, to a large extent dependent on the accuracy of certification of the deaths examined.

The deaths were classified, as far as possible, according to their essential cause, this being in most cases the primary cause certified. In some cases, however, such classification was difficult, particularly in a somewhat large group in which two almost equally indefinite conditions of health or vitality were registered as causes of death.

With a view to gaining some idea of the comparative preventability of different proportions of the total mortality by separating those deaths to which the influences of heredity may have contributed from those due entirely to the effects of environment, an attempt was made to group the deaths in three divisions—those due to ante-natal, natal, and post-natal causes—with sub-divisions into groups of deaths from similar or associated conditions.

The result (Table I.) was not altogether satisfactory, being largely a classification according to the physiological system affected. In the case of numerous deaths which might possibly have been classified differently, the reasons for the method of grouping here adopted are not given below, except where moderately large numbers of deaths are involved.

To some extent the groups are arranged in order of increasing preventability; this order is also approximately that of their incidence chronologically.

It was not found practicable to include all the secondary causes of death in Table I, though it contains other facts of interest concerning the deaths.

THE CAUSES OF DEATH.

Ante-Natal—These causes contributed about 18 per cent. of the total mortality, and include about a quarter of the whole infant mortality.

Congenital Malformations and **Congenital Disease** are each responsible for about 1½ per cent. of the total mortality.

Congenital Debility (6 per cent. of total mortality).—These deaths were attributed to ante-natal conditions after some hesitation. The predominant cause, "debility from birth," may mean a debility which existed in the foetus, which resulted from the stress of the act of birth, or which developed from other causes after birth. The large proportion of these deaths taking place soon after birth and before any post-natal factor beyond absolute neglect could very well come into play, together with the absence of any record of a contributing cause operating after birth, are in favour of the first possibility.

The deaths diminished in frequency from birth onwards, and nearly all of them occurred in the first six months of life; 11 per cent. were uncertified.

Premature Birth (9 per cent. of total mortality).—This cause was responsible for a quarter of the mortality of the first three months, during which practically all the deaths took place. More than half of them occurred in the first week, and their frequency diminished from the hour of birth onwards. Thirty-six (10 per cent.) were associated with the fact of multiple birth, 9 per cent. were uncertified, and 7 per cent. were illegitimate.

Natal (1 per cent. of total mortality).—This small group contains deaths due, directly or indirectly, to the act of parturition. The greater number of these took place in the first three weeks.

Post-Natal (81 per cent. of total mortality).

Unclassified Causes (1 per cent. of total mortality).

Disorders of the Nervous System (8 per cent. of total mortality).—The inclusion in this group of a large number of deaths from convulsions where no other cause was certified is obviously unsatisfactory. The varied conditions in which convulsions may occur as a contributory cause of death are shown in Table I. The deaths from this cause were chiefly of infants, and the first week of life was the most fatal period, suggesting the possibility of instrumental delivery having been a factor in some cases; 11 per cent. were illegitimate, and 14 per cent. were registered on inquest verdicts.

Disorders of the Respiratory System (17 per cent. of total mortality).—The data were insufficient to allow of the classification of the croupous pneumonias with the infections. Deaths in this group began to occur in the first week, and were most frequent during the first three quarters of the first year. During every

TABLE I.—CAUSES OF DEATH.

Cause of Death.	Male.	Female.	Total.	Illegitimate Birth.	Inquest.	Uncertified Death.	Contributory Causes.		
							Bronchitis.	Pneumonia.	Convulsions.
I.—ANTE-NATAL CAUSES.									
Congenital Malformations.									
Malformations of heart	12	5	17	...	...	...	...	...	1
Other malformations	23	18	41	...	...	...	1	1	3
Congenital Disease.									
{ Syphilis	22	23	45	8	...	1	...	...	1
{ Pemphigus neonatorum	4	1	5	...	...	...	...	...	...
Congenital Debility.									
Cardiac syncope	6	6	12	1	...	...	...	...	...
Want of vitality	9	4	13	1	...	10	...	...	...
Debility from birth	87	55	142	8	3	11	...	...	...
• Asthenia and weakness	24	13	37	1	...	1	...	...	...
Premature Birth	193	162	355	26	4	33	...	...	12
II.—NATAL CAUSES.									
Difficult labour	3	...	3	...	...	...	...	...	...
Atelectasis pulmonum	4	1	5	...	...	...	...	...	...
Asphyxia neonatorum	5	2	7	1	1	1	...	...	...
Cyanosis	2	1	3	1	...	...	...	...	...
Hæmorrhage from umbilical cord	2	...	2	...	...	...	...	...	...
Umbilical faecal fistula	1	...	1	...	...	...	...	...	...
Umbilical sepsis	1	...	1	...	...	...	...	...	...
Intestinal hæmorrhage	...	2	2	...	...	...	...	...	...
Hæmorrhage from birth	...	1	1	...	...	...	...	...	...
Ophthalmia neonatorum	3	...	3	...	...	...	...	...	1
Icterus neonatorum	7	2	9	...	...	...	...	...	1
III.—POST-NATAL CAUSES.									
Unclassified	23	22	45	4	2	...	...	1	4
Disorders of Nervous System.									
Meningitis	20	20	40	2	...	...	...	...	3
Chronic hydrocephalus	7	3	10	1	...	...	...	...	2
Epilepsy	11	4	15	...	...	...	...	...	...
Convulsions	130	103	233	25	33	8	...	...	...
Other diseases of nervous system	2	2	4	...	...	...	...	...	...
Disorders of Respiratory System.									
Laryngitis	7	7	14	...	...	...	2	...	4
Edematous laryngitis	1	...	1	...	...	...	...	...	...
Bronchitis	159	141	300	18	29	1	...	...	65
Bronchial asthma	...	1	1	...	...	...	...	...	...
Pulmonary congestion	6	6	12	...	...	...	4	...	1
Broncho-pneumonia and pneumonia	190	126	316	21	1	...	1	...	24
Empyema	2	...	2	...	...	...	...	...	...
Disorder of Alimentary System.									
Dentition	109	68	177	10	44	1	24	12	123
Stomatitis	27	23	50	7	10	...	...	...	16
Dyspepsia	5	2	7	...	1	...	...	...	5
Gastritis	13	19	32	3	...	...	...	...	5
Gastro-enteritis	16	13	29	3	...	...	...	...	2
Enteritis and muco-enteritis	23	13	36	3	...	...	1	...	9
Colitis	1	...	1	...	...	...	...	...	...
Dysenteric diarrhoea	1	1	2	...	...	...	...	...	...
Diarrhoea (including epidemic enteritis)	273	233	506	50	5	...	4	2	43
Other diseases of alimentary system	7	9	16	...	1	1	...	...	3
Disorders of Nutrition.									
Inanition	22	24	46	5	1	...	...	...	4
Want of breast milk	1	5	6	1	...	...	2	...	...
Improper and injudicious feeding	3	3	6	...	...	...	...	...	1
Malassimilation	25	15	40	6	1	...	...	...	4
Malnutrition... ..	6	4	10	2	...	...	...	...	3

TABLE I.—CAUSES OF DEATH—*continued*.

Cause of Death.	Male.	Female	Total.	Illegitimate Birth.	Inquest.	Uncertified Death.	Contributory Causes.		
							Bronchitis.	Pneumonia.	Convulsions.
<i>Disorders of Nutrition—continued.</i>									
Marasmus	122	69	191	23	...	...	...	...	18
Atrophy and wasting	3	11	14	1	...	...	...	...	1
"A wasting disease"	4	...	4	...	3	...	...	...	1
{ Rickets	18	15	33	...	...	...	6	5	10
{ Laryngismus stridulus	...	3	3	1	...	...	...	...	1
<i>Tuberculous Infections.</i>									
General tuberculosis	49	43	92	11	...	...	1	3	6
Abdominal tuberculosis	43	36	79	5	...	...	...	...	3
Meningeal tuberculosis	40	36	76	2	...	...	...	...	4
Pulmonary tuberculosis	10	8	18	1	...	...	1	1	...
Tuberculosis of glands	1	2	3	...	...	...	...	...	...
Tuberculosis of bone	4	3	7	...	...	...	...	1	...
Tuberculosis of skin	...	1	1	...	...	...	...	...	...
Tuberculous stomatitis	...	1	1	1	...	...	...	...	...
Tuberculous tumour of brain	1	...	1	...	...	...	...	...	...
Multiple strumous abscesses	1	...	1	...	...	...	...	...	...
Retro-pharyngeal abscess... ..	1	1	2	...	...	...	...	...	...
<i>Other Infections.</i>									
Enteric fever	1	2	3	...	...	...	...	...	...
Tetanus	...	2	2	...	...	...	...	...	...
Erysipelas	5	5	10	...	...	...	...	...	1
Varicella	2	1	3	...	...	...	...	...	...
Diphtheria	35	22	57	...	1	...	1	7	...
Membranous croup... ..	1	3	4	1	...	...	...	...	...
Scarlatina	19	14	33	2	...	...	1	3	1
Morbilli	133	128	261	9	7	...	50	137	22
Pertussis	58	66	124	4	2	...	18	25	40
Cerebro-spinal meningitis... ..	...	2	2	...	...	...	...	...	...
Influenza	5	4	9	...	...	...	2	4	1
Rheumatic fever	1	...	1	...	...	...	...	...	1
Septicæmia	3	...	3	...	...	...	...	...	...
Pyæmia	...	1	1	...	...	...	...	...	...
Impetigo contagiosa	1	...	1	...	...	...	...	...	...
<i>Accidents.</i>									
Burns... ..	8	8	16	4	16	...	...	2	...
Scalds	2	3	5	1	5	...	...	1	...
Other accidents	10	14	24	1	23	...	...	...	...
	2,079	1,667	3,746	275	195	68	119	205	450

period between the ages of three months and four years these deaths accounted fairly consistently for from a fifth to a quarter of the total mortality. They were almost entirely and equally divided between bronchitis and pneumonia.

Disorders of Digestive System (23 per cent. of total mortality).—These deaths were due for the most part to inflammatory conditions of the mouth and intestinal tract. As it was impossible to separate the deaths due to the specific infection of summer diarrhoea from those, resulting from the various other causes of diarrhoea, all the diarrhoeal deaths are included in this group, none being classified with the infections or nutritional disorders.

Deaths from stomatitis and diarrhoea began

to occur in the second week, and those due to stomatitis continued to take place during the first six months, inquest verdicts being recorded in 20 per cent. of the cases.

The diarrhoea mortality (13 per cent. of total mortality), including deaths ascribed to zymotic and epidemic enteritis, was at its height during the second quarter of the first year, and lessened considerably during the second year.

The deaths due to dentition (5 per cent. of total mortality), 25 per cent. of which were so described by coroners' juries, began in the fourth month, were most frequent during the third quarter of the first year, and ceased in the third year. Convulsions were noted in 70 per cent. of the cases.

Disorders of Nutrition (9 per cent. of total

mortality).—The certification of these deaths is unsatisfactory. Few of them are attributed directly to the want of or wrong food, and it seems probable that tuberculosis and syphilis are the causes of death in some of the cases attributed to "marasmus." They occurred during the first two years, causing a maximum mortality during the fourth week, which gradually declined.

Tuberculous Infections (8 per cent. of total mortality).—General, abdominal and meningeal tuberculosis caused an almost equal mortality, pulmonary tuberculosis accounting for only a small proportion. The ages at which these diseases began to be fatal were in the order given above, the meningeal form preponderating after the first year.

Other Infections (14 per cent. of total mortality).—Deaths in this group took place from the second week onwards, the period of the highest mortality being the year and a half following the age of six months. One half of these deaths were from measles (7 per cent. of total mortality), two epidemics of which took place, one causing 111 deaths in three months in 1901, the other causing 123 deaths in the first six months of 1904. In 1903 no deaths took place, and the second epidemic was evidently due to the re-introduction of infection into the fertile soil formed by the non-immune children born and grown to a susceptible age since the previous outbreak. As this is a process likely to recur, the deaths from this disease cannot be regarded otherwise than as part of the normal mortality of the district. Deaths occurred from the age of about six months onwards, the maximum mortality being at the beginning of the second year. Two-thirds of the cases were certified as dying with pulmonary complications.

Whooping-Cough (3 per cent. of total mortality) was a cause of death in the fourth week of life, was most fatal during the latter half of the first year, and caused few deaths after the second year. Pulmonary complications were registered in one-third and convulsions in another third of the cases.

Scarlatina (9 per cent. of total mortality) and *Diphtheria* (15 per cent. of total mortality) caused a fairly uniform number of deaths from the last quarter of the first year onwards.

Accidents (1 per cent. of total mortality).—The mortality from this cause fell considerably in the fifth year.

OTHER RECORDED FACTS.

Illegitimacy was noted in 73 per cent. of the

total deaths—7.1 per cent. of the male deaths, and 7.6 per cent. of the female. The proportion of illegitimate to total births during the same period was about 5 per cent.; thus the legitimate death-rate was about half as large again as that of the total child population. The proportion of illegitimate children was highest in deaths from burns and scalds (23.8 per cent.), syphilis (17.7 per cent.), stomatitis (14 per cent.), and disorders of nutrition (11 per cent.), and lowest from the one cause liable to affect equally all the children of a district—infectious diseases (3.1 per cent.). The conditions causing the greatest number of deaths among them were diarrhoea, premature birth, convulsions marasmus, pneumonia, and bronchitis.

Inquests were held in 5.2 per cent. of the total deaths. The most frequent findings of the jury were "Dentition," "Convulsions," and "Bronchitis."

Uncertified Deaths formed 1.8 per cent. of the total. In all but two of these cases death took place in the first week of life.

Bronchitis was returned as an accessory cause of death in 3.2 per cent. of the total deaths, *Pneumonia* in 5.5 per cent., and *Convulsions* in 12 per cent.

AGES AT DEATH.

Table II. shows the ages at death from each group, as well as from certain individual causes.

Table III. was prepared from Table II, and shows approximately (1) the proportion per cent. of the mortality of each age period which is caused by each group of diseases, as well as (2) the proportion per cent. of the total mortality which occurs during each age period.

By combining these results in the form of a square (Chart I.) the total mortality of the five years is shown diagrammatically, and the relative effects of the different groups of causes are more clearly demonstrated.

The two thick lines which traverse the chart separate the ante-natal causes above and the causes usually acknowledged to be preventable below from the general mass of the causes of death, and the black patch represents the mortality due to the combined effects of measles and whooping-cough.

On both sides of the chart equal parallelograms may be defined, the one formed by the mortality of the first two months, and the other by that of the second, third, fourth, and fifth years. They represent respectively 1,017 and 1,019 deaths.

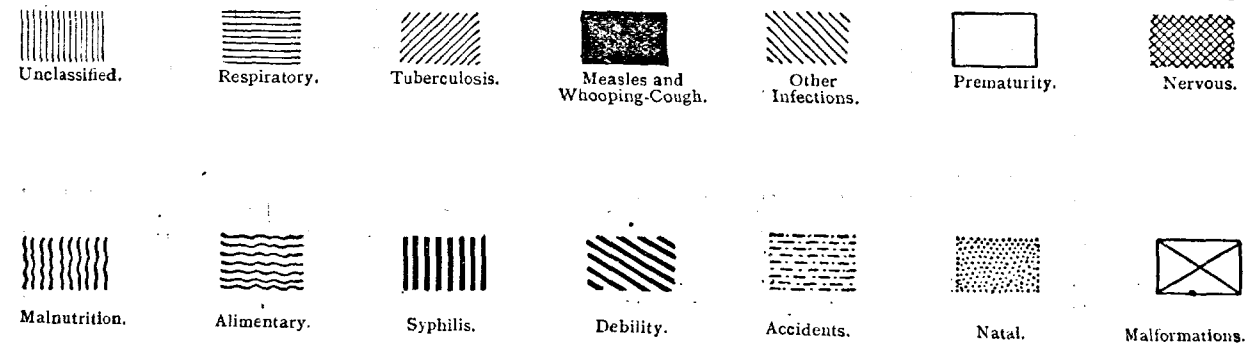
The upper half of the first parallelogram shows the mortality certified as due to causes which

TABLE II.—AGES AT DEATH.

Causes of Death.	Hours.		Days.			Weeks.		Months.		Months.		Year.	Months.				Years.				Total.
	0-12		1st.	2nd.	3rd.	4th.	5th.	6th.	7th.	1st.	2nd.	3rd.	4th.	5th.	6th.	7th.	1st.	2nd.	3rd.	4th.	5th.
	13-24	25-36	37-48	49-60	61-72	73-84	85-96	97-108	109-120	121-132	133-144	145-156	157-168	169-180	181-192	193-204	205-216	217-228	229-240	241-252	253-264
Congenital malformations ..	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Congenital disease ..	19	4	23	15	11	10	3	2	2	64	11	32	16	123	37	16	203	1	1	1	1
Congenital debility ..	62	16	78	42	38	18	11	8	2	197	33	39	23	292	33	21	355	1	1	1	1
Premature birth ..	84	20	104	58	55	33	14	11	3	278	52	81	45	456	83	53	656	2	4	1	1
Ante-natal causes ..	6	1	7	5	4	1	1	2	..	20	7	4	1	32	3	1	37	..	..	..	..
Natal causes ..	2	7	9	7	7	13	10	5	4	55	40	60	78	233	210	240	2,034	210	147	124	95
Post-natal causes ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Unclassified ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Disorders of nervous system ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Disorders of respiratory system ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Disorders of alimentary system ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Disorders of nutrition ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculous infections ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Other infections ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Accidents ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
TOTAL ..	92	28	120	70	66	47	25	18	7	353	99	145	124	721	296	294	2,727	212	151	125	95
MALE ..	49	18	67	45	39	25	15	12	3	206	65	82	63	416	171	169	1,545	112	90	58	51
FEMALE ..	43	10	53	25	27	22	10	6	4	147	34	63	21	305	125	125	1,182	100	61	67	44
Convulsions ..	2	2	4	3	5	11	3	2	1	29	13	11	6	59	31	26	208	9	5	4	2
Bronchitis ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Broncho-pneumonia and pneumonia ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Stomatitis ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Diarrhoea ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Gastritis, enteritis & gastro-enteritis ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Dentition ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
General tuberculosis ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Abdominal tuberculosis ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Meningeal tuberculosis ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pulmonary tuberculosis ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pertussis ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Morbili ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Scarlatina ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

CHART I.

1st Rest of Rest of 2nd 3rd 4-6 7-9 10-12 13-15 16-18 19-24 3rd 4th 5th
dy. week. 1st month. month. month. months. months. months. months. mths. mths. year. year. year.



were in operation before birth, and which presumably was not preventable to any great extent by measures adopted after birth.

The lower half of the second parallelogram represents deaths from tuberculous and other infections and from accidents. These deaths, which are largely preventable, are not those of new-born infants whose vitality is an unknown quantity, but of children who have survived the risks to life of the earlier months, and whose lives, therefore, are of more value both to their parents and to the State.

The chart further demonstrates a tendency to a relative increase in the preventable portion of the mortality as age advances, which possibly may be continued in later years. Indeed, it would appear that the most important fact shown by a comparison of the two parallelograms is not that the deaths of the first two months are as numerous as those of twice as many years, but *vice versa*.

Almost exactly one quarter of the total deaths during the second—fifth years was caused by measles and whooping-cough alone. This proportion is a little larger than in the country generally; in England and Wales during the decennium 1891—1900 the propor-

tion of deaths during the same years of age from these diseases was about 21 per cent.

(One has only to contrast the environment of the average working-class child suffering from either disease and nursed in the family living-room with that of the average isolation hospital ward to realise the benefit which would accrue in these cases from hospital treatment; the incidence of lung complications would almost certainly be greatly lessened, with a corresponding decrease in the mortality.)

The chart also illustrates the relative effects of diseases of the respiratory and of the alimentary systems. On the whole, the proportion of deaths from the former increased with age, whilst from the latter it diminished from the sixth month onwards. The respiratory diseases caused a greater mortality than all the diarrhoeal diseases combined, they affected more valuable lives, and they were largely catarrhal in origin. There appears to be no obvious reason why they should not be as preventable by suitable clothing and fresh air as diarrhoea is by suitable food.

The appended life tables (Table IV.) were constructed, one for each sex, in order to show the number of survivors at various stages

TABLE III.

APPROXIMATE PROPORTIONS PER CENT. OF TOTAL MORTALITY CAUSED BY EACH GROUP AND DURING EACH AGE PERIOD.

GROUP.	1st Day.	Rest of 1st Week.	Rest of 1st Month.	2nd Month.	3rd Month.	4-6 Months.	7-9 Months.	10-12 Months.	13-15 Months.	16-18 Months.	19-24 Months.	3rd Year.	4th Year.	5th Year.
Congenital malformations ..	2	6	4	2	2	1	..	..	..	2	..	..	1	2
Congenital disease ..	1	1	3	2	3	2	1	1	..	1	..	..	..	..
Congenital debility ..	19	17	16	13	6	4	..	1	1	..	..	..	..	..
Premature birth ..	65	51	26	11	7	1	..	..	..	..	..	..	..	..
Ante-natal ..	87	75	49	28	18	8	1	2	1	3	..	..	1	2
Natal ..	6	6	3	1	..	..	..	..	..	..	..	..	..	..
Post-natal ..	7	19	48	71	82	92	99	98	99	97	100	100	99	98
Unclassified ..	..	..	1	1	1	2	1	1	1	1	2	1	1	5
Disorders of nervous system ..	3	11	9	11	9	8	9	8	7	5	7	5	6	5
Disorders of respiratory system ..	1	..	8	12	17	19	20	22	24	27	22	24	28	15
Disorders of alimentary system ..	..	..	12	25	33	38	37	33	24	18	15	6	2	2
Disorders of nutrition ..	3	8	16	18	13	13	9	7	6	10	4	1	1	..
Tuberculous infections ..	..	..	..	2	8	8	9	8	12	10	12	13	15	19
Other infections ..	..	..	2	1	3	13	19	24	25	35	44	40	47	47
Accidents ..	..	..	..	..	1	1	1	1	1	1	3	6	6	5
TOTAL ..	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Convulsions ..	3	11	8	10	9	7	5	6	4	3	3	1	1	1
Dentition ..	..	..	..	..	..	4	11	10	14	8	10	2	..	..
Gastritis, enteritis and gastro-enteritis ..	..	..	1	3	5	5	5	3	..	..	..	..	1	..
Diarrhoea ..	..	..	6	16	22	27	20	16	9	9	4	2	1	1
Pertussis ..	..	..	..	1	1	2	5	8	6	5	7	4	6	1
Morbilli ..	..	..	..	..	..	1	5	8	16	17	20	29	15	22
Proportion per cent. of total mortality occurring in each age-period ..	3	6	10	8	8	17	12	9	6	4	5	5	4	3

TABLE IV.
PROBABILITIES OF SURVIVAL (Px.) THROUGH AND NUMBER OF SURVIVORS (Lx.) AT END OF CERTAIN PERIODS.

Age.	Px.		Lx.	
	Male.	Female.	Male.	Female.
Birth ..	..	..	100,000	100,000
0-12 Hours ..	99399	99447	99,399	99,947
13-24 Hours ..	99778	99871	99,179	99,318
1st Day ..	99179	99318	..	..
2nd Day ..	99444	99676	98,627	98,996
3rd Day ..	99515	99649	98,149	98,649
4th Day ..	99688	99713	97,843	98,366
5th Day ..	99812	99869	97,659	98,237
6th Day ..	99849	99921	97,512	98,160
7th Day ..	99962	99948	97,475	98,109
1st Week ..	97475	98109	..	..
2nd Week ..	99183	99554	96,679	97,671
3rd Week ..	98961	99170	95,674	96,861
4th Week ..	99193	99190	94,902	96,076
1st Month ..	94902	96076	..	..
2nd Month ..	97792	98326	92,806	94,468
3rd Month ..	97769	98297	90,736	92,859
4-6 Months ..	90736	92859	..	..
7-9 Months ..	95233	96301	86,410	89,425
10-12 Months ..	96568	97123	83,445	86,852
13-15 Months ..	97151	97630	81,068	84,793
16-18 Months ..	81068	84793	..	..
19-21 Months ..	98303	98503	79,621	83,524
22-24 Months ..	98613	99073	78,586	82,750
3rd Year ..	99093	98973	77,873	81,900
4th Year ..	99195	99318	77,247	81,341
5th Year ..	95288	95929	..	..
6th Year ..	98405	98561	76,015	80,169
7th Year ..	98885	98841	75,167	79,240
8th Year ..	99170	99307	74,544	78,690

during the first five years of life of a given number of individuals, born and living subject to the same environment as the population concerned in the present investigation.

The tables demonstrate that both male and female children had practically the same chance of surviving for the first twenty-four hours after birth as of living through the whole of the fifth year of life, and that, whilst the males lost a tenth of their number during the first four months, a fifth during the first fifteen months, and a quarter by the early part of the fifth year, the females lost a tenth in the first six months and a fifth by the early part of the fourth year. The larger proportion of female than of male survivors during the early years of life is a feature common to all English life tables. Notwithstanding that more males are born than females, the latter are generally in a majority at the end of two years. The heavier incidence of infant mortality in the male sex is the cause of this, and is probably the most potent factor in the causation of the excess of females over males in the population of this country. On comparing the relative effects of the more important causes of death it was

found that, with the exception of whooping-cough and accidents, males died more frequently than females from all causes; and, according to the Decennial Supplement of the Registrar-General for 1891—1900, this was also the case in the country generally, with the exception of whooping-cough and erysipelas. The ratio of female to male deaths varied with different causes from '6 to 1. The exception in the case of whooping-cough is difficult to account for.

EVILS OF INSUFFICIENT SLEEP.—Another matter dealing with the home and closely associated with the health of the children that calls for attention is the insufficient sleep that a large proportion of the children get. It is no uncommon occurrence to find children of thirteen staying up till 10 or 11 p.m. Education as well as health suffers considerably owing to the fatigue of the nervous system. Sleep is a most important physiological requirement, and it would be well to have more stress laid upon this subject in the lessons on personal hygiene. It is to be regretted that in some of the schools it is only in the upper standards that personal hygiene is taught, and bad habits formed when in the lower classes are then difficult to eradicate. The parents are, unfortunately, often indifferent and sometimes much to blame, and the practice adopted in some places of having classes for parents is an excellent one which deserves sympathy and encouragement.—*Annual Report of Dr. E. W. Hope, Medical Officer to the Education Authority, Liverpool.*

"I REGARD the out-patient departments of hospitals as a distinct source of danger in regard to the spreading of infectious disease. Persons in a weak state of health are exposed in the waiting-rooms to the risk of infection from others suffering from scarlet fever, diphtheria, measles, whooping-cough, and other maladies of like nature. Not only so, but the medical and nursing staff, and sometimes the in-patients, become infected. During the last year seven cases of scarlet fever and two of diphtheria occurred among the staff of one hospital, and instances occur from time to time. It is not an unusual practice, when infectious disease occurs in the family of foreign tailors, for the person to be taken off to a general hospital, partly in the hope that a second opinion will prove the illness not to be infectious, and partly to prevent disinfection and interference with work, as the patient would be sent off to the isolation hospital direct from the general hospital instead of from the home. When it can be proved that a medical man has already informed those responsible that the illness is an infectious one, legal proceedings should be taken."—*Annual Report of Dr. F. J. Allan, Medical Officer of Health, Westminster.*

MEASLES IN SCHOOLS: AN ACCOUNT OF A RECENT EPIDEMIC IN ST. HELENS.

By JAMES J. PATERSON, M.B., B.S., B.Sc., D.P.H.,
Assistant Medical Officer of Health, St. Helens.

IN recent years the subject of school hygiene has come to occupy one of the foremost places in the routine work of a medical officer of health. Recent legislation has strengthened his hand considerably in dealing with matters pertaining to school life, and the advent of the school doctor and the school nurse have afforded him greater facilities for investigating and dealing with outbreaks of infectious disease among school children. Even in the short time that these new forces have been in operation there is a distinct indication of the improvement effected by them in taking in hand the commoner infectious and contagious diseases, which are still all too prevalent amongst school children.

The gathering together of children day by day from many different localities and bringing them into close contact form conditions which are eminently favourable for the rapid propagation of infectious disease, but at the same time with efficient administration these very conditions may be turned into good account in detecting disease and controlling its spread at the very earliest opportunity.

Some of these diseases, either from their individual peculiarities or from our knowledge of their epidemiology, are more easily controlled than others; but there is still a considerable number against which we have yet to form a satisfactory plan of campaign.

In this group measles undoubtedly takes the chief place, for in it we have a disease which is the most prevalent of all children's diseases, to which practically every child is susceptible, which is of the most infectious nature, and which is more or less responsible for an unduly large proportion of deaths in very young children.

To a considerable extent we are handicapped in dealing with it from our want of exact knowledge as to the nature of the causative agent and the details of its mode of spread, but as the results of administrative methods of control accumulate we can more confidently look forward to a time when its ravages in infant departments will be substantially diminished. In the hope of contributing a little more to our information on this subject, I submit for your consideration a brief account of our experience

of measles in schools during the recent epidemic at St. Helens.

Before commencing the main subject of this paper, it may be of interest to give a short survey of the outbreaks of measles in St. Helens during the past thirty-three years, in so far as it shows the periodicity usually associated with this disease—that is to say, outbreaks occur every second or third year, while during the intervening period the number of cases is comparatively small.

The only figures available for the earlier epidemics are the death-rates, but for the purpose of a general comparison these may be taken as a sufficiently accurate measure of the extent of the outbreaks from year to year. The years 1876, 1879, 1882, and 1884 were marked by extensive outbreaks, in which the death-rate ranged from 20 to 26 per 10,000, while in the intervening years it dropped to 2, or even less.

From 1886 to 1902, a period of sixteen years, this extreme difference between epidemic and inter-epidemic periods was much less marked, but it is still possible to trace in them minor outbreaks giving a death-rate of from 7 to 10 per 10,000. These occurred every second year, with only two exceptions, which were third year periods—namely, from 1886 to 1889 and 1897 to 1900. In the intervening periods the death-rate, with three exceptions, remained below 4 per 10,000. In 1903 only one death from measles was registered, but in the following year there were no less than 131. During the greater part of 1905 and 1906 the borough was practically free from measles, but in the second half of the latter year there began an extensive outbreak, which lasted until June, 1907. Again, during 1908 not a single death was registered as having been due to measles, and only thirty-nine cases were notified to the health department as compared with 2,123 in the previous year. Thus for over thirty years there has been a fairly regular succession of years of high prevalence and years of low prevalence. At the beginning and end of the period in question there has been a succession of major outbreaks, while in the middle period the outbreaks have been of a minor character.

Judging from the local behaviour of these epidemics in the past, it might be expected that 1909 would be the occasion of an extensive epidemic, and so it happened. Towards the end of January of this year cases of measles began to occur with increasing frequency in the schools on the western side of the town.

Throughout February the schools nearer the centre of the town became involved, and at the end of that month and the beginning of March the schools lying to the eastward of the borough began to show signs of the approaching epidemic. Indeed, this slow progression eastward was a most noticeable feature of the present epidemic, and can only be explained by the fact that it began in the schools on the west side, and travelled by personal contact from street to street.

There is no reason to correlate it with the prevailing direction of the wind; in fact, during the four months of the epidemic the number of hours in which the wind had an easterly direction is almost precisely the same as that in which it had an opposite direction.

Our main source of information as regards the occurrence of cases was a system of notification by teachers and school attendance officers, for in St. Helens measles is a notifiable disease under Section 96 of the St. Helens Corporation Act, 1898, which provides that "whenever any scholar who attends any school within the borough shall be suffering from any infectious disease the principal or person in charge of such school . . . shall forthwith send notice thereof to the Medical Officer of Health." In virtue of this clause we can call upon the teachers to notify such cases of measles as may come under their notice, and to them we are indebted for the greater part of our information in the present epidemic.

The head of every school department is provided with a book of forms, on which to fill in the name, age, address, and disease from which the scholar is supposed to be suffering. The teachers are also requested to report on the same form any case that may come to their notice of a child attending school from a house in which an infectious disease is believed to exist, and to make a note to that effect in the appropriate column.

A small number of cases occur in which the teacher is unable to obtain information as to the nature of the illness. These are reported to the school attendance officer, who in due course makes inquiries at the house, and if he has reason to suspect the existence of an infectious disease he reports the matter directly to the Health Department. In this way a fairly full record is obtained of cases of illness occurring amongst children *in attendance at school*, but it is obvious that this method alone is not sufficient to keep one informed of more than a portion of the actual cases which occur;

still it forms a very useful indication of the extent and progress of an epidemic.

As soon as practicable after the receipt of the notification a school nurse visits the house at which the scholar resides and makes inquiries with a view to confirming the reputed diagnosis. If no doctor be in attendance she gives advice as to isolation of the patient and calling in of medical aid if the circumstances seem to warrant it. At the same time she makes a note of the date of onset, last attendance at school, particulars of the other members of the family, and any other information that may be of value.

As soon as each case of measles has been verified a note is sent to the school which the patient attends excluding him from further attendance for a period of not less than three weeks from the date of onset. Other members of the family are also excluded for a similar period if they are in the infant department, also if they are in the upper school and have not been protected by a previous attack of measles. The only children, then, who were allowed to attend school from an infected house were those in the upper standards who had had a previous attack.

In spite of the precautions that were taken, measles began to spread rapidly in the school first affected and to attack fresh areas. The disease soon became so general on the west side of the town, and cases occurred with such frequency in the schools, that it seemed almost hopeless to try to eliminate the school infection factor otherwise than by total closure of the departments most affected.

In some instances the way in which infection gained an entrance to the school was ascertained with a fair degree of accuracy, and as these instances serve to illustrate the difficulties one encounters in dealing with an extensive epidemic of this nature, it will be worth while to describe them in detail.

One of the most interesting of these instances is the chain of events which happened in a certain school (Christ Church Mission) on the west side of the borough. For several weeks this school remained free from measles in the very centre of the area first and most affected, and for a time seemed to enjoy an unwonted immunity, while all the neighbouring schools suffered severely. On March 5th, however, the head master notified some fifteen cases which had occurred almost simultaneously in two classes of infants occupying the same room. On inquiring at the school it was found

that the attendance, which for the previous three weeks had been about sixty, had dropped during the week in question to forty-two, and of the eighteen absentees at least fifteen were reported to be suffering from measles.

An examination of the registers showed that a little girl in one of these two classes had been at school up to February 11th, when she was noticed to be suffering from "a bad cold," and was sent home by the teacher. Later on it was proved that she had had measles. Nothing further happened until February 19th, when another member of this class, who was the school companion of the first, developed measles, and was known to have been sick in class on that date. Exactly a fortnight later (March 5th) we received the head master's notification of the fifteen cases, all of which had sickened between March 1st and 4th. The natural conclusion is that the first girl had been the source of infection to her companion, and that the second child, having attended school in an infectious condition, had given rise to the fifteen subsequent cases. It is rather curious that the first case did not cause a greater number of secondary cases, but probably the promptness of the teacher in sending her home the first day she appeared to be ill prevented further spread of the infection at that time. On the same date similar inquiry was made at another school (the Gerard) in the northern part of the town, where during the three preceding days eighteen cases of sickness had been notified. Almost the same history was obtained. A little girl had been in attendance in the infant department until February 3rd, when she was taken ill in school and sent home. A few days later the teacher received information that she was suffering from measles. No other case occurred in the school until February 19th, when a little boy in the same class developed measles. The disease was not recognised at that time, so that he must have been attending school in an infectious condition up to that date. From March 1st to 4th, ten to fourteen days later, eighteen cases of sickness occurred, of which twelve proved on subsequent inquiry to be measles.

No connection could be shown between the case on the 3rd and the one on February 19th, but I think it can reasonably be assumed that the latter was the source of the twelve cases which sickened simultaneously ten to fourteen days later, viz., between March 1st and 4th. Another instance will serve to show how the best directed efforts to keep a department free

from infection may be thwarted by the carelessness or ignorance of parents in sending a child to school while in an infectious condition. The school I refer to (Parr Flat) is situated in an isolated district in the extreme east of the borough, and though it had not yet been reached by the epidemic, it was included in the general closure up to May 7th in the hope that it would thereby escape infection. This, however, was not realized, for on June 23rd, seven weeks after re-opening, twenty-nine cases of sickness were reported, of which twenty-one proved to be measles, and all of these sickened during the preceding three days.

On making inquiry as to the cause of this fresh outbreak it was found that a little girl in the infant department had been kept at home for a week, from June 8th to 14th; the reason for absence sent to the teacher was that she had had a "bad cold." After her return to school a brother, also in the infant department, who had been in attendance up to the 17th, was kept away for the same reason. In the meantime the little girl had admitted to the teacher that she had had "spots on her body," and the teacher, becoming suspicious of measles, sent specially to inquire whether the boy, who was now ill, had a rash or not. The reply was to the effect that "he had only a cold and there was no rash." When the school nurse visited the house on June 23rd she found unmistakable evidence of a measles rash on the boy's arm and chest, and on questioning the mother more closely obtained the admission that the girl had been "just the same."

Here, then, is a clear history of a child attending school from an infected house who subsequently develops measles, while another member of the same family is out of school for only a week during the beginning of the disease. It is not surprising, then, that a crop of a score of secondary cases should appear some ten days later in that department.

In many of the schools a very strict watch was kept by the teachers in the infant department for children who showed early signs of measles, but teachers alone cannot be expected to have the necessary skill to diagnose the disease sufficiently early to permit efficient steps being taken to prevent further infection. Where practicable the schools were visited frequently by a school nurse or myself, in order that suspected cases might be individually examined and dealt with at the earliest opportunity. Owing to the large number of schools which ultimately became affected, and the large

area covered, it was clearly impossible for the staff of the Health Department to carry out this plan with success, as the following instance will illustrate.

In a certain school (St. Patrick's) in one of the poorer districts, almost daily visits were made for the purpose of making a routine examination for early cases of measles. From time to time small batches of cases were found and excluded, but as time went on these occurred at more frequent but less regular intervals, showing that infection was entering the school from several different sources. These successive "crops" of secondary cases were never large, but they became so frequent that, together with their "contacts," the number of scholars excluded approached one-third of the number on the roll.

At this stage the question arose as to whether the classes could be profitably conducted with an attendance bordering on 60 per cent. From a purely educational point of view it is doubtful if the teachers can be expected to devote their usual energy in teaching a class so depleted in numbers, knowing full well that the great bulk will have to be done over again as the sick children return to school. This disorganisation of school work due to the absence of many scholars and their return at irregular intervals several weeks, it may be months, later, is certainly a question worthy of due consideration.

Of the financial side of the question I need not say much, for with the disappearance of Article 101* of the Code the monetary loss to the education authorities caused by the exclusion of individuals is a serious one indeed.

A consideration of these points, together with the plain evidence that our efforts to limit the spread of infection had not met with any obvious degree of success, led to closure of eighteen infant departments during the month of February and the first week of March.

Still the epidemic continued its steady progress eastward, and by the middle of that month practically every one of the twenty remaining infant schools, which were mostly on the east side of the town, began to show signs of becoming invaded. From the experience gained in the previous weeks the only step that seemed reasonably consistent was to close all these departments forthwith, before the infection gained a still wider footing. Accordingly a general closing order was made out for all infant departments for six weeks

from March 15th to April 23rd, a period which included the Easter holidays.

On the following Monday, April 26th, the departments reopened, but the attendance was so poor in number of the principal schools and so many of the children brought reports of brothers or sisters suffering or recovering from the disease that the general closure was maintained for another fortnight—namely, to May 7th. This made a total of eight weeks continuous closure of all the infant departments. On reopening at the end of that period the attendance proved to be practically as good as it was previous to the epidemic.

Such is a general description of the epidemic and its behaviour. I shall now proceed to give an analysis of the figures relative to the outbreak.

From the beginning of January to the end of April, a period of seventeen weeks, there were altogether 1,367 cases of measles brought under our notice. The actual number of notifications received considerably exceeds this, but the above number includes only those in which the diagnosis was verified. Many of the cases notified proved not to be measles, or the evidence was too slight to establish a diagnosis, or, as happened in a few cases, the nurse could not gain admission to the house.

These 1,367 cases were distributed amongst 860 families in the following way:—

One case in	509 families	...	509 cases.
Two cases in	227 "	...	454 "
Three "	98 "	...	294 "
Four "	20 "	...	80 "
Five "	6 "	...	30 "
	860 "		1,367 "

That is to say that there were 391 families in which more than one case occurred, and, as will be seen from a subsequent table, the majority of secondary cases in these families were younger children, who contracted the disease from a child attending school. In order to show the relative influence of home and school conditions in spreading infection, the 1,367 cases have been classified under the following heads:—

1st. Primary cases which occurred in children under school age—i.e., four years—and who therefore could not have been infected otherwise than at home. For convenience, I shall refer to these as "home" cases.

2nd. Primary cases occurring in children of four to fourteen years of age who had been attending school during the epidemic and who presumably caught the infection there. These

form the group termed "school" cases in the table.

3rd and 4th. Secondary cases occurring in children of these two groups. These secondary cases are further sub-divided according as they were secondary to a "home" case or a "school" case. There were 52 instances of a "home" child and a "school" child sickening simultaneously, and two cases of measles in individuals over school age—namely, 1 of fifteen and 1 of eighteen. The secondary cases are those in which measles developed in another member of the same family not earlier than a week from the date of onset in the first or primary case; cases occurring before that time are classed as "primary."

It was interesting to note that the majority of these secondary cases sickened in from nine to twelve days after the primary case, and that only in a very few instances was the sickening delayed until the third week or later. As will be seen from the figures in the following table, the commonest sequence of events was that a "school" child contracted the disease first, and conveyed it to a younger member of the family who had never been to school, while the reverse sequence, infection of a "school" child by a "home" child, is comparatively rare.

The primary cases occurring in children under four years of age number 156. The primary cases in children of school age, four to fourteen years, numbered 804; the secondary cases corresponding to the first group numbered 240—these include 64 cases secondary to a previous "home" case, and 176 secondary to a previous "school" case. The secondary school cases numbered 163, which includes 34 secondary to a previous "home" case, and 129 secondary to a "school" case in the same family.

There were 52 instances of simultaneous sickening of a "home" child and a "school" child, a circumstance which points to infection taking place in the house rather than in the school. Deducting these 52 cases from the 804 primary school cases, with which they are included in the table, and adding them to the home cases, we get 212 primary cases, which were due to home infection, and 752 in which the infection most probably occurred at school.

These figures, however, require a still further correction, for, as I shall show in detail later on, there is reason to believe that we received notification of only 26.7 per cent. of the cases under four years, and 37.7 per cent. of those over that age. Calculating on this basis the 164 primary cases under four would represent a probable total of 590, the 804 of the four to

TABLE A.—INCIDENCE AT AGES.

	Ages.																	Totals.
	Under 1 year.	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-18	Over 18	
Primary cases ...	15	36	40	67	123	232	206	114	57	26	24	9	9	3	1	1	1	964
Secondary cases ...	42	65	63	70	57	31	21	20	14	8	10	1	1	—	—	—	—	403
Totals ...	57	101	103	137	180	263	227	134	71	34	34	10	10	3	1	1	1	1,367
Deaths...	6	13	9	7	—	6	—	—	—	—	—	—	—	—	—	—	—	41

Number of families ... 860.

	Under School Age (4 years).	Infants and Standard I. (4 to 8 years).	Standard II., etc. (8 to 14 years).	Above School Age.
Primary cases ...	158	732	72	2
Secondary to school case ...	176	111	18	—
Secondary to home case ...	64	32	2	—
Totals ...	398	875	92	2
Deaths ...	35	6	—	—

fourteen years of age group 2,144, and the 52 simultaneous cases, 139.

On transferring these from the "school" group to the "home" group, we get 729 probable cases in which the infection was caught at home, and 2,005 in which the school was the probable place of infection. Putting this in simple figures, nearly three times as many cases originated in school as at home. I do not think this is by any means an exaggerated estimate, for in the particular instances of school infection which I quoted it was seen that even a single case was capable of giving rise to a "crop" of 12 to 20 secondary cases.

Another point which tends to confirm the view that school infection was the predominating factor is that the epidemic spread comparatively slowly from school to school, but when once it gained a footing in the school its progress there was very rapid indeed. It will be readily seen, too, that infection which takes place at school is distributed over a much wider area than that which takes place at home. In the latter case it is probably limited to the members of one family or their immediate neighbours. In the former it affects many children in different streets and districts, making these the centres of fresh areas of infection.

Another interesting point is that the number of secondary cases due to a "home" primary case is proportionately greater than those due to a "school" primary case. Thus, from the figures in the table, 158 "home" cases gave rise to 98 secondary cases—that is, 61 per cent.—and the 804 cases at school age to 305 secondary cases in their own families—that is, 38 per cent. The probable explanation of this comparatively greater infectiousness in the former group is that the younger children are at home during the whole period of the disease, and that there is opportunity for more prolonged contact than is possible in the older children, who often attend school during the earlier stages of the disease. It is quite likely, too, that the virulence of infection is related to the severity of the disease, and that, as younger children are almost invariably more severely affected than the older ones, their relative infectiousness is similarly increased.

The number of deaths which occurred in the families visited was found by referring to the Registrar's death returns for the corresponding period. As is invariably the case, the number of deaths is far greater among the children under school age than in the group of older

children. The exact figures are 35 deaths among the 398 cases occurring in children under four, only 6 in the 675 cases in the four to eight years of age group, and none among the older children. This works out to a fatality of 8.8 per cent. among the younger children, and of 0.67 per cent. in the older children, or, taking the two groups together, a total fatality of 3 per cent. The fatality rate in the group of younger children as compared with the elder—it was exactly thirteen times greater—appears at first sight disproportionately high, but this figure is not at all at variance with the well-known fact that measles is a most fatal disease for young children.

Although the number of cases on which this calculation is based does not by any means represent the whole of the cases which occurred, yet there is no reason to suppose that these do not represent a fair sample of the total cases. That being so, the fatality rate which holds good for the known cases will likewise hold good for those which did not directly come under our notice.

The insufficiency of notification by school agencies alone is shown in the following table, which gives in comparative columns the number of deaths from measles and its complications in the Registrar's returns for the first four months of this year, and those which occurred in the 1,367 cases notified by school officials:—

TABLE B.

NUMBER OF DEATHS AT EACH AGE PERIOD, AND PROBABLE NUMBER OF CASES CALCULATED FROM THE DEATHS.

Age. Years.	Registrar's Returns.		Notified cases.	
	Deaths.	Probable cases.	Deaths.	Known cases.
Under 1 ..	31	295	6	57
" 1 ..	63	489	13	101
" 2 ..	39	440	9	103
" 3 ..	12	230	7	137
" 4 ..	9		0	
" 5 ..	13		6	
" 6 ..	1	2,584	—	969
" 7 ..	1		—	
" 14 ..	1		—	
Totals ..	170	4,038	41	1,367

	Under 4 years.	4 years and over.	Totals.
Probable cases ..	1,454	2,584	4,038
Reported cases ..	398	969	1,367
Percentage of reported to probable cases ..	26.7%	37.5%	33.8%

Assuming that the case death-rate was the same for notified and non-notified cases, I have calculated on that basis the number of probable cases which would produce the number of deaths given in the Registrar's returns for each age period. From the numbers in the table it will be seen that approximately one-third (33·8 per cent.) of the total cases were notified, and that a relatively greater number of cases at school age were notified than of younger children, the proportion being roughly one-third and one-fourth in each case.

There is a distinct difficulty in obtaining information about the younger members of a family who may be suffering from measles. Since they are not in attendance at school we have no direct means of knowing whether they are ill or not, and it not infrequently happens that the older children continue to attend school even in the infant department while a younger one is ill at home with the disease.

Even when the teachers are careful to make daily inquiry of the scholars it is not always possible to elicit a trustworthy answer from the children. Several instances came to our knowledge of parents continuing to send infants to school although there was infection in the house, and without sending notice to the teachers. This may have been done partly in ignorance, but I think I am justified in saying that in a few cases there was a deliberate attempt to hide the fact of a baby having measles in order to "avoid trouble."

With the closure of the infant departments our main source of information was cut off, and the cases which did come under our notice were chiefly obtained through contacts attending the upper departments. These, together with the death returns, afforded a fair indication of the general progress of the epidemic, but at the same time this information was too scanty and arrived too late to be of much value in taking steps to control the spread of the disease.

The progress of the epidemic from week to week is shown in the next table, which sets out the number of cases notified and the number of deaths from the Registrar's returns.

It will be seen from a comparison of the figures that during the first six weeks of the epidemic the cases under school age are few in proportion to the cases of school age, but after that time they increased rapidly, and obtained their maximum at about the same time as the school cases. In the week following the closure of the infant departments there is a sudden fall

TABLE C.
NUMBER OF CASES NOTIFIED AND OF DEATHS WEEK BY WEEK.

Week ending:	Cases notified.			Deaths from Registrar's Returns.
	Under 4 years.	4 to 14 years.	Total.	
January 7th ..	2	5	7	—
" 14th ..	4	13	17	—
" 21st ..	4	23	27	1
" 28th ..	11	35	46	0
(1 infant dept. closed)				
February 4th ..	11	60	71	2
" 11th ..	21	55	76	2
(2 more closed)				
" 18th ..	56	115	171	8
" 25th ..	60	112	172	11
(7 more closed)				
March 4th ..	45	120	165	14
(8 more closed)				
" 11th ..	34	80	114	19
(All remainder closed)				
" 18th ..	22	53	75	19
" 25th ..	17	42	59	33
April 1st ..	18	12	30	28
" 8th ..	10	14	24	8
" 15th ..	11	8	19	18
" 22nd ..	2	10	12	4
" 29th ..	2	9	11	3
May 7th ..	4	2	6	4
(All infant depts. re-opened)				
" 15th ..	10	13	23	1
" 22nd ..	5	6	11	0
" 29th ..	2	2	4	1
June 5th ..	5	5	10	1
" 12th ..	2	2	4	1
" 19th ..	1	2	3	2
" 26th ..	3	25	28*	1
July 3rd ..	2	1	3	0
" 10th ..	4	8	12	3
(Summer holidays, all schools closed)				

* Twenty-one cases in one school.

in the number of cases, due largely to the loss of notification from the teachers in these departments. The numbers, however, show a steady fall all through the period of closure, and, with the exception of one week, ending April 5th, there is a corresponding fall in the number of deaths, which shows clearly that the epidemic was abating.

After re-opening there is a slight rise in the succeeding fortnight, which is most marked in the second week. This was due to the occurrence of minor outbreaks of three or four cases in some of the schools. These outbreaks were dealt with by excluding the affected individuals and their contacts, a method which seems to have been effective in stopping any further spread.

The week ending July 26th has a total of 29 cases, but of these 21 occurred in one school, an outbreak of which I have already given full particulars. In the column dealing with the deaths from the Registrar's returns it will be noticed that these follow fairly closely the number of cases notified, and that the

maximum number of deaths occurs about a fortnight later than the maximum of cases notified. This table, however, is not quite so complete as the others, for in a number of instances the date of onset was not ascertained with sufficient accuracy to allow the cases to be classed in their appropriate weeks, but this defect is not sufficiently great to detract from its value as indicating the rise and fall of the epidemic from its commencement to the summer vacation.

It has not been possible to ascertain fully how many susceptible children escaped infection during this epidemic, but the following figures, which were obtained in the course of routine school inspection since the schools re-opened, will give an indication of the number who escaped.

Of a total of 556 infants examined in eight schools information on this point was obtained from 391 parents or guardians. Of these 391 children, 164 (42 per cent.) had had measles previous to this year, and may therefore be regarded as "protected." Of the remaining 227 susceptible children 149 (38 per cent.) had measles this year and 78 (20 per cent.) had not—that is to say, out of five infants roughly four have had measles and one not. Of these four two had measles previous to this year and two caught the infection in the present epidemic. Fully two-thirds of the "protected" children had had their attack of measles in the epidemic of 1906-7, when they would have been two to three years of age.

The chief points of difference between the previous epidemic and this one are that the former extended over a much longer period, namely, from August, 1906, to June, 1907, that its appearance in the schools was of a more sporadic nature, and that it did not attain so marked a climax as in the present instance. During its course individual schools were closed from time to time, but there was no prolonged closure of all the infant departments as in the case of the 1909 outbreak. That this last outbreak came to an earlier and more definite end can, I think, be justly attributed to the continued closure of the infant departments, the more so as many of these were closed before the disease had gained much headway in them.

The efficiency of school closure in limiting the spread of such a highly infectious disease is still a debateable question, but when one considers the infectiousness of this disease, even in its earlier stage, and the extreme susceptibility

of children under seven, it is readily seen how these factors combine to make the infant department of a school a most favourable ground for its propagation.

Certainly our recent experience in St. Helens has been that it is in the schools that this disease finds its readiest means of spread, and that when an outbreak has become very general and fresh sources of infection are being imported almost daily into a class, there comes a time when the most careful weeding out of "infects" and "contacts" fails to arrest its progress, and that nothing short of total closure is of any avail. The former method was fully tried in the earlier part of this epidemic, when it most affected the schools on the west side of the town, but, as I have shown, it did not meet with any degree of success. The closure of the schools on the east side in anticipation of their being ultimately affected to the same degree was undoubtedly the factor which contributed most to the fall of the epidemic, while the prolonged closure prevented the possibility of these departments becoming re-infected, after the first "crop" of cases had run their course.

Action on the part of health authorities or of school officials in excluding individual cases cannot be expected to attain its full measure of success unless, at the same time, it be supplemented by the intelligent co-operation of parents in practising isolation of the infected children. This is manifestly difficult to obtain, but with systematic home visitation by a capable health visitor much may be done to educate public opinion in this direction.

In the recent outbreak in St. Helens it was gratifying to find that in many instances mothers had made some attempt to isolate the sick child, even before the visit of the school nurse, and that there appeared to be an appreciation of the danger of the disease for very young children. This certainly is a very great advance on the practice of putting all the children together, so that "they might have it at once and be done with it," and the popular idea that "the sooner they have it the better." This responsibility, however, does not rest entirely with the parents, for we require a still greater willingness on the part of teachers and school authorities to sacrifice high averages of attendance for the sake of eliminating children suspected of being infectious from their classes. Until these conditions are realised, measles and kindred diseases may be expected to continue to exact a heavy toll of life and health amongst our infant population.

SMALL-POX FROM IMPORTED COTTON.*

By HERBERT E. CORBIN, B.Sc., D.P.H., Medical Officer of Health and Medical Superintendent of the Corporation Hospitals, County Borough of Stockport.

AS my attention has been called to cases of small-pox during both last year and this year, in which, after careful inquiry, there was evidence of the infection being carried through the medium of raw cotton from parts of the world in which small-pox is endemic, I thought the matter sufficiently important to bring before your notice, not because the possibility of raw cotton conveying the disease has not been recognised, but having regard to the method of convection of the infection in these cases.

In 1908 only one case occurred. A married woman, A. B., aged thirty-two, working in the card-room of a cotton mill became ill on March 19th with pain in the back, headache and nausea. On March 21st she had a "spotted rash" on her face, and on the 24th she was seen by a doctor, who notified the case as small-pox.

The case was typical, though discrete and mild, the vesicles and pustules (I did not see the case in the papular stage) being most numerous on the face, wrists and hands, scanty on the trunk, and passing through typical stages. Attempted vaccination was unsuccessful. This case, arising at a time when there were no other cases in the country, led me to suspect the probability of infection through the medium of cotton, and through the courtesy of the manager of the mill I ascertained that having regard to the incubation period and the time of arrival in England, the particular consignment which might have given rise to this case of small-pox came from Memphis, and was shipped from New Orleans, and it transpired that while small-pox is endemic in these places, it was more than usually prevalent at the time when the supposed infected consignment was gathered and imported.

The patient was a combing tenter and in the course of her occupation continually had to piece the broken ends of cotton. I reported the possibility of infection from this source to the Local Government Board, adding "especially as in her occupation of piecing cotton she occasionally moistens her fingers with saliva in order to join up the threads in the early processes of the manufacture from the raw material."

* Paper read before the North-Western Branch of the Society of Medical Officers of Health on Friday, July 16th, 1909.

Another small outbreak of small-pox occurred in Stockport in the early part of this year. The following are the details of the cases:—

First Case: E. R., aged twenty-one, of David-street, Reddish. Seen by her doctor on the evening of February 13th. Had been ill for forty-eight hours, general malaise, with pain all over, but headache especially bad; temperature 101 deg. The condition improved, but on February 16th the patient began to feel ill again and a rash developed, occurring on the face, forearms and back; the rash consisted of papules, some of which had a shotty feel. The doctor reported that vesicles and one or two pustules were also present, but no signs of umbilication.

As he regarded in this case the diagnosis between variola and varicella as doubtful, he got his partner to see the case with him, and they concluded that having regard to the length of time between the onset and the appearance of the rash and the distinctly atypical rash, it was varicella. The rash began to disappear on February 18th, and the temperature became normal. On account of the pain in the back and head at the onset of this case it was regarded as one of influenza until the rash appeared.

I did not see this case until after my attention had been called to the first contact (M. N.).

Second Case: M. N., aged 29, Greg-street, Reddish; baker. Date of onset February 24th, pain in the back, severe headache, generally feeling very ill; on February 28th a rash developed, and I was called by the doctor to see the case on March 1st. The rash consisted of thickly set papules covering the face and head, also thickly distributed on the arms, forearms and legs, less thickly on the trunk. The papules were hard and shotty to the feel, and several were present on the palms of the hands, also three or four on the soles of the feet. The patient complained of acute pain on pressure of these papules; the temperature was 101.4 deg. The rash was perfectly uniform so far as the stage of eruption is concerned, and was not in any way polymorphic. The case was diagnosed as small-pox, and removed at once to the small-pox hospital. The case progressed as a typical rather severe case of small-pox, the pustules becoming confluent to a limited extent on the face and neck. On enquiring into the probable origin of this case it was discovered that the girl E. R. had been in the habit of helping occasionally at the house of M. N. in Greg-street, and that M. N.

had visited her at David-street on February 16th, and that she was then supposed to be suffering from influenza, but he had heard since that she had developed a rash. Inquiries were made, and the information concerning the first case (E. R.) was obtained.

Third Case: M. R., aged 47, David-street; mother of E. R. Malaise, February 27th; headache and pain in the back, March 1st; rash, March 3rd. The rash was that of modified small-pox, occurring on face, arms and legs, and consisting of a few discrete papules, hard and shotty, on the forehead. Temperature 100 deg.; patient complaining of feeling very ill. Removed to hospital on March 3rd. The rash passed through typical stages.

Inquiry into the possible origin of the cause of infection in the first case (E. R.) elicited the following facts:—

This person had worked in a cotton mill until February 12th, when she was taken ill. She had seen no one except her own people, the family of M. N., where she occasionally helped, M. N., who called when she was ill, and other mill hands for two or three months. Her occupation was that of a drawing tenter, and in the course of her work she occasionally had to piece broken strands together. This process consists of hauling in a certain amount of slack in order to overlap the broken ends, and then rolling them together with the forefinger and thumb, or with the palm of the hand.

The cotton in use at the mill was grown at Zifteh (a town in the delta of the Nile) in 1908, and the consignment which probably contained the suspected source of infection was shipped from Alexandria about January 13th, and was received at the mill on January 30th, 1909. I further ascertained that small-pox was very prevalent in the Delta towards the end of 1908 and the beginning of 1909, several deaths from this disease occurring weekly both at Cairo and at Alexandria.

Operatives are supposed to do the operation of piecing without moistening the hands, but I ascertained that each of the cases A. B. and E. R. actually used saliva for this purpose, and I have on several occasions observed operatives facilitate the process of piecing by introducing the thumb and forefinger to the mouth in order to piece the finer strands together, and to lick the palms of the hands when piecing coarser strands. It is easy to see thus how it is possible for infection to be conveyed directly

to the mouth, and infected material which might be quite harmless with ordinary handling becomes dangerous when thus introduced into the system of a susceptible individual.

In gathering the cotton the pickers, who are natives of both sexes, carry large open-mouthed bags, which are slung round their necks and hang in front of the body. They gather the cotton with both hands as they pass down the rows in the field, and deposit it in these bags. An almost universal habit obtains among the pickers of both sexes of chewing tobacco, and in the States a root known as "waheyawa." During their work they indulge very frequently in the habit of expectoration, and very commonly some of the expectorated material enters the bags containing the raw cotton. Chewing and expectoration also occurs when conveying the cotton in wagons to the gin, in the process of ginning, and also when shipping the baled cotton at the docks. Precautions are taken as far as possible to prevent infected persons from gathering cotton in the cotton fields, and from handling it at the points of export.

When small-pox, however, is very prevalent among natives, quite a large proportion of the cases are very mild. "Missed" cases are therefore very frequent, and these continue to work in the cotton fields throughout an attack of the disease, so that it is impossible entirely to avoid contingency of some of the cotton becoming infected in the process of gathering.

In the report of the New Orleans Board of Health for 1907 referring to small-pox, it is stated that "the bulk of the infection was due to repeated importation of cases both in the incubative and the eruptive stage, the spread of infection from individual cases being limited in most instances to one or two cases of the disease at most." During the year 234 cases occurred in New Orleans, and it will be thus seen from the above statement what a large number of cases, "both in the incubative and eruptive stage" unavoidably enter the towns. The fact again that only ten deaths occurred among the 234 cases in the City of New Orleans points to the mild nature of the disease in the States. In the States a prevalent superstition is current among the natives that the white "medicine man" is endowed with witchcraft, so that natives smitten with disease of any kind prefer to hide away and take their chances unattended rather than come within the grasp of the doctor. These facts, I think, will make

it clear how extremely difficult, if not almost impossible, it is to control such a disease as small-pox among natives in large cotton-growing districts. Further, the existence of the undesirable habits of chewing and expectoration which have already been referred to under such circumstances will also make clear the impossibility to avoid raw cotton being infected with small-pox.

Dr. Ross, Medical Officer of Health for Cairo, has been kind enough to send me a statement showing the incidence of small-pox in Cairo, Alexandria, and Port Said during the past four years. He states that "the period of comparative immunity in Egypt is now about nine years." The last outbreak began in Alexandria in 1907, when 504 cases occurred; it then spread to Port Said in March, 1908, and to Cairo in December, 1908, where, during the early part of 1909, 447 cases were notified with 200 deaths.

SMALL-POX IN CAIRO, ALEXANDRIA AND PORT SAID.

Date.	Cairo.		Alexandria.		Port Said.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
1906	36	9	80	41	7	1
1907	62	24	504	283	18	7
1908	269	95	35	19	42	19
1909 (Jan. to July)	447	200				

Dr. Ross states that "it should be noted that very little cotton is exported actually from Cairo itself, but that the majority is packed in the country districts and exported mainly from Alexandria." It is obvious from what has been said that very little infection of cotton occurs at the ports, and that the great danger exists from mild cases working in the cotton fields.

Under ordinary circumstances the disease is communicated by more or less intimate contact with an infected person, and there is little doubt in the case of this disease that fomites and infected materials are a source of danger, so that the mere handling or contact with such infected articles is sufficient to spread the disease.

Raw cotton, on account of its texture and organic nature would no doubt constitute a suitable nidus for the organism of the disease. It is acknowledged that the "striking distance" and infectivity of small-pox is very great,

probably greater than that of any other infection; but there is also evidence that the virus of small-pox becomes rapidly attenuated, and that infected material becomes entirely non-infective after a relatively short period. The time which elapses between the gathering of the cotton and its appearance at the mill, in the card-room, or in the spinning-room, would probably be sufficient to reduce the infectivity of the material to a minimum and negligible quantity unless the infection was actually introduced *into the mouth* of a susceptible person.

I am inclined to the view that, although the imported raw cotton, containing as it may an occasional living but attenuated organism of small-pox, may be handled *en masse* without danger of infection by a large number of people, and in more detail by winders, reelers, splicers, doublers, and doffers, the only operatives who would be subject to infection in the manner I have indicated would be those in the blowing-room, the card-room, or the spinning-room.

If the cotton was so infective as to produce a case of small-pox by the mere handling frequent epidemics would be inevitable in the cotton industry, and hence it is probable that all instances of small-pox occurring in operatives in the cotton trade are due to the accidental introduction of the attenuated virus from the raw cotton into the system by the mouth. The resistance of the individual has to be taken into consideration, more especially as very many operatives in a cotton mill are unvaccinated and practically none of them revaccinated.

When such a "sporadic" case arises in a mill, and no other cases are produced therefrom, it is evident that the resistance of those exposed to infection from the case, on account of climatic or other epidemic influences, is sufficiently high to prevent the spread of the disease, but I maintain that even under such adverse conditions and with an attenuated virus the *actual forcing*, as it were, of the infection into the system is sufficient to produce the disease, albeit in a modified form, as in the cases A. B. and E. R.

It is difficult to account for the fact that infection will spread on one occasion, while at another time under apparently identical conditions no such epidemicity is evidenced.

On one occasion at the London Fever Hospital a case of varicella arose in a scarlet fever ward, and though every case was in bed, and the case of varicella promptly isolated, seven cases of varicella arose among the

scarlet fever patients. On another occasion a case of varicella arising under almost identical conditions—which I was careful to note—failed to infect any other patient. In this latter case the resistance of the scarlet fever patients, *i.e.*, of this small community exposed to the infection, must have been at that time high against that particular infection.

Two main factors are involved in the spread of an infectious disease:—(a) the vitality of the organism (this includes virulence as well as reproductive capacity), and (b) the resistance of the community. All the so-called "epidemic influences," no doubt mostly climatic in character, produce their results by change in these two main factors.

If these changes were represented in the form of curves, the conditions favourable to an epidemic would exist when a crest in the wave of vitality of the organism occurred simultaneously with a trough in the wave of resistance of a community, whereas when a crest in the wave of resistance corresponds with a trough in the wave of virulence no epidemic could exist.

If the vitality of the organism be expressed by V, and the resistance of the community be expressed by R, the epidemicity of an infectious disease would vary directly with V and inversely with R, so that one might call the expression

$$\frac{V}{R} \text{ the epidemic factor.}$$

It may happen that, though the virulence of the micro-organism is low, as in the case of scarlet fever, in many epidemics which have recently occurred, yet the resistance of the community affected is also very low, with the result that an epidemic of mild cases arises.

In the cases of small-pox A. B. and E. R. the vitality of the organism was low, and the resistance of the community—*i.e.*, those operatives exposed to infection from the sufferer—was high, though in many cases they were unvaccinated; thus in each of these cases there were upwards of twenty operatives working in the same room but no case arose among them.

Fortunately it will be seen that the probability of the infection of small-pox spreading from imported raw cotton is very small under ordinary circumstances, inasmuch as the coincidence of a number of contingencies is necessary for its occurrence:—

1. Infection during gathering and importation is guarded against as far as possible.

2. Considerable attenuation of infectivity in any infected material occurs before it is dealt with by a piecer.
3. With such reduced infectivity there is little chance of infection unless this is introduced directly to the mouth.
4. The probability of the strands of cotton breaking just at a point where a portion of infected material is situated is small.
5. An operative only occasionally uses the mouth as a means of facilitating the process of piecing.
6. It is necessary, for infection to occur, that the individual should be susceptible to the disease.
7. This susceptibility is rare in vaccinated persons, and practically non-existent in revaccinated persons.

It is thus easy to see that though some thousands of operatives deal with raw cotton, some of which is slightly infective, yet on account of the necessary coincidence of several circumstances the risk is slight and cases are rare.

Such a possibility should, however, be carefully guarded against.

The most certain safeguard would be the vaccination or revaccination of every person who becomes engaged in a cotton mill.

With regard to the question of moistening the hands in connection with piecing, the conditions of temperature and humidity of the workrooms are such that the skin is normally sufficiently moist to facilitate the process of piecing. Occasional dipping of the hands in a solution of glycerine and water, however, would, after wiping, ensure, on account of the hygroscopic nature of the glycerine, a moist condition, and even the occasional use of saliva, as at present, would be quite unnecessary.

THIRD INTERNATIONAL CONGRESS ON SCHOOL HYGIENE.—The third International Congress on School Hygiene will be held in Paris on March 29th to April 2nd, 1910. The official head of the congress is the Minister of Public Instruction in France. An English Organization Committee has been formed with Sir Lauder Brunton as president and Dr. James Kerr and Mr. E. White Wallis as honorary secretaries. The membership subscription is one guinea, and subscriptions should be paid to the secretaries of the English Organization Committee, 90, Buckingham Palace Road, S.W., from whom all information relating to the Congress can be obtained.

PRESERVATIVES IN CREAM.

THE Local Government Board have recently issued a report by Dr. J. M. Hamill on the use of preservatives in cream. The report contains much valuable information on the subject, but one at least of the recommendations with which it concludes will give rise to a good deal of adverse criticism. It appears that the cream consumed in England is mainly a home product, although in summer a considerable quantity is imported from Ireland. The amount imported from abroad is relatively small; most of it comes from France and contains preservative, but cream sterilized in tins and free from preservative is imported from Norway, the Netherlands and Switzerland. The use of chemical preservatives in cream is common, the preservative most chiefly employed being a mixture of boric acid and borax in such proportions as to produce a neutral product. Other preservatives, such as sodium salicylate and sodium benzoate are occasionally employed. Some firms carry on a large cream trade throughout the year without using any preservatives; but cream producers whose trade consists in supplying retailers with cream in jars and in small bulk invariably use preservatives, and in this way cream comes to be sold by grocers, fruiterers, fishmongers, and other retailers as well as by dairymen.

The cream dealers who use preservatives affirm that cream free from preservatives can only be supplied by firms having exceptional facilities, and that the whole of the "jug trade," *i.e.*, the retailing of cream in small receptacles by grocers, fishmongers, etc., would be swept away if the use of preservatives was prohibited, or if effect were given to the Departmental Committee's recommendation that 0.25 per cent. of boric acid should be fixed as a maximum. Dr. Hamill states, however, that a firm in Ireland is able to carry on a successful jug trade in London throughout the year, although not using more than 0.20 per cent. of boric acid.

In view of the conflicting opinions of cream traders, the Board instructed Dr. A. Harden to investigate the effect of different amounts of boric acid and boron compounds on the keeping power of cream at relatively high temperatures, and under conditions approximating to those under which the jug-cream trade is carried on. The investigation was made at the Lister Institute, and from the experiments the conclusion is drawn that 0.2 per cent. and 0.3 per cent. of boric acid are insufficient to preserve ordinary creams for more than three or four days at 71° F., but that 0.4 per cent. will enable it to keep for from four to seven days at this temperature. It is important to note, however, that the point at which cream

ceases to "keep" and becomes unsaleable was not determined in these experiments by any physical or chemical criterion. Dr. Harden was unable to discover such a criterion, and finally decided to rely upon the judgment of two expert cream tasters, who were placed at his disposal by the Cream Trade Protection Society. The expert cream tasters of the Cream Trade Protection Society were not unnaturally somewhat fastidious in their tasting, and it is not surprising to find Dr. Hamill stating that "the trained taste of the judges led in some instances to rejection of cream which would have satisfied ordinary individuals with less fine perceptions."

Dr. Hamill's recommendations are as follows:

1. In the interests of the public health and of the consumer, and also with a view to removing difficulties which traders in cream are experiencing on account of present uncertainties, it appears desirable that effect should be given—subject to (2) below—to the recommendation made by the Departmental Committee on Preservatives, 1901, that the only preservative to be used in cream should be boric acid, borax, or mixtures of these boron preservatives; that a maximum limit of boron preservative calculated as boric acid (H_3BO_3) should be prescribed; and that the presence of boron preservatives should in all cases be declared. These provisions should also apply to clotted cream.

2. An exception might, however, be made in respect of the use of hydrogen peroxide, the addition of which to cream might be permitted provided that only traces were allowed to remain in the cream.

3. It appears desirable that the question of issuing regulations on this matter should receive the Board's consideration, and that account should be taken of the following points:—

- (a) The declaration of the presence of preservative to the purchaser, whether wholesale or retail, should in all cases be adequate, and the preserved cream, as an article of commerce, should be differentiated from cream which contains no added preservative.

- (b) In the case of boracised cream the maximum amount of boron preservative, calculated as boric acid (H_3BO_3), should be 0.4 per cent. from May to October inclusive, and 0.25 per cent. during the remainder of the year.

- (c) Cream in which boron preservatives are permitted subject to the above limits should in all cases contain at least 40 per cent. of milk fat.

4. Having regard to the use of sweetening agents, such as saccharin, to conceal sourness of cream and to impart an unnatural sweetness, it appears desirable that their presence should be notified to the purchaser.

Dr. Hamill thinks there are some grounds for permitting a maximum of 0.4 per cent. of boric acid during the months of May to October inclusive, but he regards it as important that dealers should understand that this would represent "a concession to trade necessities as they exist at present, and would be reconsidered as the development of improved methods of preparing and conserving cream warrants such a course." It is strange that Dr. Hamill should not perceive that nothing would be more likely to retard the development of these improved methods than the adoption of his recommendation to permit traders to dose their cream with an amount of boric acid considerably above that recommended by the Departmental Committee. The recommendation to adopt so high a maximum as 0.4 per cent. will undoubtedly be strongly opposed by medical officers of health.

REVIEWS.

PARENTHOOD AND RACE CULTURE. By C. W. Saleeby, M.D., F.R.S. Edin. London: Cassell and Co., 1909. Price 7s. 6d. net.

It often falls to the lot of the public health worker to be told that his work encourages the survival of the unfit, and therefore is bringing harm rather than good upon the community. This reproach finds expression in a variety of utterances—from the protests of an angry slum-property owner confronted with a statutory notice to the carefully guarded statements of the Mendelians. The movement for the prevention of infantile mortality is, it appears, specially destructive to the race. Professor Flinders Petrie, leaving for the moment his field of Egyptology, has volunteered the statement in his book, "Janus in Modern Life," that the movement "is doing away with one of the few remains of natural weeding out of the unfit that our civilisation has left us." And he predicts that "it will certainly cause more misery than happiness in the course of a century." This is a serious indictment, which must be met not by mere sentimental vapouring, but by a reasoned justification based upon adequate knowledge. Dr. Saleeby, in the present volume, has attempted, and with remarkable success, to reconcile the views of the selectionist and the sanitarian. He points out that the *fittest* does not necessarily mean the *best*. It merely means that which *fits*; and the ideal of race culture is to ensure that the fittest shall also be the best. How can this be done? Certainly not by killing the babies of the poor, or, what is practically the same thing, by allowing them to die of preventable disease. Every human life must be preserved, and not only preserved but provided with the best possible environment. But it by no means follows that every human being should be left

unrestrained to "hand on the torch of life." Deaf-mutes, the feeble-minded, epileptics, born criminals, inebriates and homophilics are amongst those whose best service to the community would be to remain childless; and the community should discourage parenthood in these unfortunates, not necessarily by administrative measures such as compulsory detention, though this in certain cases is desirable, but chiefly by the creation of an educated public opinion. Dr. Saleeby applies the term *negative eugenics* to measures that discourage the parenthood of the unworthy, and the term *positive eugenics* to measures that encourage the parenthood of the worthy, and he thinks that at the present time it is in negative eugenics that most can be accomplished.

Perhaps the most valuable chapters in the book are those that deal with what the author terms "racial poisons" (poisons that are injurious to the germ plasm), the chief of which is alcohol. The chapter on alcohol is particularly well done. Dr. Saleeby shows that the controversy between the followers of Lamarck and Weismann on the inheritance of acquired characters has nothing to do with the question of the influence of parental alcoholism on the offspring. The effects of parental alcoholism are not of the nature of transmitted acquirements; they are due to the effect of a deleterious influence acting on the germ cells. The germ plasm does not live in a separate universe all by itself. It can be poisoned by racial poisons and so bring forth degenerate offspring. The prevention of racial poisoning affords a common field in which both the selectionist and the hygienist can work together, and Dr. Saleeby has done good service in making this point clear. His book is a most informing and suggestive study of a supremely important question, and it is specially interesting to those who are engaged in the practice of preventive medicine.

THE OPEN AIR TREATMENT OF PULMONARY TUBERCULOSIS. By F. W. Burton-Fanning, M.D. Cantab., F.R.C.S. London. With charts and figures. Second edition, 5s. Modern Methods of Treatment Series. Cassell & Co., London.

This book presents in a concise form the main principles of open air treatment, and is based for the most part on the writer's practical experience at the Mundesley and Kelling Sanatoria in Norfolk. The aetiology of the disease is dealt with in chapter II. (chapter I. being introductory), and the present state of scientific opinion on this subject is briefly given. Chapter III. deals entirely with the temperature in the disease, the supreme importance of an accurate record in order to detect an afternoon rise, even to 99 deg. only, is again and again emphasised. The oral

method is relied upon by the writer, with all precautions against accidental errors, and "provided that sufficient time—usually ten minutes—is allowed for the oral chamber to be warmed to its full heat." He points out "the regularity and persistence of perhaps slight degrees of fever" as characteristic of the disease, and illustrates his meaning with interesting temperature charts. The importance of temperature is further emphasised in a later chapter on the "Treatment of the Febrile Patient," describing the routine generally adopted in the case of a patient just embarking on a course of sanatorium treatment. The importance of absolute rest until the temperature becomes steady in early tuberculosis, of time as a factor in treatment, and the good effect of bold removal of the patient into the open air in cases of obstinate fever are here enforced. A further chapter explains the "Treatment of the Convalescent Patient." The effect of exercise is here dwelt upon, and in this connection a clear account of Sir A. E. Wright's work on the opsonic index is given. The use of tuberculi is also impartially discussed. In an eminently reasonable chapter on diet, the over-feeding practised in some sanatoria is deprecated. The minimum diet which must be adhered to, with rare exceptions, is given, and the writer demonstrates that precision in this respect is the secret of success. He takes an encouraging view of the results, based on statistics from the Mundesley and other sanatoria, but points out that "sanatorium treatment is no more than one step in the direction of the restoration of health." With regard to subsequent care, he acknowledges that "the problem is an enormously difficult one, and calls more pressing for solution than any other point connected with the crusade against consumption." Much, he thinks, may be done by interesting the employers of labour in the matter, and two circulars addressed to them from the Kelling Sanatorium, After Care Sub-Committee are quoted in full. The last chapter compares home with sanatorium treatment, and deals briefly with the best forms of shelter and other requisites for successful treatment. Though the book is short, no points of cardinal importance have been omitted, and it is hoped that enough has been said to show that it cannot fail to be of great help to medical officers of health in dealing with this important subject.

PRINCIPLES AND METHODS OF PHYSICAL EDUCATION AND HYGIENE. By W. P. Welpton, B.Sc., Master of Method in the University of Leeds. The University Tutorial Press. Price 4s. 6d.

Mr. Welpton has produced a thoughtful and most instructive book, which we should like to see in the hands of all who are concerned with the education of children. It is a well-considered statement of the principles of physical education

and of the place that physical education should occupy in school life. The author regards school life as a whole, in which "physical and mental training merge in the pursuit of practical duties in which spirit, intelligence and skill are more than brute strength"; and throughout he treats physical education in relation to other aspects of the theory and practice of education. The earlier chapters explain what the author terms the "physical and physiological bases of human activities"—cell activity, the functions of the nervous system and of the chief organs of the body; there is an excellent chapter on the education of the nervous system, and chapters are devoted to fatigue, exercise, cleanliness, fresh air, bodily attitudes, the care of the eye, and abnormalities. The opening chapter, which is written by Professor Welton, gives an extraordinarily interesting account of the history of physical education. The whole book is suggestive and stimulating, and we can cordially recommend it.

MEDICAL INSPECTION OF SCHOOLS. By A. H. Hogarth, M.B., B.Ch., D.P.H., County Medical Officer of Health, Bucks, and Assistant Medical Officer (Education), London County Council. The Oxford University Press, 1909. Price 6s. net.

In this book Dr. Hogarth tells us why medical inspection is needed, how it should be carried out, and what should be done with the defects that medical inspection brings to light. After a short introductory chapter, and an account of the history of medical inspection at home and abroad, he devotes four chapters to a statement of the case for medical inspection, and an additional chapter to the general principles and aims of medical inspection. The organization, central and local, of school hygiene as a branch of State medicine is then considered, the functions of the school doctor and the school nurse are explained, and two chapters are devoted to the important question of the treatment of the children found defective by medical inspection. The concluding chapter deals with the common diseases affecting school life, and there is an appendix which consists of a useful bibliography and a number of forms, schedules and extracts from official documents.

The book appears to have been written more for teachers, members of education committees, and the general reader than for school doctors, although the latter will find in it much that is suggestive, stimulating and informing. Dr. Hogarth is no mere compiler—he has studied his subject at first hand, and he has thought for himself and is not afraid of saying what he thinks. He writes with a vigour and candour that will be found refreshing even by those who, like the present reviewer, are compelled to differ from him in various important matters. The best parts of

the book are those that advocate the claims of medical inspection, that explain the work of school hygiene within the school, and that discuss medical treatment. The chapters relating to the latter subject are admirable, and would alone justify the purchase of the book. In dealing with the organization of school hygiene Dr. Hogarth lays himself open to criticism. He does not regard school hygiene as a branch of public health, and he thinks it should not be placed in the hands of the medical officer of health. He appears imperfectly to realise the value of some modern developments of public health work; health visiting, for instance, he speaks of in somewhat slighting terms. The suggested scheme of organization of the central medical department seems to us to be superfluous, and, in fact, the two chapters relating to organisation might with advantage have been omitted. Probably, however, Dr. Hogarth wished to lose no opportunity of urging his views on these questions, even at the cost of introducing a good deal of highly contentious matter into his book. With these reservations, we have nothing but praise for the book, which forms a valuable contribution to the literature of the important question with which it deals.

DER ARZT: SEINE STELLUNG UND SEINE AUFGABEN IM KULTURLEBEN DER GEGENWART. EIN LEITFADEN DER SOZIALEN MEDIZIN. By Dr. Moritz Fürst in Hamburg. Leipzig: B. G. Teubner. Pp. 142. Price 1 Mark.

This small book contains an epitome of the scope of medical activities in Germany, and is written so lucidly and brightly that it is interesting reading even for those of a different walk in life. It is, in fact, written with the intention of clearing up for the educated lay public many medical functions with regard to which popular ideas are apt to be vague, and of giving a short survey over all the many branches of a very comprehensive and multifarious profession. Though each separate department that claims medical co-operation is only briefly dealt with, and the author confines himself to an abstraction of essentials, an excellent series of footnotes is appended wherein those who wish to study a particular department more thoroughly are referred to larger works on the subject.

A short account of the German medical training is given, and the various examinations are described. It is interesting to note that an aspirant for public health service may not present himself for the qualifying examination until he has been an "approved" or registered medical practitioner for at least two years. Much stress is further laid on a thorough training in psychiatry,

forensic medicine, pathological anatomy and hygiene. The examination then spreads over about one year, the first six months being devoted to the preparation of two theses on specified subjects connected with forensic medicine and psychiatry and with public health. The theses are submitted to the Kultus-Ministerium, and, if satisfactory, are followed eventually by an examination which is mainly practical, and includes, among other items, the writing out of a medical opinion on an insane subject, and on an accident case, a histological and bacteriological examination, and a necropsy.

In Germany many offices are occupied by part-time officials, an arrangement which does not altogether meet with Dr. Fürst's approval. Anyone wishing to acquaint himself with German medical ethics, or with the range of duties attached to the various medical offices, will find this a most illuminating and useful little book. It is published in B. G. Teubner's excellent series of monographs on scientific and social subjects, entitled "Aus Natur und Geisteswelt," is well printed, and is remarkably cheap.

MEAL ACCOMMODATION IN SCHOOLS.—One thing to be deplored in the feeding of many of the school children is the absence of a proper mid-day meal. They come to school, often from a considerable distance, with a mere makeshift, usually bread and butter. There is no place provided to store their meals, which are left lying in the porch or cloakroom exposed to the steam and emanations from clothes for several hours, and liable to get moist and sodden in wet weather. At one school the porch was used as a cloakroom; it was unventilated, and the door had to be kept closed, as stray dogs wandered in and took the dinners. Where it is unfortunately necessary for the children to bring their mid-day meals, some arrangements should be made for their storage.—*Annual Report of Dr. Sidney Barwise, County Medical Officer of Health, and School Medical Officer, Derbyshire.*

EXCESSIVE CLOTHING OF SCHOOL CHILDREN.—Many examples of excessive clothing were found, a condition in which the child's vitality is necessarily depressed by continuous and excessive perspiration: for example, one boy in an infant department was dressed in the following clothes:—Oxford shirt, red flannel shirt, blue jersey, thick waistcoat, blue cotton blouse, two pairs of trousers, stockings and boots, two scarves and a silk handkerchief.—*Annual Report of Dr. Ralph P. Williams, School Medical Officer, Sheffield.*

PROCEEDINGS OF THE SOCIETY OF MEDICAL OFFICERS OF HEALTH.

FOUNDED 1856.

RECONSTRUCTED 1888.

INCORPORATED 1892.

AN EXTRAORDINARY GENERAL MEETING of the Society of Medical Officers of Health was held at the Offices of the Society on September 7th, 1909, to consider a resolution relating to the alteration of the Society's Articles of Association. Present:—Drs. A. Bostock Hill, G. F. McCleary, Sir Shirley F. Murphy, H. Meredith Richards, Sidney C. Lawrence, A. E. Porter, W. A. Bond, G. B. Millson, H. Cooper Pattin, Reginald Dudfield, Wm. Butler, J. Priestley, Herbert Jones, and W. H. Hamer. The chair was taken by Sir Shirley Murphy, and the notice convening the meeting was read. The Articles of Association, of which copies had been previously sent to the Members of the Society, were discussed and amended, and it was resolved unanimously that the Articles of Association filed in 1892 and amended by the Special Resolutions of 1895 and 1908 be rescinded, and that the following Articles of Association (*see infra*) be substituted therefor.

An Extraordinary General Meeting of the Society was held at the Offices of the Society on September 24th, 1909. Present:—Dr. E. Sergeant (in the chair), Drs. H. Manley, A. Bostock Hill, Wm. Butler, Sir Shirley Murphy, J. Mitchell Wilson, G. B. Millson, L. M. Bowen Jones, Reginald Dudfield, J. Tubb-Thomas, J. Howard Jones, A. Bygott, H. W. Roberts, Herbert Jones, F. J. Allan, W. A. Bond, C. Sanders, J. Priestley and Sidney C. Lawrence. The notice convening the meeting having been read, the subjoined resolution which was duly passed at the Extraordinary General Meeting of the Society held on September 7th was confirmed as a Special Resolution without dissentient, viz:—

That the Articles of Association filed in 1892 and amended by the Special Resolutions of 1895 and 1908 be rescinded, and that the following Articles of Association be substituted therefor.

That is to say:—

ARTICLES OF ASSOCIATION.

PRELIMINARY.

1. These Articles shall be construed and the expressions used therein taken to have the same meanings as in the Companies (Consolidation) Act, 1908.

2. The Association is established for the purposes expressed in the Memorandum of Association hereto annexed.

3. In the construction of the following Articles, unless repugnant to the context, the masculine includes the feminine, the singular includes the plural, and the plural the singular; and the

following words and expressions have the respective meanings hereinafter assigned to them:

The term "Year" means the inclusive period between the first day of October in any one year and the last day of September in the following year.

"Session" means the period between the Annual Meeting and the last Ordinary Meeting in the year;

"Month" means a Calendar Month;

"Association" means the Association incorporated by the Memorandum of Association as "The Society of Medical Officers of Health";

"Branch" means a localised Association of Members of the Association, recognised, or sanctioned, or constituted by the Council;

"Honorary Fellow" means Honorary Fellow of the Association;

"Fellow" means Fellow of the Association;

"Medical Officer of Health" includes an Assistant Medical Officer of Health duly appointed by a statutory Authority;

"Associate" means Associate of the Association;

"Member" means any Member of the Association not being an Honorary Fellow;

"PUBLIC HEALTH" means the Journal of the Association.

MEMBERSHIP.

4. The Association shall comprise Honorary Fellows, Fellows and Associates.

(a) Honorary Fellows shall be persons who are eminently distinguished in the advancement of public health.

(b) Fellows shall be:—

(1) Medical Officers of Health, acting or retired, whether in the British Isles and dependencies or elsewhere; or

(2) Medical Officers (Sanitary), acting or retired, of the Navy and Army (at home or abroad); or

(3) Registered Medical Practitioners holding a Diploma in Sanitary Science, Public Health or State Medicine, under Section 21 of the Medical Act, 1886; or

(4) Medical Officers and Inspectors, acting or retired, of the Government Departments in the British Isles and dependencies or elsewhere; or

(5) Medical Officers appointed by Education Authorities.

Provided that the only persons who shall be eligible for office or who shall take part in the government of the Association shall be such persons as may be elected under sub-paragraphs Nos. 1, 4 and 5.

(c) Associates shall be persons interested in the advancement of public health.

5. For the purpose of registration the number of members of the Association is declared not to exceed 1,000.

6. The Association comprises ten branches, entitled respectively the Metropolitan, the North-Western, the Midland, the Yorkshire, the Northern, the West of England and South Wales, the Home Counties, the Southern, the Scottish and the Eastern.

Additional branches may be constituted by the Council as they shall see fit, and any existing branch may be dissolved by a majority of the Council present and voting on a resolution for that purpose, of which due notice shall have been inserted in the notice convening the meeting.

Each branch shall have the entire control of its own business.

The President of the Association shall be *ex officio* a member of each branch.

7. Every member resident in the United Kingdom shall be at liberty to join the branch whose ordinary place of meeting shall be most convenient of access to him, and he shall notify in writing to the honorary secretary of the Association who is a member of the Metropolitan Branch, the name of the branch which he joins.

The honorary secretary of each branch shall forward annually to the honorary secretary of the Association who is a member of the Metropolitan Branch, within seven days after the meeting of the branch before the last day of July for the election of members of the Council, a list comprising the names and addresses of the several Fellows and Associates attached to the Branch.

ELECTIONS.

8. Persons proposed for election as Honorary Fellows shall be nominated by the Council; their names and addresses shall be inserted in the notice convening the meeting of the Association at which the election is to take place.

9. Candidates for election as Fellows or Associates shall be proposed in writing by two Fellows or Associates at a meeting of the Association, and shall be balloted for at the next ordinary, provincial or annual meeting.

The names and addresses and titles of the candidates, with the names of their proposers and seconders, shall be inserted in the notice convening the meeting of the Association at which the election is to take place.

An Associate upon becoming eligible shall, *ipso facto*, become a Fellow, and shall forthwith notify such fact to the honorary secretary of the Association who is a member of the Metropolitan Branch.

All elections shall be by ballot, and no candidate shall be declared to be elected unless he obtains the votes of four-fifths of the Fellows and Associates present and voting.

SUBSCRIPTIONS OF MEMBERS.

10. Fellows shall pay an annual subscription of twenty-one shillings each. Associates elected prior to the first day of October, 1908, shall pay an annual subscription of ten shillings and sixpence each, those elected subsequent to the aforesaid date an annual subscription of twenty-one shillings each.

Payment of the aforesaid subscriptions shall entitle each member to a copy of PUBLIC HEALTH as and when published.

11. All subscriptions shall be due and payable at the commencement of the session in October.

Any member who shall be in arrear with his subscription for more than one year shall be liable to have his name removed from the register of the Association, and if his subscription remain unpaid for two years his name shall be removed from the register; but he shall be liable to pay the amount of his subscription which was in arrear when he ceased to be a member.

If any new member shall fail to pay his subscription within three months after election his election shall be void. Provided that where such member is resident in a foreign country or British Colony, the said period of three months shall be extended to six months after election.

12. Any member wishing to determine his connection with the Association may do so by forwarding his resignation in writing to the honorary secretary of the Association who is a member of the Metropolitan Branch, and until he shall have done so he shall continue liable for the payment of his subscription.

13. The treasurer of the Association shall pay in every year, on or before the last day of September, to the treasurer of each of the branches for branch expenses the sum of not less than two shillings and sixpence in respect of every member of a branch whose annual subscription for the current year shall have been paid to the treasurer of the Association, and may by special resolution of the Council pay travelling expenses of the elected representatives and of the honorary secretaries of the branches on the Council of the Association when attending Council meetings, or meetings of Committees of the Council, provided that in case of any member who is a member of more than one branch a sum of not less than two shillings and sixpence for branch expenses shall be paid only to the treasurer of the branch to which the said member shall have been formally joined in accordance with the terms of Article 7.

PRIVILEGES OF HONORARY FELLOWS AND ASSOCIATES.

14. Honorary Fellows and Associates shall be entitled to attend the meetings of the Association other than meetings convened in accordance with the provisions of the Companies (Consolidation)

Act, 1908, and take part in the discussions; but they shall not vote at any election or on any subject affecting the constitution, the management or the discipline of the Association.

OFFICERS OF THE ASSOCIATION.

15. Subject to the provisions of Articles 4 and 14 the officers of the Association shall be:—

(a) A President, who shall be elected at the ordinary meeting of the Association in the month of April in every year by the Fellows from among the Fellows.

The name and address of any Fellow proposed for election as President shall be sent to the honorary secretary of the Association who is a member of the Metropolitan Branch in the month of March, fourteen days preceding the election, and, together with the names of the proposer and seconder, shall be inserted in the notice convening the meeting.

The election shall be by ballot.

The president shall come into office on the first day of October following his election.

(b) Vice-Presidents who shall be past Presidents of the Association, and the Presidents for the time being of the several branches.

(c) A Treasurer, who shall be a member of the Metropolitan Branch.

(d) Two honorary Secretaries, of whom one shall be a member of the Metropolitan Branch and one a member of a provincial branch.

(e) An Editor of PUBLIC HEALTH.

(f) An Honorary Librarian.

(g) Two or more Trustees of any funds of the Association which it may become necessary or convenient to invest in the names of Trustees, if and whenever the Council shall think fit to appoint such Trustees.

16. The treasurer, the honorary secretaries, the editor and the honorary librarian shall be elected annually by the Council at their meeting in April, and shall come into office on the first day of October following their election.

All elections shall be by ballot and the retiring officer shall be eligible for re-election.

The Council shall have power to fill any vacancy that may arise from time to time.

THE COUNCIL.

17. The management of the Association shall be vested in a Council which shall consist of:—

(a) The Officers of the Association, together with the Honorary Secretaries of all the branches, *ex officio*.

(b) Elected Representative Fellows, on the direct *pro rata* basis of one representative of each branch for every completed fifty

members or part of fifty (over twenty-five) formally joined to such branch in accordance with Article 7, provided that any branch, the membership of which includes less than fifty members, shall be entitled to one Elected Representative.

18. The Council shall be elected as follows:— Before the last day of July, in every year, each branch shall hold a meeting for the election of their president and honorary secretary and their representative or representatives on the Council, all of whom shall come into office on the first day of the session following their election.

No Fellow shall be eligible to be elected on the Council, or to vote, whose subscriptions for the current year shall be unpaid.

The honorary secretary of each branch shall, within seven days after the meeting for the election of Members of the Council, send to the honorary secretary of the Association who is a member of the Metropolitan Branch, the names and addresses of the president and of the elected representatives.

In the event of any branch failing to elect qualified representatives, the Council shall, at their meeting in September, elect from among the Fellows attached to the branch the requisite number of Fellows to represent the branch on the Council.

Any casual vacancy shall be filled by the Council from Fellows attached to the branch whose representative shall have ceased to be a member of the Council.

All elections shall be by ballot.

The Council shall come into office on the first day of October following their election.

19. The Council, at their meeting in the month of April, in every year, may appoint an honorary counsel, an honorary solicitor, or firm of solicitors, and an honorary architect or surveyor.

20. The Council shall, at the annual meeting in every year, submit a report of the proceedings of the Association during the preceding year, together with the report of the Editor of PUBLIC HEALTH. The said reports shall, if practicable, be published in the October issue of PUBLIC HEALTH, and if so published may be taken as read at the annual meeting.

21. The ordinary meetings of the Council shall be held in London in the months of November, January, April and September, unless the Council shall otherwise determine, on days and at hours to be from time to time fixed by the Council.

A special meeting of the Council shall be convened by the honorary secretaries on a requisition signed by the president, or by five members of the Council.

At all meetings of the Council seven members shall form a quorum.

22. The Council shall have power to appoint Committees for any special purposes, and with powers which shall be defined in the resolution appointing any such Committee.

Committees so appointed shall report their proceedings to the Council.

23. The Council shall provide a common seal and shall have full power to use the said seal in the execution of all or any of the powers vested in them by these Articles, or otherwise in relation to the business or affairs of the Association as they in their discretion shall think fit.

24. The Council and all Committees of the Council appointed as aforesaid shall cause minutes to be made of all proceedings at any meeting of the Association, or of the Council, or of their Committees; and the Council shall at all times cause a register to be kept of the Honorary Fellows and members of the Association, together with their respective last known place of abode.

25. All moneys received by or on behalf of the Association shall be regularly paid into the banking account to be kept in the name of the Association, and no money shall be paid by or on account of the Association, other than petty cash disbursements, except by cheque of the Treasurer on the said banking account, upon the order of the Council or of a Committee duly appointed by the Council for that purpose.

26. The Council may from time to time make, alter, and repeal bye-laws for regulating the conduct of their business and the proceedings at their meetings.

MEETINGS OF THE ASSOCIATION.

27. The Annual General Meeting of the Association shall be held in London in the month of October on a day, at such a place and at such a time as shall be fixed by the Council; seven days' notice shall be given of such meeting to every member of the Association.

28. The Association at the Annual Meeting shall appoint an auditor in accordance with the provisions of the Companies (Consolidation) Act, 1908.

29. All ordinary meetings of the Association shall be held in London on such a day and at such hours to be from time to time fixed by the Council.

30. A special meeting of the Association shall be convened by the Honorary Secretaries on a requisition signed by the President, or by seven Fellows.

31. A meeting of the Association shall be held in the Provinces every year between the months of May and September inclusive. The said meeting shall, unless the Council otherwise

determine, be held successively in the districts of the several provincial branches at some place, and on a day and at an hour to be fixed by the Council.

32. At all meetings of the Association seven members shall form a quorum. The President shall take the chair; in his absence the senior Vice-President shall preside; in the absence of the President and Vice-Presidents the members present shall elect a chairman.

33. The Association may from time to time make, alter and repeal bye-laws for regulating the conduct of their business and the proceedings at their meetings.

NOTICES.

34. All notices to Honorary Fellows and members shall be deemed duly delivered to them if served personally or sent by post to their last known place of address.

35. A notice may be served by the Association upon any member either personally or by sending it through the post in a prepaid letter addressed to such member at his registered place of address.

36. As regards those members who have no registered address in the United Kingdom a notice posted up in the Registered Office of the Association shall be deemed to be served upon them at the expiration of twenty-four hours after it is so posted up.

37. Any notice required to be given by the Association to the members or any of them, and not expressly provided for by these presents, shall be sufficiently given if given by advertisement.

38. Any notice sent by post shall be deemed to have been served on the day following that on which the envelope or wrapper containing the same is posted, and in proving such service it shall be sufficient to prove that the envelope or wrapper containing the notice was properly addressed and put into the Post Office.

39. All notices required by the Companies (Consolidation) Act, 1908, or any statutory modification thereof, or the regulations, to be given by advertisement shall be inserted in a newspaper circulating in London, and if so advertised shall be deemed to have been sufficiently given.

40. None of the provisions in Table "A" of the Companies (Consolidation) Act, 1908, shall apply to this Association, except so far as they may be contained or repeated in these Articles.

41. None of these rules shall be rescinded, varied, or altered, or any addition made thereto except by a special resolution passed in accordance with the provisions of the Companies (Consolidation) Act, 1908.

THE SOCIETY OF MEDICAL OFFICERS OF HEALTH.

REPORT OF COUNCIL, SESSION 1908-9.

1. Your Council are again able to present a satisfactory report dealing with the work of the past session, 1908-9. When the Society was incorporated in 1891 there were 387 Fellows, and there are now 900. The total membership of the Society is 976, and includes 34 Hon. Fellows, 900 Fellows, and 42 Associates. During the year under review, 3 Fellows have died and 6 have resigned. There were newly elected during the year 104 Fellows and 2 Associates, the yearly averages for the previous ten years being 64 and 10 respectively.

2. An able and instructive address was given by the President, Dr. Edward Sergeant, dealing with "County Health Administration."

3. At the meetings of the Society the following subjects were dealt with:—

- (a) "The Scientific Control of Diphtheria," by Dr. W. G. Savage.
- (b) "Administration of School Inspection," by Dr. T. H. C. Stevenson.
- (c) "Suggested Amendments to the Midwives Act," by Dr. J. R. Kaye.
- (d) "Prevention of Tuberculosis amongst Cattle," by Dr. John Robertson.

4. The Annual Provincial Meeting was held on July 24th, 1909, at Ripon, where a large number of members and friends attended.

5. Your Council report that they have re-elected for the year all the officers, and have accorded to them votes of thanks for their past services.

6. Your Council report that they have elected as official auditor of the Society for a third year Mr. John Hamp.

7. Your Council report the appointment during the year of Dr. Fremantle, a Fellow of the Society, as a Member of the Midwives Act Committee, and of Dr. T. H. C. Stevenson, a Fellow of the Society, as Superintendent of Statistics, General Registry Office, London, *vice* Dr. J. F. W. Tatham, resigned.

8. Your Council report that they have appointed Dr. Reginald Dudfield as the Society's representative on the Sanitary Inspectors Examination Board *vice* the late Dr. T. Orme Dudfield; and Dr. W. A. Bond as the Society's representative on the Plumbers' Registration Committee *vice* Dr. Reginald Dudfield, resigned.

9. Your Council report that they appointed the President (Dr. Sergeant) to act as the Society's representative on the Special Committee of the British Medical Association dealing with the subject of "Ophthalmia Neonatorum."

10. Your Council report that they have codified and amended the Articles of Association, and

have given instructions for them to be printed in full in order to comply with the provisions of the Companies Acts; and have instructed the Finance Sub-Committee to have a small book of the constitution and by-laws of the Society printed for the guidance of members.

11. Your Council report that a Statistical Committee was appointed during the year, and that they have approved of that committee's recommendations with reference to the forthcoming 1911 Census, including the suggested provision of a quinquennial census in the Census Act, 1910, such Act to be passed as early as possible, and certainly not later than Easter, 1910, in order that there may be time for proper arrangements to be made for taking the census, and the adoption of certain important alterations in procedure in connection therewith.

12. Your Council report that they have arranged with the Treasurer to set aside the sum of £50 per annum to be invested, interest to accumulate, in connection with funds for depreciation of the Society's trust securities, and for dilapidations in connection with the Society's premises; and for the fund thus created to be held by the Trustees who hold the 2½ per cent. Metropolitan Consolidated Stock on behalf of the Society.

13. Your Council report that, at the request of the Midwives Act Committee, they appointed the President of the Society (Dr. Sergeant) as their representative, to appear as a witness before such Committee and to tender evidence dealing with suggested alterations and amendments to the Midwives Act, such alterations and amendments having been previously approved by the Branches and the Council of the Society.

14. Your Council report that they declined to co-operate with a special committee of the British Medical Association in circulating an appeal to midwives, nurses, and health visitors on the subject of uterine cancer and its early diagnosis, on the ground that the distribution of such an appeal would be ill-advised and liable to unduly alarm the persons amongst whom it was proposed to circulate it.

15. Your Council report that they have received during the year additions to the Library as follows:—

1. Twenty-two volumes of L.G.B. Medical Reports and seven volumes of Transactions of the Society of Medical Officers of Health (given by Dr. T. Percy Whittick).
2. A set of bound volumes of the *Lancet*, 1880-1904 (given by the editors of the *Engineering Journal*).
3. A set of bound volumes of *British Medical Journals* and *Lancets* and odd volumes on Miscellaneous Public Health Subjects (purchased by the Society through Dr. Herbert Jones).

4. A set of valuable and interesting books on various public health subjects (given by Dr. Arthur Newsholme).

16. Your Council report that they have approved generally of the action of the British Medical Association in issuing warning notices in regard to appointments of School Medical Officers and Medical Officers of Health.

17. Your Council report that they have during the year communicated with the following Government departments:—

1. Local Government Board—

(a) As to the desirability of steps being taken by the Board, when opportunity arises, for the providing for the uniform keeping of accounts of isolation hospitals by sanitary authorities.

(b) As to the desirability of providing in the Census Act, 1910, for a Quinquennial Census.

2. Home Office—

(a) As to the desirability of providing in the Census Act, 1910, for a Quinquennial Census.

3. Registrar-Generals—

(a) As to important suggested alterations in procedure in connection with the forthcoming 1911 Census.

18. Your Council report that they appointed during the year Delegates to the following Congresses:—

1. Royal Sanitary Institute and Royal Institute of Public Health, Leeds, 1909.

2. Medical Congress, Buda Pesth, 1909.

19. Your Council report that, owing to the failure of the Specialist Press, Limited, to carry out their contracts with reference to the printing of PUBLIC HEALTH and other matters, they have considered estimates and have arranged with Messrs. Page and Pratt, Limited, to take over the printing of the Journal for a period of five years from October 1st, 1909, and, in addition, to complete the present volume, the advertising department of the Journal to be carried on by the Society at their own offices.

20. Your Council report that they have arranged for the notices of meetings of the Society to be printed in future in London, and to be sent out with the Journal, and for the list of members to be printed in London for the next five years.

21. Your Council report that they have decided to take no official part in connection with the work of the Society for the Breaking-up of the Poor Law.

22. Your Council report that they have approved of the Executive Secretary's appointment of an

assistant to take charge of the Library, to undertake the cataloguing of the books, and to prepare an index of PUBLIC HEALTH, at an annual salary of £20.

23. Your Council report that they wish to again put on record the valuable services rendered by the Executive Secretary, Mr. W. A. Lawton, Barrister-at-Law, in connection with the work of the Society, more especially the promptness with which he dealt with the breach of contract by the Specialist Press, Limited, thereby safeguarding the interests of the Society.

REPORT OF EDITOR.

To the Council of the Society of Medical Officers of Health.

GENTLEMEN,—The past year has been in several respects an unusually eventful one for medical officers of health. Various developments of public health work have taken place, perhaps the most important being the great extension of administrative methods occasioned by the medical inspection of school children. School hygiene has now taken a prominent place in public health administration, and I have endeavoured to give the subject a prominent place in the pages of our Journal. I have been fortunate in securing many excellent contributions on various aspects of school hygiene, amongst which may be specially mentioned the valuable series of lectures on the medical inspection of school children that was delivered at the rooms of the Society last January.

During my term of office it has been my aim to follow my predecessors in making PUBLIC HEALTH of practical use to Members of the Society as a means of communication between colleagues engaged in similar work; and I trust I have not neglected to uphold the interests of medical officers of health as occasion demanded.

It is a pleasure to me to acknowledge the valuable assistance I have received during the year from Mr. W. A. Lawton, the Executive Secretary, in his capacity as Sub-Editor.

I am, Gentlemen,

Yours faithfully,

G. F. McCLEARY.

ANNUAL DINNER.

The Annual Dinner of the Society will take place at the Criterion Restaurant, Piccadilly, W., on Friday, October 8th, 1909. Ladies are to be invited as guests. Early application for tickets is desirable to Dr. Priestley, Lambeth Town Hall, Brixton Hill, S.W. (Single, 7s. 6d.; double, 15s.—without wine.)

THE SOCIETY OF MEDICAL OFFICERS OF HEALTH.

BRANCH OFFICIALS AND REPRESENTATIVES ON COUNCIL FOR SESSION 1909-10.

NORTH WESTERN.		
Presidents.	Hon. Secretaries.	Elected Representatives
Dr. Herbert Peck	Dr. T. W. N. Barlow	Dr. W. M. Hamilton Dr. A. Greenwood
HOME COUNTIES.		
Dr. A. E. Porter	Dr. S. C. Lawrence	Dr. H. M. Richards Dr. C. Sanders
METROPOLITAN.		
Dr. A. W. Harris	Dr. Charles Porter	Dr. R. Dudfield Dr. H. W. Roberts
EASTERN.		
Dr. A. Pringle	Dr. H. W. Beach	Dr. H. Cooper Pattin
MIDLAND.		
Dr. F. H. May	Dr. E. H. Snell	Dr. H. Bostock Hill Dr. H. Manley
YORKSHIRE.		
—	Dr. J. R. Kaye	Dr. J. M. Wilson Dr. W. A. Evans
NORTHERN.		
Dr. A. Smith	Dr. John Taylor	Dr. J. W. Hembrough
WEST OF ENGLAND.		
Dr. W. More Hope	Dr. J. Howard Jones	Dr. J. Tubb-Thomas
SOUTHERN.		
(Not elected.)	Dr. A. Griffith	Dr. W. G. Willoughby
SCOTTISH.		
Dr. C. R. Macdonald	Dr. W. F. Brown	Dr. J. T. Wilson

THE APPOINTMENT OF HEALTH VISITORS IN LONDON.

THE London County Council (General Powers) Act, 1908, empowers any London sanitary authority to "appoint suitable women (to be known as health visitors) for the purpose of giving to persons advice as to the proper nurture, care, and management of young children, and the promotion of cleanliness, and discharging such other duties (if any) as may be assigned to them in accordance with the provisions of this section." The Act further provides that the Local Government Board may make regulations prescribing the qualification, mode of appointment, duties, salary and tenure of office of health visitors appointed under the Act, and directs that no appointment of a health visitor shall be made otherwise than in accordance with such regulations. The Board have accordingly issued an order, dated September 4th, 1909, making these regulations, the main provisions of which are given below:—

Article I. provides that a woman shall be qualified to be appointed a health visitor if she

- Is a duly qualified medical practitioner; or
- Is qualified for the appointment of nurse by having undergone, for three years at least,
 - a course of instruction in the medical and surgical wards of any hospital or infirmary being a training school for nurses and having a resident physician or house surgeon; or
- Is certified under the Midwives Act, 1902; or

(d) Has for a period of not less than six months undergone in a hospital or infirmary, receiving children as well as adults, and having a resident physician or house surgeon, a course of instruction including subjects relating to personal hygiene, and holds the certificate of the Royal Sanitary Institute for Health Visitors and School Nurses, or the certificate or diploma of the National Health Society, or of any other body which may from time to time be approved by the Board; or

(e) Has, in the service of a sanitary authority, or of the council of a borough or of another urban district or of any other public body or authority in England and Wales, discharged duties which, in the opinion of the Board, are similar to those described in the Act or prescribed by these regulations in relation to the office of health visitor, and produces such evidence as, in the opinion of the Board, suffices to prove her competency.

Article I. also provides that, where the circumstances so require, a sanitary authority may, with the Board's consent, appoint a woman who, though not possessing any of the qualifications mentioned, has a competent knowledge and experience of the theory and practice of nurture, of the care and management of young children, of attendance on women in and immediately after child-birth, and of nourishing attendance in cases of sickness or other mental and bodily infirmity. But before the appointment of any such woman is made an advertisement containing certain specified particulars must be inserted in one or more of the newspapers circulating in the district.

Article VI. enables the sanitary authority to determine the appointment of a health visitor by giving her three months' notice in writing. Moreover, a woman cannot be appointed as a health visitor unless she agrees to give three months' notice previous to resigning office or to forfeit a sum to be agreed upon as liquidated damages. But the appointment may be determined by the sanitary authority, with the Board's consent, before the expiration of the notice given by them, and it may also be determined at any time by the Board.

Article VIII. adds the following duties to those specified in the Act:—

- The health visitor shall, in relation to each person visited, enter on a suitable card, or in a book to be called the "Health Visitor's Report Book," all such particulars as the sanitary authority or the medical officer of health require to be ascertained and recorded, and shall submit the cards or health visitor's report book to the sanitary authority or the medical officer of health so often and at such times as may be required, and, subject to the directions of the medical officer of health, shall keep the cards arranged so that any card may be readily

available for reference at any time when the card is not in use for the purpose of a visit.

- The health visitor shall under the direction of the medical officer of health, discharge such duties, not being duties of a sanitary inspector, as may be assigned to her by the sanitary authority in connection with and for the purposes of the administration by the sanitary authority of any Act under which powers are enforced or duties are imposed upon the sanitary authority with respect to matters relating to public health, housing, and the notification of births.
- The health visitor shall observe and execute, in regard to matters not specially provided for in this order, any such instructions issued by the Board, and any such order or direction of the sanitary authority or the medical officer of health as may be applicable to her office.

The Board's approval is required to the salary to be paid to a health visitor. The amount of the salary in any particular case will depend to some extent upon the local circumstances, but the Board, having regard to the important duties to be discharged by health visitors and to the salaries paid to female sanitary inspectors in London, consider that the salary should not be less than £100 per annum.

The Board add that they attach much importance to the appointment of health visitors in London, especially in view of the provisions of the Notification of Births Act, 1907, and they trust that advantage will be taken by sanitary authorities of the powers conferred by the Act of 1908 to make such appointments. The Act enables the County Council to pay out of the county fund and charge to the Exchequer Contribution Account any sum by way of contribution towards the salary of a health visitor appointed under the regulations not exceeding in any case one-half of the amount.

CORRESPONDENCE.

To the Editor of "PUBLIC HEALTH."

SIR,—I presume most medical officers of health keep on their book shelves the current number of the annual report supplied them by other medical officers of health. In order for these to be convenient for reference, it is necessary that they should be labelled on the back edge with the name of the borough and the year reported on. It is becoming a common practice for this to be done, but the majority of health reports are still not labelled in this way, and I would take the liberty of suggesting to all those medical officers of health who have not yet commenced the practice, that they should adopt this means of rendering the report more available for reference.

Yours faithfully,
SIDNEY DAVIES,
Medical Officer of Health, Woolwich.

THE PROVISION OF FOOTGEAR FOR SCHOOL CHILDREN.—A great deal of illness among poor district children must be caused by the continuous lowering of vitality produced by wearing on their feet what in damp weather can only be compared to a cold and wet compress. The provision of strong felt slippers for the children attending a small number of the poorest schools is an expedient that might be worth trying. Boots and stockings could be removed on entering school, and dried on suitable hot-water pipes in the cloak-room or boiler-room. The children could then put on their dry stockings and boots before leaving school. These shoes would be kept at school, and might be provided by the voluntary agencies which already provide boots for poverty-stricken children (though unfortunately the supply of boots is not sufficient to meet the demand).—*Annual Report of Dr. Ralph P. Williams, Medical Officer, Sheffield.*

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Public Health

THE JOURNAL OF

The Society of Medical Officers of Health.

No. 2.

NOVEMBER, 1909.

VOL. XXIII.

THE DAILY DISINFECTION OF SCHOOL-ROOMS.

FOR some time past a curious series of anonymous letters has been appearing at intervals in certain lay journals on the subject of school infection and its prevention. The letters are usually signed with initials that might lead the unwary reader to the conclusion that the writer possesses a medical qualification—a conclusion which, we are happy to say, would be entirely erroneous—and their purport, ostensibly, is to establish two propositions: (1) That under present conditions the school is a potent factor in the spread of infectious disease, and (2) that school infection can largely be controlled by the routine disinfection of class-rooms. According to this anonymous newspaper correspondent our elementary schools are little better than hot-beds of infection, crowded with all sorts of pathogenic organisms, which are working havoc among the helpless children that day after day are exposed to their onslaught. This state of things calls for remedy, and we are told there is a very simple remedy to hand if we would only use it. All that is wanted, we are assured, is the expenditure of a quite inconsiderable sum of money in the purchase of a trustworthy disinfectant wherewith to sprinkle the school-room floors, and the thing is done. No special skill or intellectual effort is required to carry out this method. In the words of Hamlet, "Tis as easy as lying."

Such being the present situation, this anonymous correspondent is deeply grieved at the apathy of the local education authorities, who for the most part are reluctant to adopt his method of daily disinfection. And what makes the matter worse from his point of view is that in taking this attitude the education authorities are acting not only with the condonation, but actually at the instigation of their school medical officers. This, according

to him, is the darkest part of the whole business. It appears that school medical officers generally hold the views expressed in our present issue by Dr. Kerr, Dr. Meredith Richards, and Dr. Kingsford. They attach little or no importance to daily disinfection, preferring to attack school infection by other methods. This attitude of the school medical officers is not to be borne—at least, not by the writer of these letters—and the school medical officers must, therefore, be attacked. Dr. Kerr especially must be attacked, for he has a very large number of schools under his control, and from his exceptionally high position in the world of school hygiene his example is likely to be followed by his colleagues. Accordingly, Dr. Kerr has been singled out for special condemnation, and in several letters he has been virulently attacked by name for not advising the London County Council to purchase disinfectants to sprinkle upon school-room floors every night. Dr. Kerr has not replied to these attacks, for the reasons given in his letter in our present issue.

Now all this has its humorous aspect as illustrating the possibilities of human impudence. But it has also a more serious side. It is intolerable that responsible public health officers should be the object of an irresponsible, anonymous, newspaper campaign. All public officers are, of course, open to criticism, but the criticism should be fair and above-board. What need is there for secrecy? School infection is an important public question, and any member of the public who has views on school infection is entitled to proclaim them; and if he thinks he has discovered an effective method of preventing school infection it is his duty to make it known, provided that he does so fairly. Why is this anonymous correspondent so bashful about his interest in school infection that he seeks to veil his personality behind the misleading initials with which he signs his letters? To those who know the facts the

answer to this question is obvious; but some of our readers may not know the facts, therefore we think it right to explain that the writer of these letters is not a medical man anxious to promote the public health, but nothing more than a dealer in disinfectants anxious to create a market for his wares.

This being the case it may be said that the proper course would be to leave the letters unnoticed. We are unable to agree. The letters have received a good deal of publicity and have gained some credence among members of education authorities and others. There is a large section of the public that is apt to believe any statements with an ostensible medical warrant that appear in a newspaper, and these letters are not unlikely to exercise some influence on public opinion. It is well, therefore, that all school medical officers should know the facts of the case. Reputable firms who deal in disinfectants can achieve success by the simple method of producing a good article, and making its merits and its uses widely known by legitimate advertisement. This correspondent apparently finds it necessary to adopt other methods.

The value, whatever it may be, of the daily disinfection of schools is, of course, unaffected by the fact that in this instance it has been unworthily advocated. We are aware that daily disinfection has been recommended by responsible writers whose opinions are entitled to consideration, but there is no doubt that there is a great preponderance of opinion against it. Most authorities on school hygiene hold the view expressed in the three articles in our present issue, that daily disinfection is neither necessary nor expedient, and is in fact a waste of public money. In the first place there is a growing volume of opinion that the influence of the school on the spread of infectious disease has been greatly over-estimated. The elementary schools of this country are not the hot-beds of infection they were formerly supposed to be. Secondly, school infection is almost entirely a matter of personal contact, and it can only be controlled by methods of personal hygiene—methods that act upon the children, not upon the class-room floors. School outbreaks can only be prevented by unremitting vigilance on the part of the school staff working in close co-operation with the medical officer of health, by patient investigation for the discovery of "missed" sources of infection, and by the exclusion and supervision of contacts and suspected cases.

These are the essentials of prevention, but they are materially aided by measures of general sanitation, such as free ventilation and scrupulous cleanliness of school premises. Nor should any necessary disinfection be omitted. We should be the last to deny the value of disinfection when it is really needed and properly applied. It is one thing to say this, and quite another thing to recommend a haphazard application of chemicals, which is not only useless and wasteful, but actually harmful in that it leads the public to rely upon chemicals rather than upon care and cleanliness for the prevention of infectious disease.

The principles that should guide medical officers of health and school medical officers in seeking to prevent the spread of infectious disease occurring among school children are admirably stated in the recent memorandum prepared by Dr. Newsholme and Dr. Newman. These principles are summarised in the following quotation, which may be found on pp. 12 and 13 of the memorandum:—

There is little doubt that infection in schools is spread to a much greater extent by infectious persons than by infected things; and that by systematically obtaining the information as to the infectious cases indicated in paragraphs 10 to 19, and by adopting the measures of exclusion of patients and of recent "contacts" with them which are described in paragraphs 37 to 55, the common sources of infection can be controlled.

Subject to this chief consideration, certain other administrative lines of action may be here indicated. Disinfection of special class-rooms or of particular articles should be undertaken when there is reason to believe that these have been infected. A special caution may be given as to the risk arising from moistening slates with saliva, or from the use in common of penholders and pencils which are apt to be put in the mouth; and steps should be taken to avoid this.

The frequent and thorough washing of class-rooms and cloak-rooms is an efficient means of removing both dust and infection. Dry sweeping, on the other hand, tends to scatter dust.

Much can be done to prevent the spread of infection by due attention to the sanitation and ventilation of school-rooms and cloak-rooms; and, so far as practicable, by preventing children having to sit in school in wet clothes or with wet feet. Over-crowding greatly favours the spread of infection, while adequate means of ventilation kept in constant effective use diminish it. The water supply of the school should be pure, and lavatories and closets should be kept in a satisfactory state.

ON STATE STANDARDIZATION OF THE NATIONAL LIFE.*

By H. COOPER PATTIN, M.A., M.D., D.P.H.
Medical Officer of Health, Norwich.

THE precedents of our Society impose upon its incoming president the burdensome privilege of inflicting upon you an inaugural address. This privilege can be, I imagine, a pleasure to but few of us, and is, I expect, to most of us a burden. A burden mitigated to the speaker because he has the satisfaction of lifting up his voice with, for the moment, practically all the licence which is the prerogative of the ecclesiastical pulpiteer; and mitigated to the hearers because they expect little and know that they will not be overburdened.

I should prefer an obligation being placed upon the president to deliver a valedictory address at the close of his year of office, in which he would sum up, pass in review, and bring to a focus the varied propensities, projects, and policies which had engaged the energies of the Society during his presidency, and so encourage us to take stock of our status, our progress, and our possibilities; and perhaps provide us with guidance for the future from the experience of the past. Whilst I should prefer that course to the one I have to follow upon the present occasion, I am strongly of opinion that a gathering together at the opening of a new session is a custom in every way to be honoured, if only, and always chiefly, because it serves to remind us that whilst as a Society we are a corporate entity, we have with communal relationships and interdependent projects not necessarily convergent aims; conscious as we are of each other's imperfections, such gatherings tend to make us realize the obligation to subordinate personal or sectional interests to the common weal, an obligation which, speaking from an experience extending now over some years of the working of the Society, I bear ready testimony is honourably and cheerfully discharged.

For me to address you upon any of the technical requirements of our craft, or upon the practice of our profession would be unwarrantable presumption—a teaching of one's grandmother to suck eggs; so it is to the more philosophical socio-political possibilities of our calling, which may be incorporated and embodied in the policy of our Society, that I propose briefly and with all becoming humility

* Presidential address to the Society of Medical Officers of Health, delivered October 8th, 1909.

to call your attention to-day: No president is infallible, not even the youngest!

I propose, as far as is practicable, and deliberately, to avoid making reference to the Reports of the Royal Commission on the Poor Law, tempting as is the field for criticism these provide. We shall discuss these reports fully at our ordinary meetings, and whilst conserving before all things the traditional impartiality of the chair I shall try to contribute toward the formulation in terms of maturate and filtered wisdom of that final conclusion of the whole matter, which will, I trust, be the outcome of our deliberations. Finally, I propose, as rigidly as possible, to exclude from this "humble petition and advice" the head of the contemporary Charles I.—i.e., Socialism: accepting as I do neither the definition of it by Lord Acton as "The disease which affects mature democracies"—and our democracy is very far from the mature—nor that definition which defines it as "A vision of love with a hope of loot!"

My aim is to turn your attention to the function public health officers may fulfil in the State standardization of our national life. In a book,* the profits from the sale of the first editions of which have not been such as to justify its re-publication—how true it is that a prophet receiveth not honour in his own profession!—in this book, written some ten years ago, I gave the following definition of what I mean by State Standardization of the National Life, viz., "A rationalized application of the principles we now apply to our socio-hygienic problems irrationally and haphazardly: e.g., our existing poor law administration is a haphazard application of the principle of standardizing our national life. It does, in effect, standardize a minimum substance, and standardizes it badly, because it does so irrationally. Or, for purposes of illustration, consider the position we have taken up in dealing with elementary education. We say implicitly that it is to the national interest, and vital to our racial welfare that every child shall receive a certain minimum amount of education, which minimum we determine by statutory legislation, and call upon local education authorities to provide; and, if need arise, we not only enforce the provision of this minimum, but we also make compulsory the attendance of the child; very properly we leave the attainment of any desired or conceivable maximum to private effort. In short, so far as elementary education

* The Ritual of Temperance and State Hygiene, 28. 6d. net.

is concerned, we standardize our national life. That we have done so, in this matter, haphazardly and irrationally is no argument against standardizing it in all directions carefully and rationally. The essence of the standardization being the statutory determination and provision of a minimum standard below which our national life shall not be permitted to fall, but which leaves the attainment of any desired maximum to that most bracing of racial tonics—personal effort."

The great fault which has vitiated our socio-hygienic legislation has been the want of a systematized co-ordination among the agencies charged with giving effect to the legislation, the absence of a well-thought-out aim. We have had very commendable statutory and voluntary efforts made to promote the haleness of our people, but made, *ad hoc*, haphazardly, without due co-operation and incorporation with one another, and with no animating principle of co-ordination to a common end. A more encouraging method has been attempted in the provision made for the medical inspection of children in the public elementary schools. But it will be obvious that the place and purport even of this more hopeful effort, in a nationalized scheme of national standardization, has not been completely thought out: Else, why are our children to be left without systematized inspection during the vitally important years which precede the commencement of school life? (The provision for the treatment of the defects discovered we are going at an early meeting to discuss—so I will say nothing about that.) From time to time we have tried to standardize certain elements of the national life, and have neglected others of equal or even greater importance, as in the case mentioned. I am an unhesitating advocate of State standardization all round, in housing as well as in feeding, in medical aid as well as in education. In the matter of medically inspecting children I would make it compulsory for every child to be so inspected at least once a year, from infancy to adolescence. Such inspection to be carried out (a) by the public health officers free of cost, or (b) if the parents or guardians of the child so desired, by private practitioners: a confidential record of the results of each inspection to be furnished to the public health department.

In the past the main current of opinion in this country has been, what broadly we may speak of as individualistic; in the future it is going to be collectivist. What has to be reckoned with is what I will call the public or

communal conscience—the establishment, recognition, and rule as a standardizer of conduct of the public, the racial interest, and wherever this comes into conflict with the private or class interest for it to become an accepted principle that the latter give way. What we have to aid in developing is a civic Bushido, a communal conscience to whose bar all our social activities can be brought for judgment; with, for corollary and consequence, the definitive subordination of the individual to the family, the class to the nation, the community to the race. Once we get the conception of the community as a common entity, family if you like, clearly grasped; once we not only realize for ourselves, but make others realize that we are all vitally concerned in the communal healthiness, that by the weakness of any one member of the community we are all enfeebled, as by his haleness we are all strengthened, we shall proceed with the standardization of our national life animated with a living faith. Seeing our national life from this standpoint means seeing it sanely and seeing it whole, and will involve a reconsideration of many of our current conventional shibboleths, especially that one which enables us to reply in the negative to the query "Am I my brother's keeper?" The State standardizers answer will be "Yes, you are, and the guardian of the health interests of the race in which you are a shareholder and to which you are a contributor."

Effectually to standardize our national life we shall need not only to require, but as a people to provide, all agreed upon, minimal essential of a healthy existence, *e.g.*, of food, clothing, housing, education, medical aid, etc. These minima to be available for everybody, plutocrat or pauper: only if the plutocrat or the pauper wish for other adjuncts to the agreeableness of living he will be free, and, indeed, by his own exertion will have to provide them for himself. An advocate of the State determination and enforcement of the standardizing minima, I am adverse from any stereotyping by the State of the action of local authorities. Whilst I would make it the business of the State to enforce the agreed-upon minima, not to permit life in any locality to fall below the determined standard, I should leave the way open for any local authority, if it thought fit, to advance beyond this standard unhampered by mere bureaucratic red tape.

Standardization of the national life, as I envisage it, may appear to be but another name for State socialism. "The rose by any other

name would smell as sweet." In my conception of it State standardization is the one alternative to State socialism, and immensurably to be preferred: because whilst it provides the essentials of a healthy existence for every member of the community, it leaves active and untrammelled those incitements to personal effort which depend upon the desire to possess and to enjoy comforts and luxuries, in short all the adjuncts and appurtenance of a polished and highly elaborated life. Whereas, to quote an insufficiently known writer "State socialism involves a definitive and rigorous social dragooning of individual freedom and energy; and that implies such a deadening of the stimulus to individual effort as inevitably will lead to social stagnation, discipline out initiative, and reduce life itself to a stereotyped boredom for all progressive spirits." It will be obvious that by implication (and it is due to my expectation that these points will be debated among us at our forthcoming discussions of the Poor Law Commissioners' Reports which leads me to abstain from adventuring into the region of detail) that such standardization of the national life as I suggest will involve the establishment of a State medical service with many and various carefully to be co-ordinated duties—advisory, administrative and executive. I purposely do not attempt to indicate in detail the lines upon which I think this should be developed. If any of you read the appendices to the Reports of the Royal Commission on the Poor Law you will find a scheme tentatively adumbrated in the statement of evidence contributed by myself. My aim is to turn your thoughts to general principles and not to specific and imperfectly co-ordinated proposals. Incidentally let me say that nothing is more refreshing to myself than the incorporation in this Society of the officers, not necessarily or technically medical officers of health who are charged with the execution of school medical inspection work, and I look forward hopefully and confidentially to seeing all branches of the State medical services incorporated. Indeed, I think, at some future date we reasonably may consider whether we will not be known as the Society of Medical Health Officers, rather than that of Medical Officers of Health—a distinction with a difference. That, however, by the way. I cannot either enter into subsidiary concomitants of State standardization of the national life as I conceive of it, *e.g.*, the segregation of the hopelessly defective, as one segregates lunatics; the compulsory

detention of the shiftless, the unemployed in labour colonies, where the old scriptural precept will have sway—"He that will not work neither shall he eat," etc., etc. For the present I must discontent myself simply with dissociating in your minds the notion that State standardization implies the cultivation of "creepers." On the contrary it proffers, in my judgment, the surest basis for the rearing up of a communally respecting people, and the environment most fitted to develop individuality.

If you think with me that the practice of what I will call communal thinking is going to become an habit with our people, and to determine, therefore, the character and scope of our legislative action; I have little doubt that you will agree with me that it behoves us public health officers to give heed to the counsel we shall be prepared to proffer to the community when it set, as I predict, and confidently, that, ere long, it will set about standardizing our national life. In all sobriety and earnestness we must think out for ourselves and endeavour to make others realize what are the essentials of a healthy communal existence; what standards in feeding, in housing, in medical assistance, in education, in physical training, in recreation we are prepared to advise: for, if we are to exert a real influence upon our people we must show ourselves to be capable of seeing life sanely and seeing it whole; show in short that we can be philosophical sociologists as well as professional sanitarians. I am satisfied that we are approaching a crisis in our prospects of national usefulness as public health officers, and when the inevitable turn in our affairs come, I want us so to take it at the flood that it may lead on to yet more extended racial services, and communally helpful fortunes. In humbly submitting these distempered lucubrations—

"I do not ask to have my fill
Of cheers, applause, or fame;
I shall not, for a little ill,
Against you Gods exclaim.
One boon of Fortune I implore,
With one petition kneel;
At least, caress me not before
You break me on your wheel!"

BERI-BERI IN NEWCASTLE.—At the meeting of the Newcastle-on-Tyne port sanitary authority on Oct. 1st, it was reported that during the month of September there had been twenty-five cases of beri-beri in the hospital. There had been one death, four patients had been discharged, and twenty cases remained. All the men affected were from the Brazilian warship *Barossa*.

SOME THOUGHTS ON DISINFECTION.

By H. MEREDITH RICHARDS, M.D.

Medical Officer of Health and School Medical Officer,
Croydon.

IN order that the administrative control of disease may be effective as possible, it is incumbent on all public health officials to examine from time to time the methods which have been adopted in their district, and enquire what modifications may usefully be suggested. In doing so, one naturally asks oneself, what is the rational basis for the various procedures employed and how far they have been justified by experience. One next endeavours to ascertain what additional precautions, if any, should be recommended.

Unfortunately, the task is no light one. Epidemiological problems are seldom as simple as they appear, and bacteriological results usually require considerable adjustment before they can be applied outside the laboratory.

In selecting preventive measures, two fundamental principles must be borne in mind, (1) to adapt our measures to the natural history of the disease, (2) to retain a due sense of perspective and to refrain from suggesting precautions for which there is no sufficient warrant. The attempt to enforce non-essentials is especially to be deprecated, as by so doing we often fail to carry the public with us and divert energy which may be more usefully employed in other ways.

Ever since Pasteur placed the germ theory of disease on a scientific basis, the importance of disinfection has year by year received more and more attention from laboratory workers. Yet in spite of the vast amount of literature which has accumulated in this and other countries, we seem almost as far as ever from agreement as to the comparative value of chemical disinfectants. The absence of unanimity is due in part to the intrinsic difficulties of the problems to be solved, and in part to the fact that many disinfectants are proprietary compounds, concerning which it is difficult to obtain unbiased opinions. Fortunately, many of the vendors, like Dr. Johnson's Irishmen, are fair-minded people who never speak well of one another, and one, therefore often has the advantage of studying the question from at least two points of view.

In the meantime we are in danger of forgetting that disputes as to whether certain compounds do or do not satisfy certain laboratory conditions are of little practical

importance until there is something like agreement as to the purpose which these compounds are to serve and the conditions under which they are to be used. Most of us can remember the time when the claims of rival disinfectants were considered of vital importance in the surgical world, but larger experience and more precise knowledge of the etiology of septic infections have almost banished disinfectants from the operating theatre, and by defining their limits of usefulness made the choice of a surgical disinfectant an easy matter. A similar limitation of the occasions on which disinfectants should be employed would relieve public health administrators from many of the difficulties now experienced in selecting disinfectants, and probably enable bacteriologists to set up standards which should approximate fairly closely to the conditions under which disinfectants are to be used in actual practice.

To take a concrete instance, let us take diphtheria, and consider what directions should be given concerning the disinfection of infected persons and things. Now, apart from milk-borne epidemics, it is quite clear that diphtheria is spread from the sick to the healthy by means of infectious discharges from the nose, throat, and ear, and possibly in rare instances by the dried scabs of specific impetigo contagiosa. For the most part it is also clear that these discharges are conveyed from the sick to the healthy by personal contact. Less often the interchange of handkerchiefs, pencils, or sweets has to be considered. It is also evident that a diphtheria patient with nasal discharge is fairly certain to infect his personal clothing and the sheets and pillow-cases used at night. He may also infect his school-books to some slight degree, and his slate if such an article is included in the school furniture. Theoretically he may also contaminate the floor and walls of the room in which he is confined. What routine disinfection ought to be recommended? I suggest the following precautions are ample during the progress of the case:—

All soiled linen should be at once placed in a tub of water to which a handful of ordinary washing soda has been added, soaked for twelve hours, and then boiled in a copper. Materials which cannot be boiled should be soaked for one hour in liquid disinfectant, and then washed.

Discharges from ear, nose or mouth should be received on a rag, which should be at once burnt. Any dust collected in the room should also be burnt.

The floor and furniture should be frequently wiped with a damp cloth.

Attendants should wash their hands (using a nail-brush and plenty of soap) immediately after attending the sick person and before going off duty.

In my opinion chemical disinfectants are therefore only very occasionally required during the illness of the patient, and then only for the disinfection of textile articles and other material which cannot be boiled.

Terminal Disinfection.—In the first instance it is necessary to ascertain, by repeated bacteriological examinations, that the patient's throat and nose are free from infection. Presuming this is so, the bed-clothes must be washed in the way already described. For blankets, which cannot be boiled, sterilisation by the steam disinfectant may be offered, but in my opinion, there is no evidence that ordinary washing with warm soap and water is not sufficient. In support of this opinion there is the valuable evidence afforded by the Glasgow wash-houses. Of these, that distinguished sanitarian, the late Dr. J. B. Russell wrote:—"We have during the last ten years washed in the same washing-house over a million articles of every sort, infected by every manner of contagion known in this country. Everything has been done exactly as any good housewife would do it, only in a place provided for the purposes and with ample supply of water and steam, and recently with mechanical aid. Blankets and woollen articles have not been boiled; all others have. The most crucial fact is this, that there has never been a single case or suspicion of a case of interchanged disease, e.g., of smallpox, appearing in a house from which clothes had been removed on account of scarlet fever or typhus. In short, I am convinced that in every case the result was obtained for which the operation of washing was undertaken. The only defect is this, that the washerwomen must handle the articles before disinfection or drowning of the contagia in water and are therefore occasionally infected."

Where, however, blankets cannot be washed at home or at a municipal washhouse it is doubtless wise to offer sterilisation by steam, taking the usual precautions of enclosing the infected articles in suitable bags. Infected personal clothing should also be washed or sterilized by steam.

Unless there has been profuse discharge it is unlikely that the pillows or mattresses can have been contaminated, but as the clinical features of

the case cannot always be investigated it would seem wise to sterilize mattresses and pillows on recovery of the patient. Toys should be thoroughly washed in a disinfectant or sterilized by steam if they cannot be boiled and it is thought necessary to preserve them.

It is to be presumed that carpets have been removed at the onset of the illness. Only the problem of the floor and walls remain to be considered. For this it has been my own practice in recent years to recommend spraying as a preliminary to domestic cleansing with soap and water. There is considerable room for doubt as to the necessity for spraying or other forms of chemical disinfection and the practice of Dr. Chapin, Superintendent of Health for the City of Providence (population 213,000), deserves careful consideration. This investigator has omitted disinfection after diphtheria since 1905, and in his report for 1908, page 26, writes as follows:—"The danger of omitting disinfection may perhaps be measured by the development of the disease in well persons who go away from home during the sickness and return after the warning sign is removed. Between 1889 and 1904 inclusive there thus returned to their homes in diphtheria 1,013 persons, of whom nine were attacked on their return. Terminal disinfection was practiced in substantially every instance. Since the beginning of 1905 there have been removed from diphtheria families 477 persons, of whom 415 were minors. These went away to escape the disease, or to be able to go to school or to work. In one instance a child returned three days after the funeral of the first case and was taken sick six days later. Of the remainder, fourteen were taken sick while away from their homes. The other 462 persons remained well. The percentage of attacks among those returning home after disinfection, previous to 1905, was 0.88, and since 1905 the percentage of attacks where there was no disinfection was 0.21."

From this it would appear probable that terminal disinfection after diphtheria is of very little importance, and I submit that if the precautions suggested in respect to fomites are adopted, and the floors are scrubbed with soap and water, there is reason to believe that a sufficient margin of safety has been secured, and that disinfection of the rooms by chemicals may safely be omitted.

School disinfection has next to be considered. Here there need be less hesitation, as the

amount of contaminated material is obviously less. Any pencils, slates or books used by the patient should be disinfected, if they can be identified. Judging, however, by the success with which a class outbreak can be controlled as soon as the infected class-mates are discovered, it is highly improbable that infected apparatus is of more than theoretical importance. In any case by the time the disinfector arrives on the scene several days will usually have elapsed, and in most schools pencils and books will, in the meantime, have passed through many hands.

Disinfection of the class-room by chemicals is obviously less necessary than in the case of the sick-room, but the opportunity is naturally fitting for securing greater attention to ordinary methods of wet cleansing.* Beyond this I have very seldom advised my authority to proceed, and then only because the public attach some value to the ritual of disinfection, and the exhibition of formalin or some coal tar product restores confidence to the timid. On the other hand, whenever I have secured the intelligent co-operation of the head teacher, I do not remember to have failed in a single instance to get a class outbreak under control by clinical examination of the class, combined with bacteriological examination of suspects.

Daily Disinfection of School-Rooms has recently been widely advocated by interested vendors of disinfectants and a few others, but the evidence in its favour hitherto adduced is meagre and unconvincing. Thus in Buckinghamshire it is stated that when a case of infectious disease was reported from a school a special can—a small measure to give the exact amount of disinfectant necessary to obtain the dilution in the canful of water—and a gallon can of the disinfectant were sent to the school. Nothing is said about disinfecting the clothing of the children.

The futility of such a system of disinfection is apparent. Several days must almost certainly have elapsed between the last attendance of the notified patient at school and the resort to disinfection, and it is during this period, if at all, that harm is likely to result from the infected class-room. If, therefore, as is claimed, the watering of school-rooms with a dilute germicide has stayed the progress of diphtheria, scarlet fever, and measles, the result is as surprising as that which the same writer suggests

may be obtained by prophylactic doses of $\frac{1}{4}$ minim of carbolic acid taken internally. To this the scientific inquirer can only apply the reasoning suggested by Huxley:—"For aught he can prove to the contrary such events may appear in the order of nature to-morrow. But common sense and common honesty will oblige him to demand from those who would have him believe in the actual occurrence of such events evidence of a cogency proportionate to their departure from probability."*

Now it is just this evidence which is lacking in all the reports which we have read on school disinfection, including that which would have us resort to daily "disinfection," because in a few schools this rite is alleged to have increased the average attendance from 92.22 per cent. to 92.98 per cent.,—and even these unconvincing results were not checked by any satisfactory control experiments.

In the meantime this unbalanced craving for school disinfection is diverting the attention of school doctors from sure and sane practices for the control of infectious diseases to specious but fallacious methods.

Generally speaking, what has been written about diphtheria is equally applicable to scarlet fever and, *mutatis mutandis*, to the other common communicable diseases.

Space will not permit of my discussing measles, respecting which (to quote the Medical Officer of the Local Government Board), "there is accumulating evidence that infection is short-lived and that domestic cleansing suffices for disinfection."

For my own part I believe the time has come when hygienists should free their minds from cant and teach both their authorities and the public that chemical disinfectants are of strictly limited utility, and that by far the greater part of the money now spent thereon would be better expended on soap, soda, and scrubbing brushes.

A UNIVERSITY COURSE IN TOWN PLANNING.—The Liverpool University has this session inaugurated a "School of Civic Design" primarily intended for the training of architects and engineers, but also open to the general public. Landscape architecture is one of the courses provided for, and the staff of teachers includes both the Medical Officer for Liverpool and the City Engineer.

* Huxley's *Hume*, p. 136.

PERSONAL CONTACT IN RELATION TO THE SPREAD OF INFECTIOUS DISEASE AMONGST SCHOOL CHILDREN.*

By LESLIE KINGSFORD, M.D., D.P.H.,
School Medical Officer, Liverpool.

IT has long been recognized that since compulsory education has been in force in this country the public elementary schools have been extremely important factors in aiding the spread of the commoner infectious diseases. Outbreaks of one disease or another have frequently been traced to the presence in school of some child whilst in an infectious condition. Of late, owing partly to considerable activity on the part of various individuals interested in the sale of certain disinfectants, and partly to some sensational articles in the lay and the medical press, the importance of personal contact as the paramount factor in the spread of infection in schools has been somewhat obscured, whilst an undue prominence has been given to the danger of infectious dust and dirt on the floors and walls of the class-rooms, as well as to infected articles of school use. Without in any way denying the possibility of occasional infection by these means, it is my conviction that such indirect infection should be considered only when all possibility of direct personal contact has been eliminated. That possibilities of direct personal infection in the schools exist to a degree not generally known I hope to be able to show in this paper. My remarks and the figures quoted in this paper are restricted to the following five diseases, viz.: scarlet fever, measles, chicken-pox, whooping-cough, and mumps, no reference being made to such communicable diseases as ringworm, impetigo, and ophthalmia, all of which are very common in schools; nor to diphtheria, which fortunately is not very prevalent in Liverpool.

There has been in Liverpool now for some years, an arrangement between the Education and the Health Departments whereby teachers and school attendance officers notify the medical officer of health direct, cases of infectious diseases occurring amongst the scholars or at their homes, as soon as the cases come to the knowledge of these officials. For the last two years the teachers have at the request of the medical officer of health also indicated the classes in which the infected scholars have

been taught, and have specially drawn the attention of the Department to such cases of infectious disease as have been detected in school and sent home. On the visit of the sanitary inspector to the homes of infected scholars the day following the notification further particulars are obtained; amongst them, the date when the first symptoms of the disease were observed and the date of the last attendance at school. The daily list prepared by the clerk gives all this information in tabular form, so that it is possible to tell at a glance what children have been present in school in an infectious condition, and what class or classes they attended. In the preparation of this tabular list it has been taken for granted that a child whose date of last attendance at school was subsequent to the date of onset, was a child attending school in an infectious condition. Difficulty arises, however, when the alleged date of the onset of symptoms and the date of the last attendance at school coincide. In this case the child may or may not have been infectious whilst at school. In scarlet fever, the onset being usually somewhat sudden and severe, the probability is that the majority of the cases in this group are not infectious in school, but in whooping cough and the milder forms of measles, chicken-pox and mumps where the disease may commence insidiously and without a definite onset, a large proportion of the cases are almost certainly infectious in school for some time before they are noticed. This is all the more likely when one considers how unobservant of the symptoms of disease the parents too frequently are, the result being that the sanitary inspector's notes often post-date the commencement of the illness. This group of cases must therefore be taken into consideration and a certain proportion of them must fairly be regarded as having been at school whilst infectious.

In addition to the above we must consider some children who return to school before a cure is effected, a few also in certain diseases, who, as in diphtheria, may possibly be carrier cases, and a perhaps not inconsiderable number of missed cases. These last include those cases in which the mildness of the symptoms leads neither parents nor teachers to suspect an infectious ailment, as well as some cases which, though the parents know or suspect them to be infectious, yet through fear of the loss of a prize medal for attendance, or of injury to business, or from some other cause they insist upon attending school in the hopes

* Cf. the statement in Section 22 of the Memorandum of the Medical Officers of the Local Government Board and Board of Education, 1909: "The frequent and thorough washing of class-rooms and cloak-rooms is an efficient means of removing both dust and infection."

* Paper read before the North-Western Branch of the Society of Medical Officers of Health on Friday, May 21st, 1909.

that the attention of the teachers will not be drawn to their condition.

It is probable that these last groups do not comprise a large number of children, but the damage they may do is considerable, owing to the longer period during which they are brought into contact with the other scholars.

I have recently analysed the returns for Liverpool, so far as they relate to the year 1908, and the following table summarises the results for the five diseases before mentioned, though for obvious reasons carrier cases and missed cases are omitted.

The main headings have been sub-divided into the age periods, under 7 and 7 years and over, this sub-division roughly corresponding with the division into children attending the infants' departments and those attending the upper departments. The column headed "Total Cases known to have been Infectious in School" includes those which were detected as well as those which escaped detection by the teachers. The column headed "Doubtful Groups" refers to those cases of which the alleged date of onset coincided with the date of the last attendance at school.

It will be noticed that 856 cases of these diseases were detected in school and sent home, or about 7 per cent. of the total cases, whilst in addition another 880 cases are known to have been in school in an infectious state, though they escaped recognition by the school officials, thus bringing the total up to 1,736, or 14.2 per cent. of all the school cases for the year. For the undetected cases the duration of the infectious period whilst they were in school varied from one day to one or more weeks in some cases of scarlet fever and whooping-cough. When we compare the proportion of the children on the rolls known to have been present in school in an infectious

state under the age of 7 with those over that age, we find that in each disease there is a much greater preponderance amongst the younger children, the proportion varying from slightly more than 2 to 1 in the case of scarlet fever to 22 to 1 in measles, whilst for all diseases it is 7 to 1. The percentages of the scholars on the rolls infectious in school were for all diseases 3.5 per cent. under 7 and 5 per cent. over that age, or 1.3 per cent. for all ages.

The total percentages in the table are probably above the average owing to the prevalence during 1908 of mumps, a disease with which neither parents nor teachers have been of late familiar, and which in its mildest form is extremely difficult to be certain of. But children with obviously swollen cheeks frequently escaped the notice of the teachers until whole departments became involved in the epidemic. On three occasions I found in the infants' departments between 25 and 30 children suffering from mumps of varying degrees of severity taking their lessons with the other children, and not even suspected by the teachers, although numerous cases of mumps were known to exist amongst the scholars of the departments and amongst the children of the neighbourhood. The result was that but few children in these departments escaped, whereas a reasonable amount of observation on the part of the teachers might have prevented the epidemic. The figures for mumps were as high as 30 per cent., whilst scarlet fever, which showed the smallest number detected in school, had 5.5 per cent. of the total school cases in school in an infectious condition.

If we consider a fair proportion, say a quarter, of the cases in the column headed "Doubtful group," to have been infectious in school, the total percentage would be brought

TABLE SHOWING INFECTIOUS CASES PRESENT IN SCHOOL DURING 1908.

Disease.	No. of School Cases.	Cases detected in School.		Cases infectious in School but not detected.		Total Cases known to have been infectious in School.		Percentage of School Cases known to have been infectious in School.			Doubtful Group, all ages.
		Under Seven.	Seven and over.	Under Seven.	Seven and over.	Under Seven.	Seven and over.	Under Seven.	Seven and over.	All Ages.	
Scarlet Fever	2386	22	22	40	47	62	69	6.3	4.8	5.5	625
Measles	2920	85	8	99	14	184	22	7.7	4.0	7.3	1114
Chicken Pox	1341	44	12	77	36	121	48	12.6	12.3	12.6	503
Whooping Cough	2224	51	6	253	59	304	65	16.2	17.5	16.3	911
Mumps	2846	428	178	146	109	574	287	32.5	26.5	30.0	1072
Total	11717	630	226	615	265	1245	491	15.2	12.2	14.2	4225

up from 14.2 per cent. to 22 per cent., or, in other words, out of five infected school children one was present in school in an infectious condition.

With regard to the spread of infection caused by these children, the cases detected in school will in some cases have done but little harm, if they have been recognized in the initial stages of the disease by wide-awake teachers. But children who, though infectious, escape recognition until, perchance, physical inability or the occurrence of a second case in the home prevents their attendance, are probably the ones most responsible for the spread of infection.

What has been termed the sanitary conscience of the teachers is often tested very severely and needs much encouragement and stimulus. The teachers know that a great deal, including the Government grant, the head teachers' salaries and the number of assistant teachers allowed, depends to some extent upon the average attendance of the scholars, whilst, in addition, many teachers have the feeling that by keeping up a good attendance they will stand well with the committee. With all these inducements to keep up the average attendance it is not to be wondered at that teachers here and there are met with who are most reluctant to send any child home unless the evidences of infection are so obvious that it would be impossible to overlook the case. But cases of doubt are frequently met with, and on such occasions there can be no two opinions as to the proper course to adopt. The child should at once be taken out from its class, sent home and excluded until the disease has developed and the child has been cured, or until the doubt has been cleared up.

It would be of great value from the public health, as well as from the educational and financial point of view, if head teachers, but more especially the head teachers and first assistant teachers in the infants' departments, could have, soon after being appointed, the opportunity of receiving some clinical instruction at a fever hospital. Probably in two or three demonstrations at a hospital with beds for measles, whooping cough, scarlet fever and diphtheria, and perhaps one at a skin hospital, they would learn enough to stand them in good stead all through their teaching career, and such knowledge would react in the future for the benefit of the scholars by saving many from exposure to infection, and would materially assist in keeping down epidemics. At these

demonstrations teachers would be exposed to no more risk of infection than they are almost daily in their schools.

It is not instruction in the differential diagnosis that is desired, so much as the recognition of the ordinary symptoms of the commoner infectious and contagious diseases. Obviously, the earlier a case is discovered and excluded the less the danger to the other scholars.

Dr. Kerr, in one of his Annual Reports to the London County Council, speaking of two schools in London, says, "much was done by the head-mistresses, who were possessed of special knowledge, to prevent the spread of measles in their schools, and these schools suffered much less than their neighbours solely from this reason. A sound hygienic knowledge on the part of mistresses in infant schools would be of immense use, apart from the question of school closure, in keeping down infectious disease."

Whilst it is impossible to say definitely how many of the children have been infected in the schools, a very considerable number of the cases are known to have been exposed to infection there.

So far as it is possible to judge from the evidence at my disposal, schools and neighbours' houses rank first in importance as centres where infectious diseases amongst school children are spread, next coming courts and streets, whilst the homes played a comparatively unimportant part.

Having shown that the presence of infectious children in the schools is a common occurrence, it is necessary briefly to consider the methods by which the infection may be carried to the susceptible child. Two methods of spread, namely, by direct and by indirect infection, have been suggested; but whilst all are practically agreed in recognising the former method, the latter method has been the subject of some controversy. Two factors are essential for each, the infectious child at school and the susceptible child at school; but the latter method requires the infectious child to infect the dust (or some article of school use) and the susceptible child to be dosed with the dust, whilst by the former method the infectious child can pass the infection direct to its susceptible classmate. Putting aside indirect infection by means of pencils, slates, etc., which, though quite a likely method, probably very rarely occurs, let us turn our attention for a short time to the school dust.

A condition analogous to that found in schools is occasionally met with in the scarlet fever wards of an isolation hospital.

It will probably be the experience of many of the members of this branch, that occasionally a child is admitted, say, at the end of the first week of a mild attack, with no very definite symptoms, but with the history of a rash, sore throat and temperature. The medical officer, taking into consideration the history, &c., decides to put the child into the scarlet fever ward, where it is kept in bed for perhaps a fortnight. Then the child is allowed up, and perhaps a few days later develops a typical attack of scarlet fever, which in some cases may be labelled with truth "relapse of disease." In other cases, however, reconsideration must lead the medical officer to call in question his original diagnosis, and to regard the so-called relapse as in reality a primary attack. Why, and possibly in this connection it matters little whether this be the primary attack or a relapse, although he has been in the ward for two weeks inhaling dust, which if infectious at all, must be far more concentrated and dangerous than is ever likely to exist in a school class room, should this susceptible child become infected only after it has been exposed to the danger of personal contact with the other children in the ward?

In the case, too, of secondary infection occurring in a ward, any spread of the infection is usually confined to those children who are up and about and who have had opportunity of coming into close contact with the super-added infection.

Important investigations made a few years ago by Cameron for the Metropolitan Asylums Board into the causes of return cases of scarlet fever and diphtheria, led him to the conclusion that "Very many more return cases were due to personal infection than to defective disinfection," and he further stated that it was his impression that disinfection has not any appreciable effect either upon the number of return cases or of secondary cases which occur at varying intervals after it has been carried out.

Large sums of money are annually spent by many educational authorities upon so-called disinfectants, which, as used in the schools are too frequently merely deodorising liquid soaps. The sensation of having done their best and the comfortable feeling of false security given to the teachers by the use of these disinfectants

are often perhaps the only practical results of this expenditure.

It is not desired to deny the possibility of the presence occasionally of a small amount of infectious material from time to time in the dust, but probably this does not exist in a virulent form for any length of time outside the body, and in any case its admixture with the rest of the dust would so dilute it that the actual quantity inhaled by any scholars would be infinitesimal and practically negligible, seeing that the question of dosage is an important one.

But even should it be proved that the dust may at times be infectious, what is called for is its removal rather than its attempted sterilisation. Daily damp sweeping with the use of the damp duster in the mornings, frequent scrubbing of the class rooms and plenty of fresh air are adequate to remove or to render harmless the small amount of infectious material that may become deposited.

It must be further remembered that the daily removal of every particle of infectious dust leaves unsolved the problem of how to minimise the risks of infection by personal contact. In dealing with this question in which quite a number of different factors are involved, a few suggestions may be made in conclusion:—

1. Teachers should receive special training in the detection of the symptoms of the ordinary communicable diseases, and they should be encouraged to exclude at once all actual or doubtful cases.
2. Rules regarding the exclusion and re-admission of cases of infectious diseases and of contacts should be carefully devised, special stress being laid upon the importance of the home enquiries.
3. Parents should be educated, by leaflets or otherwise, in respect of their duties and responsibilities with regard to infectious diseases and isolation.
4. The re-introduction of the former "epidemic grant" is very desirable.
5. School buildings should be so planned as to allow adequate floor and cubic space for infants.
6. Proper ventilation, actual as well as potential, should be enforced.
7. The present method of awarding prizes for good attendance requires some alteration.
8. The question of the lower age limit for attendance at school should be reconsidered.

SCHOOL DUST.*

By JAMES KERR, M.D., D.P.H.

Medical Officer (Education) London County Council.

DUST arises in school from wear and tear of floors, furniture, and materials, such as crayons, chalks, or wool, used in teaching. The greater part is introduced from outside, either upon the persons of the children and others attending the school, or with the unfiltered air which blows through windows and other ventilating apertures. Much material is carried in on the shoes of the children, but from enquiries and observations in naturally and artificially ventilated schools it appears that about as much dust is carried in by the air as is taken in by the children. Samples of the dust taken from the tops of cupboards in schools show, when examined microscopically, soot, chalk, and other amorphous materials, bits of woody fibre, hair and wool, and always epidermic scales derived from the skin of the children. Grown upon suitable media, colonies of the common organisms (*e.g.*, *staphylococcus epidermidis albus*) of the human skin have been cultivated. The organic contents of school dust show that it may be a source of specific disease. The more complete the removal of dust the healthier the school building must be. The taint of fermenting organic material can be distinguished first thing in the morning in most schools where the windows have been kept closed during the night.

Air borne.—The amount of dust collected in mechanically ventilated schools is only about one-half of that found in those naturally ventilated, although from the fact that hot-air deposits dust on colder surfaces this dust often appears as discolouration of the wall at the hot air inlets. The air entry in these mechanically ventilated rooms is usually preceded by filtration. It is impossible to filter the air entering naturally ventilated rooms, but more attention should be given to the state of the inlets; the apertures and passages often contain long standing collections of dirt. The more modern Tobins tubes have doors at the bottom opposite the inlet openings which permit of ready cleansing, but where there are galleries it is sometimes impossible to obtain access to these tubes; some of the inlets are also protected by fixed gratings which render their cleansing impracticable.

Personal Introduction.—The danger of specific contamination will be minimized by greater

attention to personal cleanliness and the more extended use of baths. Although the removal of dirty foot-gear is not practicable, more attention should be given to the removal of dirt from the shoes before entering school. The habit of scraping and wiping the feet upon entry to a building is so important that the habit should be inculcated in all children. In the Council's schools a sunk scraper is generally provided at the entrance door. The use of mats is decidedly advantageous, both in conjunction with the scraper at the door where the bulk of the dirt is removed, and also at the entry to the hall after mounting the stairs.

Daily Cleansing.—Damp saw-dust is used as far as possible. A sackful of saw-dust costs one shilling, and in a medium-sized school lasts about three weeks. Occasionally a school is found where dry sweeping is done, but this is unsatisfactory, as the effect upon the health of the cleaners is bad, and a large proportion of the dust is distributed through the air and left to settle on the desks and tables. It is uncommon to find sweeping being done with the windows closed, but in some schools, owing to the difficulty in getting rooms warm, the windows are kept closed. The use of wet sawdust in sweeping halls leaves nothing to be desired, and probably no better method could be adopted. It is, however, impossible to sweep the portions of the class-rooms occupied by dual desks, as the time and labour allowed is too small to allow for the sawdust being removed from between and beneath the feet of the desks, and as the desks cannot be moved, a certain amount of dry sweeping is practically universal. The use of frequently damped brooms is probably the best solution, and lightly spraying with a garden syringe with a fine rose would be of great service; the provision of such apparatus in each school would render routine disinfection of class-rooms with formalin at times of infectious outbreaks an easy matter. After sweeping with or without sawdust, it is the general practice to close the windows and wipe all the furniture with cloths damped with paraffin. This is excellent, though the practice of waiting until the disturbed dust has settled is better. Much dust accumulates upon the tops of cupboards and ledges out of reach, and the fermenting material left undisturbed in these situations contributes largely to the unpleasant *bouquet* noticed when there is insufficient ventilation. It would be a great advantage if the tops of cupboards were made smooth and polished and

* Annual Report, 1908.

slightly sloped, as it is impossible to clean them when left uneven. All ledges should be sloped outwards and downwards from the wall, and there should be no horizontal surfaces out of reach. The picture mouldings are generally veritable dust traps and extremely unhygienic. The older iron rail standing clear of the wall is greatly to be preferred.

School Dust and Disinfectants.—The specific function of disinfectants is asserted to be in connection with infectious diseases, the zymotic fevers especially. All our inquiries here and most of the teaching of recent years go to show that out-of-school conditions are far more powerful means of disseminating these diseases, and that the school plays a comparatively secondary role. The infection is from the children themselves, not from doors and cupboards, desks or floors; these means are trivial; it is the undetected or mild cases or carriers continuing to attend that accounts for school spread of disease when it exists. It is little use disinfecting a school-room if the clothes and persons of the infected children cannot also be disinfected. The method of searching for the infective focus and removing it must always be the chief line of resisting the spread of infective diseases. With these facts in mind, the value of routine disinfection as applied to school-rooms sinks to insignificance compared with its value in such a focus as a sick-room after the patient has been removed. The cost of disinfection will always be very great, and as the cost of the disinfectant is probably nine-tenths of the whole, it is obvious that as a commercial interest routine disinfection in relation to educational buildings is likely to be pushed as energetically as ventilating expedients were once urged on an ignorant public; although the value seems to be in little doubt the actual results to be obtained by routine disinfection might be worth a trial, using disinfection in one group of schools and omitting it in a control group.

Dustless Oils.—Far more efficacious from the dust point of view would be the use of oils as floor dressings. In many commercial houses and banks these oils are found very useful. They appear to have been unsuccessful when tried in some elementary schools, but at the Stockwell Secondary School for the past year the use of this method has been very satisfactory. The usual routine in the hall, for instance, is 9 a.m. assembly, 9.30-12.10 drill, 12.40 dinner. After this it is swept. 1.30-2, on wet days, dancing, 2, drill. The drill mis-

tress formerly suffered much from irritable throats, due probably to dust. This has disappeared since the floors were oiled. * There is less dust now on the food and during meals, and dancing has only been practicable during the past year. The decorations of the room seem fresher than those of the adjoining school decorated at the same time. There are no complaints. Dresses are not dirtied or discoloured, and there is a considerable economy in labour. Considering the extensive use of these dust-fixing oils (*Staubbindende Oele*) in German Schools, it would be well worth trying an experiment on a considerable scale.

THE RE-INTERMENT OF MUMMIFIED REMAINS AT STAMFORD.—A leaden coffin containing embalmed human remains has recently been discovered on the site of the Black Friars' Monastery at Stamford. Permission having been granted by the Home Secretary, the body was examined by Dr. G. Boyd, the Medical Officer of Health for Stamford, who ascertained that the remains were those of a man. The flesh was in an almost perfect state after having been buried for over 500 years, and the features were easily distinguishable as those of an elderly priest. It was decided that the body is that of John Staunford, who was prior of the Black Friars at Stamford in the latter part of the 14th century. The remains were afterwards replaced in the leaden shell, which was enclosed in a wooden coffin, and removed to St. Augustine's Roman Catholic Church at Stamford, where a *requiem* service was held. Later the body was re-interred in a grave specially purchased in the portion of the local cemetery reserved for Roman Catholics. A paper was placed inside the coffin recording the incidents of the discovery and re-interment of the remains.

THE PREVALENCE OF "DERBYSHIRE NECK" IN DERBYSHIRE SCHOOL CHILDREN.—The Medical Officers were asked to pay special attention to the recognition of this disease, as it was felt that this would be a good opportunity of ascertaining its frequency and distribution, and whether its synonym "Derbyshire Neck" is justified. So far as the numbers at present are known it seems to be prevalent to the extent of about 1.5 per cent., and to be found chiefly in the Chapel-en-le-Frith and Bakewell Unions. It has been found not only among natives, but among residents of a few years' duration. In the majority of cases—even where the diseased gland is of large size—no serious attempt has been made to treat it, and it seems to be looked upon with indifference. No case of exophthalmic goitre has been reported.—*Annual Report of Dr. Sidney Barwise, County Medical Officer of Health and School Medical Officer, Derbyshire.*

SOME FEATURES CONCERNING THE SEWAGE POLLUTION OF AN ESTUARY.

By R. J. EWART, M.D., M.Sc., F.R.C.S., D.P.H.,
Assistant Medical Officer of Health, Middlesbrough.

THE pollution of a river estuary is of consequence from many points of view. The æsthetic side in the majority of cases does not apply. This factor, and it is apparently the strongest, is best seen in our seaside resorts, but practically in all other places where there is proximity to the sea, the crude sewage is got rid of by direct means, with little reference to the foreshore. The influence this has had upon the immediate neighbourhood is curious, for there can be no doubt that the effect has been to increase the abundance of the fauna. Excessive pollution is of course derogatory, but with the admixture of sea water dilutions are formed which make very suitable pabulum for those minute forms upon which the larger ones live, so that, though forms of life may be driven away from the immediate surroundings, we should eventually reach a zone, as we leave the populous centre, where there is an increase.

This general feature of sewage pollution is particularly applicable to mussels and their distribution, for it will be shown later that, although they may be obtained free from all possibility of pollution, still in such situations they are rare and not of marketable value. Apparently when they occur with any frequency they are well within the sewage zone.

The Tees estuary has up to the present enjoyed an enviable reputation for the quality of the mussels, both as regards bait and food, though of late years it has fallen off. Apparently the public do not buy so largely as they did, nor do the fishermen think so highly of them as bait. Mussels all over the country appear to be falling under a ban, and, judging from the amounts carried by rail to the inland towns, this appears to be true. It seems as though the general public have learned from experience that they are not safe articles of diet. It is hard to see why in this particular case they have been abandoned as bait.

The two features that make this river of additional interest are: Firstly, the present channel, on the banks of which the mussels are commonly found, has only existed during the last twenty-five years; and, secondly, the population, also the sewage, owing to the partial adoption of the water carriage system,

has more than doubled itself during this time. It should be possible to trace some change in the fauna of the estuary in relation to the increased sewage outfall. Comparing the present distribution of mussels with that described by Professor McIntosh in 1891 in his report on "The Mussel Culture of the Estuary," little change appears to have taken place beyond the fact that they are less plentiful and have shifted towards the mouth of the river.

The formation of the new channel altered the configuration of the river considerably, for the flood entering the mouth of the river sweeps towards the north, spreading over the Seal Sands, whilst the ebb keeps to the new channel, thus forming distinct zones, the north side being clean sand, whilst the south is the usual black mud.

To the north are found cockles, and to the south we have mussels.

Studying the topographical distribution of the commoner shell-fish we see at once that the mussels roughly follow the area of sewage pollution of the estuary, whilst the cockles approach, but never actually enter, this zone. Cockles are never found in black mud, though this is the usual habitat of mussels, and, as will be shown later, there is a reason for this.

In the investigation into the conditions of the Tees estuary the following points were particularly emphasized. The specimens were collected from the beginning of January to the end of March, when the weather temperature was either at freezing point or very near it. The past winter was very suitable for the purpose, owing to the heavy falls of snow and general low average temperature. It may be assumed that what sewage organisms were discharged into the river, especially those whose normal temperature is 37 deg. C., would not undergo much multiplication or diminution for periods of weeks.

The following table shows the viability of *Bacillus Coli* under varying conditions with mixtures of salt and fresh water.

From the table it is seen that this bacillus slowly becomes overgrown by the commoner organisms, and that the process is less rapid at the lower temperatures than at the higher.

Bacillus Typhosus shows much the same viability, except that its periods are about halved; under ordinary conditions it is usually overgrown in a week. It can be assumed, then, that knowing the *Bacillus Coli* content of our sewage, it is possible by estimating the sewage content of the sea water (Houston L.G.B.

TABLE SHOWING THE VIABILITY OF BACILLUS COLI IN DIFFERENT DILUTIONS OF SALT WATER AND WITH ADMIXTURE WITH OTHER ORGANISMS.

BACILLUS COLI ALONE.									
Nature of Mixture.	At 20 deg. Centigrade.				At Temperatures from 0 to 5 deg. Centigrade.				
	10th day.	15th day.	22nd day.	25th day.	10th day.	15th day.	22nd day.	25th day.	
Pure salt water 	1,000,000	increased	same	increased	100	2	5	5	
1 part fresh and 4 parts salt water...	500,000	increased	same	increased	150	7	4	2	
2 parts fresh and 3 parts salt water	500,000	same	same	increased	250	60	45	2	

BACILLUS COLI MIXED WITH OTHER ORGANISMS.									
Pure salt water 	1,000,000	1	3	11	120	3	2	0	
1 part fresh and 4 parts salt water...	180	4	2	0	150	32	5	2	
2 parts fresh and 4 parts salt water	21	57	2	63	240	50	9	0	

The mixture when made contained approximately 100 typical Bacillus Coli per cubic centimetre.

report, 1903) to obtain a quantitative idea of its constitution.

The method of estimating the bacterial content of the mussel was varied from that usually adopted, the idea being not to find how many organisms there were in any individual mussel, but to estimate the average number of Bacillus Coli per gramme of mussel substance for any particular bed, the average weight of each mussel, and at the same time the number of Bacillus Coli per gramme of mud. By expressing our results in this way some interesting facts are seen.

The mussels were collected from all parts of a bed, and indiscriminately taken as regards position, though those under 1½ in. in length were discarded. Between fifty and 100 were collected over an area of several hundreds of square yards. They were then immediately taken to the laboratory and scrubbed in sterile water, the hands being covered with sterile rubber gloves. The mussels should always be placed with the byssus, or beard upwards, otherwise there is a loss of the internal contents, and they should be held in this position in all subsequent operations.

Twenty-five to thirty mussels are weighed, and then the contents, after the mussels are opened, are placed in a small mincing machine (this can be easily sterilized by soaking in 4 per cent. formalin, and then boiling). The shells are again weighed, so that we obtain the quantity of mussel substance used. Water should be run through the machine to wash out the remaining bits of mussel.

Dilutions of this emulsion are then made in the usual way, so that one cubic centimetre of the resulting mixture will contain 1·10 grams., 1·100 grams., 1·1,000 grams., and 1·10,000 grams. of mussel substance taken from the whole bed. One cubic centimetre of these dilutions is then sown on to Gelatine, Agar, and McConkey's neutral-red-bile-salt agar, sub-cultivations being made in the usual way. Bacillus Coli-like colonies were usually sub-cultivated from the neutral-red-media, and were only classified as typical Bacillus Coli when they fulfilled all the "flaginac" tests as laid down by Dr. Houston.

The surface mud was treated in exactly the same way. Samples of water were further taken from the mid-stream at low water, in which both the percentage of salt and bacterial content were investigated.

The following table gives the results of the examination of five mussel areas, their situation being indicated on the accompanying sketch map. The milk test is inserted, for, although sea-water contains a large number of highly resistant spore-bearing forms, still water taken from all possibility of contamination does not give the change.

The conclusions that can be drawn from this table may be briefly summarised as follows:—

- 1. That mussels can be obtained free from all evidence of sewage pollution.
- 2. That there is a close relationship between size, number, and sewage pollution. It appears that where the mussels are of sufficient size to be marketable, and in

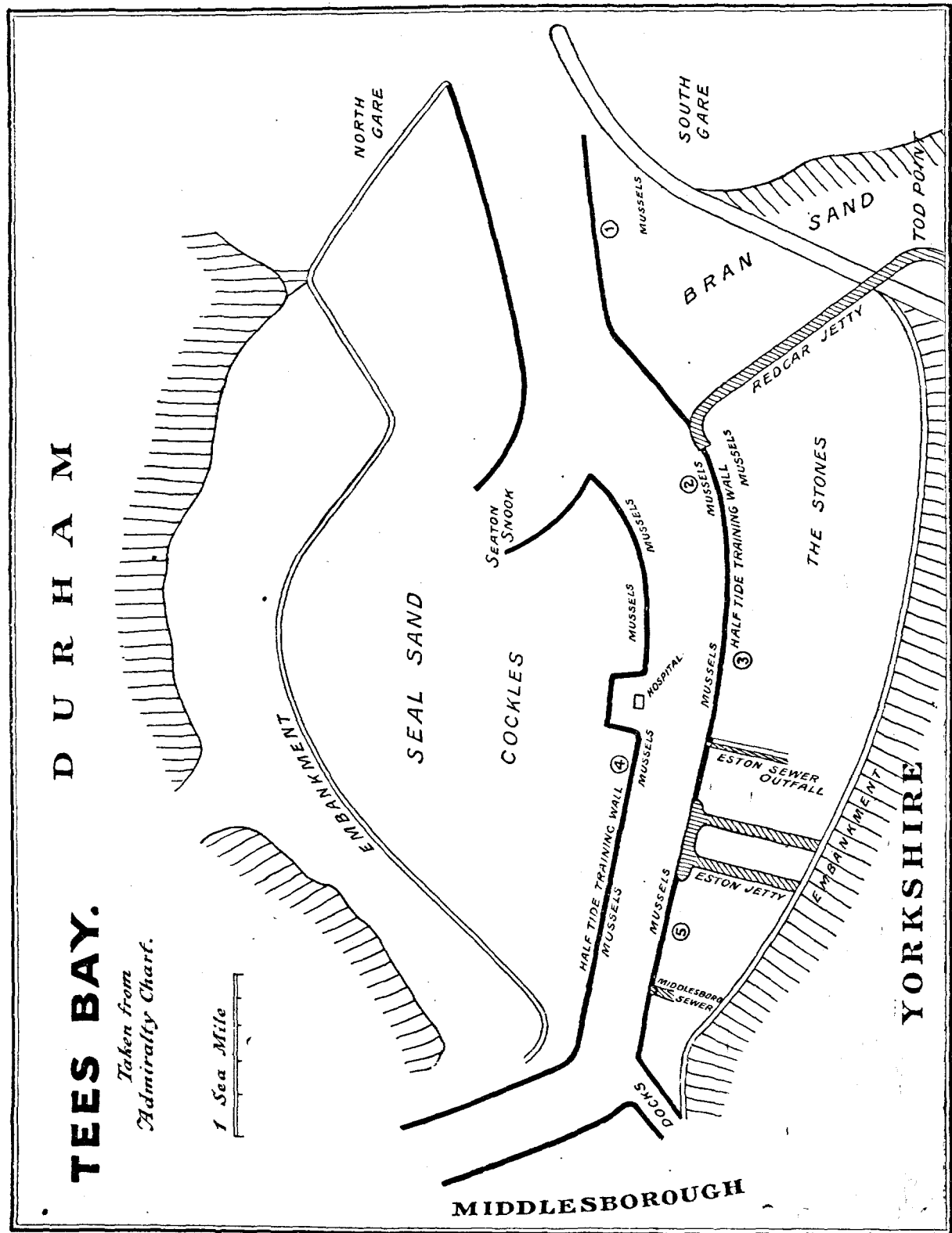


TABLE SHOWING RELATIONSHIP OF SEWAGE POLLUTION OF MUSSELS TO PROXIMITY TO SEWER OUTFALLS.

SITE OF BED EXAMINED.	Date.	Temperature of Atmosphere.	Average Weight of Mussel without shell.	Number of Organisms growing at 20° C. per gramme of Mussel.	Ratio between number growing at 20° C. and 37° C. per gramme of Mussel Substance.	Number of Flagellae Coli per gramme of Mussel Substance.	Milk Test. (Bacillus Sporogenis) (De Leiss)	Number of B. Coli found in surface mud per gramme.
BED I. 4 miles below Aston Sewer outfall. South side	9.1.09	3° C.	3.7 grms.	750,000	1.6	Absent.	Absent.	Absent.
BED II. 2½ miles below Aston Sewer outfall. South side	23.1.09	4° C.	8.3 grms.	900,000	—	Present. (Under 10 per gram. of Mussel substance)	Positive.	Present.
BED III. 400 yards below Aston Sewer outfall. South side	6.2.09	4° C.	14 grms.	410,000	1.5	Present. (Under 10 per gram. of Mussel substance)	Positive.	Present. (Under 10 per gram. of mud)
BED IV. Opposite Aston Sewer outfall. North side	6.3.09	0° C.	12 grms.	230,000	1.0	70	Positive.	100
BED V. Between Aston Sewer outfall and Middlesbro' outfall. No. 1, South side	20.2.09	4° C.	10.1 grms.	900,000	7	120	Positive.	120

sufficient quantities to be worth gathering, evidence of pollution is marked.

- That the number of *Bacillus Coli* found in the mussels corresponded closely to the environment, hence the mussel cannot be regarded as a filter accumulating harmful organisms. (The food of the mussels are not the bacteria, but a type of life that to an extent may live on such).
- That, broadly speaking, a fall in the ratio between organisms growing at 20 deg. C. and those at 37 deg. C. corresponded with sewage pollution. The same may be said with regard to spore-bearing forms.

The habitat of the mussel and cockle show certain essential differences upon which the life of these molluscs depends.

Mussels may be found attached to stones and other solid objects, but mainly in beds or scarfs, in which many may be actually embedded in the black mud with only a small portion of the shell protruding. Cockles generally live in the sand, and as the water leaves the sand the air penetrates into the spaces between the grains. On the other hand, the gelatinous organic matter between the sand particles contained in mud holds the water, so that it is

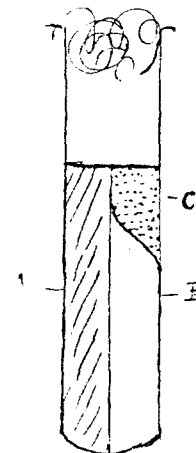
never aerated except on the surface, hence in the sand the organisms are mainly aerobic; in mud the surface gets oxygenated, and beneath the conditions and type of fermentation are chiefly anaerobic.

If a little clean sand is placed in an incubator with a small quantity of nutrient broth and the whole filled with salt water, and then inoculated with a little mud, in the course of a week a black, flaky deposit will be formed on the surface of the sand, which on microscopic examination is found to consist of spores, organisms, and organic debris; if the conditions are made aerobic the deposit is of a brownish colour.

That air has little penetrative power into mud is shown by the following simple experiment.

"A" is ordinary mud, and "B" is Agar made somewhat stiffer than usual and coloured with sulph-indigotate of soda or methyl-blue. The blue colour slowly disappears except from the surface at "C" for about half an inch, showing that in ordinary mud from depths below half-an-inch the conditions are anaerobic, and further this is found to be associated with a change in the colour of the mud from brown to black. Thus it may be assumed that wherever we get black mud oxygen is either greatly reduced or absent.

We see, therefore, that mussels border on this dangerous zone in which the more dangerous toxins formed, hence outside bacterial growth they may absorb these toxins and may contain them in the liquor found between



the mantles. Therefore, mussels are presumably more dangerous when taken from mud than when taken from their attachment to stones or other solid objects.

It is obvious that mussels, since they live in the proximity of rivers, must at times be bathed with water that is not salt. By estimation of the percentage of chlorides we can find the relative mixtures of fresh and salt water. Again if the weather is cold, and we know the nature of the sewage flowing into the river, we can, by enumerating the number of *Bacillus Coli*, get an idea of the amount of pollution present.

The following table gives the results of estimations carried out on these lines, the samples of water being taken at low tide and in close proximity to the beds from which the mussels were gathered.

From these estimations we see that the mussel is at times bathed with mixtures that

are far from being pure salt water. If they are placed in such mixtures it is seen that with one part of fresh to four of salt water the mussel opens and apparently feeds normally; with two parts of fresh to three of salt water it opens and will attach itself, but dies within twenty-four to forty-eight hours. An occasional bath of even the last mixture does not interfere with the mussels, if alternated with pure sea water—half and half is injurious, and the mussel under all such conditions eventually dies. Thus when waters of the above compositions flow over mussels they remain active and continue feeding—at any rate, with the first-named dilutions. With these lower dilutions the viability of sewage and pathogenic organisms, or even the common organisms of decomposition, is greatly enhanced, as is shown by Table I.

The question may be naturally asked, "Is any article of diet fit for human consumption that is bathed twice daily in a sewage mixture of human origin of 1 in 50,000?" There is no doubt that such a pollution would condemn any water supply, but mussels are an optional form of diet, and cannot be judged with water. Further, milk contains many more *Bacillus Coli* than fresh mussels, but here the origin of the pollution is from the cow, and not from man.

On the whole, then, mussels cannot be looked upon as safe, especially when we bear in mind that they are apt to die in transit to inland towns, in which case the bacterial contents will rise by millions.

The illnesses that may arise from eating mussels may be divided into two classes: firstly, "toxic," due to the absorption into the system of organic poisons present in the substance of the mussel itself; and, secondly, "bacterial," which may be sub-divided into what may be termed general and specific infections.

TABLE SHOWING THE COMPOSITION OF THE WATER AT LOW TIDE ON DIFFERENT DAYS AND OCCASIONS.

Source of Sample.	Date.	Temperature of Water.	Percentage of Salt.	Number of Flagellae B. Coli per c.c.	Composition of Water in 100,000 parts.		
					Salt Water.	Fresh Water.	Crude Sewage.
From breakwater S. Gare, Bed. I. ...	9.1.09	4° C.	1.94	absent	100,000	0	0
Opposite Redcar Jetty, opposite Bed II. ...	23.1.09	3° C.	1.64	2	83,643	16,355	2
4½ miles below Eston sewer, opposite Bed III.	6.2.09	2° C.	0.60	2	69,399	30,599	2
Opposite Eston sewer, Bed IV.	6.3.09	2° C.	1.61	3	82,113	17,884	3
Between Eston and Middlesbro' sewer outfalls, Bed V.	20.2.09	4° C.	1.30	20	66,302	23,678	20

A specific organic poison was described as peculiar to mussels as long ago as 1886, and the name "mytletoxin" was given to it. It appears doubtful in the light of present bacterial investigation whether such a toxin is produced by the mussel itself. The toxins are often present, irrespective of harmful bacteria, appears to be well supported by clinical observation. From the nature of the mud in which these shell-fish live, it seems likely that such poisonous products arise from it rather than from the shell-fish. Symptoms dependent on these toxins are usually seen within a few hours of eating the fish.

The next class of illness is associated with bacterial invasion, and is later in its onset and rarely seen until after twenty-four hours, though this class may be consequent upon the preceding. It apparently depends on a disturbance of balance between the putrefactive powers of the intestine and the inhibitory or controlling action of the mucous membrane. In an experience of my own, after accidentally swallowing about half a gramme of mud, the consequent attack of diarrhoea commenced thirty-six hours later, and lasted for a period of three days, the seat of the disturbance being mainly in the large intestine, but beyond a feeling of malaise there were no other constitutional symptoms.

The specific bacterial infections are longer in their incubation periods, and constitute the group of conditions included under the generic name "enteric fever."

It is quite possible that a toxic poisoning may pass on to a disturbance of the general bacterial balance of the intestine, and then in its turn to a specific bacterial invasion; in fact, the preceding conditions rather predispose than protect against the more serious disturbances.

A suggestion of Mr. Johnson, B.Sc., in the Lancashire Sea Fisheries Report, 1909, is worthy of comment. He points out that in most estuaries it is possible to find some area which at least during the flood tide may be regarded as unpolluted. He suggests that at this point a small salt-water lock should be made where all mussels collected for market must be placed for at least four days.

It is found that under these conditions the risk of mischief falls enormously and is practically confined to the possibility of a dead mussel being accidentally eaten. By this device the toxins derived from the environment are removed and the bacterial fauna greatly reduced, and the possibility of specific bacterial invasion becomes practically nil.

ENTERIC FEVER AND THE DRY-CLOSET SYSTEM.*

By PHILIP BOOBBYER, M.D.,
Medical Officer of Health, Nottingham.

THE sections on enteric fever and diarrhoea in my annual reports have, for many years, been little more than one long indictment of the dry-closet system—pail or privy—and all I need urge by way of excuse for this is the practically undiminished continuance of the dry-system in the City.

The public, and even members of the medical profession, have been so long accustomed to look to certain definite channels of infection, like water-supplies and shell-fish, for the conveyance of the typhoid poison to the human intestine, that they are apt to forget the obvious fact that by far the greater part of the enteric fever occurring in this and other countries is not propagated in this manner, and that, provided the poison be swallowed in sufficient dose, it matters little with what vehicle it is taken in. Not the most thorough and scientifically devised precautionary measures can effectually protect against infection a certain proportion of those who—like the nurses of enteric fever hospitals—are closely associated with persons suffering from the disease. In such towns as Nottingham, and in other places—like military camps, for instance—where dry-systems of excrement disposal are in use, the urine and fæces of all cases of enteric fever before diagnosis, and of all undetected cases, are disposed of without special precautions; and the resulting contamination of soil and atmosphere, of the human clothing and persons, and of food and habitation, through the agency of dirty, careless habits, and through flies and dust in warm weather, explains the spread of infection when once the fever has obtained a footing.

However much we may improve the methods and increase the efficiency of our public scavenging, and we have done both to a very large extent in recent years, we cannot entirely obviate the risk of infection by such means as those I have just mentioned; and a town, therefore, with pail-closets and privies must be subject to endemic extension of enteric fever so long as the disease exists within its borders, or invades them occasionally from without.

It will be interesting now to compare the past and present enteric fever death-rates of Nottingham, which retains its dry-closets, with those of the other great towns which have either already converted theirs, or are engaged in doing so.

The death-rate of Nottingham from enteric fever was rather below the mean rate of the other large cities taken together in the seventies—the

* Annual Report, 1903.

Nottingham rate was then about 45 per 100,000, as compared with 48 per 100,000 in the then great towns. The enteric fever death-rates of the great towns all declined from this period onwards, but, whereas the mean rate of the great towns had fallen to 20 per 100,000 in the last year of the century, the rate of Nottingham had only declined to 29—i.e., the mortality was 45 per cent. more in Nottingham than in these towns as a whole.

During the decade ended with 1907 the average enteric fever death-rate per 100,000 in Nottingham was 24, as compared with 10 in the great towns, and during 1908 the rate in Nottingham (11 per 100,000), though the lowest rate but one on record for Nottingham, was still 36 per cent. in advance of that in the great towns (8 per 100,000).

The case of Leicester in this connection affords an excellent object-lesson to Nottingham. Leicester formerly had a large number of dry closets like Nottingham, but it began their conversion to w.c.'s many years ago, and has now completed it. In the seventies the average enteric fever death-rate of Leicester was slightly below that of Nottingham, and its diarrhoea death-rate was twice as high. During 1908 the enteric fever death-rate of Leicester was only 3, while ours was 11 per 100,000, and during the previous 10 years (1898-1907) the average enteric fever rate of Leicester was 8, whereas ours was 24 per 100,000. The average diarrhoea mortality of Leicester is now considerably below that of Nottingham.

There are many who believe that much of the enteric fever in our city is caused by shell-fish. I would call the attention of such people to the above figures, and also to the further fact that the shell-fish supplies of Nottingham and Leicester are practically identical, alike as to source and quantity.

The number of cases of enteric fever notified to me during 1908 was 237, as compared with 231 in 1907, and an annual average of 286 during the preceding five years. The attack rate per 1,000 of population was equal to 0.91 (91 per 100,000). This is a very low rate for Nottingham, lower, in fact, than any previous annual rates excepting those of 1907 (0.897) and 1903 (0.81).

The disease was, as usual, very generally distributed over most of the poorer districts of the City, but groups of cases occurred marking foci of local infection.

The deaths registered as due to enteric fever in Nottingham, as already stated, numbered 29, and correspond to a death-rate of 0.11 per 1,000 (11 per 100,000). The rates for the preceding five years had been respectively 0.15, 0.16, 0.09, 0.23, and 0.14 per 1,000. The rate for 1908 is only 0.02 per 1,000 above the lowest rate on record (0.09 in 1905).

The death-rate from enteric fever during 1908 was equal to 0.08 in the 76 great towns, 0.05 in

London, 0.08 in the 142 smaller towns, and 0.07 in England and Wales.

There were six cases—two each in January and February and one each in July and August—in which there was a definite history of the eating of shell-fish (mussels) prior to attack; and as Dr. F. H. Jacob isolated from mussels belonging to the same consignment as those which had been eaten by two of the patients a bacillus which gave the reaction of the typhoid bacillus, it seems very probable that the disease in these cases at any rate was caused by the mussels. Except in these few cases, however, there was no definite antecedent history of the ingestion of shell-fish or other suspected article of food or drink, and I was constrained, as stated in the earlier part of this article, to fall back for causative theory upon what I believe to be the usual method of propagation for enteric fever infection in cities like Nottingham, viz., the fouling of all the physical surroundings of human life with the contents of our pail-closets.

I give once more with this article a table showing the actual and proportional incidence of enteric fever upon human dwellings furnished with various types of closet from 1887 to 1908 inclusive. The table speaks for itself as an argument in support of my contention that the dry-closet plays a very important part in spreading the disease.

INCIDENCE OF ENTERIC FEVER CASES UPON HOUSES WITH PAIL-CLOSETS, MIDDEN-PRIVIES, AND W.C.'S, FROM 1887 TO 1908, AND UPON WASTE-WATER-CLOSETS DURING 1905-08.

1887 to 1898 (average).		Houses.
Houses with pail-closets	1 case of enteric fever in 120	
" midden-privies	1 " " "	37
" water-closets	1 " " "	558
1899.		Houses.
Houses with pail-closets	... 1 case in 70	
" midden-privies	... 1 " "	18
" water-closets	... 1 " "	296
1900.		
Houses with pail-closets	... 1 case in 92	
" midden-privies	... 1 " "	20
" water-closets	... 1 " "	407
1901.		
Houses with pail-closets	... 1 case in 84	
" midden-privies	... 1 " "	12
" water-closets	... 1 " "	255
1902.		
Houses with pail-closets	... 1 case in 129	
" midden-privies	... 1 " "	21
" water-closets	... 1 " "	294
1903.		
Houses with pail-closets	... 1 case in 267	
" midden-privies	... 1 " "	50
" water-closets	... 1 " "	504
1904.		
Houses with pail-closets	... 1 case in 166	
" midden-privies	... 1 " "	50
" water-closets	... 1 " "	407

Houses.	1905.	204 cases	1 case in	181
37,048 with pail-closets	...	204 cases	1 case in	181
400 " midden-privies	4 " 1 "			100
12,000 " water-closets...	21 " 1 "			571
6,785 " waste-w.c.'s	26 " 1 "			261
Houses.	1906.	231 cases	1 case in	160
36,886 with pail-closets	...	231 cases	1 case in	160
300 " midden-privies	3 " 1 "			100 cir.
14,000 " water-closets...	21 " 1 "			667
6,785 " waste-w.c.'s	30 " 1 "			226
Houses.	1907.	177 cases	1 case in	207
36,697 with pail-closets	...	177 cases	1 case in	207
200 " midden-privies	11 " 1 "			18 cir.
18,395 " water-closets...	25 " 1 "			736
6,785 " waste-w.c.'s	18 " 1 "			377
Houses.	1908.	197 cases	1 case in	185
36,531 with pail-closets	...	197 cases	1 case in	185
100 " midden-privies	3 " 1 "			33 cir.
19,944 " water-closets...	25 " 1 "			798
6,785 " waste-w.c.'s	12 " 1 "			565

LOCAL AUTHORITIES AND THE REMOVAL OF SNOW.

THE Town Clerk of Lambeth has recently issued a valuable report on the use of salt in the removal of snow. It appears that the following 12 British cities do not use salt to assist the removal of the snow from the carriage-ways:—Aberdeen, Bradford, Bristol, Dundee, Greenock, Inverness, Leeds, Leicester, Leith, Newcastle, Norwich, and Paisley. At Greenock the snow is carted away immediately. At Dundee it is carted and deposited in the river or sewers or on vacant ground, and a mixture of salt and sand is used in the main thoroughfares to prevent horses from slipping during frosty weather. The use of salt in Inverness is forbidden under a penalty by the Burgh Police Act, 1892. Salt is used on the carriage-ways in Birmingham, Edinburgh, Glasgow, Hull, Liverpool, Manchester, Nottingham, and Sheffield.

The following Continental Cities do not use salt for the purpose of getting rid of a snowfall:—Berlin, Berne, Breslau, Christiania, Cologne, Copenhagen, Frankfurt, Hamburg and Munich, whilst Dresden only does so in exceptional cases. Snow ploughs are employed at Breslau, Cologne, Dresden, and Frankfurt. Salt is used in Amsterdam, Antwerp, The Hague, Leipzig, and Paris; the streets of Paris are grouped in three classes of "urgency," and the salt is spread thereon in order of class.

In regard to footpaths Edinburgh is the only British city where salt is used to any great extent for the removal of snow. At Hull it is employed for this purpose, but only to expedite matters when the snow is already thawing. It is used on the footpaths at Liverpool during the night only, the slush being flushed away by 8 a.m. It is also used occasionally at Dundee and Greenock, but with these exceptions, none of the British cities use salt on the footways.

In Continental cities salt is used sparingly on the footpaths at Dresden, The Hague, and Leipzig, but not at all in the remaining cities. At Breslau and Paris the inhabitants are required to clear the pavements; at the former place salt is forbidden, and at the latter it is required that sand, ashes, or slag should be spread.

In the case of ten British cities—Aberdeen, Bradford, Bristol, Greenock, Inverness, Leeds, Leicester, Newcastle, Nottingham and Paisley—the opinion is that a general use of salt for the removal of snow is objectionable from the point of view of public health. In the majority of these ten cases the cold slush that is formed is regarded as being at least unpleasant for if not dangerous to pedestrians, and as distinctly injurious to the feet of animals. At Edinburgh and Hull the medical officers are strongly of opinion that the use of salt is objectionable; the city engineers, on the other hand, are in favour of its application. At Hull the city engineer's opinion is that without applying salt it is impossible to maintain traffic on wood paving. The city road surveyor of Edinburgh considers that salt does no appreciable injury to paved roads, but tends to break the surface of macadamized roads. The medical officers of Dundee, Liverpool, and Manchester consider that no actual harm results from the method of applying the salt in their respective cities, though in the case of Manchester it is stated that no doubt people with defective boots suffer severely.

The authorities at Antwerp, Berlin, Dresden, and Hamburg consider the use of salt prejudicial to public health. The reply from Antwerp states that if small quantities of salt are mixed with large quantities of ashes the practice is not objectionable when applied to roads first cleared of the snow. Some years ago at Amsterdam certain of the tramcar horses' feet became diseased through the use of salt, but no complaint of injury to persons have been received. Reports from Paris, Christiania, Cologne, and The Hague do not record any objections to the use of salt.

TOOTH BRUSHES FOR SCHOOL CHILDREN.—Tooth brushes have been purchased at wholesale rates by the committee, and already 150 gross have been retailed to the children at 1½d. apiece. Each brush is enclosed in an envelope with instructions printed thereon. A circular letter detailing some elementary facts about teeth has been circulated among the teachers, and a card (Appendix 13) containing information on the preservation of the teeth, for wholesale distribution among the school children, is used. The Continental experience has shown that this is not enough, and, therefore, practical measures must be adopted for enforcing cleanliness and for providing remedial treatment.—*Annual Report of Dr. Sidney Barwise, County Medical Officer of Health, and School Medical Officer, Derbyshire.*

REVIEWS.

CHILDREN IN HEALTH AND DISEASE. By David Forsyth, M.D., D.Sc. London: John Murray. 10s. net.

Dr. Forsyth is to be congratulated upon having written this book, and the medical profession, and others concerned, upon having such a book to read. The book consists of fifteen chapters (to which is added a full and complete index) dealing with the physiology of children, the hygiene and medical aspects of schools and school life, medical inspection and supervision of scholars, the training and moral education of boys and girls, infantile mortality, the proper feeding and management of infants, diseases of childhood and their diagnosis and treatment, the control and care of idiots and feeble-minded children, etc., a very wide range of different subsidiary subjects, all bearing upon the main central important subject of child-life, concisely dealt with by the author and without any sacrifice of either clearness of outline or due proportion. The chapters dealing with children and disease (including methods of examination, diagnosis and treatment) are specially noteworthy, treating, as they do, these subjects in a plain and scientific manner, and offering many useful suggestions to medical students and even to qualified men in practice, especially in regard to the suggested methods of conducting the examination of infants and children.

The other subjects are none the less deserving of careful perusal on account of the comprehensive but simply stated manner in which the various points are set forth and treated. Especially in this direction we would note the chapters dealing with infantile mortality, the conditions of infant life, and the subject of idiots and feeble-minded children, from the State or Municipal aspect. Not only medical students, but medical practitioners would do well to read and master the remarks on infant feeding and management, as ignorance in these matters is not restricted, unfortunately, to mothers and lay persons. Simplicity is again the key-note. Proper and regular feeding and cleanliness are all that are wanted; they can easily be secured by exercising a little care. "Both the desires and requirements of infancy," says the author, "are primitive, and only exceptionally is it necessary to resort to the numerous strange and more or less unnatural preparations that from time to time are widely advertised." Natural, or breast-feeding, is the best; but artificial, or bottle-feeding, when such is absolutely necessary, can be carried out successfully, if certain scientific but simple rules are adhered to. We could have wished that the author had amplified the information as to municipal milk depôts and the good they effect, not only directly but also indirectly, by educating

mothers and others. This educational view of the question is never sufficiently strongly put forward, but is nevertheless one that is all-important. The chapters on the physiology and psychology of children deal with the interesting subjects of ante-natal, natal and post-natal physiology (the last named including growth, special functions, metabolism and puberty), sensations as the basis of mentality, ideas, recognitions, memory, judgments, influence of environment, consciousness of self, etc. No mention appears to be made of the valuable statistics derived from observations made by Francis Warner, though those of Preyer and Romanes are much in evidence.

The chapters on the hygiene and medical aspects of schools and school-life and the medical inspection and supervision of school children focus all the points that are now engaging so much public attention, and emphasis is rightly laid upon the part played by the school in shaping a child's physical, mental and moral nature—a part second only to that of the home. Finally, we would draw special notice to the chapter on the training of children, in which are many useful practical suggestions based on a scientific study of the needs of the child.

IN THE OPEN AIR. By J. Eaton Feasey. London: Sir Isaac Pitman & Sons. 1s. 6d.

The open air school seems likely to take a prominent place among our educational institutions, and Mr. Feasey's little book appears at an opportune time and should be welcomed by those who are interested in open air education. The book consists of a series of outdoor lessons in arithmetic, mensuration, geometry, etc., for primary and secondary schools. Mr. Feasey has based his lessons on a suggestion of the Board of Education that "instruction in arithmetic should be made as realistic as possible," and he has certainly been remarkably successful in carrying this suggestion into effect. His lessons, most of which can be worked out in an asphalted playground, are not only most instructive, but they afford admirable physical exercise and, unless we are much mistaken, enjoyable play for the children. The book is well illustrated, and we strongly recommend it to the notice of school medical officers.

THE SANITARY OFFICER'S HANDBOOK OF PRACTICAL HYGIENE. By C. F. Wainhill, Major R.A.M.C., and W. W. O. Beveridge, D.S.O., Major R.A.M.C. London: Edward Arnold. 5s. net.

In this book the authors have sought to provide a practical handbook on analytical chemistry, and bacteriology for the use of military and civilian medical officers who have to perform their analytical work far away from the well-equipped laboratories and well-stocked libraries that are at

the disposal of analysts in large towns. As the authors observe in their preface, "processes and apparatus not usually found in small laboratories in distant lands are as useless as a cookery book to an inhabitant of the Soudan;" and they have made their methods as simple as possible. The book, including index, consists only of 151 pages, but it contains a surprising amount of information, and gives an account of everything that is ordinarily necessary for the chemical examination of water, sewage, air, foods and beverages. One chapter is devoted to the calculation of diets, and contains a good example of a mess-sheet. There is a chapter on the methods for the bacteriological examination of water and milk, and for the isolation of *B. Typhosus* and other organisms from faecal discharges, etc.; and the procedure to be adopted in a case of food poisoning is explained. There are two appendices, one chemical and one bacteriological, and in the latter an ingenious method of performing a macroscopic Widal reaction is explained. The book is interleaved—an excellent feature in a book of this kind—and it is in every sense a handy volume.

ZEITSCHRIFT FÜR HYGIENE UND INFECTIO-
SKRANKHEITEN, Vol. LXIII., pp. 62. "Com-
parative Epidemiological Studies on Cholera
in Moscow and St. Petersburg." By Dr. Philip
Blumenthal (Moscow).

This is a very interesting account of the
behaviour of cholera in the two chief cities of
Russia during the last and the beginning of the
present century.

The author shows that in each city during the
last century there were roughly three epidemic
periods, which corresponded with the march of
the disease westward. During the first, which
occurred in the thirties and forties, there was
little to choose as to the prevalence in each.
During the second period, which took place in the
sixties and seventies, Moscow suffered somewhat
less than St. Petersburg, and during the third
period, which began in the nineties, Moscow
suffered considerably less.

In 1908, while good cases with 4,000 deaths
took place in St. Petersburg, there were only
sixteen cases in Moscow.

The author then goes into detail on the causes,
and shows that each reduction in Moscow was
coincident with an improvement in the water
supply and also the drainage, but especially the
former. At the present time Moscow, on the whole,
may be considered a well-watered and fairly
well-sewered town.

In St. Petersburg, on the other hand, there has been
little attempt at sanitary improvements. The water
is taken practically unfiltered from the Neva and
other open canals and waterways, in most of which
cholera bacilli have actually been demon-
strated. They have only one small and quite

inadequate and over-worked filtering plant for a
portion of the town. They are also without any
system of drainage or, indeed, modern sanitary
appliances of any sort. Various attempts have
been made to improve matters, but none of them
have been serious. Taken in all it would be
difficult to find in literature a more striking
example of the good effects of modern sanitation
than in the behaviour of cholera in these two
large cities.

DIRTY BREAD.—I have in other Annual Reports
alluded to the very casual manner in which bread
is protected from extraneous dirt. It is a matter
which may be verified in the streets of any town
on any occasion, that bread by being carried
about in baskets in which it is openly exposed to
all the dust which is blowing about the roads, by
being not infrequently dropped in the roads, and
hastily wiped on the hand or clothes of the
carrier, and so forth, is as regards the cleanliness
of the crust bound to be a matter of public concern.
I have communicated with the largest bread
companies in London, and those who have taken
the trouble to reply have admitted the importance
of delivering bread to the public in a cleanly state,
but beyond seeing that their vans and baskets are
kept clean, they take no precaution to ensure its
arrival at the table in a clean condition. It is
stated that bread cannot be put into a wrapper
while warm; again in large businesses, as soon
as it is cool, it must be loaded into vans for quick
delivery. It is further stated that it would require
a large staff and entail very great expense to wrap
each loaf individually in paper, and, finally, that
the public would probably not be prepared to pay
any additional cost for bread so protected. Of
the truth of some of these assertions I have very
serious doubts. Some firms, whose output it is
true may not be very large, do deliver bread to
the public wrapped in non-absorbent paper. A
man in the business, who has been engaged in it
for 33 years, tells me that every loaf which leaves
his shop (and the shop, I know, is one where a
by no means small trade is done in bread) is
wrapped in clean paper and tied up with string,
the paper being stamped with a small rubber
stamp. The cost of paper and string for this is
about fourpence per hundred 2 lb. loaves. This
gentleman tells me that he has very frequently
seen—what I suppose everyone else has seen—
children and errand boys carrying bread hugged
tightly against their clothes, the cleanliness of
which is open to question, and frequently allowing
it to drop in the streets. One cannot help thinking
that this simple measure of protection could be
carried out without the very serious trouble or
expense which it is alleged it would involve.—
*Annual Report of Dr. Meredith Young, Medical Officer
of Health, Marylebone.*

PROCEEDINGS OF THE SOCIETY OF MEDICAL OFFICERS OF HEALTH.

FOUNDED 1856.

RECONSTRUCTED 1888.

INCORPORATED 1892.

ANNUAL GENERAL MEETING.

THE ANNUAL GENERAL MEETING of
the Society of Medical Officers of Health
was held at the offices of the Society, No. 1, Upper
Montague Street, Russell Square, London, W.C.,
on Friday, October 8th, 1909. *Present:* Drs. E.
Sergeant, H. Cooper Pattin, A. Bostock Hill,
J. S. Tew, J. Tubb Thomas, F. E. Fremantle,
W. M. Hamilton, Charles Sanders, R. Dudfield,
S. C. Lawrence, W. G. Willoughby, A. E. Porter,
W. A. Bond, H. Manley, F. Vacher, T. H. C.
Stevenson, T. Strain, A. Greenwood, G. F.
McCleary, Wm. Butler, Herbert Jones, Joseph
Priestley, G. B. Millson, E. C. Seaton, John
Taylor, H. E. Armstrong, H. M. Richards,
A. Griffith, H. W. Beach and Mr. Whitaker, F.R.S.

DR. E. SERGEANT (retiring President) having
taken the chair, said, that before vacating his
position he desired to thank the members and
officers for their kind support and assistance during
his year of office, a period which he should always
look back upon with pleasure and pride. He had
already tendered his congratulations to the new
President, and trusted that he would have health
and strength to carry out his labours, and that he
would find them as pleasant as he had done, and
he felt sure that at the end of his presidential
career the badge of office would be transmitted to
his successor with added lustre. Dr. Sergeant then
invested Dr. Cooper Pattin with the presidential
collar and vacated the chair.

DR. H. COOPER PATTIN having taken the chair
thanked the members for the confidence they had
reposed in him, and said that, conscious as he was
of the high honour they had conferred upon him,
it would be his constant endeavour to merit their
approbation during his year of office.

DR. FRANCIS VACHER in proposing a vote of
thanks to Dr. Sergeant referred to the high esteem
in which the past President was held by medical
officers of health throughout the country.

DR. E. C. SEATON in seconding the motion said
that they all admired the ability and tact with
which Dr. Sergeant had conducted the business
of the Society.

The vote of thanks was carried by acclamation
and Dr. Sergeant expressed his thanks for the
compliment.

MINUTES.—It was resolved unanimously, that
the Minutes of the last General Meeting having
been printed and published in PUBLIC HEALTH for
November, 1908, be taken as read, be confirmed,
and they were duly signed by the President.

ACCOUNTS AND BALANCE SHEET.—On the motion

of the hon. treasurer, seconded by Dr. A. Bostock
Hill, it was resolved unanimously, that the
Accounts and Annual Balance Sheet of the Society
to September 30th, 1909, as submitted to the
members, be received and approved.

ANNUAL REPORT OF COUNCIL AND OFFICERS.—
Resolved that the Reports of the Council and
Officers, as printed in PUBLIC HEALTH for
October, 1909, be received and approved, and
that the following Report of the Hon. Treasurer
as submitted to the members be received and
approved, and printed in the next issue of PUBLIC
HEALTH together with the report of the Auditor.

REPORT OF THE HON. TREASURER.

GENTLEMEN,

I have the honour to report that, mainly
owing to the steadily increasing membership of
the Society, the financial position of the Society
at the end of Session 1908-9 may be considered
satisfactory. At the same time it is necessary to
bear in mind that the Trust Funds of the Society
have depreciated considerably of recent years.
This has necessitated the formation of a Special
Fund for Contingencies, which figures in the
Balance Sheet for the first time this year. The
sum of £50 has been set aside from the balance,
which has been arrived at after the deduction of
2s. 6d. per member for branch expenses, cheques
for which have already been forwarded to the
Hon. Treasurers of the Branches in accordance
with Article 13 of the Society's Articles of
Association. There remains a net balance of
£150 18s. 9d. for the consideration of the Council
in connection with the travelling expenses of
members attending Council Meetings and Special
Committees of the Council. Basing these on the
attendances as ascertained from the Society's
Attendance Book, and without any allowance
whatever for the Members of the Home Counties
and Metropolitan Branches, they result as
follows:—

Third-class fares ...	£145 0 3½
First-class fares ...	263 12 3

It is obvious that the Funds of the Society will
not permit of the payment of the latter.

As the Balance Sheet for the previous Session
covered a period of fifteen months, a comparative
statement would have no value. The following
amounts are due to the Society:—

Reprints ...	£34 15 4
Publishing ...	24 4 0
Sundries ...	22 19 2
Advertisements ...	130 0 0

The following amounts are owing by the
Society:—

Page and Pratt (1907), Ltd. £79 18 1
Rent for September Quarter 43 15 0
Hon. Solicitor ... 2 12 6

I have the honour to be, Gentlemen,

Yours obediently,

G. B. MILLSON, Hon. Treasurer.

AUDITOR'S REPORT.

GENTLEMEN,

I have to report that I have examined the Balance Sheet and Revenue Account of the Society of Medical Officers of Health for the year ended September 30th, 1909, with the Books and Vouchers produced to me, and I have obtained all the information and explanations I have required, and in my opinion such Balance Sheet is properly drawn up, so as to exhibit a true and correct view of the Society's affairs according to the best of my information and the explanations given me and as shown by the Books of the Society.

Having regard to the considerable depreciation in the market value of your investments and to the dilapidations which will be incurred under the lease, it has been considered advisable to set aside £50 to be invested in the names of the Trustees in Consols. I am of opinion that this reserve should be considerably increased.

Depreciation at the rate of 5 per cent. per annum has been written off furniture.

I have verified the Investment inscribed with the Bank of England.

During the year sixteen Finance Sub-Committees have been held, and for each meeting a statement of the cash balance has been prepared by me.

Yours faithfully,

JOHN HAMP,

October 6th, 1909. *Chartered Accountant.*

ELECTIONS.—The following candidates, who had been duly nominated, were balloted for, and the PRESIDENT declared them duly elected Fellows of the Society:—

A. G. Anderson, M.A., M.D., D.Sc., D.P.H., Town Hall, Rochdale; George S. Banks, M.B., D.P.H., City Hospital, Aberdeen; R. C. Bartlett, M.R.C.S., L.R.C.P., Romney, Hants; R. T. Brown, M.D., D.P.H., Captain R.A.M.C., care of Messrs. Holt & Co., 3, Whitehall-place, S.W.; Edward Burnet, B.A., M.B., B.Sc. (P.H.), "Dalblair," Lillington-road, Leamington; H. M. Cargin, M.B., D.P.H., Corporation Hospital, Bootle; D. A. Carruthers, M.D., D.P.H., Aylesbury, Bucks; M. L. Dhingra, M.D., D.P.H., Health Offices, Amritsa, India; James Dundas, M.B., D.T.M., D.P.H., 33, Canterbury-road, Ashford, Kent; A. Gibb Glass, M.A., M.B., B.Ch., Burnley; A. E. Harris, L.R.C.P., and S. Ed., Town Hall, Islington; J. L. Loudon, M.D., D.P.H., Hamilton, Scotland; J. F. Macdonald, M.B., D.P.H., District Offices, Hamilton; C. R. P. Mitchell, M.D., The Chase, Malvern; Elizabeth N. Niel, M.B., B.Hy., D.P.H., 5, Park-terrace, Sunderland; G. E. Oates, D.P.H., 88, Carlton-mansions, Portsdown-road, W.; W. G. Parker, M.B., D.P.H., 2, The Avenue, Taunton; A. B. Raffle, M.D., Westoe Village, S. Shields; Arthur Seilers, M.D., D.P.H., 3, Linden-road, Didsbury, Manchester; Wm. Thyne, M.A., M.D., C.M., Tudor House, Barnet, Herts; S. B. Walsh, B.A., M.B., D.P.H., Town Hall, Merthyr Tydvil; R. H. Wilshaw, M.B., D.P.H., Elmfield, Bulkington-avenue, Worthing; and A. H. Wilson, L.R.C.P. & S., D.P.H., Greswold House, Yardley, Worcestershire.

THE HON. SECRETARY read a list of nominations for membership of the Society.

ELECTION OF AUDITOR.—On the motion of DR. DUDFIELD, seconded by the HON. TREASURER, it was resolved that Mr. John Hamp, chartered accountant, be re-appointed auditor for Session 1909-1910 at the same fee as before.

PRESENTATION OF PORTRAIT.—DR. H. E. ARMSTRONG said that it afforded him very great pleasure to act as the representative of the Scottish Branch in connection with the presentation of the portrait of a so highly-esteemed former president of the Society as Dr. McVail. He reminded the members of his earlier works, and in particular of his historical pamphlet on vaccination, and said that Dr. McVail held a proud position in their profession. He felt it a very great honour to be allowed to unveil the portrait, which he felt sure would be valued by every member of the Society. (The portrait was then unveiled amidst applause.)

THE PRESIDENT said that he accepted the portrait on behalf of the Society with the greatest pleasure. Dr. McVail's position was one that they were all proud of, and he was quite sure that no portrait would be regarded with greater pleasure by the members of the Society than that which had just been presented. It was indeed an admirable piece of work, and on behalf of the Society he thanked the Scottish Branch for their contribution to the gallery of former presidents of the Society.

THE PRESIDENT then delivered his presidential address on "State Standardization of the National Life."*

On the motion of DR. SERGEANT, seconded by DR. A. BOSTOCK HILL, a hearty vote of thanks was accorded to the President for his interesting and valuable address.

THE ANNUAL DINNER.

THE Annual Dinner of the Society took place in the evening in the Victoria Hall of the Criterion Restaurant, Piccadilly Circus. Previous to this function there was a reception in the ante-chamber when the President, Dr. Cooper Pattin, M.A., who wore his scarlet robes as a Doctor of Medicine of Cambridge, and Mrs. Willie Buchanan (of Sydney N.S.W.), niece of the President, received the guests, who thus had an opportunity of pleasant friendly intercourse, while a string orchestra in an adjoining room played a selection of popular and classical music.

At the dinner, which was very handsomely served—the tables being prettily decorated with brilliant flowers. The President occupied the chair, supported on the right by Mrs. Willie Buchanan, Sir Robt. L. Morant, K.C.B., Secretary to the Board of Education, the Very Rev. Dr. Russell Wakefield, Dean of Norwich, Sir James Crichton-Browne, F.R.S., Surgeon-General.

* Published on page 39 of the present issue.

Evatt, C.B., Dr. and Mrs. Newsholme and Mr. Sidney Webb, L.C.C.; and on the left by Dr. Sergeant (past President), Mrs. Dakin, Mr. Alderman Dakin, J.P., Deputy Mayor of Norwich, Mr. Searles-Wood, F.R.I.B.A., and Dr. Newman. Among those present were Canon Foakes-Jackson, D.D., Dean of Jesus College, Cambridge, Dr. Hector Mackenzie, Dr. Pierce, Dr. Fremantle, Mrs. Fremantle, Mr. W. Gaunt, Mr. H. Craske, Dr. Lawrence, Miss Lawrence, Mr. G. B. Tomes, C.E., Mr. J. Syers and Mrs. Syers, Dr. Crookshank, Mrs. Crookshank, Mr. E. Hazelhurst, Dr. Taylor, Dr. Armstrong, Dr. Butler and Mrs. Butler, Dr. Beach and lady, Dr. Bygott, Dr. Beale, Dr. Thresh, Dr. Richmond, Dr. McCleary, Dr. A. E. Porter, Dr. Millson and Mrs. Millson, Dr. Gibson, Dr. Willoughby, Dr. Lyster, Dr. Snell, Mr. J. Hayles, Dr. W. A. Bond and Mrs. Bond, Dr. Kenwood, Dr. C. Porter, Dr. A. W. Harris, Miss Kate Nichols, R.E., Mr. W. Buchanan, Dr. Turner, Dr. Collins and Miss Collins, Dr. Coutts and Mrs. Coutts, Dr. Hamilton, J.P. (Eccles), Dr. J. Priestley, Mrs. Priestley and Miss Priestley, Dr. Herbert Jones and Dr. Carruthers.

Grace was said by the Rev. Canon Foakes-Jackson, D.D.

After the tables had been cleared,

THE PRESIDENT said:—"Ladies and Gentlemen,—I have the privilege of proposing that you drink to the health of that honorary Fellow of the Royal College of Physicians and also of the Royal College of Surgeons, Edward VII., of these renowned and venerated islands, and of all the British Dominions King, Emperor of India, and First Servant of the Commonwealth, over all persons and in all causes within these Dominions, supreme. I give you His Majesty the King!"

The toast was drunk with musical honours.

THE PRESIDENT said he was sorry to apologize for the unavoidable absence of Mrs. Sidney Webb, who unfortunately could not be with them that evening on account of illness. He had also received expressions of regret for absence from Lord Rosebery, Mr. John Burns, President of the Local Government Board, the Rt. Hon. Mr. Walter Runciman, President of the Board of Education, Sir Donald McAlister, the President of the General Medical Council, Sir Douglas Powell, Sir Clifford Allbutt, Sir Wm. Church, Bart., Sir Henry Norris, Dr. Tatham, the mayor, sheriff and town clerk of the City of Norwich, and Sir George White and Mr. Alderman Morse, J.P., Chairman of the Health and Education Committee of the Council of that city.

THE DEAN OF NORWICH on rising to propose the toast of "Health and Education Authorities," was received with prolonged cheers. It was, he said, from the Health and Education authorities that they, medical officers of health, derived their

sustenance, although many of them thought, perhaps in an exaggerated sense, that they were stony-hearted stepmothers. It must be permitted him to say how complimented the Society would feel in knowing that this was the first occasion, apart from the City of Norwich and the Church Congress, that he had taken part in any public function since his introduction to the Deanery of Norwich. That was a trying introduction, but he hoped in a few remarks he had to put before them, he would at any rate get a certain amount of sympathy, which would do away with the terrors they might have, that he intended to inflict upon them a long speech. In proposing this toast, one wondered whether it was intended that he should begin with the Great Central authorities. As regarded the Education Authority, represented by his friend on his left (Sir Robert L. Morant), he had a very wholesome dread of that gentleman, because if he attempted to tackle him, mentally or physically, he was afraid he would be in a very bad way. However, he believed that there was growing up in the Education Department, a much greater realization than formerly, of the value of those who worked with them up and down the country with the Local Authorities, and that they did honestly feel that they had a close association with one central association. He knew that there was a better understanding of, and a more real good feeling towards the Local Authorities than, he believed, inspired the Central Authorities before. Now, with regard to health and education, here they had, as it seemed to him, two great ministries of citizen life, without which citizen life had no reality, for citizen life would be imperfect unless there were a combination between them. It had been attempted in the most elaborate way possible to cultivate the mind, but unless they were intensely careful also to cultivate the health of the body it was impossible to call any person educated. Therefore, any one who considered the subject, must feel that there was an increased link between the two authorities, so that in many cases the same authority should look after both. It seemed to him that, of recent years, the whole attitude of these authorities had changed. They knew quite well that in olden days the personal convenience of the authority, and of those who composed it, had a great deal to do with the conduct of their business; but nowadays the welfare of the particular district in which they lived, or the town in which they had a certain share in its government, was more seriously considered than formerly, and he ventured to say, as one who had taken his share in local government as mayor, that local patriotism on the part of the Local Authorities was a great safeguard, and that if they had that in greater measure there would be a higher emulation to work for the good of the community. After all it was a grand thing to feel

that that spirit was influencing our local authorities. He noticed that this toast was to be responded to by one whose better half, should he say, had had a great deal to do recently with the growing consciousness in the public mind of the inter-relation of health and education. Of course the Minority Report of the recent Royal Commission on the Poor Law had been much abused, but in that Report they had shown that it was their desire to assist those who had the extremest difficulties to deal with in regard to the life of the children of the poor. They desired to hand those children over to the Education and Health Authorities who so admirably discharged the duty of looking after the health of our citizens. This recommendation arose from the fact that they had evidence before the Commission which proved that however increasing the duties which fell upon these two authorities, what they were seeking to do was their full work and not part of the work committed to them. Every authority has its discouragements. He was trying to think what was the greatest discouragement that faced the average Education Authority who tried to do its full work for those to whom it ministered. The greatest was, generally speaking, a want of understanding on the part of those with whom they laboured. But here again should come in education, at any rate to be a help, because the more they taught their people—educated their people—the more they saw, and the more they would see, the value of what the Health Authorities insisted upon. And so there was action and reaction. There could be no perfection unless both were combined. They intertwined. Take the subject of education. In past days, it was rather unusual to consider that the health conditions of the persons taught had anything to do with teaching. He remembered in his early days, as a clergyman, when he was visiting a large school, that the Master of the Boys' School told him, almost with tears in his eyes, how impossible it was for him to teach children who came without proper food, without which they were incapable of taking in instruction. In the past days these things were treated with indifference. He remembered in his own experience in past days, that things were permitted in the great Public Schools of this country in regard to health, or he should say want of health, that would not be permitted for a single moment now in any elementary school. The improvement in the great Public Schools had, he must admit, gone on more slowly than in the elementary schools. The nation was learning in this respect, and if the health and education authorities received support from the public, it must be of the greatest encouragement to them to persevere in their good work in season and out of season, of building up healthy and sane citizens. They heard a good deal in these days

of the want of grip and stamina and earnestness on the part of the English people. Well, that depended in great measure on whether they educated the people to realise that they would get better results, and be better citizens, if it were seen to that they must grow up in body as well as in mind. It was because he believed that the health and education authorities were doing this work heartily and well that he had pleasure in proposing this toast. With regard to this very matter of the officials, he did not know whether he was trenching on very dangerous ground, but he must say that of all the nonsense that was talked of up and down the land, he knew of no greater than that it was a great mistake to let officials have too much power. If they had skilled people—people whose faculties from their early days had been trained in a particular direction—it was absurd for an amateur to turn round and say that he knew better than the expert. That was not his state of mind. He would place himself in the hands of his expert friend on his right (Sir James Crichton-Browne), because he realised that his friend knew his business best; that he did not know his friend's business, but might safely rely on his friend's advice. He believed that the officers of health and education were the most earnest people in the land, and he was always prepared, from the experience of his own life as a public servant, to say that he knew nobody in whom he would more readily confide than these officials. He should like to say with what pleasure he coupled with this toast the two names of the Deputy-Mayor of Norwich and Mr. Sidney Webb. In the first place, the Deputy-Mayor of Norwich represented the authorities of the greatest city in the land. They might agree with him in that or not, but if they did not agree with it, they were mistaken. He had been there for three days, and he ought to know. He could assure them that Mr. Alderman Dakin represented the Authorities of the very kindest City in the land. It had taken a poor stranger in its arms and it was looking after his health and education. Of course, as a former Mayor himself, he recognised the position of the chief magistrate of any City as one that was fraught with very great possibilities of service to that particular place. With regard to Mr. Sidney Webb he did not know what to say. If he were to speak personally, he must say that this was true, that there was a firm, composed of Mr. and Mrs. Sidney Webb, and that they had a commercial traveller in the Dean of Norwich. They sent the unfortunate fellow up and down the country, putting before the country the wares they had got together, and he had got to say how admirable these wares were, and that he had invented them himself; but whatever value these wares had was due to these two people. If he were to speak of Mr. Sidney Webb without his

own personality coming in, except as one of the general public, as one who was a public servant, he would say that that gentleman had shown as deep a knowledge and determined grasp of details as any person who could be named throughout the length and breadth of the land, as one who was animated by great ideals, and who, he hoped, would realize these details in the future. He did not know any two individuals with whom he could more fitly and worthily couple the toast, and he gave it with all his heart.

The toast having been drunk with musical honours.

MR. ALDERMAN DAKIN, Deputy-Mayor of Norwich, in responding, said that he appreciated very much—and he spoke in behalf of his wife as well as himself—the high honour which the Society of Medical Officers of Health had done to Norwich in asking them to come to that distinguished gathering of men of light and leading, who were the very elect of preventive medicine, and whose motto must ever be, "*Salus populi est suprema lex.*" His pleasure was somewhat discounted by the fact that his personal friend, Sir George White, could not be present to respond to the toast, than whom there were very few who could speak on education questions with a greater amount of ability, experience, and force. At the same time, he yielded to no one in the advocacy of the two subjects to which the Rev. Dean had referred—the education and health of the people. It seemed almost like familiarity on his part, as a humble layman, to speak in the presence of such a distinguished assembly, but it had always been his good fortune to have been associated with the President. He had had, indeed, the distinguished honour of having installed the worthy Chairman in the office of Mayor of Norwich, which he now held, and since that time there had been a very tender association between them. The two subjects of health and education were so intertwined and intermixed one with the other that they could not possibly estimate too highly the efforts that were made to advance them. What was wanted was that the children should be fed in order that they might be fitted to receive the education they desired to impart to them. Before sitting down he should like to say that he remembered attending a meeting of a Health Congress in London when His Majesty the King, then Prince of Wales, made an admirable speech, which he had never forgotten. His Majesty, alluding to the health and education of the people, and referring to zymotic diseases, said:—"If preventible, why not prevented?" Agreeing with that sentiment, he cordially responded to the toast.

MR. SIDNEY WEBB said that in being given the honour of responding for "The Local Health and Education Authorities," he was occupying somewhat of a false position. Though he had for

nearly eighteen years been a member of what was the greatest Education and Health Authority in the world, he hardly felt that he could respond with any cordiality for the action of its present majority. Just at present the Education Committee and the Health Committee of the London County Council were not free to carry out their duties in the way they thought right, but had to go cap in hand to the Finance Committee to beg permission to do even what was urgently necessary to educate London, or to keep its people in health. That cloud would, however, he was convinced, soon pass away, and the work would go forward. The Dean of Norwich had pointed out, what no one else had noticed, that the Local Health and Education Authorities and their professional staffs had been paid a high compliment by the Poor Law Commission. That Commission included, he believed, scarcely any member of a Health Authority or an Education Authority. Yet the Minority Report proposed to intrust to these Authorities the greater part of the work now done by the Board of Guardians, for, with regard to two-thirds of all the paupers the dominant need was not relief, but either nursing or schooling. By common consent the present Poor Law system was doomed, and the feet of the young men were already at the door—perhaps even in this room—who were to carry out the corpse. And for this there was a significant reason. His wife had told him—he must be allowed to explain that he was not himself a member of the Poor Law Commission—what a change had come over the spirit of the Commission when the medical officers of health began to pour in their evidence. Up to that point, it had been a question of how to deter people from applying. The medical officer of health brought in the ideas of searching out cases, of insisting on treatment at the incipient stage, of regarding even one "missed case" as an evil and a public danger; and the Commission came to see that what was wanted was not the relief of destitution but its prevention. It was this new principle, learnt from the medical officers of health, that the Minority Report worked out into a complete scheme. He could not help feeling that, whatever might happen this session or next, this principle of preventing the very occurrence of destitution must prevail with the nation. If so, it meant that we had for ever done with, not the present Poor Law alone, but with any Poor Law, or system of relieving destitution as destitution, whether masquerading as public assistance or any other name. No Poor Law Authority, whatever its title or its composition, could ever prevent the occurrence of destitution, because it could not do anything until destitution had occurred. No one knew better than a medical officer of health that the only way of preventing

was to arrest the operation of the specific causes, either before the appearance of the disease, or at any rate in its most incipient stage. Thus the prevention of destitution due to disease, child neglect, mental defectiveness or unemployment, was obviously the task of the Health, Education, Lunacy, and Unemployment Authorities respectively. What these several Authorities failed to prevent, they (and not any Poor Law Authority) would have on their hands to maintain and cure, just as was now the case with small-pox. These were critical times for medical officers of health. Those who clung to the old notion of relieving destitution rather than preventing it, were already talking of what they called the encroachments of the Health Authority and the Education Authority. It was a significant thing that the Majority Report actually decided to retain the phthisis patient in the Poor Law, and thus exclude this disease in England from the sphere of Public Health, and to reclaim for the Poor Law the medical treatment of children at school. It had even been suggested by high official authority, that the medical officer of health should be stripped of his isolation hospitals and of his bacteriological laboratory, and relegated to what these people seemed to think was his proper position as a sort of superior sanitary inspector. The Majority Report for Ireland actually recommended the merging of the whole Public Health services in the Poor Law. On the other hand if the nation should prefer spending its money in the prevention of destitution rather than on its relief, the health department would come to overshadow all the rest of local government. Meanwhile, however, the common enemy was the maintainer of the *status quo*, whether inside the Local Government Board, or outside. "Great is Diana of the Ephesians!" Yet we could not go on for ever letting in any one year hundreds of thousands of people sink for the first time into the morass of destitution. By what roads had these unfortunates travelled down to this morass? Down the road of preventible sickness went annually uncounted thousands of people; and at the bottom of the road, on the very edge of the morass, stood the poor law doctor and the workhouse infirmary, lavishing millions worth of medical treatment on patients in whom destitution had set in, too far gone in disease to be fit for anything but burial. Why not hand the job over to the authority and the medical service which could stop them at the top of the road, at the very beginning of the disease, long before destitution had set in? Down the road of neglected childhood there gravitated or graduated into unemployment and unemployableness, and eventual destitution, hundreds of thousands of young people. At the bottom, at the very edge of the morass, stood the stoneyard and the able-bodied workhouse, available only when the disease had

gone so far that destitution had set in. Why not hand the job over to the Local Education Authority which could stop these young people at the top of the road? Down the road of unemployment went, too, tens of thousands of men of all sorts, for whom, when destitution had set in, and the men were demoralised and ruined, the Poor Law found maintenance in virtual idleness. Why not hand the job over to an authority in this case, it must be a national authority for the able-bodied unemployed—which would stop the men at the top of the road, and deal with them at the very moment they became unemployed, without waiting for them to become destitute? This was really the gospel which the medical officers of health had been preaching in their own sphere. They had been hampered in all sorts of ways; but they had done enough to show what potentialities there were, and that they might be entrusted with the whole of the task of dealing with the sick. It was because the medical officers of health had been the first missionaries of this gospel, without quite claiming the full share of the credit to which they were really entitled, that he was glad to be present that night. It was very largely to them that we had to look for the success of the scheme formulated in the Minority Report. He could not help thinking that the medical officers of health were doing already more than any other public officers to regenerate England—to make England even a more productive nation than it would otherwise be.

THE PRESIDENT called upon Sir Robert L. Morant, K.C.B., Secretary to the Board of Education, to propose the next toast.

SIR ROBERT MORANT, in proposing the toast of "The Society of Medical Officers of Health," claimed that it was the toast of the evening. He was both sorry and glad that it had fallen to him to propose it. He was sorry, because being a Civil Servant he could not make an appropriate formal speech, but could only, if they would permit him to do so, "think aloud"; he was glad, because in a personal and not an official capacity he was very pleased to say a little on the new relation which had come into being between Education and the Public Health, and between Education Officials and Public Health Officials. There had been in his view a really big and new departure in that connection recently. Probably no development in Public Health during the last few years had been of greater importance than the new work of medical inspection of school children. School hygiene had become a permanent part of our Educational System.

If, then, he might be permitted to think aloud he would remind the Society of a few points respecting this subject. In the first place there had been a linking up between Health and Education. This linking up between the two services was

needed both centrally and locally. Centrally, as they knew, the Education Department when it required a Chief Medical Officer came to that Society and selected for that post a medical officer of health, in the person of Dr. Newman, whose admirable work for the Board, for local authorities, and for the country had fully justified the choice and the policy. To link up the two services locally was not, he knew, always so easy a matter, but it had been, it must be admitted, very successfully grappled with. He found that up to date there were 307 out of 328 Local Education Authorities in England and Wales which had appointed School Medical Officers who had been "recognised" by the Board of Education. In 224 of these areas the school medical officer was also medical officer of health, and in the remaining areas an increasing degree of co-operation existed between the School Medical Service and the Public Health Service. He had heard with satisfaction that the Society had opened its doors to the school medical officers, and so had the Board of Education in the appointment of Dr. Crowley. Up to the present time the number of assistant school doctors numbered about 750, of whom 68 were women. It might, he thought, be said that the system had now passed beyond the initial stage, and was working both satisfactorily and efficiently. Especially satisfactory was it to note that in the large majority of areas effective co-operation had been secured between the school medical officer and the medical officer of health. Secondly, he had noted with much interest that the Society had this year extended their borders so as to include the other sex. In this matter, too, the step had also been taken centrally, for the Board of Education were fortunate in obtaining the services of Miss Janet Campbell for their medical department; she had done admirable work, and had given renewed support to the view that women's service is of the highest importance and value in this important department of public work. He had been additionally glad to know that some 68 of the school doctors now at work in the country were women. Lastly, the Board of Education had come into close touch with the Local Government Board in various ways as well as in the happy co-operation which existed between Dr. Newman and Dr. Newsholme.

A second thought which he desired to express was that this new movement marked a stage in the development of a public conscience in regard to preventive medicine. The public was now beginning to realise that prevention was not only better than cure or palliation, but that concomitantly with that every individual owed a duty to the community in the matter of his own health. This has been admirably stated by one of the most successful of the medical

officers of health in this country, Dr. Newsholme, now of the Local Government Board, who said to the Royal Commission: "The form in which medical aid should be given should be such as constantly to enforce on the minds of the patients their duty to the community and to themselves in matters of health." That was a new conception which might be fruitful of great results. Even from an economical point of view people were beginning to see that palliation was enormously expensive, and that prevention in the long run cost less and produced more valuable results.

But another thought which was often uppermost nowadays was that prevention interfered with the freedom of the subject, and this kind of organisation by the State was declared to be Socialism. As far as education was concerned we had had thirty years' experience, during which time the education of the people had been provided out of public funds, and in a sense such free education was State Socialism. It was impossible, Sir Robert Morant urged, for the individual to do some things as effectively as the community could do them. For such things as the provision of water supplies, gas, drains, locomotion, education, no satisfactory provision could be made unless the people agreed to do it jointly. It was occasionally worth while the members of the Society drawing the attention of their councils to the philosophy of this position rather than allowing them to be misled by the term "Socialism." The fact is that things which are luxuries in one age become necessities for most people in the next age; and what have been necessities in one age come to be obligations in the next age; that is to say, they come to be regarded as things which must be made obligatory on those who are unwilling to regard them as necessary.

This process may be seen in many matters, and particularly as regards Education; and we are now coming to see the third stage being reached as regards health. For it is coming to be recognised as an "obligation" to avoid needless ill-health, and that one of the functions of the State should be, as far as possible, to prevent people getting ill when they need not: at all events as regards illnesses which are easily communicable to others and thus directly impair the welfare of the community.

Moreover, we had now to think of the English people in competition with other races, and if we neglected the health of the race—if we deliberately left open the three roads to destitution of which Mr. Webb had spoken, and not only left them open but almost tempted people to slide down those roads—we should lose in the racial competition of the world. It was true that we could not prevent people falling ill by Act of Parliament, but what was necessary,

and what could partly be done by Act of Parliament, was to remove the external conditions which made it impossible for them to be healthy. That, it seemed to him, was the great part which this Society should play in the future.

In conclusion, Sir Robert Morant urged that a new situation had been created by linking up Education with Public Health, each of which had formerly been hedged round in its own area. The linking up had been accomplished, but it now remained to prove that this new relation could be harmoniously worked, for if that could be done there was a new region of scope for the energies of the members of the Society in the highest degree worth cultivating.

Sitting as he did at the centre, he was bound to say that a strong impression had been borne in upon his mind that really important national results would be secured if this relation between the two services could be kept on harmonious and reasonable lines. To secure this result, however, it was necessary not to exasperate people by exaggerated statements; and though there might be short cuts to reform, the best way of attaining real improvement was to interest the people themselves in the development of their own powers and will through the local authorities. Therefore, if he might, he would urge the members of the Society to be willing to advance slowly, persuading rather than attempting to force the authorities whom they served, and co-operating together rather than claiming that either Education or Health should receive chief consideration. Short cuts and hasty action often delayed progress; if they would proceed patiently on the lines suggested the desired goal would be attained in the long run. In the hand of the medical officer of health largely lay the future of the race. It was by their efforts that they could remove the evil conditions which surrounded so many of the rising generation and lessen the evil effects which followed them. The Board of Education owed much to the labours both of medical officers of health and of school medical officers, and he was glad to think they could join together in this new crusade working for the great cause of National Education.

THE PRESIDENT, who was received with cheers when he rose to respond to the toast, said that Sir Robert Morant was quite right when he stated that one of the great reasons why he was so delighted to be present that evening was that his visit was not made in an official capacity as representing the Board of Education, but as one of those interested in the hopeful results of linking-up and co-ordinating the health and education services of the country. They were all specially pleased with the last memorandum issued by the Board of Education—he meant that dealing with physical education of the children in our schools; and it was the fact of his exposition of the extension

of the linking-up of health and education in the country which made the speech of Sir Robert Morant that evening so important. It was this new linking-up which members of their Society must show themselves competent to deal with. They had still many questions to cope with. They had to stimulate the inspection of children prior to school attendance; and in any future public school edict that hiatus would have to be filled up; and he believed that it would be filled up by members of their own calling. That seemed to be the opinion of Sir Robert Morant, and they fully appreciated the wisdom of his advice, but they had at present no machinery for discovering the injuries or illnesses from which the children suffered, and, therefore, they were hindered in eradicating and preventing those injuries and illnesses. That was a question which would have to receive the very closest attention. Personally, he lived in the hope and expectation of seeing medical inspection, and the work connected with the inspectorial work by the officers concerned with the treatment of the poor throughout the kingdom co-ordinated and affiliated. To put it on the lowest ground, it was of vital importance to the race in their, he hoped, peaceful competition with other races, to have everyone of its members in as vigorous health as possible. Mr. Sidney Webb, who characterised himself as only one member of the firm, had been very generous in his recognition of the good work done by the Society and its members. They were all grateful for that in these days of unearned increment. One of his own great-grandmothers was a Welshwoman, and the Society of Medical Officers of Health had a very strong claim to receive a very large amount of the unearned increment of the wealth of the nation. Sir Robert Morant had spoken of stimulation in the direction of the collective conscience of the nation and of the creation of a Civic Bushido, a communal conscience, to whose Bar they could bring all their social activities, and receive judgment. It seemed to him that the inevitable result of that would be that whenever there was a conflict between the individual and the community it should be the individual who should give way to the community, the class to the nation, the family to the race. The function to which they had to look forward was that as medical officers of health they should be regarded as the official standardizers of the public health. And if they were to take a function so high as that they must take a large and comprehensive view of all the elements of such a healthy nation. They should not be content to concern themselves as to what was best for themselves or their own particular district; but, as Wesley said, he took the whole nation as their province, and they should become preachers of the gospel of hygiene. It was with

that ideal in their minds that they thanked Sir Robert Morant for having proposed the toast, and, speaking on behalf the Society—and very certainly so far as he himself was concerned—he maintained that these were the animating principles which had always guided his official life, and he hoped always would.

DR. SERGEANT, ex-President, in proposing "Kindred Societies," said that they must all have been delighted with what they had heard from the lips of Sir Robert Morant, and they appreciated the important work he had done in linking up the health and education services of the nation. It was always a delight to hear Mr. Sidney Webb, and he had listened with pleasure to the address which Mrs. Sidney Webb had given to the Society. At the same time many of the questions discussed were idealistic, and would only affect legislation to be passed in the course of time. Many gentlemen who had spoken were not aware of the difficulties still connected with elementary sanitation. They had been fighting for many years these questions. He had been a sanitary officer since 1874, and he had had to fight the question of pure milk which was not now the fashion. But it was a matter that affected the lives of all young people. The filthy condition of the cow-sheds in the country, and the character of the people engaged in the milk trade were simply deplorable. Medical officers of health ought to have the power to see that the milk supply was entirely free from danger. Then the housing of the people in the country districts was the same as it was thirty years ago. It ought to be dealt with, and he was glad that there was now a Bill before Parliament to deal with this all-important subject. Medical officers of health ought to have more authority than they had to deal with the sanitary condition of the houses of the people at the present time. He quite agreed with the aspirations of all the gentlemen who had spoken, but the elementary conditions of sanitation should first be put right. That was what was of pressing importance. Gentlemen of the highest position connected with kindred societies were present that evening, including Sir James Crichton-Browne whose words were listened to throughout the country with the greatest respect, Surgeon-General Evatt the President of the Poor Law Medical Officers Society, which he hoped would soon be intimately associated with their Society, and Dr. Newsholme, their respected friend, for whom they had the deepest affection, for he was a medical officer of health who knew all their troubles. They felt proud of him as president of the Epidemiological Society, and Mr. Searles-Wood who was president of the Council of the Royal Institute of British Architects, and Mr. Barnes, President of the Sanitary Institute which had done most valuable work

in connection with sanitation for the past thirty years. He begged to propose "Kindred Societies."

SIR JAMES CRICHTON-BROWNE said that in responding to this toast he wished to prevent any misinterpretation of a slight personal allusion made in the course of the evening by the Dean of Norwich. The Dean had said that he had never consulted him as an expert. He could not conceive the possibility of that. He did not know of a stronger, clearer, abler, better-balanced mind than that which the Dean was carrying to the capital of East Anglia. Lord Rosebery, in that brilliant bi-centenary speech which he delivered at Lichfield, said that Dr. Samuel Johnson was born scrofulous, was half-blind and half-removed from madness. That was quite true; but the question was whether he was born so. His impression was that Dr. Johnson's infirmities were due to the fact that there was no medical officer of health at Lichfield. Medical officers of health, and especially general practitioners, ought to be very careful of the type. They would have to be concerned not so much with individuals as with the mass, for amongst the mass there lurked the special genius and if they could by their sanitary labours safe-guard and prevent the premature extinction of such a genius they would confer a great benefit on the world. But it was not on these benefits that they rested their claim to public recognition. Their immediate claim to that was that through their labours there was a rising appreciation of the importance of the services they were rendering to the country—an appreciation not so high as it ought to be but an appreciation which would lead to a readjustment of the conditions and terms of the offices which they held and such permanent conditions, such adequate remuneration as would greatly enhance their position. He did not think there was a just conception of the far-reaching effects of their labours, especially in the direction of a diminishing mortality due to local sanitary improvement. That must be discovered by the discerning eye in very unsuspected quarters. He must say that in his own department and that of kindred societies, the effects of their work were evident. On January 1st last there were 129,000 lunatics in England and Wales, to say nothing of the semi and demi-semi lunatics scattered throughout the general population. That was a very serious state of affairs; and a very heavy and growing burden on the community for the number of lunatics had increased last year by 2,700. But that burden would have been far heavier and more grievous but for the exertions of the medical officers of health in furthering local sanitation. It was alcohol which loomed in the public mind in connection with insanity. There was the wildest exaggeration in regard to that on

the part of their teetotal friends, but large as the proportion of lunatics was caused by alcohol, a larger proportion still was caused by insanitation and disease. In every asylum in this country, besides the alcoholic lunatics, there were a large number of patients who were mad as a sequel to typhoid, meningitis, influenza, tuberculosis or other preventible diseases contracted by contagion. He noticed that last year out of 11,000 cases in one asylum twenty-three were due to puerperal fever, 536 to influenza, 438 to starvation and 1,003 to contagious diseases. There was a large number of cases which could be traced to preventible causes, but there were also a large number of cases due to preventible diseases which could not be traced. The moral of all was, that they must have no preventible disease which they could possibly avoid; and second, that they must strengthen the hands of the medical officers of health in the beneficent work in which they were engaged. Their Society were leaders; they had achieved remarkable victories in the past in connection with the prevention of preventible diseases, insanity and even crime. The Poor Law Commission attributed a large increase of insanity to unemployment, which really meant parish starvation and innutrition. It seemed to him that this chronic unemployment was very disastrous to the general health. That was a question for our rulers, and they should point out the disastrous consequences that followed from innutrition. On behalf of the Medico-Psychological Society, he looked with the greatest admiration on the work which this Society was accomplishing. He trusted that they would not become too much specialists, but always keep in touch with the main profession and with the kindred societies. He should regret to see the Society's work cut off from hospital work, school work, sanatorium work, tuberculosis work of various kinds, and relegated to sanitary inspectors' work.

SURGEON-GENERAL EVATT replied on behalf of the Poor Law Medical Association. He was, he said, also a surgeon-general in the Army, and he could say that the Royal Army Medical Corps were the preventive officers of the Army. The lesson of the Army was a lesson full of optimism and betterment. The increase of temperance in the Army was because the men were better lodged, better paid, and better fed than they were formerly. And in consequence of their better health there was greater sobriety, greater intelligence, and a greater demand for knowledge. What they had done in the Army for the "red-coats" the medical officers of health could do for English citizens. When he left the Army he had gone down into the slums and afterwards joined the Poor Law Medical Association, which had been good enough to elect him President, but he could call all his friends in this Society comrades. The

object of his Association was to make the position of parish doctors better than it is.

DR. NEWSHOLME responded to the Epidemiological Society, and in doing so said that he was a medical officer of health first and last. In view of the past triumphs of the medical officers of health in the prevention of disease, and in view of the great fact that it was becoming more and more realized that the treatment of disease was preventive rather than palliative, he was inclined to think that the days of epidemiology were drawing to a close. But he recalled the fact that during the holiday months of the present year a leading article appeared in the Journal of the British Medical Association which suggested that the control of fever hospitals should be transferred to the parish authorities. They knew what that meant—the putting back the hand of the clock forty years. But no doubt it was a holiday joke. They owed a great indebtedness to the Journal during the past forty years; and they ought to remember with special gratitude the most statesmanlike document which it published with regard to ophthalmia, and in its advocacy of security of tenure for medical officers of health, which was one of the most essential conditions of the position of these officers, and one of the grounds on which the public good could alone be achieved. There could be no doubt that these officers would have a better tenure of position in the future than in the past, and a better linking up of their duties with those of the school teachers. He wished to express gratitude to Sir Robert Morant for his encouraging and inspiring speech in regard to all matters which concerned their common welfare. When all the desired reforms referred to were accomplished, he was sure that then the better era would be at hand when the work of the Epidemiological Society would no longer be necessary.

The toast of "Our Guests" was proposed by the PRESIDENT, and responded to by MR. SEARLES-WOOD.

The PRESIDENT proposed the health of the Secretary of the Metropolitan Branch of the Society, who had taken charge of all the arrangements of the dinner and the music. They offered him their warmest thanks for the excellent entertainment he had provided.

DR. PRIESTLEY, who replied, said he had been more than gratified by all he had seen and heard that evening.

The music was under the direction of Mr. Albert Fox, and the concert between toasts was most enjoyable. The artists were:—Miss Dora Thorpe, who played on the violincello with great expression and brilliant technique Goddard's charming "Berceuse," and also sang, accompanying herself on the cello, with feeling, Mascheroni's "For all Eternity"; Mr. D'Arcy Wollven, an

excellent baritone; Mr. Charles Capper, a *siffleur* who rivalled the thrush and the nightingale, and the very funny *raconteur*, Mr. Walter Churcher.

Southern Branch.—A Meeting was held at the Crown Hotel, Emsworth, on September 29th, 1909. Present, Drs. Cameron, Gibson, Griffith, Lyster, Stephens, Stott and Willoughby, with Dr. L. S. H. Glanville as visitor. In the absence of the president Dr. Willoughby took the chair.

After the minutes had been confirmed, the hon. sec. referred to the resolution of the Branch regarding hospitals and defective scholars, and the wish of the Council that Dr. Lyster should bring the matter before the Society by reading a paper at one of its meetings. After some discussion as to whether the subject could not be brought before the hospital staffs of different areas, it was thought that a discussion at a meeting of the Society should be the first step, and Dr. Lyster was pressed to introduce it.

Four newly-elected Fellows of the Society were elected members of the Branch. The resignation of one member was announced.

The president elect, chosen at the June meeting, having written that he was unable to accept, Dr. Barclay, of Weymouth, was elected as president for 1909-10.

It was decided to hold meetings on the first Friday of each month in the year, excepting January, August and September.

DR. LOCKHART STEPHENS then gave a graphic description, assisted by an excellent map, of the oyster layings near Emsworth, and asked for answers to the following questions:—

1. Does the presence of B. Coli indicate positively contamination with human excrement?
2. Has B. Coli been found when human excrement contamination is not suspected?
3. Is B. Coli a natural inhabitant of the oyster?
4. Is it possible to produce a harmless effluent from sewage treatment?
5. How can suspected oysters, etc., be purified?

These matters gave rise to an interesting discussion, in which all took part.

One of the members called attention to the articles which have appeared in the *British Medical Journal* on the Report of the Poor Law Commissioners, and after considering the matter the following resolution was moved and carried:—

"That in view of the apparent animosity of the *British Medical Journal* to the Minority Report of the Poor Law Commissioners, the Southern Branch requests the Society to consider the reports on the earliest possible occasion."

Midland Branch.—The Annual Meeting of the Branch was held at the Council House, Birmingham, at 3.30 p.m. on Thursday, October 7th, 1909.

Present: Dr. Herbert Manley (in the chair), Drs. F. H. May, J. H. Garrett, George Reid, T. Robinson, R. Logan, C. E. Tangye, Arthur Orton, John Orton, Ridley Bailey, Henry Malet, A. Bostock Hill, Mabyn Read, J. Robertson, Higgins, Lawrence W. Pole, and E. H. Snell. Apologies for absence were received from Drs. Reginald Green, Henry May, and Marsh Jackson.

The PRESIDENT-ELECT (Dr. F. H. May) was inducted into the chair. Having thanked the Branch for the compliment conferred on him, Dr. May proposed a vote of thanks to the retiring President, Dr. Reginald Green. This was seconded by Dr. Manley, and carried unanimously.

The Treasurer (Dr. Bostock Hill) presented his annual report. The accounts having been audited by Drs. R. Bailey and J. Orton, the report was adopted.

DR. F. H. MAY then delivered his presidential address on "Some of the difficulties which occur in the administration of small isolation hospitals."

DR. MANLEY proposed a vote of thanks to the President for his address. This was seconded by DR. GEORGE REID, and supported by Drs. J. ORTON, GARRETT, MABYN READ, and BOSTOCK HILL, and unanimously carried.

DR. MAY then replied.

North-Western Branch.—A Meeting of the North-Western Branch was held at the Victoria Hotel, Manchester, on Friday, October 15th, 1909. Present: Dr. Herbert Peck (in the Chair), Drs. Wheatley, Meredith Young, Hitchon, Buckley, Wood, Daley, Ralph Young, Berry, Fraser, Hawksley, Kingsford, Marsden, Garstang, Sergeant, Greenwood, Hamilton, Dearden, Hope, Corbin, Mussen, Buchan, Wilkinson, Burnet and Barlow. Dr. Brindley and Dr. Arnold wrote regretting their inability to attend.

The proceedings commenced by the induction of the new President, and on the proposition of Dr. Garstang, seconded by Dr. Sergeant, Dr. Hamilton was accorded a vote of thanks for his services in the Chair during the past year.

The minutes of last meeting were read, confirmed and adopted.

A letter was read from Dr. Vacher thanking the Branch for the portrait they had presented to him, and another from Dr. Martin resigning his membership. With regard to the latter, the Secretary was requested to write in the name of the Branch to Dr. Martin asking him to withdraw his resignation.

Dr. Johnston, the Assistant M.O.H. of Blackburn, was nominated for election as a Fellow. His nomination was proposed by Dr. Greenwood, seconded by Dr. Barlow.

The Treasurer's annual statement was received and adopted.

It was decided to hold the Annual Dinner on December 3rd, and a sub-committee consisting of

the President, Secretary, and Drs. Hamilton and Hitchon, was appointed to make the necessary arrangements.

The Hon. Secretary reported on the Council meetings.

A question with respect to the number of elected representatives on the Council was referred to the Committee, as was also the consideration of the draft bye-laws for the Branch.

Dr. Hope drew attention to the amendments in the Housing and Town Planning Bill which had been carried in the House of Lords, and moved the following resolution, which was seconded by Dr. Sergeant and carried unanimously:—

That this meeting of the North-Western Branch of the Society of Medical Officers of Health desires respectfully to express its entire dissent from the attitude of the President of the Royal Sanitary Institute in regard to the Town Planning Bill, and considers that such attitude is detrimental to the progress of sanitation throughout the country.

It was resolved that one of the Branch meetings during the session should be held in Liverpool.

The President then delivered his address on "The Territorial Force and its Sanitary Corps," for which a hearty vote of thanks was accorded to him at the close.

CORRESPONDENCE.

The Editor does not accept responsibility for the opinions of correspondents.

THE FUTURE OF THE M.O.H.

To the Editor of "PUBLIC HEALTH."

Sir,—I agree most cordially with the general tenor of the admirable article on "The Future of the Medical Officer of Health," in your current issue; but I confess I do not share your surprise at the position taken up by the *British Medical Journal*. This journal is the official organ of the British Medical Association, and the opinions editorially expressed therein embody what is known as the "accepted policy" of the Association.

Now, the accepted policy of the Association with regard to medical officers of health is laid down in the resolution passed by the representative meeting at Belfast in July last, on the instance of the chairman of the Public Health Committee of the Central Council of the Association. Resolutions, passed as this one was, are not mere expressions of opinion on the part of the representative meeting; they are articles of faith; become part of an ethical canon; and, like most articles of faith, may be the cause of the bitterest injustice.

How, why, and by what means this particular resolution became drafted it is not for me now to discuss. But it has been adopted, and can only be amended or rescinded after elaborate constitutional proceedings.

I quote the first part verbatim:—

"In the interests of the public health, and in view of the multiplicity of duties thrown upon medical officers of health by recent enactments, it is desirable that in future appointments medical officers of health should be required to devote their whole time to the duties of their office, and be debarred from private practice except as consultants."

It is quite clear that the words "future appointments" have interest to each one of us who at present holds office on a limited tenure; for if we are to gain further leases of office it can only be by "future appointments"!

It is equally clear that a medical officer of health who is to give his whole time to the "duties of his office" cannot be a professor of hygiene, a hospital superintendent, a school medical officer, a public analyst or a police surgeon; for none of these offices is referred to in the Local Government Board's compendious regulations, or in any statute, as a necessary appanage of the post of medical officer of health.

Thus it is, Sir, that the *British Medical Journal* does not consider the transfer of fever hospitals to the poor law authorities a deed affecting the interests of the medical officer of health.

It is perhaps worth noting, as illustrative of the degrees of attention given to the subject, that the British Medical Association raises no objection to medical officers of health acting as "consultants," and does not propose that their consulting practice be limited to fever work.

But the resolution goes on to affirm the desirability of medical officers of health being debarred from private practice (except as consultants) not, be it observed, in the interests of other general practitioners, but "in the interests of the public health."

Of course, it would be well for the public health were a Newsholme or a Shirley Murphy to be at the head of each sanitary department in the country. But this cannot be, and, as there are but 350 "whole-timers," and over 11,000 "part-timers" in England and Wales, much sealing-wax will be used in Whitehall before the last "part-timer" disappears. In fact, some think that, with a highly-trained M.O.H. appointed by every County Council (as will shortly be the case) one of the best arguments for the creation of more "combined" districts will disappear.

It seems not unlikely that the central, co-ordinating, county administrator will prefer to have "a man on the spot" in each village working under him, rather than a few men in charge of unworkable groups of rural districts. So, perhaps, the natural death of the part-timer is not quite yet. However this may be, we claim that as a body we have done our duty, and that our local

knowledge and influence have sometimes stood the public health in good stead.

And some of us—because we have not been entirely dependent on our official emoluments—have been enabled to make, in our humble way, quite a little stand for what is right, and good for the community. For the British Medical Association to force the pace and to accelerate our departure from this sphere will not benefit the public health, the public-health service, or the profession at large.

Still, it is not as a part-timer, but as a medical officer of health that I write this letter, and I do hope, Sir, that in the best interests of all concerned, our Society will consider very seriously this Belfast resolution, and take whatever action may seem just and appropriate.

I am, Sir, faithfully yours,

F. S. CROOKSHANK,
Medical Officer of Health, Barnes.

ANONYMOUS LETTERS AND DISINFECTION.

To the Editor of "PUBLIC HEALTH."

Dear Sir,—During the past year a large number of letters, anonymously signed, have been sent to various journals, advocating daily disinfection of schools, and *inter alia* attacking me by name for certain opinions on the futility of such school disinfection as a means of combatting epidemics. Fortunately these opinions are too well-known and too widely held by medical officers of health to need urging afresh on your readers.

As I believe the whole campaign is engineered on behalf of a firm interested in the sale of disinfectants, these letters require no further notice, and any discussion of their contents would merely aid the advertisement they are indirectly intended to give to the firm's preparations.

Yours faithfully,

JAMES KERR.

LAW REPORTS.

HIGH COURT OF JUSTICE.

KING'S BENCH DIVISION.

June 9th, 1909.

BEFORE LORD ALVERSTONE, L.C.J., JELF AND SUTTON, J.J.

THAMES CONSERVATORS v. GRAVESEND CORPORATION.

Pollution of River—Thames Conservancy Act 1894, Sect. 94—Sewer Discharging into River—Prescriptive Rights.

On summary proceedings under Sect. 94 of the Thames Conservancy Act 1894 for causing or suffering

sewage to flow into the river Thames; a sanitary authority who are discharging sewage from their own property into the sewer which causes the pollution cannot set up as a valid defence that the sewer is an ancient one, and that other persons in the district have a prescriptive or statutory right to drain into it.

This was a special case stated on the hearing of a summons against the Gravesend Corporation for causing or suffering sewage to pass into the Thames, contrary to Sect. 94 of the Thames Conservancy Act 1894. It was proved that a sewer from the borough flowed into the river. For the Corporation it was contended that the sewer had existed for many years before the Corporation had the same vested in them, and that individual owners had acquired prescriptive rights to drain into it and so into the Thames. As regards connections which had been made since the sewer was vested in the Corporation, it was said that the owners of property were entitled to do so by Sect. 21 of the Public Health Act 1875, and that the Corporation could not prevent them. Among the connections which had been made in recent years were various water-closets belonging to buildings erected by the Corporation. These discharged into an old drain which went into the sewer. The justices dismissed the summons, holding that the contention of the Corporation was right.

The Court sent the case back to the magistrates to convict in respect of the discharge of sewage from the buildings of the Corporation.

LORD ALVERSTONE, L.C.J., said that so far as it was alleged against the Corporation that they had caused sewage to flow in by allowing people to connect their drains with the sewer, and so allowing the sewage to go into the sewer and then into the river, he did not think they could interfere with the decision of the magistrates. But when the Corporation themselves were pouring into the sewer sewage from their own buildings, he thought the case was exactly within the words of the Section, and that the Corporation were liable to be convicted.

JELF and SUTTON, J.J., concurred.

KING'S BENCH DIVISION.

June 9th and 10th, 1909.

BEFORE LORD ALVERSTONE, L.C.J., JELF AND SUTTON, J.J.

SUTCLIFFE v. SOWERBY BRIDGE URBAN DISTRICT COUNCIL.

Public Health Act 1875, Sects. 36 and 305—Substitution of Water-closets for Privy Middens—Form of Notice.

A notice under Sect. 36 of the Public Health Act 1875, requiring a person to provide sufficient water-closets,

ash-pits, and ash-bins, will not necessarily be invalid because it does not expressly state that the existing privy accommodation is insufficient.

This was a case stated by a Court of Summary jurisdiction at Halifax, on the hearing of an application for an order under the Public Health Act 1875, Sect. 305, authorising the Sowerby Bridge Urban District Council to enter certain premises for the purpose of making sufficient water-closets and ash-pits. The Court of Summary Jurisdiction made the order.

The houses in question had been furnished with privies and an ash-pit connected therewith on the system known as the privy midden, but not with water-closets. The attention of the owner had been informally called to the fact that, in the opinion of the Sanitary Committee, the privy middens were insufficient, and that water-closets ought to be substituted. As nothing was done, a formal notice was served stating that "the houses above described are without sufficient water-closets, ash-pits, and ash-bins," and requiring sufficient water-closets to be provided. It said nothing as to privies. This notice was not complied with, and in consequence the Council desired to enter and do the work. It was contended that the notice was bad because the respondents had not determined that the premises were without a sufficient water-closet, earth-closet, or privy, and an ash-pit furnished with proper doors and coverings in terms of Sect. 36 of the Public Health Act 1875, and that the notice did not set forth that such was the case.

The Court dismissed the appeal.

LORD ALVERSTONE was of opinion that useful legislation like this should not be defeated by a technicality, especially as no injustice had been done to the appellant. The form of notice brought it home to the owner that water-closets were required. Previous communications had made it clear that the privies were not sufficient. He thought the notice was a good one and sufficiently complied with Sect. 36.

JELF and SUTTON, J.J., expressed doubts on the point, but did not disagree.

Leave to appeal was refused.

[For full report, see 73 *J.P.*, 385.]

CHANCERY DIVISION.

July 23rd, 24th, 26th, 1909.

BEFORE SWINFEN EADY, J.

EAST BARNET VALLEY URBAN DISTRICT COUNCIL
v. STALLARD.

Public Health Act, 1875, sect. 22.—Drainage of premises outside district.—Right to cut off.

When the drains of premises outside a district have been connected with the sewers of a district, with the consent of the local authority, the connection cannot be severed by the sanitary authority, nor can the owner be called upon to enter into an agreement under Sect. 22 of the Public Health Act, 1875.

This was an action by a local authority to determine the defendant's right to continue to drain his premises into the sewers of the authority. The premises were partly within and partly without the district, but the house was outside. The drainage of the house had been taken into the sewers of the plaintiff council at the suggestion of the council's surveyor, and had so continued for some years. The local authority now desired to prevent the sewage of the house going into their sewers without payment, and required the defendant to either disconnect or enter into an agreement under Sect. 22, of the Public Health Act, 1875.

SWINFEN EADY, J. said that when connection with the sewers of a local authority has been made either by the permission or acquiescence of the local authority, it had been decided in the case of premises inside the district that the drains cannot be cut off. He could see no distinction between Sect. 21 which dealt with such cases, and Sect. 22 which related to premises outside the district. The plaintiff council had themselves made the original connection, and the defendant did not seek to do anything. He did not think that Sect. 22 applied to the case. The defendant had made some alteration in his drains and had added some new water closets, but once connection is made with the sewer, a slight alteration was not a new connection.

PROSECUTIONS FOR FAILING TO SUBMIT LISTS OF OUTWORKERS.—A number of summonses against Sheffield firms—tailors, silversmiths, electro-plate manufacturers, etc.—for failing to make returns of outworkers, were heard at the Sheffield City Police Court on Oct. 5th. The Health Committee had undertaken the prosecutions, and they were represented by Mr. H. L. Coath from the Town Clerk's Department. Formerly notices were sent twice each year from the Medical Officer's Department to firms employing out-workers, notifying them that lists should be sent in. But, said Mr. Coath, there was a tendency to wait until a second and sometimes even a third notice was sent, and so the practice was altered. Mr. J. Bailey Howard, inspector in the Medical Officer's Department, proved the cases. In some instances lists were sent in the moment the summons was received, but in others the names had not yet been supplied. The magistrates imposed penalties varying from 3s. 6d. to 12s. 6d.

REDUCING THE SALARY OF A MEDICAL OFFICER OF HEALTH.—The Kingston Town Council, at a recent meeting held *in camera*, decided to reduce the salary of their medical officer of health (Dr. H. Beale Collins) by the sum of £55 a year. No public explanation has been offered as to this unusual procedure, which has evoked very strong comment in the town, and a proposal has been started to promote a public testimonial to Dr. Collins in recognition of his 16 years' service. The only complaint that has ever been publicly made concerning the work of Dr. Collins is that he is "too idealistic," and it is believed that the action of the majority of the town council is due to the fact that he recommended the alteration or re-building of certain schools in the borough which would have involved considerable expenditure. Members of the town council claim the right to revise and alter the report of the medical officer before it is sent to the Local Government Board.

OLD PLAGUE PIT UNEARTHED.—Dr. D. L. Thomas, Medical Officer of Health of Stepney, reports the discovery of human bones at 167, Whitechapel-road, where excavations are in progress. The remains were found at a depth varying from two to eight feet, and consisted of bones belonging to at least 80 bodies. No evidences of coffins were discovered, but a farthing dated 1733 was unearthed. From the presence of the farthing, and from other evidence, Dr. Thomas infers that an old plague pit in the immediate neighbourhood had been disturbed at some time after the year 1733, and the contents re-buried at the rear of No. 167. Dr. Thomas adds that the Plague of 1665 reached the East End through Clerkenwell and Shoreditch. In three weeks there were 2,006 deaths in the Parish of Stepney, and 1,206 in the Parish of Whitechapel. At that time the district was sparsely populated, and on account of the number of bodies that had to be buried, and the difficulty of carting them, the plague pits were placed close to the main road.

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SCARLET FEVER OF BOVINE ORIGIN.

THE London County Council have recently published a highly important epidemiological document, which deserves the attention of every medical officer of health in the country. We refer to Sir Shirley Murphy's report, submitting a joint report by Dr. Hamer and Dr. T. Henry Jones on an outbreak of scarlet fever in London and Surrey, and a bacteriological report on the outbreak by Dr. Mervyn Gordon. The outbreak presents some remarkable features. In the first place it was unusually extensive. It affected upwards of 400 persons, who were distributed in no less than ten districts; and in the investigation there were engaged, not only the medical officers of health of these districts, and of certain other districts in which suspected farms were situated, but also the county medical officers of health of London, Surrey and Wiltshire. The cordial co-operation of all these officers was essential to the successful prosecution of the investigation, and, in accordance with the best traditions of the public health service, this co-operation was most readily given.

The chief milk vendors among whose customers cases of scarlet fever occurred numbered twelve, the number of cases per vendor varying from fifteen to 102. All the vendors obtained their milk from one dépôt of a certain milk company having ten or twelve similar dépôts. This dépôt received milk from thirty-one farms, and enquiry soon brought three farms, which are referred to as X, Y, and Z, under suspicion of being concerned in spreading the infection. It was reported that at farm X there had been cases of German measles, and at farms Y and Z cases of measles. The two latter farms, however, were quickly cleared from suspicion. The patients there were undoubtedly suffering from measles, and it was found that these farms had not supplied milk to some of the implicated vendors. Milk

from farm X, on the other hand, had been supplied to all the implicated vendors; and at the cottage of the farm carter, who also acted as milker, the investigators discovered that the supposed cases of German measles consisted of two undoubted cases of scarlet fever and three cases of sore throat. Here, it may be thought, was the source of the outbreak; but the first of these patients was taken ill on June 11th, while the outbreak began in Surrey on June 7th. The milk from farm X was infective four days before the cases occurred in the carter's family, and enquiry failed to reveal any other cases of human scarlet fever.

Attention was directed to the cows at farm X, and they were examined by Mr. Dunbar, the veterinary inspector of the London County Council, who found that most of the cows presented scabs and excoriations on the teats and udders, the lesions being similar to those first described by Sir William Power in what is known as the Hendon disease. The lesions were most marked in a red heifer that had calved about May 24th. The calf died four or five days after it was born, and it appears likely that the milk of the red heifer first came into use on June 7th, the day on which the first cases of the outbreak began. Drs. Hamer and Jones suggest that the milk of this animal had a special pathogenic quality, which possibly gave rise to the death of her calf, and subsequently to scarlet fever amongst the human consumers of her milk. This hypothesis still leaves the origin of the disease in the red heifer to be accounted for, and it is suggested, *faute de mieux*, that she was infected by food. The question whether scarlet fever may be derived from the cow has been much discussed, and hitherto the weight of opinion has seemed to lean in favour of the view that no conclusive evidence of a bovine origin has been brought forward. The present report, however, throws more light on the question, and suggests new lines of enquiry which may lead to definite results.

MEDICAL OFFICERS OF HEALTH AND THE REPORT OF THE ROYAL COMMISSION ON THE POOR LAW.*

By Major GREENWOOD, M.D., D.P.H., LL.B.,
Hon. Sec. Poor Law Medical Officers' Association.

BY your courteous invitation I am able to put before your Society the views held by the Association I represent with regard to reform of the present Poor Laws, so far as they affect the status and duties of the members of our respective services. The substance of the reforms that have hitherto been proposed must profoundly affect the position now held by Poor Law medical officers, and may not unlikely result, if carried out, in some modification of the offices held by the members of your service. At any rate, our two services are the only public medical services that are likely to go into the melting pot, and for that reason it seems to us there is the utmost need that we should endeavour to come to an agreement and take counsel together as to what steps should be taken to defend our common interests. In saying this it must not be supposed that I forget that as public officers we only exist for the good of the nation, and that the national interest alone is after all the desideratum to be sought for. But, gentlemen, I think it will be agreed that neither your service nor ours is unmindful of this fact, and that both consider the true interests of our respective services are indissolubly bound up in this: that we should each be made as efficient as possible to do that public work which the exigencies of the national welfare require of us respectively.

Now, with regard to this matter, we have two voluminous reports published during the present year, either of which might revolutionize both services. It is not my intention this evening to deal in any length with these reports. We have each of us examined them for ourselves, and it is not unlikely we might perhaps differ somewhat in our interpretation of the proposed reforms. The subject too, is a large one, and there would be no time to enter very closely into the pros and cons of either. My object is chiefly to point out to your society what line our criticism of these reports has taken, to what we have committed ourselves up to the present, and how far we are prepared to join with you in endeavouring to bring about a common reform. In the first place, it must be clear to all that the medical scheme of the

* Read to the Society of Medical Officers of Health, on November 12th, 1909.

Majority Commissioners involves, if successful, the extinction of our present service. We have made up our minds that such an extinction is not good for the public welfare, and that a distinct Poor Law medical service, both indoor and outdoor, ought to be continued; therefore, we could not join in any attempt to support the Provident Dispensary scheme of the Majority Commissioners. We emphatically deny that it would be good either for the public or the poor, and we believe it would be ruinous in its effects on that portion of our common profession practising in poor districts. We further condemn the principle that every practitioner who wished should be a Poor Law medical officer, and we consider that there is scarcely any public medical service in the country that has better claims to be recognized as a distinct service than has the Poor Law. We have already protested both to the public and the Local Government Board that the present Poor Law Medical Service is absolutely opposed to these proposals. We have further come to the conclusion that it is not good for the public, or the poor, that any essential difference should be drawn between medical and other relief—I do not allude to questions of the suffrage, or to differences that have grown up in our midst of late years in the administration of these forms of relief, or even in the course of time to further changes necessitated by changing conditions. But we do object to the doctor being made a relieving officer. We object to the crippling of that official in the most important duties he has to undertake, which must necessarily arise if possibly the most important part of public relief is practically taken out of his hands. A resolution against this proposal is another step our Association has taken, and published to the public and to the Local Government Board.

Except in regard to the above-mentioned points, I may say our service has at the present time a clean slate, and we are quite ready to welcome any suggestions you may formulate, and to assure you we shall only be too glad to consult with you on common grounds, and bring about all possible co-operation between the Sanitary and Poor Law service of the country.

Before concluding, I should like to say a few words with regard to the proposals of the Minority Commissioners. I think it not unlikely that from some points of view their proposals may seem exceedingly attractive to the Sanitary medical service. If the medical

treatment of the sick State poor is to resolve itself into a mere question of sanitation, it is probable that the service, whose special appanage sanitation is, would, as Mrs. Webb phrases it, get all the "plums." But, on the other hand, the Minority Commissioners also propose to enrol the present Poor Law medical service in the ranks of the Sanitary service, and Mrs. Webb has plainly said that in the future the newcomers may expect to share in these "plums." There is, therefore, every prospect that posts now only open to professed sanitarians, will, if the Minority scheme be carried out, be thrown open to a much larger circle. This, in my opinion, is not to the advantage of the present Sanitary service.

It must not be forgotten that even if a certain number of the present Poor Law medical officers are pensioned off, there will remain in round numbers about 3,000 to find places in the new Sanitary service, and all these under the scheme are to be allowed to compete for the "plums" in that service. To allow this to take place, some modification would have to be made in the rights that you possess as Diplomates in Public Health. It has been suggested that present Poor Law medical officers who become partly health officers, should not be debarred from the higher sanitary offices on account of the non-possession of that diploma. Whether such an arrangement would meet with the approbation of the medical officers of health of the country, I do not know. It is at least questionable whether for the public good it is wise to mix up in one service clinicians and sanitarians, and especially whether the science of public health would gain by such an admixture. On the other hand, as practical sanitary knowledge is necessary for the successful carrying on of all medical practice, if the Poor Law medical service of the future were kept distinct, as now, it might easily co-operate far more with the public sanitary service than it has hitherto done; and the true principle, in my opinion, to form the basis for future Poor Law reform, is to try to get this co-operation, while retaining a proper distinction between the clinician and the sanitarian. It seems to me that under any workable system, the country must be divided into districts, and the actual treatment of the sick State poor must be in the hands of clinicians—that is, of district medical officers. An exception might be made in the case of infectious disease. The treatment and every other detail connected with it have naturally drifted into the hands of the

sanitary service, as is only right and proper, and good reasons can be given why all forms of infectious disease may be safely treated at the public expense. But it is otherwise in the case of ordinary disease. If at times it may be difficult to draw the line, in most cases a broad line of demarcation can be drawn between the two kinds of disease.

If all diseases are to be treated in the same manner as infectious disease now is, then we are in a measurable distance of the socialisation of medicine. I think, then, there should be a distinct service to deal with ordinary disease occurring among the sick State poor, and that the present Poor Law medical service, indoor and outdoor, or some modification of it, is the best fitted to do this public work, and I shall be very glad to hear the views of the members of this society on this vexed question, and especially any proposals that might assist us in co-operating better in our Poor Law work with the medical officers of health. In our various districts we now frequently consult with our medical officer of health. Not infrequently we direct his attention to sanitary defects in the district. We give him early notice of the presence of notifiable, and often non-notifiable disease, and during the last year we have further notified to him the presence of pulmonary tubercle. Yet I think there is much more that might be done to co-operate for the public advantage in our respective functions.

The following resolutions were passed at a meeting of the Poor Law Medical Officers' Association on March 11th, 1909:—

1. That this Council desires to express its grateful acknowledgment of the unanimous testimony borne by the Royal Commission to the value of the past services of Poor Law medical officers, and their recognition of the disadvantages under which they have laboured, and the inadequacy of their remuneration.
2. That in the opinion of the Council it is impossible for Poor Law medical relief to be organised on a provident basis, as the only proper recipients of such relief are by reason of their poverty unable to contribute anything; that those able to contribute are proper objects for charitable assistance.
3. That the Council views with the strongest disapprobation the proposal to draft the State poor on to provident medical institutions; that in their opinion it would result in converting the same into Poor Law institutions, mainly supported by the rates; that it would be disastrous to these institutions by driving away many, if not all, of that class for whom they were specially created. Further, that it would largely increase the number of the State poor by adding to them many of the poorer members of provident medical institutions, and by so doing would inevitably cause great injury to the whole

medical profession, especially the practitioners in poor districts.

4. That the Council strongly condemns the proposal to make every medical practitioner a Poor Law medical officer, and it does so for the following reasons:—

- (a) It would be many times more expensive than the present system.
- (b) That the value of the work done could never be properly tested, as no system of inspection could deal with so widely extended an arrangement for Poor Law medical relief.
- (c) That it would largely tend to provide free medical relief to all poor persons, and to increase, rather than diminish, the pauperization of the nation.
- (d) That the interests of the sick State poor would be far better attended to by a special service, the members of which were adequately paid and whose work was capable of proper inspection.

5. That the Council strongly disapproves of the proposal to allow a poor person to claim State medical relief without the intervention of a relieving officer or assistance officer; that it would be opening the door widely to gratuitous medical relief to all members of the poorer classes; that it is no part of the duties of a Poor Law medical officer to decide as to the right of a poor person to State relief; and as in any widely extended system it would be necessary to pay for the items of work done by the medical officer, it would be a direct incentive to the latter to admit too readily the claims of poverty.

That for the protection of the ratepayer it is absolutely necessary that there should be a skilled lay officer to decide who are proper applicants for medical relief.

That in thickly populated areas there is no hardship in requiring applicants to get an order from an assistance officer, and that instances of the deserving State poor being deterred from applying to the Poor Law medical officer through having first to obtain an order are in urban districts conspicuous by their rarity.

DISCUSSION.

DR. A. BYGOTT (Barking) read the following statement:—It has been a great pleasure to me to hear the able remarks of Dr. Greenwood, as I was unable to be present at a meeting of Poor Law officers held in the spring to discuss this question, and to which I was kindly invited. Although I have now left that service, I am laying before you exactly the same views that I laid before the Royal Commission on the Poor Laws, at a time when I had no prospect of leaving them. I am convinced that it is, from the point of view of a Poor Law doctor, absolutely necessary to sever his connection with the Guardians, or any other *ad hoc* body connected with relief of destitution, and to attach him to the sanitary and education services, practically making one well-disciplined and organized civil medical service able to fight disease and to secure proper working conditions for those who serve in it. I gather that there

may be some who do not share my views. Dr. Greenwood need, I think, be under no misapprehension as to the attitude of professional medical officers of health to those proposals of the Majority Commissioners suggesting that medical treatment for wage earners shall be connected with a gigantic medical club, to which all registered practitioners shall be medical officers. I do not propose to touch on the relationship of vaccination to the Poor Law doctor, because we always used to admit that it ought to be connected with sanitation, and that in any change being made it would almost certainly be taken away from the destitution authority. It is well to examine the medical system of the Poor Law in detail. The object of that legislation was to be deterrent, and two executive officers were created—viz., relieving officers and masters of workhouses—to represent the Guardians in administering the laws. No mention was made of medical officers. When it became necessary to provide for the poor the primitive medical help available in those days, it was contracted for, almost like food, and provided under the supervision of these officers as the representatives of the Guardians, a limited recognition being afterwards made of the medical staff as officers. In this way the status of the medical officers is a low one. Meanwhile, owing to the deterring influence of the relieving officers and the rigour of the workhouse, a barrier of protection has arisen around the medical officer, which has limited his field of operations and has caused him to work at a very low price; so that his position in connection with a destitution authority, under present conditions, if the relieving officer were to be removed, would be untenable. At the same time, owing to his subordinate position and its association with pauperism, good medical work in this service is almost impossible, and the medical officers frequently exposed to unpleasant humiliations. An honest attempt was made about twenty years ago in Birmingham to improve matters. Some of the leading consultants were appointed to form a medical visiting staff at the infirmary, backed up by a young and energetic house staff, and this institution compares favourably with most well-equipped hospitals. A similar attempt to procure an efficient outdoor staff was made, and Drs. Kaye and Barwise were two of the paid hospital medical officers. I understand that they found their condition irksome. Various other men came, who went into general practice. One man stayed for some time, but he found the work very distressing; the last man left to enter the public health service at a reduced income. Another board combined two districts, pooled the vaccination fees, and appointed a whole-time officer; he has entered the public health service at a greatly reduced salary. The Guardians, satisfied with the experiment, have

recently made another whole-time office in that Union. All these men found the service incompatible with good work, undignified, and have concluded that the public do not get value for the money that they spend, because it is so badly arranged and organized; the tendency, therefore, has been for members of that service after proper training, passing the necessary examinations and gaining the requisite experience, to gravitate into public health. There appears to be a trend of opinion in favour of creating whole-time men in the Poor Law service, who, having entered it, recognize that there is no future before them in that service. In the sanitary service, the medical officer is an adviser and consultant; it has been able to secure the life services of exceedingly able men who have developed it, made it interesting, invested it with a dignity, and given opportunities to its members to become life-long students, aiming at a better state of things, and it is proposed to attach to it this other immature starved service which I have described. If this is done it will be the best day's work that was ever done for it; it will enable the district medical officer to escape from the thralldom of relieving officers, medical officers of health and Guardians; it will do away with the necessity of his sheltering himself behind the relieving officer, so that he shall not be overworked; it will protect him more surely and in a more dignified way, because it will enable this work to be organized and arranged in such a manner that it will be done easily; and if little difficulties arise, he will have the assistance and sympathy of colleagues who have fought his battle for a generation, and are winning all along the line. We must remember that we are advancing, that the nation have a right to the discoveries of Simpson, Lister, Koch and others, which have been given to them, and which are often withheld by a bad system. Medical relief differs essentially from other relief, the person to be relieved is different, the necessities and possibilities for influencing others are different, so that we ought, if our systems have to be changed, to put medical relief on right lines, and to do our best for those millions whose health and strength is their only capital, who are after all the final court of appeal. Speaking as a Poor Law officer, I see nothing but good in the proposals for a unified State service, which will treat, teach and administer.

DR. MANLEY (West Bromwich) said he wished to deal with that part of Dr. Greenwood's paper in which Dr. Greenwood said he represented the views of his Association. To the speaker that part failed in one essential point: it was destructive without being constructive. It disapproved, as indeed he and many who thought with him also did, of the scheme proposed in the Majority Report. Speaking with the experience of twenty years' general practice, he certainly would not add

his support to the proposal to make a gigantic provident dispensary in the guise of the Poor Law, and that must be the opinion of every medical man who had had a large contract practice. But Dr. Greenwood seemed to think that the alternative to the majority was a kind of *status quo* in which some vague alteration was going to take place in the constitution of the Boards of Guardians, and the Poor Law service was going to be left very much as it is. He did not think the majority of the Poor Law medical officers were content with the Poor Law medical service as it is. He said, without fear of contradiction, that the tyranny of the relieving officer was not a myth at all, and he thought it was taking too favourable a view of things to say that there was abundant co-operation between Poor Law medical officers and medical officers of health; that was certainly not the case with regard to relieving officers. The difficulty of co-operating with members of the Poor Law service was a serious difficulty for the medical officers of health. The paragraph of Mrs. Sidney Webb's that they as a service were going to be put in charge of a Poor Law aid service had been grossly misread. They were astonished that a man of the experience of Dr. Downes should deliberately propose that the sanitary service should be deprived of the control of infectious disease. Having expressed his approval of the principle of a unified State medical service, Dr. Manley said they were not going to accept in a moment either the Majority or the Minority Reports or Dr. Downes' proposals; the question must not be settled in a hurry, and the more it was debated he hoped they would endeavour to come to some working arrangement in which the minority would loyally do the best for the profession, even if they did not agree with it.

SURGEON-GENERAL EVATT, C.B., said he spoke with considerable diffidence in the presence of specialists. He felt that they were really only at the beginning, and that the discussion must go on for some years. He would like to take them back to the seventies, when the amalgamation of the two bodies, the regimental officers and the corps officers, took place. The same arguments as were used now were used then. But they had triumphed, and had built up a corps which included the curative and sanitary sides; and both had gained enormously by the union. The speaker referred to regimental officers tied hand and foot by the Guardians and unsympathetic relieving officers, who spoke at times in a way that was really heart-breaking to any man who had the consideration of the people at heart. He saw how impossible then it was for them to rise as a profession unless they looked to their civil brethren, and he made it his business to go to the Poor Law Association and see how much

their sympathy went with that body. He would prophesy that they would one day see in every borough a unified medical service. There must be union, declared the speaker, and he hoped that the Association would not put it on one side. There might be trouble at first, but the tendency was that every medical man practising under the State must have the diploma of public health. Every one of the thousand officers of the Army were trained in public health—he did not care what they called them, curative or non-curative, he (the officer) was still a physician working for the benefit of the nation. Last Sunday he spoke to 1,400 young men at Whitfield's on prevention of disease. The moment the word "prevention" was mentioned the whole house exploded. Prevention was their capital, and they were quite as wide awake to it as most medical officers of health. The speaker likened Mrs. Sidney Webb to Hypatia, and said she had the future with her. If they went against her it would simply be like the old priests against the new prophet. He was quite sure that the public outside were every day being awakened to the question of prevention. Speaking of drunkenness and contrasting the present increase in the sobriety of the Army with the condition of former days, Surgeon-General Evatt said good barracks had made a sober Army; it was not temperance lectures. "Did not our splendid soldiers drink shockingly when they were over-crowded?" he asked. Oxygen, he declared, had made men sober. He asked them to take warning, and by their action become unified. They did not succeed by routine, however good that might be. If he found a man in his command strong and promising to do good work he brought that man forward. Those brutal Guardians who insulted a doctor were not really insulting the man himself, but they were degrading the profession of medicine. "We want a most penetrating medical service," declared the speaker in conclusion.

MR. FREMANTLE (Herts) said with regard to Surgeon-Gen. Evatt's observation that the increased temperance was due to oxygen, he thought education had had a share in the matter. He had the interesting experience of spending a day at Aldershot with Col. Firth, and of seeing the Army school sanitation there. There they had the private soldier, the non-commissioned officer, the combatant officer, as well as the medical officers, being trained in sanitation; it was part of the qualification for promotion that those officers should attend the sanitary course. They must do the same. Mr. Fremantle strongly emphasized the need of co-operation, and said the essential thing for which they must fight was unification. It was merely a matter of looking ahead. They would never get their own way if they were going to associate themselves either with one camp or

the other. Let them rather take a scientific line and get the support of both sides. The only rational thing was to amalgamate the two and put them under one head. He very much regretted to see how some members of the medical profession had gone violently for or against the one report or the other. Let them steer clear of that. Unification was enormously for the improvement of the service and the health of the nation.

DR. G. McCLEARY (Hampstead) agreed with Mr. Fremantle, who had told them not to be led away by political catchwords. He had read carefully everything Dr. Greenwood had written on the Poor Law Commission Report, and he seemed to see a dual Dr. Greenwood. He saw the views which seemed to emanate from Dr. Greenwood's practical experience as a Poor Law officer, and when he was expressing those views Dr. Greenwood seemed to be leaning strongly towards the unification of the two services which was proposed in the Minority Report. There was, however, another Dr. Greenwood, who objected to that proposal, apparently on the ground that it was "socialistic." At the present time all sorts of opposite things, the Budget and Tariff Reform for instance, were called socialistic, and he did not think that the use of these terms threw light on the question. He thought with Dr. Greenwood that there might with great advantage be much greater co-operation between the two services, but he would point out that they had not only to deal with themselves but with their masters, who would not allow co-operation, because they were working from opposite points of view. He failed to see how there could be any thoroughly working co-operation between the two services unless they were unified into one service. He thought both sides would gain by it, but especially the Poor Law medical service. Of all the branches of the medical profession the Poor Law medical officer suffered most from the "insolence of office." He would like Dr. Greenwood to state something definite as to what he would prefer, because he did not appear to be in favour of the Majority or the Minority. It seemed to the speaker quite impossible to expect the present state of things to continue; there must be changes in the direction either of the Majority or Minority Reports, and it was for the Poor Law medical service to make up its mind in which direction those changes were to take effect.

DR. SYDNEY DAVIES (Woolwich) congratulated Dr. Greenwood upon coming and putting his views before them when he must surely have expected those views would be largely in the minority. He would like to ask Dr. Greenwood a few questions. Firstly with regard to destitution, he understood Dr. Greenwood still held the opinion that nobody should be allowed medical treatment except at their own expense, unless

they were absolutely destitute. The speaker instanced the case of a man earning twenty shillings a week, with half-a-dozen children to support and eight shillings a week rent to pay. Was that man to pay for a doctor to attend his wife and family out of his income? The second question was, if Dr. Greenwood recognized that all infectious diseases should be treated at the public expense in the interests of the community, did he maintain that it was not to the interest of the community that other diseases should be similarly dealt with?

DR. E. H. T. NASH (Wimbledon) asked why Dr. Greenwood's Association wanted the matter left *in statu quo*. It seemed to him that was entirely erroneous. The question of making every man a Poor Law medical officer was the result of evidence which the British Medical Association gave before the Commission. He spoke of the tendency of competition to lead to good work.

DR. REGINALD DUDFIELD (Paddington) submitted that the highest aim of medical art was prevention, not cure; they had been content with cure in the past because they did not know the rules for prevention. If they accepted that view, it placed the whole medical service in the preventive rank, and included in that was the Poor Law medical service. Everybody would agree that they could not have two preventive services in the same district, and that argument was practically the whole point.

DR. R. A. LYSTER (Hampshire) congratulated Dr. Greenwood upon the protest of his Society to which he (Dr. Greenwood) had alluded, and which set their Society a good example. He noticed with a great amount of surprise Dr. Greenwood's statement: "We do object to the doctor being made a relieving officer." It had been his good fortune to have among his friends rather a large number of district medical officers from time to time, and he had often heard the Poor Law medical officer described as an assistant to the relieving officer. Turning to that part of Dr. Greenwood's speech in which he referred to "that unfortunate term 'plums,'" it was a great pity the word had been introduced into the discussion at all. Personally, he was not frightened about certain developments of the future. It had been pointed out by several gentlemen that the best men would probably keep at the top, but it seemed to him very inadvisable to quote personal opinions. The public would develop the scheme; it was not for this or that individual to say that certain persons would get the plums; it was not for members of the Commission to say who were going to get them. With regard to the separation of infectious diseases from other diseases, it was quite impracticable to have the former dealt with by the medical officer of health, and the non-infectious diseases by some other service. Dr. Nash said the

result of competition would mean good work. Possibly it would, but he did not think it needed much imagination to see that it would lead to something much more serious from a professional standpoint. He would like to ask Dr. Greenwood what his objection was to opening the door to gratuitous medical relief, if that relief was necessary? If medical relief was necessary it should be given, but it should be given instantly and not follow investigations; the investigations should come afterwards.

THE CHAIRMAN intimated that that day a small special committee had been appointed to confer with the Association at the latter's request.

DR. GREENWOOD, replying to the criticism, said the abolition of the destitution authority was the great difference between the Majority and the Minority Reports. Mismanagement had been referred to, and no doubt there were many examples all over the country, but bad management did not go on everywhere. Replying to a question, Dr. Greenwood said there were 3,700 district medical officers, which, with another 2,000 indoors, brought the number up to 7,000 or 8,000, taking indoor and outdoor. One member asked the number of members in his Society, and said he had not heard about the Society. The membership was about 800. Dr. Manley spoke about the policy being destructive and not constructive. Well, he included in his paper the attitude of his Society up till July last, and nobody seemed to have taken any interest in the report till then. His Association still believed in the resolutions they passed then, and did not consider that by any argument they had been overthrown. He only disagreed with Mr. Fremantle when that gentleman came to lay down the proposition that the questions could only be solved by a unified service. With regard to Dr. McCleary, what he stated about his views being from a two-fold aspect was probably right. A medical man was also a citizen, and had his views of what was necessary for the good of the country as well as his medical point of view. Dr. McCleary also mentioned that the authorities would not allow co-operation. It did not follow that any authority put up would also be opposed to or would go against co-operation with other authorities. He admitted there was a probable weakness in the Majority Report from the point of view of two committees in the same authority, but that was the best argument for the *ad hoc* authority. With regard to free medical service, if they were to have that for all who claimed to be poor he confessed he did not see the point. If they were going to have a condition in which all who classed themselves poor could obtain assistance at the public cost it meant destruction to every practitioner in the poorer districts getting a living out of small fees. He knew one section

of the Commission wished to abolish the sixpenny doctor altogether. "But we have not come to the decision that all sixpenny doctors are bad," said Dr. Greenwood. It was how the doctor did his work, and one man for sixpence would do as good work as another man would do for a larger fee. Urgent cases were attended to, but nobody knew how far they really were urgent. There should be in every service loopholes by which those cases were attended to. But if they were taking the essentials of life it was no more necessary for a man to get medical attendance free than for him to receive food free. Unless they could show that medical attendance on the one hand was much more important he could not see the reason why one form of relief should be taken out of the relieving officers' hands and not another. Referring to the question of "plums," Dr. Greenwood said he was led into that by Mrs. Sidney Webb. As to co-operation and co-ordination with other services, that might be done to any extent.

THE CHAIRMAN thanked Dr. Greenwood for his interesting paper and the meeting then closed.

THE TERRITORIAL ARMY AND ITS SANITARY CORPS.*

By HERBERT PECK, M.D., D.P.H.,

Captain in the Sanitary Corps of the Royal Army Medical Corps, Territorial Force; Medical Officer of Health for the Borough and Rural District of Chesterfield.

THE Territorial Force is now an Army in being, and it appears desirable that the arrangements made for the sanitary work in connection with it should be carefully considered with a view to their being made as efficient as possible.

Although it is needless to dwell upon the necessity of such a corps as Mr. Haldane has initiated, a short review of the mortality in some recent campaigns will show how necessary it is.

The admission to hospital for sickness and wounds and deaths from wounds, or being killed in action, in British wars since 1873, are shown in the table on next page.

These figures, for which I am indebted to Lieutenant-Colonel Firth's valuable book, "Military Hygiene," show that in the campaigns of the last fifteen years the admissions to hospital on account of sickness averaged about thirty-six times those from wounds, and the deaths 376 times as many. Lieutenant-Colonel Firth gives the averages, taken over a longer

* Presidential Address to the North-Western Branch of the Society of Medical Officers of Health, delivered October 15th, 1909.

period, as twenty-five men admitted for sickness for one admitted for wounds, and the deaths from sickness as five to one from wounds.

In the twenty-one months of the Russo-Japanese War, the Japanese had one admission for wounds for 115 admissions from sickness, and one death from wounds or being killed in action for 0.37 of a death from sickness. These are the figures given in an editorial of the *British Medical Journal*, the translation of an address given at Tokio, by Surgeon-Lieutenant-General M. Koike, in *The Royal Army Medical Corps Journal* for December, 1906, *La Semaine Médicale*, No. 29, 1906, and the *Russki-Invalid*, November and December, 1906.

The editor of the *Royal Army Medical Corps Journal*, in a review of Surgeon-General Koike's address, warns those comparing the figures given in it with those of other wars that the very large increase in the number of wounded and killed must influence the proportion just as much as a decrease in the number suffering or dying from disease, and says "the closer one examines the figures, the more one is forced to the conclusion that the former and not the latter condition has been the chief influence at work in determining the marked alteration in the proportion of deaths from disease to deaths from wounds, in the Russo-Japanese War, as compared with the immediately preceding wars."

It must be remembered against this view that the amount of sickness in both armies, as will be seen later, is stated to have been less than in time of peace.

The *Russki-Invalid* makes the following comparison:—

	Russian Army.	Japanese Army.
Admissions for disease ...	333,411	334,073
Proportion per 1,000 of strength	244.25	220.51

The rates are based on the estimate that the average strength of the Russian Army was 1,365,000, and that of the Japanese Army 1,515,000. The writer attributes the higher disease rate among the Russian troops to the fact that the climate and country of Manchuria were more strange to them than to the Japanese.

The same writer gives the Russian deaths from wounds, including killed in action, as 1 to 0.27 from disease. You will remember the Japanese rate from disease was 0.10 higher.

No absolute reliance can be placed on the figures of the *Russki-Invalid* with regard to sickness, for the editor of the *British Medical Journal* and Surgeon-Lieutenant-General Koike

EXPEDITION OR WAR.	RATIOS PER 1,000 OF STRENGTH.					
	ADMISSIONS.			DEATHS.		
	For Disease.	For Wounds or Injuries in Action.	Total.	From Disease.	From Wounds or Killed in Action.	Total.
Ashanti, 1873—1874 ...	474.0	70.0	544.0	16.0	6.0	22.0
Perak, 1875—1876 ...	227.0	1.6	228.6	20.0	1.6	21.6
Zululand, 1879—1880 ...	739.0	12.0	751.0	24.83	1.8	26.63
Afghanistan, 1879—1880 ...	869.9	51.0	920.9	36.03	6.92	42.95
Egypt, 1882 ...	554.0	29.0	583.0	6.06	7.15	13.21
Sudan, 1884 ...	76.2	49.2	125.4	—	31.36	31.36
Nile, 1884—1885 ...	808.6	22.4	831.0	40.01	11.70	51.71
Suakim, 1885 ...	282.9	13.7	296.6	7.87	6.50	14.37
Sudan, 1885—1886 ...	1100.3	46.9	1147.2	29.44	9.82	39.26
Nile, 1889 ...	73.5	3.3	76.8	1.31	0.65	1.96
Ashanti, 1895—1896 ...	49.27	—	49.27	0.56	—	0.56
Chitral, 1895 ...	1530.0	14.0	1544.0	49.39	5.10	54.49
Dongola, 1896 ...	976.6	—	976.6	81.70	—	81.7
Bechuanaland, 1896 ...	531.0	11.0	542.0	28.60	2.6	31.2
Mashonaland, 1896 ...	782.0	53.0	835.0	3.80	15.0	18.8
Tirah, 1897—1898 ...	573.8	25.0	599.4	28.24	2.67	30.91
Nile, 1898 ...	1101.7	56.7	1058.4	36.18	15.67	51.85
China, 1900—1901 ...	1051.7	10.2	1061.9	22.71	2.35	25.06
South Africa, 1899—1901 ...	746.0	34.0	780.0	69.0	42.0	111.06

give 236,223 as the total number of Japanese sick. There is also a discrepancy between the last two authorities, inasmuch as the *British Medical Journal* gives the number of deaths from sickness as 27,185, while the translator of the Japanese Director-General's paper gives that number as the number of cases of infectious disease. It must be remembered also that 39,635 Russian "missing" were allocated in the available statistics at the same rate of mortality as obtained in the Russian hospitals, although it is not definitely known what became of them.

And now to speak of previous sanitary corps.

The Northern States military authorities in the American Civil War attempted the reduction of the sickness inefficiency and mortality by organizing a special sanitary staff, but without conspicuous success. The Japanese in the Russo-Japanese conflict had a sanitary corps which obtained strikingly successful results, as you have seen, the percentage of sickness being actually less than in time of peace. I have no knowledge of the Russian sanitary organization, but Dr. Schaefer in "La Revue Militaire des Armées Étrangères" says:—"By adopting measures of hygiene suitable to the climate, and providing for feeding the men by means of wheeled kitchens, the number of Russian sick was less than in time of peace." I gather from this that there was some sanitary corps.

The sanitary corps of the Territorial Force differs, however, from all previous corps, inso-

much as it is the first manned by sanitary specialists. Much excellent sanitary work has been done by the British Royal Army Medical Corps, many members of which hold a diploma in public health, but the sanitary duties have been supplementary to other work, and not the primary object of the corps' existence. The Sanitary Corps of the Royal Army Medical Corps, Territorial Force, to give it its full designation, has a peace establishment of 105 of all ranks—viz., one major, two captains, two subalterns, and 100 of other ranks.

The war establishment, according to information supplied to me from the War Office, is fourteen divisional sanitary officers in active appointments, and six lieutenant-colonels, forty majors and sixty captains, whose services are available on mobilization. Being a member of the corps on its war establishment, it is scarcely necessary to say I am a friendly critic, and only point out what appear to me to be defects in the hope that they may be remedied, and recommend changes with a desire for efficiency. As a junior officer I make my remarks with considerable diffidence, and hope they may not be considered presumptuous.

Beginning with the War Office, it is necessary that each sanitary officer should have a properly defined position. He has none at present. He may be a major or a captain *à la suite*, which term appears to be a polite variation on the term "supernumerary," but no one has been able to tell me in what relation he stands

to the combatant officers, the officers of the Royal Army Medical Corps of the Regular Army, or even the superior officers of his own branch of the service.

The officer should be provided with a uniform. All who have any knowledge of the private soldier are aware of the scant respect he pays to anyone not in uniform. This uniform should be issued at once, for there would be so much to do in the event of mobilization, and so little time to do it in, that it is not likely that time would be found for the issue of uniforms.

The uniform is also necessary for the protection of its wearer, who would not have many moments to live if captured out of uniform by an enemy when engaged in his duties. It would not be altogether useless in time of peace if the owner went into camp for training. A question of mine on the subject addressed to the Secretary of State for War was replied to as follows:—

“— I am directed to inform you that in the case of officers of the Royal Army Medical Corps (Territorial Force) whose services are available only on mobilization, the provision of uniform (service dress) before mobilization orders are issued, though desirable, is left to the option of each individual officer. No outfit grant would be issued until mobilization is ordered.”

This may be paraphrased as follows:—The officer is at liberty to provide his uniform at his own expense, but will be paid for it if mobilization is ordered. (Query—Would this be retrospective?)

Each officer should be attached to a particular unit, and its headquarters should be his, and he should know the extent of the country in which he might be called upon to act upon mobilization. The reason will be shown later on.

The officers attached to each unit should have a squad of men detailed for instruction in camp sanitary work. *The Corps as at present constituted has more officers than men.* Even if the men trained by them were moved on with the unit in case of mobilization, the officers in charge of the next camp would benefit by their efficiency, while the next incoming regiments would bring other trained men to take their place.

Now I will point out what I consider should be the duties of commissioned officers in time of peace.

The officer should make himself thoroughly acquainted with the country in which he might

be called upon to act, not confining himself to the district for which he is medical officer of health. He should know the exact situation of every watermain, public sewer, hospital, and building suitable for a temporary hospital. These should be marked on a map supplied to him for that purpose. The map should be kept up to date and duplicated, and the duplicate deposited at the local headquarters. The officer should also have at least a general idea of the geology of his district, for the nature of the subsoil is of the greatest importance when considering the choice of a camp, temporary or permanent. The officer should go into camp at least once with the unit to which he is attached, and should assist in choosing, or at any rate in laying out, the camp for the annual training. The knowledge of the officer is assumed to be guaranteed by his medical and public health qualifications, and the experience gained previously and subsequently to taking them, and the fact that the officer is in the active practise of his profession is taken to mean that he is fully trained at all times and able to take duty in the field, and that it is therefore unnecessary for him to go into camp in time of peace. I strongly dissent from this assumption. It may be unnecessary in the case of those who have served in the Regular Army or the late Volunteer Force, but there are many others, competent in all other respects, who are quite ignorant of the conditions of camp life. One of these men placed in charge of a camp would be in the position of a learner for some little time, and although he would doubtless soon acquire the small amount of knowledge he lacked, the fact that he displayed ignorance at the outset of his active service would tend to diminish his authority and the respect in which he was held.

Another and very important duty which should not be neglected is the giving of lectures to officers and men. It is more important to give them to the former than the latter. The advice of the sanitary officer must be given to the commanding officer, who in turn gives orders to his officers, who transmit them to the non-commissioned officers, who see that the men carry them out. It is therefore highly desirable that the officers should know the principles on which the advice is based. If lectures are given in camp, all may be compelled to attend, which is not always the case when they are given in a drill-hall or similar building.

Lectures are a necessity, for the sanitary

education of the soldier must be in time of peace. It is to be remembered that even if the knowledge instilled should not be required in war, it is useful in civil life, and every man who acquires a knowledge of the main principles of sanitation becomes a sanitary missionary among the civil part of the community. The scope of the lectures should include the selection of the camping grounds (mainly for the benefit of the officers), water supply, the destruction of flies, the disposal of refuse, and general sanitation. Other subjects might be usefully added, such as food supply and the prevention of infectious disease; but the prevention of foot-soreness, first aid, personal hygiene and all that appertains to it may be considered as in the province of the other branch of the Royal Army Medical Corps, Territorial Force.

The usefulness of the sanitary officer in case of mobilization will largely depend on his status. He will be of little use unless some change such as has been indicated is made in it, and he is given a properly defined position. I make no excuse for repeating myself to some extent on this point.

On mobilization an official notice, which is always kept in readiness, will be sent to each member of the force by post or otherwise, and the duty of the sanitary officer will be to report himself at the local headquarters as soon after as practicable. Presumably he will then be placed in charge of the sanitary arrangements of the camp, if there should be one; but if not, he will be called upon to assist in laying one out. The choice of the site of the camp will be principally governed by military considerations, but it is conceivable that occasions might occur on which it would be necessary for the officer to give an opinion as to which of two or more sites was the better from a sanitary point of view. It would be then that the knowledge of the district acquired in time of peace would prove of service, but in the absence of such knowledge the assistance of a local medical officer of health or inspector of nuisances might prove invaluable. When the site of the camp has been selected, it will be the duty of the officer to advise as to the positions of the various quarters. This has to be carefully thought out. It would not do to construct latrines so that the prevailing wind brought down myriads of flies to the kitchens, as in the American Philippine Campaign; nor “to pitch the hospital for wounded on the lee side of a hill, getting the full benefit in torrid heat of

the flies and smells from a slaughter-house on the weather side,” as occurred “after one of the worst actions in Natal” during the late South African War. (Viscount Midleton, when Mr. St. John Brodrick, in the *Times*.) It is difficult to think that such mistakes would have been made if thought had been taken or the advice of the medical officer followed.

In the Russo-Japanese War, members of the Sanitary Corps of the Japanese Army Medical Corps moved in advance of the troops. They inspected the wells, tested the water, and if it proved to be of a satisfactory nature, placed a sentry over it to prevent its being fouled or poisoned. Provision was made for the boiling and filtration of water; unwholesome places were disinfected and refuse burned; houses in the villages were made sanitary, or if this was impossible, burned; baths and latrines were constructed. Notices were placed at the entrances of villages showing the number of houses, the quartering capacity, the wholesomeness or otherwise of the wells, and the existence or non-existence of infectious disease.

Some other preventive measures which were taken were, perhaps, not within the scope of the duty of the Sanitary Corps—*e.g.*, the issuing of portable filters and creasote pills (called *Seiro-gan*, or “Invasion of Russia” pills). Although this work was necessary in Manchuria, it is to be hoped that much of it would not be required in the event of a campaign in the British Isles, to which the service of the Territorial Force is confined.

Before concluding, I may remark that it has always appeared to me that the services of inspectors of nuisances should be utilised in connection with the Territorial Force. Most of them, especially those of the larger rural districts, would make most excellent guides, knowing as they do the short-cuts and foot-paths. It would, of course, be necessary to give them uniforms for reasons already given. Many of them would make admirable non-commissioned officers in the sanitary corps.

THE PREVENTION OF CONSUMPTION.—The Tottenham Council, on the application of Dr. Butler-Hogan, its medical officer of health, has granted the free use of the Council Chamber on Wednesday, December 15th, for the purpose of a lecture on “The Prevention of Consumption,” by R. W. Philip, Esq., M.D., F.R.C.P., of the Royal Victoria Consumption Hospital, Edinburgh. As the seating accommodation is limited, early application should be made to the M.O.H., Town Hall, Tottenham, by medical officers and others wishing to be present on the occasion.

SOME OF THE DIFFICULTIES WHICH OCCUR IN THE ADMINISTRATION OF SMALL ISOLATION HOSPITALS.*

By FRANCIS H. MAY, M.R.C.S., L.R.C.P., D.P.H.,
Medical Officer of Health of Aston Manor.

IT is no easy matter for a part-time medical officer of health, when writing a non-academic presidential address, to prepare one of sufficient interest to be read at the Midland Branch of the Society of the Medical Officers of Health, all of whose members are better versed and trained in hygienic subjects than I am, many having even taken part in the framing of public health legislation before I had entered the field. Nevertheless I have endeavoured to choose a practical subject in which I have had some experience, viz., "Some of the difficulties which occur in the administration of small isolation hospitals." By this title I mean infectious hospitals without a resident medical officer but under the superintendence of the medical officer of health.

It would be as well to make it clear at the outset that it is not to be inferred that these difficulties are so many or so great as to call into question the utility or necessity for the provision of such commendable institutions as isolation hospitals. I desire rather at this juncture to emphasize the statement that with sufficient accommodation and efficient administration they are absolutely indispensable to the sanitary welfare not only of densely populated towns but of all districts, whether urban or rural, and play an important part in preventive medicine.

Structural.—Many of the older and smaller isolation hospitals present structural difficulties both in the administrative offices and in the meagre ward accommodation. This is sometimes owing to their having been originally built as small-pox hospitals, but finished either too late for the small-pox epidemic or disinfected after the epidemic has subsided, and subsequently utilized for the treatment of scarlet fever, diphtheria, or typhoid fever. The treatment of these diseases, especially scarlet fever, requires more wards and much more bathing and nursing accommodation than was provided in the old days when some of the small-pox hospitals were constructed with one or two pavilions of two wards each and with one small bathroom to each pavilion. These adapted hospitals, if utilized for scarlet fever,

were evidently not likely to prove large enough nor so well adapted for the treatment and segregation of patients as later ones built for the purpose; and sooner or later they have to be extended, either with permanent modern wards or, in epidemic periods, by temporary wooden or iron pavilions built during urgent need. Isolation hospitals so constructed may probably prove adequate for local requirements in ordinary times, but owing to the difficulty in their administration medical officers of health have had to incur grave responsibilities when an epidemic has presented itself in their districts; and in coping with it as hospital superintendents they have had to face the added difficulties and anxieties arising from the number of patients so rapidly overtaking their accommodation. This by no means implies any fault of the medical officer of health, or lack of recommendations to his council to extend permanently both the administrative offices and wards in non-epidemic periods. In my own case the medical officer of health as hospital superintendent at such a critical period not only had to convert his committee to the urgency of adding a pavilion of two wards, but to insist on a temporary one being erected within a definite number of days. In such a case, unless his co-officer the surveyor rises to the occasion, he may have to take nearly all the responsibility of such temporary structure, whether of wood or iron, slated roof or otherwise; its size, lighting and ventilation; and the foundations and drainage, even when this building has to be erected in a limited number of days—it may be in the winter months.

To add to this he will have the additional anxiety of knowing that the cost of this pavilion will most likely have to be paid for out of revenue not provided for in the estimates, for upon only a few of these temporary pavilions have the Local Government Board been willing to lend money; and yet he will have to induce his committee at these panic times to build according to Government measurements, i.e., 2,000 cubic feet per adult, in order to indulge the hope that a short loan by the Local Government Board may be subsequently granted.

The possibility that the height of the epidemic may be passed before this new extension pavilion is finished and its utility lost until the next epidemic, is another source of anxiety, and indirectly it supplies another argument against medical officers of health being appointed annually.

Another consideration in isolation hospital administration, and one in which the medical officer of health is sometimes at fault, is that when obtaining temporary ward extension in an epidemic, extra sleeping accommodation for nurses employed to work these wards must be included.

Of recent years nearly all isolation hospitals have been freed to patients resident in the district, and rightly so; but how few councils where fees were charged, at the same time or previously to the transition, considered the increased administrative difficulties this would involve and extended their ward and nursing accommodation to allow for the greater influx of patients before the next epidemic visited their district? When Aston Manor freed the scarlet fever hospital to patients some years ago the isolation only represented 52 per cent. of notified cases in the district, but the proportion rapidly rose in the following years to 85 per cent. of notified cases.

As scarlet fever is endemic in most towns and large urban districts (apart from the isolation of other diseases in hospital) I consider that for the proper treatment and segregation of cases of scarlet fever, allowing cubic space of sufficient capacity, much more ward space is required than was anticipated when the treatment in hospital was first undertaken, therefore persistent efforts on the part of the medical officer of health in overcoming these difficulties by supplying ample ward space is more than justified, as it tends towards more efficient work, more rapid recovery, quicker discharging, and a more speedy subsidence of an epidemic. It also tends to obviate the risk arising from premature discharge of cases. Let me add that to lessen administrative difficulties abundant ward space is desirable even in non-epidemic periods to allow for each ward in turn to lie fallow for a time; this permits of the necessary washing down of walls, floors and ceilings, and especially the disinfection of beds and bedding, thus minimizing ward infection.

That some small isolation hospitals have no steam disinfectant on the premises is a great disadvantage. In this connection I may mention that disinfection of hospital beds in a steam disinfectant on the premises should be carried out systematically as well as when occasion requires, also that the steam disinfection of all dirty clothing before admission to the laundry for washing is requisite, especially as two or more diseases are often treated upon

the same site, and sometimes have to be treated in the same hospital.

This paper might have been entitled "a plea for increased ward accommodation to ease administrative difficulties," even bearing in mind that the more these extensions occur the more beds, staff and supervision are required; and I would contend here strongly that if the accommodation for the nurses be increased in proportion there will be fewer difficulties to surmount, more efficiency, and less anxieties when epidemics threaten or occur. It is only just to state that some of these particular administrative difficulties and much of the apparent delay of councils in extending originally insufficient permanent isolation hospitals are due to the slow method of procedure in the submission of the necessary plans, etc., to the Local Government Board for their approval, the time taken before the plans are sanctioned in procuring an inquiry in order to obtain a loan for extension, and subsequently further delay in advertising and the selection of tenders, together with the slow process of erecting a permanent structure. Much of this would be obviated if the Local Government Board more fully recognized these difficulties, also the utility in epidemic periods of the rapid extension of isolation hospitals by means of temporary pavilions, always providing they are built in accordance with Government plans and regulations or to set plans recognized by the Local Government Board, loans accordingly being assured, though of short duration.

I cannot refrain from words of thankfulness that, owing to the recognized danger of small-pox being spread by aerial infection for a considerable distance, the Local Government Board refuse their sanction to loans for the erection of a small-pox department on isolation hospital sites when utilized as hospitals for scarlet fever or other diseases, and have further made it conditional in granting loans for extension for scarlet fever that no small-pox cases shall be treated on the same site, thereby minimizing other administrative difficulties and necessitating a new site and hospital being procured for small-pox.

As the provision of adequate accommodation both for patients and staff is so intimately connected with the efficient administration of isolation hospitals, I hope, at some other time, to show you four types of temporary wards all added in epidemic periods to the permanent Aston Manor Isolation Hospital opened in

* A Presidential Address delivered before the Midland Branch, on October 7th, 1909.

June, 1885. This small isolation hospital was originally built as a small-pox hospital, but it was not completed until the epidemic of small-pox had nearly disappeared from Aston Manor by the help of a tent hospital. As the new hospital was not in use for some time, it was utilized for the isolation of scarlet fever, and for this purpose it has been employed ever since, but it has been much improved and extended, a new site and small-pox hospital a quarter of a mile away having been subsequently provided.

The following are the types of the four temporary wards added to the old permanent structure. In 1890, owing to an increase of scarlet fever, Pavilion "C," to accommodate twelve adult patients, was built in the fourteen days following Christmas, 1889, of wood on brick foundations, with slated roof, and warmed by slow-combustion stoves, but for which a loan was refused. This was built nineteen years ago and is still in regular use.

"C." *Loan and Cost.*—No loan. Building and furnishing, £753.

In 1893, during an epidemic of small-pox in Aston Manor, Pavilion "E," to accommodate twenty adult patients, was built in twenty days. This pavilion was erected of wood and corrugated iron on a brick foundation, and is used now for scarlet fever for overflow cases.

"E." *Loan and Cost.*—No loan. Building, £967. Furnishing, £17. Contractors paid by instalments.

In 1895, owing to an epidemic of scarlet fever, Pavilion "B" was built for twelve adult patients in twenty-one days, with two bedrooms upstairs. This pavilion was built with double wooden walls, with felt and shavings between, on brick foundations, with slate roof.

"B." *Loan and Cost.*—No loan. Building and furnishing, £1,195.

In 1906, owing to another epidemic of scarlet fever, a permo-temporary pavilion "A," to accommodate twenty adult patients, was erected according to Local Government Board measurements upon a foundation with drainage for a permanent block, the superstructure consisting of wood and iron lined with felt and sawdust between. This pavilion was erected in November and opened in the short space of one month from the day the resolution was passed by the council, despite most inclement weather.

Whilst building the pavilion, accommodation for the increased staff was included, and two bedrooms for two nurses each were erected

on the ground floor but separated from the wards by a wall of brick, with separate entrances outside and lavatory.

Upon request, the Local Government Board, after it was erected, held an enquiry, and a loan for twelve years was granted for this permo-temporary pavilion.

"A." *Loan and Cost.*—Loans: £1,529 (twelve years) building and £245 (ten years) furnishing; total, £1,774.

I should not like this Society to think that because I admit the usefulness of permo-temporary ward extension (*i.e.*, temporary superstructure on foundations with drainage as for a permanent block) in epidemic periods that I am any the less a strong advocate, when time and money permit, for these extensions being always carried out by the provision of permanent wards in non-epidemic periods. Of course, the administrative offices are of necessity increased by permanent buildings.

Resident Medical Officer.—The question of the number of patients who can be safely treated without a resident medical officer is a debatable one, and one too much dependent on the local circumstances to be able to give it a definite answer. It is also largely dependent on the nature and type of the disease. A continuance for several months of a hundred and twenty cases of scarlet fever, many of whom would be convalescents, may certainly be dealt with without a resident medical officer provided he has an efficient staff; but taking into consideration the care and anxiety the discharge as well as treatment these cases involve, from an experience of these epidemic periods with over one hundred cases in hospital, I am of opinion that a visiting medical superintendent ought then to have extra medical assistance in some form or other. In isolation hospitals where diphtheria and typhoid fever are admitted and treated the necessity for a resident becomes apparent, the admission of such cases often requiring immediate surgical attention.

Visiting.—Apart from difficulties arising from structural defects and meagre accommodation for staff and patients, there are many other questions which arise in the administration of small isolation hospitals. A system which permits of adult visiting once or twice a week is to be deprecated, although if there were no risks of infection it has some advantages. The public eye tends to keep up the standard of punctuality and scrupulous cleanliness. The public visiting assists the arguments for adequate

ward accommodation in epidemic periods, as visitors soon see when overcrowding of cases commences. The visiting of parents can also be utilized in making arrangements for patients' discharge. But on the whole the system is an unsafe one through minimizing the effects of isolation, and is otherwise objectionable, often making a cheap peep-show of patients who abhor being viewed under distressing circumstances. Where patients are in danger special permits might be issued, and general visiting abolished.

Operations.—A difficulty which often presents itself at an unexpected moment is whether the consent of a parent should be obtained or not before operating, *e.g.*, for mastoiditis. I usually operate and tell the parent afterwards; this saves injurious delay and possible refusal, or a demand for consultation with the medical practitioner, and as no anæsthetic is called for in urgent mastoid operations, that region of the body being almost without sensation, I feel it is not so necessary to alarm the parents in advance. The radical cure of mastoiditis I should not attempt or recommend in fever hospitals, as it is better performed by specialists, but I find this is seldom necessary if cases are not delayed and are operated upon early enough—that is, not waiting for pus to form—tenseness, tenderness or redness with high temperature being sufficient justification in so safe a region to operate. I am pleased to say I have had few cases which did not heal in hospital.

Ringworm.—A minor difficulty is to be found in the admission of cases affected with ringworm and the risk of its spread, as scarlet fever patients in the stage of desquamation are especially liable to catch ringworm in hospital. In the segregation of cases, male and female ringworm wards are almost a necessity, together with frequent disinfection of bedding, and it is necessary to advise the parent that the patient has ringworm on admission, as this particular skin affection is often not cured on the discharge of a patient. During the past ten years I have systematically had all hair on the heads of children, male and female, clipped on admission, and the hair shortened or removed in cases of women whenever there is indication of dirt or neglect. This procedure has led at times to criticism and trouble, but has been the means of discovering several cases of ringworm which otherwise could not properly be treated, and would have increased the risk of its spread, besides lessening the work and difficulty on discharge.

Staff.—Another minor difficulty is the maintenance of staff in non-epidemic periods. As long as a hospital is full or the number of patients exceeds two-thirds of its accommodation, there is little trouble; below that number, the staff may have to be reduced to satisfy economic considerations. This often (when the month's notice has terminated) necessitates advertising to increase it again, owing to a sudden influx of cases, and in the long run costs more than retaining old, tried, and worthy nurses. This reduction of staff is often ill-timed and no economy, especially as medical superintendents are expected at short notice to staff a small-pox hospital in the event of a case arising in a district, and it necessitates a minimum of three or four being drafted from the staff in the event of opening up wards in the small-pox hospital even for one patient. This difficulty I have had to face on more than one occasion.

I am aware many hospitals are run with probationer nurses and the staff cannot so easily be interfered with, but the system of training with a non-resident medical officer I have long since discarded, and employ fever trained nurses with wardsmas under them, which ensures more safety in the management.

The fact must not be overlooked that sickness among the staff may temporarily reduce it, to say nothing of the provisions which must necessarily be made for extra night duty, special nursing, or even holiday after arduous strain in epidemic periods.

Return Cases.—I cannot treat of the difficulties in the administration of isolation hospitals without reference to the much-discussed and important subject of return cases. To minimize some of the recognized difficulties and dangers of these return cases, also to prevent the risk of litigation after discharging scarlet fever patients from hospital, I will describe at some length the plan I have adopted for seven or eight years, of utilizing one of the two visiting days for the interviewing of one or other parent or relation of those patients passed for discharge the day previously. They are plainly told the patient's condition, and that however long he or she may remain in hospital it is not safe for the person discharged to mix with young or susceptible children under a month's quarantine outside, *i.e.*, to mix with children or persons under forty years who have not had scarlet fever, other than the parents, who must of necessity take their risk. I also advise that a child discharged shall not attend any

school till this period has elapsed, and am willing to give a certificate for its absence after discharge. At the same time I explain to them that I cannot say when any case is free from "lung" or "ward" infection carried in the lungs. I recommend that they either send the discharged child for at least a month to some place where there are no other young or susceptible people, or send away previous to the patient's discharge the children who are at home for a month, thereby obtaining a month's quarantine outside hospital.

The system gets discussed among the parents visiting, so that when the time comes for their children's discharge they are generally prepared with some arrangement. They are asked to sign a paper agreeing to this when fetching their child home on the following day, so that if there is no truth in their statement the written lie often checks them. Since I adopted this system there has been no threatening of litigation in return cases, and my return cases also have become greatly reduced. Where such arrangement is impossible and children have to return home among others, I have adopted a plan of discharging the child as if going home and isolating it in a pure ward or small cottage on another site across the road for a minimum of three days, with nurse separated from rest of staff; the patient's and nurse's washing, etc., being done on the spot. Although this plan has not always prevented return cases where the child discharged is going among other children it has minimized the dangers, also the criticism and risk of litigation if return cases do occur; and I believe that few hospitals do more, or are more careful in discharging cases, than the Aston Manor Fever Hospital.

Even with these and many other precautions batches of return cases may occur. I say batches, and mean it, for I notice that my return cases occur in small batches periodically. For instance, I discharged during a severe epidemic 120 cases into two neighbouring authorities without a known return case, and over eighty in my own district, yet later had a batch of three or four return cases that had run a normal course in hospital and with no alteration in method of discharge. Several times have cases been admitted to hospital from a home to which in a day or so I was contemplating discharging a child. All fresh clothing is expected on fetching a child out, none being sent from hospital except on written application.

There are many other difficulties connected

with hospital isolation, both structural and administrative, to which I have not adverted in this address, but I feel that I have already trespassed on your patience much longer than I ought. I recognize that this department of public health work on which I have so imperfectly lifted the curtain this afternoon is one of considerable importance, and have assiduously endeavoured during the years I have been engaged upon it to keep it free from reproach. There are other medical superintendents at these hospitals present this afternoon, and I hope that they will supplement my deficiencies from their experiences.

A MEDICAL OFFICER OF HEALTH ELECTED MAYOR.—The Oswestry Town Council have received the formal resignation of the medical officer, Dr. R. de la Poer Beresford, who has accepted the unanimous invitation of the Council to act as Mayor during the ensuing year. Dr. Beresford's letter of resignation was in the following terms:—"Oswestry, October 26th, 1909. Gentlemen,—In order to accept the honourable position of Mayor, which you have offered to confer upon me, it will be necessary for me to place in your hands my resignation as your medical officer of health. In doing so, however, may I be allowed to say that it is my express wish to be intimately associated with and have the supervision over the duties during my year of office, that after serving the Council in that capacity I may be in a position, with your permission, to resume office at the close of my official year as Mayor of Oswestry. As probably the senior medical officer of health in England, I feel very proud of that office. Thanking you for your great courtesy and many kindnesses in the past, I am, etc., R. de la Poer Beresford, M.D., M.O.H." In order to give Dr. Beresford an opportunity of resuming office as medical officer of health at the close of his mayoral year, the Council resolved to appoint his successor for one year only.

PADDINGTON TUBERCULOSIS EXHIBITION.—This Exhibition, which has been organized by the National Association for the Prevention of Consumption, will be held in the Congregational Hall, Queen's Park, Harrow-road, from December 8th to 17th inclusive. It will be open daily from 12 to 9.30 p.m., and there will be no charge for admission. The organizers hope to be able to arrange for a popular lecture to be given each evening, also for demonstrations and conferences. On December 13th, at 5 p.m., Dr. Allan, Medical Officer of Health of Westminster, will lecture upon "Methods for Systematizing and Co-ordinating Medical and Social Work in connection with Tuberculosis." A discussion will follow.

THE MEDICAL MILK COMMISSION ON THE AMERICAN CONTINENT—ITS ORIGIN, ITS PURPOSE AND ITS GROWTH.

By HENRY L. COIT, M.D.,
President of Pediatric Section, XVI., International Medical Congress, Budapest, 1909; Founder of the First Medical Milk Commission.

IN the year 1899 an attempt was made by the Medical Profession to obtain legislation in the State of New Jersey on the purity of the milk supply.

This object, important alike to clinicians and those who study the economic relations of infant mortality, it was then impossible to attain.

This was the first purely professional effort made in the United States to secure suitable milk for clinical purposes; it preceded by four years the first official control over the milk supply, which was established in Washington in 1894.

This agitation, started in the Medical Society of New Jersey, has become a world-wide movement, and the question of morbidity and mortality due to milk has engaged physicians universally in a demand for clinically clean milk.

The Medical Milk Commission had its inception in the efforts of the author of the plan to solve problems in infant feeding. It was coincident with the early work in the United States on the artificial nutrition of infants; and this particular need for clean milk is today the largest single factor in sustaining the interest in the subject.

Defects of Ordinary Methods of Milk Production.—Every ordinary method thus far employed for producing and distributing milk on a large scale reveals defects, and cannot be trusted to yield a product suitable for the use of the sick, for hospitals, or for the food of the young infant. Gathered milk, so called, constitutes the larger portion of milk brought to the cities. This is mostly milk of a low grade, and in many cities needs only to pass the casual view of the inspector at the railroad station to fulfil the municipal regulations.

Legislation has heretofore been trusted to regulate this matter, but neither federal legislation nor the ordinances of municipal government can secure what we require. These influences are too remote from the sources of supply; the demands are too limited, their standards of purity too low; they are not

closely identified with actual dairy work and do not stimulate the best efforts of the dairy-men in the practise of dairy hygiene.

Furthermore, it will probably always be true that legislation cannot regulate the details of special kinds of work; an ordinance in its letter may require milk to be clean, but how it shall be made clean it cannot define. Law may fix a standard of cleanliness and purity, but it cannot determine methods for its attainment; it would be necessary that the code should define what constitutes a clean hand, a clean udder, a clean vessel, a sterile container; what constitutes a healthy animal, a safe workman, good food, or proper housing and care—these the law never has and probably never will determine.

Possible Methods of Control.—There are three methods of supervision of the milk supply now employed to safeguard its purity. First: Commercial control, which is followed in many cities. It consists of a licence issued to collectors and distributors of milk, with no proper or efficient official inspection of the dairy premises or milk shops; most of the supply is brought on railroads from distant points, without proper refrigeration. The method is imperfect and great havoc is wrought among the people through infection, infant morbidity and mortality.

Second: Municipal control, which involves official inspection of farms, supervision of transportation and milk shops. In this, the score-card has recently been employed. Copenhagen, New York City and Rochester represent types of this method. In every large city the control of by far the greater part of the milk supply must fall on the health department; therefore, very great importance must be attached to this method. New York City consumes daily nearly two millions of quarts of milk, distributed from twelve thousand milk shops, and is obtained from thirty thousand sources of supply.

Third: Medical supervision and control. This method does not supersede the foregoing official or municipal control which is employed in cities for the general supply, but it attempts to obtain a special milk or clinical milk, suitable for the sick, for hospitals and for young infants. This product is in quality so far above the requirements of the Government ordinance that it is not strictly under the law at all. The plan provides for the voluntary unpaid services of a commission of several physicians, appointed by a medical society which combines under its control a dairyman, a chemist, a bacteriologist,

a veterinarian, and a medical inspector of employees, who render to the commission information upon which, if its requirements and standards are met, issues a certificate to the dairyman which permits him to designate the product "certified milk." The method includes: (a) Contract control of production; (b) automatic advance of requirements with increased knowledge; (c) safeguards, including the most advanced methods of sanitary science.

Clinical Standards of Purity for Milk.—In order to meet the clinical requirements for milk in the present state of our knowledge, three conditions of purity must be fulfilled. These requirements were formulated in 1892, in connection with the organization of the following plan:—

First: An absence of large numbers of micro-organisms, and the entire freedom of the milk from pathogenic varieties.

Second: Unvarying resistance to early fermentative changes in the milk, so that it may be kept under ordinary conditions without extraordinary care.

Third: A constant nutritive value of known chemical composition, with a uniform relation between the percentages of its combined constituents and its organic principles unimpaired by mechanical thermic or chemical treatment.

The Plan.—In January, 1893, the plan was presented to the Practitioners' Club, a medical society in the City of Newark, New Jersey. It was without precedent known to its author, and was submitted for approval to Professor T. Mitchell Prudden, the late Professor Albert R. Leeds, and Dr. R. G. Freeman, all of whom were later identified with its development. The plan provides that the medical commission establish correct clinical standards of purity for the milk; become responsible for periodical expert inspections of the dairy or dairies under its patronage; provide for frequent examinations of the product by a chemist and a bacteriologist, the first to determine its food values, and the latter to serve as a detective control over the methods employed in collecting and handling the milk.

The medical commission also directs a frequent scrutiny of the live stock by competent veterinarians, whose duties consist in keeping the herd free from disease and also the detection and exclusion of bovine tuberculosis. Likewise the commission directs a systematic medical supervision of the health of the dairy employees, and insists upon a continuous knowledge, through reports by a physician, of their health

and personal hygiene. By the service of reliable experts in these four departments, safeguards are established against the common dangers of impoverished and contaminated milk.

The code of requirements includes sureties for its fulfilment, necessary forfeiture clauses, a territorial limit for the sale of the product, and provision for the compensation of the experts appointed by the commission. It controls the character of the land used for pasturage and the cultivation of fodder; determines the construction, location, ventilation and drainage of buildings; provides for an abundant and pure water supply, and prevents the use of water from wells or springs holding surface drainage. It requires in the stable cleanliness and order, and disallows the keeping of any live stock, except for milking purposes, near the dairy buildings. It regulates the assortment of the herd with reference to uniform results, as well as the health, the breed and temperament of the animals. It excludes animals that are tuberculous or are found in a state of health prejudicial to the herd. It provides for proper housing and shelter of the animals, together with their grooming, their treatment and the prompt removal of waste from the stable. It regulates the feeding, with reference to uniformity in the chemical composition of the product, and restrains the use of all questionable or exhausted materials for food. It governs the collection and handling of milk by insisting upon a proper regard for cleanliness, as viewed by the bacteriologist in its relation to the animal, her surroundings, the milker's hands, the vessels, and the association of persons handling the milk with immediate or remote sources of infection. It controls by minute specified requirements every step in the cooling of the milk and its preparation for shipment, and adds to the product every detail of care necessary to promote its keeping qualities or favour its safe transportation. The product of such medical control of milk production was given a name, and when coining the term "certified milk," it did not occur to its author that it would be comprehensive enough to cover the activities of many medical milk commissions; but time makes thought more concrete, and the development of an idea extends its application. The definition of the term "certificate" is "a documentary declaration regarding qualifications, service, conduct, or other advantageous facts; it is more official than a recommendation and does not proceed like a licence from a public authority."

Membership on the Commission.—The Medical Milk Commission is logically organized to include in its membership only those who by special training can best direct these various agencies in the attempt to obtain clinically clean milk. The physician is the proper custodian of health, and his knowledge equips him to judge what conditions are inimical to human life.

It is for this reason that the Medical Milk Commission is strictly a medical organization, and in order to protect its high purposes and the professional reputation of its members it must receive the appointment or endorsement of a representative medical society.

The membership in these commissions as organized on the American continent ranges in number from three members to one hundred. The experience of the original commission in Essex County, New Jersey, would justify the wisdom of limiting the membership to twelve, a majority of whom should be physicians.

Since the experts who work under the direction of the commission are paid officers, and in most instances are paid by the dairymen, it seems best that these should not be members of it, but be designated for employment by the commission and be responsible to it, so that they may at any time be removed for just cause.

Less than twelve members cannot well perform the duties devolving upon these commissions, provided that the four lines of supervision as indicated by the plan are effectively carried out. It is desirable that three members of the commission should together be responsible for each one of the four features of the medical control, and each individual should report to the commission on the fulfilment of the requirements after a personal inspection of the dairy at least four times every year.

Special Features of the Plan.—The meetings of the commission are held at short intervals at a stated time and place. The quorum is small to ensure the transaction of business and the issue of the certificates if the reports of the experts are satisfactory. The reports of the bacteriologist, the chemist, the veterinarian, the dairy physician and the visiting committees are read and discussed. The dairyman and the veterinarian are often called upon to attend the meetings. The chemist's report includes the results of a complete bi-monthly quantitative and qualitative analysis of the milk. The bacteriologist's report includes the numerical findings of bi-monthly examinations of the

milk. The dairy physician reports on the health of every employee on the plant, the nature of any sickness, and the method employed in the treatment, and the isolation of any who are ill with infectious disease.

It will be found necessary for milk commissions to exercise patience in realizing many of their plans. Educational influences are always slow, and in this matter the instalment of new methods for obtaining results must often wait upon increased business to warrant the outlay.

The price of the product determined by the commission is not an insignificant factor in the success of the plan. Expensive requirements may call for the expenditure of large sums by the dairymen, such as installing ice plants or electric light and power. While no milk fit for ordinary domestic use can be produced with profit to the dairyman for less than five or six cents as first cost, milk of a suitable grade for hospitals or for infant feeding cannot be sold at a profit for less than fifteen cents per quart.

Result of the Plan to Certify Milk.—It has thus been found possible to combine two diverse interests to effect a public good, and that a purely scientific scheme may be worked together with and influence a commercial institution. A most gratifying result has been the universal confidence in the gratuitous and disinterested work of the commissions, and the character of the product has been such that almost the entire output of certified dairies is employed by physicians in their work.

The clinical standards adopted by the commissions have in the main been realized, but this is because they represent reasonable requirements, which automatically advance as more improved conditions become possible.

The examinations of the milk by a bacteriologist have done more than any other feature of the supervision to improve the milk. The reduction of the bacterial contaminations is the most difficult problem to solve, but an average of not more than ten thousand bacteria per cubic centimetre can be maintained throughout the year if the man in charge of the milking is experienced, is in sympathy with the requirements, is familiar with the principles and practice of cleanliness, and has been trained for his work.

The result of frequent chemical analyses of milk, which shows its relative food values, has been useful to those who employ the product for accurate percentage feeding of the young. The close supervision of the health of the workmen on the plants by a qualified physician

has made it possible to prevent communicable disease among the men employed on a plant producing thousands of quarts of milk daily during a period of fifteen years.

The veterinary inspections have been far-reaching in their results; it has been possible by inspection and tuberculinization of all animals, before they are brought to the plant, by the semi-annual re-test and the prompt isolation of every animal in ill-health, to keep a herd of milch cows almost continuously free from conditions which would jeopardise the milk.

The keeping qualities of certified milk are remarkable; it can be taken on transatlantic voyages and kept sweet throughout. It may be sent over for the return voyage. Certified milk has been received in New York having been shipped to Liverpool on a trial trip twenty-one days before, and sending one quart to the chemist and one to the bacteriologist it was found that the chemist kept his quart eleven days unimpaired and on the thirtieth day the last remaining quart was still sweet. Thus far this work has been largely educational and experimental, and yet the physicians who are giving their time to it have seen practical results as respects the very superior quality of the milk, the approximation to the standards adopted, and the benefits derived from its use in the nourishment of atrophic infants.

It is highly desirable that this work should be organized and carried on by medical commissions in every large centre of population, and that there should be some uniformity of requirements for certified milk, because it is chiefly designed for accurate, medical and dietetic purposes.

The plan was initiated in 1896, three years after the first commission was organized, with the formation of commissions in New York by Drs. Holt and Chapin, one year later in Philadelphia by Dr. Hamill, and then medical milk commissions appointed by medical societies multiplied rapidly until three years ago there were twenty-one at work in the United States. It was then recognized by the Government. The Surgeon-General and the Secretary of Agriculture issued educational bulletins on the subject.

Through the initiative of the Cincinnati Academy of Medicine these commissions were federated into a national association to promote the growth of the plan and to legislate upon and harmonize the standards and adopt uniform methods and regulations for all commissions.

This association admits to its membership

only those commissions and their members which have been appointed by a medical society in good standing; also professional sanitarians and research workers in hygienic laboratories.

At Chicago in 1908 its membership was three hundred, with thirty-six component commissions. This year at Atlantic City its membership is five hundred, with fifty-eight component commissions in the United States and Canada.

This body of physicians is exerting an enormous influence for good through its educational propaganda, by its leadership in the pure milk movement, and by its effect upon the character of all milk consumed by the people of North America, which in the United States alone is approximately ten billions of quarts annually, or two gallons a month for each individual of the urban and suburban population. These statements emphasize as important that the term "certified milk" should not be degraded or employed by producers of market milk who are not in contact with or under the control of a medical milk commission; that standards of purity and quality for such milk should be determined legally, so that the commissions, their producers and the public should be protected against deception and misbranding. It is also important that the medical commissions, as voluntary unpaid bodies with great responsibility, should have a legal status.

Legislation to cover these points has been sought by many of the commissions throughout the United States. New York has added a rider to her pure food law protecting the term "certified milk" against falsification, and regulating its employment by the commissions. Kentucky did the same thing two years ago; but it seemed desirable that, since the plan had its origin in New Jersey, a law should prevail there, and also to serve as an example to influence similar legislation in other States.

Such an Act was passed by the New Jersey Legislature in the present year (1909), it was inspired by and drawn under the direction of the Essex County Medical Milk Commission.

The Act includes every phase of milk commission activity; it is designed to protect professional interests and encourage the multiplication of commissions throughout the State and the production of "certified milk" in every large community.

It recognizes the National Association as the final arbiter of standards, as well as for methods and regulations; it also defines the powers, and

confers upon the medical commission a legal status.

Thus after twenty years public opinion has been so moulded that this certified milk law was passed with a practically unanimous vote in the Senate and House of Assembly, and the most comprehensive law in the world on the purity of the milk supply has been placed on the Statute-books in Trenton.

THE EDUCATION AUTHORITY AND MENTALLY DEFECTIVE AND CERTAIN OTHER SPECIAL CLASSES OF CHILDREN.*

By ALEXANDER G. R. FOULERTON, F.R.C.S. Eng.,
D.P.H. Camb.,

Lecturer on Bacteriology and on Public Health to the Middlesex Hospital Medical School, County Medical Officer of Health and School Medical Officer of East Sussex.

BLIND, DEAF, MENTALLY DEFECTIVE, AND EPILEPTIC CHILDREN.

THE Local Educational Authority have special powers under the Elementary Education (Blind and Deaf Children) Act, 1893, and the Elementary Education (Defective and Epileptic Children) Act, 1899, for the education of those who, not being either imbecile or idiots and not being chargeable to the Poor Law Guardians, come within the category of defective children as defined by the Acts. Under the former Act it is the duty of the Local Education Authority to make provision to enable blind and deaf children to obtain efficient and suitable education; under the other Act the Education Authority may, with the approval of the Board of Education, make similar provision for children who are mentally or physically defective or who are epileptic.

In making provision for the education of blind and deaf children, the duty of the Local Education Authority is a compulsory one. And in the common case of deaf mutes—that is to say, children who because of deafness either from birth or supervening during infancy have been unable to learn to talk—the exercise of the duty laid upon the Education Committee is of great public advantage. Such children are frequently quite healthy, and having been deprived of the sense of hearing have often other faculties developed beyond the average of childhood. Under proper tuition the power of speech is readily acquired, and the sense of lip-reading is developed so that such children when they pass from under the care of the Education Authority may become active and useful workers, and the

* From Annual Report to the East Sussex Education Authority, 1908.

extra expense involved in their training may be looked upon as expenditure remunerative to the State. In the case of the blind child, the value returned to the State for the expense incurred in education is necessarily less; indeed, it is only under exceptional circumstances that the blind child is other than a cause of unproductive expense to the State throughout its life. Nevertheless, the Education Authority have very properly been made responsible for providing the child with such training as may make after-life better endurable.

The optional powers of the Local Education Authority under the Defective and Epileptic Children Act require careful consideration. Each Local Education Authority is left free to exercise the special powers, or not to do so, according as their individual conception of public policy and various local circumstances may dictate. And in deciding as to the exercise of their powers the Local Education Authority will doubtless be influenced by consideration of the amount of practical benefit to the community which will accrue from the provision of special training for these children.

Amongst epileptic children there are two classes to be considered: those who, although subject to epileptic fits, are not below the average of mental development, and those whose epilepsy is a symptom, or concomitant, of nervous disorder which is manifested by mental deficiency also. The latter class of children have to be considered as mentally deficient children, and so dealt with; their epilepsy is merely an incident of more comprehensive nerve disorder. And for the other class, the children who are of average mental development although epileptic, it is doubtful whether any special provision for education is necessary, except so far as it may be advisable to isolate them in special institutions for the double purpose of keeping them out of the public elementary schools and of providing medical treatment for the cure of their disease when cure is possible. Both these purposes are important; some of these children may be cured by systematic medical treatment given in early life, and, on the other hand, their presence in classes with healthy children is distinctly detrimental. Whether the Education Authority are to provide special institutions for what would be mainly curative purposes is, however, another matter. Meanwhile the accommodation in certified institutions for such children is closely limited; and if the provisions of the Act in this respect were to be adopted systematically in East Sussex, the authority themselves probably would have to provide a certified school within the county. Should such provision be contemplated it would be worth while to consider whether a certified school could be attached to the County Asylum, whose staff are

specially qualified to undertake the supervision of treatment in these cases.

The question of dealing with mentally defective children, according to the Act, is one of great difficulty. The children to whom the Act applies are in it defined as being children who

"not being imbecile, and not being merely dull or backward, are defective—that is to say, what children by reason of mental or physical defect are incapable of receiving proper benefit from the instruction in the ordinary public elementary schools, but are not incapable by reason of such defect of receiving benefit from instruction in such special classes or schools as are in this Act mentioned."

In scientific classification, children mentally defective are graded as (1) those with "high grade amentia," the feeble-minded children, or the mentally defective children of the Act; (2) children with "medium grade amentia," or imbeciles; and (3) those with "low grade amentia," or idiots. But in actual practice it is frequently difficult and it may be impossible to define the exact line of demarcation differentiating the very dull and backward child from the feeble-minded child or "high grade ament"; still more difficult is it frequently to decide whether a child is merely feeble-minded, or whether he is an imbecile or "medium grade ament." However, the best attempt to define that which is probably indefinable is represented by the following. The "high grade ament" is "one who is capable of earning a living under favourable circumstances, but is incapable from mental defect existing from birth, or from an early age, (a) of competing on equal terms with his normal fellows, or (b) of managing himself and his affairs with ordinary prudence"; the "medium grade ament," or imbecile, is "one who by reason of mental defect existing from birth, or from an early age, is incapable of earning his own living, but is capable of guarding himself against common physical dangers"; whilst the "low grade ament," or idiot, is "a person so deeply defective in mind from birth, or from early age, that he is unable to guard himself against common physical dangers."

In deciding as to whether they shall exercise their optional power of making provision for the training of mentally defective children the Education Authority have again to consider what public good will accrue from the necessary expense incurred. And in this case there is little difficulty in stating an opinion that public money spent on the training of mentally defective children, as the term is commonly understood with reference to the Act, is money wasted unless means for supervision after the child leaves the special institution are provided. The definition of the "high grade ament," as given above, states that he is one who is

capable of earning his living "under favourable circumstances"; it has to be added that those favourable circumstances are of a very special kind, and certainly include continuous supervision throughout life. The feeble-minded child frequently improves rapidly under skilled training, and will learn, and even become adept at, a trade. If he remains under careful supervision in after-life he will be able to practise his trade with profit either sufficient or nearly sufficient to pay for his maintenance; in which case the money that has been expended on his training represents useful outlay. But for the working-class mentally defective child, who leaves the care of the Education Authority at the age of 16, the "favourable circumstances" will not occur, except in rare cases in which either he is able to follow his trade under the care of relatives or is maintained thenceforward under supervision in some institution. Otherwise, when the carefully trained child leaves the care of the Education Authority his defects quickly assert themselves: he is incapable either of competing on equal terms with his normal fellows, or of managing himself or his affairs with ordinary prudence. He becomes a social nuisance, with his natural destination in the workhouse, prison, or lunatic asylum, as the case may be.

The London Authority have given special care to the training of mentally defective children, and their experience in the matter may be regarded as crucial. In the last Annual Report (1907) of the Metropolitan Asylums Board their Children's Committee state:—

"The care of the feeble-minded has proved to be one of the most difficult branches of our work. Ten years ago, as we have before pointed out, the question of public provision for the feeble-minded was in its infancy, and it was only by the sure guidance of experience that any judgment could be formed as to the future. The young feeble-minded children who were at that time received in the small homes established under our control have, in the main, remained under our care, and, contrary to the hopes of many interested in the problem, have not so far improved under special care as to justify their being sent out to take a place in the world as ordinary citizens."

In short, the experiment, sanctioned by the Act of 1899, of attempting by special training to make these mentally defective children capable of supporting themselves as ordinary citizens has proved a failure, so far at least as its immediate object is concerned. But the failure has indicated clearly the measures necessary for dealing adequately with the social evil. And those measures are set out in that part of the recently issued Report of the Royal Commission on the Care and Control of the Feeble-Minded which advises the establish-

ment of a central body to train mentally defective children, and to supervise their after-life, so that what work they can do, according to their ability, shall be utilized to the full for their own benefit and to the advantage of the community.

MORALLY DEFECTIVE CHILDREN.

Under the Children Act, 1908, the Local Education Authority are required to make provision for the maintenance in certified industrial schools of youthful offenders under the age of twelve years, and under certain circumstances of those of twelve or thirteen years of age. Most of the youthful offenders for whom provision must be made come within the category of "moral imbeciles," who have been defined as "persons who from an early age displayed some mental defect, coupled with strong vicious or criminal propensities on which punishment has little or no deterrent effect." Considered from a somewhat closer point of view, the moral imbecile is one in whom certain primary instincts for self-gratification, plunder, or destruction are uncontrolled, because of some want of development of higher mental powers. With this want of development of higher mental powers there may be sufficient mental defect to bring the morally defective child also within the category of mentally defective. But this is not always the case. The general mental powers may be such that, given a good education, the moral imbecile may pursue for long a course of injury to society with some measure of success. The ill-educated moral imbecile becomes marked as the habitual criminal, and so is the more easily dealt with for the protection of society. The well-educated one may be able to shield himself successfully, and to the greater injury of society, from the consequences of his defects. Some, indeed, have attained to considerable eminence in walks of life, such as finance and statesmanship, in which strong predatory instincts are not necessarily a bar to personal success. But, as his definition implies, the moral imbecile is one who is not to be cured either by punishment or by education. And so, for the protection of others, he should be kept under close supervision throughout life. Therefore in accordance with the principles advised as guiding the management of the mentally defective child, the Royal Commission on the Care and Control of the Feeble-Minded have recommended that the Education Authority shall be relieved of all responsibility for the morally defective child, and that he shall be entrusted to the care of a central body whose function it will be to train him in early life, and to keep him under supervision afterwards.

POOR LAW CHILDREN.

The education and physical care of children under the Poor Laws is another matter in which the Education Authority are specially interested.

The Report of the Poor Law Commission recommends:—(1) That the maintenance of children in workhouses is to be recognized no longer as a legitimate way of dealing with them; (2) that the system of boarding-out should be extended and placed under thorough supervision; and (3) that when the preceding recommendation cannot be carried out satisfactorily, the children should be maintained in institutions or industrial schools. At the same time the report recommends that the Poor Law children should not be transferred entirely to the care of the Education Authority. With reference to these recommendations it must be noted that at the time of writing, and it is true after only some nine months' experience of medical inspection of the children, the experience in East Sussex has been that those who are maintained in the workhouses are, in respect of physical health and personal cleanliness, distinctly better placed than those who are boarded out. There would have been some hesitation in recording this observation after somewhat limited experience, had it not been that the opinion has been formed independently by both medical inspectors; and, at any rate, continued careful investigation of this point will be made. In any case, the proper supervision of boarded-out children must necessarily be a matter of considerable difficulty, and on the whole it would seem probable that in most cases the maintenance of necessitous children in special schools is the procedure from which the best results will be obtained.

THE MIDWIVES ACT.—The Surrey County Council have decided to terminate the agreements with the district medical officers of the county as inspectors of midwives under the recent Act, and have appointed Miss Falk, the superintendent of the Surrey Nursing Association, to perform the duties at a salary of £120 a year.

CHOLERA PRECAUTIONS.—At the West Ham Police Court on October 21st, George Humphreys, living at Coombe-road, Sydenham, was summoned, as master of the steamer *King's Lynn*, for neglecting to obey a notice directing that none of his crew were to be allowed to leave the ship until after permission had been given in writing by the medical officer of health. The *King's Lynn* arrived at Gravesend from Rotterdam on Sept. 9th, and as at that time Rotterdam was an infected port the defendant was served with a notice by the port medical officer of health directing him that none of the passengers were to be allowed to leave the vessel until their addresses in writing had been given. The vessel went up the river to Bugsby Hole, where the medical officer discovered that without his permission the captain's wife and two of the crew had left the ship. A fine of £5 and £5 costs was imposed.

THE SPREAD OF TUBERCULOSIS BY INDISCRIMINATE SPITTING.

IN a recent report on this subject, Dr. John Robertson, Medical Officer of Health of Birmingham, has drawn the attention of his Authority to certain additional precautions, which he advises should be taken in order to limit the spread of tuberculosis. Starting from the fact that by far the greatest source of tuberculous infection is the sputum of persons suffering from phthisis, he points out that "at the present time there is a considerable amount of living tuberculous infection strewn broadcast on footpaths and other public places, and in the dwellings of the patients. This sputum is carried on boots and clothing, as well as being pulverised and blown about by wind." Dr. Higgins has recently examined one hundred specimens of sputum picked up from Birmingham streets by one of the labourers of the Health Department, and he found that seven per cent. of these specimens contained tubercle bacilli. Dr. Higgins' results confirm those of Dr. Annett, who found virulent tubercle bacilli in five per cent. of the specimens of sputum from the footwalks of Liverpool that were examined by him. Dr. Robertson thinks that further steps should be taken to prevent this fouling of the streets. The Birmingham Corporation have for some years attached notices to a large number of lamp-posts in the city requesting persons not to spit on the footwalks, and similar notices have been exhibited in omnibuses, tramcars, public-houses, workshops and places of public resort. The Corporation have not, however, adopted the model bye-law against spitting in public places, which does not apply to streets.

Dr. Robertson has collected information on the subject from the United States, where, it appears, there are laws prohibiting spitting on street sidewalks in force in many of the chief cities; and he quotes a number of opinions of responsible officers as to the effect of these laws. Dr. Bensen, Sanitary Superintendent of New York, states that the law "has resulted in a remarkable decrease in the spitting habit"; Dr. Brodrick, of the San Francisco Health Department, states from his personal observation that the law is very well observed in that city, and that it is rarely necessary to arrest an offender. The report from Milwaukee is to the effect that the law has made the habit of spitting on the sidewalks practically a thing of the past. The Chief Medical Inspector of Chicago makes the following statement:—

"This ordinance has been vigorously enforced for a week at a time, upon several occasions arresting all seen spitting on sidewalks or floors of street and elevated cars. Then the enforcement was allowed

to become lax and only flagrant violations were noticed. . . . These spasmodic raids upon the spitters have had a decided beneficial effect. Prominent citizens were arrested, and the papers gave much publicity to the cases, and the people have thus learned that they are liable to arrest for spitting. From my own observations, I should say there is not one-hundredth part as much spitting in public places as there was previous to these spasmodic enforcements of the law. A continuous, vigorous enforcement would practically end the spitting nuisance."

Similar testimony is quoted from other American cities. Dr. Robertson concludes his excellent report by recommending the "making of a bye-law to be enforced by the police, to prevent spitting on all public foot pavements and courtyards within the city, spitting being allowed into the street channels and gullies only."

COWSHEDS, DAIRIES, AND MILK SUPPLY.

DR. A. G. ANDERSON, Medical Officer of Health of Rochdale, has recently issued an elaborate report on an investigation he has made into the condition of the cowsheds, dairies, and milk supply of his district. The report is divided into five sections, with four appendices. Section I. is devoted to a discussion of the general conditions of the milk supply of Rochdale, and is supplemented by an appendix containing a description, tabulated in detail, of every cowshed in the borough. Section II. deals with the question of milk in relation to health and disease, with special reference to summer diarrhoea and tuberculosis. Section III. deals with dirt in milk; its sources and significance; and what standard should be adopted in a reasonably pure milk. Section IV. is devoted to the bacteriology of milk, while Section V. contains a short *résumé* of the chief legislative measures on the subject, and some suggestions for the control of the milk supply. The report is a very able and thorough piece of work, and it forms a valuable contribution to the literature of the important subject with which it deals.

A RINGWORM CLINIC FOR SCHOOL CHILDREN.—Since September 10th, 1908, ninety-two cases of ringworm amongst poor children have been treated by formalin or other medicinal applications at the bi-weekly Ringworm Clinic, which, conducted by the assistant medical inspector and the school nurses, at the Education Offices, has been sanctioned by the Board of Education. The cost of this clinic in drugs, etc., has amounted only to a few shillings.—*Annual Report of Dr. Edmund M. Smith, Medical Officer of Health, York.*

THE FEEDING OF SCHOOL CHILDREN.*

By RALPH CROWLEY, M.D., M.R.C.P.,
School Medical Officer, Bradford.

CONSIDERABLE attention was paid to this subject in my last report and in the special report upon the Feeding of School Children. I propose here to give the statistics for the year as to the numbers of children for whom breakfasts and dinners have been provided, and to emphasize a few points which experience indicates need more particular attention.

The average number of children receiving breakfasts and dinners, or dinners only, each month has been as under:—

	1908.	Dinners Only.	Dinners and Breakfasts.
January	1500	..	..
February	1837	..	..
March	1882	..	..
April	2059	..	..
May	2244	..	..
June	2507	..	..
July	2571	..	..
August	2525	..	..
September	2665	..	..
October	1325	1496	..
November	1570	1829	..
December	1614	1943	..

There are in all twenty dining rooms; seven of these are rooms apart from the schools—e.g., 100m used for Sunday-school purposes; thirteen, the rooms attached to the schools, of which seven are used for teaching purposes also.

The cost of the food is 1.1d. per meal, per child, and the total cost, including all administrative expenses is 1.88d.

There has been considerable difficulty in the carrying out of the menu as originally proposed; since the kitchen has proved quite inadequate to cope with the large number of meals served, and this has led to a restriction in the kinds of meals which could be provided. The extension of the kitchen is now, however, nearly completed.

There is still much room for attention to detail in the dining rooms and in the conduct of the meals. Speaking generally, the opportunity the mid-day meal affords from the educational aspect is hardly sufficiently recognized. Considerable difference exists in this respect as between different dining rooms. Probably the underlying difficulty is that the meal is looked upon as something to be got through as quickly as possible, and this sense of "rush" spoils the meal.

It prevents adequate attention being paid to the cleanliness of the children, for children still come to some of the dining rooms with dirty hands and even sometimes with dirty faces too. No trouble can be considered too great to ensure that this does not occur. If clean hands and faces cannot be obtained in any other way, it would seem as though

* Annual Report, 1908.

it may be necessary to provide washhand basins in connection with the dining rooms. More careful attention could perhaps be paid to this matter by the class teacher, who would be glad, one would think, to be responsible for seeing that the children, out of his or her class at any rate, left the school with clean hands and faces.

Then sufficient attention, due chiefly, no doubt, to the rush already spoken of, is not paid to the monitresses—i.e., the older girls who assist in the laying of the tables, the serving of the food, etc. The splendid opportunity of training afforded is hardly sufficiently appreciated. They should be the special concern of one teacher, who would be responsible for seeing that the staff of them was adequate, that they were scrupulously clean and tidy, that they had definite work allotted to them, and that they kept strictly to it.

But undoubtedly the least satisfactory part of the arrangement is the lack of attention to the individual child, the complaint which dogs the path of our elementary school system at every turn. In the original experiment on the feeding of school children, it was found that some of the children needed special care and attention. They needed to be coaxed by, for example, the giving of small helpings, and to be encouraged to persevere in eating food which at first might be strange to them. Of the children who would hardly touch some of the dinners at first, soon became accustomed to them. There will always be a certain proportion of these children—10 per cent. at any rate; they may, unless specially attended to, cease to attend the dinners at all, though they will probably be children who are especially in need of careful feeding.

To such children inadequate attention is at present given. It seems to be no-one's business to ascertain whether the tickets given out are regularly used, and, if not, to ascertain the reason. The continual change in assistant teachers in the dining rooms makes this supervision on their part very difficult. More might perhaps be done by the class teachers. They might, one would think, for their own satisfaction, reasonably be expected to know exactly which of their children went to the dinners, and whether or not they attended regularly. At any rate, until more attention is paid to this point it is impossible to expect the full physical benefit to be derived.

From the æsthetic and educational point of view much could be done by keeping the dining rooms bright with plants and flowers. If the committee do not see their way to do this, one would think voluntary helpers might be found, two or three of whom would be responsible for each dining room. In the summer the children themselves would sometimes be able to bring flowers. Arrangements are already in hand to carry the above into effect in one of the smaller dining rooms.

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REVIEWS.

IMMUNITY AND SPECIFIC THERAPY. By W. D'Este Emery, M.D., B.Sc., Clinical Pathologist to King's College Hospital. London: H. K. Lewis, 1909. Price 12s. 6d. net.

In his preface the author states that he has attempted in this book "to give a connected and symmetrical outline of the chief facts definitely known with regard to the method in which the body protects itself against infections, and of their applications in the diagnosis, prevention, and treatment of disease." In this attempt he has been remarkably successful, and his book will be welcomed by many of his professional brethren who wish to follow the rapid advance of knowledge in immunity, and yet experience considerable difficulty in finding time and opportunity for reading the numerous papers that contain the latest researches. The study of immunity has now so greatly developed that it requires a special nomenclature, one might almost say a special dialect, for its elucidation; and Dr. Emery has done well to prefix a glossary, from which we may learn the meaning of such strange, but apparently necessary, words as "anaphylaxis" and "pro-zone."

The first chapter gives a general account of immunity, and the next five chapters are devoted to the nature of toxins, the phenomena of anti-toxin formation, inter-reactions of toxin and anti-toxin, the origin of anti-toxin, and immunity to toxins. To explain the side-chain theory is no easy task, but Dr. Emery has successfully accomplished it; his description of this complicated subject is remarkably clear, and can readily be followed. The remaining chapters deal with bacteriolysis, the agglutinins and precipitins, phagocytosis (including an account of the work of Wright and others on opsonins), "reactions," the colloidal theory of anti-bodies, and immunity to bacteria; while the last chapter is devoted to the practical applications of the modern knowledge of immunity. There is a copious bibliography, a list of authorities, and a general index. Dr. Emery is an able writer, and possesses in a high degree the power of marshalling facts in a logical and coherent series. As a general account of immunity there is nothing better than this book.

RECENT PROGRESS IN THE STUDY OF VARIATION, HEREDITY AND EVOLUTION. By R. H. Lock, M.A. Second edition. London: John Murray, 1909. 5s. net.

This book, which has the distinction of being recommended by no less an authority than Alfred Russell Wallace, has undergone considerable alterations in the second edition; various additions have been made, and certain points have been explained in more detail. Mr. Lock is a Mendelian,

and makes no secret of the fact, but his treatment of the subject is fair, and the importance of the recent work of the Mendelian school quite justifies Mr. Lock in devoting so much of his book to it. Other matters, however, receive their due share of attention, and nothing of cardinal importance in the recent work on heredity has been omitted. Biometrical methods are admirably explained, the theory of mutation is impartially discussed, and there is a most suggestive chapter on recent cytology. Now that eugenics is becoming one of the questions of the day there is a growing demand for trustworthy popular books on heredity, and Mr. Lock has performed a useful service in giving us this lucid and attractive account of the best recent work on the subject. The book is well got up and illustrated, and contains portraits of Darwin, Mendel, De Vries, and other giant workers in heredity.

HEALTH AND COMMON SENSE. By Woods Hutchinson, M.A., M.D. London: Cassell and Co., 1909. Price 5s. net.

Dr. Woods Hutchinson has applied a vigorous common sense and a breezy literary style to the discussion of some important questions of hygiene, such as food, exercise, sleep, clothes, child-nurture, etc., and he has produced a very entertaining and stimulating book, which will no doubt be widely read. Dr. Hutchinson has a strong antipathy to fads, and he has selected a number for special attack, amongst which are the breakfast cereal fad and the brown bread fad. Against the breakfast cereal, referred to collectively as "mush," he launches some damaging criticisms, and his attack on the brown bread fad will be specially welcomed by those who have suffered from the pertinacity of the brown bread devotees. The last chapter deals with the health of the middle-aged man, and contains some sympathetic advice to those who have reached the wrong side of forty.

CHILDREN OF THE POOR. By A. Davies Edwards, M.B., D.P.H., Medical Officer Bournemouth Education Committee. London: Hammond, Hammond & Co., 1909. Price 1s. net.

This book consists of a series of essays on various aspects of child life amongst the poor. As a Poor Law doctor and a school medical officer, Dr. Edwards has had plenty of experience of the evil conditions to which the children of the poor are too frequently subjected, and he writes of these things with much sympathy and insight. Dr. Edwards is an enthusiast in the cause of the children, and his book, with its vivid reminiscences, will appeal to many readers whose interest is not excited by the ordinary matter-of-fact statements and statistics that make up a good deal of what has been written on this subject.

PROCEEDINGS OF THE SOCIETY OF MEDICAL OFFICERS OF HEALTH.

FOUNDED 1856. RECONSTRUCTED 1888.
INCORPORATED 1892.

AN ORDINARY MEETING of the Society of Medical Officers of Health was held at the Society's Rooms, No. 1, Upper Montague-street, Russell-square, London, W.C., on Friday, November 12th, 1909, at 5 p.m., when the following members were present:—Dr. H. Cooper Pattin, President (in the chair), Drs. R. Dudfield, James Kerr, Alfred Greenwood, E. H. T. Nash, J. Tubb Thomas, J. M. Martin, Herbert Manley, A. Bostock Hill, S. C. Lawrence, H. W. Roberts, A. E. Porter, E. H. Snell, G. B. Millson, W. G. Willoughby, Sidney Davies, R. A. Lyster, Frank Robinson, T. Strain, J. Priestley, H. B. Collins, Chas. Sanders, T. W. N. Barlow, E. Sergeant, F. J. H. Coutts, G. F. McCleary, G. Sowden, C. F. Stovin, J. Butler-Hogan, John Tate, C. R. Harper and Aug. Griffith.

MINUTES.—The Minutes of the previous Ordinary Meeting of the Society, held on April 2nd, 1909, and published in PUBLIC HEALTH, May, 1909, p. 316, were taken as read, confirmed, and were duly signed by the Chairman.

ELECTIONS.—The following candidates, who had been duly nominated, were balloted for, and declared by the President duly elected:—

H. W. Bailie, L.R.C.P. and S., L.F.P.S.G., D.P.H., Ashby, Malone-road, Belfast; F. G. Bushnell, M.D., B.S., D.P.H.; 2, Norton-road, Hove; H. J. Cates, M.D., D.P.H., 10a, Hay-lane, Coventry; W. F. Clarke, L.R.C.P., M.R.C.S., Bank House, Morley; W. F. Corfield, M.B., B.S., D.P.H., 36, Stanwell-street, Colchester; R. J. Ewart, M.D., F.R.C.S., D.P.H., 47, Oxford-road, Linthorpe, Middlesbrough; J. W. Fox, M.B., M.R.C.S., L.R.C.P., D.P.H., Waterloo Villa, Waterloo-road, Tonbridge; T. E. Holmes, M.A., M.D., B.C., D.P.H., 11, Regent-street, Nottingham; L. A. Johnson, M.R.C.S., L.R.C.P., Virginia House, Normanton; A. A. Jubb, M.D., 23, Guest-road, Barnsley; C. T. Moller, M.B., Ch.B., Germiston, Transvaal, S.A.; A. G. Newell, M.D., C.M., D.P.H., Kurseong, Bengal; J. L. Russell, M.B., C.M., West Lodge, Todmorden, Yorks; W. B. Simpson, M.B., C.M., D.P.H., Friar Gate, Grimsby; H. G. Smith, M.A., M.B., B.C., D.P.H., The Sanatorium, Knightwich, Worcester; N. H. Walter, D.P.H., The Isolation Hospital, Willesden; G. N. Wilson, M.D., C.M., D.P.H., 42, Eldon-street, Greenock.

NOMINATIONS.—The Hon. Secretary read a list of nominations for election to the membership of the Society.

A paper was then read by Dr. Major Greenwood, hon. sec. of the Poor Law Medical Officers' Association, upon "Medical Officers of Health and the Report of Royal Commission on the Poor Laws."*

MIDLAND BRANCH.—A meeting of this Branch was held on Thursday, November 4th, 1909, at 3.30 p.m., at the Council House, Birmingham.

* Published in the present issue.

Present: Dr. Philip Boobhyer (in the chair), Mr. R. Denison Pedley (President of the School Dentists' Society), Drs. W. T. Elliott, John Robertson, T. Robinson, W. M. Clendinnen, J. M. Cowie, W. Spencer Badger, Reginald Green, Joseph Cates, W. Sisam, A. H. Wilson, A. Hamilton Wood, E. Peacock, T. Ridley Bailey, T. Stanley Robinson, Sidney Barwise, S. Charles Harris, John Orton, W. H. Davison, Lawrence W. Pole, H. E. Jones, and E. H. Snell.

Dr. Boobhyer was voted to the chair. Apologies for absence were received from Drs. Henry May, Herbert Manley, Bostock Hill, Fremantle, Mr. Councillor Bowater, Mr. Vickery, and Mr. F. W. Richards.

Dr. W. T. Elliott read a paper on "The Treatment of Teeth in the Elementary Schools."

The discussion was then opened by Mr. Denison Pedley, and continued by Dr. Boobhyer, Drs. Robertson, Harris, Barwise, Ridley Bailey, Thos. Robinson, and Clendinnen.

The Chairman proposed, and Dr. Robertson seconded, a hearty vote of thanks to Dr. Elliott and Mr. Pedley for so kindly attending and introducing the subject. This was carried unanimously.

Southern Branch.—A meeting of this Branch was held at Winton House, Basingstoke, by invitation of Dr. Holmes Meyrick, on November 5th, 1909. Present: Drs. Griffith, Hemsted, Lauder, Livingstone, Lyster, Maples, H. Maturin, Meyrick, Milburn, Routley, Walker, Watts (Members), and Mr. Thomas Holt (Town Clerk of Winchester), Drs. Ahrens, Cross, and Worth (Visitors).

The minutes having been confirmed, Dr. Bartlett, of Romsey, was elected a Member of the branch. It was announced that Dr. R. Humphrey had resigned.

The Hon. Secretary reported that Dr. Barclay, who was elected to be President of the Branch at the last meeting, could not accept. Dr. Willoughby (Eastbourne) was nominated, and his election was unanimous.

Dr. Lauder was appointed as representative of the Branch on the Council of the Society, in place of Dr. Willoughby.

Mr. Thomas Holt (the Town Clerk of Winchester) then gave an outline of a case of meat seizure at the barracks and the subsequent proceedings, which presented features of unusual interest.

This was followed by questions and general discussion.

Dr. Ahrens (M.O.H. Basingstoke Urban) gave an account of a case of meat seizure, which was also fully discussed.

Votes of thanks were passed to Mr. Holt and Dr. Ahrens for attending and for their interesting papers; and to Dr. Meyrick for the use of his

rooms (to which he responded by inviting those present to tea).

A vote of thanks was given to Dr. Lauder for his services as President during the past year.

Yorkshire Branch.—A meeting of the Branch was held at Sheffield on Friday, October 29th, 1909. Dr. Martin, the President, was in the chair, and there were present Drs. Adam (Wakefield), Anderson (Wortley), Burman (Wath-on-Dearne), Cade (Huddersfield), Cameron (Leeds), Clark (Leeds), Clements (Batley), Corbett (Mexborough), English (Swinton), Jackson (Denholme), Knight (Scarborough), Lambert (Farsley), Langdon (Wakefield), Macdonald (Huddersfield), Moore (Huddersfield), Orr (Wakefield), Riddell (Rotherham), Ross (Penistone), Scatterty (Keighley), Scurfield (Sheffield), Stedman (Selby), and J. R. Kaye (Wakefield, Hon. Secretary).

Previous to the actual meeting Dr. Scurfield, the Medical Officer of Health for Sheffield, very kindly conducted the members on a tour of inspection of the Commonsides Consumption Hospital, situate in the city, the Baby Consultation Rooms, and also round a tenement factory of grinding wheels.

The members afterwards met at the Town Hall, where the ordinary business of the meeting was carried out.

The following new members were elected:—Dr. W. Travers Clarke, School Medical Officer, Morley; Dr. L. A. Johnson, Medical Officer of Health, Normanton, Yorks; Dr. A. A. Jubb, Assistant School Medical Officer, West Riding; Dr. Lawson Russell, School Medical Officer, Todmorden; and Dr. Algernon E. L. Wear, School Medical Officer, Leeds.

Dr. Scurfield then read a paper on "Lung Disease Among the Sheffield Grinders," and afterwards proceeded to deal with the question of sanatoria treatment of phthisis in cities. He referred to the visit by the members that afternoon to the Commonsides Consumption Sanatorium, an institution intended to deal principally with industrial consumption. A discussion followed.

Some interesting information was then given by Dr. Scurfield on dried milk depôts. The children supplied there are mostly discovered by the lady inspectors. They are found to be generally ill-nourished on account of the food given not agreeing with them, and it was remarked how such troubles of digestion were set right when the children were placed on proper diet, and particularly on dried milk for two or three months, after which the consumption of ordinary milk should be resumed. The dried milk is supplied to the mothers at a little over cost price, with suitable instructions, on condition that the child is brought to the depôt once a week. This weekly examination of the child has a very salutary effect on the mothers.

Dr. Scurfield claimed that these dried milk

depôts have all the advantages of sterilised milk depôts, and at a fraction of the cost. Last year no less than 700 babies were fed, and he had no doubt whatever that ultimately such action would very greatly decrease the infant mortality death-rate in Sheffield.

Dr. Martin, the President, brought the discussion to a close, and thanked Dr. Scurfield and others for the information so kindly given.

The members then partook of refreshments kindly provided by the Lord Mayor of Sheffield, to whom a cordial vote of thanks was accorded.

Home Counties Branch.—The first meeting of the session 1909-10 was held on October 20th at 1, Upper Mantague-street, Russell-square, W.C.

In the presence of a large company, Mr. F. E. Fremantle, the retiring President, formally introduced his successor, Dr. A. E. Porter, M.O.H. of Reigate Borough and Rural District. A hearty vote of thanks was then accorded to Mr. Fremantle for his enthusiastic work as President during the session 1908-9.

The Hon. Secretary reported that the alteration of the hour of meeting from 5 to 4 p.m. appeared to meet with great favour, especially amongst the members engaged in practice. He also had the pleasure of announcing that he had succeeded in filling all the dates of the sessional programme, except May, 1910, for which he invites offers.

Dr. A. Ashby, the Hon. Treasurer, then presented his balance sheet of the Branch for the past session, which was duly audited by two members and approved. Dr. Ashby was given sincere thanks for his services as Hon. Treasurer for the fifteenth year.

A subject referred to the branches by the Society, —viz., the formation of a Veterinary Service and establishment of uniform regulations for cowsheds—was on the agenda, but consideration of this matter, as the Milk Bill had not been proceeded with, was unanimously adjourned *sine die*.

Dr. Porter then delivered his presidential address, entitled "Some Aspects of the Work of a M.O.H. in Country Districts." At its conclusion, Dr. Seaton and Dr. Thresh gave expression to the great pleasure all present had experienced at the President's breezy treatment of a subject which was comparatively new to many of them.

VERMIN AS A SIGN OF GOOD HEALTH.—Great difficulty has been experienced in dealing with verminous children, many of the mothers considering the matter to be trivial, some professing that the condition complained of is, to use their own expression, "a sign of good health; they winna stay on a bairn that's bad."—*Annual Report of Dr. J. W. Hembrough, School Medical Officer, Northumberland.*

CORRESPONDENCE.

The Editor does not accept responsibility for the opinions of correspondents.

ANONYMOUS LETTERS AND DISINFECTION.

To the Editor of "PUBLIC HEALTH."

November 16th, 1909.

Dear Sir,—In your November issue I read with great interest your leader on the daily disinfection of public schools.

As a director of a company that, *inter alia*, makes a high-class disinfectant fluid, naturally I am interested (so I frankly state) in the matter. I am pecuniarily interested; but I am also interested as an individual, a ratepayer, and a father with children at school.

You allege that an anonymous maker and seller of disinfectants has been attacking Dr. Kerr. I have carefully read Dr. Richards', Dr. Kingsford's, and, last but not least, Dr. Kerr's letter on this subject in your current issue, and all that I can say is that if your conjecture is justified, your article is justified, and your conclusions are based on solid rock.

These gentlemen have given the subject of the prevention of infection careful, scientific, and well-balanced consideration, and they are in a position to obtain and to weigh facts. They feel that they know means which are necessary, nay, of vital importance, means which are receiving their daily, perhaps hourly attention. That they or any of them should be attacked for not adopting measures, perhaps helpful, but at present only partially proven, and of enormous expense, for the benefit mostly of a trader, is unbearable.

Dr. Kerr has evidently given the subject an enormous amount of consideration; and many of his suggestions are eminently practical, besides having the added value of reducing risk of infection without adding materially to the ratepayers' burden.

The tables given by Dr. Kingsford cover a very large number of cases and are convincing.

With Dr. Meredith Richards' remark that "chemical disinfectants are of strictly limited utility," I cannot literally agree. That the utility of these disease-preventing necessities should be limited to a strictly utilitarian area I am of opinion. But what an extended and extensive area it is!

When I talk of chemical disinfectants, I do not refer to so-called disinfectants, but to preparations which have been scientifically tested in a bacteriological laboratory with regard to their germicidal powers.

In personal cleanliness, in the disinfection of clothing, in many of the protective measures set forth in the concluding paragraph of your leader, they might—nay, I venture to say should—bear

an important and operative part. One thing I would venture to accentuate: *Caveat emptor*. Let no loose specification, no monopoly tendering, bring into disrepute these desirable preventive aids. Let public authorities purchase intelligently on germicidal values, and let them bar the quack and the imposter whose label claims a panacea and hides a sham.

I, for one, welcome the publicity which the unknown has evolved, and, while sympathizing with Dr. Kerr, can reassure him by affirming that the correspondence is like ventilation, doing much good.

May I add that I welcome, too, the steps which the *Lancet* is taking to examine and publish the comparative values of chemical disinfectants from a strictly utilitarian aspect?

Yours faithfully,

EDWARD COOK & CO., LTD.

THOS. ALEX. COOK, Director.

To the Editor of "PUBLIC HEALTH."

November 15th, 1909.

Dear Sir,—In reference to the leading article in your last issue and Dr. Kerr's letter, may we be permitted to dissociate ourselves *entirely* from the anonymous attacks upon public health officials which you condemn?

Less than a year ago we were obliged to expose the advertising methods of a firm of disinfectant manufacturers. We shall, perhaps, not be considered vindictive if we say that we feel some gratification in seeing the action we were compelled to take at that time more or less endorsed by your present exposure of somewhat similar methods directed against Dr. Kerr and other professional men.

We know that the majority of disinfectant manufacturers feel as we do in this matter, and desire with us to be allowed to "achieve success by the simple method of producing a good article and making its merits and its uses widely known by legitimate advertisement."

Yours faithfully,

NEWTON, CHAMBERS, & CO., LTD.,

Manufacturers of Izal Disinfectant.

To the Editor of "PUBLIC HEALTH."

Dear Sir,—Will you permit us to express the satisfaction afforded us by the article published in your November issue, and at the same time allow us to disclaim, so far as we are concerned, any participation in the anonymous letters to which you have so seasonably called attention?

Yours faithfully,

THE "SANITAS" CO., LTD.

C. T. KINGZETT,

Chairman.

LAW REPORTS.

HIGH COURT OF JUSTICE.

COURT OF APPEAL.

October 23rd, 1909.

BEFORE COZENS HARDY, M.R., FLETCHER
MOULTON AND FARWELL, JJ.EAST BARNET VALLEY URBAN DISTRICT COUNCIL
v. STALLARD.Public Health Act, 1875, Sect. 22.—Drainage of
Premises outside District—Right of Authority
to cut off drain.*When the drains of premises outside a district have been
connected with the sewers of a district, with the
consent of the local authority, the connection cannot
be severed by the sanitary authority, nor can the
owner be called on to enter into an agreement under
Sect. 22 of the Public Health Act, 1875.*

This was an appeal from a judgment of SWINFEN EADY, J. (see ante p. 74). The action was brought for a declaration that the defendant, the owner of certain premises, which were partly within and partly without the plaintiff's district, was not entitled to drain the part outside the district into the plaintiffs' sewers, except on such terms and conditions as might be agreed under Sect. 22 of the Public Health Act, 1875. The connection of his drains with the authority's sewers had been made some years previously with the knowledge and consent of the plaintiffs.

SWINFEN EADY, J., decided in favour of the defendant. The Court of Appeal dismissed the appeal for the same reasons.

CHANCERY DIVISION.

June 26th, 1909.

BEFORE WARRINGTON, J.

JARVIS (ON BEHALF OF HIMSELF AND OTHER
DEBENTURE HOLDERS) v. ISLINGTON BOROUGH
COUNCIL AND LANE.Distress—Penalty for Selling Adulterated Milk—
Debenture Holders—Injunction—Coming into
Court with Clean Hands.

This was a motion by the plaintiff for an interim injunction to restrain the defendants from distraining certain goods in the plaintiff's possession as receiver on behalf of the debenture holders of the North-Eastern Dairy Company, Limited. This company was fined on June 11th last £100 and twenty guineas costs for selling adulterated milk (see ante p. 377). The distress, was to recover the penalty, and the ground of the motion was that the goods on which the distress had been levied were not the goods of the company, but the

goods of the plaintiff as receiver for the debenture holders. The company had been formed to take over the business of the plaintiff, and he was one of the debenture holders. The plaintiff had been appointed receiver on March 22nd, and had carried on the business. The adulteration complained of was on April 6th.

MR. JUSTICE WARRINGTON said it was not necessary to deal with the point of law which had been raised as to whether the goods were those of the debenture holders or of the company, and were or were not capable of being distrained. This was a motion for an injunction to stop, *pendente lite*, what was alleged to be a wrong. A person who came for that relief must come with clean hands. The plaintiff did not come with clean hands. The offence of which the company was convicted was the act of the plaintiff himself. He knew that separated milk was being put into the churns on the morning in question for the purpose of being sold as milk. On the plaintiff's own evidence the Court was satisfied, as the magistrate had been satisfied, that the plaintiff himself committed the offence. It would be intolerable if a man, to whom goods were said to belong, could commit an offence under the Food and Drugs Act, and do it in the name of some one else, and then when that some one else was convicted say that the goods on which distress was issued were not the goods of the party convicted, but were his own, and so could prevent the Crown from obtaining the penalty to which it was entitled. The case was a very bad one, and the motion must be dismissed, with costs.

KING'S BENCH DIVISION.

June 18th, 1909.

BEFORE LORD ALVERSTONE, L.C.J., JELF AND
A. T. LAWRENCE, JJ.

PEGG AND JONES, LIMITED, v. DERBY CORPORATION.

Public Health Act, 1875, Sects. 42-43.—Cleansing of
Privies by Local Authority—Power to cleanse
some and not others.*When a local authority undertakes to cleanse the privies
in their district, they cannot refuse to cleanse the
privies of a particular owner because such privies
are not in accordance with the requirements of a
local Act.*

This was a case stated by the Justices of Derby on the hearing of an information laid by Messrs. Pegg & Jones, Limited, against the Derby Corporation, charging that they, having undertaken the cleansing of privies under Sect. 43 of the Public Health Act, 1875, had failed without reasonable excuse to cleanse the privies in the appellants' factory.

By Sect. 42 of the Public Health Act every local authority may undertake the cleansing of earth closets, privies, ashpits, and cesspools, either for the whole or any part of their district. If, having undertaken this duty, they refuse to cleanse any particular privies without reasonable excuse, they are by Sect. 43 made liable to a penalty.

For the Corporation it was said that by a local Act all privies in the borough were to be subject to the approval of the Corporation, and they had only undertaken to cleanse those privies which had so received their approval, and the appellants' privies had not been approved, as they did not satisfy the Corporation's requirements. The Corporation had no bye-laws and there was no means of enforcing the local Act.

The Justices dismissed the information, as they considered that the non-approval by the Corporation was a reasonable excuse for their not cleansing the privies in question.

The Court allowed the appeal.

The Court held that the non-approval under the local Act was not a reasonable excuse within the meaning of Sect. 43 of the Public Health Act, 1875, and further that the words "any part of their district," in Sect. 42, could not be read as referring to a class of houses such as those which contained privies of which they approved. They therefore considered that the limitation which the Corporation had attached to their undertaking was inoperative, and that they were bound to cleanse the privies of the appellants.

October 15th, 18th and 19th, 1909.

BEFORE A. T. LAWRENCE, J., AND A COMMON JURY.

PATERSON v. R. WHITE AND SONS, LTD.

Negligence—Illness after drinking Mineral Water
—Zinc Chloride.

This was an action to recover damages for negligence. The negligence alleged was that the defendants had allowed a quantity of zinc chloride to get into a bottle of hop ale manufactured by them. The bottle in question had been bought by the plaintiff's wife at a shop in Woolwich, on August 7th, 1908, the label over the stopper being at the time untouched. The plaintiff drank part of the contents directly from the bottle, and immediately after he was violently sick. The remainder of the bottle was afterwards analysed and found to contain 46 grains per pint of chloride of zinc. The plaintiff had been ill for a long time afterwards and was unable to work. He was a ship's rigger and sailmaker. The plaintiff said that the ale burnt his mouth, and that he passed a piece of metal three days afterwards.

W. J. Hadley, M.D., F.R.C.P., who saw the plaintiff about twelve weeks after the event, said the plaintiff's symptoms were consistent with zinc chloride poisoning. He had seen him several times since and he thought it would be some time before the man would be able to work.

The plaintiff's wife in her evidence said the bottle smelt strongly of paraffin. She took it back to the shop directly, and then brought it back, and it stood in the cupboard untouched until handed to Dr. Rowlands. She denied that she said her husband had faked the bottle. The shopkeeper who sold it said the label was untouched when sold, and corroborated the plaintiff's wife as to the return of the bottle and as to the smell of paraffin. Evidence was given of the analysis, and also further medical evidence as to the condition of the plaintiff being consistent with zinc chloride poisoning.

For the defence it was said that no zinc chloride was used in the manufacture or in the bottling. It was suggested that the plaintiff had tasted paraffin on the mouth of the bottle, and had afterwards faked it. The claim was alleged to be fraudulent. Evidence was given of the care taken in the manufacture of the ale, and that no chloride of zinc was used. A neighbour gave evidence to the effect that the plaintiff's wife had told her that the plaintiff had faked the bottle after it had tasted disagreeable.

Mr. Frank Oldfield, L.R.C.P., was of opinion that the man's symptoms were those of ptomaine poisoning and not of metallic poisoning. The piece of metal said to have been passed was lead and not zinc, and was quite bright. Dr. Howitt gave corroborative evidence.

The jury found for the plaintiff, damages £300, for which judgment was entered.

ILLEGAL MANUFACTURE OF MARGARINE.—On October 5th, at Brentford Petty Sessions, Arthur Purkiss, grocer, Brentford, appeared to answer four summonses charging him respectively with (1) manufacturing margarine on premises not registered as a margarine factory with the Middlesex County Council, (2) manufacturing margarine with more than 10 per cent. of butter fat, (3) using unregistered premises as a butter factory, (4) having in a butter factory a substance—namely, margarine—intended to be used for adulterating butter. The last two summonses were issued under the Butter and Margarine Act, 1907. Proceedings were taken by the Middlesex County Council. Evidence was given that an officer of the Board of Agriculture, acting under Section 2 (3) of the Butter and Margarine Act, 1907, had inspected the premises, and had found a mixing machine. He took a sample of the so-called butter which had been through the machine, and

this sample on being analysed at the Government Laboratory was found to consist of equal parts of butter and margarine.

Objection was taken to the second summons on the ground that no copy of the analyst's certificate had been served with the summons. It was objected further that the defendant could not be convicted on both the first and third summonses, as the same premises could not be used illegally as both a butter and a margarine factory.

The Justices convicted on each summons, and fined the defendant £40 in all and 5 guineas costs, but agreed to state a case on the above points.

EXPOSURE OF SCARLET FEVER PATIENT.—On October 7th, at Willesden Petty Sessions, Mrs. Hibbard was summoned at the instance of the medical officer of health for that she, being in charge of a person whilst suffering from infectious disease (namely, scarlet fever), wilfully exposed such sufferer without proper precautions against spreading the disease. Proceedings were taken under the Public Health Act, 1875, Section 126 (2). It was said that two other children had in consequence contracted scarlet fever. It appeared that the defendant's son had been excluded from school on September 6th on suspicion of having chicken pox, and that the defendant had been warned by two health visitors, and had been instructed to watch carefully for peeling. On the 16th the assistant school medical officer had diagnosed the case as scarlet fever, but notwithstanding this the boy had been allowed later on the same day to play in the road, and to go for a ride in a baker's cart with other boys. It was also said that he had been sent on the 12th to a Sunday school. The defendant said that the boy had run out of the house and was away in the cart before she could stop him. She was fined 20s. and costs.

FAILURE TO NOTIFY SCARLET FEVER.—On October 21st at Kingston, George Shead, chartered accountant, was convicted of failing, as head of the family, to notify to the medical officer of health of the district that three of his children were suffering from scarlet fever at the premises occupied by him at New Malden. He was fined the maximum penalty of £2, and ordered to pay the costs. It appeared that the sanitary inspector, having some suspicion, called at the house on July 29th last, and that Mrs. Shead denied that there was illness in the house, but Mr. Shead admitted that the children had suffered from sore throat and rash. The inspector was allowed to see one child only, and that at the door of the house. He told the defendant that he thought the case was scarlet fever, and advised him to consult a medical man, which he refused to do. The inspector also asked that the medical officer of health, or an independent doctor, should visit

the house at the council's expense; but these proposals were also refused. Printed instructions as to isolation were given to the defendant, but it was said that the children had not been isolated, nor a medical man called in. On August 12th the medical officer of health had called at the house and examined the children and found they were suffering from scarlet fever. The defence was that the defendant and his wife did not know it was scarlet fever, and that the sanitary inspector did not inform them of its presence in the house. The Chairman, in convicting, commented severely on the defendant's conduct.

PERJURY IN A MILK CASE.—At the Central Criminal Court, on October 23rd, William Palmer, formerly manager to the North-Eastern Dairy Company, Limited, was found guilty of committing perjury on the hearing of a summons issued at the instance of the Islington Borough Council against the company for selling milk containing 6 per cent. of added water. The defence to the summons was a warranty, and Palmer gave evidence to show that the milk had been sold in the same condition as received. He said that he received the milk at the dépôt, and that it was under his control and supervision from the time it came there until the time it left in the possession of the roundsmen, and, therefore, it could not have been adulterated. The prosecution alleged that Palmer was not there at all when the milk arrived, but was in bed, and that the milk was received by a man who, in accordance with the practice which was said to have prevailed at the dépôt, added separated milk to it. The magistrate fined the company £100 and 20 guineas costs. The defence to the perjury was that the defendant had made a mistake as to the particular morning, and a denial of the addition of separated milk. A man of the name of Webster, who had fetched the milk from the station, was also convicted of perjury. Sentences were postponed, pending the hearing of an indictment against Palmer, Webster, and another man, charging them with conspiring to defeat the ends of justice and to sell adulterated milk. This indictment, however, was postponed until next sessions.

LEAD IN GINGER BEER.—At the South-Western Metropolitan Police Court, on November 11th, George Gammon, landlord of the "Selkirk Hotel," Tooting, was summoned at the instance of the Wandsworth Borough Council for selling ginger beer containing metallic lead equal to 1.54 grains per gallon, so as to render the article injurious to health. It was not suggested that the addition of the lead was done wilfully, but it was believed to be due to the use of a leaden pipe in the service of the ginger beer. The medical officer of health had sent out a circular letter to the publicans of the

district, advising the discontinuance of such a pipe, as it was calculated to cause lead poisoning among consumers. The magistrate thought it was sufficient, in the circumstances, to order the defendant to pay the costs of the summons, but said that it should be generally known that the use of such a pipe might cause injurious effects.

THE DISINFECTION OF SCHOOLS.—From time to time gentlemen come to see me with a view to getting my support for one or another of their preparations for use in school disinfection. As misconception is apt to exist as to the meaning and possibilities of disinfection, I venture to draw attention to the following considerations. No disinfection is of the slightest value unless the material used actually kills the germ against which it is supposed to be used; to use disinfectants in a general haphazard manner is a waste of money. The germs with which we are concerned in school are those of infectious diseases, including, for instance, consumption and sore throats. The claim which is usually made for disinfectants in connection with the ordinary school infectious diseases is, in my opinion, often of a very exaggerated nature. The school premises play an exceedingly unimportant part in the spread, for instance, of measles, and very much less than is usually thought in the spread, for instance, of diphtheria and scarlet fever. Indeed personal infection is, in all infectious diseases, by far the most important cause of their spreading from one child to another. So far as the school premises are concerned, they are dangerous to health just in so far as they are dirty or dusty, and the first consideration should be to cleanse, not to "disinfect." Germs always exist in association with dust and dirt, and if the latter are removed there will seldom be need to disinfect in the ordinary sense of the word. To ensure that a school is rendered a safe place for children to be in, nothing further is necessary or advisable than a systematic cleansing with a suitable soap, daily sweeping with plenty of damp material, and the systematic use of dusters which will retain and not merely disseminate the dust. The habitual use of so-called disinfectants is in my opinion objectionable; they tend to lessen the confidence of those responsible in the ordinary methods of cleansing and in such agencies as fresh air and sunlight; in water closets and urinals they are specially to be deprecated; they simply cover up smells which should not be allowed to exist. Disinfectants have their place in a way which I need not now detail, for occasional and exceptional use in the school in connection with an outbreak of infectious disease, but speaking generally, as I have stated, they are not to be commended.—*Annual Report of Dr. Ralph Crowley, School Medical Officer, Bradford.*

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THE HOUSING, TOWN PLANNING, ETC., ACT, 1909.

AMID the din of political controversy, it is gratifying to be able to instance the new Housing and Town Planning Act as a measure of first-rate importance, which has commanded the approval of the best minds of all parties. The Act is one of the most valuable public health measures that have been placed upon the Statute-book; it will remain as a permanent record of the stimulating and far-reaching influence that Mr. John Burns has exercised over public health administration. To medical officers of health the Act is of special interest. It contains provisions that greatly augment the duties and responsibilities of the medical officer of health, but it also marks a distinct step in advance in the direction of improving his status and strengthening his position as an administrative reformer. The Act provides that every county council must appoint a properly qualified medical officer of health, whose duties are to be prescribed by the Local Government Board, and who, if appointed after the passing of the Act, is debarred from engaging in private practice, and also from holding any other public appointment without the consent of the Board. A county medical officer of health must not be appointed for a limited period only, and, once appointed, must not be removed from office without the consent of the Local Government Board. The latter provision was strongly opposed in the House of Lords, but owing to the firmness of Mr. Burns it was ultimately carried, and the Act thus gives security of tenure to county medical officers of health. This is a substantial instalment of a reform for which the public health service has long been pressing. It is a valuable precedent, and also, we hope, a favourable augury for the future extension of security of tenure to other medical officers of health.

The Act in many ways simplifies and

expedites administrative procedure and greatly strengthens the hands of the administrative authorities, central and local. For instance, it enables a closing order to be made by the local authority, and the appeal against such an order must be made not to a Court, but to the Local Government Board. Similarly, if a local authority is satisfied that a house let to persons of the working classes is not kept in all respects reasonably fit for human habitation, they may serve a notice on the landlord calling upon him to execute such works as they may specify to be necessary, and here again the appeal is to the Local Government Board. The functions of the Board as an authority for deciding appeals have been greatly increased by the Act, and the result should be a corresponding increase in administrative uniformity and efficiency.

Part II. of the Act, which deals with town planning, opens up a new field for the activities of our local authorities. Hitherto, town planning in this country has been left to the initiative and enterprise of a comparatively few public-spirited individuals, but the German municipalities have shown us how much may be done by a municipal town-planning scheme to make a town beautiful as well as healthy. Town planning is, of course, not solely a public health matter; it is largely concerned with questions of æsthetics and of convenience. But it has an exceedingly important public health side, and medical officers of health may be trusted to take care that in the preparation of town-planning schemes public health requirements will receive their due share of consideration.

PATHOLOGY AND THE PUBLIC HEALTH.

IN order that additional scientific work may be undertaken by the Medical Department of the Local Government Board, Mr. John Burns has appointed Dr. Eastwood, the pathologist to the Royal Commission on

Tuberculosis, as a medical inspector, who is to act also as a pathological investigator. Provision has also been made for the services of an assistant investigator, and for the requisite laboratory equipment.

Mr. Burns has made this new departure in order to satisfy the need which has long been felt that the Board should be in a position to carry out, through the agency of their own staff, various pathological investigations having a direct bearing on the administrative medical work of the Board. These investigations are intended not to replace but to supplement the valuable researches on the origin of disease which for many years have been carried out by investigators specially engaged by the Board from year to year. This new development is of special value at the present time in view of the importance of turning to immediate practical advantage the results of the work of the Royal Commission on Tuberculosis, whose labours will, it is anticipated, terminate at an early date. The Commissioners and their staff have already dealt, in very exhaustive detail, with certain scientific aspects of the problem of the dangers to man of tuberculous food; and it is expected that further valuable information on these and kindred matters will be available when their final reports are published. The Commission is rendering a lasting service to preventive medicine by formulating important conclusions as to the liability of human beings to infection by tubercle bacilli of animal origin, and to science by publishing in the form of appendices to its reports the large mass of precise experimental data embodying the original research of its investigators. The material thus provided constitutes a record of permanent value, simplifying the task of future investigators and pointing the way to the methods to be adopted in further inquiries for securing a wholesome food supply. The President of the Local Government Board in his new scheme has provided for turning to practical advantage the results of the protracted and highly intricate experimental researches of the Royal Commission, and for applying these to the practical routine of food inspection.

While there are practical problems in relation to tuberculosis which demand immediate attention, it is not intended that the new work shall be confined to this subject. In the case of many other infectious diseases menacing the public health, questions constantly arise which demand laboratory investigation; and for this purpose the Local Government Board has long

needed a staff with adequate laboratory equipment. The new establishment is thus provided with a wide scope for extending the range of its utility.

The additional work now contemplated will not be restricted to current laboratory investigation on behalf of the Board. It has to be remembered that pathological methods of diagnosis of disease are being employed to a steadily increasing extent by sanitary authorities throughout the country. Enterprise of sanitary authorities on sound scientific lines needs appreciation and encouragement; it is believed that by giving it a wider publicity, a helpful stimulus will be provided for sanitary authorities whose progress is less advanced. There is, in particular, a need for work which can best be carried out by the Local Government Board of co-ordinating and standardizing the bacteriological methods of diagnosing disease, and of keeping sanitary authorities informed of such new and reliable discoveries as may be administratively applied by them in securing a more successful struggle against disease. The task of ascertaining what is already being done, and of helping sanitary authorities to better work in the pathological research of disease, will form a most important part of the work to be undertaken by the additional medical inspector of the Board.

Complaint has sometimes been made that this country is more niggardly than some others in the public endowment of scientific inquiries relative to disease. Whatever truth there may be in this statement, it should not be forgotten that at times research of this kind has been supported with much liberality from our public funds. For example, in endeavouring to elucidate particular problems relative to experimental tuberculosis, the present Royal Commission has conducted its inquiry in a most elaborate and costly manner, far exceeding in magnitude of detail what has been done in the public inquiries upon these aspects of the subject which have been instituted in other countries. It must be admitted at the same time that there is in England a strong and justifiable feeling that medical research paid for by the State ought to be such as will produce, or is likely to produce, a harvest of practical utility. This object is immediately in view in Mr. Burns's new scheme, and there can be no doubt as to the high value which the work now inaugurated will have as a national asset contributory to the common welfare.

LUNG DISEASE AMONG THE SHEFFIELD GRINDERS.

By HAROLD SCURFIELD, M.D., D.P.H.,
Medical Officer of Health, Sheffield.

IT has generally been accepted by medical opinion that men who have to work at certain occupations which expose them to the inhaling of dust are specially liable to die from a form of lung disease. It has also generally been accepted that this liability varies according to the nature of the dust inhaled; thus the effect mentioned has been observed in the case of the steel grinder and the gannister miner, and not in the case of the coal miner. It is now recognized that the lung disease which kills these workers, even if it begins as fibroid disease, ultimately becomes tubercular.

I produce tables showing the death-rate among the Sheffield grinders and cutlers. At the top of the list are placed the grinders who use the largest proportion of dry stones. At the bottom of the table is given for purposes of comparison the death-rate among all males over twenty years of age. It will be noticed that the death-rate among grinders is enormously high, and affects both wet and dry grinders:—

In the Annual Report of the Chief Inspector of Factories and Workshops for the year 1900 there is a report by Dr. T. M. Legge on "Gannister Miners' Disease." On page 485 there is a table giving the deaths for ten years of the workers at one gannister mine, and it is there shown that of the 76 deaths of which the causes are recorded, 64 were due to phthisis and gannister miners' disease, 7 to respiratory diseases, 1 to an accident, and 4 to other causes. In spite of this extraordinary mortality from phthisis, Dr Legge, after examining a number of the workers, makes the following statement:—"The physical development of nearly all the men examined was remarkably good, and even among the gannister workers conveyed no idea of the extent to which the lungs might become damaged by the dust."

As the result of a recent examination of Sheffield grinders, conducted by Dr. Collis on behalf of the Home Office, and by Dr. Barnes on behalf of the employers, the evidence as to the presence of fibroid disease was inconclusive. It would appear that fibroid disease in its early stages does not produce marked physical signs, or that a man may hold a

CITY OF SHEFFIELD.

MORTALITY IN THE GRINDING TRADE AND ITS BRANCHES, ALSO IN THE CUTLERY TRADE, DURING EIGHT YEARS, 1901 TO 1908, FROM ALL CAUSES, AND FROM PHTHISIS AND DISEASES OF THE RESPIRATORY SYSTEM.

Trade and Branch.	Number of Male Workers 18 years and over.	Number of Grindstones and Glazers.			Deaths.					
		Wet Stones.	Dry Stones.	Glazers.	All Causes.		Phthisis.		Respiratory Diseases.	
					No.	Rate per annum per 1,000 living.	No.	Rate per annum per 1,000 living.	No.	Rate per annum per 1,000 living.
GRINDING	3,941	3,280	693	2,325	966	30.6	480	15.2	174	5.5
Forks and Steels	96	—	92	84	31	49.4	17	22.1	3	3.9
Augers, etc.	54	6	46	43	10	23.1	9	20.8	1	2.3
Surgical Instruments	28	16	11	28	9	40.2	5	22.3	3	13.4
Scissors	194	176	102	155	70	45.1	38	24.5	17	11.0
Razors	413	250	137	263	102	30.9	41	12.4	21	6.4
Edge Tools	279	289	60	218	63	28.2	40	17.9	7	3.1
Knives—Table and Spring	1,518	1,302	202	1,012	362	29.8	173	14.2	67	5.5
Sheep Shears	143	86	7	68	42	36.7	29	25.3	5	4.4
Agricultural and Mining Implements	156	128	4	71	1	0.8	—	—	—	—
Hammers, Vices, Anvils, etc.	53	28	—	31	5	11.8	1	2.4	1	2.4
Saws	216	296	—	120	49	28.4	17	9.8	6	3.5
Scythes and Sickles	40	45	—	12	12	37.5	8	25.0	3	9.4
Files and Rasps	373	394	—	10	97	32.1	55	18.2	15	5.0
Miscellaneous	378	264	32	210	113	37.9	47	15.8	25	8.4
CUTLERY	3,889	—	—	—	928	29.8	184	5.9	220	7.1
ALL MALES—(20 and over)	124,000	—	—	—	16,299	16.4	2,705	2.7	3,323	3.3

The numbers employed shown in the above Table have been taken from the Home Office (Factory Department) Return, corrected for outside workers.

considerable amount of stone, steel and gannister dust in his lungs without developing fibroid disease.

In the second table a comparison is given of the death-rates among the grinders and cutlers, and among other groups of Sheffield workers.

It is difficult to combat the idea that the long-continued exposure to the dust in the case of the grinders predisposes them to take tuberculosis of the lungs. Nearly half of the grinders die from tuberculosis of the lungs, whereas only one-sixth of the adult males in Sheffield die from that disease.

Probably most people who are greatly predisposed to tuberculosis of the lung are sufficiently exposed to the risks of infection to contract the disease and die from it. It seems to me fair, therefore, to assume that the one-sixth of the male population who die from tuberculosis of the lungs includes nearly all those males who are greatly "predisposed" to the disease. No doubt the one-sixth also includes cases who are not specially predisposed, but who are exposed to long-continued and intimate sources of infection. It is also fair to assume that a large proportion of the five-sixths of the ordinary male population who do not die of tuberculosis of the lung have a strong resistance against that disease. It must be remembered that many of these people have to live with consumptives, in many cases to occupy the same bedroom or to sleep in the same bed, and yet they fail to die from the disease.

The grinders are originally men of good physique, and I think it is fair to assume that they include just as large a proportion of persons strongly resistant to tuberculosis as the ordinary male population, and yet half the grinders die from tuberculosis! The circumstances of their occupation must, therefore, be such as to enable the tubercle bacillus to overcome many grinders endowed with a strong resistance. I cannot help thinking that the predisposing effect of the dust on the lung is a very important one, and my opinion is strengthened by the fact that tuberculosis of the lung is comparatively rare among women in Sheffield, and that the grinder does not infect the members of his own family at home in the same way as he does his fellow-workmen. Surely there can be no more subtle method of infection than sleeping in the same bed with a patient and being exposed night after night to his cough-spray, and surely the grinder would infect his wife more easily than his fellow-workmen, were it not for the predisposing effect of the dust.

At the recent inquiry held in Sheffield, the theory was advanced that fibrosis of the lung actually protected the worker against tuberculosis, and by its presence caused the tubercular disease to run a slower course than in a healthy lung. This opinion appears to be founded on the theoretical observation that if a tuberculous focus in the lung becomes healed, the method adopted by nature is to build a wall of fibrous tissue round it. I should like to make a few observations on this theory.

CITY OF SHEFFIELD.

MORTALITY IN CERTAIN TRADES FROM ALL CAUSES, AND FROM PHTHISIS AND RESPIRATORY DISEASES, DURING EIGHT YEARS, 1901 TO 1908.

Trade.	Workers.		Average Annual Death-rate per 1,000 living.		
	Number.	Age.	All Causes.	Phthisis.	Respiratory Diseases.
Grinders	3,941 (3)	18 and over	30.6	15.2	5.5
Cutlers... ..	3,889 (3)	18 and over	29.8	5.9	7.1
File-cutters	1,850 (2)	20 and over	29.9	5.4	5.2
Silver, etc., workers	2,380 (2)	20 and over	25.9	5.4	4.5
Tailors... ..	941 (1)	15 and over	20.9	1.6	3.7
Printers	487 (2)	20 and over	16.7	3.3	3.1
Joiners... ..	2,286 (1)	15 and over	14.1	1.8	2.8
ALL MALES	124,000 (1)	20 and over	16.4	2.7	3.3

The numbers employed shown in the above Table have been taken from sources as indicated by the bracketed number, as follows:—(1) Census Report, 1901. (2) Trades Union Officials' and Manufacturers' Returns, 1906. (3) Home Office (Factory Department) Return, corrected for workers outside the city, 1908.

In the first place, there are no data to show that a person with fibrosis of the lungs takes longer to succumb to tuberculosis of the lungs than a person with a lung originally healthy. It would be difficult to obtain data. A number of "fibroid" cases would require to have their sputum examined at regular intervals in order to mark the interval between tubercular infection and death. After that had been done, it would be difficult to obtain a standard for purposes of comparison from persons with lungs originally healthy. The duration of tuberculosis of the lung depends on so many other different factors. Again, it is to be expected that tuberculosis of the lungs in the case of many grinders will run a very slow course, because, as I have already shown, the grinders attacked must include many men who are endowed with a great natural resistance to the attacks of the tubercle bacillus. Even if it could be shown that the tubercle bacillus does not flourish readily in that portion of the lung which is actually affected by fibroid disease, is not the remaining healthy lung, by the fact that it is being overworked, rendered more liable to attack?

It was suggested at the Sheffield inquiry that the greatest harm is done by the consumptive grinder spitting in the trough in which the wet stone revolves, and by the infected water being subsequently sprayed into the air. If this theory were correct, one would expect the wet grinders to be more affected than the dry grinders. This, however, is not so.

I do not think there is anything in the gannister miner's occupation (which is even more fatal as regards the causation of tuberculosis of the lung than the grinder's) which would take the place of the spray given off by the wet stone. I think that the suggestion with regard to the spray is a probable explanation as to why the wet grinders are nearly as bad as the dry, but I cannot think that this is a more subtle method of infection than sharing a bed with a patient in the late stages of the disease.

As regards prevention, I am of opinion that attention should not be solely devoted to the removal of dust by fans, but that everything possible should be done (1) to improve the cleanliness, lighting and ventilation of the grinders' hulls; (2) to control the careless spitting of the workers, a large proportion of whom must continue to be infectious until a great alteration has been effected in their

industry; and (3) to encourage the workers to take an interest in their own health by temperance, regular meals, getting plenty of fresh air in their off time, etc.

Simple instructions on health matters should be issued to the grinders, making it clear to them that improvements in the future depend largely upon their own efforts. These instructions should be issued with the authority of the Home Office, and posted up in the various grinding hulls.*

DISCUSSION.

DR. CAMERON, in thanking Dr. Scurfield, said that the educational value of sanatoria was beyond all doubt. Cases received early could be cured, but unfortunately they often went back to work, as dusty as the tenement factory they had seen, and it was very disappointing to find after a time a recurrence of the disease, which often proved fatal. If some outdoor occupation could be found for these cases many lives would be saved, but the small wages usually obtainable for outdoor employment tended against its adoption.

DR. MOORE, of Huddersfield, emphasized the fact that the great duty of the medical officer of health was prevention, and not so much to deal with palliative measures. The post-mortem records of our general hospitals show that there is a large percentage of cures from pulmonary tuberculosis, and it would be interesting to find what determines the cure, which in many of the cases often takes place under adverse circumstances.

DR. SCATTERTY, of Keighley, was greatly impressed by what he had seen during the afternoon, and the idea of a sanatorium in the very centre of a large town was new to him.

DR. ANDERSON, of Wortley, agreed with what had been said, and referred to the cubic space of 2,000 ft. per bed as not being so necessary where the windows are constantly open. In advocating the open window in private houses one was met with the difficulty of how to prevent the entrance of dirt, and of counteracting the cold in severe weather.

DR. SCURFIELD, in replying, agreed that the main object was to lessen the incidence of the disease, but stated that something must be done for the actual sufferers, especially where notification had been adopted.

A MEDICAL OFFICER OF HEALTH ATTACKED WITH SCARLET FEVER.—We regret to hear that Dr. Reynolds, Medical Officer of Health of Shrewsbury, is suffering from an attack of scarlet fever contracted during the performance of his duties.

* Before the discussion took place the members of the Branch paid a visit to the Sheffield Corporation Consumption Hospital, where sanatorium treatment is carried out; and also to a tenement grinding and cutlery factory. In the discussion these visits are referred to.

SOME ASPECTS OF THE WORK OF A MEDICAL OFFICER OF HEALTH IN COUNTRY DISTRICTS.*

By A. E. PORTER, M.A., M.D., D.P.H.,
Medical Officer of Health, Reigate Borough and Reigate Rural District.

I SUPPOSE that each member of our Society who is honoured by a call to the presidential chair is filled with despair when the time arrives for him to select a subject for his address. Since by time-honoured custom no discussion is expected to follow (though I think that this was wisely discountenanced by my predecessor), it is desirable to steer clear of controversial matters, and to confine oneself chiefly to facts. This rules out so many topics that I received with considerable relief the suggestion of our Secretary that possibly some remarks on certain aspects of health administration in rural areas as compared with that in large urban districts might be acceptable.

Dr. O'Connor read a paper dealing with this matter before the parent Society a short while ago, and, judging by portions of the discussion, it appeared obvious that many of our members holding county-borough and similar appointments were almost as ignorant of the details of our daily routine as even Members of Parliament. I hope to be able to indicate to those members of our Branch who hold county appointments a few of the difficulties that are encountered in our work, in order that they may make allowance for our shortcomings towards themselves, and be merciful in exercising some of the supervisory powers with which current legislation appears tending to invest them.

Rural areas, which for the purpose of part of my remarks may be taken to include small urban districts, and even small municipal boroughs, naturally vary much in character. Some rural districts, for instance, may be largely composed of what practically amount to collections of towns, and the administrative details may be strictly comparable to those of big urban communities, whilst others may consist chiefly of moorland and mountains, or of wide agricultural belts, where villages are small and few, and where communication with large urban centres is so slender that the introduction of infection is a matter of great rarity.

Consequently my remarks are intended to apply solely to rural areas with which I am personally acquainted, and more especially to

the work encountered in a pair of Essex rural districts of 185,000 acres, chiefly agricultural, and in a combination of borough and rural districts in Surrey, both largely residential, and with an area of 50,000 acres, there being, for comparison, an intervening period of five years in a large city borough, whose sanitary organization probably compares favourably with that of any of the great towns of the United Kingdom.

The difference of the work in these types of sanitary areas may roughly be divided into legislative and administrative.

Legal matters are dry subjects, and I do not propose to even attempt an exhaustive account of the differences existing between public health law in rural and urban districts.

As regards the Public Health Act, 1875, many of the sections are not applicable to rural districts, but inasmuch as the Local Government Board may by order invest rural districts with practically any of the peculiarly urban powers in sanitary matters, the distinction is not of much practical importance. The desired clauses can generally be obtained without much difficulty, and I believe that almost the only exception to this rule is with regard to the provision of a public abattoir. If good cause were shown, no doubt the Board would favourably consider even such an application.

Until an order is applied for, a house may be erected without drains, no bye-laws can be made with respect to new streets and buildings, and slaughter-houses cannot be regulated. These are the most striking instances, and few rural authorities who have the interests of their districts at heart will fail to apply for powers, at all events with regard to the last two matters.

Similarly, the sections affecting offensive trades are omitted: notice for the periodical removal of manure from mews, stables, etc., cannot be given, and the contents of cesspools are allowed to overflow or soak therefrom. As regards the last matter the permission becomes of importance in portions of rural districts situated on such bare water-bearing strata as the chalk, from which public supplies are likely to be drawn; but I do not know of a rural authority that has sought for the powers conferred by this section. Somewhat naturally, they prefer to put off the evil day when a sewerage scheme is required for a growing village; cesspools communicating with the chalk need no attention from generation to generation.

As regards the Public Health Acts (Amendment Act), 1890, practically all the urban sections are procurable by a Rural District

Council, so far as sanitary provisions are concerned.

The Sale of Food and Drugs Acts do not apply to rural districts, and only to such boroughs as have a population of 10,000 and a separate Quarter Sessions or police establishment.

Part II. alone of the Housing of the Working Classes Act, 1890, is applicable to rural districts, though Part III. may be adopted for specific parishes with the consent of the County Council, a consent that is by no means always forthcoming.

On the other hand, the Public Health (Water) Act, 1878, is essentially for rural districts. It is of little service however, since, if a house is without a proper supply, the maximum cost for providing water that can be incurred is £8 6s. 8d., or £13 with the consent of the Local Government Board. As a well 4 ft. in diameter may cost upwards of £2 10s. a foot to sink, it will readily be understood that the Act is generally useless. An Abyssinian well is cheaper, but unless it is certain that sufficient water will be reached within 20 ft. of the surface the outlay is likely to be exceeded.

Another section of this Act requires a water certificate to be obtained before a new house can be occupied, and the owner is liable to a fine not exceeding £10 if he fails to obtain this certificate. Having paid his fine, he has no further trouble, since there is no continuing penalty, and his tenant may have to go to the nearest pond for his household needs.

In rural districts a new local authority appears in the form of the Parish Council. This august body, brought into existence by the Local Government Act, 1894, has many useful functions of a non-public-health nature, is entrusted with a few minor sanitary powers relating chiefly to water supplies and ditches, can levy a limited rate, and has the right to complain to the County Council if the Rural District Council fails to carry out some of its duties. Its members are, however, even less anxious, as a rule, to incur public expenditure than the more important authority. The meetings are usually reported at length in the local Press, and it would seem that much legislative and debating talent is buried in quiet country villages. Sometimes the meetings take place in the school; sometimes, I believe, at the local tavern.

In large parishes forming part of a rural district some of the supervisory powers are occasionally delegated by the District Council to a parochial committee.

Several subjects that come under the constant cognizance of the Sanitary Department of a large town bulk very small in the routine of a rural medical officer of health. The Factory and Workshops Act, for example, absorbs little of his time or of that of the sanitary inspector. Factories are probably non-existent, and workshops consist principally of laundries, mostly small.

In house-to-house inspections of real country villages the condition of the drains below the surface is usually taken for granted, attention being chiefly directed to such sanitary matters as can be noted in a few minutes. The ultimate fate of the sewage, however, frequently demands investigation, and the ditches in the immediate neighbourhood need watching, since it is naturally more convenient to let a cesspool overflow into a ditch than to be troubled with emptying it every few weeks. A luxuriant crop of nettles frequently affords a clue.

One finds all degrees of drainage systems. The most primitive is an entire absence of a drain of any kind. The next stage of evolution is perhaps a bucket under the sink waste, and thence there is every stage up to elaborate schemes of iron pipes, manholes, disconnecting traps, and all the other luxuries that are the delight of the sanitary engineer and a source of much labour to the officers who investigate river pollutions.

Meat inspection is naturally at a discount; even the most energetic sanitary inspector cannot keep an eye on, perhaps, a dozen slaughter-houses scattered over 50,000 acres or more.

Common lodging houses are conspicuous by their absence, and scavenging, where carried out at public expense, is generally undertaken more or less satisfactorily by a contractor under the supervision of the surveyor.

To counterbalance these, must be set the questions of water supply and sewage disposal, which are apt to become troublesome in country districts. The water supply of scattered communities situated on impervious strata is often a most difficult problem, unless a public company has stepped into the breach. Some Rural District Councils have, through the efforts of their medical officers of health, provided excellent supplies with mains running through even sparsely populated parishes, and at a strictly reasonable cost; but it requires bold and confident advice to induce them to undertake ambitious schemes of this kind. Consulting engineers do not care about them, and the

* Presidential Address delivered to the Home Counties Branch of the Society of Medical Officers of Health on October 20th, 1900.

respective Parish Councils are liable to oppose them on account of expense. There are public supplies in certain parts of Essex, due to the efforts of a distinguished member of our Branch, that are a credit both to him and to the Councils that have the benefit of his advice.

Similarly, schemes of sewage disposal, whether serving simply a country mansion or a rural parish, are frequently difficult to devise, expensive in operation, and by no means ideal in their results.

The chief duty, however, outside office work, that absorbs the time of a country medical officer of health is the control of infectious diseases. This subject assumes an entirely different aspect from that which it exhibits in a large town. In the latter there is usually an endemic prevalence with periodical exacerbations or declines, in a population protected to an appreciable extent. The preliminary inquiries are made by the sanitary inspectors, and it is only when on rare occasions a serious increase occurs that the medical officer of health gives the matter his close personal attention.

In rural districts there is, or should be, no endemicity. A case of scarlet fever or diphtheria in a parish hitherto free means the introduction of infection into an almost entirely unprotected community, and may mean that an epidemic is already in progress. It is usually desirable for the medical officer of health to investigate the circumstances himself, and a couple of cases among children occurring in close sequence, unless there is an obvious connection between them, makes a prompt personal visit almost indispensable, at all events if they occur during a school session. Even at this early period a call at the school is desirable, and a close scrutiny into the registers, followed perhaps by the examination of some or all of the children present, and many of those absent for unknown reasons. As a rule, no doubt, the enquiries lead to nothing, but occasionally the time is well spent.

For instance, on October 9th, two years ago, I received a notification of scarlet fever in a parish with a population of about 2,000, more than a year having elapsed since there had been a case of the disease there. Two more notifications came on the 10th, all the addresses being within a quarter of a mile of each other. A visit to the school, however, revealed two brothers peeling, and calls at the houses of absentees were rewarded by the discovery of eight cases of scarlet fever in various stages,

not a single one being under medical care. A few days later three more cases of the same kind were found, and I then remembered that the village doctor had told me about a week previously that he was attending a case that he at first thought was diphtheria (he had sent me two swabs), and afterwards German measles. On my suggesting that another visit might be desirable, he found his patient peeling profusely. A few more cases were subsequently notified by their medical attendants, but the outbreak was over in ten days, and nothing further happened till the patients began to leave the hospital; but this, as Rudyard Kipling puts it, is another story. It clearly, therefore, does not pay to sit down and wait for notifications in rural districts.

Similarly, cases of diphtheria merit early attention. In a small parish two cases occurred in families attending the same school at the very end of the summer term, the notifications being received after the holidays had commenced. Nothing further happened till the end of the first week of September, when a child from another family, living more than two miles from the others, was attacked. A visit to the school and a preliminary look round, with the taking of a few swabs, revealed one child teeming with diphtheria bacilli, whilst a call at a few houses where children were being kept at home brought to light a boy suffering from a slight attack, his elder brother being a milker on a farm of considerable size. No medical man was in attendance. The whole school was then examined, and most of them were swabbed, whereby three cases of nasal diphtheria and two children with the bacilli present in the throat were identified. The results were entirely satisfactory.

I have always been somewhat anxious about diphtheria in rural parishes since an experience many years ago in another part of England, where, through relying on notifications and school closure, an epidemic in a parish of about 2,000 inhabitants lasted four years, and fully 10 per cent. of them must have been attacked during the period. I have no doubt that by working on more modern principles much sickness might have been prevented and many lives saved.

Whatever may be the case in towns, I am sure, too, that it pays to swab at least the other children of an infected house in country districts. Almost as often as not, one or more of the inmates is found to be infectious, and not infrequently one can then obtain something

like a definite history pointing to a slight attack of diphtheria, which was not at first forthcoming. More than once also I have in this way come across a child almost dying from cardiac paralysis following nasal diphtheria that had escaped the notice of the medical man who had notified the ordinary faucial case.

To carry out these principles it is, of course, essential that the sanitary areas under one medical officer of health shall not be too extensive, since, when his districts lie within easy reach of large endemic centres, there is so much interchanging of visits between town and country that the importation of infection is liable at certain seasons to be of almost weekly occurrence, and this brings us to one of the two chief drawbacks of rural work, namely, locomotion. Travelling expenses may be allowed in some enlightened districts, but I have never heard of such a luxury. In the largest combinations £100 to £150 a year may easily be swallowed up in this manner, and a prospective candidate for such a post should always form an estimate of the facilities for getting about before applying. Some combinations, such as the one I have charge of, are compact, whilst others are straggling. In the days of my youth I have cycled sixty miles on a hot summer day in connection with a single notification of enteric fever, but such strenuous journeys are liable to pall even before the grasshopper becomes a burden. Again, the contour of the districts is worth considering, since twenty miles in a hilly country may be equivalent to twice the distance on the flat.

The other bugbear is clerical work, not so much correspondence, perhaps, as the posting up of registers and journals, and the preparation of reports. Dr. O'Connor estimates that half the time he devotes to official duties is absorbed in work that could be carried out by a clerk, and this no doubt is the case in such large combinations. In small ones, however, the amount of office work is so variable, and so largely of a personal character (for example, booking visits, inspections, etc.), that regular employment for a clerk would probably be difficult to arrange. Casual employment for reports, and perhaps the filling in of death and infectious disease registers, would certainly be a boon.

Apart from periodical reports to one's authorities, one's annual reports, requiring attention as they do when daylight is brief, locomotion difficult, and infectious disease apt to be

particularly prevalent, are decidedly thorns in the flesh. Special reports are often in demand, since in small sanitary areas officious parsons, magnates of the *nouveaux riches* type, and persons having a grudge against their neighbours have a playful habit of complaining to the Local Government Board that sanitary matters are not receiving due attention, with the inevitable report as a consequence, and much useless invective and burning of midnight oil on the part of the unfortunate medical officer.

County medical officers of health of an enquiring turn of mind will, I hope, bear in mind that their district *confrères* have to find their own means of conveyance, and that the winter is in consequence not the most suitable time for collecting information, and, moreover, that if a wet year coincides with repeated outbreaks of infectious disease the amount of systematic inspections possible may almost approach the vanishing point. Also, that at most periods of the year correspondence and reports have to be effected at times and on days when those accustomed to the service of an office staff would shudder at the idea of being discovered at work.

If the Legislature would bear this in mind too when contemplating the imposition of fresh duties, without the bare suggestion of facilities for carrying them out, the lot of the rural medical officer would be much improved.

Inasmuch as a single visit to a remote village in connection with a notifiable disease may alone absorb four or five hours, and involve sufficient physical fatigue to invite an easy chair and slippers for the remainder of the day, it will readily be understood that ordinary office hours are of no account when these diseases are at all prevalent. If chemical and bacteriological work is undertaken, as is becoming increasingly common, one's days are very fully occupied.

At certain seasons ten or twelve hours' work a day, exclusive of halts, may be by no means uncommon, and successive net working weeks of sixty hours, or even more, may cease to be a novelty.

In blissful ignorance of these circumstances, Parliament periodically introduces fresh legislation, which in a large town may perhaps mean little more than an additional clerk or inspector, but which in rural districts involves a curtailment of time which should be available for social or other relaxation.

It need hardly be said that one's vital

statistics are of a somewhat bald and scanty character: personally I have no use for higher mathematics, or even logarithmic tables.

One's labours may be greatly lightened by the assistance of an efficient sanitary inspector. In large areas the inspectors may live ten or more miles away from the medical officer of health, and rural inspectors are necessarily largely their own masters. Those of unsteady habits are a great nuisance, but come to grief sooner or later as a rule.

There are good ones and there are bad ones. A good one must be indifferent to mud and wet jackets. He must be an all-round man who does not work too much by rule of thumb. Personally I confess (in the strictest confidence) that I find the knowledge of how to take a swab, under suitable conditions, a valuable asset, whilst the faculty of being able to evict gypsies without creating a breach of the peace is a quality much appreciated by rural district councils.

I have touched in a somewhat discursory manner on a few of the drawbacks to work in country districts, and others are to be found in Dr. O'Connor's paper and in numerous Government Blue-books; but there are compensations, both of a personal and professional kind.

After a few weeks of strenuous labour brought to a successful conclusion, for instance, one feels at liberty to spend all but a few hours a day on breezy commons in the vain attempt to bring one's handicap down to single figures, or otherwise to indulge in one's favourite hobby, and this can be done without criticism or compunction.

One's work, too, is mostly of a more interesting character than that met with in a large town. It takes one among the villagers, who to some extent still preserve their old-time courtesy and good manners, unspoiled by the halfpenny Press and the street-corner Socialist orator.

It is possible to study the incidence of infectious disease by the unit instead of by the mass, and that is perhaps why some of us consider that the relationship between these diseases and insanitary conditions has been enormously overrated. It is likewise interesting, though disappointing, to watch a secondary epidemic of scarlet fever develop in a village as the patients forming the primary outbreak begin to return from the hospital, and to meditate on the futility of reckoning return cases by the fresh incidence in the specific

families, or to put a time limit on the occurrence of the phenomenon.

Above all, there is the absence of office routine, and the fact that much of one's time is spent in the fresh air, often in country villages scarcely spoilt by the march of progress; and all this appeals to those who, like Robin Hood, would sooner hear a bird sing than a mouse squeak.

THE TREATMENT OF TEETH IN THE ELEMENTARY SCHOOLS IN RELATION TO PUBLIC HEALTH.*

By W. T. ELLIOTT, D.D.S., L.D.S., F.Z.S.

IN bringing this subject before you for discussion I would state what I wish to say with regard to the importance of the question and the evidence we possess as to statistics as briefly as possible, since we are all aware of existing conditions.

Those reports that have been published refer only to decayed teeth, and make no mention of teeth that are missing. Consequently in many such cases, for this reason, there is defective function on one side or the other; and trouble may also be caused by the defective action of the muscles of the lips and tongue, causing indistinctness of articulation and interfering materially with the education of the child; so that there are present in the schools children suffering from preventable and remediable defects of the mouth of which both teachers and parents are ignorant.

I would remind you that this serious state existing with regard to the teeth also extends to other countries, as shown by the published reports during the last few years, and as referred to in detail in the communication I recently placed before the Child Study Society in London and published in the *British Dental Journal* for April 15th, 1908, all of which are confirmed by the reports that have been recently issued by the medical officers under the Education Act, and although in these reports there is a considerable variation as to the percentage of defective mouths, I think this may be attributed to the personal factor which must of necessity greatly influence the results arrived at.

Clearly, therefore, we need only consider the subject from a practical point of view, for it must be evident to all that it is economy to spend money on means to check this serious

* A paper read before the Midland Branch of the Society of Medical Officers of Health, on November 4th, 1909.

physical deterioration. A study of the report of the Royal Commission on the Poor Law also infers that the expenditure of money on the physical defects of school children would be an evident gain. This report says (on page 886): "What is, above all, deplorable is the enormous amount of incipient disease that exists, undiscovered, untreated and unchecked, in the infants, school children and young persons who constitute one-half of the entire population, and upon whose health the productive power of the next generation depends."

From such conclusions, coming as they do from those who are not members of the medical profession, it is evident that lay authorities are beginning to realize the state of affairs, although even now I am not convinced that most of those in authority are aware of the serious state that exists. Anyhow, we are all agreed, I am sure, that something in some form or another should be done.

Now it is the duty of specialists to say as far as they can to what extent different diseases affect the organism as a whole, and this has been emphasized during the last few years with regard to the teeth by the investigation of many dentists and by the united efforts of the British Dental Association and the School Dentists' Society, who have long been aware of this, the gravest single problem that has come to light in the course of medical inspection.

We are, then, face to face with a destructive and ail-prevalent disease. Toothache is only quite a small part of the effects of diseased teeth. In health the mouth has to a large extent developed the faculty of looking after its own cleanliness, but when it comes to ill-health it is quite a different matter. Secretions change their character, the secretory cells on the gum margins get out of order, and they get deposits, suppurations and sepsis, which are beyond the natural powers of the mouth to control, and so the teeth cannot be protected from caries, rendering the child incapable of digesting and assimilating the food provided for it.

Likewise the vast amount of treatment given for the eyes, throat, and lungs is negated so long as these conditions are allowed to exist; and further than this, oral sepsis must produce infection where children are associated in schools. Diseases of the teeth possibly outweigh all other physical defects; they are one of the greatest hindrances to school work, and probably are more responsible, directly or indirectly, as a cause of malnutrition than

all other causes combined, for the development of oral sepsis imperils resistance to disease, the blood stream becomes septicly affected, and the tissues are unable to obtain the necessary nutrition.

The condition of the teeth, therefore, is of the greatest importance to the development of the child, for nature has provided no recuperative process by which defective teeth can recover. Teeth which are affected become progressively worse, for there is a retrogressive condition of tooth substance because the protective influence of the blood is practically absent from the teeth, so that the child with bad teeth becomes an adult with worse teeth, and is handicapped in the struggle through life.

In those instances where periodic treatment has been given, such as in the Poor Law schools and other institutions, I think it is quite evident that there is a marked improvement in the general health, and this may be attributed to the fact that tooth disease is distinctly less.

Now the ultimate purpose of the Education Administrative Provisions Act is no doubt to protect the developing child from all those conditions which produce disease, so that it may become, as far as possible, a useful asset to the State. In fact, the aim of this Act is practical, and, as far as the teeth are concerned, any beneficial results must be very small unless treatment is in vogue, so that all the evidence we possess indicates that dentistry should be an essential part of public health. Indeed, I take it that without it it is not complete. The betterment of public health is now one of the great activities of modern life, and dentistry, being a part of the healing art, must essentially take a share.

Light, air, and cleanliness are now enforced conditions in every school, but the septic mouth that vitiates the atmosphere and undermines the health still exists.

I have referred to these facts in order to indicate that dentistry has now a place in modern science. It has become one of the necessities of civilized life, and, as a result of this, there is a tendency for a change in public opinion with regard to it.

The science of public health is also of recent development. Not long since it was occupied with the environment of the people only as a whole, such as sanitation and water supply. Now it has advanced so that the individual must receive attention, all indicating the

tendency to build up a scheme of preventive treatment, and it is essential that this should centre mainly round the elementary school. Such a system must necessarily include treatment of the teeth, and the work of the dentist must form an important part in the future of the methods of public health. That there is a growing recognition that the health of the child is the proper concern of the State is clearly evident, not merely on the part of the people themselves, but also by the activity evinced by the education authorities, and at a meeting of the Trades Union Congress held at Ipswich during this year resolutions were passed, *inter alia*, "that skilled medical attendance and treatment should be provided for all requiring it." Clearly Trades Union and similar congresses are always ready with their simple solutions of such deep and far-reaching problems as are involved in the subject of public health. Ignorance, destitution, and ill-health, however, are three dominant problems towards which legislation is being directed.

Perhaps one of the first points to consider in dealing with this subject is that of hygiene. It is generally admitted, I think, that the teaching of this is essential with regard to the teeth, and when we think that the mind of a child is far more susceptible and impressible than is that of an adult, it is surely desirable that instruction should be given in the school. In this manner it reaches all, and should be part of the recognized system. Schools are the only places where it is practicable to teach every child the value of its teeth and the best means of preserving them. Proper arrangements surely ought to be provided for practically enforcing the instructions given, and it should be part of school routine. I notice that Dr. Stevenson, amongst others, has pointed out how much ignorance exists, not merely with the children but with the parents. He suggests that there should be a course of lectures for instruction to be given to the teachers, so that through them the children may be properly instructed upon the question. I am very glad to observe that the Education Committee of the L.C.C. have placed a purely dental book on the list of their libraries, so as to be available for the use of the teachers in the schools. This is a significant sign that the education authorities are desirous of having this subject thoroughly understood by the teachers, and therefore they thought it advisable to provide them with a book for

reference. All are agreed, and I believe it is generally carried out, that no children should be allowed to attend school if they are in an uncleanly state, and some further precautions should be adopted so that preventive treatment in the form of what is known as "mouth drill" may be carried out in the schools, because it requires favourable environment for the germs to attack the teeth. They should also be taught that improper breathing is most detrimental to the teeth.

There are many agencies in different parts of the country where lectures are provided and instruction given with regard to health in its various aspects. For many years this has been done by the authorities connected with the Athletic Institute in this city, and I believe a great deal of good has been inculcated, but it only reaches a certain class of people who are a little more given to thought and their surroundings than the greater number are. At any rate, they certainly think it desirable now to include the subject of teeth in their lectures.

I would here include a word or two as to what has been and is being done in other countries. In France, and particularly in Germany, a great deal more is done for the teeth of the child in the matter of treatment, where the school dentist has been in evidence for a considerable time past. School clinics have been organized, some of which are entirely paid for by the municipalities, and others are being supported by philanthropic people. In Germany, I believe, there are thirty-six towns or cities where dental clinics are available for the treatment of children; and I find that in Dresden, for instance, which has 65,000 school children, there have been ten dentists appointed to do the required work. In Berlin, I understand, they have a very fine clinic in one elementary school which cost £400 in fittings alone. Two dentists are constantly in attendance, and everything is provided for the proper carrying out of the treatment of the teeth. They apparently consider that unless a citizen is physically fit he is of little value to the State, and they recognize that the mental and bodily condition of children depends upon tooth efficiency.

Here in England we have by no means gone so far as that, and all that has been hitherto done, I believe, is through philanthropic channels. In the case of the Dental Institute at Cambridge, which is now doing excellent work under the guidance of a dental officer

who is paid £300 per annum, and also here again in Birmingham, the elementary school children in certain schools have received attention and the necessary treatment under the supervision of the Dental Hospital authorities, the required money having been found from private sources.

So I think we may now regard this question as beyond the theoretic stage. Treatment of some kind and to some extent will have to be done, and I do not think it can or should be met through the agency of philanthropy. It must surely be considered from an economic and not from a sentimental standpoint. For if education is desirable from the State point of view, public health is equally so. How, then, can dentistry be provided in the most economic and satisfactory manner? One fact is quite clear: the work to be done is enormous in its extent. There is throughout the country a school population of about 6,000,000. We have here in Birmingham alone nearly 100,000 children attending the elementary schools; and when we remember that it is a speciality *per se*, and that treatment cannot be exactly based on the same lines as is the case with the eye or throat, one reason being that it is actual physical work to be undertaken that covers a certain period of time and that cannot be delegated to the province of the nurse, it must be evident that the cost must be on a somewhat different basis. But, anyhow, it is obvious that any scheme must be regarded as somewhat tentative. Experiments, we know, have to be made in every branch of life, for without them there could be no progress. We have proved it in the case of technical education, which ultimately resulted in the Technical Education Act. We had here also some years ago the Education Aid Society, which was formed in order to raise money to pay the school fees. But what I think should be aimed at in the first instance is the organization of a system that is based on progressive lines and admitting of gradual extension by a system of improvement.

As I have pointed out in the paper to which I have already referred, there are three ways in which treatment may be adopted, and in each case with certain satisfactory results.

1.—Through the already organized hospitals, and through similar institutions which might be subsidized for this purpose.

2.—The work might be done by arrangement by contract by appointed dentists in large centres at a place arranged or at their own

rooms, on similar lines as is done in the case of medical work under the Poor Law Administration.

3.—By school clinics.

For consideration the children may be comprised under three heads.

1.—Those whose parents can provide treatment at their own expense.

2.—Those children whose parents cannot provide treatment unless it is obtainable at contract fees.

3.—Those children whose parents under any circumstances are unable to pay anything towards any treatment whatever.

With regard to the first, it seems to me that it is, of course, hardly likely to be approved, because it is almost impossible to bring children the necessary distance, and another reason is that from the hospital point of view it is undesirable to associate this class of work with hospital practice as we understand it to-day. No moral good can result from it. I find that the British Medical Association has passed a resolution against children being sent to public charities for treatment, and I am sure that this would be supported throughout the dental profession. The recommendation of the British Medical Association is that "under existing conditions the most satisfactory provision for treatment of the children who are defective, and whose parents cannot afford to pay, would be contract work by a private practitioner, either at central institutions or clinics, or, in the case of sparsely populated districts, at their own place for practice."

In the second place, treatment might be undertaken by dental practitioners, either at their own rooms or at the schools, if accommodation could be provided, and the work arranged to be done at certain hours and at a fixed rate of fees, as is done under the Poor Law Administration and in the case of the Army. It does not necessarily mean that in this way money is to be found from the rates. Each case, of course, would be reported by an officer of the Education Committee, who would notify the parents that the defects must at once receive attention, and if they were unable to pay the fees that had been arranged, the Education Committee would give a voucher for the payment of these fees. A list of names of those dentists who have been appointed to do this work could be had from the head teacher when the parent had been notified that the child must have treatment. A choice should be allowed to the parent to select the

practitioner they would wish to carry out the treatment. As an initial course I think there is much to commend it. In this way there is a method of efficient decentralization which is desirable, and which we do not obtain in the first case, and, moreover, it is a course that would be likely to interest and educate the parents. At the same time, also, it is a scheme that does not involve the cost of maintaining salaries of specially equipped institutions. It certainly is a method which would apply very satisfactorily to isolated centres, where it would be difficult for children to journey any distance to properly equipped buildings.

There is, I think, nothing to be argued against the third scheme except that the whole community must pay for their support. I believe it is the course generally desired by those who have intimately studied the question. I find that Dr. Albert Gibson, Medical Officer of Health, Education Committee, Isle of Wight, has advised his committee that an appointment of school dentists is, in his opinion, the only possible means of remedying the conditions; and, regardless of expense, he says that he feels confident in the end an economy would be effected by the general decrease of ill-health. It is, as I have already said, the system adopted in Germany, but it means that they must be rate-supported, and I fear that some initial course would be considered advisable from the ratepayer's point of view. It is, perhaps, the only method that may be regarded as complete, but the treatment must be free. This is so in Cambridge, the money being obtained now from the rates. The method there adopted is that the youngest children are first treated, and probably in this way the greatest good is done with the money expended. Of course there are two objections to free clinics: the first being the lessening of parental responsibility, and the second the great tax which it necessarily means for their support. Let me, on this point quote from Memorandum 567 issued by the Board of Education. It says: "The increased work undertaken by the State for the individual will mean that the parents have not less to do for themselves and their children, but more."

The Education Committee of the L.C.C. have already recognized the urgent importance of tooth treatment, and although they differ in their report as to whether school clinics should be established or existing institutions subsidized, it is quite clear what their decision

would be if the ratepayers would be likely to raise no great objections.

With regard to the cost. In every question that concerns any improvement in the condition of life there is always asked the question, "What will it cost?" and it is on the matter of payment that the whole crux of this question turns. Public authorities, I believe, are not disposed at the present time to make any grant for tooth treatment. The salaries for medical officers can hardly be a guide for fixing a basis for dental work—they are so entirely distinct. They, I think, can get through a greater amount of work with much less labour. The work of a dentist is actual, is physical, and, as I have said, no part of it can be delegated to the nurse's sphere. So far as I am aware, although some suggestions have been made, there has been nothing settled, nothing definitely adjusted. Nor do I very well think there could be if satisfaction to all concerned is to be arrived at, unless a committee, consisting of those interested on both sides—*i.e.*, the dentists, the school medical officers, and the education authorities—could be formed to formulate some basis to meet the requirements. What has already been done, I think, with regard to the Poor Law schools is that a general calculation of the payment is at the rate of 2s. 6d. per head per annum, basing a fixed salary upon that calculation.

The probable cost of treatment should be based, I think, on the number of patients treated rather than on the time expended or on the amount of work that is done. In the calculation at which I arrived in the paper given before the Child Study Society I considered that it would cost 2s. 6d. per head per child extending over a limit of three years. If we made a charge on the rates it would mean a quarter and one-thirtieth of a penny to bring in the £3,400 that would be required to treat the whole of the children in the schools of this city.

Other suggestions have been made that treatment should, in the first instance, be given only to children between certain ages—say between eight and nine, which is the most important time; and in the calculation arrived at in a paper recently read referring to Birmingham, the probable estimate was that on a calculation of about 8,000 £1,250 would be required, involving one-tenth of a penny rate.

If some method could be adjusted by which the elementary-school children's teeth could

receive attention and treatment once during school life, apart from a periodic inspection, it might be a means of dividing them into, say, three classes, which might be termed good, medium, and bad, so that those who are likely to benefit most and those who necessarily require the most urgent attention should receive it. Anyhow, it seems to me that the cost for this might largely be met in reality without much drain upon the authorities, in the same way as is the supplying of free meals for the children under the Provision of Meals Act. I understand that the percentage of children who are supplied with free meals in this city amounts to about 2 per cent., costing the ratepayers about £3,000 per annum.

From enquiries I have made from amongst some teachers in the schools, I am led to believe that 10 per cent. is a fair computation of the number who would be unable to pay anything whatever towards medical or dental treatment. If, therefore, we calculate on this percentage that 10,000 children in the elementary schools of this city are destitute so far as this matter is concerned, and if we calculate that the cost of what might immediately be necessary to be done for their teeth could be carried out at the cost of 2s. 6d. per head, it would amount to £1,250. Anyhow, this amount of money, or something like it, has already been found, as I said, from private sources, and if it is impossible to obtain it through the ratepayer it surely could be found by a voluntary method, or from the Local Government Board through the Guardians, if they are willing to exercise the powers they possess and deal with such cases requiring, as they state, "operation or specialized attention" by special payment. If this is so and can be deemed a satisfactory method of solving the question, then such a scheme can be carried out without calling upon the ratepayer.

With regard to the balance of 90 per cent. who can and should afford to pay something towards keeping their children in sufficient health to receive the education that is given them, they should have the opportunity of having it done at certain fixed fees, either at a central institution organized for that purpose, or by dentists in various localities who will undertake the work at contract fees; and if such a system as this is feasible, it would of course necessitate the appointment of a dental officer for certain centres, whose special experience would enable him to say exactly what should be done, and certificates of the treatment being

satisfactorily performed would be required, as would be the case in any department where the public money is expended. I believe the education authorities are empowered to feed destitute children, and can obtain the money that may be expended on them from those persons who, by intention or neglect, refuse to pay, and under Section 12 of the Children's Act may be prosecuted for withholding proper medical attendance, and some such compulsory powers might surely be enforced with regard to medical and dental treatment where the health of the child is concerned.

I find also from a paper published by Dr. Sidney Barwise that he has suggested a provident scheme for dealing with these conditions, as I understand, including the teeth, upon a contributory basis. The work is organized so as to avoid all suggestion of charitable means. Sixpence a year he suggests as constituting membership, and this would include treatment of all kinds, "including some care of the teeth." The object of such a club, he says, would be to forego rate aid and prevent the intervention of charity. But I understand that any system of treatment which may be on a contributory basis is considered not to be workable. At any rate, I imagine such a course is expensive in its administration and is against the general feeling of the community, and it seems to me that the course I have outlined would largely meet the necessary requirements. Any scheme, however, must necessarily be incomplete and experimental, but it should contain, in my opinion, the element of that clause to which I have referred, issued by the Board of Education, expecting those who can afford to contribute in some degree towards the welfare of their children to do so. This seems to me a simple method, it is practical and is not costly, and admits of extension or otherwise as is desirable; and surely the authorities are justified in telling the parents that before a child can have free education it must be in a proper condition to receive it. For secondary schools scholars are required to have their teeth put in order, and mostly a certificate is required to this effect, recognizing how materially this conduces to their health. Why, then, should all the money and labour we expend on education in the elementary schools be very often wasted on account of the child being unable to assimilate it?

If we then admit that tooth disease is one of the most potent causes affecting the physical

efficiency of the children, we are bound to face this problem ultimately by exhaustive treatment. If any other part of the body were affected to a similar extent, I think the State would at once step in and convince the public of the necessity of the question and justify any expenditure that might be incurred. There is, unfortunately, no enthusiasm for any improvement in the health of the race so far as the general community is concerned, and this heterogeneous element of child life demands hygienic measures which must be democratic, but still accepting the responsibility of those who by neglect, by apathy, or by ignorance contribute to decrease the value of child life and of child efficiency as the greatest national asset, for progress can be obtained by no other means than independence and self-reliance.

DISCUSSION.

MR. DENISON PEDLEY, in opening the discussion, said that his remarks would be based on the results of twenty years' experience in a children's hospital and an equal number of years in private practice, and he was pleased to say that he attended the meeting as the representative of the School Dentists' Society. In the first place, he wanted to justify the expense; secondly, he would like to mention remedies which may be proposed; and in the third place, what may be done in the way of prevention. The education authorities had power to provide systematic inspection of the teeth of school children, and to make sufficient arrangements for the examination of their physical condition; he incidentally remarked that there were 300 authorities in England and Wales to make such arrangements. In the first place, we must justify the expenditure to the education authorities, this being only right, as they had to justify the expenditure to the public. Speaking as to whether the money would be forthcoming, he was certain it would be forthcoming, and he felt justified in making that admission when he considered the money that is being wasted on Poor Law administration. It rested with the medical men and dentists to prevent the spread of disease as far as possible. Mr. Pedley then referred to the Report of the Royal Commission on Poor Law Reform, quoting several passages. A casual glance at this Report would convince everyone that it was worth while to spend a little money on the children. Sickness pulls down people very quickly, and everyone who reads the Report of the Royal Commission will realize this fact. It was far preferable to spend the money on the children than to keep them as chronic invalids when they grow up, and this is the point to be impressed upon the British public. Quoting Dr. Kerr, Mr. Pedley went on to say that he (Dr. Kerr), speaking at Bradford, remarked

upon the large number of cases of phthisis, and said that in many cases the disease originated with the teeth; he (the speaker) did not want to minimize the effects of other factors such as insanitary dwellings, etc. Bad teeth in children caused inability to masticate, and defective mastication caused a large amount of illness. Mr. Pedley further stated that necrotic teeth lessen vitality, and this is the opening for tubercle. The speaker quoted Dr. Newsholme as saying that a little money spent on children will pay us if it only reduces tuberculosis, as by so doing it will reduce the amount of Poor Law sickness. Mr. Pedley, proceeding, said that it had been stated that the Germans were in front of us in every way, and it had been remarked, "Look what they are doing for the teeth of the children"; he would like to point out that we have been pressing this matter in England since 1883 or 1885. Speaking of the Poor Law authorities in London, he said that within the last ten years they had sent out 5,000 children as domestic servants, and 6,000 of their boys had gone into the Army and Navy, and every one, the speaker emphasized, had got clean mouths, dentists having been appointed by the Poor Law authorities. The work of the School Dentists' Society had been the means of obtaining for the Poor Law children sixty-nine appointments in the Poor Law schools. He agreed that the appointment of whole-time dental officers is an excellent plan, and one which he believed the London County Council favoured very much. Secondly, arrangements could be made with hospitals to have children treated by the staff; and, thirdly, we could have the distribution of the children among the dental surgeons in the district at reduced fees. But all these schemes are matters for local arrangement. Mr. Pedley then went on to say that with regard to a large number of towns where there were no hospitals at all, and where dental surgeons would be scattered, it would only be possible to appoint a whole-time dental officer. Whatever scheme is adopted it ought to be a contributory scheme. A large number of children to be attended to would have parents earning three or four pounds a week, and they should be made to bear a portion of the expense. Mr. Pedley here remarked that it is a well-known fact that if you make the working man pay towards helping himself it was the truest form of charity. The speaker laid very great stress upon his third point, that prevention must be run for all it is worth; but what we want, he said, is mutual help in this noble work of prevention. A great deal may be done by the giving of lectures by the school medical officer to the teachers, as this was the only means of getting at the children. He also remarked that the school medical officers ought to be paid for it. His point, especially with regard to prevention, was that the teachers would have a

sympathetic interest for the scholars, as many of them had bad teeth themselves. There was not a teacher who would not be glad to take an interest in such a subject as the teeth, and in addition to this fact there were in the Midlands a large number of able dentists who would help the school medical officers, so that they would have no difficulty in this respect. In conclusion Mr. Pedley remarked that it might not be desirable for a child to know too much about its stomach, but it should know something about its teeth, and so get into the habit of cleansing them.

DR. BOOBBYER then proposed a hearty vote of thanks to Dr. Elliott and Mr. Pedley for so kindly attending and reading such interesting and instructive papers. He said the subject before the meeting was of the highest possible importance both to the public and to school medical officers. When Dr. Handford gave a paper in Birmingham some time ago on this particular subject he was caricatured in a Birmingham paper as pulling out children's teeth wholesale, but certainly Dr. Handford did not suggest that, and neither did he (the speaker). No statistics were given by Dr. Elliott, said Dr. Boobyer, but he would mention a case where 33 per cent. of the children examined were given as having more than four badly carious teeth each, and the children with only four carious teeth were returned as having a good set. He wished to speak more particularly with regard to a scheme for dealing with this portion of the work, and he was strongly disposed to think that the better plan would be to adopt the school clinic alternative, in which general practitioners of dentistry should be asked to attend under contract with the education authorities. This is being done with regard to eye work, said Dr. Boobyer, and he thought it was even more desirable with regard to the teeth. In relation to sending the children to hospitals, we find, proceeded the speaker, that we get a much larger amount of imposition on these charities, whereas if we had school clinics in every town the health visitor could find out the earnings of the father, the amount of rent paid, etc., and we should be better able to eliminate those who were not in need of charity. This scheme was adopted to a great extent in America, where they examined every one of the children's teeth. Dr. Boobyer emphasized the fact that he was strongly in favour of children having treatment at a school clinic, but would advise the appointment of dental practitioners to attend the children there.

DR. ROBERTSON, after heartily seconding the vote of thanks proposed by the chairman, said that this was a subject in which he had taken a great deal of interest, and soon after coming to Birmingham he was anxious to make a practical experiment, and to know what the cost of examining the children's teeth would be.

DR. HARRIS said that he had great pleasure in agreeing with the remarks of Mr. Pedley and Dr. Elliott with regard to this question. Dr. Harris proceeded to say that he had noticed the bad state of the children's teeth, and if the matter were taken up in the proper spirit a great deal of good might be done. He thought with regard to the schemes mentioned that it would hardly be possible to adopt any of them throughout. It would be far more satisfactory if every town were judged on its own merits. In Coventry, for instance, there were twenty-six schools, and to fit each school with what one might call a suitable and up-to-date dental surgery would mean a lot of expense. In Coventry there were six qualified dentists practising, and if the work were divided among these men, and the work done in the way it ought to be done, it would mean taking up an infinite amount of time. Under these circumstances it would probably be better for a whole-time man to be appointed. Dr. Harris returned thanks for the invitation of the Branch.

DR. BARWISE said that there was another point which neither of the papers had dealt with; it was the case for the county districts; the problem for the towns was practically an easy one. Mentioning the County of Derbyshire, the speaker said that there were in that county 400 schools extended over 640,000 acres, the nearest medical man being often four or five miles away; here the difficulty would be very much greater than for the large towns. They had made a start in Derbyshire on the preventive lines, in that they supplied tooth-brushes at cost price. Dr. Barwise said that they also had small cards of instructions printed, and every child was given one of these cards. The scheme the speaker's authority was considering was rather different from those suggested, and he would appreciate the criticism of the meeting. The scheme was to approach the parents and say that they were to form a children's provident club for the county, and ask them to pay 2d. a quarter or 8d. per annum, and for that amount they undertook to treat all the ailments that the child might not ordinarily have treated by medical men—such as eyesight, discharging ears, ringworm, etc.; and in this scheme they had £1,000 to spend on their teeth. He did not know what that would do for their teeth. He thought they could see all the children's teeth once while at school. He would ask Dr. Elliott what would be the best time to examine the teeth, between eight and nine or when they were just leaving. Dr. Barwise said that he ought to mention that from the payments to the provident club they would get about £2,000 a year; in addition to that he would ask the education authorities to subsidize the provident club, and he would also ask those people who were willing to help to do so. There were 90,000 children in the schools,

and 80 per cent. had carious teeth. In some schools where the masters have had tooth drill the percentage was nothing like that; 30 per cent. in some schools. Dr. Barwise said that in order to compel people to join the provident club they would take advantage of the Act of last year, and take parents before the magistrates when the children had bad teeth, and explain to the magistrates that for 8d. a year the children could have had proper attention. He wanted to protest against the suggestion that the cost of this work should be put on the Poor Law authorities. It should come out of the education rate.

DR. RIDLEY BAILEY said that the condition of the children's teeth was notorious, and since he had been in this work he had been appalled at the number of carious teeth. He certainly did not agree that the children should be sent to hospitals, as this was unfair to the staff and to the subscribers, and in addition the number would not allow of their securing proper attention. He wanted to endorse Dr. Barwise's protest against the expense being borne by the Poor Law authorities; nothing was more demoralizing than to teach people to go to the Poor Law for medical treatment. There were two defects in connection with the provident club: it could only be successful where there were a very large number of children, and the number of payments of 8d. a year in a small place would be inadequate to deal with the numerous defects. The only way to deal with the matter was by the establishment of school clinics, and personally he was in favour of the resident dentist. Dr. Bailey said further that he thought the Board of Education should give a grant for this work, and that the grant should apply to all defects found by the school medical officer. The difficulty we had to contend against lay in the fact that too many authorities regard medical inspection with no favour, and look only to the cost as a burden they are compelled, against their will, to bear.

Dr. ROBINSON contended that there was not much lost in grants through the teeth; that occasionally the children lost half a day or perhaps a day through toothache, but that was nothing compared with other diseases. The only way to convince the authorities was by showing them that they were losing money on the grants. He agreed that preventive measures must be adopted, but what were we doing to prevent this tooth trouble? Mr. Pedley said, remarked Dr. Robinson, that defective teeth caused consumption, but he (the speaker) would begin with the food and not the teeth; it was the food, and if we were going to deal with decayed teeth we should have to deal with the food first. Bread made with white flour and containing no phosphates must not be allowed. He laid particular stress upon the harmful effects of white flour.

DR. ROBERTSON remarked that teeth were probably worse now than some time ago, and further went on to say that schools in some districts were better than others; this might be due to some local custom in vogue, but he thought that investigation upon this important point was necessary. If, continued the speaker, by the abolition of white bread we could improve the teeth, let it be abolished; he thought that our preventive work suggested something on these lines. He said that a great many children had parents who were willing to pay, but there was this difficulty, that where parents refused to pay there was no power to make them, and he did not think that, in the event of proceedings being taken, the magistrates would consider the parents neglectful owing to this cause. The parents should certainly be required to pay either directly or through some arrangement; they ought to be the source from which the funds were derived.

DR. CLENDINNEN asked whether it were better to look after the temporary teeth or the permanent teeth. If we were spending money was it better to spend it on teeth about to be shed, or on children who have got their permanent teeth?

DR. ELLIOTT replied on the discussion. He commenced by expressing appreciation for the vote of thanks proposed by the chairman, and explained that his object was to give some advice and some idea as to what had been done in Birmingham, and a little insight with regard to the cost of the undertaking. He did not enter very much into the subject so far as justifying the expense, but Dr. Robinson had raised that question and seemed to think that he could not tell his authorities that the teeth were very much the cause of non-attendance at schools; he thought they were a very great cause of trouble in this respect. It was not merely the teeth, but the effects caused by an unclean mouth; 70 or 80 per cent. of the children's illnesses in their schools were primarily caused by the teeth, although this might not be seen at the immediate time. Dr. Robertson had referred to the cost of what had been done in Birmingham; in a paper he gave he considered the cost for the whole of the children would be something like £3,000, or about an average cost of £250 for 1,000 children if the treatment were carried out in a properly equipped and appointed place.

The correct age for treating the teeth, if examined only once during school life, was between eight and nine.

There was probably more necessity for treatment at eight or nine years of age than at an earlier or later age.

Dr. Elliott proceeded to say that he thought that the scheme that Dr. Barwise had spoken of was a good one for isolated districts, but he did not know how the cost of properly putting the

children's teeth in good condition could be done on that money under those conditions.

With regard to statistics, he said that he purposely omitted to mention these, as figures varied very much, but children with carious teeth are found to be quite 90 per cent.

What has been overlooked in regard to the examination of the teeth of school children was that only carious teeth had been looked for, but there were other reasons accounting for defective mastication. Mouths had been passed as sound where there were very few carious teeth; this was a mistake, because if the child had lost its molars before its time there must be defective mastication.

He thanked the Branch for their invitation to open the discussion on a subject in which he took so great an interest.

MODERN EDUCATIVE METHODS FOR THE PREVENTION OF INFANTILE MORTALITY.*

By HAROLD KERR, M.D. Edin., D.P.H. Camb.,
Assistant Medical Officer of Health, Newcastle-upon-Tyne.

IN order that we may carry out efficiently the great principle which underlies the policy of, and is indeed the *raison d'être* for, the preventive branch of our profession, it is essential that we not only take a leading part ourselves in the practical application of all the methods available for the prevention of disease, but that we also do everything in our power to instruct others from our own knowledge and experience how best to avail themselves of the means at their disposal for guarding against the morbid influences to which they are liable to be exposed.

In no section of our work is this more necessary than in that which relates to the preservation of infant life, and in none other is time and trouble, spent in the education of others, more productive of good results.

The terribly heavy death-rate among young children in our towns is of course due to a certain extent to the relative unhealthiness of their surroundings, but that is by no means the chief cause. The factor that is of primary importance is maternal mismanagement. I use this word advisedly, because all mothers, with very few exceptions, love their babies, and desire to do the best for them; but every visitor in the homes of the working, and even lower middle, classes knows only too well the hopeless ignorance of the majority of the mothers in

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regard to everything connected with the rearing of healthy offspring. In the case of illegitimate children the mother's love is often less, and, with the consequent occurrence of wilful neglect, the mortality is much higher than in the case of infants born in lawful wedlock.

The only advice obtained by a large proportion of mothers is that of baby's grandmother; and I wonder what percentage of the infantile mortality is directly attributable to the baneful influence of this infanticidal expert! We have all learned in the course of our duties that the esteem in which a woman's erudition is held is often in direct ratio to the number of babies she has lost, and the higher this is, the greater is the assurance and effrontery with which she delivers her dicta. You will perhaps remember the little story, retold recently in the *British Medical Journal*, of the poor health visitor who was asked by one of these sybils if she had had any children, and on answering confusedly in the negative, was promptly advised to go away, and not come blethering about "fresh hair and civilized milk" to a "lady" who had buried seven bairns. Most health visitors have been told something to the same effect, often enough.

So helpless are the average young mothers, that one is almost driven to the conclusion that in the process of evolution the human female has lost the natural maternal instinct which guides all the other animals in the care of their young, and has failed to replace it with any kind of acquired knowledge.

Many sanitary authorities are now taking steps to educate mothers, and there are various other agencies which are working to the same end. These all obtain their effect either by dealing directly with the mothers, or indirectly by teaching those who will influence them. The following are the principal media through which information and instruction are imparted:—

Female officers, or health visitors, appointed specially for the purpose by the sanitary authority. These may be in the "whole time" employment of the authority, or may be voluntary workers who co-operate with the permanent officials.

The medical practitioner, whether in private practice or in institution employ.

The midwife.

The district nurse.

Such institutions, charitable or otherwise, as hospitals and dispensaries, general or special.

Municipally or privately conducted milk depôts.

Crèches.

Mothers' and babies' welcome societies.

Mothers' meetings.

The National Society for the Prevention of Cruelty to Children.

These all deal directly with the mother and child. Other agencies which act less directly are:—

The education authorities, many of whom are now doing most valuable work in training pupil teachers and senior girl scholars in domestic economy and in the care of infants, and in giving lessons on temperance.

Domestic service—for many a girl, while acting as a nursemaid, gets most useful preparation for the time when she will have babies of her own.

Temperance societies.

And, generally, there is the moral effect of regular and frequent attention to premises on the part of the sanitary inspectors.

Let us look at the rôle taken in this work by the Public Health Department.

The medical officer of health directs and supervises all the preventive measures, but cannot himself spare time for regular house-to-house visitation. For this many authorities have appointed ladies to act as health visitors; in some districts they are called female inspectors—a most inappropriate and unfortunate title. In certain towns there exists a voluntary association of ladies who act in co-operation with the health visitors.

In order that such officers may be of real utility, it is most essential that only the right kind of women are employed, for a tactless or unsympathetic person can utterly ruin any chance that an entire staff might have of doing good. Work of this description is foredoomed to failure if taken up for the sole purpose of making a living. In itself it is not by any means an idyllic employment; it takes one among depressing and dingy, not to say frequently filthy and verminous surroundings, and unless prosecuted by those who can find a reward in the knowledge that they are helping to abolish squalor and ignorance and to save life, had better by far be left alone altogether.

The duties of the female members of the staff of a Public Health Department are much the same everywhere, so for convenience I shall describe the system adopted in Newcastle.

First, then, we find the superintendent of

midwives, herself a registered midwife, and also trained as a health visitor. In some cities this officer is a qualified medical practitioner, in which case, of course, the duties are more responsible and comprehensive than are outlined below. Her primary duty is, as her designation implies, supervision of the midwives of the district, and in the performance of this every child not under the care of a medical practitioner is visited within a fortnight of its birth. Owing to the fairly efficient working of the Notification of Births Act, 1907, comparatively few are missed, and thus there is maintained an efficient check upon the unregistered handywomen, while a good idea is also obtained of the care given by the midwives to their patients. During the winter the midwives receive a six-months' course of weekly lectures from the superintendent, and as a result of much painstaking effort our midwives, from most unpromising material, have become surprisingly efficient. During 1908 not a single case of puerperal septicæmia occurred in the practice of any of them.

Originally this work occupied the whole of the time of the superintendent of midwives, but it is now possible for her to omit the first visit to quite a considerable proportion of the midwives' cases, as a number of the midwives themselves are well able to advise the mothers as to the proper care of their infants.

Next come the health visitors, who revisit every case, not attended by a medical practitioner, at regular frequent intervals throughout the first year of the infant's life, and instruct and help the mothers, by friendly conversation, in the general principles of domestic hygiene and the upbringing of their children.

The ladies are all actively interested in various charitable and other associations and institutions for the education and assistance of mothers. Of the institutions, one of the most noteworthy is the Mothers' and Babies' Welcome Society, where poor women can receive a substantial meal daily, for the nominal charge of a penny, during their pregnancy and for nine months after parturition. Here also are held little "at homes" and "health talks" for the mothers, who are encouraged to bring their babies with them, to be weighed, and to report progress generally.

Another institution of note is the Day Nursery, which is simply a crèche, where also mothers receive instruction and help with their children.

Then there are mothers' meetings galore,

and our ladies are much sought after for addresses to these.

At the Health Department itself there is each week a full programme of events—lectures, interviews, weighings, and not the least important part is the education of the midwives and of ladies interested in the work, in everything that will render each of them capable of playing a useful part in the saving of infant life.

In Newcastle we are fortunate in that there is little employment of women, and consequently there is not the same hindrance to natural feeding that one finds in the big towns of the cotton districts, for example. But nevertheless there is the tendency on the part of many mothers to substitute artificial food for the breast—a practice for which, to some extent at least, we have to blame the unscrupulous methods of certain canvassers for the sale of patent foods—and although one does not meet with so many of the grosser outrages upon the infantile digestive organs as one sometimes hears of elsewhere, such as feeding a three-months' child with pickled onions or soothing him when fractious with a whelk soaked in gin, one still finds fairly frequently that baby gets the same as the rest of the family.

In order to drive home the principle of the necessity for breast-feeding, it was decided recently to hold an exhibition of breast-fed babies in Newcastle, and under the patronage of the ladies of the city a scheme was drawn up for this purpose.

About that time I was privileged to be present at the third annual baby show of the Corporation of one of the big Yorkshire boroughs, and had an excellent opportunity of obtaining information and forming an opinion as to the value and effects of such a function. I was assured by the medical officer of health that the good results were indisputable and more far-reaching than had ever been anticipated. It had been found that a baby show appeals strongly to the parents, and in order that their youngster may score as highly as possible, he is most carefully tended and kept, the ladies of the Public Health Department being frequently appealed to for advice. The mother finds that if baby is to be clean, the house must also be clean; then, of course, the mother has to keep herself smart, or she would look out of keeping. The home being now more attractive, the husband spends more time there, and consequently there is more money available for

domestic purposes. Some of the neighbours are stimulated by the spirit of emulation, and so the ball starts rolling. This all sounded very Utopian, but nevertheless I saw enough to convince me that as a sociological factor a properly conducted baby show has an undeniable value, and I was genuinely impressed with its possibilities of usefulness.

The idea being a new one in Newcastle, we had at first no notion of what support it would receive, but very quickly found that the function would be a most popular one. With no more advertisement than through the health visitors and the midwives, some 564 entries were obtained, and as this was the utmost number which it was possible to accommodate in the space at our disposal, the lists were closed at an early date, otherwise we might easily have reached 1,000.

During the week preceding the exhibition the babies were weighed and classified, the visit to the Health Department being made the occasion for much useful advice to the mothers. Forms had been previously drawn up, and on these were entered the particulars of each candidate, including number, name, address, number of teeth, actual weight, and normal weight for corresponding age, with a space left for the judges' awards. The youngsters were classed according to age, in three-month periods, from birth to fifteen months; there were special classes in addition for twins and for prematurely born infants.

The only proviso, beyond that of locality of birth, was that no child should be admitted which had not been entirely breast-fed until nine months old. The ladies of the Health Department have a fairly extensive knowledge of the people among whom they work, and there is no reason to believe that there were admitted many babies who were not genuinely breast-fed.

Each mother received a ticket on which were marked the name, class, and number of her child, in order that on the day of the exhibition the exhibitors might be arranged the more easily in the order of their names upon the judges' lists. No charge for admission was made in the case of exhibitors, so that no mother might be excluded on account of poverty. All risk of confusion and accident was obviated by the provision and instruction of a large number of stewards (many of whom were midwives), whose business it was to shepherd and assist the mothers during the judging, to conduct them in batches to tea as the

judges were finished with them, and to see that the general public were not allowed among the babies. The visitors were placed in the galleries and elevations surrounding the hall.

Some twenty local medical practitioners volunteered to act as judges; these were largely drawn from the staffs of the children's and maternity hospitals. They had, perhaps, the most difficult task of the day, for it was by no means easy to say that any particular children were finer and healthier than the rest where the average of all was good. The system of marking adopted was as follows:—With 100 marks as maximum, 30 were allowed for weight, marks being deducted for excessively high figures; 30 for general development, under which head came pathological conditions; 30 for the condition of skin, eyes, ears, nose, mouth, nates, etc.; and 10 for general vitality and vigour.

About eighty prizes were offered by private donors, and all were of a useful description—perambulators, baths, cots, clothing, fireguards, etc.—and all prize-winners were decorated with appropriately coloured rosettes.

The judging commenced about 2 p.m., and everything was over and the babies on their way home by 5.30 p.m., which, all things considered, denoted fairly expeditious work.

The judges took every opportunity to point a useful moral and to render the occasion as educative as possible for the mothers.

Prize-winners were more than satisfied with the day. The unsuccessful aspirants took their disappointment much more cheerfully than had been anticipated. All that could be said to please and encourage them was said, and every mother, whether a prize-winner or not, got a substantial tea. There were no long, weary waits, and, so far as one can hear, nobody has been much the worse for his or her part in the day's proceedings.

Special prizes were presented to the midwives whose case-registers showed the highest percentage of living mothers and children for the twelve months preceding the exhibition. These awards were very keenly competed for, and were perhaps more highly valued than any others given that day.

From the great demand there was from the outset for visitors' tickets, which were retailed at sixpence, it was soon obvious that there would have to be some counter-attraction to the babies, otherwise a large number of visitors would never see these at all. It was there-

fore decided to have an exhibition of nursery appliances in the large Corn Market, immediately below the hall in which the babies were. Accordingly business firms in the city were invited to take stands and show articles connected with the nursery, all such articles to be first submitted for approval. No patent foods or medicaments of any kind were permitted.

A very representative show was thus obtained; it included such lines as baby linen, clothing, cots and bedding, baths, perambulators, furniture, fireguards, feeding bottles and sterilizers, pasteurizers, nursing and accouchement requisites; while a firm of art publishers made a very attractive exhibit of prints from well-known pictures in which the baby occupies a prominent place. This last, though not strictly appropriate, nevertheless served a useful purpose in adding to the interest of the exhibition.

A large space was set apart for the display of home-made appliances; this was under the charge of the superintendent of midwives, and consisted of sets of clothing made by mothers (for the best of which prizes were offered); model sets, paper patterns of which were on sale at a nominal figure; and all sorts of contrivances calculated to show the poorer visitors how it is possible to construct comfortable cots out of such extremely cheap materials as banana crates and orange boxes; by slinging a big towel or clean sacking between the up-turned legs of a small table; while a cheap shilling fireguard was converted into a snug little cot, and supported at the side of the mother's bed on rods thrust between the bed frame and the mattress. A makeshift incubator for a delicate or premature infant was contrived out of an ordinary clothes basket and some wool wadding; penny pepper castors took the place of powder puffs, and certainly appeared preferable from the point of view of cleanliness; stone ink bottles and demijohns made useful hot-water bottles; and, indeed, the list might be continued long enough, but these will serve as examples. In addition there were charts and diagrams of every description dealing with babies, their nourishment, their weight, and their development. In fact, the display of nursery appliances as a whole was a most interesting and instructive affair altogether.

It is too early yet to speak of results, but from the fact that the Exhibition of Babies and Nursery Appliances was visited by over 2,000 people, the bulk of whom were drawn from the poorer parts of the city, it is difficult to see

how it can fail to exert some influence for good. Further, the local Press took the matter up most sympathetically, and in the long accounts published by the various papers strong emphasis was always laid upon the objects and lessons of the undertaking. The hearty support accorded by the Lord Mayor and Lady Mayoress had also an excellent effect.

One result that has already accrued is that the Health Department's work for the prevention of infantile mortality has been brought prominently before the notice of the public, and much interest has been taken in it by many persons who will be able to render valuable assistance.

Half of our infantile deaths in Newcastle occur during the first three months of life, and one-third of the total deaths under one year are due to premature birth or congenital defects. It is, therefore, during the early months that the greatest attention should be paid to the babies, and for this reason a strong attempt is made to get into touch with the mothers during their pregnancy, before the birth of their children.

During 1908 some 1,100-odd infants were followed right through their first year, or until they died, by the Health Department, and some interesting facts were elicited. As regards the relative risks of natural and artificial feeding, the infantile mortality figures were as follow:—Entirely breast-fed, 94 deaths per 1,000 births; mixed feeding (breast and artificial), 192 deaths per 1,000 births; and of entirely artificially-fed infants, 4 deaths out of 14. The question of feeding is one that can be dealt with to a considerable extent by the health visitors, but the influence of housing accommodation is one that depends mainly upon economic conditions, and is for the most part beyond the control of the Health Department. As a matter of interest, I append the following figures from the annual report of the medical officer of health for 1908:—Of infants living in single-roomed houses, the infantile mortality rate was 129 per 1,000 births; of those in two-roomed houses, 111 per 1,000 births; and of those in three-roomed houses, 103 per 1,000 births.

In all cases the mothers have impressed upon them the value of fresh air and ventilation, but that is a point upon which they more often than not prefer to follow their own opinions. Health visitors have told me, however, that on their appearance in a street there is sometimes, by a curious coincidence,

a sudden stealthy opening of many windows. So much for the stirrings of conscience—or the fear of trouble.

As regards all the different schemes and systems under which mothers receive material reward for successful baby-rearing—such, for instance, as the mayoral bounty in Huddersfield and Rotherham, and the "baby show," municipal or otherwise—some people hold that these are subversive of the natural affection and instincts of the mother, and should not, therefore, be made use of. They may be right in principle, but in actual practice there can be no doubt of the life-saving value of such schemes, and after all the saving of life is our main object. I therefore hold that, until all women are educated up to a high efficiency in nursery craft, no means whatever that are likely to conduce to that end should be left untried, and no scheme neglected by which their interest may be excited and stimulated. Is it not more likely that by rousing the interest of the mothers in their children the natural affections will also be stimulated and increased?

It is often stated that people cannot be made good or wise by Act of Parliament. That certainly is so; but under recently passed laws much power has been obtained whereby responsible persons may be reached and influenced for good. I refer to the Midwives Act, 1902, which has proved an unspeakable blessing to both infants and mothers where it has been properly administered, and to the Notification of Births Act, 1907. The highest value of the former lies not so much in the death-blow it deals to the Sarah Gamps, but in the possibility it creates for the education of the general body of midwives. The midwife has unrivalled opportunities for influencing the women among whom she works. Of necessity she spends more time with them than the busy medical practitioner can spare, and by her familiarity with the mysteries of parturition—the chiefest incident in the life of woman—is appealed to and consulted in a way that no one else is. Consequently it is of the highest importance that she should be well acquainted not merely with the proper management of labour and the puerperium, but also with the broad principles pertaining to the care and upbringing of children. For this reason it is highly desirable that the midwives of every district should work in close touch with the Public Health Department, and it is a profitable plan to treat them as unofficial assistants, responsible as such for the

instruction of their patients in the elementary rules of domestic hygiene and the care of the young.

There is, of course, a risk that the midwives might come to believe themselves medical experts; such a danger must be most carefully guarded against by strict supervision.

The Notification of Births Act, 1907, is of value in that it enables us to reach, for the purpose of educating them, many mothers who else would have no assistance other than that of such undesirables as the ignorant and untrained handywoman or the equally dangerous grandmother.

The Children Act 1908 deals with "infants" up to the age of seven years. By controlling baby farmers and providing for the punishment of parents or guardians found to have neglected or improperly treated their young in various ways specified in the Act, it too may be included among the valuable educative enactments.

Such, then, is an outline of the means at our disposal for dealing with the great wastage of life among the young.

But be the means as comprehensive as they may they are of no value unless intelligently used. That they may be really productive of tangible amelioration of the infantile mortality can be readily proved, and, with your permission, I shall terminate my remarks with a further quotation from the annual report for 1908 of the medical officer of health of Newcastle-upon-Tyne:—"Of these (*i.e.*, the 1,100 or so infants kept under observation), which include the children of the very poorest classes and those whose chances of survival are lowest, the infantile mortality rate was 113 per 1,000, as compared with 139 per 1,000 for all infants in the city. Considering the unfavourable climatic conditions (hot, dry summer) and consequent severe incidence of diarrhoea, this figure is a most encouraging one." Indeed, 113 per 1,000 is not a rate with which one can rest satisfied, but at least it denotes some improvement. With stronger effort and increased attention to the subject it is anticipated that the progress will be very much more marked in the future

PRESENTATION TO A MEDICAL OFFICER OF HEALTH.—Dr. C. F. Fenton, who has resigned his office as Medical Officer of Health of Barking after fourteen years' service, has been presented with a handsome mahogany bureau, bookcase, and chair by the members and officials of the Barking District Council and the Education Committee. Dr. Fenton has decided to devote himself to private practice in Barking.

THE MUNICIPAL CONTROL OF THE SUPPLY OF HOUSEHOLD MILK.

DR. JOSEPH P. FRENGLEY, District Medical Officer, Wellington, New Zealand, has recently made an interesting and valuable report on milk control to the Wellington City Council. The report contains many drastic recommendations, which were adopted by the Council, and appear, as adopted, in an appendix to the report in the following form:—

That for the purpose of securing as far as possible a pure milk supply for the city—

(a.) A municipal milk-station be erected on a site to be selected, having railway-siding accommodation, at which all milk arriving by rail shall be inspected and cooled, and from which only such milk as shall have been "passed" by an officer under the Sale of Food and Drugs Act, shall be allowed to be sold as household milk.

(b.) That all dairies and herds from which milk is sent into Wellington City shall continue to be inspected by the Agricultural Department, with whom the superintendent of the municipal milk-station shall be expected to confer, and to whom he shall recommend such alterations or improvements as he may deem necessary. All cans and other receptacles used by suppliers and vendors shall be subject to the approval of the superintendent.

(c.) That within six months of the establishment of the municipal milk-station all herds from which milk is supplied to the city shall undergo the "tuberculin test," and thereafter at least once every year, and no milk shall then be allowed to enter the city except from such cows as have given a satisfactory negative tuberculin test.

(d.) That milk brought into the city by road need not pass through the municipal milk-station, provided it is demonstrable that such milk can be and is being delivered to the consumer within four hours from the termination of the time of milking at the dairy concerned; provided also that vendors of such milk shall undertake to ascertain by test with the proper apparatus that the milk is of standard quality, such milk to be subject to inspection by the Council's inspectors, and regulations be framed for the infliction of severe penalties for the sale of milk not coming up to the required standard. The cancellation of supplier's or vendor's licence to follow a third conviction within a period of eighteen months.

(e.) That all dairies and vendors supplying milk to the city shall only do so as under a licence to be issued by the Corporation, and subject to regulations to be framed.

(f.) That all milk that has passed through the municipal milk-station for distribution to consumers shall still be subject to strict inspection,

and the vendors of same and [or] their employees be liable to severe penalties in the event of a conviction for adulterating the milk after it has left the municipal station.

(g.) That all milk that does not reach the New Zealand standard as defined by the regulations made under the Sale of Food and Drugs Act, 1908, shall not be passed. The following is the definition as there laid down:—

"Milk is the fresh, clean, lacteal secretion obtained by the complete milking of one or more cows properly fed and kept, excluding that obtained fifteen days before and ten days after calving."

Standard.—"Milk shall not contain less than 12 per cent. of total solids, not less than 8½ per cent. of solids not fat, not less than 3½ per cent. of fatty solids (milk-fats), and not more than 1 per cent. of ash."

Prohibited Addition.—"The addition of water to milk is hereby prohibited."

All milk that is not "passed" shall be separated or otherwise disposed of as the inspecting officer shall direct.

(h.) That provision be made at the municipal milk-station for the bottling or canning of milk under seal as may be required by vendors.

(i.) That all milk that passes through the municipal station be subject to a charge for inspection and treatment. It is estimated that a charge of ¼d. per gallon on milk in bulk and 1¼d. per gallon on bottled milk would be sufficient to cover permanent charges and the working expenses of the depot.

(j.) That, in order to cover the cost of inspection of milk brought into the city by road and not passed through the municipal station, each vendor of such milk be required to make a quarterly statutory declaration of the quantity of milk sold, and to pay a charge on same, estimated at ¼d. per gallon.

(k.) That it be made a condition that milk sent into the city by rail shall not be delivered at the country railway station earlier than half-an-hour before the scheduled time of the departure of the train, and not later than four hours from the time of termination of milking.

(l.) That, in order to ensure as far as possible the proper domestic treatment of the milk, the council should subsidize the present visiting-nurse system.

(m.) That, to assist further in the proper feeding of infants, the Council should arrange for a certain quantity of milk to be supplied free to mothers in poor circumstances as may be recommended by the visiting nurses.

(n.) That licensed milk-shops should be of two kinds:—

(1.) Where milk is kept in bulk and sold for consumption on or off the premises in any

quantity, only the following articles may be sold; or the milk shall be stored in specially ventilated separate compartments in which these articles may be stored, and from which they may be sold: viz., milk, butter, eggs, cream, and mineral waters. Such milk-shops should be allowed to sell on any day of the week.

(2.) Milk-shops where other goods than those specified above are sold shall only be allowed to sell milk in properly sealed bottles or other approved receptacles.

The following is an estimate of the probable expenditure and receipts:—

Permanent Charges.

Interest on estimated cost of land, building and plant, £20,000 at 4 per cent.	£ 800
1 per cent. sinking fund ...	200
Depreciation on—	

Building, £12,000 at 1 per cent.	120
Plant, £4,000 at 5 per cent.	200

£1,320

Working Expenses.

Superintendent ...	400
3 inspectors ...	600
2 engineers at £250 ...	500
2 assistant engineers at £200 ...	400
4 bottlers at £150 ...	600
4 cool-chamber men at £150 ...	600
6 cleaners at £130 ...	780
1 accountant ...	250
1 clerk ...	150
Inspection of dairies ...	250
Maintenance and contingencies ...	400

— 4,930

£6,250

Receipts.

Estimated 1,000 gallons bottled daily, at ¼d. per gallon extra ...	£760
Estimated 1,750 gallons daily by road, at ¼d. ...	664
Estimated 4,250 gallons daily by rail, at ¼d. ...	4,847
Cleaning cans, say 400 daily, at 1d. each	601

£6,872

Estimated profit, £622.

RESIGNATION OF DR. H. W. BEACH.—Dr. H. W. Beach has resigned his appointments as Medical Officer of Health, Port Medical Officer, and Medical Superintendent of the Isolation Hospital, Yarmouth, in order to devote himself to private practice. At the meeting of the Yarmouth Town Council on December 14th a resolution was passed unanimously expressing the Council's appreciation of the valuable services rendered by Dr. Beach during the five years he has held office in Yarmouth.

MILK AND TYPHOID FEVER. A RECENT ACTION FOR DAMAGES.

IN the Civil Court of the Liverpool Assizes an action has recently been concluded in which £500 was given as damages for breach of an implied warranty under the Sale of Goods Act, 1893, that certain milk supplied was reasonably fit for consumption. This action was keenly fought on both sides, and a number of points of great importance from a public health point of view were brought out during the hearing. The allegation of the plaintiff was that, owing to there being at the farm from which the milk was supplied a person who was convalescing from typhoid fever, and who was suffering from cystitis, infection in some manner gained access to the milk, and was the cause of an outbreak in the Woodlands School. The defence was that the outbreak at this school arose from infection from existing cases in an adjoining district (Llandudno Junction), the infection passing into the sewers, which also received the drainage of this school, or, alternatively, from infective matter being deposited on the foreshore of the Conway estuary (which received the sewage of this district), and being conveyed thither either aerially or by means of the handling of mussels.

The experts called on behalf of the plaintiffs were Sir James Barr and Dr. Meredith Young, and on behalf of the defendants Dr. A. G. R. Foulerton. It was an extraordinary and disappointing feature of the trial that the medical officer of health of the district was not called as a witness.

The points with which these gentlemen sought to establish their respective theories of the causation of the outbreak, and those which appeared to throw doubt upon them, may be summarized as follows:—

FOR THE MILK CONVECTION THEORY.

1.—A case of typhoid fever had occurred at the farm from which the milk was supplied, the origin of which case was directly traceable to infection by a relative. The fact of this case being one of typhoid fever was not disputed. The sufferer was isolated at a fever hospital on February 9th, but owing to pressure being brought to bear on her medical attendant she was allowed to return to the farm on March 16th. She was, at the date of her return to the farm, in a weak condition suffering from some heart mischief and phlebitis, and a few days later she was found to be also suffering from cystitis—a disease which she had had some time previously.

2.—Although a trained nurse was in attendance on this patient for night duty she was attended during the day by her daughter, who occasionally came in contact with those who handled the milk, and she was visited amongst others by the cook, who also mixed with the farm hands, and by the farmer who delivered the milk.

3.—There were opportunities for the infection of the milk not only in the manner alluded to above, but owing to the fact that some of the excreta of the patient were emptied, without previous disinfection, into a privy which was the only one available for the use of the farm hands and others employed in connection with the milk supply.

4.—That the case at the farm, though convalescent, was still infective, probably owing to the condition of the bladder having set up bacilluria, was evidenced by the fact that the farmer died from typhoid fever on May 15th, his son died from the same disease on May 24th, and a servant who came to the farm on June 5th also contracted the disease.

5.—There were twenty-five different households supplied with milk from this farm, and in eight of these households, cases of typhoid fever occurred.

6.—The cases of typhoid fever occurred in several different districts, and the only common factor in connection with them was the milk-supply. In other words, infection followed the milk cart.

7.—The outbreak began fairly suddenly after the return of the convalescent typhoid case to the farm.

8.—The outbreak ceased suddenly after the milk supply from this farm was discontinued.

9.—The cases possibly connected with the milk supply had not been fully enumerated, because the milk was supplied to several "hydros" in Llandudno at Easter time, and the visitors shortly afterwards dispersed to many different quarters.

10.—About fourteen houses received no other milk but that from this particular farm, and eight of these houses were infected.

11.—About 200 adults were supplied with the milk in question, and thirteen, or 6.5 per cent., were infected; of children eleven out of about forty-two supplied were infected, equal to 26 per cent.

12.—The milk had probably been infected on more than one date, or only certain receptacles had become infected at the time of delivery of the milk. There was thus not one large explosion due to a single infection, but a series of small explosions at dates too near to allow of contact infection.

AGAINST THE MILK CONVECTION THEORY.

1.—The outbreak did not present the explosive character usually observable when milk is the cause, but rather showed a sequence of small isolated batches of cases.

2.—The case at the farm had been treated in hospital for five weeks, and was convalescent as regards enteric fever; the cystitis was a disease of old standing, and there was no direct evidence to show that the excreta or urine were either of them infectious.

3.—Even assuming this case to have been

infectious, there had been no such possibility of contamination of the milk as is usually the case in milk outbreaks, but only a very indirect possibility by the access of infection to some person coming in contact with it, and carrying it on hands or clothing to the milk.

4.—A bacteriological analysis of the suspected milk made on April 13th failed to reveal the presence of the typhoid bacilli.

5.—A considerably larger number of persons supplied with the milk escaped infection than is usual in outbreaks caused by milk.

6.—In milk outbreaks there is usually a higher percentage of females attacked than of males, a condition which did not obtain in this case. (The Woodlands School is a school for boys.)

FOR THE SEWER GAS THEORY.

1.—A considerable number of cases of enteric fever had occurred in Llandudno Junction, about three-quarters of a mile from the Woodlands School, and therefore a considerable mass of infective material had been placed in the sewers, with which sewers the drains of the Woodlands School communicated.

2.—There was a portion of an old drain passing under the dining-room of the Woodlands School which might have allowed an escape of sewer gas into the school.

3.—There had been a temporary stoppage in the drains of the school, which would have conduced to the accumulation of drain gas and its entrance into the school.

4.—It had been shown by Horrocks and Andrewes that typhoid bacilli could in certain circumstances escape from sewers into the surrounding atmosphere.

5.—Though there was an interceptor the cap on the rodding arm was not cemented on (*sic*).

AGAINST THE SEWER GAS THEORY.

1.—A considerable number of cases occurred at Llandudno, which is on a different system of sewerage from that of Llandudno Junction.

2.—The drainage of the Woodlands School is of modern design and cut off from communication with the sewer by a manhole with intercepting trap. Thus Horrocks' and Andrewes' findings did not apply in this case.

3.—There were no cases of typhoid fever at the Woodlands School prior to this outbreak, and therefore the school drainage system was not itself infected.

4.—The old drain under the dining-room was covered by 8 inches of macadam, 6 inches of concrete, and 1 inch of cement, and on this a floor of wood blocks set in bitumen was placed, thus rendering the floor quite impervious to gas.

5.—The drains at the school were only stopped temporarily owing to a deficient flush of water caused by a burst water-main, and this occurred after the outbreak had commenced.

FOR THE POLLUTED FORESHORE THEORY.

1.—The sewage of Llandudno Junction, which was admittedly infectious at this time, discharged into the Conway estuary, and may have been carried back to pollute the foreshore. From the foreshore air-borne infection could be derived.

2.—This theory fitted in with the continued occurrence of typhoid fever at Llandudno Junction and the surrounding district, and had a parallel in the case of other estuaries where typhoid fever was endemic owing to similar causes.

3.—Alternatively this sewage would infect certain mussel-beds situated in the estuary, and persons handling or consuming these would become infected.

AGAINST THE POLLUTED FORESHORE THEORY.

1.—The sewage discharges on an ebbing tide only (the outlets having tidal flaps), and there is a rapid current out to sea at the point of their discharge.

2.—The mussel-beds are deep ones, and the mussels are obtained from them by means of dredgers or "rakes" by men working from boats.

3.—The cases which occurred at Llandudno could not have been due to this cause, as the sewerage system is quite distinct.

4.—There was no evidence that anyone at the school visited this foreshore or handled or consumed the mussels in question.

5.—Typhoid fever was not, in fact, endemic in Llandudno Junction or the surrounding districts, and certain cases which had recently occurred there had probably been caused chiefly by another infected milk supply.

It will thus be apparent that the milk theory explained all the circumstances of the outbreak, whereas the other theories broke down completely when put to explain the Llandudno and certain other cases. The defendants were naturally attempting to discount the milk theory, and were compelled to find some other theories to take its place. In this they obviously failed, as shown by the verdict.

One point which it will be worth the while of anyone engaged on a similar case to bear in mind is the strictest possible separation of those affected into "primary" cases and "contact" cases. Obviously, in any action the primary cases alone are those which can be taken into account in explaining the origin of the outbreak, and, what is of the greatest importance to the plaintiff, they are the only cases which can be taken into account by the jury in assessing damages. In the action in question this point was specially referred to the jury in respect of one case—that of the schoolmaster's wife, who sickened on or about April 17th, the first case with which she came in contact being that of Geoffrey Wood, who sickened on or about April 3rd. The question of

the length of the incubation period was never in dispute, but was accepted as being fourteen days on an average, and this doubtless governed the finding of the jury as to Mrs. Field's case, which they gave as a "contact" case.

Another question of great importance which was asked by the jury before they retired was whether, assuming the farmer to have taken all possible precautions, that fact would affect the question of liability. Mr. Justice Bray answered that question in a most direct and emphatic manner in the negative. This must be borne in mind when giving advice as sanitary officials in cases where infectious illness or sanitary defect exists in places where food for human consumption is sold.

AN OUTBREAK OF POISON BY ARSENICAL SWEETS.*

By J. R. HUTCHINSON, M.B., Ch.B., D.P.H.,
Assistant to the Medical Officer of Health, Manchester.

ON April 3rd and 4th, 1908, two letters were received by the medical officer of health from the head masters of two city schools stating that several of their scholars had been violently sick soon after eating a certain kind of sweet.

In one school ("A") twenty-four children had been taken ill, whilst in the second school ("B") nine children were affected. With the letters were sent two packets of the suspected sweets, one from each school, and the names of the shopkeepers from whom they were obtained were given.

The samples enclosed consisted of a number of irregularly rounded hard brown sweets, each somewhat larger than a marble. Some of them were quite dry, and coated with a light brown powder; whilst others were sticky, and were dark in colour. The retail price was four ounces for one penny. One ounce contained from ten to eleven sweets. After a cursory examination both samples were submitted to Professor Délépine for analysis.

On April 6th Professor Délépine reported verbally to the medical officer of health that many of the sweets contained "a large amount of arsenic."

On April 7th the medical officer of health visited the manufacturer, acquainted him with what had taken place, took samples of the raw material of which the sweets were made, and requested that, pending a chemical analysis, no more of these materials should be used. The manufacturer then informed the medical officer of health that the two shops from which the sweets apparently responsible for the illnesses at schools "A" and "B" were bought were supplied from a consignment manufactured on March 24th,

* From the Annual Report of the Medical Officer of Health, Manchester, 1908.

and delivered to six shops and one middleman in the city some time between the 25th and the 27th of that month. He further stated that he, too, had had a complaint from one of the shops that the sweets had caused sickness amongst the scholars of a third school ("C"), and that he had in consequence been round to the six shops supplied and recalled the whole consignment. All the recalled sweets (eleven 7-lb. boxes) were handed over to the medical officer of health, who retained one box and sent the others on to Professor Délépine.

The names and addresses of the six shopkeepers and the middleman from whom the sweets had been recalled were obtained.

The schools "A" and "B" were visited, and the history of thirty-three cases of illness were investigated. At school "C" fourteen cases were enquired into. Three of the six shops on the list supplied by the manufacturer are those accounted for as being responsible for the illnesses at schools "A," "B," and "C"; the other three were visited, as was the middleman. This latter dealer had supplied the sweets to four other shops, so that in all seven remained to be dealt with. These seven were visited in turn, and it was found that in three instances the boxes had been recalled unopened, and in two others, although the boxes had been opened, none of the sweets had been sold. In the case of the sixth shop four halfpenny-worths had been sold, and, so far as the shopkeeper knew, had been consumed without any ill effects; whilst the seventh shop was found to be responsible for the illness of nine children at a fourth school ("D").

The four shops from which the sweets causing the illness at schools "A," "B," "C" and "D" were obtained are in close proximity to the respective schools, and may be regarded as regular school tuck shops, whilst the only other shop at which the sweets are known to have been bought is not situated near a school. It is quite possible, therefore, for the sweets bought here to have been the cause of illness without the cases coming to light, for, as will be seen later, in none of the known cases was a medical man called in.

In all, sixty-two cases of poisoning are known to have occurred—fifty-six in children attending the schools "A," "B," "C" and "D," five in children under school age, and one in an adult, the mother of one of the affected children.

The number of sweets consumed was usually small—one, two, three, or four. Eleven purchases, nine of 2 ozs., one of 4 ozs., and one of 1 oz., were responsible for forty-eight of the sixty-two recorded cases. What commonly happened was that when a child found that the sweets made him ill, he passed them on to some of his friends, who in turn disposed of them in the same way. The smallest quantity known to have been eaten was

half a sweet, whilst the largest quantity was twenty sweets (halfpennyworth). In both cases severe vomiting ensued. The effects left after eating a large quantity do not appear to have been more severe or lasting than those experienced from a small number.

In nine instances only one sweet was eaten; in six there was vomiting, in two the children were ill but did not vomit, and in one case the child was not ill.

In eleven instances two sweets were eaten, ten of the children were sick, one was not sick.

In six instances three sweets were eaten; five of the children were sick, one was not sick.

In four instances four sweets were eaten, and all the children were sick.

In thirteen cases more than four sweets were eaten, and all the children were sick.

Various periods elapsed between the eating of the sweets and the onset of symptoms. Most commonly the interval was about an hour; in some cases, however, the illness came on almost immediately, whilst in others it was delayed one-and-a-half to two hours. In all cases the onset was sudden, some of the children vomiting in school before they had time to leave the room. As a rule the only symptoms were vomiting, and less frequently, abdominal pain; after the stomach was emptied the children became quickly well. In some instances there was purging; in one or two there was a general feeling of illness with giddiness. The most striking feature was the rapid and apparently entire recovery of the children, either during the same day or by the next morning. This is illustrated by the fact that of all the children affected only six missed any school period, five of these were absent for half-a-day, whilst one child was away two days.

In forty-six cases vomiting was the main symptom. It occurred in seven cases within fifteen minutes of eating the sweets, in four more within thirty minutes, in eleven more within forty-five minutes, in ten more within sixty minutes, whilst in fourteen cases it was delayed over an hour. There was abdominal pain in twenty-two cases, purging in nine, headache and dizziness in six.

Boys and girls were alike affected, and only four children are positively known to have eaten sweets without any ill effects. Of these four, two ate two sweets each, and two ate one sweet each. An adult who ate two sweets was violently sick, whilst a pet dog which ate one also vomited.

That the symptoms were due to the ingestion of an irritant poison contained in the sweets in sufficient quantity to cause almost complete expulsion is proved by the fact that—

- (1) They were those of an irritant poison.
- (2) They occurred only in those children who had eaten this particular kind of sweet.

- (3) No further illness occurred after the recall of the sweets.

- (4) The illnesses were all transitory. After vomiting, the sufferers were quickly well again.

That the irritant poison was arsenic is proved by the facts that—

- (1) Arsenic was found by Professor Délépine in the sweets in sufficient quantity to account for all the symptoms;
- (2) No other poison was detected in them; and
- (3) Arsenic was found in the urine of four of the sick children seven days after the sweets were eaten.

The fact that four children ate the sweets without their giving rise to any symptoms in no way militates against the general conclusions, for, as Professor Délépine's subsequent investigations showed, some of the sweets contained the poison whilst others did not.

By the time the clinical investigations were completed an extended report by Professor Délépine on the analysis of the two packets of sweets obtained from the schools "A" and "B," and on the boxes of sweets recalled by the manufacturer, was at hand. Of the two packets Professor Délépine says: "The first contained twenty-seven sweets, six of these were light-brown in colour, and looked hard and dry. Of these six, three were almond-shaped, and three were irregularly rounded. These latter three resembled the remaining twenty-one, except in point of dryness; the twenty-one were dark-brown and sticky, they adhered to one another and to the paper. There were about 175 sweets to the pound." The second packet, the report goes on to say, "contained sweets having the same character as the bulk of the sweets in the first packet; there was, however, a larger proportion of small sweets, there being about 198 to the pound."

Several sweets were analysed and found to contain a large amount of arsenic. It was then observed that the six dry hard sweets in the first packet contained no appreciable amount of arsenic, whilst all the moist sticky ones were heavily loaded with the poison. Further, the arsenic was uniformly distributed throughout each of the sticky sweets, the central harder portion and the superficial softer portions containing about equal amounts. In one section Professor Délépine was unable to detect any mass of white arsenic or any recognizable crystals. He estimated that the quantity of the poison present was not less than 13 parts per 10,000, i.e., a little over 9.1 grains per lb., so that some of the larger sweets which weighed $\frac{1}{10}$ oz. contained probably not less than $\frac{1}{10}$ grain of arsenic.

The presence of this quantity of arsenic fully explains the symptoms, and explains, too, the

rapidly induced vomiting. This prompt ejection of the poison would appear to have saved the children.

From Professor Délépine's examination of the two packets of sweets it is obvious that two varieties were being dealt with; the one dry, hard, light-brown in colour and non-arsenical; the other moist, soft, sticky, dark in colour, and containing approximately $\frac{1}{20}$ grain of arsenic per sweet. When the contents of the eleven recalled boxes came to be examined it was found that five of them contained sweets of the first description, four those of the second, whilst the other two contained a mixture of both kinds, some poisonous, others non-poisonous. The smell of the two types of sweet was quite different.

The amount of arsenic present, as found by Professor Délépine using the Délépine-Reinsch method, varied from 8.4 to 11.2 grains per lb.

How does it happen that almost exactly one-half the number of recalled boxes contained the poisonous sweets and the other half the non-poisonous?

As before stated, all these sweets were made on March 24th. On further inquiry it was ascertained that two boilings of this particular sweet were made on that date. It might reasonably be assumed, therefore, that only one boiling contained the poison. Now one boiling weighs approximately 44 lbs. From two such boilings, therefore, 88 lbs. of sweets or twelve 7-lb. boxes ought to have been made. According to Professor Délépine's analysis, five of the boxes submitted to him contained wholly poisonous sweets, whilst two contained the mixed poisonous and non-poisonous ones. The former were, however, much more numerous than the latter variety. The total weight of the seven boxes was 49 lbs., and if 5 lbs. be allowed for the non-arsenical sweets in the two mixed boxes, we get 44 lbs. of poisonous sweets; this corresponds to one boiling.

The average amount of arsenic found was 10.11 grains per lb. of sweets. This means something like one ounce of the poison in the contaminated boiling.

The ingredients that go to make up one boiling were said to be: glucose 10 lbs., cane sugar 30 lbs., starch 6 lbs., and in addition a little cocoa-shell powder and water.

What was the source of the arsenic?

Several possibilities have to be considered.

- (1) One of the ingredients may have contained arsenic as a result of its process of manufacture, as, *e.g.*, happened in the beer poisoning outbreak in 1900.
- (2) The poison may have been introduced with one of the ingredients having accidentally got into one of the packages.
- (3) It may have been accidentally introduced by some vessel or instrument previously used to contain arsenic or an arsenical compound, or
- (4) it may have been introduced by design.

To understand what possibilities exist in any of these occurrences, it is necessary to know how the sweets are made.

A cask of glucose which weighs 5 cwts. is kept in the boiling room, as are sacks of starch and sugar, which when full weigh 2 to 2½ cwts. apiece. The pans used are four in number; they are heated over coke fires. The staff consists of one man, an employé of 25 years' standing, and three girls. The man is the actual "sugar boiler," whilst the three girls take each of them a part in every operation, as occasion requires. They usually mix the charge of glucose, sugar, etc., stir the pots, knead in the starch, pull the mass, roll it (that is to say, mould the sweets), and then break them up.

Thirty lbs. of cane sugar go to one boiling. This is scooped out of the sack with a vessel used for the purpose, and kept in the sack. It is put on to a scale pan and weighed out; a hole is then made in the summit of this pile of sugar on the scale pan, and into it is placed 10 lbs. of glucose.

The glucose is taken out of the cask by a girl, who picks it up in her hands after dipping them in water, rolls it in a ball in order to free it from her fingers, and then places it in the hole made in the sugar on the scale pan.

Roughly, 10 lbs. of glucose are added.

When the glucose cask is getting empty it is reared on edge against the wall so as to enable the girl to reach the bottom. This, of course, involves the burying of her head, arms, and shoulders in the cask. The contents of the scale pan are transferred to the boiling pan, and two quarts of water are added by means of a lading can. The mixture is then heated over a coke fire to 280 deg. F., at which temperature it is kept for 20 minutes. At the expiration of this time it is poured out on to a cooled metal slab greased with cocoa butter. When it has cooled sufficiently to allow of manipulation six pounds of starch are added to the mass and kneaded into it. The starch is added by means of a scoop kept in the starch sack. After kneading, pieces of the plastic mass are cut off and pulled by hand over a hook with the effect of lightening the colour. The pulled sweet is then passed between rollers, the opposing surfaces of which are hollowed out to mould the individual sweets. The sweets are then separated by breaking up the rolled cake. Any residue which may remain is swept up and put in a tin under the table to be added to the next boiling. The sweets are then dusted over with cocoa-shell powder and packed away in 7-lb. boxes. This, it was said, is the invariable routine.

At his visit to the factory on April 7th the medical officer of health was given the most positive assurances that no materials other than those ordinarily used had been used for the making of the sweets on March 24th, that no

difference had been made in the two boilings of that date, and since that date, or even before it, no raw materials have been removed from the premises. The manufacturers stated that if anything unusual had occurred in connection with the particular boilings on March 24th they would have been informed of it; they further stated that, so far as they knew, no arsenic or substance likely to contain arsenic was, or ever had been, on their premises. In short, they professed themselves utterly unable to account for the occurrence, and expressed their willingness to do all in their power to assist in clearing the matter up. The appearance of the sweets, and the fact that they contained a large amount of glucose, suggested to Professor Délépine the possibility that a highly arsenical glucose might have been used in their manufacture. It was found that there were on an average ten sweets to the ounce, each containing approximately $\frac{1}{20}$ grain arsenic. This is equivalent to eight grains of arsenic per pound, so that every pound of glucose used in boiling—assuming glucose to be the source of the poison—must have contained something like thirty-five grains of arsenic. This is far in excess of the quantity of arsenic found in the glucose which was responsible for the outbreak of beer poisoning in 1900. In this material the largest quantity of poison found by Professor Délépine was six and a-half grains per pound, whilst Professor Campbell Brown found as much as nine grains per pound. Professor Délépine states, however, in his report that, considering the fact that some of the sulphuric acid used in the manufacture of arsenical glucose contained a heavy precipitate of almost pure arsenic, it is quite possible that some of the samples of glucose may have contained very much larger quantities of arsenic than either Professor Campbell Brown or he disclosed. It appeared, therefore, that the introduction of arsenic by means of arsenical glucose was a possibility.

The samples of glucose, sugar, starch and cocoa-shell powder first obtained were not taken from the same packages as the materials used in the boilings of March 24th; they were, however, from the same consignments. It must be remembered that fully fourteen days had elapsed between the date of making of the poisonous sweets and the notification to the medical officer of health of the first cases of illness. All that remained, therefore, of the packages from which the ingredients used in the boilings of March 24th were taken had been used up some days previously. Nevertheless, samples of these materials were submitted to Professor Délépine, who pronounced them free from arsenic.

We may suppose that the arsenic was introduced as part of a sack of starch. Against this is the fact that only one panful of sweets was affected, and this could only have happened if the poison

had been collected from the bottom of a sack, which is unlikely. Professor Délépine was unable to find any crystalline arsenic in the sweets, and, besides, both the contaminated and uncontaminated sweets were found to contain the same amount of starch. The poison could not have been introduced with the brown cane sugar without attracting attention as a white powder. The cocoa-shell powder with which the finished sweets were dusted over can be dismissed at once, as it was found that the centre of the contaminated sweets contained as much arsenic as the outer portions.

It is thus very unlikely that the poison was introduced as an accidental contamination of any of the ingredients in bulk.

The idea of the poison having been accidentally introduced through the medium of some vessel or utensil previously used to contain arsenic or one of its compounds may probably be dismissed.

It was impossible to examine the sacks used to contain starch or sugar, as they had been returned to the respective dealers in those articles, nor was it any use examining the pans, as they are used over and over again every day.

The possibility of the transference of arsenic by rats was considered, and was excluded.

In all twenty-nine samples of materials, including sweets of various kinds, glucose, starch, sugar, rat poison, dust, soot, bicarbonate of soda, tartaric acid, etc., were submitted to and examined by Professor Délépine, and were without exception found to be free from any material amount of arsenic.

A consideration of all the particulars appeared to suggest that the most likely suppositions were, either that some highly arsenical glucose had been used or that arsenic had been added to one panful of the sweets. To take the latter suggestion first. If as much as one ounce of arsenic had been thrown into the pan whilst the mixture was boiling, or whilst the ingredients were being mixed, one would not have expected the poison to be so uniformly distributed through the sweets as was found to be the case. This point, too, was tested experimentally by Professor Délépine. In the contents of two pans made in accordance with the formula given by the manufacturers, and with their own ingredients, he added arsenic in one case before boiling, and in the other case fifteen minutes before the end of the boiling. In both cases he obtained hard dry sweets closely resembling the non-poisonous variety found in the recalled boxes. He was unable to find with the naked eye, or by means of the microscope, any trace of the poison, although the powder added contained fine octahedral crystals of arsenious acid.

Arsenic *per se*, therefore, does not render the sweets sticky.

There were marked differences in appearance between the poisonous and non-poisonous sweets.

The poisonous ones were smaller and denser than the non-poisonous; they were moist and sticky, whereas the non-poisonous ones were dry and even dusty. When melted the arsenical sweets gave a pale liquid and a dark sediment. The non-arsenical ones gave a dark liquid and a light sediment.

If then, as asserted by the manufacturers, they were all made according to the same recipe, and with the same materials and rollers, the mass passing through the rollers must have been very different. But it was found that the contaminated sweets contained twice as much reducing sugar as the non-contaminated. They were not, therefore, both made according to the formula given by the manufacturers to the medical officer of health.

Would the presence of this excess of reducing sugar render the sweets soft and sticky? Professor Délépine was able to show without doubt that it would.

We have therefore to consider whether, along with an excess of glucose introduced into one boiling of the sweets, there was also the introduction, accidental or by design, of a large quantity of arsenic.

If glucose was the source of the poison, how was it that only one painful of sweets was affected? Assuming that an experimental trial was made with a new sample of glucose just sufficient for one boiling, then this sample must have contained about one ounce of arsenic.

Confectioners' glucose is supplied mainly by two large firms in this country, one an English and the other an American company. The glucose in this instance was said to have been supplied by the American firm. Control samples of their glucose were found to be arsenic free. Besides, no special precautions were taken by this firm when they were informed of these cases of poisoning, and the Local Government Board have no knowledge of any further cases occurring elsewhere.

The presence of a double quantity of glucose *plus* arsenic in the sweets, then, might have been a mere coincidence. If so, it was a very remarkable one.

In view of the conflict of evidence as to the composition of the sweets, the manufacturer was again interviewed. He adhered absolutely to his former statements as to the composition of the sweets and the sources of the raw materials. Amongst other questions he was asked:—

1. Were all these sweets made with the same mould? If so, how is it that, although the arsenical sweets are denser than the non-arsenical ones, there are at least twenty-three more of the latter to the pound than of the former? The first part of the question was answered in the affirmative, whilst he professed himself unable to account for the differences in weight.

2. Were the sweets by any chance obtained from an outside source? Answered in the negative.

3. How does he account for the difference in smell of the good and bad sweets? Answered he was unaware of it.

4. Did he observe any moist appearance about any of the boxes when he packed the sweets? Answered in the negative.

5. Has he questioned the "sugar boiler" as to whether any unusual circumstance had been observed about this painful of sweets? Answer: Yes, nothing had been noticed.

6. Was arsenic or any substance which might be suspected of containing arsenic kept on the premises. Answer: No.

The manufacturer repudiated the suggestion that some arsenical substance might have been removed from the premises. He stated, too, that absolutely no change had been made in the personnel of the establishment since this occurrence, nor had the routine work been altered in any way.

It follows from this that either the manufacturer himself was being grossly deceived or was not telling the truth.

These inquiries are incomplete, in so far as they do not settle the question of how the arsenic got into the sweets. They do show beyond doubt that the composition of the sweets was not in accordance with the recipe given.

One can only suspect that this is not the only particular in which misleading statements were made, and that material facts were being suppressed.

The outbreak is important, not only on account of the very large total amount of poison present, but as showing also the precise effect of known poisonous doses of arsenic on sixty-two different individuals. The usual medicinal dose of arsenic is equivalent to that contained in one of the contaminated sweets, but many of these children ate four, six, eight, ten or more. One child certainly ate twenty sweets within three and a-half hours; she was violently sick. In this case, too, the sweets were obtained from a mixed box of contaminated and uncontaminated ones. The former certainly outnumbered the latter, but it is impossible to gauge the total amount of arsenic which the child consumed. Curiously enough this was one of the children who missed no school period.

The outbreak further brings into sharp contrast the difference between acute and chronic arsenical poisoning. In the one case you get vomiting and diarrhoea, with rapid and complete recovery; whilst in the other you get the symptoms of a cold in the head, with anæmia, pigmentation, tingling in the hands and feet, muscle atrophy, and extreme helplessness, which lasts for months, and perhaps a fatal result.

CORRESPONDENCE.

The Editor does not accept responsibility for the opinions of correspondents.

THE DAILY DISINFECTION OF SCHOOLS.

To the Editor of "PUBLIC HEALTH."

December 13th, 1909.

Sir,—I was not surprised to learn from your columns that Dr. James Kerr and some of his colleagues seek to palliate the exposure of their obstinate adherence to a policy of obstruction by alleging that the public enlightenment on the subject of school disinfection has been "engineered on behalf of a firm interested in the sale of disinfectants." Even if it were, it would by no means exculpate a glaring neglect on the part of any one charged with the duty of school cleansing. It is too late in the day to aver that infection can only come through living creatures or wearing apparel, and not through inhabited dwellings or schools, or even churches. Dr. Kerr well knows that the hygienic condition of the elementary schools in London is deplorable, and yet scorns all attempts to secure amelioration by routine careful disinfection of those schools.

In your article on the subject you say that you are familiar with the fact that many of the anonymous letters which have appeared have been signed with "misleading initials," and that the writer is not a medical man, but a mere "dealer in disinfectants anxious to create a market for his wares." Of this I have no knowledge, and cannot help thinking that no dealer could be so foolish as to create a market for his competitors by conducting a public propaganda when by private use of the same arguments he could secure to himself, if not a monopoly, at least a much larger share of the business.

Personally, I have taken a great interest in the whole subject of disinfection of schools for the last thirty years, when I was actively engaged in scholastic work, and I have written constantly on this subject, under initial letters, *nom de plume*, and, as in this instance, my name. I hope that your statements may not create a prejudice or a suspicion of *bona fides* in the minds of those editors to whom I have addressed my communications, whether lay or professional.

I have never attacked Dr. Kerr either by name or implication. What I have done to the best of my ability has been to criticize what I believe to be mistaken views on his part as to the value of the disinfection of schools, views which, when expressed by a man holding an important position such as Dr. Kerr's, are apt to be conceded an importance altogether fictitious. But since Dr. Kerr, in concert with yourself, seeks to dismiss the whole movement as a trade device, I have no hesitation in affirming that his oft-reiterated contention as to the insignificant part played by the

schools in the spread of infectious disease is contrary to all known facts of the case. I will go further and suggest that he is actuated by a desire—and, from his standpoint, a very natural desire—to conceal the potency of public schools as factors in the dissemination of infectious disease. The statistics of any public health committee of any borough council prove this beyond cavil.

As to your own article, I would merely point out that many of your arguments, which, I may add, are similar to those commonly used by opponents of routine disinfection, are directly or indirectly refuted by the authorities whom you quote in their support. "In the first place," you say, "there is a growing volume of opinion that the influence of the school on the spread of infectious disease has been greatly over-estimated. The elementary schools of this country are not the hotbeds of infection they were formerly supposed to be." We turn to Dr. Kingsford's paper and read, in the very first sentence, "It has long been recognized that since compulsory education has been in force in this country, the public elementary schools have been extremely important factors in aiding the spread of the commoner infectious diseases." Dr. Kingsford is merely echoing views expressed by his predecessors, from Sir Shirley Murphy onward.

Dr. Meredith Richards points out that "theoretically a diphtheria patient with nasal discharge may contaminate the floor and walls of the room in which he is confined," adding, "generally speaking, what has been written about diphtheria is equally applicable to scarlet fever, and, *mutatis mutandis*, to the other common communicable diseases."

Dr. Kerr is bound to admit that "the organic contents of school dust show that it may be a source of specific disease."

Dr. Newsholme and Dr. Newman, in the memorandum from which you quote, say "Disinfection of special class-rooms, or of particular articles, should be undertaken when there is reason to believe that they have been infected" (page 12, paragraph 21). There is always dust in school-rooms; Dr. Kerr himself admits that dust "may" be a source of disease, meaning, I presume, that the class-room may be a source of infection. Therefore, according to the opinion laid down by Dr. Newsholme and Dr. Newman, class-rooms should be disinfected, and seeing that a fresh supply of infectious dust is laid down as one supply is removed, the process should be applied daily. That at least has been my contention for very many years.

I am, Sir, your obedient servant,

W. LAUZUN-BROWN,

L.R.C.P., L.R.C.S. (EDIN.),

Member of Committee of Public Health,
Borough of Finsbury.

PROCEEDINGS OF THE SOCIETY OF MEDICAL OFFICERS OF HEALTH.

FOUNDED 1856. RECONSTRUCTED 1888.
INCORPORATED 1892.

North-Western Branch.—Minutes of a meeting of the Branch held at the Victoria Hotel, Manchester, on Friday, December 3rd, 1909. Present: Dr. Peck (in the chair), Drs. Sergeant, Greenwood, Johnston, Arnold, Dearden, Hitchon, Buckley, Harris, Merry Smith, Daley, Buchan, Corbin, Carnwath, and Barlow. Letters were read from the following expressing their inability to be present: Professor Delépine, Drs. Wheatley, Berry, Garstang, Young, and Fraser.

The following bye-laws were adopted by the Branch, on the proposition of Dr. Sergeant, seconded by Dr. Greenwood:

BYE-LAWS.

1. The constitution of the North-Western Branch is determined by the Articles of Association and Special Resolutions of the Society.

2. The Branch shall be managed by a Committee consisting of President, Vice-Presidents, Secretary, Treasurer, and four members. All Past Presidents to be Vice-Presidents. The election of officers and Committee shall take place at the Annual Meeting of the Branch to be held in June, and the voting shall be by ballot. Any member may nominate candidates for the various offices. Nominations to be sent in writing to the Secretary on or before the third Friday of May in each year. The names on the list, together with the names of their proposers, shall be printed and sent round to each member of the Branch, with the notice convening the Annual Meeting, and the voting shall be on those names in the list and on no others. The Committee shall have the right, if they think fit, to specially recommend to the meeting for election any members whose names are on the list. At Committee meetings three shall form a quorum.

3. As far as possible the meetings of the Branch shall be held on the third Friday in the months from October to June inclusive. The meeting held in June shall be called the Annual Meeting, at which the election of officers and Committee will take place, and the Treasurer's statement be submitted. The meeting in October shall be reserved for the President's address.

4. A special meeting of the Branch or Committee may be called at any time by the President. Three days' notice shall be given of such meeting (or in the case of emergency not less than twenty-four hours). No business shall be transacted at such meeting except that on the notice calling the meeting.

5. The Branch shall meet in Manchester, except when otherwise arranged.

6. Seven days' notice shall be given of any ordinary meeting, and the notice shall state the business for the meeting.

7. In all matters not provided for in the Articles of Association and Special Resolutions of the Society, or in these Bye-laws, the decision of the President shall be final.

8. No resolution of which notice has not been given shall be proposed except by the unanimous consent of the meeting.

9. No alteration can be effected in these Bye-laws except after due notice.

A paper was read by Dr. Barlow, the secretary, entitled "Milk-Borne Typhoid: Some Observa-

tions on a Recent Assize Trial, with a Special Reference to the Drain Theory."

A most interesting discussion took place upon the points raised in the paper, in which Drs. Peck, Greenwood, Buchan, Corbin, Merry Smith, and Carnwath took part. A cordial vote of thanks was conveyed to Dr. Barlow at the close.

The congratulations of the Branch were offered to Dr. Buchan on his being called to the Bar.

THE ANNUAL DINNER of the Branch was held at the Midland Hotel in the evening. Forty-three were present, including the Lord Mayor of Manchester, Sir William Sinclair (Member of the Central Midwives Board), A. Munro, Esq. (President of the Lancashire Veterinary Association), and Harcourt E. Clare, Esq. (Clerk to the Lancashire County Council).

Letters of regret at their inability to attend were read from the Lord Mayor of Liverpool, the Chairman of the Lancashire County Council, the President of the Liverpool Medical Institution (Dr. Bickerton), the President of the Manchester Medical Society (Dr. Coates), and Professor Sinclair White. A very excellent musical programme was rendered, and a most enjoyable evening was spent. The Lord Mayor of Manchester, in the course of the evening, invited the members of the Branch to inspect the new Royal Infirmary buildings on a day to be arranged.

Northern Branch.—The Annual Meeting was held at Newcastle-on-Tyne on October 22nd, 1909, when the following members were present, viz.:—Dr. A. Smith (President), Drs. Hill, Armstrong, Jackson, Renney, Mostyn, Arthur, Kerr, Foggin, Hislop, Hembrough, and Taylor.

The balance-sheet was adopted as correct. The membership had increased by two during the year. The officers of the Branch were re-elected. It was resolved to hold the Branch meetings on the fourth Friday of Feb., April, June, and October.

The report of the Council of the Branch stated that five meetings had been held during the year, with an average attendance of twelve at each meeting; that most interesting papers had been read and discussed to the advantage of all present; and that the finances of the Branch were in a satisfactory condition.

A paper entitled "Modern Educative Methods for the Prevention of Infantile Mortality" was read by Dr. Kerr, assistant medical officer of Newcastle-on-Tyne. The paper was favourably criticised by several of the members present.

It was resolved to hold the annual dinner on December 15th, immediately after a special meeting, at which Dr. Smedley, Assistant M.O.H. of the County of Durham, was to read a paper on "The Medical Inspection of School Children."

Midland Branch.—A meeting was held on Thursday, December 2nd, at 3.30 p.m., at the Council House, Birmingham. Present: Dr. J.

H. Garrett (in the chair), Drs. Ridley Bailey, J. M. Cowie, John Robertson, A. Bostock Hill, A. Hamilton Wood, C. E. Tangye, F. Robinson, Mabyn Read, Lawrence W. Pole, and E. H. Snell. Apologies were received from Drs. Henry May and Herbert Manley.

An invitation was received from the Royal Sanitary Institute to appoint delegates to attend their Congress, to be held at Brighton in September, 1910. On the recommendation of the Council it was resolved to nominate as delegates Drs. Garrett and Snell, and any other member who desired to attend.

Dr. Thomas Robinson opened a discussion on "The Report of the Departmental Committee appointed by the Lord President of the Council to consider the working of the Midwives Act, 1902." Drs. Bostock Hill, J. Robertson, Mabyn Read, and the Chairman took part in the discussion, and Dr. Robinson replied.

The questions of the formation of a service of veterinary inspectors and the raising of cowsheds to a reasonable standard were discussed, and it was proposed by Dr. Robertson and seconded by Dr. Bostock Hill that the matter should be referred to the Council of the Branch for report.

Home Counties Branch.—The second meeting of the Session 1909-10 was held on Wednesday, November 17th, 1909, at 1, Upper Montague Street, Russell Square, W.C.

The Hon. Secretary had the satisfaction of reporting that all the dates of the sessional programme were now filled up.

Dr. F. G. Crookshank brought forward a resolution which led to a lengthened discussion, but was adopted by the meeting *nem. con.* in its final form, viz., "That the Council be asked to consider the declaration of policy at the Representative Meeting of the British Medical Association (Minute 234), and to take all necessary steps to protect the interests of medical officers of health." Then with the consent of the meeting (Bye-law 7), a resolution (originally proposed by Mr. Fremantle as an addition to the first one) as follows was put to the meeting and also carried *nem. con.*: "That in view of the proposals for the reform of the Poor Law now before the country, it is premature to define the future appointment and duties of district medical officers of health."

The Hon. Secretary was instructed to forward both resolutions to the Council of the Society.

The third meeting of the Session 1909-10 was on Wednesday, December 15th, 1909, at 1, Upper Montague Street, Russell Square, W.C.

The Hon. Secretary reported that he had fortunately been able to arrange for the presence of five members of the Home Counties Branch at the important conference of the National Housing and Town Planning Council held at the Westminster Palace Hotel on December 14th and

15th, 1909, to consider the practical administration of the town planning clauses of the Housing and Town Planning Act, 1909. He also reported that a permanent advisory committee had been formed at the conference, on which he had accepted office as representing the Home Counties Branch of the Society of Medical Officers of Health, subject to the approval of his Branch. On the motion of Dr. Beale Collins, seconded by Dr. Elwin Nash, an expression of thanks was given to the Hon. Secretary for his prompt action at an important juncture, coupled with a confirmation thereof.

The Hon. Secretary was instructed to write on behalf of the Branch to the Council expressing an earnest hope that the Council would endeavour as soon as possible to obtain the placing of at least three representatives of the Society on the permanent advisory committee, and nominating Dr. Sidney C. Lawrence as one of the number.

The Hon. Secretary read a paper entitled "The Eventful History of the Home Counties Branch, 1894-1904." Beginning with a recital of the circumstances of its birth on August 24th, 1894, Dr. Lawrence related the story of the Home Counties Branch, which has, on the sure and certain foundation laid fifteen years ago by the pioneers then present, risen to become the largest and not the least energetic branch of the Society of Medical Officers of Health.

A hearty vote of thanks was given to the Hon. Secretary for his labours in compiling a history, which, though necessarily condensed, is most interesting to all members of the Branch, but especially to those gentlemen who for many years past have taken an active share in its work.

Southern Branch.—A meeting was held at the Town Hall, Portsmouth, on December 3rd 1909. Present: Dr. Willoughby (president), Drs. Cameron, Fraser, Gibson, Griffith, Lauder and Stott. The minutes were read and confirmed, and apologies for absence were read from several members.

The following resolution, viz., "That the Branch undertakes to pay the travelling expenses of the president to the council meetings of the Society unless these are paid by the Society," was adjourned *sin die* on the recommendation of the Branch Council, as the Branch could not at present afford to do it.

The attitude of the British Medical Association towards part-time medical officers of health was raised, and postponed to allow other members to take part in the discussion.

Dr. W. G. Willoughby then read his presidential address on "Mortality Statistics in Annual Reports." Those present expressed their opinions upon some of the points raised; and the useful suggestions of the President were much appreciated.

A vote of thanks to the President for his paper was carried heartily, and to Dr. Fraser for the use of the room.

LAW REPORTS.

COURT OF APPEAL.

November 19th, 1909.

BEFORE COZENS HARDY, M.R., FLETCHER
MOULTON AND FARWELL, L.JJ.ATTORNEY-GENERAL *v.* BIRMINGHAM, THAME AND
REA DISTRICT DRAINAGE BOARD.Public Health Act, 1875, Sect. 17.—Pollution of
Stream—Sewage Effluent—Discharge of
Injunction.

Sect. 17 of the Public Health Act does not require that a sewage effluent sent into a stream shall be free from all matter, but only that the matter sent in shall not deteriorate the quality of the water in the stream. Where permanent sewage works have been erected to prevent pollution, after an injunction has been granted, the Court has power to discharge the injunction if satisfied that the pollution no longer exists.

This was an appeal from a decision of KEKEWICH, J. The action was brought in the name of the Attorney-General, on the relation of the Tamworth Borough Council and the Tamworth Rural District Council, against the defendant Board for an injunction to prevent the defendants from polluting the river Thame contrary to Sect. 17 of the Public Health Act, 1875. The sewage works are on the banks of that stream, and the effluent from them flows into the stream. The action was begun in 1899, but was not tried until 1907, and in the interval the defendants had been constructing works to remedy the pollution; but these works were not concluded. KEKEWICH, J., granted the injunction, and refused to suspend it, as he was of opinion that when the Attorney-General asked for an injunction and showed a breach of a statute, the Court was bound to grant it. The defendants appealed, and when the appeal came on for hearing the Court of Appeal suspended the injunction to give the defendants time to complete their works and to carry out new works which they contemplated.

When the case came on again there was such a conflict of evidence among the experts that the Court appointed Sir Wm. Ramsay, Professor of Chemistry, to report to the Court as to whether the effluent was polluting the river or not. His report now came before the Court, and he reported that the river was not made fouler by the Birmingham effluent, and that the effluents from the defendants' works were to such an extent freed from excrementitious matter, and other foul and noxious matters, that they did not affect or deteriorate the "purity" of the water in the river.

It was contended on behalf of the plaintiffs that this was not sufficient. They said that the effluent

was still a polluting one, and not up to the standard of the Royal Commission, and that the intention of Sect. 17 was to forbid the sending of any polluting liquid into the stream. They also said the Court could not discharge the injunction. Sect. 17 is as follows:—

"Nothing in this Act shall authorize any local authority to make or use any sewer, drain, or out-fall for the purpose of conveying sewage or filthy water into any natural stream or watercourse, or into any canal, pond, or lake, until such sewage or filthy water is freed from all excrementitious or other foul or noxious matter such as would affect or deteriorate the purity and quality of the water in such stream or watercourse, or in such canal, pond, or lake."

The Court discharged the injunction subject to an undertaking.

COZENS HARDY, M.R., said the case was of great importance, not merely to the particular locality, but to all corporate bodies and drainage boards throughout the country. He did not agree that the Attorney-General on proving that a public body was exceeding its powers or committing some offence against a statute was entitled as of right to an injunction. The sewage board had not appealed on the ground that the order made was wrong, but they said that since the judgment they had at enormous expense of money so altered the situation that there was now no breach of the section. The Court accepted as a fact the finding of Sir Wm. Ramsay. Then came the question as to whether that showed a compliance with Sect. 17 of the Public Health Act, 1875, or was that section an absolute prohibition against conveying filthy water into a stream. He agreed with the view expressed by Kekewich, J., as follows:—"This again necessarily implies that excrementitious or other foul and noxious matter may be conveyed, for it is not said that none such shall be conveyed into any natural stream or watercourse, but only that there shall not be conveyed into it such as would affect or deteriorate the purity and quality of the water. It seems to me that, on the grammatical and reasonable interpretation of the language, what the Legislature intended to prohibit was the deterioration—that is, the making worse the purity and quality of the stream or watercourse—and that no one can be said to have offended against the prohibition if, as a matter of fact, there has been no such deterioration." In these circumstances he thought that the defendants were now committing no breach of that section, and that they ought not to be subject to an injunction. He thought the order should be in the following form:—"It appearing that the state of things existing at the date of the judgment has been changed by the permanent works of the defendants, and that there is no longer any breach

of Sect. 17 of the Public Health Act, 1875, and the defendants undertaking to use their best endeavours to prevent any recurrence of such breach, discharge injunction; appellants to pay costs of the appeal."

FLETCHER MOULTON, L.J., in concurring, pointed out that sewage effluent must contain the matters put into it, and that the object of the section was not to prevent the effluent from being discharged into the stream, but to prohibit its being sent in before these matters had been so changed that they ceased to be foul or noxious; the water must nevertheless contain the chemical constituents of these matters, but so long as they did not make the stream worse no breach of Sect. 17 was committed.

FARWELL, L.J., also agreed.

KING'S BENCH DIVISION.

December 2nd and 3rd, 1909.

BEFORE GRANTHAM, J., AND A SPECIAL JURY.

ADAMS *v.* "VANITY FAIR" (LIMITED) AND OTHERS.
Libel.—Medical Inspection of Schools—Vaccina-
tion—Notice of Unvaccinated Cases.

This was an action of libel brought against several defendants in consequence of an article which was published in *Vanity Fair*. Mr. Ernest Pomeroy, the writer of the article, was the only defendant at the trial, as the action had been stayed as against the others. The plaintiff, a lady, was a qualified medical practitioner. In June, 1908, she had been appointed a Medical Inspector of Schools for the Urban District of Twickenham. The alleged libel was written in connection with the following incident:—The plaintiff, in pursuance of her duties in August, 1908, visited certain schools known as St. Stephen's Schools in her district. She was provided with a number of forms and a register on which to make the necessary notes concerning the children she examined. The forms were for the purpose of giving notice to the proper authorities, whose duty it would be to see to any disease which existed, and if she found that the sanitary arrangements of the school were not satisfactory, it was her duty to call the attention of the clerk to the district council or the sanitary officer to these defects. On the day in question she went to the school and found two children who had not been vaccinated, an exemption certificate having been granted in respect of one child but not in the case of the other. Upon learning these facts she gave notice to the vaccination officer, whose duty it would be to convey it to the medical officer of health.

The defendant, in an article in *Vanity Fair* of October 7th, headed "The Tyranny of Vaccination," wrote as follows:—"The crew on the Kesteven Education Committee have distinguished themselves in compulsory culture persecutions, but for compulsory cowpox persecutions, St.

Margaret's, Twickenham, leads the way. The *Morning Leader* for September 29th reports: 'A new method of enforcing the vaccination of children has been adopted at the St. Stephen's School at St. Margaret's, Twickenham. On September 3rd last a lady doctor, Dr. Martha Adams, visited the school, attended by a nurse, to conduct the inspection of the little girls, under the Act passed last year. When Dr. Martha discovered the presence of unvaccinated children she pointed out to the mothers that she would be obliged to report the fact to the vaccination officer. The local vaccination officer apparently has received the names of those children who were found to be unvaccinated, and already some parents had given way and had their children vaccinated.' After some further extracts from the above report, the article continued:—"To my mind a more villainous misuse and abuse of power has never been perpetrated, even in the medical profession, which is peculiarly prolific in cases of this kind. . . . But why are the medicos so prejudiced? Because of the vaccination fees. They get 5s. to 7s. 6d. a case in cash, and they can also count on the child successfully inoculated as being a source of income to them for some months, if not till death. . . . How many of the children reported to the vaccination man by Dr. Martha were subsequently infected by her? And at how much per head? Or, if by some other doctor, what percentage did she obtain?

Dr. Martha Adams, in the course of her evidence, said on August 27th last she went to the St. Stephen's Schools. In the course of her examination she found two children who had not been vaccinated. The mothers of both children were present. In one case a certificate of exemption had been obtained for the child, but not in the other—the case of a child named Hazard. She gave Mrs. Hazard notice that it was desirable that the child should be vaccinated, and filled up and gave to the mother a form to be sent to the medical officer. She did not order the child to be vaccinated. In the following month she sent a list of children who were unvaccinated to Mr. Field, the vaccination officer. Since she had held her present position she had never vaccinated a child or even directed that a child should be vaccinated. She saw the article in *Vanity Fair* in October, 1908. There was no ground for suggesting that in what she had done she had any object to serve but that of conscientiously discharging her duties. It was not true that she received any fees beyond her salary for vaccination, or received any percentage of fees from anybody else. To do such a thing would be professional misconduct.

In cross-examination she stated that the libel had done her no harm pecuniarily. She was still in the same employment.

In the circular sent out under the Education Act there was no reference to vaccination. The fact that she had reported that two children had not been vaccinated was made the subject of a question in the House of Commons. Mr. Runciman replied that the Education Board had never suggested to local education authorities that as part of the work of medical inspection under the Act inquiries should be made as to whether children had been vaccinated or not, and strongly deprecated the use of a medical inspection for the purpose of trying to enforce vaccination. Any information elicited at such inspection should be regarded as strictly confidential. Since the answer had been given in the House of Commons she had not reported any cases of non-vaccination to the public vaccinator. That was in pursuance of instructions received by her.

Dr. Macdonough, the district medical officer for vaccination at Twickenham, said that there was no truth in the suggestion that the plaintiff arranged with him to share his vaccination fees with her. It would be a most improper thing to do.

Mr. J. S. Whittaker, medical secretary of the British Medical Association and secretary of the Central Ethical Committee, said that if certain of the statements in the article were true it would be the duty of that Committee to bring the matter before the General Medical Council.

Mr. H. J. Saunders, clerk to the Twickenham Urban District Council, said that that Council was the education authority for Twickenham. He issued to the plaintiff forms for the purpose of being used in making inspections. Those forms contained a paragraph relating to personal history and included a space for adding information as to the presence or absence of vaccination marks. The forms when filled in were sent to his office and there kept, and whatever was done in regard to them was done under the direction of the local education authority.

Cross-examined.—In the form for medical inspections issued to the local authority by the Government no mention was made of vaccination. The local authority added the words "vaccination marks" to the form as supplied by the Government. He had heard that the plaintiff had sent a list of children who had not been vaccinated direct to the public vaccinator. It would have been more regular if this had been done through his office.

For the defence the Hon. E. A. G. Pomeroy said that he took a strong interest in the subject of vaccination and was opposed to it. He had no personal feeling against Miss Adams, and wrote the article in the interests of the people. He justified it. He thought the plaintiff had vastly exceeded her duty. He now knew that the plaintiff was paid by salary alone. When he wrote the article he thought it possible that some

arrangement had been made by her with the public vaccinator as to their sharing fees.

The parents of the child Hazard gave evidence that they had moved from Kennington to avoid vaccination.

The jury returned a verdict for the plaintiff, with one farthing damages. Judgment was entered for the plaintiff accordingly, with costs.

December 8th, 1909.

BEFORE LORD ALVERSTONE, L.C.J., AND A SPECIAL JURY.

CARDALE V. KLOCKENBUSCH.

Warranty—Negligence—Oysters—Typhoid Fever.

This was an action for damages brought by Lieut. Cardale, R.N., against the proprietor of the Sun Hotel, Chatham, in consequence of an attack of typhoid fever from which he had suffered, and alleged to be caused by the eating of oysters at the defendant's hotel. It was alleged that the plaintiff relied on the care and skill of the defendant to supply wholesome oysters, and that the defendant had been guilty of negligence.

Lieut. Cardale stated that in 1908 he was in command of H.M.S. "Teazer," and that on October 14th he dined at the Sun Hotel with his friend Lieut. Downes, and that they had each half-a-dozen oysters. A day or two afterwards he began to feel unwell. On October 21st he dined at the same hotel, but had no oysters. The only other occasion when he had oysters was at Sheerness, on the 27th. He began to feel seriously ill soon after, and went to stay with his brother, a doctor, who found that he was suffering from typhoid fever. He was unable to travel until January 30th, and returned to work in April. He had been unable to accept an appointment offered to him, and had been put on half-pay until the following June. Altogether he was out of pocket £164. His friend, Lieut. Downes, had died of typhoid contracted about the same time.

Dr. Cardale, the plaintiff's brother, said that on October 31st his brother told him he had been seedy for some time. The next day he seemed tired, and could not eat, going to bed without any supper. He said he thought it was biliousness caused by some oysters he had eaten on the 14th. On November 2nd the witness suspected the disease, and extracted blood from the lobe of the ear, sending it to a pathologist, for the purposes of obtaining Widal's reaction. The result showed that he was suffering from typhoid. From eight to fourteen days was the period of incubation according to the latest knowledge. Oysters eaten on October 27th could not have caused this illness, and Widal's reaction could not appear less than fifteen days after infection and seven days after disease; some put the period from eight to eighteen days.

Dr. F. J. Smith said he had devoted much time

to the study of typhoid. It was now accepted by medical authorities that contaminated oysters caused the disease. Milk, water, and sewage were the principal causes. The plaintiff's illness and that of Lieut. Downes would be consistent with infection on the 14th. It was not absolutely impossible that the plaintiff's illness might have been caused by the oysters eaten on the 27th, but it would have been unprecedentedly short. The bacillus got into the shell and gills of the oyster, which sometimes swallowed it, and sometimes did not. It did not affect the taste or make the oyster sickly.

Evidence was given to show that Lieut. Downes was complaining of illness on October 29th, that the disease was diagnosed on November 7th, and that he died on November 24th.

Dr. Holroyd, medical officer of health, said he had caused notices to be posted up at Chatham in September, 1908, warning the people not to eat oysters unless boiled, because of the prevalence of typhoid. There were infected beds in the Medway, which had been closed. Up to November, 1908, the cases of typhoid had been traced only to the eating of cockles.

The defendant stated when a small quantity of oysters were ordered he was in the habit of getting them at Quintero's, a Swiss café near the hotel. He had purchased some from Quintero on the 9th, and the next purchase was shown by the books to be on the 19th. He sometimes bought oysters from one local waterman. He had never heard that some of the oysters in the Medway were contaminated, and in October, 1908, would not have hesitated to buy them from any local waterman.

The following questions were left to the jury:—(1) Was typhoid caused by oysters eaten at the defendant's on October 14th? (2) Did the plaintiff rely on the skill and judgment of the defendant? (3) Was the defendant negligent? (4) Damages, if they found for the plaintiff.

The jury answered the first three questions in the affirmative, and awarded the plaintiff £264 damages.

Judgment was entered accordingly, subject to a stay of execution pending an appeal.

CONSPIRACY TO ADULTERATE MILK.—At the Central Criminal Court on November 20th, William Jarvis, secretary, William Palmer, manager, and John Alfred Webster, milk carrier, were indicted for conspiracy to pervert and defeat the due course of justice upon the hearing of a summons against the North-Eastern Dairy Company, Limited, and to sell milk which should not be of the quality demanded by the purchaser, and to obtain money from such persons as should purchase the milk. The case arose out of a summons against the company for selling fresh milk

mixed with separated milk as new milk. In defence a warranty was pleaded, and Palmer, who was manager of the company's depôt, and Webster, who was a milk carrier, both gave evidence in denial of the allegations of the prosecution. The magistrate, however, fined the company £100 and costs, and this prosecution was then instituted against the accused. The jury found Jarvis and Palmer guilty; they acquitted Webster. Mr. Muir said that in six cases against the company within a period of twelve months they had successfully pleaded a warranty. Palmer and Webster were both convicted of perjury last sessions in the evidence they gave upon the hearing of the summons. (*See ante p. 108.*) Webster was brought up for judgment on the perjury charge. The Common Serjeant said that Jarvis appeared to have systematically practised the business of adulterating milk. He sentenced him to eight months' imprisonment in the second division. Palmer he sentenced to three months' hard labour for the conspiracy and a similar term upon the indictment for perjury, the two sentences to run concurrently. Webster occupied a subordinate position, and had been led into this, but eventually repented, and had told the truth. He would be bound over in his own recognizances in £20 to come up for sentence if called upon.

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THE ANNUAL REPORT OF THE CHIEF MEDICAL OFFICER OF THE BOARD OF EDUCATION.

DR. NEWMAN'S first annual report, which has been awaited with special interest by his former colleagues, will well repay the most careful study. It gives the first authentic account of what is undoubtedly the most important public health movement of recent years, and it is particularly valuable in that it sets forth, clearly and unmistakably, the lines on which the movement has been organized and directed by the Board of Education and the administrative methods that have been adopted. The report is a document that will long remain as a conspicuous landmark in the progress of social reform.

After a brief historical survey of the school hygiene movement in this country and abroad, Dr. Newman proceeds to discuss the administration of medical inspection by the local education authorities, and to this subject a considerable amount of space has advisedly been devoted. The introduction of medical inspection gave rise to a great extension of other branches of school hygiene, and necessitated administrative changes on a very large scale and within a short period of time. The magnitude of these changes is apparent from Dr. Newman's statement that, whereas before 1907 only a small minority of the local education authorities had made any arrangements for medical work in the schools, at the present time all the 328 education authorities of England and Wales are "endeavouring, generally speaking with considerable enthusiasm and success, to make adequate provision for the medical inspection of school children, and for meeting, more or less effectually, the collateral questions of school hygiene raised thereby." In some respects the development of school hygiene consequent upon the Education (Administrative Provisions) Act, 1907, has

taken a course that is unusual in the history of public health administration. Hitherto progress has been gradual, spreading, largely through the agency of local Acts of Parliament, from town to town, and generally speaking it has taken place in response to peripheral rather than to central stimuli. Medical inspection, however, and the other school medical work to which it has given rise, introduced as it was in response to a strong national demand, came into operation simultaneously all over the country, and has been organized throughout under the guidance and direction of the Board of Education. The creation of this vast organization was a task that was beset with difficulties, and it speaks volumes for the skill and judgment with which the policy of the Board of Education has been directed, as well as for the public spirit of the local authorities, that medical inspection was got to work so rapidly and efficiently.

The policy of the Board in relation to the new work of school hygiene has been based on a principle that has long been advocated in this journal. The Board have insisted that the new school medical service should "to the utmost extent work in with the existing machinery of medical and sanitary administration, developing and supplementing it as required, rather than supplanting it by bringing into existence new agencies, partially redundant and possibly competing." In this attitude the Board have received almost universally the support of the local education authorities. It appears that up to the end of the Educational (Code) year 1908-9 the Board have "recognized" 307 school medical officers in 307 of the 328 local educational areas, and in 224 of these areas the officer appointed is the medical officer of health of the area. In the 83 remaining areas the school medical officer in 76 cases, has been appointed either to be under the supervision of the medical officer of health or directly to co-operate with him, and even in the remaining cases some degree of effective

co-ordination has been secured. Dr. Newman attaches special importance to the most intimate co-operation between the school authority and the authority responsible for the administration of the wider branches of public health, and there can be no doubt that much of the success that has attended the Board's handling of the whole question of school medical work has been due to their firm adherence to this principle.

In the organization of the school medical officer's department the Board have allowed considerable latitude to local authorities, having regard to the variations in local conditions; but the general rule has been for the authority to appoint a school medical officer and subsequently to give him as many whole-time assistants as was thought necessary. In some districts, however, part-time assistants have been appointed, and in some other cases the work has been distributed between whole-time and part-time assistants. Dr. Newman thinks it is too early for a final opinion to be formed as to the relative advantages of whole-time and part-time assistants, but he points out that there has been a tendency to discard the system of many part-time assistants for that of a few whole-time assistants. This change has actually taken place in Somerset, Wilts, and the Lindsey Division of Lincolnshire. It is interesting to note that 8 school medical officers, and no less than 60 assistant medical officers are women.

One of the most interesting sections in the report is that which deals with the action taken by local education authorities in respect to medical treatment. Considering the novelty of the subject and the numerous difficulties that attend it, surprising progress has been made in the provision of treatment for school children. It is true that only one authority, Bradford, has opened a fully equipped school clinic, but smaller clinics have been established in six other districts, and altogether no less than 55 authorities have made arrangements for treatment with the sanction of the Board. This is a matter in which Dr. Newman will probably be able to record very considerable progress when he issues his next annual report.

MEDICAL OFFICERS OF HEALTH AS PARLIAMENTARY CANDIDATES.

THE only medical officer of health, we believe, who was adopted as a Parliamentary candidate for the recent general election was compelled by a legal disability to withdraw

his candidature only a fortnight before going to the poll.

Mr. Fremantle, County Medical Officer of Health and School Medical Officer for Hertfordshire, and last year's President of the Home Counties Branch of the Society, has for three and a half years been the prospective Conservative candidate for the Parliamentary division of Rotherhithe. When first adopted as prospective candidate Mr. Fremantle held only a half-time appointment, but in May, 1908, he was appointed to give his whole time to the duties of the County Council. The work in the constituency being evening work he was able to continue his candidature, and on December 17th last was adopted as candidate. On December 21st his attention was drawn by his opponent to Section 83 (13) of the Local Government Act, 1888, which provides that "no paid clerk or other paid official in the permanent employment of a County Council who is required to devote his whole time to such employment shall be eligible to serve in Parliament." It was evident, therefore, that he could not be nominated on January 14th unless he could resign his appointment by that date. As his County Council do not meet until February 14th and he is compelled by the terms of his appointment to give three months' notice of resignation, it was clear that he could not resign, even if he was prepared to do so, except by a special meeting of the County Council being summoned, and their being willing, if a quorum were obtained, to forgo the notice required. Another way out of the difficulty might have been found if his County Council had been willing to vary the terms of his appointment, since the Housing and Town-Planning Act, 1909, which came into force last December, places no limitation on the appointments and practice of a county medical officer appointed before the passing of the Act. In the circumstances, however, the chances of Mr. Fremantle's becoming eligible were so slight that he was compelled to withdraw his candidature.

It may be noted, however, that no medical officer of health is ineligible to serve in Parliament unless he is a county medical officer of health engaged to give his whole time to such employment; and, political sympathies apart, Mr. Fremantle has many colleagues who hope that he may vary the terms of his appointment, and be in a position to represent the views of medical officers of health in Parliament at no distant date.

*THE MINORITY REPORT IN ITS RELATION TO PUBLIC HEALTH AND THE MEDICAL PROFESSION.

By MRS. SIDNEY WEBB, D.Litt.

THE Minority Report of the Poor Law Commission proposes, so far as the provision for the sick is concerned, to put an end to the present duplication and overlapping between the Poor Law Medical Service and the Public Health Service; to merge both services in a unified medical organization for each county and county borough; and to place this unified service under the supervision, not of the Poor Law Division of the Local Government Board, but of a newly constituted Public Health Department, acting not through any Poor Law or "Public Assistance" Authorities, but through the Public Health committees of the directly-elected Town or County Councils.

This far-reaching but on the whole simple scheme of reform emerged, during the three years' investigation of the Poor Law Commission, from two streams of facts in the survey of the whole country that was made by the Commissioners. In town after town it was discovered that the old idea of the sphere of a Public Health Service—namely, that it confined itself to measures of general provision, and did not treat the individual patient—was no longer correct. The recent developments of the Public Health Service—its 790 municipal hospitals crowded with patients, opening their wards to one disease after another, and even adding out-patients' departments and dispensaries; the growing staffs of "health visitors" (who are occasionally qualified medical practitioners), giving "hygienic advice"; the organization, here and there, of domiciliary nursing; the active supervision of midwives; the "milk clinics"; the medical inspection and treatment of school children; the official acceptance of the specifically pauperizing disease of phthisis as part of the sphere of the Public Health Authority—were rapidly encroaching on the domain of the Poor Law doctor and the Poor Law infirmary, and were bringing about a hopeless confusion of principle as to what was the public and what the personal responsibility for sickness. Secondly, it had to be admitted that these developments of the Public Health Service were not to be ascribed merely to the over-zeal of local authorities or to the muddle-headedness of Parliament, but that they were the necessary outcome of a half-conscious realization that the principles of the Public

* Read before the Society of Medical Officers of Health, Jan. 14, 1910.

Health Department afforded a better basis for State medicine than those of the Poor Law Medical Service. This, as the Commission fully recognized, was not the fault of the Poor Law doctor himself. What appeared to the Commission the grave defect of the whole system of Poor Law medical relief—on which the community is spending something like five millions a year—was not any failure in skill or humanity on the part of the 4,000 Poor Law medical officers concerned, but the fact that they were condemned to stand helplessly by when their ministrations would have been most effective. They have to let the preventable disease occur, to see it develop and get worse whilst the patient is slipping slowly down the hill of poverty, and only come in towards the end when pecuniary destitution has set in. By the very nature of the Poor Law the ministrations of its medical service are inevitably confined to those persons in whom sickness has gone so far as to make them unable to earn their livelihood, and in which disease has reduced them to pecuniary destitution. By the very nature of the case the ministrations came, therefore, too late in the vast majority of instances to amount to much more than "medical relief." In short, what the Poor Law Medical Service was instituted for, what it still aims at, and what it secures is the diminution of individual suffering. It does nothing, and by its very nature can do nothing, to prevent the occurrence of disease. On the other hand, the Public Health Service, whilst at least as effective in preventing individual suffering, aims at preventing the very occurrence of disease, or at any rate preventing its recurrence in the same or any other patient. The Public Health doctor can deal with the case in its incipient stage, irrespective of whether the patient is or is not too ill to go to work. Unlike the Poor Law Medical Service, the Public Health Service is not limited to the treatment of the individual patients, still less of such individual patients only as are so far gone as to have become pecuniarily destitute. It has at its command the devices of notification and searching out, of the provision of acceptable hospital accommodation and even in bad cases of compulsory removal, of house to house inspection and domiciliary nursing, of a continuous supervision of practically all the infants and the school children, and of large measures of alteration of the sanitary environment. Above all, there is an important difference between the Poor Law and the Public Health Department in the psycho-

logical reaction. Here we come to the supremely important "moral factor," the effect on personal character. The irony of the Poor Law Medical Service is that the better it gets the more harm it does to the character of those whom it seeks to benefit. For every increase in its efficiency, every growth of humanity in the Poor Law doctor, every expensive improvement in the Poor Law infirmary is a standing temptation to men and women to become destitute, or to pretend to be destitute, in order to qualify for the treatment which the State provides only for the most thriftless or the most unfortunate of the working class. And the temptation is, in too many cases, irresistible. As a Northumbrian miner once put it, "If you have owt you get nowt; if you have nowt you get owt, and a very gude owt too."

Apart from this, however, we have the fact that the Poor Law Medical Service, restricted as regards each patient to the period in which he remains destitute, can exercise no kind of moral pressure or disciplinary supervision before and after treatment. It can do nothing to induce the person who is just beginning to go down in health to adopt those habits of personal hygiene which alone would prevent him from becoming ill and therefore becoming destitute; it can do nothing, after the patient takes his discharge, to keep him under observation and bring pressure to bear on him so to live as not to have the relapses that will bring him again and again to the workhouse, until he comes in for the last time to die. In this way, by making elaborate and comfortable provision for the destitute sick, just because and just when they are destitute, without doing anything to prevent them from becoming destitute, the Poor Law Medical Service is in a cruel dilemma. For by all the humane treatment that it provides for the girl about to have a baby, to the drunkard in his bouts of delirium tremens, to the prostitute in her attacks of venereal disease, to the wretched man or woman who comes in periodically to be fed up and cleansed from vermin, the very humanity and professional excellence of the Poor Law infirmary—divorced as it necessarily is from any preventive influence over the patients' lives before they become paupers and after they cease to be paupers—unfortunately constitute elements in the breaking down of personal character and integrity, and may even be said actually to subsidize licentiousness, feeble-mindedness and disease.

Now, the Minority Commissioners assert that this evil psychological reaction, characteristic of all the operations of the Poor Law—and of any Poor Law, whatever its designation—is not a necessary accompaniment of public provision. It is, for instance, not seen in the operations of the Post Office or the public elementary school, or in the provision of scholarships to the universities. It is, in fact, inherent only in the operations of a Destitution Authority. We know from actual experience that the Public Health Service, in its relation to sickness, not only has no "pauperizing" effect, but on the contrary positively promotes physical self-control, stimulates self-maintenance and increases the consciousness of parental responsibility. No one is tempted to become destitute or to simulate destitution in order to obtain the valuable treatment (often including maintenance) afforded by the Public Health Department, any more than citizens are tempted to become destitute or to simulate destitution in order to enjoy the rate-maintained libraries, parks and pavements, the journeys in the municipal tramway, the water supply from the municipal reservoirs, the consumption of the municipal gas, or the education in the municipal schools. This is the enormous psychological and sociological advance that has been made by "taking out of the Poor Law" one service after another, and so getting rid of the qualification of "destitution." Moreover, the curative treatment of individual patients by the Public Health Service—undertaken as it is for the good of the community, and not merely out of a desire to relieve individual suffering—happens always to be accompanied by hygienic advice and requirements as to personal conduct which (as seen, for instance, in infectious disease injunctions, health visiting, and the practice of "milk clinics") amount to a constant stream of moral suasion, and, where necessary, disciplinary supervision, to promote physical self-restraint and the due care of offspring. This is, indeed, admitted. The only complaint that is made against the Public Health Service, from the standpoint of those concerned for the maintenance of a sense of individual responsibility is that this bracing influence on personal conduct is not always combined with a pecuniary charge. Here there seemed to the Minority Commissioners to be room for a deliberate reconsideration by Parliament, with regard to all branches of the public service, of the whole question of charge and recovery

of cost, or, as it is more correctly designated, the propriety of "special assessments" on individuals for services specifically rendered to them over and above the services enjoyed equally by all ratepayers. That gratuitous treatment is not necessarily connected with public provision for specific complaints, quite independently of the qualification of destitution, has been conclusively proved by the large amounts actually recovered year by year in respect of the maintenance of lunatics. The Minority Commissioners not only propose that Parliament should definitely prescribe which services should be made the subject of special assessments and which should be done for all gratuitously, and what should be the scale of family income that should be deemed ability to pay; they have also devised and for the first time promulgated a carefully thought out plan and the necessary machinery for enabling these special assessments to be made and enforced, wherever there is ability to pay, without hampering the Public Health Department in its preventive and curative work.

I proceed now to make clearer these proposals of the Minority Report by a summary description of what happens in the present chaos and what will happen in the order of the future, as regards birth and infancy, sickness and permanent invalidity.

BIRTH AND INFANCY.

At present it is not easy to say what public authority is responsible for enforcing parental obligations, for stopping gross neglect, and for ensuring as a minimum that at any rate such provision is made for maternity, and for the nurture of infants up to school age, as is imperatively required in the interests of a healthy community. The Poor Law Authorities are legally bound to give gratuitous treatment and maintenance to any woman who is destitute and chooses at the time of child-birth to claim such aid. As a result, nearly 15,000 babies are born in the workhouses of the United Kingdom every year. The Poor Law Authorities, though they may provide costly maternity wards, are, by their very nature as Destitution Authorities, inherently and necessarily incapable of exercising any supervision over the health or the conduct of these women before they choose to come in to be confined, or after they choose to take their discharge. A girl may go out and let her infant quietly die; she may come in again a year hence, and let the second infant die; what is worse for the community, she may from poverty, ignorance or wilful

carelessness so neglect her infant in its earliest years as to saddle us with a rickety, stunted and permanently diseased citizen; she may repeat this process as long as nature permits, without the Poor Law medical officer or the representatives of the ratepayers having any power to insist on or to ensure proper conditions for this torrent of babies brought into the world at the public expense. Against this mass of poverty and parental neglect the Public Health Authority is now bestirring itself to fight, and, with insufficient legal powers, and without practically any co-operation from the Poor Law Medical Service, is organizing its service of health visiting and milk dispensaries. Meanwhile, the Local Education Authority, which has been tempted to subject infants of three to the discipline of the schoolroom, because there was nowhere else for them to go, is beginning to exclude all children under five, and in doing this it is receiving the sanction of the Board of Education. But as the Consultative Committee of the same Government Department lately reported, "There is no doubt that the absence of public provision for children under five, so far as the poorest classes are concerned, is a crying evil."* The Minority Report proposes that the whole responsibility for enforcing parental obligations, preventing neglect and ensuring at any rate the necessary minimum of provision for maternity and infant nurture up to school age, shall be placed upon the Local Health Authority, which could combine for this purpose the present scattered services of birth notification, infant visitation, midwifery supervision, the milk dispensary and school for mothers, and the control over abortifacients. What it would take over from the Board of Guardians are birth registration, vaccination, and (outside the Metropolis) the inspection of baby-farming—all three anomalous excrescences on the Poor Law—together with the maternity ward, the workhouse nursery, and the power to give domiciliary treatment (including the necessary home aliment) to mothers and infants. Under such a system the girl expectant mother (already presumably within the supervision of the health visitor under the chief medical officer), who might come into the maternity ward for her confinement, would remain under the same supervision after her discharge, and, in fact, throughout the infancy of her child, and would, if certifiable as feeble-minded, be reported to the Town or County

* Report of Consultative Committee upon children below five. Cd 4,259 of 1908, p. 127.

Council committee dealing with the mentally defective. On the other hand, the respectable married woman might obtain midwifery assistance in her own home, with or without payment, according to scale of income, with no more stigma of pauperism than if she were a scarlet fever patient. Who can doubt that, if the chief medical officer of every town or county were empowered to organize such a systematic service for birth and infancy, on the lines of what is already being done in a partial way by the most progressive Health authorities, the result would be a vast improvement in the conditions of birth (including the virtual abolition of *ophthalmia neonatorum*), and an almost incredible diminution of the mortality among new-born infants and children under five, together with a most beneficent increase in the consciousness of parental obligation and in the performance of parental duties on the part of the mothers, and a far more general enforcement of pecuniary responsibility against the fathers—the whole at a cost to the community that would be more than saved in the diminution of the expense now so unwillingly incurred over the defective, the blind, the crippled and the diseased who result from our present neglect.*

THE TREATMENT OF SICKNESS.

In no branch of the subject is the question of overlapping of work and duplication of machinery between the Poor Law Medical Service and the Public Health Department becoming more acute than in the actual clinical

* An interesting example of the hopeless tangle into which we are getting through the overlapping and competition between the Poor Law and the Public Health Service is afforded by the present position of the medical practitioner under the Midwives Act, administered by the Town or County Council. The medical man whom the law requires the midwife to send for in cases of difficulty is held by public opinion to be under a moral obligation to go; and yet there is still, after a whole year's delay, no provision for the payment of his fee. The Departmental Committee to which the question was referred could, under the inspiration of the Poor Law Division of the Local Government Board, find no better solution than to recommend the Board of Guardians to pay. Yet the Board of Guardians admittedly need not pay, and, indeed, cannot legally pay, unless upon inquiry they come to the conclusion that the woman (or rather the woman's husband if living with her) was at the time "destitute," or at any rate "poor," according to the meaning of an obscure statute of 1848, which has never yet been construed by the High Court. At the same time, it is recommended that the Local Health Authority should be responsible for preventing collusion between midwives and doctors. Thus, the best arrangement the Local Government Board can suggest is that the doctor should go whenever he is called, but that his chance of getting his fee from the Poor Law Authority is to depend, not on the gravity of the case, or even on the absence of a fraudulent collusion between the midwife and himself, but on whether the Board of Guardians may subsequently choose, without possibility of appeal, to class the woman as destitute. Under the proposals of the Minority Report, both the control of the certified midwives and the payment of fees to the medical men whom they are required to call in, would be in the hands of the Health Committee of the Town or County Council, and its chief medical officer; whilst the recovery of the cost from the patient or her husband, in case of ability to pay according to the statutory scale, would be enforced by the special department of the Town or County Council entrusted with this duty.

treatment of sick patients; and yet there exists, at the same time, a disastrous amount of untreated disease. There are, I believe, still some people, thinking themselves educated, who believe that the spheres of the two co-existing rate-maintained medical services are distinct and clearly defined—who believe, in short that the Public Health Service has nothing to do with the clinical treatment of the individual patients. Such persons close their eyes to the 700 hospitals of the Public Health Service—actually having more beds than all the voluntary hospitals put together—treating at the present time, I suppose, something like 100,000 separate patients every year; no longer confining themselves to small-pox and enteric, but taking in an ever-lengthening list of diseases, diphtheria, measles, all forms of tuberculosis and many accident cases—in two towns (Barry and Widnes) actually specializing exclusively in non-infectious cases. It is, in fact, now only a matter of chance and locality whether a sick person, or a person who meets with an accident, will be removed to a voluntary hospital, a Public Health hospital, or a Poor Law hospital; and (whether or not he repays the cost of his maintenance) it will equally depend on chance whether or not he becomes thereby a pauper, and whether or not he or any of his relatives come under liability for repayment. This rivalry between the competing rate-supported hospitals and medical staffs is becoming daily more serious and more acute in the vast range of tuberculosis. The Local Government Board for England and Wales, like the Local Government Board for Scotland, is definitely ranging the provision of adequate treatment of tuberculosis within the sphere of the Public Health Department. In Scotland this has been done by explicit order. In England and Wales a phthisical man will now be alternately a pauper and a public health patient. Neglected and untreated whilst his disease is still curable, as soon as he becomes too ill to earn a living he can go into the workhouse whenever he chooses; as soon as he insists on taking his discharge, his case is officially notified to the medical officer of health, who thereby becomes responsible for looking after him and for preventing him infecting his family, but who is only here and there able to find him a place in a municipal hospital or sanatorium, and cannot, in practice, supply the necessary aliment for domiciliary treatment, or secure that the housing accommodation is adequate; then the man breaks down and enters the

workhouse again, passing thus alternately from the Poor Law to the Public Health Department, the modern Public Health Service, just because of the existence of its older rival, being unable adequately to deal with the case: until eventually there ensues death in the workhouse and a widow and children on the rates.

With all this overlapping of work and duplication of machinery, the amount of untreated sickness at any one time is plainly enormous. To take only that revealed by the Poor Law doctors themselves, we know now that one-third of all the two million persons who sought Poor Law relief last year did so on account of sickness, and the greater part of them on account of disease or infirmity, *which, largely because it had not been treated when it should have been, had gone so far that the patient was unable to work.* The sickness of the applicant for Poor Law relief is, in fact, nearly always a neglected sickness. But this is not all. The medical inspection of school children is revealing an almost incalculable amount of minor ailments going entirely untreated, either by the private practitioner or by the public doctor, and either by the Poor Law or the Public Health Service. Thirdly, to revert again to tuberculosis, we have the fact that this disease, which in itself alone produces one-seventh of all our pauperism, and the greatest of all the deductions from the adult working life of the people, is at the present time, among the whole wage-earning class, hardly ever properly treated until its ravages have advanced too far to be curable. I need not instance the corresponding experience of cancer and of other diseases. "Almost every disease," Dr. McVail expressly told the Poor Law Commission, "can be dealt with from the standpoint of prevention; and whilst phthisis is specially important, yet the early stages of disorders of all organs of the body—heart, lungs, kidneys, digestive system, brain and the rest—often furnish indications for preventive measures" which, if not applied in time, involve the community in the waste and expense of subsequent incapacity and treatment. This neglect of early treatment is, of course, all the more grave in that in tuberculosis, and, as we are beginning to suspect, in many other cases, it means neglect of precautions against the spread of the disease to others.

In this administrative dilemma there are but two courses practically open to the statesman. In his able dissent from the Majority Report, Dr. Downes, the Local Government Board

Medical Inspector for Poor Law purposes, sketches out one of them as his ideal. The whole of the public provision for the treatment of sick persons is to be relegated to the Poor Law. This means the transfer of the 700 Public Health hospitals to the Boards of Guardians (or the new Poor Law Authority); the reversal of all the arrangements now being made under the direction of the medical officers of health for the medical treatment of school children; the rescinding of the recent orders of the Local Government Board as to phthisis, and the transfer of all provision for tuberculous patients to the Poor Law medical officer. Dr. Downes does not tell us frankly that this policy involves also the abandonment of the public health principles of "searching out cases, and of treatment in the interest of the public health irrespective of pecuniary means"—yet this necessarily follows, for no Poor Law Authority can possibly compel people to become paupers, or urge them to accept what cannot be other than parochial relief. Dr. Downes is, however, more candid on the obverse of the picture, for he makes it plain that he contemplates that the enlarged Poor Law, when it has swallowed up so much of the present work of the medical officers of health, is still to be "deterrent" (as, indeed, any Poor Law or any Destitution Authority must inevitably be), and is still to bear the stigma of pauperism. I must leave you to judge what havoc any such policy would make of all the success so far achieved by the Public Health Service in combating infectious disease, and what sort of a service you would have when the medical officer of health had been reduced to the status that this highly placed official of the Local Government Board evidently regards as his proper sphere—of somewhere between the borough surveyor and the sanitary inspector.

The other course, and, as it seems to me, the one to which Parliament every session more and more inclines, is to take the sick person altogether out of the Poor Law, and to make the Public Health Department exactly as responsible for the treatment of all cases of tuberculosis, cancer and rheumatism that would otherwise go untreated as it is to-day for small-pox and enteric. This involves the transference to the County or Borough Council, acting through its Public Health Committee, of the whole Poor Law Medical Service and its outdoor patients, the Poor Law infirmaries and dispensaries, and the hospital treatment of

the present inmates of the workhouse sick wards. This is the solution officially recommended by the responsible medical chiefs of all the departments concerned—the Chief Medical Officer of the Local Government Board for England and Wales, the Medical Member of the Local Government Board for Scotland, the Medical Member of the Local Government Board for Ireland, and the Chief Medical Officer of the Board of Education for England and Wales. This, too, was the solution urged by the distinguished medical man whom the Poor Law Commission specially appointed to investigate the very subject, Dr. McVail. Why, in face of this authoritative testimony against which no rebutting evidence was called, and of this remarkable concurrence of opinion among those practically concerned, the majority of the Poor Law Commissioners refused to adopt this solution I am still unable to understand. The minority of the Commissioners were more modest; they accepted the conclusions to which experience had led these authoritative witnesses, and those of the medical expert to whom the Commission had deputed the examination of the problem. The recommendation of the Minority Report, based on this weighty expert evidence, is for a unified medical service in each county and borough of sufficient size, under the direction of the Public Health Committee of the elected Town or County Council; having in each case the necessary staff of whole-time salaried medical officers, including clinicians as well as sanitarians; institution superintendents as well as domiciliary practitioners; empowered, however, to give domiciliary treatment, and to make the necessary provision for home ailment and nursing wherever domiciliary treatment is judged expedient; adapting or increasing the existing buildings so as to provide (but only by way of supplement to whatever voluntary institutions there may be in each place) the necessary hospital and sanatorium accommodation for all diseases, including whatever public provision is made for maternity, the care of infants under school age, and senile or other permanent infirmity; the whole work being national, under the supervision of a separate Public Health Department in London, administering (in order to prevent any increase in the local rates) a grant in aid of public health expenditure alone, and in substitution for the existing grants in aid to the Boards of Guardians, of not less than five millions sterling.

THE CARE OF THE PHYSICALLY DEFECTIVE AND THE CHRONICALLY INFIRM.

At present it is scarcely too much to say that we have no systematic arrangements for the crippled and the infirm. No small proportion of children suffer from grave physical defects of frame or limb or member. These go largely unattended to prior to school age, because no authority is responsible. Between five and fourteen the child is within the sphere of the Local Education Authority, which in London and a few other places is providing most expensive schools in the hope of training these physically defective children to earn their own living. They pass out into the world and are again without the protection of any public authority, with the unfortunate result that whilst they intensify competition in many of the sweated industries, their infirmities often prevent them from earning any adequate livelihood. At last they pass into the hands of the Poor Law, to be either given a dole of outdoor relief, practically without any medical examination and without supervision of their way of life, or to be merged with all sorts and conditions in the general mixed workhouse. Along with these unfortunates may be considered the later recruits to the same army of the invalidated—the prematurely broken-down man or woman, those rendered chronically infirm by rheumatism or heart disease, the sufferers from hernia or varicose veins, and the hundred and one others whose physical infirmities make them not worth a living wage. The great defect in our method of provision for all this great class, from infancy to old age, is, as it seems to me, the absence of any responsibility by the Local Health Authority. Seeing how helpless are these victims, and how grave is the financial burden that they place on the community, one would have thought it obvious that the Local Health Authority ought to know about every physically defective infant, in order to see that nothing was neglected in the early years which might prevent its becoming a cripple; one would have thought that the care of such children during school age was, again, primarily a matter of Public Health concern; one would have thought that when they became adult there ought to have been, again under the direction of the Health Authorities, the ministrations of the health visitor,* and

* Some of these physically defective persons can and do earn good wages. I have heard of cases in which they have had to forgo earning these wages in order to qualify for the medical treatment in the poor-house infirmary, when they might just as well have gone on earning their wages while under treatment in the hospital and thus paid back some of the cost of it.

for those who are friendless something in the nature of rural settlements in which they could be put to such non-competitive work as they were capable of. Those prematurely invalided men and women who by reason of their physical infirmity had to resort to public maintenance ought surely to be the special charge of the Local Health Authority; to be treated from the medical standpoint in such a way as to stop malingering; to see that nothing was left undone by which the infirmity might be cured; to ensure that they did such work as they were capable of; and that, above all, they lived in such a way as not to aggravate their condition. The Minority Report recommends that the physically defective of all ages, who can be certified as unable by reason of their infirmity to earn a livelihood, should be the special charge of the Public Health Department of the County or County-Borough Council, which would find in the work a new and hopeful sphere.

SAFEGUARDING THE PRACTITIONER.

And here I must break off to consider an objection which has been raised, though less to the Minority Report scheme than to that of the Majority, that any such proposed change in the Poor Law Medical Service would be seriously detrimental to the interests of the private practitioner, if not of the medical profession as a whole. I do not mean that the doctors have put forward any claim that their private interest should be upheld at the cost of those of the whole community. But it is necessary for the welfare of the community that there should be a strong, competent, and adequately remunerated medical profession; and it is quite fair to point out that any change which was likely to injure a profession of so much value to the public must be, to say the least of it, very critically scrutinized. I am the more ready to say this because, in my own opinion, the medical profession in the United Kingdom stands at this moment in a position of grave danger. A very large proportion of its members earn incomes which can only be described as scandalously inadequate, whilst many of those who now enter its ranks after a long and expensive education fail altogether to secure a footing. And for this evil, the unconsidered and piecemeal development of public policy, in connection with the Poor Law Medical Service, isolation hospitals, midwifery, some of the action with regard to infantile mortality and the treatment of school children, together with the wholesale extension of

voluntary hospitals and dispensaries, may have been to blame.

Now, the Minority Commissioners had very seriously in mind this consideration when they were drawing up their recommendations; they took care to fortify themselves by competent medical advice; and they did not proceed without satisfying themselves by very careful inquiry among practically all sections of the medical profession that their proposals would certainly inflict no injury on any part of the profession, and that they would, on the contrary, go far to avert the present dangers and set it up on a firm and durable base.

What the private practitioner fears, to put it bluntly, is an extension of gratuitous doctoring, by which he will lose the poorer section of his present paying patients. It is, however, a mistake to assume that the work of a Public Health Department need necessarily be gratuitous. The most typical work of the Public Health Authorities, the enforcement of house drainage and the improvement of domestic sanitary conditions, has nowhere been done without charge; and nearly always the procedure has taken the form of compelling owners and occupiers to execute the necessary work at their own expense. All this development has certainly not been disadvantageous to the independent plumber and builder. In the same way, a rise in the standard of health—for instance, the general enforcement of a higher level of attention to minor ailments in children attending school—really increases the practice of the private doctors of all grades. What, indeed, is true is that, if we do not take thought about the matter, and go very deliberately into it as a matter of principle, we are only too likely to find that Parliament and local authorities, driven year by year to take up some new service that the health of the community requires—whether this be midwifery or the medical treatment of school children—and unable, so long as they deal with the subject in this fragmentary way, to devise any convenient machinery for charge and recovery, may slip unawares into free doctoring, without protecting the interests of the present generation of medical men.

It is for this reason that the Minority Report elaborates a plan, and devises new machinery, for systematically charging an adequate fee to every person attended by the officers of the Local Health Authority, in every case in which that person is found to be able to pay, and for effectively recovering that fee by legal process.

It is proposed that, instead of taking it for granted, as we now do, that several hundreds of thousands of persons are entitled to gratuitous medical attendance, and instead of leaving the option of making a charge, case by case, to the impulsive decision of the chance majority of a committee, there should be settled by Parliament or by the Town or County Council a definite scale of incomes, according to number in family, which should constitute ability to pay. Such a scale is already in use by the Home Office in respect to children who are compulsorily removed to industrial and reformatory schools; such a scale is even now being framed by the London County Council with regard to medical treatment of school children. It is proposed that the duty of making the necessary enquiry as to incomes, assessing the charges according to the prescribed scale, and recovering the sums due for all the branches of the work of the Town or County Council, should be made the work of a distinct department, under a new officer—the Registrar of Public Assistance—acting under the control of a separate committee of the Town or County Council, having nothing to do with the treatment of the cases. Under this system no one would be compelled to pay whose family income was found to be so low as to make it desirable in the public interest that he should be treated gratuitously. On the other hand, every person whose family income was such that he could properly afford even the smallest fee would, if he had accepted the services of the Public Health Department, whether by using the public hospital, the school clinic, or the domiciliary medical attendance of the district medical officer, find himself charged a substantial fee, in proportion to his means, which he would be as strictly compelled to pay as he has now to pay his rates, his payment for an inmate of the county lunatic asylum, or his contribution for a child at the industrial school. The medical man would meanwhile receive from the public authority the proper professional remuneration* for his work, whether or not this was recovered by the local authority. The primary object of this machinery for charge and recovery may be financial, for it is quite a mistake to suppose that recovery is practically impossible. It all depends on how you go about it.

I do not think there need be any fear

* This payment might take the form of a salary as in the county lunatic asylum, or of a fee as in the case of the police calling in a doctor to treat an accident.

that the new Registrars of Public Assistance, undisturbed by irrelevant considerations, having their own expert staffs, and fortified by express authority from Parliament and from the Town or County Council as a whole, would (whilst exempting at once all those falling below the scale minimum) quite successfully compel every person to pay who could afford to do so.

But an equally important object of this plan of charge and recovery is to confine the medical services of the Public Health Department to that section of the population which must, in the interests of the community as a whole, be provided with medical attendance at the public expense. Do you not see what a safeguard this systematic enforcement of payment would afford to the private practitioner? Every case would be automatically reported to the registrar and systematically investigated by his officers as to financial resources. The prosperous workman, or the stingy person of the lower middle class, who might be tempted to take advantage of the services of the Public Health Department because there was no stigma of pauperism, no relieving officer to face, and apparently nothing to pay, would promptly find himself served with a courteous but firm demand from the registrar for the payment of a substantial fee, exactly as he now receives the demand note for his municipal water rate or the municipal electric light. Finding that these services of the public doctor, though no longer guarded by a deterrent relieving officer, could not be obtained without this substantial payment, all those who could afford to pay the private doctor's fee would find no attraction in them. On the contrary, they would prefer, seeing that they had anyhow to pay, to choose their own doctors, to be attended to at their own homes, and to pay their own medical attendants. It is, I venture to say, *this free choice of doctors* that affords the most potent inducement, to all who can afford the fee, to consult the private practitioner. If payment has to be made, anyhow, by all who can spare the money, even the most parsimonious of those who at present go past the private practitioner's door will cease to find any reason why they should forgo this privilege of having their own doctor. Here, too, we see the real remedy for "hospital abuse." If the endowed and voluntary hospitals and other medical charities sent automatically to the Registrar of Public Assistance the names and addresses of all their patients, and if the

Registrar were empowered to make and enforce a prescribed charge upon all whose family resources were found on enquiry to exceed the statutory minimum, we should no longer find the resources of these medical charities drained and the sphere of the private practitioner curtailed by the resort to gratuitous medical treatment on the part of those who can afford to pay their own doctor's fee. And yet no sickness would go untreated. Hence the total income of the medical profession, in fees and salaries, would be largely increased.

I venture very seriously to press this point on those who are concerned for the private practitioner. The Majority Report of the Poor Law Commission proposes a great extension of "provident" dispensaries, to be subsidized out of the rates, membership of which, whether by paupers or subscribers, is to entitle men, women and children to the right to choose their own doctors, and to free institutional treatment—a proposal which I find one medical man has summed up as "a public system, supported by public money, of free medical relief on a basis of contract practice."* What the private practitioner should insist on is the maintenance, intact, of his monopoly of the practice of those who prefer a "free choice of doctors." Any suggestion that the State medical service, or any collective organization, should be allowed to offer this attraction should be instantly negatived. And, further, it should be insisted on that, whilst no one who needs the services of the public doctor should be turned away, there should be drawn a definite line of demarcation between those for whom the community will provide medical attendance without charge, and those from whom, if they take advantage of the State provision, the local authority will enforce repayment at such a rate as will encourage them to choose their own doctor. In the plan of charge and recovery by the Registrar of Public Assistance, the Minority Report furnishes for the first time an effective means of maintaining the safeguard of the private practitioner.

THE RELATION OF A UNIFIED PUBLIC HEALTH SERVICE TO NATIONAL CHARACTER.

In conclusion I must again emphasize the urgency of this reform from the standpoint of the "larger expediency" of improving not merely the health but the character of our race. However we may desire to safeguard

* "The Poor Law Commissioner and the Medical Profession." By a Medical Practitioner. (London: A. C. Fifield, 1909.)

the interests of this or that profession or section of a profession, the final decision will be based, or ought to be based, on whether or not the proposed reform will strengthen and ennoble the men and women who are subject to it. The Minority Report adopts this proposal of a Unified and Preventive medical service not only because it appears to offer the only practicable escape from the administrative dilemma into which the co-existence of two rival rate-maintained medical services has brought us, and not merely because, by extending the Public Health principle of "searching out" disease and dealing always with the incipient case, without the stigma of pauperism, it holds out the prospect of securing an incalculable improvement in public health and a progressive diminution in the present annual waste through sickness. We advocate this reform because we believe that we shall thus curb physical self-indulgence, increase the care of the child by the mother, the concern of the husband for the wife, and positively heighten the desire and capacity of all persons to maintain themselves. To "take the sick out of the Poor Law" is, as we now see, to put an end to what is inevitably a bad psychological reaction on personal character.

The Poor Law Authority—constitute it as you please, call it by what name you will—must always, just because it is a Destitution Authority, fail altogether in the important matter of supervision of the lives of its patients before and after the crisis of destitution. Unless a person chooses to apply for relief, no Poor Law Authority can touch him, or bring him under inspection or moral pressure, or even know anything about him. Immediately he chooses to take his discharge he disappears out of the ken of the Poor Law Medical Officer, he cannot be followed up, his home and method of life cannot be kept under observation, and no sort of influence can be brought to bear to prevent him getting into such a state as will inevitably bring him to the workhouse again. Take for instance the destitution brought about by drink. Under the Poor Law—under any Poor Law—the drunkard cannot be touched until he is in a state of destitution. A man may be neglecting his children, leaving his wife without medical attendance, or maltreating a feeble-minded child, and yet no Poor Law Authority can do anything to prevent the destitution which will probably ensue. It is only when

the man is suffering from delirium tremens that he is taken into the workhouse, put into a clean bed with two attendants to look after him, dosed with the costly and agreeable morphia, and then, when he has recovered from his debauch and can return to his work, let out to begin his evil courses again. In fact, under the scheme of the Minority Report, with the Education Authority, the Public Health Authority, and the Asylums Authority responsible for searching out the incipient destitution of the neglected child, the sick wife, and the maltreated feeble-minded child, the drinking head of the family would be called to book long before he found himself in the comfortable quarters of the workhouse. Indeed, it seems apparent to me that once the Public Health Authority was responsible for searching out diseases, one of the first diseases which would call for systematic prevention and cure would be alcoholism. With the treatment of sickness by the Public Health Authority there is, in short—through the machinery of the health visitors and sanitary inspectors, the municipal milk dispensaries and schools for mothers, the medical treatment of the children and the visits of the school nurse—no little opportunity for preventing, by inspection, by advice, by exhortation, by compulsory removal, and, where necessary, by prosecution, many of those practices of neglect and self-indulgence which now result in much of the waste and expense of disease.

DISCUSSION.

DR. HERBERT MANLEY (West Bromwich) said he thought most of them were in agreement with Mrs. Webb, but he was afraid she looked upon them as being more of idealists than they had time to be. She conceived them capable of doing much which they would like to do but which they did not see how they could get the time or the support of their councils to carry out. He felt, after comparing the Majority and the Minority Reports, that there could be no doubt that reform must come, and he felt strongly that the remedy recommended by the Minority Report, of abolishing overlapping, was a far better one than creating a somewhat similar authority to the one which at present administered the Poor Law, and which would be a kind of general club on a provident basis. There were, he thought, not a few in that room who had had experience of club work, and he did not think any of those gentlemen would desire to go back into contract practice. Neither did he fear that the extent to which the practitioner would be exploited by the State was comparable to the extent to which he had been, and always

would be, exploited by the philanthropist. The Poor Law Guardian was a pretty good sample of that sort of man, because he often did not allow the very few fees which he might pay. He was quite certain that any of them who had had the ill luck to deal with Poor Law Guardians would agree that they were exceedingly philanthropic when work had to be done and exceedingly mean when work had to be paid for. It was marvellous what really respectable gentlemen would do on Boards of Guardians. Therefore he did not think the profession generally ought to be afraid of a State Medical Service. He felt, however, one or two difficulties in the creation of such a service. It was proposed to put under the charge of them and their committees curative as well as preventive medicine. Personally he had not the slightest desire to return to curative medicine, and he thought they would all prefer to stay where they were. He thought that would be a great objection in the eyes of their section of the profession. He would not mind administering a District Medical Service, but he should object to taking part in it. It was true that if they were going in for preventive medicine Dr. McVail seemed to contemplate keeping a gigantic case-book, which appeared to him to involve an amount of book-keeping that was staggering. Dr. McVail said the medical officer should keep himself informed of the physical state of every patient on the list so that he would have a life history of all of them. They ought to give the gravest possible attention to the Minority Report, because he was sure himself that it was in that direction rather than in the perpetuation of contract practice that a solution agreeable to their profession would be found. He proposed that the best thanks of the Society be given to Mrs. Webb.

DR. R. A. LYSTER (Hants) said he would like to ask whether the proposals in the Minority Report were really an advance. It seemed to him they might still have one family being looked after by three committees and possibly by three medical men. That seemed to him to be a weak point. Medical attendance at the public cost should be one matter dealt with, if possible, by one committee. In reference to maternity cases in the workhouse he thought Mrs. Webb would not suggest that an unfortunate girl should be more hardly dealt with or not be admitted to the infirmary. In the Minority Report there was a reference to the Poor Law Medical Service being restricted to persons who proved themselves to be destitute. He believed that was not strictly in accordance with the law. As a matter of fact he believed the clear duty of Guardians was to provide medical attendance when it was beyond the means of the individual. Guardians under the existing Poor Law should provide any medical attention that was obviously beyond the means of the

individual. They might take, for instance, a labourer earning 15s. a week with a family to keep. He was not destitute. In ordinary circumstances he managed somehow, but suppose some small operation or special treatment was recommended as the result, for instance, of the medical inspection of school children. It was laid down by the Local Government Board that Guardians should provide the necessary treatment. He agreed with Dr. Manley that contract practice had been altogether at the expense of the medical profession. The suggestion about allowing the poor to choose their own doctor was mentioned, he thought, at the last meeting, but seemed to meet with little sympathy. With reference to midwives calling in doctors a certain number of Guardians did authorize payment of a fee in all cases. They had the machinery for recovering the cost if the person could pay, and some Guardians did pay a fixed fee without dispute or question. It should not be stated that medical men only got a fee in cases of destitution. That was so in the majority of districts, but not in all. He had great pleasure in seconding the vote of thanks.

MR. FREMANTLE (Herts) said he looked forward to there being only one authority who should determine whether a person should receive public assistance. There could be only one inquiring authority into financial circumstances. They did not want the Public Health Authority to have to decide whether a person should receive relief from public funds. That work should be done by the man who was now called the relieving officer. He spoke as one who did not go so far as Dr. Manley, and did not intend at present to commit himself to one part or other of the Commission's Report. Whereas there was much in the ideals of the Minority and in their theories, there were certain points at which they had to turn to the Majority for greater understanding of the practical difficulties of attaining those ideals. They could not reach ideals at once, but it was no reason why they should not aim at them. The idea of the Majority seemed to be that public assistance should be administered by an authority analogous to the education committee, and that seemed to him to be more practicable than the Minority's suggestion. He could not imagine county councils themselves taking on such an enormous amount of work without outside assistance. This theory of providing free medical attention for everybody with a view of preventing illness later on meant putting on the healthier members of the community the burden of paying for the treatment. The present system had this good effect: that so long as people liked to keep themselves healthy they saved their pockets. He did not believe this new theory would result in such a reduction of sickness and medical treatment as the Minority Report would have them believe.

DR. JOHN ROBERTSON (Birmingham) said there was one point which had not been very clearly dealt with in either report. Mrs. Webb spoke of the Public Health Medical Service as superior, and he thought most unbiased people would agree with that remark. He believed it was superior for a definite reason. That reason was that in the Poor Law branch of the public medical service there had grown up too great an amount of interference from the central authority. On the other hand, the public health branch had been much freer. As a result it was now doing better work, and he believed in the future it would do still better work. He hoped that point would be kept in mind when any step forward was taken in regard to the Poor Law Medical Service.

DR. GEORGE REID (Staffordshire) said the work of county councils was efficient because they had efficient permanent officials. This work if it passed from boards of guardians to county councils would be conducted by permanent officials under the guidance of the councils.

DR. H. M. RICHARDS (Croydon) said if Mr. Fremantle had more experience of the work of a medical officer in towns he would perhaps be convinced of the necessity of more medical treatment. He did not believe children were going to have measles merely in order that their parents might get free medical treatment. Every day one saw a large number of children whose parents failed to call in a doctor, say in mild cases of scarlet fever, because they could not afford it. Even if a doctor were called in he could not expect to be paid. That was grossly unfair to the general practitioner and put a premium on the spread of infectious disease. He thought it time that they as medical officers of health should give their adhesion to the principle that the necessity of medical treatment should be judged by public welfare and not by the test of destitution. As a Society they ought to hold a watching brief, he thought, and after hearing all sides they could in the next twelve months pronounce judgment on details.

DR. WM. BUTLER (Willesden) said the most admirable part of the work of the Commission was that it had shown that the present system had broken down, and that there was no adequate provision for dealing with the vast amount of disease now discovered. If any scheme was to be successful there would have to be not only adequate medical treatment but compulsory medical treatment.

DR. SIDNEY DAVIES (Woolwich) said that in his district, owing to the great poverty prevailing, hundreds of cases were sent to the fever hospital, not on account of isolation, but because the people could not afford to pay for medical attention. Last year 300 cases of scarlet fever were removed to hospital which might have been isolated at home. With home treatment the cost would have

been halved, while there would have been no more infection in the district.

DR. CHARLES SANDERS (West Ham) said every case of scarlet fever in his district cost £2 2s. a week if sent to hospital. For many years they had been giving a subsidy of 10s. a week, which enabled a family to get medical attention and nourishment for the patient at home.

DR. HUGH STOTT (Lewes) said that neither the Majority nor Minority Report dealt with security of tenure for the medical officer. That obtained now in the Poor Law Service, and why should not the medical officer of health be in the same position as other public officers in regard to security of tenure and pensions? He hoped that matter would be considered.

THE CHAIRMAN said that speaking personally—not as president—he was generally in agreement with the policy adumbrated by Mrs. Webb. He was glad to have presided on the occasion of an address on a subject so full of interest to themselves and the community at large.

The vote of thanks was accorded by acclamation.

MRS. SIDNEY WEBB in reply said she was surprised that Mr. Fremantle should so misunderstand the situation as to state that the authority recommended by the Majority Report was similar to the Education Committee. It was really a practically independent body largely composed of irresponsible persons. It was the Minority Report that recommended that the control of disease and the prevention of destitution should be dealt with by a body similar to the Education Committee. Referring to Mr. Fremantle's remarks as to the report of the Departmental Committee on the Midwives Act, she took strong objection to the recommendation of the Committee that the fees of doctors called in by midwives should be paid by the Poor Law Authority. She urged that these fees should be paid by the local supervising authority, as was recommended to the Committee by the representatives of the medical profession who gave evidence, and she thought medical officers of health should do their utmost to prevent the Committee's recommendation from being carried into effect. Having explained the various questions put to her during the discussion, Mrs. Webb thanked the Society heartily for the vote of thanks that had been passed.

PARENTAL IGNORANCE.—A mother, whose child's vision was particularly bad, assured me a year after the notice was received that she knew a much better remedy for short sight than spectacles, and that since the child had had her ears pierced she could see much better. I took the trouble to try and convince her by again testing the child for sight in her presence, but she still does not believe, and the child is still in the same or a worse condition than before.—*Annual Report of Dr. F. J. Wheelton, School Medical Officer, Middleton.*

MORTALITY STATISTICS IN ANNUAL REPORTS.*

By W. G. WILLOUGHBY, M.D., D.P.H.,
Medical Officer of Health, Eastbourne.

I AM much obliged to you for honouring me by again choosing me as your President for the ensuing year.

Fifteen years ago this month in this Portsmouth Town Hall, largely by the aid of the then Medical Officer of Health for Portsmouth—Dr. Mumby—the Southern Branch was formed, and there were twenty original members, of whom only seven of us remain. The branch is a difficult one to organize and manage, both because of its unwieldy area and because so many of its members are part-time men to whom to spare a day now and then for meetings is a serious financial matter. The fact that so large a portion of our members are part-timers is, however, a reason for them to help to keep the branch going and the meetings interesting, because the Central Society itself is naturally rather dominated by men who spend all their time at public health work, and the interests of part-timers are therefore not particularly prominent, although the large majority of medical officers of health are part-time officers.

I should like to appeal to our members, both full-time and part-time health officers, to support the branch by attendance at the meetings as often as possible and by assisting at discussion among ourselves, which must tend to mutual assistance in our daily work.

It is difficult to choose a subject for a presidential address. I rather object to the stereotyped presidential address, which often amounts to a general roving historical expedition over a large variety of subjects, and admits no discussion. It is too much like a sermon, among the chief objections to which are, I think, that the points are not argued and questions cannot be asked. I will therefore, to-day, if you will allow me, rather deal with one topic, and instead of giving an address will open a discussion on a subject on which all of us are intimately interested, namely, the mortality statistics in our annual reports. In these days of extra duties you will perhaps excuse me if I talk of such an ordinary subject as our annual reports.

The time of the year is coming when the yearly nightmare of the annual report oppresses us. At any time it would be a difficult extra

* Presidential Address read before the Southern Branch of the Society of Medical Officers of Health, December 3rd, 1909.

task, but coming as it necessarily does at the commencement of the year, when one is usually busy with the extra sickness occurring at the time, and with other matters requiring re-starting and reorganising, it is I suppose to most of us really like the last straw. It does not add to one's comfort to know that when it is complete it looks a remarkably small affair compared with the labour it has required. The innocent-looking little paragraphs giving statistics especially, seem very feeble ways of expressing what has been to us a considerable amount of mathematical labour and device. Another item which does not improve one's feelings towards the report is that it is so little appreciated generally. It is true that there are members of one's Council who do read and appreciate it, but not one of us, I think, can be without the experience of being asked questions about matters as if they are new when they have been fully dealt with in report after report. Sometimes to the exclusion of the bulk of the report, unappreciated and forgotten or never read, one paragraph or two may upset some vested interest or other and may cause trouble, and has, in fact, led in one or two cases to the loss of his post by a zealous medical officer.

In spite, however, of these and other drawbacks, the Local Government Board was wise in instituting the annual report of the medical officer of health. Neglected as we may be, and subordinate officials with insecure tenure of office in many cases, it is recognized that ours is the one office where it is necessary to have a detailed commentary report, and whose statistics are of special value. The medical officer of health's report is an object of value to those who think. It is, moreover, frequently a work of reference, even to those who do not openly appreciate it.

I consider, however, that the greatest value of our annual reports is to ourselves. Each succeeding one is rather like a milestone showing how we have proceeded each in our districts to deal as we can with that part of the care of the public health entrusted to us, and the statistics show us what changes have occurred and are occurring. Unless we had to draw up a report every year with vital statistics I am afraid we should not have such a grasp on the conditions affecting the state of health of the district as we have now; we should not have such an accurate knowledge of the causes of death and disease; we should not have our most useful work of reference in our districts, and we should not have our

recurring guide as to what it is necessary for us to do to still farther improve the condition of our respective populations.

I should like to-day briefly to emphasize the necessity of compiling as accurate vital statistics as possible, particularly death and disease rates, and the value of studying one's own statistics compared with those of other districts and the country at large. This, however, involves an intricate study of the numerous and important items which have to be eliminated before comparisons as to the relative healthiness of districts can be made. The ultimate conclusions are not perhaps as important as the necessity such an accurate report throws upon us of conscientious study of the varied conditions of our district, for this study in itself—to anyone really interested in his work—must lead to the farther step of attempting to ameliorate the adverse conditions which appear to us to conduce to an undue death rate or disease rate. A bald, uncorrected death rate is of very feeble value compared with a death rate corrected, say, for even the sex and age constitution of the district, or age group and sex group death rates—these are in their turn feeble compared with similar death rates arranged according to special areas or according to circumstances, whether connected with industrial specialities, housing specialities, overcrowding as regards air space, etc., etc. Infantile mortality rates similarly should be studied in districts and areas and other subdivisions, so that local causes can be ascertained and dealt with where necessary. The study of death rates from separate causes of death is invaluable to a medical officer in the working of his district, and the vital statistics portion of one's report is not in any way complete without accompanying statements as to matters such as the housing and social conditions and method of life of the persons concerned.

It is not until our annual vital statistics are carefully compiled and studied that we can get a fair view of the relative importance of various diseases in our districts. Figures showing the prevalence of disease are, when we can get them, as important as death rates, for the extent of suffering and misery a disease may cause is not always to be measured by the death rate. One disease may kill where another will cause much suffering and misery without being directly fatal. Measles or whooping cough, for instance, have a far higher death rate per 1,000 living than syphilis,

and yet the last is more harmful to the community at large than perhaps either of the former.

I venture to think that, having compiled our vital statistics with care, if we studied them thoroughly we might find that undue attention had been given by us in some directions compared with others. In this respect it is interesting to study the mortality statistics of the Registrar-General, whose annual volume is, I think, to us one of the most important of publications.

Taking the last issue of the Registrar-General's Vital Statistics—1907—we find the tuberculosis proportion of deaths for 1907 as 107 in every 1,000 deaths, and that of small-pox *nil*. Consider for a moment the usual and important age of the sufferer, the years of suffering, the pauperizing result, the spread of infection with like results to others, the endless chain of misery a case of consumption can and does cause, and consider also the four or five weeks' illness of a case of small-pox. The disparity is tremendous; but what in our districts is being done for the two diseases? If ours is like most districts, we have very properly made good provision—such as vaccination and means of isolation—against the spread of small-pox, and hence its relative unimportance now; but we have not done anything like relatively as much against tuberculosis. A graphic comparative table in our reports of causes of death in each of our districts, with explanatory comments as to suffering and loss caused in each important case, should tend to open our Councils' eyes to what matters specially need attention, and would be of much use to ourselves. Advice and amelioration can only thoroughly follow on the carefully compiled facts.

A similar table of comparative prevalence of disease for the district or for its parts is more difficult, but in some cases is possible.

The Registrar-General's last report shows that in England and Wales out of every 1,000 deaths in 1907 the various forms of tuberculosis caused 107 deaths, 76 from phthisis, and 31 from other forms of tuberculosis. Not including pneumonia as an infectious disease, tuberculosis causes more deaths than all the other infectious diseases combined. Are we dealing in our districts with tuberculosis in anything like this proportion? Are our councillors spending on tuberculosis a sum equal to the sum spent altogether on small-pox, scarlet fever, enteric fever, diphtheria, measles,

whooping-cough and diarrhoea, for instance? No doubt, if we were not dealing effectively with these they might collectively eclipse tuberculosis in prevalence; but I think you will agree with me that we are not yet doing all we might with regard to tuberculosis. The subject of tuberculosis is a very large one, and the ameliorating measures are almost as largely social as medical, but it seems to me the least sanitary authorities can do is to give as much attention to it from one point of view as is given to, say, scarlet fever, and see that more isolation is provided. We should at all events see that the relative importance of this disease is not overlooked. Its very serious age incidence and its duration, though adding to its difficulties in preventive measures, make it all the more important.

The next chief cause of death is heart disease, causing 97 of every 1,000 deaths. This need not cause anxiety. Though occasional cases might be prevented, I should rather think that as we eliminate other preventable causes of death, deaths from heart disease must necessarily increase. Old persons must die of something, and the bulk of the deaths set down to heart disease are those of old people.

The two next chief causes are pneumonia, with 89 per 1,000 deaths, and bronchitis with 81. Although, again, deaths from these diseases include those of many old people, there are many deaths from these two causes which might be prevented, especially in the very young. In these cases the social condition of the parents is important. Tables of causes of infantile mortality show that too many deaths from bronchitis and broncho-pneumonia occur in infants; careless and ignorant exposure of children causes many of these deaths, and the Notification of Births Act, worked with the aid of useful health visitors, ought to be helpful. Records of previous deaths in the same families are useful guides for the employment in the latter stages of infancy of voluntary agencies, such as district visitors.

After the above causes of death there is a somewhat long drop through diseases of the nervous system (64 per 1,000 deaths), old age (63), cancer (61), diseases of blood vessels (59), diseases of the digestive system (51), premature birth and congenital defects (44), violence (37), diseases of the urinary system (33) and debility (28), to the zymotic diseases, measles, etc.

That premature birth, congenital defects, and debility cause 72 per 1,000 of all deaths shows that there is another field open to the

enthusiast in preventive medicine. Though at first sight these deaths may not seem to indicate a fertile field for preventive measures, I am sure that many of them are due to social conditions capable of remedy, especially in the cases of women pregnant or likely to become so, and that as these conditions are remedied so there will be less of these infant deaths. Here our more general duties come in, such as improvement in the sanitary condition of homes, decrease of overcrowding, the inspection of school children, exertions in the cause of temperance, the prevention of industrial labour in recent mothers and women about to become mothers, care in the feeding, and other matters. Such measures must affect favourably the number of deaths and the amount of suffering from these causes.

After the diseases I have named come measles with 24 in every 1,000 deaths, diarrhoea with 21, and whooping cough with 19. I have had the pleasure of reading a paper before the branch on these three zymotic diseases and their importance. They are difficult to deal with in many ways, their mode of spread is insidious and difficult to check, and in the case of measles and whooping cough the spread is so rapid that it cannot be overtaken. Deaths from cases of these two diseases, however, too often occur from neglect of care. It is sufficient, perhaps, to point out that though these two diseases, especially measles, occur in the upper classes as well as in the poorer classes, deaths comparatively seldom occur; the inference is obvious: again, as in other diseases, the social conditions are the determining factor. The same as regards social conditions is true of diarrhoea as a cause of suffering and of death. We can do and have done much to prevent this cause of death, but here, as in nearly each cause of death one studies, one sees how much depends on the general elevation of the standard of housing, on temperance, on the provision of work for men, and on the care of mothers, and similar social affairs.

The next commonest cause of death is influenza (18 per 1,000), and then diphtheria (11 per 1,000). All other causes are below this figure, and thus the study of one page of a model of statistical annual reports, viz., the Registrar-General's, gives one a capital text on which to study the relative importance of the causes of deaths. There is, of course, much behind these figures which may alter the relative importance to many of us; but, as I have said, a similar table in the reports on our own districts must be a useful guide to each of

us. In many cases I think it may lead us to attach much more relative importance to some diseases and conditions in our particular districts than we have hitherto felt it necessary to give.

One other feature of the Registrar-General's Report I should like to allude to as a basis for part of our reports, and that is the part or parts dealing with the increase and decrease as years pass by of certain diseases. The Registrar-General's table dealing with the crude annual death rates from various causes in groups of five years, from 1871 to the present, shows very marked decreases in the following as causes of death:—Small-pox, scarlet fever and typhus, and extinction of rabies. Great decreases have occurred in enteric fever, whooping cough, phthisis and rheumatism, and smaller decreases in diarrhoea, venereal diseases, puerperal diseases, erysipelas and bronchitis. The following diseases have increased as causes of death:—Cancer, pneumonia, premature birth, diabetes and urinary diseases. Measles has remained almost stationary. The mortality from alcoholism, cirrhosis of the liver, and congenital defects has about doubled itself in each case. The conjunction of these three is not a mere coincidence.

These facts, though capable of a certain amount of explanation, such as improved diagnosis, remain broadly as they stand, and afford material for careful study. A similar grouping of facts for our own districts would, I think, give each of us plenty of food for reflection.

I hope I have not been too long in indicating thus superficially on what lines I think we may proceed to profit, by first carefully drawing up vital statistics for our respective districts in our annual reports, and then carefully studying them with a view if possible to seeing that in each succeeding year we may feel that we have accomplished something towards reducing unnecessary deaths and unnecessary suffering.

MEDICAL OFFICER'S INTERESTING RECORD.—At a recent meeting of the Marlborough Board of Guardians it was stated that Dr. Lawson, a district medical officer in the service of the Board, had held no fewer than twenty-nine similar appointments during the past thirty-two years. A statement laid before the Guardians by the clerk showed that Dr. Lawson had held office in the following Unions:—Berkhamsted, Reigate, Atcham, Banbury, Shaftesbury, Sanford, Downham, St. Albans, St. Ives, Droitwich, Williton (twice), Hardington, Chipping Norton, Devizes, Frome, Dore, Malmesbury, Chilton, Clun, Fareham, Bourne, Alcester, Wycombe, Blandford, Wimborne, and Cranbourne, Bideford, Stratton, and Marlborough.

SUMMER DIARRHŒA.*

By A. E. NAISH, M.A., M.D.,
Assistant Physician to the Sheffield Royal Hospital.

THE subject I bring before you to-night needs no apology on account of its importance or general interest. I do not, however, attempt its introduction in the hope of being able to say anything new or startling, but rather with the object of stimulating interest in the causation and the means of prevention of this terrible disease. Last year, in spite of the comparative coolness of the summer and consequent low death-rate, acute diarrhœa was responsible for more than ten times as many deaths as scarlet fever or diphtheria, and for nearly fifteen times as many as typhoid; and the after history of those that recover is, perhaps, the gravest feature of all—for months often the weight remains nearly stationary, and if the child does not fall a victim to some intercurrent disease, it tends to suffer permanently from malnutrition.

With a disease of such gravity it would be remarkable that so little is known about its mode of origin and spread were it not that the subject is one of considerable complexity, and that probably under the one name we have grouped a number of different, even if closely allied, diseases.

Among the theories that have been advanced as to the causation of this disease, one may be justified, I think, in putting aside all but the three most important.

The first is that it is due to the action of heat on the cerebral heat centres—in other words, that the cases are examples of heat stroke strictly comparable to the heat stroke of adults, in which diarrhœa and vomiting are not infrequently met with. A number of authorities, especially in America and Germany, have expressed themselves in favour of this theory, but although certain cases may be, and probably are, due to this cause, I think it can hardly be contended that the bulk of summer diarrhœa can be attributed to it. In the first place, if heat were the main cause we should expect that sudden rises of temperature would be followed by the greatest number of cases—in other words, that the curve of incidence would correspond closely to the curve of the maximum temperature—whereas

in reality a rise in the average mean temperature, or the temperature of the ground at three or four feet, corresponds more closely to the incidence of the disease. Further than this, it is found that the maximum incidence generally falls some weeks after the maximum ground temperature. It might be said that this is due to the interval between onset and death, but in Woolwich, where notification is carried out, the same phenomenon is noticed. On the average of four years the highest ground temperature was in the fifth week of the summer quarter (July, August and September), whereas the largest number of cases was in the eighth week. Other arguments against the heat theory are of the nature of positive evidence of the infectivity of the disease, which I shall touch on later.

It is well to remember, however, that heat often causes loss of appetite and nausea even in adults, and, acting on an infant whose digestion has been deranged for some time and who has perhaps been suffering from chronic looseness of the bowels, may well be the determining factor in the production of an acute and even fatal diarrhœa.

The next theory is that the products of the decomposition of milk (or other food) act as poisons—in short, that the disease is comparable to the ptomaine poisoning of adults. This theory has unfortunately been confused with the theory of the transference of pathogenic organisms by milk, and in certain text books and writings it is not clear whether the authors distinguish between them. With regard to the decomposition theory, however, neither the bacillus nor the toxin have been demonstrated, and it is a notable fact that no connection has been traced between diarrhœa incidence and the supply of milk from particular farms.

I shall, however, discuss the question of milk in connection with the third theory, which I now bring forward. This is that the disease is due to the invasion of the body by bacteria. Assuming this to be so, we have further to enquire whether the organism is one of those normally present in the intestine, which under normal circumstances has taken on pathogenic functions, or whether it has been introduced from some foreign source, and in what way it is conveyed to the child's intestine.

The gaps in our knowledge are so great that I may perhaps be forgiven if I do not discuss the matter in its logical sequence.

In America a considerable proportion of the

cases of diarrhœa occurring in summer has been proved by Flexner and others to be due to infection by bacilli of the dysentery group: these cases always have blood and mucus in the stools. The type which is commonest in England is not clinically the same, and the para-dysentery bacillus cannot be isolated. Morgan and others of the Lister Institute have for the last four years found one bacillus of the non-lactose group to predominate over all others in cases from London hospitals. They have isolated it from feces and post-mortem material in over 50 per cent. of cases, and have found it nearly always absent in healthy children, or in those suffering from other diseases, even if complicated by diarrhœa.

Williams and Murray in Liverpool have also isolated a bacillus closely allied to para-typhoid B. Certain epidemics have been shown by Escherich to be associated with the presence of a modified colon bacillus, and others with a streptococcus. All these bacteria have been isolated from post-mortem material as well as from the feces, and have frequently given agglutinative reactions.

So far, then, as this evidence goes, it seems to point to the invasion of the body by bacteria, especially by those of the colon group, being frequently the cause of summer diarrhœa. I have myself noticed in many cases a distinct period of malaise often accompanied by an urticarial rash before the onset of acute diarrhœa.

The close relationship of many of the bacteria found to one another and to the colon bacillus makes us wonder whether the latter and its family in the character of Jekyll and Hyde are not responsible for most of the mischief.

With regard to the mode of transmission it has been widely held both among medical and lay men that milk is the main, if not the only, source of infection. It is natural, I suppose, to attribute all diseases that manifest prominent intestinal symptoms to the action of food or drink, and in this instance the theory receives strong support from the well-known relative immunity of infants fed at the breast. However, if we look a little further into the matter, we find certain facts which must make us pause before we ascribe to milk such a position of importance as a transmitter of this disease.

Following upon the discovery of the comparative immunity of breast-fed infants, there was a rush towards the sterilization of cows' milk for bottle-fed babies, especially in certain Conti-

mental countries and America. Many towns set up machinery for sterilization on a large scale, and supplied the milk in sealed bottles.

We have now the opinion expressed by many authorities who have been in a position to judge of the results, that sterilization of milk has had little effect on the general or diarrhœa mortality of infants (after making due allowance for the variation in mortality according to temperature).

This has been attributed by some to contamination taking place in the houses, but often the milk has been supplied in such a way as to render such contamination very difficult: for instance, in narrow-necked bottles, which may be left uncorked for two or three days in an incubator without decomposition occurring. Occasionally we have even more evidence: for instance, in the town of Halle the illegitimate infants were put on sterilized milk from the year 1904 without any reduction of the mortality amongst them, which still remained high in proportion to the general town rate, and was chiefly from gastro-intestinal disease.

Where sterilization of milk has been undertaken hand in hand with its modification to suit the needs of the different ages, or with depôts for the instruction of mothers, excellent results have been reported; but these can hardly be attributed to the sterilization.

Our own experience at the depôts in Sheffield is confirmatory of the above. If milk were the chief carrier of infection the use of a sterilized dessicated powder kept in tins, and mixed freshly with water for each feed, should act largely as a prophylactic. We have no means of comparing the attack-rate of these babies with the general attack-rate of bottle-fed babies, but I think there is not much difference in favour of the former.

There are other general considerations which tend to point in the same direction. The West Riding enquiry into the bacteriology of milk showed that the greatest number of bacteria were added at the farm. Now, as the milk supply of rich and poor does not differ largely, and a greater proportion of children of the rich are hand fed, we should expect, if the milk bacteria were the main cause of diarrhœa, to have a larger proportion of cases among them than among the poor, whereas it has been proved that the higher in the social scale one goes the less acute diarrhœa is found.

Further, the workers at the Lister Institute found that, out of twenty-nine samples of milk taken from houses affected, only one contained

*A paper read before the Sheffield Medico-Chirurgical Society, October 28th, 1909. This paper and the following discussion have been kindly communicated by Dr. Harold Scurfield, Medical Officer of Health, Sheffield.

Morgan's bacillus, whereas out of eight batches of flies six contained it.

How, then, can we explain the immunity of breast-fed infants? In the first place, there has been a tendency to exaggerate this immunity; more breast-fed infants are attacked than would be gathered from the death-rate figures; in other words, the disease tends to be milder. In the next place, it is a well-recognized fact that the catarrhal condition resulting from repeated "insults to the intestinal mucosa" acts as a powerful predisposing cause of true infective diarrhoea, and these insults are far less frequent in breast-fed infants. In the third place, freshly drawn milk has been shown to have an inhibitory effect on the growth of many bacteria, and it is quite possible that maternal milk may in this way act as a mild antiseptic. In this connection it may be mentioned that under normal conditions the flora of the breast-fed baby's intestine differ markedly from those of the hand-fed baby's.

Is the disease communicable from person to person? I think there can be little doubt on this point.

Firstly, the disease used to be very prevalent in institutions where children were aggregated closely. Finkelstein observed in the infants' ward that the epidemics were preceded by one child being taken ill first, the others following after an interval. After antiseptic precautions had been instituted there was a fall in mortality from about 80 per cent. to 22 per cent.

Secondly, investigations made in towns seem to establish the fact that overcrowding has a closer relation to the prevalence of the disease than any other factor.

Thirdly, similar investigations show a marked grouping of the cases in certain streets and areas, and a tendency for the disease to spread from the backs of houses to the backs of those in an adjoining street.

Fourthly, a spread throughout a family is very common, if not the rule. Dr. Davies, the medical officer of health of Woolwich, says:—"It was common to find the baby notified was not the first case in the family, and frequently it was found that most members of the family had been affected one after another within a few days' interval. Probably the usual incubation period is from two to seven days, as the interval between the commencement of successive cases varied between these limits."

I have not attempted to exhaust all the evidence that has accumulated with regard to the transmission of this disease, for time has

allowed me to touch here and there only a few fragments of its etiology. I should like, however, to bring forward one or two provisional suggestions as to its prevention. In the first place, probably too much attention has been directed to the milk supply, and not enough to housing conditions.

The following rather striking account was given me by a lady who was an Army nurse at Aldershot for five years, and afterwards at Bulford. In the Old Lines (at Aldershot), where the houses were small, dark and low lying, diarrhoea was very prevalent among the children; but in the New Lines, which stood higher, with houses larger and lighter, it was much less so. The milk supply was the same. At Bulford, where the houses were in long straight lines, with free through ventilation, diarrhoea was almost unknown.

The betterment of housing conditions is, however, a big thing, and one which will probably take many years to make much headway in, but there is one thing which I think may be done without much delay. The mortality in infants' institutions has been much reduced by the introduction of antiseptic precautions. Last summer I suggested to Dr. Scurfield that it might be possible to educate mothers, even in poor houses, to a recognition of the infectivity of diarrhoea. Dr. Scurfield took up the proposal with enthusiasm, and representative poor streets were chosen by each of the women sanitary inspectors. The object was to teach the mothers by written and verbal instructions that the stools and possibly the urine of infected cases were a source of danger to others, and to help them towards the routine disinfection of the same and the cleansing of the infants' bodies, whether in infected or non-infected cases, during the hot months. I had hoped to have some figures to give comparing the diarrhoea mortality in these districts with the general diarrhoea mortality, but the numbers are too small to draw any conclusion from. Among 417 infants under one year, seven died from diarrhoea, but of these one was brought from another district while suffering from the disease; in another case measles had ushered in a prolonged diarrhoea of ten weeks, which was not improbably tubercular; and in a third the diarrhoea was only the terminal event—lasting two days—in an illness of three weeks' duration.

I think the effect of the instructions has been of value. There has been striking

evidence that most of the mothers have tried to carry out the instructions, and in doing so have come to realize more fully the seriousness as well as the infectivity of the disease, and that as one consequence they have taken their children for treatment at an earlier stage.

In conclusion, I should like again to draw attention to the number of types there are of this disease, dependent probably on different bacteria, and that our only guide to future rational treatment will be through differentiation of these types. This can only be done by accurate observations, and recording of their observations by a large number of medical men.

DISCUSSION.

DR. GEORGE WILKINSON, Honorary Surgeon to the Sheffield Royal Hospital, asked if Dr. Naish could explain the connection between rise of ground temperature and incidence of epidemic diarrhoea. With regard to spread of infection by flies, did he understand Dr. Naish that flies carried the infectious organisms from the faecal discharges to food, such as milk, from which source other inmates of the house became infected?

DR. WADDY, District Medical Officer, Sheffield Union, rose to offer one or two practical suggestions. One difficulty which he encountered in his house-to-house work was the practice of keeping milk warm on the hob. After milk had been sterilized by boiling, it was liable to subsequent infection. By keeping the milk warm any micro-organisms present were incubated, and the degree of infection of the milk was enormously increased. Milk which had been boiled should be set to cool quickly. Only sufficient for one feed should be made warm at a time. The chief difficulty was with regard to feeding bottles. It seemed impossible to make people understand the difference between keeping a bottle always clean and keeping it always dirty. Mothers assert that they clean the bottle before filling it. If this were so, then one would expect, in a definite proportion of visits, to find a bottle in the condition of being cleaned ready for use. But such a discovery is of the utmost rarity. Even in those cases in which this course is adopted it is quite inadequate. It is perfectly easy to keep a bottle clean by rinsing it out with cold water immediately after it has been used. It is very difficult to clean a bottle which has once become dirty; indeed, the bottle which is kept dirty never is clean. In this respect the provision of two bottles only increases the danger. The cleaning of the dirty bottle is all the more easily neglected and postponed. There are two dirty bottles to contend with instead of one. It is quite usual for milk to be put into a bottle and left in the child's cradle all night, and perhaps even all

the next day, if two bottles are in use. The instructions issued by the medical officer of health are superior to those which have been published previously; but on this point there is room for further amendment. Instead of taking for granted that bottles are dirty, and telling people how to clean them by boiling them in soda, they ought to insist on the importance of never allowing the bottle to become dirty. The only way to keep a bottle clean is to keep it clean.

DR. A. E. BARNES thanked Dr. Naish for his interesting paper, and thought that all the members must agree with his conclusions. He agreed with Dr. Naish that it was necessary to set to work to differentiate the various types of disease, or perhaps different diseases. He had seen two cases where apparently adults had been infected from children. As regards the statement that the child was often not the first in the family to be infected, he had seen an interesting case where the child during the summer epidemic suddenly began with acute colitis. The diagnosis of colitis was made in the laboratory, and on communication with the family doctor it turned out that the father had been affected with colitis for some years. Too much reliance should not be placed on the work in regard to Morgan's bacillus, as the original paper of Ledingham and Morgan was severely criticised by Dr. Thwort on grounds that appeared to be very sound—namely, that the differentiation of the bacillus depended on fermentation reactions, and it had been shown that by appropriate cultivation any bacillus of the group could be made to give any particular fermentation reaction, and that the agglutination reaction which was obtained by Morgan might be due to some other cause, as some of the sera agglutinated other bacilli in high dilution. It should also be remembered that only the non-fermenters of lactose were investigated. Dr. Barnes also wished to refer to some Breslau statistics which went to show that the incidence in cellar dwellers was less in proportion than those dwelling in upper rooms.

JAMES MARTIN BEATTIE, M.D., Professor of Pathology and Bacteriology at Sheffield University, said: I quite agree with Dr. Naish that too much stress has been laid on the carriage of infection by milk alone. The disease is an infective one, and a look at the home in which the disease occurs shows how easily the causal organisms can be carried by flies to all kinds of food, to the hands of the child, and even to its mouth. Recent work has brought out very strongly the important part played by flies in the carriage of disease-producing organisms. In regard to the causal organism, I do not think there is sufficient evidence to justify any very definite conclusions. There is a good deal to be said in favour of Morgan's bacillus, and the work he and Ledingham have done is extremely valuable; but my own observations lead me to regard with suspicion the classification of bacteria into separate

groups simply because one ferments a special sugar and another does not. Certainly with streptococci the same organism at different times and in different stages of virulence gives different reactions with the various sugars, and I see no reason to doubt that other organisms act in the same way: it may yet be proved that Morgan's bacillus is merely a modified colon, typhoid or dysentery bacillus. Dr. Naish has referred to the conclusions given in the Report on the Contamination of Milk of the West Riding County Council—that the main contamination is at the cowshed, and that the contamination in the houses of the consumers is not great. I feel that in this Report the evidence is not strong enough to justify the conclusions. Too little attention has, in my opinion, been given to the milk at the consumers' houses. Many more samples will require to be examined, and the examination will require to be much more thorough and exhaustive.

MR. ARCHIBALD CUFF, F.R.C.S., Honorary Surgeon, Sheffield Royal Infirmary, after thanking Dr. Naish for his very interesting paper, said that he quite agreed with the writer that it was most important to teach the mothers the immense importance of cleanliness in attending to their children, and also impressing them with the fact that diarrhoea was infectious, and that by carelessness they could infect other children, or perhaps keep up the disease in the patient. Professor Beattie had in his remarks emphasized this, and had probably mentioned a very important factor when he said that the condition of the milk when in the house was probably of more importance in the spread of the disease than the condition of the milk before delivery. Mr. Cuff said that anyone who had been on the staff of a children's hospital must have been struck with the uncleanness of the mothers in dealing with the evacuations of the little children—a carelessness due in part to ignorance, and in part to poverty. Not only were the mother's clothes often accidentally soiled by the child, but the apron and even the mother's skirt is used to complete the cleansing of the child, and her soiled hands used immediately afterwards to put the dummy teat into the child's mouth. It was probably the same at home, and with the lack of linen and towels in the cottages of the poor it seemed more than probable that infection was carried by the mother from one child to another, food and milk were infected—nay, it was even possible that the organisms, transferred to nutrient media, such as milk, food, etc., from a normal child's stool, might under suitable conditions of warmth, etc., become so virulent as to start an enteritis in another child. It would be an interesting thing to examine bacteriologically some of the milk, food, and articles coming into contact with the small children in some of the houses in the diarrhoea

districts during an epidemic. Mr. Cuff was certain that the convincing of the parents of the highly infectious nature of the disease was one of the most important factors in the prevention of this scourge.

MRS. LUCY NAISH, M.B., said: In this discussion on summer diarrhoea you may be interested to hear of the value of antiseptic treatment of the baby's buttocks and diapers, coupled with the value of fresh air, as evidenced by the babies at the nursery block at the Sheffield Union Workhouse. When I first became a Guardian about three years ago I was distressed to find about thirty children, whose ages varied from one month to three years, in one quite small day nursery, which seemed to me quite inadequate as regards fresh air. Also there was only one paid attendant, and she was assisted by any female inmates other than the mothers of the babies. Some of the inmates were quite old women, or often unmarried girls awaiting their confinements. The mothers of the suckling babies slept with them and came across from the laundries or other places where they were employed in the day time at regular intervals to feed them, but they were not allowed in any way to attend to the baby by bathing or even changing its napkin. In fact, they were just a herd of human cows. When I first called attention to the small size of the nursery I was told that a new block was being built, and all my schemes for improvement were deferred until the babies got into the new block. Meanwhile diarrhoea was very prevalent among these children, and they had to be sent up to the Union hospital for treatment, and I was frequently told by the medical officers there that a lot of children were admitted with diarrhoea from the nursery block. The milk of the bottle-fed children comes from a farm controlled by the Guardians. After eighteen months' dilly-dallying with first one authority and then another, at last the babies were really removed into the new block. The change to new quarters did not, however, stop the diarrhoea, and many cases were sent to the Union hospital during the summer of 1908. Soon after a new master and matron were appointed, and I took the first opportunity of going to the matron and explaining to her that I should like to see the mothers of the suckling children doing more for them than merely feeding them, and suggested that each one might bath her own baby before she went to her other work. The matron fell in with the idea, and the result is that now each mother bathes her own baby in the morning, and each one has a numbered peg with her own towel and little bag containing sponge and soap, and by this means the baby is ensured one good bath a day; and as the mothers always work under supervision, they leave the workhouse having learnt something by their stay there. I

ought to say here that I succeeded in persuading the Guardians to appoint another attendant, whose work is chiefly night work and superintending the morning baths. Also each mother, when she comes to feed her baby, takes it up from the cot and changes its napkin, and leaves it comfortable in its cot again when she goes back to her work. I then turned my attention to the care of the napkins. When I asked what was done with them I was told that they went to the laundry every day, but I wanted to find out what was done with them immediately after they were taken off. I found out that they were *supposed* to be taken into the basement and put into a tub of water there. The actual facts were that they were thrown down the stairs into the basement. If they managed to fall into the tub well and good, otherwise they lay on the floor or the steps until they were gathered up to go to the laundry. As the hot cylinders of the block were also in the basement, it was a nice incubator for any diarrhoea bacilli. On investigating the tub I found that there was neither sink nor tap in the basement, so you can imagine how often the water was really changed. I found two outside water-closets in the large airing court; the tubs were taken out there and filled with a weak solution of disinfectant, the soiled napkins were put in, and as it only meant tipping the tub to empty it into the proper drains, there was reasonable hope of the water being emptied daily. As the summer drew on I was struck by the fact that the little babies hardly ever got outside, and then on making another tour of investigation I found a lot of old disused swing cots in the basement, and I had these brought up and put into the big shed in the airing court. It was then only necessary for the bedding to be carried out every day; and the children were eventually taken out first thing in the morning, and lived out in the court all day long. The mothers had chairs out there and fed them, and the elder children had all their meals served out in the open air. I made a point of visiting the nursery whenever I was able at odd times, took every opportunity of impressing cleanliness as regards the changing of the napkins, and I also taught them how to put on napkins properly—a thing which even nine out of ten trained nurses don't do correctly—and by this means saved many a petticoat or blanket from being soiled. The milk supply of the bottle-fed babies was exactly the same as in previous years. I am happy to say that this year the medical officer of the workhouse *had not had to send a single case up to the Union hospital for diarrhoea*.

DR. A. E. NAISH, in reply to Mr. Wilkinson, said that at present he supposed the relation between ground temperature and diarrhoeal incidence could not be entirely explained. It might be, however, that the colon bacillus evacuated from the intestine was, if kept at a high tempera-

ture for a sufficient length of time, capable of producing "strains" which were pathogenic. This would explain why a rise of temperature for a short time was less efficacious in the production of the disease than one more prolonged.

With regard to the spread of infection by flies, it was not even necessary that they should infect the milk, since, as Professor Beattie had pointed out, it was quite sufficient they should infect the hands or the mouth, or even articles which came into daily contact with the hands of the mother or child. Infection might well be carried between the different members of one family without the intermediate agency of flies; it was well to remember how many people a "typhoid carrier" might infect, and the passage from rectum to mouth was much easier in a child than in an adult.

He quite agreed with Dr. Waddy that the cleansing of the bottle immediately after each feed was seldom carried out, and that two bottles were more dangerous than one.

He welcomed the criticisms by Professor Beattie and Dr. Barnes as to the lack of absolute distinction of Morgan's and other bacilli. Their close relationship to others of the colon group seemed to go hand in hand with clinical observations on the types met with.

He thanked Mr. Cuff for his graphic description of the conditions prevailing in many of the homes.

A RETURN CASE OF ENTERIC FEVER.—On May 6th, 1908, a male patient was dismissed from Belvedere Hospital, recovered from enteric fever, for which he had been under treatment from March 13th. His household consisted of his wife and two children, and on June 13th the former sickened of enteric fever. The circumstance led to a bacteriological examination of the first patient's condition, with the result that the organism of the disease has been recovered from his urine. The possibility of infection by this means has for some years been recognized, but it rarely happens that a concrete illustration is obtained. This patient has been kept under observation, and at the present time (July, 1909) the organism is still recoverable from his urine. A vaccine is being prepared therefrom, with the object of ascertaining whether its administration may lead to an amelioration of the symptoms indicated. It may be observed as of some interest that no case has occurred among the patient's fellow-employees, nor (save in the instance of his wife) among the other inmates of the tenement in which he lives. When first recognized there was a definite degree of pyuria also present, but now there are only a few leucocytes in the urine.—*Annual Report of Dr. Chalmers, Medical Officer of Health, Glasgow.*

DENTAL DISEASE AND THE MEDICAL PROFESSION: THEIR RELATIONSHIP TO PUBLIC HEALTH.*

By R. DENISON PEDLEY, F.R.C.S. Ed., L.D.S. Eng.,
Dental Surgeon to the Evelina Hospital; President
of the School Dentists' Society.

THAT the Education—Administrative Provisions—Act of 1907 for England and Wales, and the Scottish Education Act of 1908 will have far reaching results is apparent to all who are even remotely concerned with the public health. One immediate effect, however, is to bring those whose chief concern is preventive medicine on the broadest lines into closer relationship with collateral branches of the profession, who, while mainly occupied with the treatment of disease, are still anxious to do their part in prevention. As belonging to one of the latter, I consider it an honour to be permitted to address you this evening, the more so because, long being an associate, I am not altogether unacquainted with the literature and the discussions of the Society of Medical Officers of Health.

It is true that the thoughts and many of the facts I propose to place before you are concerned with the prevention of diseases too long considered as belonging to a narrow speciality; but it is possible to prove that no disease is so obscure as not to merit attention, none so unimportant as to be ignored with impunity.

It is scarcely necessary to remind you how widely spread dental diseases are among all classes of the community. As the result of medical inspection their prevalence among children will be amply confirmed from every report made by the school medical officers throughout the country. Like many other diseases, they owe their origin to the action of bacteria, and, apart from the mechanical interference with so important a function as mastication (sufficient in itself to impair nutrition), the presence of carious and necrotic teeth is a constant menace to health by the accumulation of septic material which poisons the body, lowers its vitality, and opens a wide door for other diseases to enter.

These are facts of sufficient importance to justify and to impel the medical profession, as a whole, to take an active interest in supporting remedial and preventive measures, as they have done in the past, and as they are doing to-day for other diseases. With the

* Read before the Metropolitan Branch of the Society of Medical Officers of Health, December 10th, 1909.

exception of a few enlightened physicians and surgeons—and, I should like to add, an occasional medical officer of health—the general attitude of the medical profession towards dental diseases has been one of apathy and indifference. Such indifference to-day may be traced to lack of knowledge. That the medical profession know little or nothing of dental defects is the result of their early environment. In most of the hospitals where medical students receive their training one or more dental surgeons are appointed. A course of lectures is delivered on dental surgery, either in the summer or during the winter session, and demonstrations are given in the dental department. Where such demonstrations are confined to radical operations alone, it will generally be found that restrictions have been placed upon the dental surgeon by his medical colleagues. These lectures or demonstrations the medical students may attend or not, as they please: the subject is optional. Whatever opinions may be held as to the desirability of attending lectures, attendance at demonstrations should be compulsory; and in a well-equipped dental department every medical student should learn practically how teeth are saved as well as how they are lost. In the casualty or out-patient department the student will often avail himself of the opportunity to remove a tooth because of intolerable pain or an alveolar abscess; but the reason for the pain or the why of the abscess receives scant consideration. He is not taught that an examination of the mouth with the aid of a mirror and a probe will reveal defective teeth which on casual inspection escape observation, nor is he taught that pain is but one symptom of dental disease, and that not the most important. Although more than half the patients he attends to will have carious teeth, he does not realize that in such cases valuable teeth may be saved for years. Seldom is it pointed out that necrotic roots must no more be permitted than necrotic bone in any other part of the body. Not often will it be insisted that septic material from the teeth and the tissues which surround them is spoiling the patient's digestion and producing infection of the glands and of the blood itself.

Let us suppose that owing to what are unfortunately very exceptional arrangements the elementary truths here enumerated have been learned by practical experience in the out-patient department, the student next enters the

wards. Under these circumstances the condition of the patient's mouth as to the presence of carious and necrotic teeth will be entered on the clinical notes, not only as a matter of routine, but with an intelligent knowledge of the bearing of the facts. If it be a children's ward, the student will find that three out of four children above five years of age have defective teeth which require attention, and he will soon be impressed with the fact that all this disease may, and for the most part does, exist without complaint of discomfort on the part of the patients. The effect of such intelligent action must gradually spread until it will be generally known that without a healthy mouth it is scarcely possible to have a healthy body. The student will gradually realize that, apart from any special treatment such as an operation or the administration of certain drugs, the surgeon and physician are alike, in that they rely upon careful nursing, perfect cleanliness, and nutritious food for the recovery of their patients; that the purest air will be tainted when it passes through a mouth loaded with pathogenic bacteria; that every carious tooth is a cup containing its quantum of septic material, which, when churned up in mastication, will taint the best of food; and that defective teeth are a constant source of irritation. Before the student enters the operating theatre, with its germ-proof walls and floor, its spotlessly clean nurses, its aseptically clad surgeon, assistants and anaesthetist, he will be informed that a further advance has been made in Listerism. Not only the hands but *the mouths* of the operator and his assistants are carefully cleansed: no one is allowed near the operating table, nor to stand over the patient until this is done: the gospel of cleanliness is a reality; and should he desire to join this white-robed throng his mouth also must be clean. A little later these truths will find their way into the text-books on Surgery and Medicine—apart from the special articles written by the dental surgeon—and they will have due weight and authority because they will be written by the physician and the surgeon.

Five years ago, in the *Lancet* of October, 1904, I pointed out that a search through the papers set at the final examinations for the medical and surgical diplomas and degrees of the Royal College of Surgeons, the Royal College of Physicians, and the London University during ten years revealed the fact that "you will not find a single question upon dental caries." Since then I have extended my

researches to the year 1909 with exactly the same result. That is fifteen years. The most common disease to which humanity is subject is entirely ignored in medical examinations. To the already overburdened student it may seem hard to add another subject; but the whole object of his training is to obtain a knowledge of diseases, that he may recognize them without delay, alleviate the suffering they cause, and ultimately hinder their recurrence: in brief, to cure and to prevent them. Is it not, then, an anomaly that hundreds of young practitioners should emerge from their medical training every year in ignorance of the most prevalent of all diseases? They are not to blame: they look to their teachers for guidance and inspiration, and what the teachers have ignored the students are also likely to ignore. The subject should be treated just as special subjects usually are taught, and an occasional question in the final examinations is necessary.

The effect of this neglect of teeth in medical training has been manifest in various ways in the experience of students when they became medical practitioners. It may be considered individually and collectively. It is to the latter I propose to direct attention, because of its relationship to the public health. In passing it may be said that, left to his own resources when in some country district far removed from the skilled assistance of a dental surgeon, many a young practitioner has reason to regret this lack of knowledge, compelled as he may be to witness the ravages of a disease he is quite unable to treat, deprived also of the fees he might legitimately earn by so doing.

Among the many factors which play a part in the production of dental diseases defective diet must be considered as one of great importance, especially in early life. The dentist realizes this every day, and does his best to inform his patients; but contrast his position with that of the general practitioner who is so often the confidential adviser of the mother and her offspring. Only when the mischief is done and habits have been already formed is the dentist consulted, and he feels his helplessness. The pernicious effect of patent foods is well known to the medical officer of health by the infant mortality; but how few understand that such effects are recorded in the jaws of innumerable children long after they have passed through their infantile life. If this were realized by the medical profession as a whole we should not find that every patent food placed upon the market had its full quota of

testimonials from the profession. So accustomed are the public to these supports of infantile indigestion that we see around us the healthiest children fed as if they were invalids, and without a protest.

Important as the subject of dietetics is, it can only be learned by long experience; therefore the student will turn to the text-books for guidance from those who should know, not merely for the diet of the sick but for that of the healthy. Analyses are plentiful, and many wholesome scientific truths are there embodied; but he who examines the literature devoted to the dietary of children during the past twenty-five years will, I believe, find that the function of mastication has been practically ignored; the assumption seems to have been that digestion commences in the stomach and not in the mouth. The "most nutritious foods" recommended are, for the most part, soft foods, and even the muscular coats of the intestines and the beneficial effects of their exercise are seldom referred to.

Paraphrasing an illustration of Herbert Spencer's, it may be said that in some future age, when our text-books, or what remains of them, are consulted, especially that section devoted to the food of the people, it will be said, "Ah! these were evidently written for the guidance of people who had no teeth."

Should any feel inclined to ask if the evils here indicated are brought about through a lack of knowledge of dental diseases I would remind them that only the recognition and knowledge of diseases have enabled you to carry out so efficiently your preventive work.

Let us give one more illustration. Recently an Anæsthetists Bill was prepared for presentation to the House of Commons at the instance of the medical profession. The strongest opponents were a body of men describing themselves as "Extractors and Adaptors of Teeth, Limited." According to their own account they are established all over the country, and they brought evidence to prove that they had long been in the habit of extracting teeth under anæsthetics without danger to the community. According to the evidence given before the "Coroners Committee," in England alone the total number of administrations of local anæsthetics was 919,399 for 1908. Of nitrous oxide the total number of administrations was 142,872 for 1908. Additional figures are given for Scotland,

Ireland, and Wales. A preliminary examination is made before administering nitrous oxide. "The first thing is to obtain the patient's name, address and age, and one or two questions as to any disease of the heart or kidneys." The extracts here given are sufficient for my purpose, but I hope you will read more of the evidence in this interesting Blue Book, including that of Mr. Charles Tomes, F.R.S., L.D.S., a member of the General Medical Council. These "Extractors and Adaptors of Teeth" are unqualified, but with some knowledge of the manufacture of artificial dentures. Their show-cases of artificial teeth are to be seen in the streets of nearly all our towns; but *they are not dentists*, and without hospital training they administer anæsthetics, they perform surgical operations upon the mouth and remove teeth, they themselves judging what teeth require removal. These men do not hesitate to assert their rights legally, and any threat of interference is resented on the plea that they are supplying a public demand.

Of course, we believe that no man should be allowed to administer any anæsthetic, nor should he be permitted to perform any operation upon the human body without a special training. We believe that when the British public are sufficiently well educated to appreciate the value of their teeth such operations and administrations by untrained men will be things of the past. There is a public demand for the treatment of teeth, but not for their indiscriminate removal. If there are not sufficient dentists, it is quite time that the medical practitioners—so many of whom find it difficult to earn even a moderate competence—should seek additional training in the dental departments of their own hospitals, and thus supply the demand.

Under existing conditions the people are misled by their own ignorance. They imagine that these men are dentists; they seek advice, and are persuaded to have teeth taken out which might often be saved for many years.

This wholesale extraction of teeth causes a vast amount of unnecessary suffering. It is a pernicious practice and gravely injurious to the public health.

An International Exhibition of Hygiene is being organized under the auspices of the Argentine Government by an influential committee of physicians and surgeons resident in Buenos Aires, the president being Dr. Canton and the secretary Dr. Luis Agote. It will be opened on May 25th, for a period of six months.

THE PROPHYLAXIS OF YELLOW FEVER.*

THE first authoritative and complete statement of the practical means by which, in accordance with modern theories of the spread of yellow fever, the number of deaths from that disease in Rio de Janeiro has been reduced from 4,852 in 1894 to none in 1909 was made by Dr. Oswaldo Cruz, the head of the Public Health Service of Brazil, in a paper read before the Latin-American Medical and Sanitary Congress held in Rio de Janeiro, August 1st to 10th. The following is an extract from Dr. Cruz's paper:—

"It is now more than a year since there has been a case of mortality from yellow fever in Rio de Janeiro. We have, therefore, reason to believe that Rio de Janeiro is freed from the onus given to it as the great yellow-fever centre. The initiation of the prophylactic service was beset with some difficulties. It was proposed to undertake a new prophylaxis in a city of more than 800,000 people, extended over an area of 1,116 square kilometres (430 square miles), very irregular topography, the altitude varying from 1 to 460 metres above sea level; with 82,396 houses, in many of which lived people who did not always facilitate the efforts of the sanitary authorities.

"The campaign against yellow fever was begun on April 20th, 1903, under the direction of the Public Health Service, and was called the Service for Prophylaxis of Yellow Fever. For the expense of prophylaxis in the whole country, including the ports, \$1,650,000 was appropriated annually.

"In order to carry out the prophylaxis programme the following personnel was designated, which was aided by the corps of inspectors of the Public Health Service for the Union: One medical inspector, ten sanitary inspectors (physicians), one administrator, one customs inspector, one accountant, seventy medical students, nine sub-chiefs, two hundred overseers, eighteen guards of the first class, eighteen guards of the second class, and a thousand workmen.

"The city was divided into zones, according to density of population, and in these zones the work of the prophylaxis corps was performed by two groups of the service: First, the division of isolation and sanitation; second, the policing of infected districts. To the first division was allotted the work of removing cases to the pest-house, or isolating the residents and disinfecting the houses for the exclusion of mosquitoes. The second division, the sanitary police force, was required to visit every building in the city, dwellings or other public or private buildings, and

to destroy any mosquitoes found in the larva stage, and to take precautions to prevent mosquitoes having access to standing water in which they might breed. This division was separated into two sections, one to work in buildings, the other in vacant lots, streams, marshy lands, etc. Co-ordinate with the service thus undertaken, the Department of Public Health carried out a defensive campaign, exercising the greatest medical vigilance over those resident in the infected districts.

"Yellow-fever cases were made known to the sanitary inspectors by the reports of medical assistants, of the head of the family in which a case occurred, or by anyone to whom the facts of the case were known, in accordance with the requirements of the law. The sanitary service being advised, a competent group of inspectors and authorities were at once despatched to the locality, having with them a physician. The latter ascertained if the case was one for isolation treatment (whether under or over four days after the onset of the disease), and if the case required isolation the same was carried out either in the dwelling-house or in the hospital, hospital treatment being resorted to only when the dwelling was unsuited to isolation treatment or when the patient wished it. In such cases the patient was taken to hospital in a vehicle closed against the entrance of mosquitoes, and the house was disinfected in accordance with the system below outlined. In the case of isolation in the home the physician chose a roomy quarter of the house, with door opening into another secluded part of the house and with windows. If there were more than one door, the others were temporarily closed. The patient was kept under a netting enveloping the bed upon which he lay during the time permanent quarters were being arranged. The doors and windows of the room to be isolated, and of the rest of the house as well, were sealed to prevent the exit of mosquitoes existing there, the windows of the isolated room being fitted with wire screens in such a way as not to interfere with ventilation, all other openings to the outside or to other parts of the house being sealed with cloth or paper. The only door to be used in the use of the room must be specially fitted with a double door drum, provided with an arrangement which does not admit of both doors being opened at the same time. This apparatus prevents the entrance and exit of mosquitoes, and after the room is thus prepared the door and windows are closed, and camomile is burned in the room three to four hours in the proportion of ten grams per cubic metre of space. The room is then well ventilated and is ready to receive the patient. The rest of the house is well caulked and isolated from the room in which the patient is placed, and disinfected with sulphur gas as below indicated. During this operation a sanitary inspector remains

* First Report of the Departmental Committee appointed to inquire into the Law Relating to Coroners, etc. Pages 106 to 112. (Cd. 4782.)

* From the Public Health Reports of the U.S. Public Health and Marine Hospital Service. November 19th, 1909.

in the room with the patient and stops the entrance of any gas which may possibly find its way through some overlooked crevice. During the preparation for disinfection the sanitary authorities make a thorough inspection and destroy any mosquito larvæ they find, pick up or destroy any vessels lying about which might serve as a receptacle for mosquito-breeding water, and close water boxes against the same danger. The patient remains in isolation for seven days, after which isolation may terminate if the family so wishes. The infected district is then treated as above indicated—that is, by disinfection, sanitary policing, and medical supervision. Disinfection is carried on in two ways, one force working from the centre toward the outer limits of the district and the other from the boundaries of the district inward. The area of infection being determined over as large an area as possible, these two sections separate, one of which begins immediately with the house in which the case of yellow fever occurred, the other beginning at those houses which might possibly have been infected at the greatest possible distance from the case in isolation. The purpose of such a system was to destroy all mosquitoes which might have carried infection within the district.

"While the disinfecting force is thus at work the police division, under the direction of a physician and of students who direct the different sections, operates throughout the infected district, making every effort to destroy all mosquito larvæ and to prevent the possible breeding of mosquitoes outside as well as inside the houses. Where larvæ are likely to exist in stagnant water or refuse of any sort, petroleum mixed with creoline, lysol, or similar products is thrown over the water or refuse in sufficient quantity to kill the larvæ instantly. Where it is impossible to use petroleum, as in the case of tanks and boxes for household use, a small fish, the 'barrigudo' or 'Girardinus caudimaculatus' is placed in large numbers in the water. This fish destroys the larvæ of mosquitoes most voraciously. Larvæ in the drains are destroyed by the use of Clayton gas, which is pumped into the sewer, which has been previously divided into compartments. Simultaneously with the disinfection the sanitary inspectors make daily inspection of the suspected district, examining every inhabitant supposed not to be immune—that is, children under five and all foreigners of less than five years' residence in Rio. These are subjected to the closest vigilance, being placed in isolation at the least tendency to rising temperature. Reports are made in writing, those to whom this duty falls being required to fill up daily a bulletin sent out by the medical inspector to the chief of each district. In this report must be given the record of any who work outside the district, or who for any reason absent themselves

therefrom, a record of their condition being also kept by the physician in the district in which they work or are temporarily resident. When any inhabitant absents himself from the district, the record must show his address, where he will be subjected to vigilance on the part of the authorities there. If the person under vigilance evades the attention of the physician and withdraws without giving notice, the owner of the house in which he lived is fined, he himself is apprehended by the sanitary police, fined, and subjected to renewed vigilance.

"Thus were carried out the details of the yellow-fever campaign in this city. Those who are interested in the beginning of the campaign from the point of view of the above discussion and in the influence of the various factors in the development of the sanitary service as affecting yellow fever should read the important memorials of Dr. Bulhões de Carvalho, in 'Contributions to the Epidemiological State of Yellow Fever,' Rio, 1903, and of Oliveira Borges, in 'Prophylaxis of Yellow Fever in Rio de Janeiro,' presented to the Third Latin American Medical Congress in Montevideo, March 17th to 23rd, 1907.

"In closing, we present below the statistics showing the death rate from yellow fever from 1872 to date, which serve to prove the statement in the beginning of this communication that yellow fever is wiped out in Rio de Janeiro."

MORTALITY FROM YELLOW FEVER IN RIO DE JANEIRO
FROM 1872 TO AUGUST, 1909.

Year.	Deaths.	Year.	Deaths.
1872	102	1891	4,456
1873	3,659	1892	4,312
1874	829	1893	825
1875	1,292	1894	4,852
1876	3,476	1895	818
1877	282	1896	2,929
1878	1,176	1897	159
1879	974	1898	1,078
1880	1,625	1899	731
1881	257	1900	344
1882	89	1901	2,299
1883	1,608	1902	984
1884	863	1903	584
1885	445	1904	48
1886	1,449	1905	289
1887	137	1906	42
1888	747	1907	39
1889	2,156	1908	4
1890	719	1909	0

DEATH CERTIFICATION.*

By MEREDITH YOUNG, M.D., D.P.H.,
County Medical Officer of Health, Cheshire,
Late Medical Officer of Health, Marylebone.

IT is really a matter of serious moment that the certification of causes of death is in such an unsatisfactory condition. Certification by medical men is on the whole quite satisfactory, and if the medical officer of health were given a proper *locus standi* so that he would be enabled, not merely as a matter of courtesy but as a matter of right, to inquire into cases where vague nomenclature had

*Annual Report, Marylebone, 1908.

been employed, and where primary causes were ineffectually distinguished from secondary causes, probably nothing more would be requisite. To this end little more is required but the transference of the supervision of registrars of births and deaths to the local sanitary authority, with power to make regulations for the guidance of these officers.

In the case of deaths not certified by medical practitioners a more drastic change is needed. The coroner's jury may have its good uses, but its seven hundred years of hoary antiquity must probably stand as one of the best excuses for its existence. A fairly extensive experience of such bodies compels me to say that, whilst innate common-sense and shrewdness often constitute their salvation from totally fallacious findings, they are exceedingly apt to be swayed more by irrelevant items of evidence than by those which are both relevant and admissible. Not infrequently their verdicts are arrived at without medical guidance, and are couched in terms which display a want of appreciation of the real meaning of the words they have heard and even of those which they have themselves used.

The law has in view, in the holding of coroner's inquests, the highly important duty of inquiring into cases of homicide or sudden death with the object of separating out those deaths due to criminal intent.

State medicine has in view an object no less important, for correct death certification depends upon correct medical nomenclature; upon the latter public health statistics are entirely based, and upon the last legislative measures for the betterment of public health are very largely founded.

There is a distinct necessity, in my opinion, for the regular co-operation of medical with legal knowledge in all inquiries into sudden and unknown causes of death. Every coroner possessed of legal qualifications alone should have as an adviser a medical man of extensive pathological experience, and post-mortem examination should be the necessary preliminary to every inquest. Until these essentials are carried out the findings of coroners' juries must be accepted with very considerable reserve. I give some verdicts recorded in this district during 1908 to show the curious wording sometimes adopted by juries:—

"Suffocation—want of fresh air, caused by collapse of houses."

"Bursting of abscess in abdomen and inflammation of lungs accelerated by fractured patella and injury to the side caused by a fall on ground when alighting from a tramcar in motion."

"Disease of heart and other organs caused by alcoholism, otherwise natural."

"Disease of heart and liver, at a time when he was under chloroform for the purpose of an operation."

THE BILIARY CIRRHOSIS OF INFANTS, OTHERWISE KNOWN AS INFANTILE LIVER.*

By T. FREDK. PEARSE, M.D., M.R.C.P., D.P.H.,
Health Officer, Calcutta.

FOR many years a peculiar disease of the liver of infants, accompanied with fever and attended with a high mortality, has been recognized in India (Bengal).

The morbid anatomy and pathology of this disease were well described by Lieut.-Colonel Gibbons, I.M.S. (retired), in 1891, who considered it a form of biliary cirrhosis, and suggested that the term intercellular cirrhosis would be appropriate, as there occurred a primary development of fibrous connective tissue within the lobules between the liver cells. The other organs of the body seem unaffected, except the kidney, which shows marked degeneration and shedding of the epithelium of the tubules. The usual post-mortem appearances were œdema of feet and legs and generally of face and hands, and a small quantity of fluid in the abdomen. All the tissues of the body are bile-stained. In the earlier stages the liver is enlarged, but later it becomes small. There is no perihepatitis, but the liver substance is tough and the outer surface granular. The liver cells are much altered, many being destroyed and others converted into masses of granular debris. In the interlobular band of connective tissue many bile ducts are found. The intercellular fibres are not applied closely to the degenerated cells, but form a network, in the spaces of which the degenerated cells lie.

It was suggested that the disease is due to an irritant which primarily attacks the liver cells, but which also leads to proliferation of the connective tissue elements. The proliferation of the bile ducts is not so easily explained, but it was suggested by Paltang to be a curative process, in which a regeneration is brought about by a multiplication of bile ducts from which masses of liver cells were formed. The disease is not due to alcohol, there is no evidence of syphilis, and the pathological changes are quite different from the liver enlargement which follows malaria.

Symptoms.—The disease is almost entirely limited to children between six months and two years of age. The onset is insidious. Some families seem liable to the disease. It occurs amongst rich and poor, but is probably less common amongst Mahomedans than Hindus. It is as common amongst infants fed with other milk than that of their mothers.

The disease varies in its duration, sometimes lasting a month only, at others for perhaps two years. Generally the first symptom noticed is enlargement of the liver, but earlier symptoms are

* Annual Report, 1908.

nausea, vomiting, sallow complexion and slight fever. The child loses its appetite, becomes irritable, develops thirst, and becomes distinctly feverish, especially towards night. The liver enlargement progresses, and may become very extensive. Some tenderness over the liver is detected. In the later stages jaundice sets in and the child is markedly ill. Oedema occurs also in the later stages. There is a deficient excretion of bile, the stools being clayey and whitish, but the urine is deeply stained. The fever seems to increase with the disease.

The prognosis is extremely unfavourable, but it is impossible to estimate the case mortality, as there are no trustworthy figures available. The disease is said to be common in Madras, and it has been seen in Bombay. The clinical course of the disease was well described by Dr. Jogendra Nath Ghosh in the "Transactions" of the first Indian Medical Congress (1894).

Since 1904 careful inquiries (in the absence of medical certificates) have been instituted in Calcutta into the causes of all deaths, and the prevalence of this disease has been clearly shown. The symptoms and course of the disease shown by later inquiries confirm the early descriptions. I am not aware, however, that anything further has been done to explain its pathology or to discover its origin.

We had in Calcutta in 1907 no less than 636 deaths of children from this disease. Of this number, 92 only were under twelve months of age and 138 only were over two years of age. The great bulk of the cases—viz., 64 per cent.—died at ages between one and two years. The mortality amongst Hindu children is greater than amongst Mahomedans, but male and female children are about equally attacked. It is important, in connection with the theory that this disease is brought about by absorption of toxic material from the bowels, to note that diarrhoeal diseases (more particularly acute and chronic enteritis and the complaint corresponding to summer diarrhoea) are less common in Calcutta than in England, the mortality from diarrhoeal disease being 21 per 1,000 births in Calcutta, as against 31 per 1,000 births in England and Wales (1904). Considering that the disease occurs in sucklings, in infants artificially fed, and in children between one and two years of age, who are given all sorts of food, it is difficult to ascribe the disease to errors of diet. It is generally considered to be a progressive disease, and once started almost always proves fatal. Taking all things into consideration, we can most reasonably conclude that it is a parasitic disease, but whether microbic in origin or due to larger forms, there is no evidence to show.

Our returns for 1908 show 727 deaths from this disease, distributed as follows:—Hindus 596,

Mahomedans 124, mixed races 2, other classes 5. It is therefore much more common amongst Hindus, even taking into consideration their larger population. From the large mortality annually occurring from this disease the statistics are of more than purely medical interest.

SANITATION IN MODERN COTTAGES.—With a number of new villages arising in different parts of the West Riding owing to colliery extensions, it is interesting to compare the new with the older, and to note what advances, from a sanitary or æsthetic point of view, are made, and it is noteworthy that the advantages are not wholly with the newer houses. There is a tendency in certain districts to have the kitchen and scullery fittings in a single room at the back, and to reserve the ground floor front room as a "parlour." A common result of this is to render the front room practically useless, and to crowd the family into the back room, which becomes in fact the only "living room." Another change much to be deplored from every point of view is the very general absence of gardens from the newer colliery houses; for it is a remarkable fact that even where the houses are badly kept, the gardens, where they exist, may be a source of profit and pleasure to the tenants, and are usually well kept. On the other hand, the improved fittings in the newer houses are a great advantage on the old, polished stoneware sinks, with properly trapped waste-pipes taking the place of the rough stone sinks generally found in the older. The arrangement of the back premises, too, is a great improvement, the yards being generally paved either wholly or in part, with proper channels for drainage.—*Annual Report of Dr. Kaye, County Medical Officer of Health, West Riding.*

BACK-TO-BACK HOUSES.—There are 16,000 back-to-back houses in Sheffield, and in the case of the 8,000 front houses it is a common practice for the occupiers to throw slops and refuse on the streets in order to save themselves the trouble of carrying the stuff round to the yard. On one occasion recently I found the occupiers of some front houses make the excuse that they had no right to use the yard. As a result I addressed a circular letter to all the house agents in the city, and ascertained that in the terms of letting the front houses have just the same right to use the yards as the back houses. I am of opinion that in the next Corporation Bill a clause should be inserted for the purpose of recovering a substantial penalty from persons who throw refuse on the streets, thus putting an end to a practice which ought not to be permissible even in a colliery village.—*Annual Report of Dr. Scurfield, Medical Officer of Health, Sheffield.*

A MILK-BORNE OUTBREAK OF EPIDEMIC GASTRO-ENTERITIS.*

By MATTHEW HAY, M.D., Medical Officer of Health, Aberdeen.

ON November 9th my attention was called to the practically simultaneous occurrence in the west-end of the city of several cases of well-marked enteritis in two families, who were obtaining their milk supply from a common source. On visiting the cases and making inquiry in the neighbourhood and at medical practitioners, I quickly found that we had to deal with a well-marked although fortunately, circumscribed epidemic of gastro-enteritis, and that it was chiefly associated with the customers of a certain retail dairy in the vicinity. Within a short street in which the dairy was situated, I discovered, by a house-to-house visitation, nearly 70 cases of gastro-enteritis, all of which, except two, had received part, or whole, of their milk supply from the suspected dairy; all the houses in the street were visited, and it was found that more than a half of the families did not receive their milk from this dairy. Among these families, with two exceptions, there was no illness; and the exceptions consisted of families in which a case of a somewhat indefinite gastro-intestinal illness had occurred, such as might take place occasionally in any family. In an adjacent street, every member of two large families—both obtaining their milk from the same source—were laid down with gastro-enteritis. Difficulty was experienced in obtaining a list of the customers of the dairy, partly because of the milk being mostly paid for when bought and the names of the purchasers not being recorded, and partly because of a natural reluctance in the dairyman to intensify the charge against the milk.

I found the dairyman, otherwise, most willing to co-operate with the Public Health Authorities in the carrying out of such precautions as were necessary. He obtained his milk supply from three farms in the country; and immediately before my visit, having heard of some of the cases of illness among his customers, and having also learned that illness existed at one of the three farms, he had resolved to stop taking milk from this farm. I approved of this step, and at the same time communicated with the County Medical Officer, who visited the farm, and found that there had been a series of five cases of illness there similar to the illness among the customers of the dairyman in Aberdeen. I also ascertained that part of the milk from this farm was supplied to another dairyman in town, and that a small quantity was sold by the farmer himself direct to certain consumers in the city. By the time I received this information the County

*Annual Report, 1908.

Medical Officer had arranged for such precautions being taken as would prevent further possible infection of the milk. I accordingly did not think it advisable to make a full inquiry among the customers of the second dairyman, as it would have created unnecessary alarm after all real danger was over; but such limited inquiry as I made revealed several cases of gastro-enteritis both among the customers of this dairyman and among those families to whom the farmer sold his milk direct.

The evidence associating the farm with the crop of illnesses in the city was rendered complete with the fact that the first persons to sicken at the farm were laid down on November 5th, and that, with one exception—where the illness was said to have begun on the same day—all the illnesses of the group investigated in the city commenced on November 6th to 8th. The period of incubation of the infection was short, as was definitely proved by the experience of a family who had returned to town on the evening of November 5th from a long stay at Banchory, and all of whom were laid down on the evening of the 6th and morning of the 7th.

The illness varied in severity in the different cases. In the majority the patient was confined to bed for two to three days, but a few cases were laid up for over a week. The illness began usually with severe headache, shivering and backache. More or less severe vomiting or retching followed, and was accompanied in severe cases by abdominal pain. In most cases diarrhoea was present, and continued for several days. In a few cases cramps in the legs were complained of. There was usually some degree of fever, which lasted for two or three days, the temperature rising by 1 or 2, or even 3, degrees. All the cases recovered.

The stools and urine of some of the cases were obtained for bacteriological examination, which did not, however, yield any definite results.

In connection with this outbreak, it is of importance to note that inquiry among the medical men of the city showed that, for a month or so previous to the outbreak, there had been isolated cases of fairly severe gastro-enteritis in their practice, and that the cases were rather more numerous than usual, but there was rarely more than one case in a household. In the county also, and in the district in which the infected farm is situated, the County Medical Officer was informed that similar cases had been met with.

The inference is that the city and surrounding district had for some time been suffering from an undue prevalence of a zymotic or infectious enteritis, not highly communicable from person to person, but nevertheless capable, after the manner of typhoid, of slowly spreading in this way, and that after a time, owing to the occur-

rence of cases of the disease at the farm referred to, the milk of the farm had become infected in an easily explicable way, just as the milk may become infected with typhoid or scarlet fever, and was at once followed by an explosion of cases of illness among the consumers of the milk.

When infection of milk occurs, it is usually conveyed on the hands of the persons employed in milking the cows or handling the milk vessels. The most scrupulous cleanliness of hands and aprons should be observed at all dairy farms and dairies, and would usually prevent infection of the milk, even when the persons themselves happened to be infected.

It is important for dairymen to bear in mind that recent legal decisions appear to show that where any illness arises from the use of milk which has become contaminated by the neglect of proper precautions by the dairyman or his servants, the dairyman may be successfully sued for damages. In a recent case damages to the extent of £500 were awarded by a jury.

THE POLICY OF SCHOOL CLOSURE.—With the experience of an extended outbreak behind us, it may be useful to apply its lessons to the policy of the future. Sectional closing of schools was vigorously adopted in the early part of the outbreak, but without appreciably affecting the increase of cases prior to the New Year holidays. When these approached, the whole educational machinery was stopped for a period of three weeks. The result of this was to produce a reduction of the cases occurring at and below school ages in the three weeks which immediately followed the closure. But the duration of the closure was insufficient to exhaust the activity of the virus, which broke away, when the schools were reopened, with almost reinforced vigour, like a current whose onward course has been temporarily obstructed. We can scarcely be said to have gained anything ultimately in reducing the volume of the disease from the attempt to interrupt its course. For the future we shall have the advantage of medical inspection under the Education Act to help in the early recognition and exclusion of children who are displaying the first symptoms of invasion of the disease. Supplementing this, a record of children attending the infant classes, who are susceptible to attack, will be of use in directing attention to the children who most require this supervision. By this means the extent of the invasion of individual schools may be somewhat restricted, but, as we have seen, the bulk of the cases will be supplied from the children who are under school age, and here our tenement system of housing forms a heavy handicap on any effort to limit the spread of the disease once a tenement has become invaded. —*Annual Report of Dr. Chalmers, M.O.H., Glasgow.*

ISOLATION DIFFICULTIES IN RURAL DISTRICTS.—"As an example of the difficulties one has to contend with in combating infectious diseases in country villages where no isolation hospital is available, and when the housing accommodation is so inadequate as is the case at Lenwade, I may say that the first case in an epidemic occurred in a family of eight—father and mother and six children. When I first visited them I found a girl and a boy, aged respectively eleven and thirteen, both ill with the disease, and sleeping in one room. The only other bedroom in the cottage was occupied by the parents, a son aged fifteen, and three other children, aged six, three, and eight months. The son was in the garden, and had, as I discovered, well-marked diphtheritic membrane on both tonsils; in addition, one of the other children had a purulent nasal discharge. There was only one room downstairs in this cottage, and the small garden at the back was in free communication with that of the cottage next door, where there were also children. I need hardly say that the children next door did not escape the infection."—*Annual Report of Dr. Long, Medical Officer of Health, St. Faith's Rural District.*

LEAD POISONING IN THE WEST RIDING.—During the year cases of lead poisoning attributable to the use of lead-contaminated drinking-water were reported at Denholme, Dewsbury, Lepton, Mytholmroyd, Ossett, Penistone Rural, Soothill Nether, Thurlstone, and Worsborough. A large number of samples of water were tested for lead, and positive results obtained at Baildon, Clayton, Denholme, Dewsbury, Elland, Gomersal, Greetland, Harrogate, Hebden Bridge, Hipperholme, Honley, Mytholmroyd, Ossett, Ravenshorpe, Rawdon, Saddleworth, South Crosland, Soyland, Thurlstone, Worsborough, Yeadon. In most of the cases the amount of lead found was very slight, but the fact that a water supply possesses plumbo-solvent power should be sufficient to cause the Sanitary Authority to maintain a constant watch over its behaviour in this respect. In August, 1908, the county medical officer examined a number of samples from domestic taps in various parts of the West Riding, the water collected being that which had stood in the service pipes all night. Twelve of these samples were found to contain lead to a dangerous extent, and thereupon the West Riding Sanitary Committee communicated with the respective water companies. In all the more important cases some form of treatment is being adopted to remove the ability of the water to dissolve lead. The county medical officer has been called in on several occasions to advise as to the best methods of achieving this end, which is usually a fairly simple matter. —*Annual Report of Dr. Kaye, County Medical Officer of Health, West Riding.*

FACIAL ERYSIPELAS IN A CLASS.*

By JAMES KERR, M.D., D.P.H.,
Medical Officer (Education) London County Council.

ON March 21st a letter was received from the head teacher of the Girls' Department at New Park Road stating that there had been three cases of erysipelas in Standard VI. The first case (A. S.) occurred on February 19th. Her nose was "swollen and extremely red and shiny." It was diagnosed as erysipelas by a medical man. She was out of school for a month, returning on March 16th, and was examined there on April 8th; she was noted as undersized, poorly nourished and poorly clad, evidently convalescent from a serious illness which there was no reason to doubt was correctly diagnosed. The second case (M. C.) occurred on March 12th, three weeks after the first case and before her return to school. Her face under the right eye became swollen, red and painful. She was sent home and treated by applications of flour. She was seen in school on March 26th as a well-clad, refined and delicate girl. Some swelling still remained as a bagginess under the right eye, and the whole history was quite consonant with a slight attack of erysipelas. The third case (A. M.) ceased attendance on March 16th; she had no contact with either of the previous two, but stated that M. C.'s face was exactly like hers at the start. Her mother on April 8th gave a very definite history of erysipelas, which started in a small spot under the left eye, the nose and eyes becoming red and swollen, and then it spread down the neck with watery blisters that hung in bags. On examination she was healthy and well grown. The face was still somewhat swollen, and there was no doubt that she had had erysipelas.

The class-room was thoroughly disinfected on March 27th, but in spite of this two further cases occurred.

The fourth case (A. B.) was absent from April 2nd to April 6th. The inflammation started under the left eye, where the skin was swollen and red. The head teacher sent her to a local practitioner, who diagnosed an infectious process. Seen on April 8th, she was an undersized and ill-nourished child. There was a small punctured point, covered with a scab, below the left eye, but no longer any inflammation. The fifth case (M. W.) ceased attending on April 3rd. The inflammation commenced under the right eye and spread across the nose to the face. Seen on April 8th with "St. Anthony's fire," she had erysipelatous inflammation of the skin of the face, including nose and cheeks, which were red and swollen with a definite margin, and here and there little vesicles especially about a linear scratch under

* Annual Report, 1908.

the right eye, where the inflammation is said to have started. She was well developed and nourished, and at the time when seen was extremely ill and suffering with bronchitis. She had sat immediately in front of A. B., who had become ill the previous day.

The spread of erysipelas through a class in this manner is a rarity that may almost be described as unique. The origin of the inflammation in at least three cases from a scratch below the eye, and in the same position in the other two, is suggestive of factitious production; but the fact that the cases did not originate at once but at intervals, and that none of the children were particular friends, is against this. Two of the children were exceptionally sensible, intelligent and truthful, and denied all but the possibility of an unnoticed and accidental scratch. The class-room was at the top of the building and had been used as an art room, having shadow curtains which could be rolled upwards, out of deep and dusty troughs, which it was impossible to clean, and which were therefore removed.

THE VENTILATION OF DWELLING ROOMS.—In the present day, when the advantages of the proper ventilation of dwelling-rooms are beginning to be more and more appreciated, it is desirable that the windows of every such room should be so constructed as to be easily opened. In Aberdeen, as in Scotland generally, the windows are constructed with sashes, but sashes are difficult to move without the usual counterbalancing weights. There are still some windows in the older houses that have been constructed without such weights, and there are many others in which the cords attached to the weights, after being broken, have not been replaced. It is well that the owners and occupiers of property should understand that the sanitary inspector and myself regard such defects as contravening the requirements of the Public Health Act and the Local Acts. We have, therefore, for some years been steadily insisting on every window being so constructed that it can be readily opened without much effort. It is scarcely enough that only one sash should be made to open, inasmuch as a room, especially in still weather, cannot be satisfactorily ventilated except by raising the under sash and lowering the upper sash. The heated and foul air can then find its way out by the opening at the top of the window, while the fresh air will flow in by the opening at the bottom. The owners of property have now for many years fully recognized their obligations in respect of the free ventilation of drains. It is almost more important, in the interests of health, that they should be equally ready to provide for the proper ventilation of dwelling-rooms. I attempted to make these observations as not infrequently the sanitary inspector and myself experience difficulty in persuading landlords of the older houses of the necessity for making such provision.—*Annual Report of Dr. Hay, Medical Officer of Health, Aberdeen.*

THE BIOLOGICAL EFFECTS OF TOWN LIFE.

THE *Zeitschrift für Stadt-Hygiene* (Vol. I., Part 7, 1909) contains an interesting article, entitled "The Town Man," by Dr. Bachmann, District Physician of Harburg. In it he endeavours to answer the question, What has the town made of man? and, by pointing out the causes of mischief, to show in what direction our efforts should be directed so as to get rid of the injurious influence of town life while retaining the benefits of town culture.

From this biological standpoint the most important factors in our surroundings are nourishment in its widest sense; then the air we breathe, dwellings, clothing, light, temperature, care of the skin, movement, and lastly the psychical effects of town life.

With the exception of general culture the author assumes all the advantages to be on the side of country life, and the article is taken up with a comparison of the conditions and the effects they produce on man.

As compared with the country the evils of town life may be said to consist broadly of an excess of proteid, spices, and fluids, a deficiency of mineral matter (note our machine-milled flour), an excess of poisonous stimulants, breathing of dust and harmful gases, deficiency of muscular activity, and, as regards the poorer classes, dirt, bad clothing, and insanitary dwellings.

After allowances for differences of race and position, the author has come to the conclusion that the town has developed a special type of man, with special characteristics and tendencies, of which he considers the following the chief (and here the qualities are spoken of in contrast to the country type), viz.:—Pallor; greater weight and height than the country man (which increase of weight is due to increase of lymphatic and fatty tissues, notwithstanding a decrease in the size of the muscles and bones); a tendency to variation from excessively tall and lean to the small, delicate, undersized, ill-developed man; early decay and irregularity of teeth, muscle weakness, inclination to catarrh (due to disturbances of nutrition), greater tendency to nervous disorders, pigmentation under the eyes (this applies especially to Berlin children), in certain lymphatic types sparing growth of facial hair, and lastly premature baldness.

He brushes aside the argument which is occasionally used that the bodily constitution of the town man has been evolved to suit his mode of life, and says that it is the result of hygienic misuse of stimulants, proteid, etc.

The author then traverses the various conditions which bring about these results and discusses the physiological question in connection with excessive

proteid (especially in animal flesh), the deficiency of mineral matters, and the want of muscular exercise, impurity of air, general influence of town life, including mental and moral conditions, the use of tobacco and stimulants (in their broadest sense), and finally concludes that with the exercise of will-power, etc., the evils can be removed, and we can return to a healthier and more natural mode of life.

CORRESPONDENCE.

The Editor does not accept responsibility for the opinions of correspondents.

To the Editor of "PUBLIC HEALTH."

DEAR SIR,—Mrs. Webb, in her most interesting address to the Society on the 14th inst., did an injustice, it seems to me, to the recent Report of the Departmental Committee on the Midwives Act, 1902, of which I was a member, and I fear my reply failed to remove the misunderstanding.

Mrs. Webb pointed out the necessity that medical men summoned to a confinement according to Rule 18 of the Central Midwives Board should be assured of the payment of their fees. She regretted that the Departmental Committee should have made the authority responsible for the administration of the Poor Law the authority to secure this payment.

In paragraph 71 of their Report the Committee agreed "that the Act should be amended by giving the practitioner summoned by a midwife in cases of emergency a secure expectation of payment." Cases not of emergency will be treated, for the present, according to the prevailing system, by the general practitioner in charge of the case or by the Poor Law medical officer.

As to the method selected of securing payment in the cases of emergency, the Committee decided, as Mrs. Webb rightly demands, that the question of payment should be entirely separate from the treatment of the case. By the Minority Report's proposals there would be "Registrars of Public Assistance" to decide whether and how much the patients should pay. It was impossible for the Committee to make recommendations as regards authorities and officers that may or may not be called into being by the reform, at some future time, of the Poor Law. It was obviously advisable to keep in one pair of hands the whole business of deciding on the economic resources of any individual family. The County Council had no machinery for this purpose. To give them, as the local authority under the Midwives Act, 1902, the responsibility of deciding whether the patient could or could not pay the medical fee, would result in disorder, irregularity of standard, and many cases of injustice. The Committee, therefore, decided to make "the authority responsible for the administration of the Poor Law" responsible for the payment, subject to certain checks by

the local authority under "the Midwives Act, 1902." This leaves the machinery unchanged in the case of any reform of the Poor Law according to the Minority Report, and keeps the payment of fees and the treatment of cases under separate authorities.

May I, at the same time, demur to Mrs. Webb's suggestion that the Committee were "nobbled" by the Poor Law representatives from the Local Government Board? The Committee were, I believe, individually—as they certainly were in common—actuated by the single desire to render the Act effective, and to use the existing instruments of local government for the improvement of the Act in order to make it as efficient as possible for the common good. It was not their duty to frame a report with a view to hypothetical eventualities, still less to use their opportunities in order to further any schemes they might favour for a general reform of the Poor Law.

But I cannot conclude without expressing my general concurrence with the sympathy necessarily felt by medical officers of health for the scheme put forward by Mrs. Webb for Poor-Law reform. She and her colleagues have clearly defined the separate factors concerned in the problem of destitution, have laid down a definite scheme for classifying responsibility and apportioning their duties of administration in harmony with the other functions of the community, and, above all, have impressed upon the public the supreme lesson that prevention is better than cure.

Believe me, yours faithfully,

F. E. FREMANTLE.

January 21st, 1910.

A SUGGESTION TO ABOLISH THE TERM "NUISANCE."—The word "nuisance" is one which needs abolishing. Its meaning under the Public Health Acts is restricted to certain specific insanitary conditions. But the public have no knowledge of this restriction, and in consequence demands are frequently made on sanitary authorities for the remedy of matters with which they are powerless to deal. It is often the case, too, that sanitary officials step over the boundary line drawn by the Public Health Acts, and serve "informal notices" on unsuspecting persons for the abatement of conditions which may be insanitary but which do not by any means come within the four corners of the statutory definition. However, the motive is almost always good, and the results obtained desirable from a public health point of view. This does not make it any the less necessary that a revision of the Public Health Act, 1875, and particularly of the hard-worked Section 91 and its correlated sections dealing with nuisances, should be carried out at an early date.—*Annual Report of Dr. Meredith Young, County Medical Officer of Health, Cheshire.*

PROCEEDINGS OF THE SOCIETY OF MEDICAL OFFICERS OF HEALTH.

FOUNDED 1856.

RECONSTRUCTED 1888.

INCORPORATED 1892.

AN ORDINARY MEETING of the Society of Medical Officers of Health was held in the Society's Rooms on Friday, January 14th, 1910, at 5 p.m. Present:—Dr. H. Cooper Pattin, President, in the chair; Drs. J. M. Martin, E. Sergeant, H. Manley, A. Bostock Hill, George Reid, G. F. McCleary, T. W. N. Barlow, W. M. Hamilton, A. Greenwood, J. R. Kaye, F. J. Allan, H. W. Beach, J. Tubb Thomas, E. H. Snell, W. A. Evans, A. E. Porter, W. F. Brown, H. M. Richards, G. Sowden, W. H. Symons, C. R. Harper, J. Tate, C. F. Stovin, A. Bygott, R. Dudfield, S. C. Lawrence, H. W. Roberts, G. C. Taylor, C. W. F. Young, E. D. Parsons, E. C. Seaton, H. Stott, J. Robertson, J. Priestley, R. H. Wilshaw, C. Sanders, J. F. Taylor, J. Williamson, W. G. Willoughby, D. A. Carruthers, W. R. Smith, A. J. Laird, E. H. T. Nash, Herbert Jones, and Mrs. Sidney Webb, visitor.

MINUTES.—The Minutes of the previous Meeting held on November 12th, 1909, having been published in PUBLIC HEALTH for December, 1909 (p. 103), were taken as read, approved, and duly signed by the Chairman.

ELECTIONS.—The following candidates, who had been duly nominated, were balloted for, and declared by the President duly elected:—

FELLOWS.

R. C. M. Colvin-Smith, M.B., B.C. (Cantab.), M.R.C.S., L.R.C.P. (Lond.), Cromer, Norfolk; T. S. Higgins, B.Sc., M.B., B.S. (Lond.), D.P.H. (Cantab.), Council House, Birmingham; D. M. Johnston, M.B. (Durh.), M.R.C.S., L.R.C.P., D.P.H. (Lond.), Health Office, Blackburn; A. A. McWhan, M.B., B.Sc., D.P.H. (Lond.), County Buildings, Cupar; A. Oberdorfer, M.B., Ch.B. (Vict.), D.P.H. (Camb.), Town Hall, Eastbourne; W. Roughton, F.R.C.S. (Eng.), D.P.H. (Lond.), Rushton, New Barnet; S. Seekings, M.B., B.S. (Lond.), D.P.H. (Cantab.), 62 Tynemouth Road, S. Tottenham, N.; A. E. L. Wear, M.D., B.S., 13 Hanover Square, Leeds; C. R. Wood, M.A., M.D., B.S., M.R.C.S., L.R.C.P., D.P.H., New Shoreham, Sussex.

NOMINATIONS.—A list of nominations to membership of the Society was read by the Hon. Secretary.

A paper was read by Mrs. Sidney Webb upon the "Minority Report of the Royal Commission on the Poor Laws."*

A motion standing in the name of Dr. S. C. Lawrence was not proceeded with.

Home Counties Branch.—The fourth Meeting of the Session 1909-10 was held at 1, Upper Montague Street, Russell Square, W.C., on Wednesday, January 19th, 1910.

On the motion of Dr. Sowden, seconded by Dr. Elwin Nash, it was unanimously resolved "That

* Published in the present issue.

the Home Counties Branch do contribute the sum of three guineas towards the costs incurred by Dr. Martha Adams, School Medical Officer of Twickenham, in the lawsuit for libel against one Pomeroy." Dr. Adams is a member of this branch.

Dr. Thresh, County M.O.H. for Essex, read a paper: "Some Notes on the Presence of Bacillus Coli in Deep Well Waters, and on the Multiplication of Bacteria in Water." At its conclusion a hearty vote of thanks was accorded to Dr. Thresh for contributing to the programme of the Session a paper which aroused the interest of everyone present.

Dr. A. Richmond, who had taken part in the laboratory work referred to, was present as a visitor.

THE SUB-LETTING OF HOSPITAL ACCOMMODATION.—Some inquiry will doubtless have to be made into the adequacy of the "arrangements" under which a hospital designed to serve the needs of a particular area no sooner gets into working order than the authorities responsible for its management proceed to make what is generally a one-sided agreement to take in patients from a number of outside districts. This "sub-letting," as it may be termed, of hospital accommodation is a matter which calls for the strictest surveillance. It is a system which usually breaks down at the time of greatest need, and the time of greatest need, moreover, not infrequently comes to both "landlord" and "tenant" at the same time, with the result that the "tenant" is left without any provision for isolation.—*Annual Report of Dr. Meredith Young, County Medical Officer of Health, Cheshire.*

DAYLIGHT SAVING AS A HEALTH MEASURE.—It is questionable whether young men and women engaged in sedentary occupations have a sufficient allowance of time for outdoor recreation. They require more than the artisan or workman who is engaged in vigorous physical work during the whole time of his employment. No class of person would have benefited so much from the Daylight Saving Bill, which, however, seems now to have received its quietus. But Parliamentary sanction is really not necessary to a better arrangement of the hours for sedentary employment. If in the summer months those in charge of offices in Aberdeen, and of such workshops as milliners and dressmakers and other sedentary occupations, would, so far as possible, arrange for at least a part of their staff or employees commencing an hour sooner and finishing an hour earlier, it can scarcely be doubted that the gain in health to the employees would be appreciable.—*Annual Report of Dr. Hay, Medical Officer of Health, Aberdeen.*

LAW REPORTS.

HIGH COURT OF JUSTICE.

KING'S BENCH DIVISION.

October 18th, 1909.

BEFORE LORD ALVERSTONE, L.C.J., DARLING AND BUCKNILL, JJ.

STAR TEA COMPANY, LIMITED, v. NEALE.

Sale of Food and Drugs Acts.—Coffee—Mixture of Coffee and Chicory—Label.

When coffee is asked for, and the purchaser is given a mixture of coffee and chicory and a coupon entitling him to certain articles, there is evidence that entitles the justices to convict for selling an article to the prejudice of the purchaser, although the mixture was sold in a wrapper labelled "coffee mixture."

This was a case stated by the justices of Gloucester on the hearing of a summons under the Sale of Food and Drugs Acts, against the appellant Company for selling to the prejudice of the purchaser, coffee not of the nature, substance and quality demanded.

The justices convicted the Company, and fined them £5 and costs.

It appeared that the respondent Neale, an inspector under the Acts, visited the appellants' shop. He saw an assistant, Harry Hunt, and asked him for half-a-pound of coffee. Hunt supplied it in two packets contained in wrappers with two coupons. [The wrapper was labelled on front and back "coffee mixture," with the words "sold as a mixture of chicory and coffee" in small print. The coupons entitled the purchaser to articles such as tea cups, boot brushes and clocks.] The witness paid 11d. for them. His attention was not drawn to the label or to the article supplied being a mixture. He produced the certificate of analysis by the county analyst showing that the article contained 74 per cent. of chicory and 26 per cent. of coffee. After the sale, the assistant, in reply to something said by the inspector, said he had made a mistake.

For the defence, an inspector in the employ of the appellants deposed that their assistants were told that when coffee was asked for pure coffee was to be sold, that the commercial value of the mixture in question was 10d. per pound, and that the two coupons were worth at least 6d.

The following notice was annexed to articles in the shop which were intended to be given in exchange for coupons:—"Given away with $\frac{1}{4}$ lb. of tea, also with $\frac{1}{4}$ lb. mixed coffee, $\frac{1}{4}$ lb. cocoa mixture, or three tablets of soap."

There were also notices in the shop similar to the following:—"Presents with coffee. $\frac{1}{4}$ -lb. packet mixed coffee 5 $\frac{1}{2}$ d. The check given with this mixed coffee is equal in value to quarter-pound tea checks, and can be exchanged at same time as tea checks."

The justices found as facts that the respondent asked for coffee and was supplied with the mixture above described, that no notice was given to him of the nature of the article supplied prior to the sale to him, and that the wrapper or label and tickets were not brought to his notice until the mixture was supplied; and were of opinion that an offence had been committed under Sec. 6 of the Sale of Food and Drugs Act, 1875, and further that as in their opinion the chicory had been added fraudulently to increase the weight and bulk of the article sold, neither the label or wrapper nor the ticket produced afforded the appellants any protection under Sec. 8 of the same Act, and that the right to the receipt by customers of articles of the nature and value of those produced by the appellants which might or might not have been required by the customers under a system known as the "bonus system" could not in law be relied on to disprove the fraudulent intention which they considered to exist.

ALVERSTONE, L.C.J., said he was not satisfied that the label contained sufficient notice; the expression "mixed coffee" would mean a mixture of coffees. The words "sold as a mixture of coffee and chicory" were in very small print. Then the justices had found that the chicory was fraudulently added, the effect of which finding was to prevent the appellants from having any protection under Sec. 8 of the Sale of Food and Drugs Act, 1875. It was said there was no evidence to justify the justices in so finding, but taking all the circumstances of the case into account, he thought that there was such evidence, and that the appeal should be dismissed.

DARLING and BUCKNILL, JJ., concurred.

RECENT PUBLIC HEALTH LITERATURE.

Cattle, Diseases of

FREER (G. W.). Ephemeral fever, or three, days sickness in cattle. *Veterinary Journ.*, 1910, lvi, 19.

Diphtheria.

ORR (T.). The control of diphtheria in school. *Journ. Roy. Inst. Pub. Health*, 1910, xviii, 18.

Housing.

DABELL (T. J.). The improvement of city slums by housing reform and otherwise. *Journ. Roy. Sanit. Inst.*, 1910, xxx, 533. Discussion, 538.

Hygiene, Public.

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THE VITAL STATISTICS OF SANITARY AREAS.

DR. NEWSHOLME, in his Annual Report as Medical Officer of the Local Government Board for the year 1908-9, draws attention to a difficulty that has been felt by all who have attempted to make use of the vital statistics published in the annual reports of the Registrar-General. He points out that the laboriously tabulated statistics of local areas can be utilized for administrative public health purposes, for which, after all, the statistics chiefly exist, "only in the exceptional instances in which the registration and sanitary areas happen to coincide;" and he expresses the hope that before the next Census is taken arrangements will be made for publishing vital statistics for units of sanitary administration, or for aggregations of two or more sanitary units. Fortunately, this hope appears likely to be realized, for the Registrar-General, in a discussion of the same subject in his Annual Report for 1908, had already intimated that "it may be possible at a future date to redistribute the returns (collected as before by registration areas) according to administrative areas, though it will probably be impracticable to publish separate statistics for the smaller areas." The reform thus indicated would be welcomed by medical officers of health and by all who have occasion to make use of the local statistics in the Registrar-General's reports, and it is much to be hoped that it will be carried into effect.

The statements to which we have referred have, however, been misapprehended in some quarters, and have been taken to foreshadow an interference with existing registration areas in order to make these areas partially or completely co-terminous with the administrative areas. But from the Registrar-General's Annual Report it is obvious

that there is no such intention. On page lxxiv it is clearly stated that the "obstacles in the way of such a proceeding are too serious to be overcome except by legislation going to the length of a new Registration Act." Evidently, there is no suggestion of interfering in the least with existing registration areas; such interference is unnecessary, for, as the report goes on to state, "the area of collection does not necessarily govern that of presentation." The intention, apparently, is to leave the existing arrangements for registration untouched, and to express the results of registration in terms of administrative sanitary areas, instead of registration areas. We can find no evidence in either of the two reports to which we have referred of any proposal to make sanitary areas and registration areas coincide. Nothing is said as to the date when the proposed changes may be expected to come into operation, but we may assume that no alteration will be made before the beginning of the new decennium in 1911. The current decennium must, of course, be completed on the old lines for the purposes of the Decennial Supplement.

It may be that the publication of local vital statistics for administrative sanitary areas will involve the disappearance from the Registrar-General's reports of the records of the registration areas, and this will be a matter for regret. But it must be borne in mind that these records are far from being trustworthy. They have never been corrected for institutions, and in many cases this defect makes them practically valueless. Moreover, in size and constitution the registration areas, especially the sub-districts, have varied considerably from time to time, being governed solely by convenience of registration. Therefore, if it is found impossible to record the statistics of both registration and sanitary areas the balance of advantage is greatly in favour of preferring the latter.

PROBLEMS CONNECTED WITH THE MEDICAL TREATMENT OF SCHOOL CHILDREN.*

By ROBERT A. LYSTER, M.D., Ch.B., B.Sc., D.P.H.,
County Medical Officer of Health and Chief School
Medical Officer for Hampshire.

A LARGE number of the unsatisfactory conditions associated with the treatment of school children found as a result of medical inspection to be defective can be traced to the vague and indefinite character of Section 13 (1) (b) of the Education (Administrative Provisions) Act, 1907. This section placed upon Education Authorities the duty to provide for the medical inspection of certain children, and gave them the power to make "arrangements for attending to the health and physical condition of the children educated in public elementary schools," provided that such arrangements were sanctioned by the Board of Education. Vague and general references such as the above must inevitably need elucidation, and the Board of Education is now engaged in interpreting, with more or less success, the meaning of this Section. Interpretation of a law by a Government Department is always a most unsatisfactory process, and is altogether outside its genuine functions.

The first point that rises to one's mind is whether the Act really contemplates education money being spent upon individual medical treatment, and whether the words "attending to the health and physical condition of the children" legally permits such money to be used for hospitals, for philanthropy, or for carrying out duties that have been legally placed upon Poor Law Authorities.

In the well-known Memoranda issued by the Board of Education an attempt is made to show that the present suggestions are merely extensions of what has been done previously by certain authorities, and in paragraphs 15 and 16 of Circular 576 it is argued that certain Education Committees had already undertaken duties connected with the spread of ringworm, vermin, and certain infectious diseases. The fact, however, that such work has been done by education bodies does not legalise further action in any way. Moreover, such steps were taken obviously as a means of protection of the other children rather than as a specific treatment for the individual. In paragraph 17 previous Acts are mentioned (Blind and Deaf Act, Defective and Epileptic Act, and Provision of Meals Act) which, it is suggested, have

* Read before a meeting of the Society of Medical Officers of Health, February 11th, 1910.

imposed upon Education Authorities some share of responsibility as to treatment; but it must be pointed out in this connection that all these Acts emphatically declare that the parent is liable for that part of the expenditure which is personal and not educational.

It is difficult to believe that the Legislature could have intended Section 13 of the Administrative Provisions Act to stand in direct opposition to the general tenor of all previous Acts. Even that extraordinary and extremely useful conglomeration called the Children Act, 1908, provides penalties for the parent or guardian who refuses to obtain treatment for a child. Read in a light of so definite a legal obligation, surely it is reasonable to suppose that an Education Authority, as such, does all that may be expected of it when it discovers and draws attention to the bodily needs of the children, warns and advises the parents, and gives information to those whose business it is to see that the parents' obligations are carried out in one way or another, but not out of education funds, nor under the direction of educationists.

The saddling upon an Education Authority of the specific and individual treatment of that part of the population which happens to be attending school appears to me to be an entirely unsound principle, and I cannot think of any argument as to why the medical need of such children should be distinguished from the similar and equally important needs of infants below that age and of older persons. Surely an attempt should be made to outline some definite scheme for the medical treatment of all people who are not in a position to provide it for themselves. This is one of the few points upon which I differ from the suggestions of the Minority Poor Law Commissioners. In the Minority Report it is carefully pointed out that in thousands of cases identical children are being simultaneously provided for by an Education Authority and by a Poor Law Authority, and families are mentioned in which one child is being kept at the public expense in a reformatory school, another at an industrial school, while the Poor Law doctor is attending the mother and a younger child, and other children are receiving meals from the Education Committee. The same report refers very rightly to the costly and demoralizing overlapping of functions and duplication of services that exist between various authorities, and suggests that a re-arrangement should be made in order that there may be no possibility of such overlapping. But when we come to their

actual suggestions we are disappointed to find that they include the proposal to place the medical treatment of children of school age in the hands of the Education Committee, while infants under school age and those above school age are to be dealt with by the Health Committee. Surely there is here a considerable possibility of overlapping still continuing to take place. In order to prevent this it is suggested by the Minority Commissioners that the Education Committee would hand over this duty of treatment to the Health Committee; but why bestow upon a body a duty which you expect them to depute to another?

So far as I am able to obtain information, the "treatment" that is being or is about to be carried out by Education Authorities is a provision only for those who fail to provide for themselves. This is not only not education, but it is unsound socialism; for if the provision is free or costs less than that supplied by individual effort, it is unfair to the non-participants and it invites them to become participants, thus increasing the burden upon those who still provide for themselves or who have no need for such provision. In order to outline a sound policy it would be necessary to imitate the scheme of provision of free education which is open to all, and which therefore may with justice be provided out of common funds. Of course, many prefer other means of education for their children, but the fact remains that they could avail themselves of that which is provided for all. This is the essence of sound socialistic work, and is an indispensable condition if any scheme is to be regarded as being universally fair. Upon these lines the sound policy would be to provide compulsory medical treatment for all who need it. But such a scheme would not be called education, and should not be associated in any way with an Education Authority. My personal opinion is that such a scheme is ultimately inevitable, and I believe that everyone would be benefited by its adoption. If one may judge from the effect of compulsory free education upon the status and remuneration of the members of the teaching profession, it would certainly work out very considerably to the advantage of the medical profession and its members.

To say that because the children need medical attention, and because they cannot be educated properly without it, it is the duty of the Education Authority to provide the same at any or no price is merely begging the question.

The same argument would apply in favour of the Education Authority providing sleeping accommodation for those children needing a good night's sleep. The Poor Law is, as we have been shown by recent reports, quite bad enough in all conscience, but I doubt whether it contains anything more entirely wrong-headed than some of the proposals by short-sighted educationists under Section 13.

Medical Treatment Act.—As the inevitable consequence of the apparently unexpected interpretation of the duty of an Education Authority to provide individual treatment, there has now appeared the Local Education Authorities Medical Treatment Act, 1909, and the question naturally arises as to whether the passing of this Act alters in any way the principles that have been already discussed. In order to satisfactorily work this Act, it will be necessary for an Education Authority to establish (1) machinery for the investigation of the means possessed by all parents for whose children treatment is provided; (2) another for recovering the cost of the treatment; (3) the compilation of elaborate scales by means of which it will be possible to determine whether the Education Authority are satisfied that the parent is unable to pay the amount needed. All such arrangements have been or should have been long ago made by Poor Law authorities, and for an independent authority to establish similar machinery would be to add to the existing chaos and overlapping that is greatly deplored by members of the Poor Law Commission.

Even if Education Authorities established such machinery, it is extremely doubtful whether there would be any practical result from this Act. Most probably the amount that is recovered would be altogether disproportionate to the cost of such recovery. How much, for instance, is being recovered under Acts which confer similar powers upon local authorities?

CHILDREN NEEDING TREATMENT.

The parents of children who need medical attention can be divided into two classes—(1) those who can pay for it and (2) those who are unable to pay for it. It is quite unnecessary to introduce any other class. Naturally the division into which any particular parent is placed depends upon three facts: the amount of his income, the size of his family, and the cost of the treatment that is required. For instance, there are great numbers of children whose parents can carry on an independent

existence, but who are quite incapable of meeting even the slightest additional expenditure. Other parents could be reasonably expected to meet some small expense such as would be involved in the extraction of a few teeth or the purchase of spectacles at a contract price not exceeding (say) three shillings, but are quite incapable of meeting any higher outlay such as would be necessary for the provision of continuous treatment or an operation.

The defects for which at the present time treatment is to be provided are mostly included in the following list: Sores of all kinds (including sores on head, impetigo and other skin diseases, scabies, sore eyes and eyelids), ringworm, verminous conditions, discharging ears, defective sight, adenoids, enlarged tonsils, defective teeth. The first four of these (sores, ringworm, vermin, and discharging ears) might be dealt with by local sanitary authorities as a fairly reasonable extension of their present duties.

The testing of the sight, including the issue of prescriptions, is not really a part of treatment at all, but is purely part of the medical inspection. It can be carried out easily and expeditiously by arranging for the examination of accumulated cases at special temporary centres (schools) on Saturday mornings. Prescriptions can then be issued, and the parents are able to obtain spectacles at contract prices. Such a scheme has now been working with perfect smoothness in Hampshire for some little time.

The last three (tonsils, adenoids and teeth) might reasonably be taken over at once by Poor Law Authorities, who have power to make special arrangements for operative treatment, and who could undoubtedly, if they went about it in a business-like fashion, undertake this work far more economically than any other body as at present constituted. If this could be arranged there would be no need for any exploitation of the medical profession for carrying out this part of the national scheme, and yet the full advantages of proper institutional treatment could be obtained for all necessary cases.

A sub-committee of the London County Council have grouped defective elementary school children into three classes:—

1. Those who require treatment in an institution and an outdoor life.
2. Those requiring operative and in-patient treatment.

3. Those who can be promptly and adequately dealt with in suitably equipped rooms.

No matter what the classification may be, the only practical and definite plan at present is to deal with those children whose parents are unable to pay for the necessary treatment. Children in the first class, which includes cases of early tuberculous diseases, are surely cases that should be dealt with either by public health committees or by Guardians. The second and third classes could be dealt with by a very simple extension of the existing Poor Law medical service and provisions.

If considerable overlapping in the future is to be avoided, and if medical treatment of poor people is to be placed upon the simplest practicable basis, there are only two possibilities between which we have to choose: (1) reference to the Poor Law; (2) reference to public health committees.

REFERENCE OF CASES TO THE POOR LAW.

In favour of referring such cases to treatment under the Poor Law there are the following arguments:—

1. The Guardians have, or should have, an organized medical service, which in its turn provides, or is supposed to provide, all the medical attention necessary to the poor. Of course it is fully recognised by most of us that the arrangements made by Guardians are almost universally of an unsatisfactory character, but it is extremely likely that if these particular cases were referred to the Poor Law Medical Service for treatment there would be a very rapid improvement in the conditions of the work that are at present associated with that service. The activity with which these cases are now being supervised and looked up by the medical inspectors of Education Authorities would concentrate public attention upon this work, and it is reasonable to expect that this would be followed by very rapid mending of their ways on the part of the Guardians.

2. The Guardians of England and Wales have in their service nearly 4,000 Poor Law medical men. This service is pretty generally recognised as unsatisfactory at the present time, but it should be remembered that it is most unsatisfactory from its own members' point of view. Upon the sick or infirm poor there is being spent annually over five millions sterling. It appears at all events an obvious possibility to reorganize this gigantic service in order that it may include that part of the medical treatment of school children which logically and naturally becomes part of its

duties. Such a reorganization and extension should cost far less than the creation of a new service. The extent to which provision for the treatment of children has been or should have been made by Guardians is best realized by remembering that one third of the paupers are children.

3. If the Poor Law Medical Service is not at present capable of providing all the necessary treatment, the Guardians could be easily forced to make such provision, and it is extremely likely that a wonderful improvement in the administration of the medical service of the Poor Law would be rapidly brought about. This would lead to a decreased call upon hospitals and less exploitation of the medical profession by the public.

4. Undoubtedly one authority alone should deal with the provision of medical treatment of all who cannot afford to provide the same.

5. A very considerable stimulus to the suggested scheme of treatment of these cases under the Poor Law has been given by the recent ruling of the Local Government Board. This decision was obtained as the direct result of the rule adopted in Hampshire to get as much as possible done by the Guardians.

Since the commencement of the medical inspection of school children, many cases requiring medical or surgical treatment have been discovered, in this county as well as in others, whose parents are obviously unable to provide it. Many of these people, however, are not so poor as to be compelled to apply to Guardians for help in the usual way. Such cases have accumulated rather rapidly in some parts of the county, and the situation became so acute in the Havant District that Dr. Lockhart E. W. Stephens, District Medical Officer to the Havant Union, called the attention of his Board of Guardians to the matter.

The Board of Guardians then laid the matter before the Local Government Board, and received a reply that has already been extensively published.

In this reply two facts appear to stand out prominently:—

1. That if children need medical attendance, though not for acute illness, and the parents cannot obtain it, an order for the attendance of the district medical officer should be given.
2. That if such children require "operation or specialized attention," then special payments may be made to the medical

officer, or other arrangements may be made by the Guardians.

The powers thus possessed by the Boards of Guardians would enable them to deal effectively with the cases that usually present the greatest difficulty. "Operation or specialized attention" would, of course, include the treatment of adenoids, ringworm, defective vision, discharging ears, etc. Such work, if undertaken by the district medical officers, would need to be paid for on terms to be arranged. Also it is obviously the intention of the Local Government Board that if any district medical officer was disinclined to undertake such specialized work, the Board of Guardians may make special arrangements with other medical men for dealing with such cases.

Some Boards of Guardians have already arranged to pay special fees for the prescribing of suitable glasses in cases of defective vision, and have undertaken to provide the necessary spectacles. Also some have arranged for the payment of fees for operative measures for cases of tonsils, enlarged glands, etc. The Havant Guardians are paying a fee of £2 for operations for adenoids and tonsils.

Against the suggestion of reference of these cases to the Poor Law there may be urged:

1. Pauperization of the families so treated. In this connection it should be remembered that the receipt of medical relief under the Poor Law does not legally pauperize, but those who urge this disadvantage may still claim there is some stigma attached to any relief under the Poor Law. This may be true, but it is very easy to exaggerate such things, and my own experience is that the stigma attached to Poor Law medical relief is not very serious. Moreover, the extension of both outdoor and indoor medical relief would probably tend to remove whatever stigma may at present be attached to it.

2. Enthusiastic supporters of the Minority scheme would oppose the reference of these cases to the present Poor Law administration because they object to any improvement of the existing Poor Law service.

3. Work that has been attempted in the past by Guardians has a very evil reputation, and this may tend to cast a slur upon the new work.

4. Possibly the most valid objection of all is the probability that guardians would supply this relief "on loan." This would mean that persons altogether incapable of paying for medical treatment would be saddled with a

debt on account of it for an indefinite period in the future. It would, however, be apparently a very simple matter to prevent such an occurrence.

REFERENCE OF CASES TO PUBLIC HEALTH COMMITTEES.

The work of medically treating the children of poor parents is inseparably connected with the public health. Poverty and disease work on each other in a vicious cycle, and among the poor there is a vast amount of infectious illness continually present. Many such cases remain unreported, untreated, and practically unknown, and they serve as a continual and ever-present focus for the spread of such diseases among the general public. There is thus constituted a most grave public danger, the only possible way to remove which is to devise improved and more easily available means for treating these cases. Treatment and prevention are inseparably associated in practically all diseases; the one is essentially the complement of the other.

In favour of this plan are urged the following facts:—

1. Such a scheme would constitute the commencement of the consolidation and unification of medical treatment of poor persons upon which it would be possible to build all kinds of desirable developments.

2. The Health Committees are already providing to a considerable extent for the treatment of these children if they happen to contract an infectious disease such as scarlet fever or diphtheria. They are also dealing with these cases by means of health visitors, whose duties in some details can only be distinguished with difficulty from those of school nurses. These committees also have statutory powers under the Cleansing of Persons Act, 1897.

3. The work already done by Health Committees has a much more enviable reputation, both on account of their method of dealing with the cases and also with the members of the medical profession. So far as I know, Health Committees have never suggested allying themselves with medical charities such as hospitals, etc., and have never attempted to exploit the profession in such a scandalous fashion as is now being suggested and actually carried out by some Education Committees.

4. No stigma of any kind, real or imaginary, would be attached to medical work done under such committees.

Against this suggestion there is, as far as I

can see, only one objection to be urged. In fair-sized urban districts and boroughs there is no doubt that the Health Committees could undertake this work at very little notice, and would do it extremely well. In county areas, however, it must be remembered that the sanitary or health committees have had in the past very little administrative work to do, and it is doubtful whether some of them would feel inclined to undertake the carrying out of such a scheme. Under the Minority scheme, however, they would be called upon to undertake a work of very much greater magnitude, and the dealing with part of such work (*i.e.*, the work connected with school children) as a commencement would undoubtedly have its advantages. An alternative would be for the health committee of the county to direct this work through the local health committees of the sanitary districts in its area. At the present time half the salaries of the medical officers of health are paid through the county council, so that it would only be one more step forward for the county council to pay the salary of the medical officer of health and the expenditure connected with the treatment of the children of poor persons. The consideration, investigation and details of treatment could be left more or less to the district councils, and the health committee of the county council need only retain the supervising and organizing power.

PROVISION OF TREATMENT.

The treatment that at the present time is commonly being obtained for the children found to be defective may be classified as follows:—

1. Through the parents:
 - (a) Parental attention.
 - (b) Treatment by private practitioners or medical clubs.
 - (c) Attendance at hospitals or dispensaries as ordinary patients.
2. Through the education committee:
 - (a) Provision of nurses.
 - (b) Contributions to hospitals, dispensaries and nursing and children's care associations.
 - (c) The establishment of school clinics.
 - (d) The supply of spectacles.

TREATMENT THROUGH THE PARENTS.

The almost invariable plan now is to send a notice to the parents stating that the child needs either parental or medical attention. If parental attention is necessary, as in the case

of neglected children, there are various methods of bringing pressure to bear upon those parents who ignore the advice that has been given. In the case of verminous children the simplest action is undoubtedly to make them school attendance cases by excluding them as unfit for attendance at school. The parent is then summoned for the non-attendance, and, with careful handling, there should be little or no difficulty in obtaining convictions. Quite recently I have had an interesting proof of this fact. Two children were being thus dealt with in connection with a certain school in my area. The first case that was brought before the local Bench (who had never previously had such cases presented to them) came on unknown to me, and I was therefore unable to arrange for any special presentation of the case to the Bench. The attendance officer did his best to explain matters, but the Bench were not satisfied, and the case was dismissed. The second case was due exactly a fortnight after; and, as I had notice of this, I arranged for the Deputy Clerk of the County Council and myself to attend. We were successful in convincing the Bench that such cases were perfectly legitimate and were in the interests of the public; and the chairman, in giving his decision, stated that the first case had been mistakenly dealt with, and that they had decided to convict, and to impose severer penalties in future. This method is far simpler than the routine that is outlined in Section 122 of the Children Act, 1908, which necessitates public cleansing and a subsequent second lapse into a verminous condition before any punishment is inflicted upon the parent. Section 12 of the Children Act, 1908, enables action to be taken against parents who wilfully neglect to provide adequate food or clothing for the children.

When medical attention is required Section 12 of the Children Act enables considerable pressure to be brought to bear upon the parents to provide medical aid. Parents receiving these notices go, in some instances, to the local private practitioner, and there is undoubtedly a good deal of work done in this way.

In districts where hospitals and dispensaries are available, parents have the opportunity of getting recommendations or notes for these institutions and so obtaining treatment there through the usual agencies. So long as they are simply obtaining treatment at the expense of the charitable there is no new principle introduced, and such treatment simply helps to

swell the enormous bulk of hospital abuse and to increase the magnitude of the organized effort that is being made to obtain gratuitous treatment from the medical profession.

TREATMENT THROUGH EDUCATION COMMITTEES.

According to the excellent and most valuable report of the Chief Medical Officer of the Board of Education, eight education authorities had made arrangements to contribute public money to hospitals by August, 1909. Probably this number is now increased.

In Circular 596 from the Board appears the statement that "it is permissible to include among the conditions of contribution a provision allocating a reasonable remuneration to the medical men working for such institutions." The practical value of this is probably nil, and I have been unable to obtain any evidence that hospital staffs have received or are about to receive any remuneration for this work. Public bodies are not likely to show any alacrity in taking advantage of this extraordinary "permission." Even if they did the conditions of the election and appointment of hospital staffs would be altogether upset if any attempt were made to carry out this suggestion, and directly a salary became attached to hospital positions it would be necessary to re-open all of them to competition.

It is altogether unnecessary for me to discuss the question of hospital abuse, for the fact that it has been so long regarded as a question vitally affecting the interests of the medical profession shows clearly that the protection to the profession afforded by a limitation of the expenditure of hospitals to the amount raised by voluntary contributions of the charitable is of a most fragile character. There is no doubt that if we had been a better organized and more business-like profession we should long ago have ceased to regard the giving of medical services to hospitals and similar agencies as professionally permissible. It is altogether an unsound principle, and I hope that it will be a matter to be discussed in the near future by the British Medical Association.

At the present time the medical profession is the slave of ancient traditions, and it is time that it was placed upon a more business-like footing. There is no reason why the practice of medicine should have different rules from those which govern the scientist. For instance, a scientist discovers a method of wireless telegraphy or a new means of ignition for engines suitable for motor cars. He at once

protects himself in such a way as to make it certain that if the public desire to acquire the advantages resulting from his genius he must reap very considerable pecuniary benefit therefrom. The public are in no way surprised at this attitude, but treat it merely as simple and common-sense business. No one says to such a scientist that wireless telegraphy is likely at times to be able to save large numbers of lives, or that an improvement in the safety and reliability of motor cars may have a similar effect, and that he should therefore hand over the results of his cleverness for the public good. Everything that the public requires from pure science, except when it is connected with medicine, is usually paid for.

NURSES.

Up to the present I have seen no reason to employ school nurses, either for assistance during medical inspection or for attempting treatment or following up cases. I find that the average teacher is quite capable of giving all the assistance necessary during the medical inspection, and that there are other means of ascertaining the progress of the cases and of keeping up the required pressure upon the parents in order to bring about improvement in the condition of the children. It does not appear to be realized fully that there is a danger of creating a very large unqualified service by the unconsidered employment of large numbers of nurses. The unexpected and regrettable occasional developments following the establishment of a service of midwives and of district nurses should make us hesitate before we give our unqualified support to schemes that may develop into public dangers. The greatest of care should be taken to prevent any treatment being carried out by nurses, except under definite written instructions from a medical man, and the whole of their work should be done under direct medical instruction and supervision. If this precaution is not taken there is undoubtedly great danger to the public. Quite recently I have had three illustrative instances occur in connection with district nurses. In the one case a boy was found to be ailing and the district nurse was called in. She took his temperature, found it to be 104°, and left him after giving the mother some general advice, which did not include the fetching of a medical man. The following day she called and found the temperature 105°. Upon her own initiative she then proceeded to give the child a cold sponge, which resulted in the reduction of the temperature for a time. The next day, the

child being very ill, a doctor was called in; the case was diagnosed as typhoid fever and was removed to hospital. Subsequently in that house and a neighbouring one six other cases of typhoid developed, and in addition the nurse herself contracted it. In the second case a district nurse wrote to me informing me that she was attending and treating so many cases of *chicken pox* in her village that her midwifery practice was being interfered with! I found that she was attending all kinds of cases entirely upon her own responsibility. In a third case a nurse attended a child suffering from nasal diphtheria, and continued to "treat" it, without medical supervision, until shortly before death took place.

HOSPITALS.

The attitude that is being assumed by Education Authorities at the direct invitation of the Board of Education constitutes a serious menace to the profession. Relying upon the vaguely worded Section 13 (1.) (b), to the effect that "the local Education Authority may encourage and assist the establishment or continuance of voluntary agencies," the Board have definitely invited local Education Authorities to contribute to the funds of hospitals and dispensaries, thereby suggesting that this new scheme of national treatment should be at the expense of the medical profession. Apparently also they have decided to alter the law and to change the "may" into "must," because they have endeavoured to make it quite clear that establishment of school clinics will not be permitted until treatment by a hospital has been tried to its fullest possible extent.

In opposing this extraordinary suggestion it is difficult to improve upon the argument supplied by the British Medical Association in the report issued in December, 1908. The ground, upon which the services of the honorary staff of hospitals or other charitable institutions are given, is that it is a charity supported by the voluntary contributions of benevolent members of the community, the medical men giving their services and the other philanthropists giving money. If this charitable basis is abolished the claim upon the staff to act as honorary officers ceases. By accepting contributions from public funds for the treatment of certain patients they cease to be purely charitable institutions, and there is also a grave risk that their legitimate work would be interfered with.

If the profession now permits the insidious introduction of arrangements whereby patients in respect of whom hospitals receive payments

from public funds are to be treated gratuitously by the honorary staff, a very serious form of competition with private practitioners will be instituted under public sanction, and a precedent will be created for ever-increasing demands by the community upon the gratuitous work of medical practitioners. At present the demand made upon the services of medical officers of hospitals are automatically limited by the necessity imposed upon the hospital authorities of meeting incidental expenses by the voluntary contributions of the charitable. If hospitals are able to draw upon the public purse for these incidental expenses, this protection to the profession is destroyed. For these reasons any attempt by public authorities to arrange for the treatment of school children in hospitals and other charitable institutions is thoroughly unsound in principle.

The London County Council appear to have made arrangements with hospitals that will result in the payment of about £6,000 of public money, and I am assured that this is likely to be considerably increased. No real provision seems to have been made for the earmarking of part of this money to be used as definite payment for medical services, and the whole scheme constitutes a new and particularly scandalous form of hospital abuse.

The theory upon which is based the present idea of using hospitals to the greatest possible extent is similar to that which pervades the Provision of Meals Act. Under this Act voluntary effort is to be stimulated and used so far as is possible, but experience has shown that such agencies are often quite incapable of dealing adequately with the problem. This result should teach us that a similar experience is probably in store for any scheme that depends upon the extension of voluntary effort to provide medical treatment. But there is involved in this particular application of the principle a still further objection, viz., that the persons who are essential for the supply of the medical treatment (*i.e.*, the doctors) are expected to give their services in connection with these institutions without remuneration.

The Southern Branch of this Society considered the clause in Circular 596 which suggests that doles of public money should be given to hospitals, and that education committees should bargain with lay committees of hospitals concerning the services of honorary members of the medical staff. It was finally resolved "that this Branch notes with regret the clause D. 7 g. of the Board of Education

Circular 596, referring to the use of hospitals in the treatment of school children; this Branch is of opinion that this matter calls for the attention of the Society of Medical Officers of Health, and respectfully begs the Society to consider it." The Committee of the Royal Hants County Hospital have forwarded to the Hants County Education Committee a resolution which might well serve as a model to all such committees. In it they point out that this new work is entirely outside the legitimate scope of hospitals.

SCHOOL CLINICS.

The Board are apparently prepared to sanction the establishment of school clinics after they have been satisfied as to the diseases and defects to be treated therein, their cost and the conditions of treatment; but it seems that the education authority must first show they have exhausted all possible means of obtaining such treatment at the expense of the medical profession, *i.e.*, through hospitals. School clinics are intended to treat defective vision, external eye disease, ringworm, verminous children, skin diseases and discharging ears. Judging from those already in existence, no test of means on the part of the parent is required, and any child suffering from one of the above diseases is eligible for treatment at the clinic, at which no fee is charged except for spectacles. The effect of this indiscriminate treatment upon the general practitioner is best judged by the feeling that exists at Bradford, where the school clinic has been in operation for some time. Here, in such a disease as ringworm, the head teacher, in excluding it from school, gives the child a notice to take home to its parent advising that it should be treated either by a medical man, or at the hospital, or at the school clinic. Very little imagination is required in order to guess which is the usual course adopted. It is the opinion of the profession in Bradford that the school teachers also unduly bring pressure to bear upon the parents to take their children to the clinic, and the secretary of the Bradford division states that he believes that every general practitioner in the town is hostile to that institution. Apparently they have very good reason for such an attitude.

The alternatives to school clinics appear to be: (1) the treatment by the general practitioner of those cases who can afford payment; (2) the treatment of the other children by an extended Poor Law medical service, or by the recognition of local surgeries in accordance with the plan

suggested by the British Medical Association, the principle being payment by voucher similar to that adopted in cases where payments are made for soldiers on furlough in districts where there are no officers of the R.A.M.C.; (3) the provision of a national system of medical treatment.

If school clinics could be managed under ideal conditions which would include the exclusion of children whose parents are in a position to pay for treatment, and the adequate payment of the medical men engaged to do the work, there would be little to say against them, except, that they are controlled by the wrong committee. But in practice one finds such conditions usually absent to a greater or less extent.

A most important objection to the school clinic is the fact that it deals merely with one particular small period of life, and there appears to be no valid reason why the ages five to fourteen should be selected for the special provision of treatment, while the younger children and the older persons are left entirely unprovided for. It does not seem very long ago since this Society was very decisively claiming that the hygiene of school life was a mere detail in the general hygiene of the people, and that it would be a false step if the care of the health of the children was separated in any way from the general public health administration. The establishment of school clinics is obviously an extension of the false principle that this Society helped to expose quite recently, and it behoves us to deal just as energetically with this as we did with its predecessor. If the principle of universal treatment is right, then there should be an extension to other ages; if it is wrong, it should be abolished altogether.

PROVISION OF SPECTACLES.

It is stated in the Annual Report of the Chief Medical Officer of the Board of Education that up to August last twenty-one authorities had received permission to spend public education money to the amount of about £400, on the provision of spectacles.

In Hampshire we have arranged for a contract whereby spectacles can be supplied in accordance with prescriptions at a cost varying from two to three shillings, and the gratuitous supply of spectacles will be found probably to be altogether unnecessary. The sight is examined, as I have explained above, by establishing temporary centres at schools, and most of the parents, having had previous communi-

cations telling them the maximum price of spectacles under the contract, come prepared to pay. Others are dealt with by directing towards them the attention of local charitable funds or persons, or by the guardians.

In the above outline of some of the problems connected with the treatment of school children found to be defective, I have endeavoured to deal as far as possible with essentials and principles, and have refrained from making undue reference to details of administration, either in my own or other areas. Neither have I referred to the many schemes for directing local and philanthropic interest towards the cases—such as the formation of local "treatment" or "children's care" committees, or the enlistment of the services of school correspondents and others. Such schemes have been or are being developed in the West Riding of Yorkshire, Surrey, West Sussex, Hampshire, and other areas. Whether this help is obtained or not, the essential social and professional problems remain practically unaltered. Neither have I the time to do more than refer to the proposal that has been made in Derbyshire for the formation of a gigantic provident society for the children.

In conclusion, the suggestions that I wish to make are:—

1. That the present vagueness of the law upon the subject should be removed by more definite and precise legislation.
2. That the provision of public treatment by Education Committees is undesirable, and tends towards further complication of a problem that has been made extremely difficult by such treatment being provided by more than one authority (Guardians and Health Committees).
3. That a national scheme for the medical treatment of poor persons is urgently necessary. In my opinion it would be difficult to improve upon the one recently outlined by Mrs. Sidney Webb before this Society. This scheme, you will remember, places public treatment in the hands of Health Committees, and there would be treatment for all, but the private practitioner would be entirely safeguarded by an adequate fee being charged to all persons who are able to pay. Such a national scheme would deal with school children just as the whole includes the part, or just as the

general public health administration includes the supervision of health at school.

4. That either in connection with such a scheme or preceding it, a definite scale of incomes should be drawn up by Parliament or by Town or County Councils, which should decide the question of ability or inability to pay for treatment provided.
5. That in the interests of the profession the influence of the Society should be used in opposition to the suggestion made in Circular 596, D.7.g. (Grants of public money to hospitals).

DISCUSSION.

DR. SYKES (St. Pancras) said he would like to ask a question on the last paragraph in the paper. Dr. Lyster said nothing about those who were unable to pay.

DR. LYSTER said the treatment would be available for everyone, and after the treatment had been given there would be an investigation of the circumstances of the individual. If the person was found to be able to pay, the cost of the treatment would be recovered as an ordinary debt, just as rates were recovered. If the person was found to be quite unable to pay then it would be regarded as part of the Poor Law administration.

DR. SYKES asked who would treat patients who were unable to pay.

DR. LYSTER said the principle was designed precisely on the same lines as free education. There would be a service for the treatment at once of everyone who applied for it.

DR. MCCLEARY (Hampstead) asked whether Dr. Lyster would extend his condemnation of school clinics to open-air schools for children specially needing such treatment.

DR. LYSTER said that he stated in his paper that very little could be said against school clinics if they were managed properly under proper conditions. But children who needed open-air treatment should surely be under the Health Committee and not under the Education Committee. He was not against the treatment of children but against treatment by education committees with money raised for education.

MR. FREMANTLE (Herts) said he should like to endorse Dr. Lyster's clear and logical plea. They would get into terrible confusion if they tried to prop up voluntary hospitals with official money. Either these institutions would continue to be voluntary hospitals, in which case the medical men would not be paid and there would be a great drain on private practice, or the medical men would be paid and would be getting the credit of voluntary work while receiving some payment. As

Dr. Lyster had argued, it was clear they must go in for a system of unification of the medical services. He felt perfectly clear that in rural areas, if they were to have a proper system of medical treatment by the State, it must be all on one line. It must provide not only infirmary treatment but also out-patient treatment for those who could not afford to pay. Poor Law infirmaries must be extended to be public health infirmaries, and in order to do it they must have a uniform system. The time might not be ripe for that, but it was ripe for demanding investigation—either by a Royal Commission or a departmental committee—into the re-organization of the medical and sanitary State service. He felt it was essential that they should separate that from Poor Law Reform. If they had such an inquiry he thought medical men would be able to make a sufficiently strong case to get immediate legislation; therefore he hoped there would be definite action by the Council of the Society with a view to the appointment of a departmental committee, because he did not think there would be much objection to that, whereas there might be objection if they tried to hurry general reform of the Poor Law.

DR. H. MEREDITH RICHARDS (Croydon) said the suggestion of a departmental committee seemed only another way of hanging the thing up. His advice was to do as much as possible in the way of medical treatment at the present moment, and to take any opportunity that presented itself of putting the law into shape. He thought there was already ample material for the Local Government Board to act upon without a departmental committee accumulating further evidence. With regard to Dr. Lyster's paper, he thought they were all looking forward to a unified medical service. The only difference was as to the precise details. He did not think school clinics were as unpopular as Dr. Lyster seemed to suggest, if they clearly defined what these school clinics were for. The cases treated in Croydon were practically diseases of the skin and eye. Dr. Lyster said the provision of spectacles was not treatment. He thought it was a special form of treatment. If they limited treatment to these things and dental work they would not interfere with the ordinary treatment of medical practitioners. As for local authorities giving vouchers, he did not envy the doctor who had to supervise a system of that kind. The relation between the Education Committee and the Health Committee seemed to him to be a matter of detail and not of great importance. The system they had in Croydon was that the Education Committee paid a grant of so many hundred pounds a year to the Health Committee for undertaking the work. It was essential, he thought, that the school medical officer should be under the direction of the Education Committee

for certain purposes, but the Health Committee was better able, perhaps, to undertake the treatment. School nurses Dr. Lyster did not seem to find of any service in Hampshire, but he himself had found no better way of keeping children under supervision. In rural districts no doubt the school master or mistress was familiar with the homes of the children, but in a place like Croydon a school nurse was needed to get in touch with the homes.

DR. E. H. T. NASH (Wimbledon) said that if a school clinic were properly organized there were few objections to it. As to the system of vouchers, if the payment was so much per visit there could be no supervision, and if they paid so much per case they would be reduced to the worst type of contrast because it would be the desire of the medical man to get rid of the case as soon as possible. The scheme he suggested was that general practitioners working at school clinics should be paid on the basis of time. Then the practitioner would put forth his best efforts and do best work, and on that basis they would get a thoroughly efficient school clinic working without friction. He thought eye work was treatment of a most intricate kind, and the mere provision of spectacles in an offhand way was absolutely wrong. He thought it must be regarded as one of the most important parts of treatment which was rarely even now recognised sufficiently. It was a great mistake to send such work out of the district, because in most districts nowadays there were medical men who could do it. He had seen in the balance sheets of invalid children's aid associations amounts paid for fares to such and such a hospital. Anyone helping such a scheme was helping to lower the status of the general practitioner. If this work was given to local practitioners it would help to keep them up-to-date, and would raise the standard of the work that was being done in the district.

DR. CARRUTHERS (Bucks.) said he had approached many local practitioners on the subject of eye work, and found they were all willing to undertake it if they were supplied with cases to do it. It was all very well for those who lived in urban areas to talk, but it was difficult to get a scheme that would go down in rural areas. If they rushed the matter now the tendency would be to do more harm than good. There was no difficulty for a parent who was really willing to do it to get treatment somehow. The difficulty with regard to the treatment of school children was the parent who would not do anything. They were advised to go to the Guardians, but as far as medical officers were concerned, Guardians were a great nuisance. Dr. Lyster said the sound policy was to have compulsory treatment all round, like free education. The difficulty in that was that medical inspection could not be made

compulsory. It was safeguarded all through that a parent could object to a doctor examining his child. They might look for vermin, but they could not medically inspect a child if the parent objected, without being open to a charge of technical assault. With regard to open-air schools, he was not aware that there was any treatment in those schools as far as London was concerned. The education committee was not treating the child, but putting it in better surroundings for the day. With regard to hospitals he quite agreed with Dr. Lyster that there was no means of payment to a medical man treating school children at a hospital. He did not quite grasp whether Dr. Lyster moved a resolution that the meeting agreed with that.

DR. LYSTER: I don't think I can.

DR. HERBERT JONES said a resolution could not be moved without the unanimous consent of the meeting to the suspension of the standing orders.

DR. CARRUTHERS said he hoped Dr. Lyster would give notice and move a resolution at the next meeting.

DR. BYGOTT (Barking) said that morning he had a woman come into the office with a child. The father was a platelayer earning a guinea a week, and there were five children. They had to get twelve letters so that a £3 instrument might be obtained. He thought something ought to be done for cases like that, and they ought not to defer too long dealing with the matter. Something was said by Dr. Lyster with regard to the treatment of adenoids being handed over to the Poor Law Authority. The Poor Law Authority was a dangerous body to undertake such things. He remembered one Board of Guardians being called on to appoint a medical superintendent. They appointed a gentleman with no experience in major surgery at all. Very soon an operating theatre was opened, and this man, without the necessary skill, began to operate. His results were lamentable. They must see that the work was put into proper hands. There should be properly equipped buildings for the work of the public health departments, but if they told the British taxpayer that they wished him to erect such buildings he would tell them he would not do it. Consequently it was a matter of bargain. They were not the people to bargain with the hospitals. If medical men continued to allow themselves to be sweated in those institutions they had themselves to thank. The logical and fair way was that, at any rate for a time, the authorities should pay rent to the hospitals for the use of the buildings and pay the doctor for doing the work. There would be no harm, he thought, in a system like that, and it seemed to have a great deal in the way of administrative convenience to recommend it. One thing to remember was the great difficulty education committees had

with regard to children who stayed away from school. They were a great inconvenience to the authorities, and also a great danger to public health. Numbers of cases of infectious disease were missed in that way. If a child was sufficiently ill to remain from school its parents ought to provide it with medical attendance. That was probably a counsel of perfection, but it would be advantageous. He had found that much-abused person, the school nurse, very useful in this way. Working in an urban district he found the school nurse an exceedingly handy person.

DR. LOCKHART STEPHENS (Sussex) said he thought the discussion ought to be brought back to general principles. Surely the medical inspection of school children was the outcome of a feeling that all was not well with the race, and that to deal with the physical deterioration of the nation they must begin at the beginning. He looked upon the medical inspection of school children as an important enactment, because it was an attempt to deal with national defects at a time when they could be dealt with. An elaborate machinery had been created by the State, and special officers had been told off to find these defects, and as the State paid for the machinery to find the defect the State ought to pay for remedying the defect. The question of voluntary hospitals ought not to come in. He thought this question ought to be referred by the Society to a committee which should seriously consider resolutions to be put before the Local Government Board or the proper authority to approach on the subject. He felt that the State, having paid for investigation of the defect, should remedy it. There should be no claim upon the parent; he had done his duty in producing the child. The State wanted the child and the State wanted the child educated in such surroundings that it should grow up strong and healthy. He thought that a committee should be appointed to deal not only with this very large question of the public health but also with its relationship to the medical profession. He was strongly adverse to doing any voluntary work in this matter—they would not be doing their duty to the profession if they did not insist that the State should pay.

DR. SIDNEY DAVIES (Woolwich) said that if a parent was obliged under penalties to obtain medical treatment for his child it followed that he must be in a position to obtain such treatment. When the Legislature ordained that parents must send their children to school it at once assisted the authorities to provide schools for the children to go to; therefore it was absolutely necessary now for the State to provide medical treatment for the children. Until this was done the Act on that particular point could not be put into effect.

DR. CHAS. SANDERS (West Ham) said he agreed with Dr. Stephens that they had departed from

the lines of Dr. Lyster's paper, which dealt with principles, and had been discussing small details. They would all agree in desiring more definite legislation, but as to that which was the crux of Dr. Lyster's paper many of them would differ. With regard to a national scheme of medical treatment being urgently necessary, he thought no one in the room would be opposed to it. They all looked forward to the happy day when some such national scheme should be set afoot. With reference to Dr. Stephens' remarks, if he could go back to his district and say to people that they had only to get married and their children would be fed and clothed and medically treated, he would be hailed as a prophet in his own country, and especially would he be welcomed if he could say that was the opinion of an important meeting of gentlemen in the west end. He took strong objection, however, to what was said with regard to the provision of spectacles. People who got married knew beforehand that probably they would have children, which they would have to house, feed and clothe, and, in the present state of the law, provide with ordinary medical attention. But he would defy anyone to decide beforehand whether he was going to have a child born with a long eye or a short eye. That was a visitation of God which no foresight could prevent. It was a condition accidentally coming into a school child's life and depriving the child of the benefits of any education. It appeared to him to be absolutely useless to provide a big school, with teachers and all the paraphernalia of education, and then put into it a child with a long eye or a short eye. Under those circumstances he thought that an education committee might be allowed to add to their school some provision with regard to spectacles. He advised his committee to be very lenient in assuming ability on the part of a parent to pay, but more than 50 per cent. paid outright, others paid half, and not more than 12 per cent. had been provided with spectacles free. With regard to school clinics for the treatment of ringworm and skin diseases—which he should say were par excellence the very cases which should be the main support of the medical practitioner—it appeared to him to be advancing a bit too quickly. The question of public money being devoted to hospitals was a matter of grave principle, and he was disposed most heartily to agree with Dr. Lyster in the view he took of it. The paper was a most valuable contribution to the discussions of the Society.

THE CHAIRMAN expressed the thanks of the Society to Dr. Lyster.

DR. LYSTER, in replying on the discussion, said with regard to spectacles that the general method of examination for giving a prescription for spectacles he did not think could be called treatment. It was diagnosis of a refined kind, and

came under the head of medical treatment. The actual provision of spectacles did not affect the profession in any way. Spectacles were articles on sale in the way of business. With regard to open-air schools, where children were taught merely in the open air, that was purely an educational matter. His objection to them was when they were modified sanatoriums. He agreed with what was said about the payment of fares to hospitals. He had known of 15s. being paid in fares to get a prescription, when there was a man within a mile who would be glad to do the work for 10s. 6d. That was waste of money. Dr. Carruthers said Guardians were a nuisance. He had found them an unmitigated nuisance in the past, but by persistence and patience it was possible to educate even Guardians. He was now getting sympathetic attention from Guardians who at first repudiated him and all his works. He did not recommend the voucher system, but it should have sympathetic attention. With regard to school nurses, he seemed to have given the impression that he was opposed to them. That was not true. He was not opposed to their legitimate work. But education committees were establishing a machinery and officers who should be under health committees. A nurse who gave information about the homes of the children should be called a health visitor, and be employed by the health committee. It seemed to him to be time the Society formed settled convictions on these important matters, and he hoped it would be possible to organize some definite policy. They might regret it afterwards if they did not form some opinions now.

LACK OF HOUSES FOR SOLDIERS AT ALDERSHOT.—Speaking generally, the tendency in building houses for the working classes is in the direction of too large a number of rooms, with consequent diminished cubic space in each room. Rents being fairly high, the ordinary artisan is compelled to let off portions of his house in order to meet expenses. It is no exaggeration to say that the vast majority of working class families let their houses in lodgings. It is right to mention that there is an enormous demand for such lodgings in consequence of the very large number of soldiers married off the strength, and therefore being compelled to provide accommodation for their wives and families in the town. Many such families (each family occupying one room only) are to be found within a single dwelling-house, consequently the surroundings generally from such a system are not conducive to good health. Many of these soldiers' families are in a state of great poverty, and, in some cases, of degradation. —*Annual Report of Dr. Routley, Medical Officer of Health, Aldershot.*

THE REPORT OF THE DEPARTMENTAL COMMITTEE ON THE MIDWIVES ACT, 1902.*

By T. ROBINSON, M.R.C.S., D.P.H.,
Medical Officer of Health of the County of Leicestershire.

TERMS OF REFERENCE—"To consider the working of the Midwives Act, 1902, and in particular with reference to the supply of midwives and the cost of training, the remuneration of medical men summoned on the advice of midwives under the rules in pursuance of the Act, and the delegation of their powers by County Councils under the Act."

SUPPLY OF MIDWIVES.

THE first paragraph in the Report, Vol. I., of real importance is para. 22, page 4.

After reading this, one asks the question: How is it that such definite recommendations as those given in the Summary could be made? (page 19, etc.)—such as (1) No shortage, but proper distribution only necessary; (2) No subvention needed from the State, but the establishment of county nursing associations necessary (to provide the ways and means); (3) The standard of the examination should not be raised, but consideration should be evidently made in the wording of the questions to meet the educational level and restricted vocabulary of the class of women likely to present themselves from rural districts.

To return to the actual supply of midwives, the certified midwives on the rolls are given in a table under para. 24, from which it appears that there were 25,634 in March, 1908. The total number of births in England and Wales in 1908 was 942,611: this works out at 38 births to every midwife on the roll. The roll had increased to 27,234 in 1909, thereby reducing the average births to 35 per midwife.

The number of certified midwives notifying practice, however, in 1909 was only 13,348 (this figure is not to be taken as too reliable, owing to the failure in some districts to notify practice), allowing about 70 births per midwife notifying practice.

From the above figures we see that less than half the certified midwives on the rolls gave notice to practise. What is the other half doing? This difference in the figures cannot be accounted for by local supervising authorities neglecting to carry out their duties appertaining to the yearly notice of practice. Some certified

* A paper read before the Midland Branch of the Society of Medical Officers of Health on December 2nd, 1909.

midwives undoubtedly prefer not to exercise their powers as midwives, and thus come under the supervision of the local supervising authority, but to act as monthly nurses only. There must be, however, some thousands of certified midwives to whom the certificate is of no value, as there are no means of working under it. In my opinion the Central Midwives Board might make inquiry through each local supervising authority and the midwives themselves, and ascertain exactly to what extent each certified midwife is using her certificate; also from those who are not using their certificates the reasons why in general terms. This information would undoubtedly convey to the Central Midwives Board many suggestions for future action.

Any shortage in a town district where a midwife can make a living is easily rectified; the difficulties in the question of supply are really found in the sparsely populated rural areas.

It is not difficult to say that, if all the midwives on the rolls were practising, there are enough (and perhaps too many) with one midwife per 35 births; but one practising certified midwife to every 70 births is quite a different matter, and as this was the average in 1909 it must show that in the sparsely populated districts midwives are scarce, or absent, or cannot make a living.

The rate of births per midwife is taken to gauge average sufficiency, and is used again later on.

The market for certified midwives appears to have been overflowed with the wrong class of women, viz., the class who want to make a whole living. This appears to have been rapidly going on during the last four years, as 5,934 midwives have been added to the rolls in virtue of passing the Central Midwives Board examination, and it may be safely said that the great majority of these are women dependent on their work for a livelihood. Of the bona-fide midwives only 885 have dropped out in the five years up to March last (these figures are probably below the actual number on account of defective records), and only 123 other certified midwives, or a total of 1,008. The balance increase on the rolls is therefore nearly 5,000. In the year ending March 31st, 1909, nearly 1,900 midwives passed the C.M.B. examination and were put on the rolls—a terrific rate of production.

The inquiry that I have previously suggested would, of course, include these 5,934 C.M.B. examination midwives, and would help to

show if much expensive training had been wasted.

I would almost go further and suggest that there should be no more C.M.B. examinations after six months from now, and until these details and the real needs have been ascertained.

EXPERIENCE IN LEICESTERSHIRE.

Present position in the county:—

Population of county, Census 1901	...	...	225,911
Area in acres	...	...	524,202
Number of women known to be practising midwifery before Midwives Act	...	...	375
Number certified when Act came into force in 1905	...	...	130
Number of certified midwives practising in January, 1909	...	...	113
Number of certified midwives on the rolls who are not practising	...	...	29

POPULATION AND AREA WITH MIDWIVES.

The 113 certified midwives cover a census population of 173,578 and an area of 210,511 acres, or one midwife to every 1,536 persons and to every 1,865 acres (nearly three square miles). Allowing for the estimated increase in the population since the census, there would be about one midwife to every 1,700 persons. These midwives are practising in all the populous areas.

From the notifications of births made by the midwives and my own inspections I estimate that about half the births are attended by certified midwives without a doctor. Some certified midwives seldom attend with a doctor, and some seldom without—the custom varying in different parts of the county, and sometimes even in adjoining parishes. Taking the average birth rate of the population at 27 per 1,000, there are on an average forty-six confinements to every midwife. Half these would be attended by the midwife without a doctor, and some of the other half with a doctor, the remainder being attended by monthly nurses. I should judge this to be a fairly accurate estimate of what actually takes place.

Of the older midwives (those who are certified on "previous practice") a small minority entirely depend on this work for a living, most of them doing it to enlarge the family income. Eighty-two per cent. of the certified midwives practising in the county are those certified on "previous practice." On the other hand, all the newly trained midwives take up the work as a means of livelihood.

In only a few cases is there overcrowding of midwives, and in those the midwives are resident chiefly on account of their family ties

Very little could be done, therefore, to distribute these midwives over a larger area, because they are located in their present positions for their own special reasons other than maternity work.

POPULATION AND AREA WITHOUT MIDWIVES.

There are in the county 202 parishes containing a population of 52,333 and an area of 313,651 (490 square miles), in which the services of a certified midwife are not available. In other words, one-tenth of the population of the county and no less than three-fifths of its area must remain outside the purview of the Midwives Act after April 1st, 1910.

The Central Midwives Board might with advantage ascertain similar figures from all local supervising authorities.

We have in Leicestershire practically no more room for midwives dependent on the work for their living, except to replace from time to time the old midwives who drop out.

The deficiency, therefore, can only be met in one of two ways: either by the formation of a county nursing association which would employ nurse-midwives, or by a considerable increase in the number of our own rural certified midwives, who, living in the county, are content to supplement their income by taking a few cases annually.

SUBVENTION AND THE FORMATION OF COUNTY NURSING ASSOCIATIONS.

In paras. (4), (5), (6) and (7), page 19, these questions are dealt with. The report here says that *there is no need of any subvention from the State*, but the committee was evidently satisfied that subsidy was necessary from *some one*, as they proceed to recommend the formation of county nursing associations, the branches of which derive possibly half their income from *charity*.

These particular recommendations do admit that the Midwives Act, as it at present stands, must be a dead letter in some districts and unworkable in others.

The Central Midwives Board have recently passed a resolution in favour of subvention from public funds of midwives who are unable to maintain themselves in sparsely populated and poor districts—*quite the opposite to the recommendations of the committee*.

INTERFERENCE WITH MEDICAL PRACTICE.

It can be readily seen that the formation of county nursing associations throughout the country for the purpose of providing nurse-midwives is going to largely interfere with the

work of the general practitioner, especially in the poorer districts. It rests with the practitioner to raise his voice in opposition if he so desires when the time arrives. Certainly I think the local medical practitioner should be consulted when *branch* nursing associations are formed.

CLASS OF MIDWIFE.

If we agree that the total number of certified midwives is enough to go round if properly distributed, how is that distribution to take place? The greatest difficulty in the way of the distribution is the fact that mainly the wrong class of women has been trained, viz., those who are dependent on their work for a living. They cannot go out into the rural districts to earn their living—it cannot be done.

I hold that the other class—the respectable rural women with some little educational attainments (the Report refers to “uneducated women from rural districts”)—are the best fitted for these rural districts; women who have had a thorough practical training and who have become good practical midwives; women who would practise to supplement the family living; women who know what poor rural homes are, and who are in attendance not only as a midwife, but as a kind, helping friend. There is nothing against a midwife helping in the house so far as I can see, and certainly that is what is wanted in the rural homes. These women would require no subvention from the State or other form of subsidy.

Another point in favour of this class of women being provided is that more of them can be scattered about, and the prospective *mother has a choice of midwife*. This is an important consideration, for the patient naturally does not care to be forced to have in attendance a midwife whom she may dislike; nor is it in her interest or the course of the confinement that such should be the case. There must be some consideration shown for the patient's feelings, and she cannot be treated too much like a machine.

The recommendations of the committee (see Summary, paras. 15 to 19) appear to me to support my contention in this respect.

Further, the evidence of Miss Amy Hughes, of Queen Victoria's Jubilee Institute, shows that between the years 1902 and 1908 the increase in the number of Queen's nurses was 112, whilst the increase in the number of village nurses was no less than 523.

CHARACTER OF EXAMINATION.

These rural women candidates are barred by the *character* of the examination for ever from qualifying, and therefore also from increasing a meagre rural living, because they *cannot do the written part*; and, moreover, they are nervous during the written examination, and excessively so during the short *visà voce*.

My opinion is that the character of the examination should be on the following lines:—Attendance of the candidate at a lying-in hospital (not the one trained at); conduct a case or two with medical man or midwife examiner, and a thorough questioning on what is happening and likely to happen—this to be followed by a half-hour's examination *visà voce* (more of a chat than hard questioning), in order that the examiner may thoroughly ascertain the candidate's general knowledge of the subject.

I am not advocating that ignorant women should be admitted to the rolls, but sound, practical midwives.

The present examination and the attitude of the Central Midwives Board seems to me to be to produce a kind of semi-doctor, a class which will gradually curtail more and more the midwifery practice of the medical practitioner, and especially will this be felt in those districts where the medical man is only too glad to take the cases himself; in fact, *must* take the cases himself to make a living.

REMUNERATION OF MEDICAL MEN SUMMONED ON THE ADVICE OF MIDWIFE.

A secure expectation of payment—this must be a *sine quâ non*, but it will require fighting for. The Central Midwives Board have recently approved this also.

(b) 3. The quarterly return of cases for which payment has been asked should be submitted to the local supervising authority *before* payment by the Guardians.

This would help to check the medical help records, etc.

(b) 4 says:—

The *scale of fees* should be fixed by Order of the Local Government Board on a *systematic basis, having regard to local conditions*.

Whilst 6 says:—

In emergency cases the *system of a uniform fee* which should cover any ordinary after-attendance is recommended for adoption, with the addition, perhaps, in scattered rural areas, of *some allowance for "mileage."*

The two sections seem contradictory to me.

Secure payment is only recommended in *emergency* cases, defined as those under the heading of “Labour” in the rules, and hamorrhage during pregnancy, secondary p.p.h., septicæmia during lying-in period, and any inflammation of the child's eyes. Why this limitation? Surely dangerous feebleness of the child is an emergency! Is eclampsia to wait till the midwife gets some guarantee of the doctor's fee? Are not medical men entitled to a guaranteed fee when they are called in to “abscess in the breast” or “white leg”?

The medical man, more especially after April 1st, 1910, is to be the consultant, the rectifier of all the mistakes, misfortunes and wrongdoings of certified midwives; the law has provided these certified midwives, and the State should provide the medical fee in *all* cases.

I am surprised that the British Medical Association should have confined their requirements of a guaranteed fee to emergency cases only.

(b) 9. For cases not scheduled as emergencies, the ordinary machinery of poor law medical relief would usually be sufficient.

This is fostering the poor law medical officer purely and simply. Surely if payment by the Guardians is “relief on loan,” there is no need to make this distinction. If the medical man tries to obtain the fee himself from the patient and proves he cannot, that should be enough in all cases.

(b) 8. A list of practitioners willing to respond to a midwife's call should be prepared and circulated in every area.

In other words, “black-list” those who won't and advertise the “white sheep.”

OPHTHALMIA NEONATORUM.

The report recommends that this should be compulsorily notifiable under the Notification Act, 1889. Uniformity of action is necessary, and its adoption should not be optional.

NOTIFICATION OF BIRTHS ACT, 1907. (Read para 8, page 22.)

Without some compulsory system of early notification of births, the difficulties of the administration of Sec. 1 (2) will be enormous. The alternate system suggested would be complicated owing to the interval allowed for the births to be registered, and the necessity for so much sorting of dates and names. Copies of such information would have to be sent to the local supervising authority. In any case *certified midwives on the rolls* should be

compelled to notify every case they attend, whether as midwife or monthly nurse, and whether they have given notice of practice or not. This latter is essential to check the work of certified midwives who have not given notice of practice.

MIDWIVES ACT. SEC. 1 (2).

Local supervising authorities will have something to do to interpret the terms "habitually and for gain" and "otherwise than under the direction of a registered medical practitioner," and to prove any transgression. It will not be difficult for would-be offenders to drive the proverbial coach-and-four through this section. Unless it is administered rigorously, the effect will be that the certified midwife working under strict rules will become greatly dissatisfied, and their present grumblings against the continued practice of uncertified women will increase in proportion to the failure to carry out this subsection.

YEARLY NOTICE OF PRACTICE.

The requirements of the Act in this respect ought to be given notice of in the rules.

DISCUSSION.

DR. BOSTOCK HILL, in opening the discussion, said that with much of what Dr. Robinson had said he quite agreed, but with a good deal he did not agree. He was one of the opponents from the first of the introduction of any lower grade of midwife, and he very strongly opposed this when it was before the Society of Medical Officers of Health. Warwickshire was put down on the list of the Commission as one of the counties anticipating a shortage, and there will be a shortage in certain districts, but in other districts there would be more midwives than would be required. He had six midwives' inspectors; but as there were 320 midwives, and the inspectors were health visitors as well, they could not give the time to find out the women who were practising as midwives. It might be desirable to stop the supply of midwives by not holding examinations, but he did not think that this course would be possible; all these matters must be regulated by the principle of supply and demand. He quite agreed that there were many more midwives than were required. One of the reasons of the very large increase of midwives is the belief among the midwives that all those who have not been examined will be removed from the roll after April, 1910, and that only those who hold the C.O.S. or C.M.B. certificate would be allowed to continue to practise; this is the cause of such a large number going in for the examinations. He was able a few years ago to get his Authority to allocate £180 to training midwives, and they then trained properly educated women to undertake the work,

but it was impossible for them to get a living owing to the lack of patients. He had, during the last three years, made a different suggestion which the Council had adopted, which was that only women on the staff of nursing associations should be trained. His County Council had an agreement with a nursing association to which they subscribed that one nurse should be trained as a midwife, and they had a lien on that nurse's services. He thought that the difficulty of the supply in rural districts might be solved in this way. The more highly educated woman was much more suitable than the woman taken from the cottage, and he certainly did not agree that women should be just sufficiently trained to enable them not to get into trouble; the high standard should be maintained, and only women efficient for the examinations should be allowed to compete. He strongly opposed the lower grade of midwife practitioner.

DR. ROBERTSON said that nothing had been mentioned as regards the position of the question in towns, although the number of midwives practising in towns greatly outnumbered those practising in rural districts. The condition in Birmingham was quite satisfactory without any amendment of the Act, and, so far as the people are concerned, the only persons who are suffering are the midwives themselves; and as regards the medical profession and the midwives this condition was also quite satisfactory. He hoped that nothing would be done in dealing with this matter so far as the towns were concerned, the problem being immediately one for the rural areas. In Birmingham, in cases of urgency the nearest medical man was called in by the midwife, and he would be paid according to scale. Speaking of the supply of midwives, he wished Dr. Robinson would relieve him of about one hundred, as they had quite that number too many in Birmingham. Only a very small number of midwives in Birmingham held the Central Midwives Board certificate, but out of the 200 practising, 170 were *bona-fide* midwives; of this number there were 100 first-class women, women well trained, and these women attended practically 10,000 births out of the 16,000 births for the year. It worked out at a very small number per midwife; practically in Birmingham only twenty-eight midwives were making a sufficient amount of money for a livelihood—i.e., attending one hundred cases or more each—and only twenty-two out of the 198 could be considered as self-supporting. The whole point is that the profession of midwifery is a very poorly paid one. Highly educated ladies who come from the schools are raising the fees, and these are the midwives who compete with the medical profession; these ladies only attend every few days, and someone has to be engaged to do the nursing, as they will not do it. In such cases

the better plan would be to have a doctor in the first place, and this will very quickly be found by the working man to be the case. The Notification of Births Act was in force in Birmingham, and as a check they had the returns from the Registrar of Births.

DR. MABYN READ said that he had had a good deal to do with the county nursing associations, and his experience was that the nurses were sent into the rural districts, where they combined the duties of district nurse and midwife. They are district nurses paid by the parishes. The associations were taking care to see that all these nurses were midwives; they were training them in a very good manner. If the women were not properly trained they were a danger to the public. The district nurses thoroughly understood their work, and were well able to do it. The Guardians in his district had paid fees for some time to medical men called in by a midwife on the terms suggested by the Local Government Board, and in his experience there had never been any difficulty in regard to the fees. He would do nothing towards allowing any less trained midwife to go into practice, but he would like to raise the standard of those practising. Old women acting as midwives were a danger to the public, but some people still preferred this type to the properly trained midwife. These old women should be turned out as quickly as possible. He got information from the health visitor as to those midwives who were not enrolled at the present time, and he also obtained information as to the number of cases they attended. He found that they attended very few cases. Out of 1,200 births registered in Worcester an average of 836 were attended by midwives.

DR. GARRETT considered that the principal point had been missed in the discussion. The problem was how to supply midwives in rural districts; and this seemed to him to be a very knotty question indeed. Trained women could not be sent into these districts, as they could not earn a livelihood. The area was too great to be covered by a midwife, and in a smaller area the number of children born was not sufficient to get her a living. Dr. Read, continued Dr. Garrett, struck a note that might be of some value in regard to covering these rural districts, when he said that district nurses might get the midwifery certificate. The tendency had been for a good class of woman to take up midwifery with the idea that she was going to get a living, but very often she was disappointed. The question of the teaching of midwives who were going to practise was a very difficult one. As to the control of midwives, this was much easier in a town like Birmingham, as the area was much smaller than in the rural districts.

DR. ROBINSON, replying on the discussion, said he was very glad that his paper had been so freely criticised, as he always welcomed candid criticism. He was afraid that Dr. Hill and Dr. Read did not agree with his contention that the Central Midwives Board should suspend their examinations for six months, and he referred to the great increase in the number of midwives. The impression among the midwives certainly was that they were going to be stopped practising after April, 1910, unless they held the certificate of the Central Midwives Board. If this were the impression in Warwickshire and Leicestershire it was only reasonable to suppose that it was the impression all over England, and it was owing to this cause that so many women had rushed in for the examinations, with the result that we were now overwhelmed. He maintained that a large amount of charity money was being wasted on training these women. The majority of women who received certificates flocked to the more populous districts, with the result that they were overcrowded and the rural districts neglected. He did not want to reduce the standard, but what he was working for was a change in the character of the examinations. He did not say very much about the towns, as any deficiency there could very quickly be rectified; neither would he wish to interfere in any way with the high standard of efficiency found in Birmingham. The Central Midwives Board were asking others to train midwives (*bona-fide*) to whom they had granted certificates. Speaking of the giving of lectures, he said that they could not give lectures in the rural districts, although they endeavoured to supervise the women practising. When inspecting these women he was particularly struck with the excessively dirty woman whose boast it was, when questioned, that she had never lost a case. He wished the Notification of Births Act was in force in Leicestershire. In regard to the new Act he said there would be the greatest difficulty in interpreting the words "habitually and for gain." The mother would say, "I do not know who to go to; I must call in somebody." He found that all highly trained hospital nurses wanted a lot of waiting on, and in many instances they were no better, practically, than the woman who has not had hospital training. The solution of the difficulty, in his opinion, was subvention in the poorer districts.

PRESENTATION TO DR. H. W. BEACH.—Dr. H. W. Beach, who recently resigned his post as medical officer of health of Great Yarmouth to engage in private practice, has been presented with a barometer by members of the Eastern Counties Branch of the Society of Medical Officers of Health, in recognition of his services as honorary secretary and treasurer of the branch.

UNDERGROUND WORKROOMS.*

By FRANCIS J. ALLAN, M.D., D.P.H., Medical Officer of Health for the City of Westminster.

EXCEPT as regards bakehouses, it is curious to note that there has been no direct legislation dealing with underground rooms used as workplaces, although, as you are all aware, the use of underground rooms for habitation has been controlled to some extent since 1855 by Sections 103 and 104 of the Metropolis Management Act of that year, Section 62 of the 1862 Act, and subsequently by the provisions of the Public Health (London) Act, 1891, Section 96; and in the country by Sections 71-74 of the Public Health Act of 1875.

It appears to have been considered that so long as a basement room was not used for both living and sleeping purposes, the general provisions of the Public Health Acts were sufficient to ensure that the conditions under which such rooms were used in the day time were satisfactory.

It is desirable, therefore, to consider what these provisions are and whether they are sufficient for the purpose—especially when the basement is to be used as a workplace. Before doing so, however, it may be well to inquire what the objections are to basement rooms.

In many instances underground rooms now being used as workplaces were not constructed to be used for this purpose. They were in some instances the cellars or the kitchens of an ordinary dwelling-house, in others the storage cellars of shops to which perhaps the vaults under the pavement may have been added to give additional space and to obtain extra light through the glazed-over intervening area.

Under such circumstances it is often difficult to procure structural alterations which shall bring them up to a reasonable standard of healthiness. The difficulties which are encountered relate to ventilation, warmth, lighting, dampness, entrance of impure air from ground contaminated by drains, coal gas, etc., or from the direct connection of sanitary conveniences therewith.

Ventilation and Heating.—The difficulty of ventilation is closely connected with that of warming. Basement rooms are frequently found without any fireplace, and thus resort is made to gas-stoves without flues or to hot-water pipes, and so a very important means of

withdrawing used-up air is absent. In some workrooms the only means of heating are the ordinary gas jets for lighting or gas heaters used for irons.* The conditions are aggravated by the lowness of many rooms and by their being situated partially or entirely under the level of the surrounding ground, and in a number of instances adequate ventilation is practically impossible without creating a draught. If there is some means of exit for used-up air, a further difficulty is experienced as to the source of the air which is supplied to take its place—it may come from an undesirable source or bring with it street dust and dirt or smoke "smuts." It is of importance that the air supplied should be the best obtainable, and it may be necessary to provide inlet ventilators communicating with the external air at some distance above the street level, with a fan to drive it in if there is not sufficient "pull" set up by fires or stoves or differences in temperature. The absence of fires in summer makes a considerable difference in the ventilation of many underground workrooms, and without some mechanical means of driving in or extracting the air it may become quite stagnant. There is, however, sometimes the advantage that the temperature may be much lower than that of the air outside. The non-provision of flues to gas stoves must necessarily lead to an increase of the products of combustion in the air, thereby adding to the difficulty of ventilation. In this connection it may be of interest to mention the result of an examination of the air of three workrooms (not underground) in which unventilated carbon stoves were in use, which the Home Office inspectors were good enough to make. Chemical analysis showed:—

		CO ₂ (10,000)	CO (10,000) approx.
ROOM E.			
Over stove	...	56.5	Less than 0.5
In centre of room	...	10.8, 11.2	None.
ROOM S.			
Over stove	...	87.5	0.8
In centre of room	...	16.4, 12.0	—
ROOM B.			
Over stove	...	34.0	0.5
In centre of room	...	13.4, 13.6	—

The tests "over stove" were made from the direct fumes from the stove. The inspector held the use of such stoves to be an infringement of Section 6 of the Factory Act.

Lighting.—With two notable exceptions, there are no provisions requiring efficient

lighting in the Factory and Workshop or Public Health Acts relating to ordinary dwellings, workshops, and factories; and even in the most recent Act—the Housing and Town Planning Act, where stricter regulations are made for underground places where people sleep—it is provided that a closing order shall not prevent a room unfit for sleeping being used for other purposes. The exceptions, it should be noted, are both in connection with underground rooms—Section 101 in the former dealing with bakehouses, and Section 96, London Health Act, dealing with dwellings. In regard to dwellings, there is no doubt but that daylight is demanded, as the size of the windows is specified, but with regard to bakehouses it was left to each local authority to decide. The opinion of this Society was that an underground bakehouse should be lighted with daylight throughout. It had been thought by some that, as the work in bakehouses is usually carried on at night, it was unnecessary to require daylight: it was, however, eventually agreed that, as a certain amount of day work is carried on in most bakehouses, and in order to secure the beneficial effects which accrue from sunlight, the requirement of daylight was eminently desirable, and preferable to any form of artificial lighting.

All workrooms, in my opinion, should be efficiently lighted by daylight, and some legal provision should be made for securing this. In this country, especially during the winter months, artificial light has to be employed during some part of the day; and it seems to me desirable that some standard of lighting should be set up. There are many workrooms and offices where artificial light is used continuously, being the only means of lighting available. The problem as to the best method of using artificial light is one which is not yet worked out. Many workrooms are inefficiently lighted, or the lights are placed in positions which may be detrimental to eyesight, or cause headaches from the heat or from chemical rays. Further information is required on these points and in regard to the colour, steadiness, diffusion, etc., of artificial light.

Such information would enable us to decide whether we should ask that the hours of employment should be curtailed in workrooms not properly lighted. What is the effect on a person who spends the whole day in an underground room lighted artificially, and who is practically cut off from sunlight, except on Sundays, for at least six months of the year?

The Coal Mines Regulation Act is the only piece of legislation which prohibits the employment of women and boys under twelve years of age underground and restricts the hours of lads between twelve and sixteen years of age, and I presume that one of the reasons for this is the absence of sunlight.*

Dampness must frequently be found in basement rooms in the older type of house. It may arise from the proximity of adjoining ground, especially when vaults have been taken in as part of the workroom, to the absence of proper damp-courses in the walls, to the contact of the floor with the ground, or the absence of sufficient means of drainage.

Impure Air may find its way into underground rooms from ground adjoining or underneath, which may be contaminated by leakage from sewer drains, gas mains, etc.

It is scarcely necessary to emphasize that the want of proper ventilation and light, the presence of dampness or impure air, must be prejudicial to the health of persons who are forced to spend any time in places where any or all of such conditions exist. Especially detrimental it must be to young, growing persons and to those pursuing a sedentary occupation.

Is the law sufficient to remove these conditions, or does it require strengthening in any special direction?

Section 6 of the Factory Act, 1901, requires a reasonable temperature to be maintained, but the measures taken must not interfere with the purity of the air, while Section 7 requires that adequate means of ventilation shall be provided in every factory and workshop, and when structural alterations are required application may be made to a Court of Summary Jurisdiction, and the Court may apportion the expenses between the owner and the occupier of the premises as appears to the Court to be just and equitable under the circumstances of the case, regard being had to the terms of any contract between the parties—the duty of enforcing Section 6 being with the Home Office, and of Section 7 with the Borough Councils. In this connection I should like to

* The following contributions to the subject deserve consideration:—
A useful report by Mr. Bishop Harman on "Artificial Lighting of Class-rooms" is contained in the report of Dr. Kerr, Medical Officer (Education) of the London County Council, for the year ending March, 1907. Various forms of gas and electric lighting are considered.
"Glare, its Causes and Effects," by J. Herbert Parsons, a paper read at a meeting of the Illuminating Engineers' Society.—*Lancet*, p. 234, January 22nd, 1910.
"The Measurement of Illumination—Daylight and Artificial," by P. J. Waldram F.S.I., a paper read before the Society of Architects.—*Building News*, January 14th, 1910.

* Read before the Metropolitan Branch of the Society of Medical Officers of Health, January, 1910.

* Results of the examination of the temperature and air in such rooms are given in the Annual Report of the Chief Inspector of Factories and Workshops for 1908. Medical Inspector's Report, No. 60.

express my appreciation of the way in which the Home Office Inspectors are at all times willing to co-operate with medical officers of health.

Section 2 of the Factory Act requires every workshop or workplace to be kept in a cleanly state, properly ventilated and not overcrowded; free from effluvia from drains and sanitary conveniences of any kind or other nuisance, but this section is, as far as the Metropolis is concerned, replaced by Section 2 (1) (g) of the Public Health (London) Act, 1891. The latter enacts that—

"Any factory, workshop or workplace which is not a factory subject to the provisions of the Factory and Workshops Act, 1901, relating to cleanliness, ventilation and overcrowding, and

(1) is not kept in a cleanly state and free from effluvia arising from any drain, water-closet, urinal or other nuisance, or

(2) is not ventilated in such a manner as to render harmless as far as practicable any gases, vapours, dust or other impurities generated in the course of the work carried on therein that are a nuisance or injurious or dangerous to health, or

(3) is so overcrowded while work is carried on as to be injurious or dangerous to the health of those employed therein,

shall be nuisances liable to be dealt with summarily under this Act."

It should be noted here that ventilation is only required under this Section to remove impurities generated by the work carried on.

Sub-section (a) or Section 2 (1) of the Public Health (London) Act, 1891, is, however, much wider in its application and gives Metropolitan Boroughs power to deal with "any premises in such a state as to be a nuisance or injurious or dangerous to health," and although Section 157 of the Factory Act excludes men's workshops, *i.e.*, workshops where women, young persons and children are not employed, from the provisions of that Act relating to "temperature, means of ventilation, drainage of floors, and sanitary conveniences," these can be dealt with under Sections 2 and 38 of the Public Health (London) Act. There is, further, the power given to the Home Office inspectors by Section 18 of the Factory Act. Notwithstanding the existence of these powers, which

might have been thought sufficient to deal with almost any defect, it was thought desirable for various reasons to legislate specially for one class of business carried on underground, *viz.*, bakehouses, and to require that no underground bakehouse should after a certain date be used unless certified by the District Council to be suitable as regards construction, light, ventilation, and in all other respects. This had the effect of bringing all underground bakehouses into line at once, and I think all will agree that this has produced beneficial results.

In a Bill which was introduced into Parliament in 1906, it was proposed to extend the principle to all underground workshops, and I find I reported at the time that this would be useful, especially if extended to include workplaces, which would bring in many places where food is prepared; but as no provision was made in this Bill or in the Factory Act for the withdrawal of such certificate if at any time the premises are found not to comply with the requirements, a clause should be introduced giving a magistrate power to close an underground bakehouse or workshop on being shown that it was unsuitable for use.

I am still of opinion that it would be desirable to have some such requirements. I think it is as essential for workers who spend long hours, possibly engaged in some sedentary occupation, as for persons occupying them as a dwelling, that underground rooms should comply with regulations similar to those laid down in Section 96 of the Public Health Act or the requirements recommended by this Society for bakehouses, in order to secure uniformity of action throughout the country.

In the case of the bakehouses, evidence was available showing the effect of the conditions under which they worked upon the health of the bakers; but I am not aware that there is any of a statistical nature which would apply to other underground room workers. Perhaps information as to the effect on health might be forthcoming from factory surgeons.

I believe similar views are held by a number of medical officers of health. Thus Dr. Louis Parkes wrote in his 1908 report that the use of underground rooms should be prohibited unless they complied with certain conditions. "It probably would not be possible to make existing underground workshops comply at once with the regulations to be framed; but it might be feasible to apply the regulations to existing workshops after a certain period, in

the same manner as the Factory and Workshop Act sections were made to apply to underground bakehouses after a certain period, which allowed owners and occupiers to make the necessary alterations after due notice." "If such regulations were in force, architects in designing new buildings for use as shops on the ground floor and residential flats or set of chambers on the upper floors would cause the underground rooms to conform with the regulations, so that the shops and basements might be let at the full rental value."

"PUERPERAL FEVER": A QUESTION OF NOMENCLATURE.—Dr. A. Savege, district medical officer to the Sculcoates Board of Guardians, was summoned to the Hull Police-Court on Jan. 20th, at the instance of the Hull Corporation, under the Infectious Diseases Notification Act, for failing to notify two cases of puerperal fever. Dr. J. Wright Mason, medical officer of health of Hull, said that from information received from the midwives inspector there had been two cases of puerperal fever in Hull. Those cases had not been notified. A letter was given to the magistrates which had been written by Dr. Savege to the finance committee of the Sculcoates Board of Guardians, in which he stated that the two women in question were suffering from puerperal fever. The defence admitted the letter, but stated that Dr. Savege had used a phrase "puerperal fever" wrongly. The fever that the two women were suffering from was in no sense one that was necessarily attached to women in the lying-in state. The facts of the two cases were that two women living in a poor neighbourhood required assistance of a midwife from the lying-in charity. It was one of the regulations of the Central Midwives Board that in any case in which the temperature of the patient rose above 100 deg. F. it was the duty of the midwife to ask for medical aid. The midwife in those cases had asked medical aid of the Sculcoates Board of Guardians because the temperature of the patients had risen above 100 deg. F. Dr. Savege had attended to the two women. Dr. Savege said that when he had written that letter he had used the words "puerperal fever" in the dictionary sense and not in the sense notifiable under the Act. There was nothing in the word "puerperal" to suggest a septic state. In his conception of the word "puerperal" there were twenty different kinds of fever, but there was only one kind which should be notified under the Act. The two women in question were not suffering from puerperal fever in the notifiable sense. The magistrate dismissed the summonses and said that Dr. Savege had got into difficulty by the loose way in which he had described the illness of the two women.

WATER SUPPLY IN TENEMENT HOUSES.*

By SIDNEY DAVIES, M.D.,
Medical Officer of Health, Woolwich.

SECTION 78 of the London County Council (General Powers) Act, 1907, provides as follows:—

"For the purposes of Section 48 (provisions as to house without proper water supply) of the Public Health (London) Act, 1891, a tenement house shall be deemed to be a house without a proper and sufficient supply of water, unless there shall be provided on the storey or one of the storeys in which the rooms or lodgings in the separate occupation of each family occupying such house are situate, a sufficient provision for the supply of water for domestic purposes:

"Provided that this section shall not apply to any tenement house in respect of which it can be shown that any such provision for the supply of water as aforesaid is not reasonably necessary."

The following police-court cases are of interest for several reasons. Few decisions have yet been given on Section 78 of the London County Council (General Powers) Act, 1907, and the magistrate hearing these cases gave prolonged consideration to them, and evidently had some difficulty in coming to a decision. It seems that the way in which Section 78 will be interpreted by London magistrates is in considerable uncertainty.

Notice to provide a sufficient water supply for the use of the occupants of the upper floors of three tenement houses not having been complied with, proceedings were taken by the Woolwich Borough Council at the police-court. Two cases were heard by Mr. Gill on Oct. 11th, 1909, and one case by Mr. Hutton on the 20th. The two cases heard by Mr. Gill were very similar. The houses consisted of six rooms on three floors, the washhouse, where the water supply originally was situated, being two steps below the basement. In both houses the families living in the house had joint use of the washhouse. One—No. 8, was occupied as follows: One family occupied ground floor front room and first floor front room; another family the basement back room, first floor back, and ground floor back. The basement front was closed as unfit for occupation. In the other—No. 9, one family occupied the first floor and another family the basement and ground floor. The

* A paper read before the Metropolitan Branch of the Society of Medical Officers of Health, January, 1910.

upper flight of stairs consisted of fifteen steps, and the lower of fourteen. As a result of the notice a water-tap and sink were fixed in each house in the passage on the ground (or middle) floor, but no waste-pipe was provided; and a control stop-cock was fixed in the basement washhouse on the branch water pipe supplying the new tap. It was shown in evidence that, as the result of some seven inspections made by two inspectors and the medical officer of health at intervals in the three months succeeding the tap being provided, the water was found turned off at the control cock on all occasions but one, this being done presumably to prevent the new tap from dripping, filling the small sink and overflowing, so causing a nuisance.

Mr. Gill, after taking a week to consider the case, decided in favour of the defendant in the case of No. 8, and in favour of the Woolwich Borough Council *re* No. 9. He held that as regards No. 8 the General Powers Act did not apply, as each of the occupiers of the house had separate occupation of a room on each floor, the tenant who sub-let to the other occupiers having sole legal occupation of the washhouse, although he permitted the other occupiers to use it.

With regard to No. 9 the occupier of the two upper floors had no water supply on the floor on which his rooms were situated, and Mr. Gill held it reasonable that there should be a supply, and fined the defendant 20s. and 23s. costs. Hence, unfortunately, there was no decision given as to whether the new supply provided was a proper and sufficient one.

The third case was also a six-roomed house of three floors. The basement consisted of a washhouse with a tap and sink (the only water supply) and a room recently vacated on account of its low height and dark condition. A family of a man and wife and one child lived on the ground floor, and a man and wife and two children on the top floor. The staircase, consisting of twenty-two steps in two flights, is in the middle of the house, hence unlighted, and the lower flight very dark. A notice having been served to provide a proper and sufficient supply for the tenants of the top floor, the owner fixed an additional tap outside of the house on the same level as the existing tap in the basement, but approached through an outside passage from the ground floor. This was, as stated to the medical officer of health on inspection, no improvement, the tenant of the top room still using the tap in the

basement. She had the alternative of coming down one flight of stairs, going outside the house by a side door on the ground floor, descending three more steps and a sloping passage, and so reaching the tap in the yard at the back; but she preferred, she said to the medical officer of health, going down the dark lower staircase inside the house. The owner, refusing to provide a water supply on the top floor, was summoned, and the case heard by Mr. Hutton. Having heard the evidence, he adjourned the consideration, on his own suggestion, to visit the premises. On the further hearing he called the tenant of the top floor, and asked her whether she was satisfied with the water supply, and which tap she used. She said she was satisfied, and used the new outside tap. Mr. Hutton said personally he would not be satisfied, and if the tenant had said she used the tap in the basement he would have convicted the owner; but as it was he did not think it reasonably necessary to require a water supply on the top floor.

Thus one case was lost on a legal technicality, and another on its merits, as to what was reasonably necessary. It can hardly be doubted that the County Council in promoting the General Powers Act of 1907 did not expect the scullery in which the common water supply was situated would ever be regarded as a separately occupied room, and seeing that the sub-letting in the case in point must have implied right to enter this room for the purpose of obtaining water, it is difficult to understand how it could be considered in any sense as separately occupied. If the magistrate was right in his decision, it follows that the Act requires amending. But Mr. Hutton's decision appears to the writer even more surprising. Everyone knows that tenants are extremely unwilling to give evidence against their landlord. But even supposing the tenant's word could be accepted, as likely as not the rooms will be occupied by a different family in a few months time. It is, therefore, remarkable that the magistrate should have made his judgment dependent on the easily influenced word of the tenant, and not on the evidence of his eyes and of the facts brought before him. But leaving this point, was Mr. Hutton justified when he said in effect that it was not reasonably necessary to fix a water supply on the top floor because the tenant had a separate supply on another floor? Par. 78 of the General Powers Act, 1907, expresses the view that it is necessary for families living on

one floor to have a water supply on the floor on which their rooms are situated, water being necessary for drinking, cooking, cleansing, and the general purposes of a family. Cases might occur where the family only consisted of one person, or when the members of the family did not have meals in their rooms, and only used them for sleeping, or made so little use of them that a very small quantity of water was necessary. Here it would not be reasonably necessary to have a water supply on the floor occupied. But the magistrate having made his decision depend, not on the number or habits of the family but upon the facility with which water could be fetched from lower floors, the judgment appears to be directly opposed to the spirit of the section.

Sir S. Murphy in his annual report for 1908 says that the compulsory provision of sinks (and waste pipes?) was intentionally omitted from the General Powers Act, for fear they should be used for the disposal of slop water, and so give rise to nuisance. The omission is much to be regretted.

Dr. McCleary has, on the other hand, insisted on sink wastes being supplied in Hampstead, under Sec. 73 of the Metropolis Management Act (houses without sufficient drains), but no case has been taken to court.

Dr. Millson, medical officer of health for Southwark, has been successful in enforcing the provisions of Sec. 78 (General Powers Act, 1907) in a case almost exactly parallel to the last described Woolwich case. The defendant in this case appealed to Quarter Sessions, but without success.

Dr. Millson adds that 500 houses in his district have been provided with an additional supply under the General Powers Act, the supply being placed sometimes on the staircase and sometimes in the living room.

SIZE OF DESKS.—Injurious postures are not caused solely by the type of the desk, but are also influenced very largely by its size. For this reason it is advisable to have in most standards two sizes of desks. A recognition of the fact that children in the same standard and of the same age often vary greatly in height will make the truth of this statement obvious. During some recent observations, children 53 inches in height were using the same desks as other children 63½ inches in height, the size of the desk being suitable only for those above 60 inches. Numerous other examples could be given.—*Special report of Dr. R. A. Lyster, County Medical Officer of Health, Hampshire.*

DISINFECTION OF BOOKS BY FORMALIN VAPOUR AND BY DRY HEAT.

By H. RENNEY, M.D., D.Hy.,
Medical Officer of Health, Sunderland.

SO far as I am aware, the results of experiments relating to the disinfection of books which have been exposed to the infection of scarlet fever, diphtheria, or enteric fever have never been published, except, I believe, in the case of books in which the germicide used was steam. Steam, however, is an agent which cannot be used satisfactorily in practice, as moist heat is destructive to the binding of the books. Exposure to the action of formalin vapour has therefore been resorted to, and although scepticism in regard to its action in the disinfection of books has been expressed, the practice has been continued for many years.

It occurred to me that it would be a good thing to put the question to the test by means of bacteriological examination, and I have therefore made a series of thirty-seven experiments in the disinfection of books which I infected with the micro-organisms derived from the scarlatinal throat, from diphtheria, and from enteric fever. In addition to these organisms I made use of pus taken from a suppurating parotitis in a case of enteric fever. At first I did not previously sterilize the books which I used as "sample" and "control," and as these first experiments were made with pus organisms I am afraid my results were probably vitiated by the omission, the cultures being possibly contaminated with micrococci previously in the books. Afterwards, both books were sterilized by dry heat at a temperature ranging from 180 deg. to 190 deg. C. for an hour, before commencing the experiment.

I satisfied myself that books exposed to this temperature contained no living organisms, provided that they were exposed for an hour on two or three successive days. Strips were cut from a page of the sterilized books by means of sterile scissors, and introduced into tubes of nutrient broth with the aid of sterile forceps. The broth cultures were then incubated for forty-eight hours at 37 deg. to 40 deg. C., after which film preparations were made and examined for the presence of any micro-organisms. If a negative result occurred, sub-cultures on agar were made from the broth cultures. It was often necessary to do this where broth cultures gave negative results, as it frequently happened that the growth in

broth was so poor that film preparations made from these cultures were doubtful, but when the broth was sown on agar there was an abundant growth on the latter medium. This, of course, was in those instances where either too low a temperature or too short an exposure had been used for sterilization. I soon found out that with a temperature of 180 deg. to 190 deg. C., and an exposure of an hour on two or three successive days, the result of incubating the strips in broth and the subsequent sub-cultures on agar, was negative.

METHOD OF WORK.

Having thus sterilized two books, one of which I shall call the "sample" and the other the "control," I smeared on a previously marked area on a page of both books several loopfuls of a broth culture of the test organism. In the first few experiments the page of each book was allowed to dry in the air, but owing to possible contamination this was discontinued, and drying was effected by placing the books with the smeared pages open, in the hot-air sterilizer, at a temperature of from 20 deg. to 30 deg. C., for twenty minutes to half an hour. After drying, the sample was subjected to the action of the germicide for a given period, after which the smeared portion was cut into strips by sterile scissors, and removed to a tube of nutrient broth by means of sterile forceps. The control page was cut up and transferred to a tube of broth in the same manner, and both broth tubes were incubated at 37 deg. to 40 deg. C. for forty-eight hours. Cultures were also made from the sample and control books after the preliminary sterilization, in order to make sure that the leaves were sterile. The broth tubes were examined for turbidity or other evidence of growth, and film preparations were made in every case. Sub-cultures from the broth tubes were made on nutrient agar, and incubated at the above temperatures, when, on obtaining a positive result, film preparations were made, and the organism verified. The germicidal agents used were formalin vapour and dry heat at various degrees.

In the case of books disinfected with formaldehyde the method was as follows:—

The books were exposed to the action of the disinfectant in a chamber of about 450 cubic feet capacity, and were placed in an upright position on wooden rails two inches broad and three inches apart, the pages being opened as far as possible. The formaldehyde was generated by an Alformant lamp, using sixty

Schering's formalin tablets. The floor was sprayed with formaldehyde.

The result of my observations proved that:—

1. It is necessary for the effectual sterilization of books that they should be exposed to a temperature of 180 deg. to 190 deg. C., in a hot-air sterilizer for an hour on two or three successive days, in order to ensure the destruction of micro-organisms which, though apparently not pathogenic, appear to be present in most books.

2. That the presence of these organisms appeared, in some of the experiments, to inhibit the growth of the various test organisms, and in others to prevent growth altogether.

3. That the disinfection of books by exposure to formalin vapour for 48 hours is impossible, for it was found that the test organisms were killed by such exposure only when the infected pages were purposely placed open so that the vapour had easy access to them; whilst where the infected pages were loosely closed by means of strips of gummed paper the test organisms were not killed.

4. That books which have been infected with the above test organisms can be disinfected by exposure to dry heat at a temperature of 150 deg. to 165 deg. C. for an hour, the organisms being killed by this temperature. This was the result when the sample book was the middle one of a pile of three.

5. That a temperature of even 180 deg. to 190 deg. C. for an hour does not injure either the paper or the binding, whether the latter is of leather or cloth. The boards, of course, are warped at the end of the time, but the application of a heavy weight until the books are cold restores them to their normal condition.

THE EXAMINATION OF THE CONTROL.

The staphylococci and streptococci recovered from the controls were shown by film preparations stained with methylene blue or carbol-fuchsin, the diphtheria bacilli by Loeffler's methylene blue and by Neisser's method; the bacillus typhosus by the stains above mentioned, by motility in hanging drop preparations, and by agglutination with serum diluted to 1 in 80 from a known case of enteric fever.

MACHINE-SKIMMED MILK.—That every tin of condensed milk made from machine-skimmed milk shall have printed upon it in bold type, "Unfit for infants and invalids," was the resolution passed at the annual meeting recently of the Lancashire Farmers' Association at Preston.

THE COMPULSORY ISOLATION OF PHTHISIS PATIENTS.

THE Rural District Council of Docking has recently addressed a communication to the Local Government Board, in which the Council state that their attention has been called to cases of phthisis in the district which appear to have been directly contracted by reason of the sufferers residing with, or attending on, persons so afflicted. The Council point out that the undesirable conditions too often prevailing in small and ill-ventilated cottages conduce to the spread of phthisis, and they urge the Board to consider the question of obtaining "some amendment in the law, whereby provision may be made for the compulsory isolation of cases in the earliest stages." The Council suggest that, as provision made by the Council might entail a greater expenditure than its own needs would justify, it might be advisable "for such amendment to take the form of granting powers to the Local Government Board to arrange for the enlargement of the various sanatoria scattered throughout the country." To this letter the following reply has been received from the Local Government Board, which may be taken to define the view of the Board on this important question:—

LOCAL GOVERNMENT BOARD,
WHITEHALL, S.W.,
December 1st, 1909.

SIR,

I am directed by the Local Government Board to advert to the letter which the Docking Rural District Council addressed to the President on the 5th ultimo representing that it is desirable that provision should be made for the compulsory isolation of cases of phthisis in the earliest stages of the disease.

In reply, I am to point out that the Rural District Council and the Guardians already possess powers enabling them to take important measures for combating the disease.

The Board are advised that the compulsory isolation of cases of pulmonary tuberculosis in their earliest stage is impracticable, and that the best measure in regard to such cases is the reception of the patients voluntarily into sanatoria for a limited period, during which they may be instructed as to the means which they should themselves employ to combat their disease and to prevent the spread of infection to others. With such training there is every reason to hope that the patient's means of livelihood need not be interfered with—a point of much importance in

the case of patients of the poorer classes. I am to draw attention to the remarks in regard to such training on page 11 of the Memorandum by the Board's Medical Officer on Administrative Measures against Tuberculosis, a copy of which has been forwarded to the Rural District Council.

As regards advanced cases of pulmonary tuberculosis, which are, it is believed, the chief source of the infection of healthy persons, I am to point out that it is competent to the Guardians to arrange for the efficient treatment of patients in the receipt of medical relief from the Guardians in their infirmary or some other suitable institution under conditions which will afford the greatest benefit to the patients, while preventing the spread of infection in small, ill-ventilated cottage homes, such as are referred to in your letter.

Under Article IX. (2) of the Public Health (Tuberculosis) Regulations, 1908, the Rural District Council have ample power in regard to poor persons to take any measures and supply any assistance within such reasonable limits as the circumstances of the case require and allow, as will obviate the risk of infection, especially from the use by the poor persons of an infected sleeping apartment.

Under Section 131 of the Public Health Act, 1875, the Rural District Council have power to provide for the treatment in a sanatorium of persons from their district suffering from pulmonary tuberculosis, whether suffering from the early or advanced stage of the disease, and to defray, in whole or in part, the cost of their maintenance in a sanatorium. If such accommodation were provided by the Rural District Council, it would be competent to the Guardians to arrange for the reception, when necessary, of any persons in receipt of medical aid from the Guardians upon such terms as may be mutually agreed upon by the Guardians and the Rural District Council. I am also to state that it is competent to the County Council to take steps with a view to the provision of hospital accommodation for cases of pulmonary tuberculosis under the Isolation Hospitals Acts, 1893 and 1901.

The Board are advised that much good work can be successfully carried out under the powers indicated above, and they would recommend the Rural District Council and the Guardians to co-operate in utilizing those powers to the full extent of their possibilities.

I am, Sir,

Your obedient servant,

(Signed) JOHN LITHBY,
Assistant Secretary.

J. A. Stoughton, Esq.,

Clerk to the Docking Rural District Council,
Fakenham.

THE SHEFFIELD OPEN-AIR RECOVERY SCHOOL.

DR. RALPH P. WILLIAMS, school medical officer to the Sheffield Education Committee, has recently issued a valuable report on the Open-Air Recovery School that the committee decided to establish in March, 1909. The school is situated at Whiteley Wood, five miles distant from Sheffield, and was formed by adapting the buildings and playground of a small disused elementary school for the purposes of open-air tuition. The school stands on sloping ground about 200 yards from the road, and is surrounded by wooded meadow-land. The general arrangement of the school is thus described by Dr. Williams:—

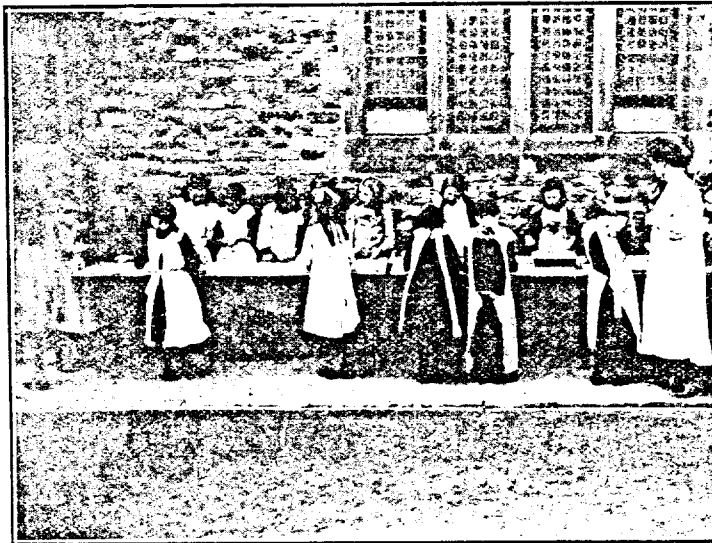
The old infants' class-room was made into a kitchen by the provision of a kitchen-range

The school was sanctioned by the Board of Education, under the Education (Defective and Epileptic Children) Act, 1899.

The number of children in each class was thus limited to twenty-five. Fifty children were admitted when the school opened on July 21st, 1909. The attendance throughout was excellent.

In all fifty-eight children passed through the school, it being found necessary to exclude certain children as unsuitable, whilst one or two others left owing to their having reached the age limit.

The staff consisted of two female teachers, who were both on the ordinary staff of the Education Committee, and the school was visited weekly by one of the school nurses, who assisted in weighing the children, examined them as to cleanliness, etc., and afterwards paid home visits when necessary.



A COOKING LESSON.

with boiler and hot-water drum, a copper, and a sink. The class-room at the other end of the building was divided into two by a wooden partition. One half was fitted up as a bath-room, hot and cold water was laid on, and four rose showers were provided. The temperature of the water, which could be read on a thermometer let into the delivery pipe, was controlled by two taps. The other half of the room was used for medical inspection, and for the weekly inspection by the nurse.

Good cloak-room accommodation was available for both boys and girls.

Two sheds were available. The one which faced south was used throughout as a dining-shed, all meals being served here whatever the weather might be. The shed facing north was only used in wet weather for class work and during the two hours' rest.

All the homes of the children were visited during the earlier days of the school in order to impress on the parents the necessity of sending the children to bed early, keeping their bedroom windows open, and allowing them to go to sleep in the afternoons of Saturday and Sunday, if possible.

The children were selected as follows:—

A circular letter was sent to the head teachers of the senior departments of schools which were within easy walking distance of the Leopold Street (City) car terminus. They were asked to recommend four or more (according to the size of the department) of the most anæmic and poorly nourished children attending school.

These children (in all 100) were examined by me at the Education Office, and the most suitable cases selected. The selection was not an easy matter, as the majority of the children were suitable, and it had to be borne in mind

that those children admitted to the school must be capable of undertaking the walk of a mile and a half every evening from the school to the tram-car. It was also thought advisable for this reason to admit only children between the ages of nine and thirteen years.

The following is a list of the physical defects from which the children were suffering on admission. It also shows the number of children in which such defects occurred:—

DEFENCES.	
Anæmia and Bad Nutrition ...	43
Oral Sepsis... ..	13
Tuberculosis of Lung ...	3
Doubtful Tuberculosis of Lung ...	9
Tuberculosis of Glands ...	2
Convalescing after Pneumonia ...	1
" " Kidney Disease	1
" " Operations for	
Enlarged Tonsils and Adenoids	4

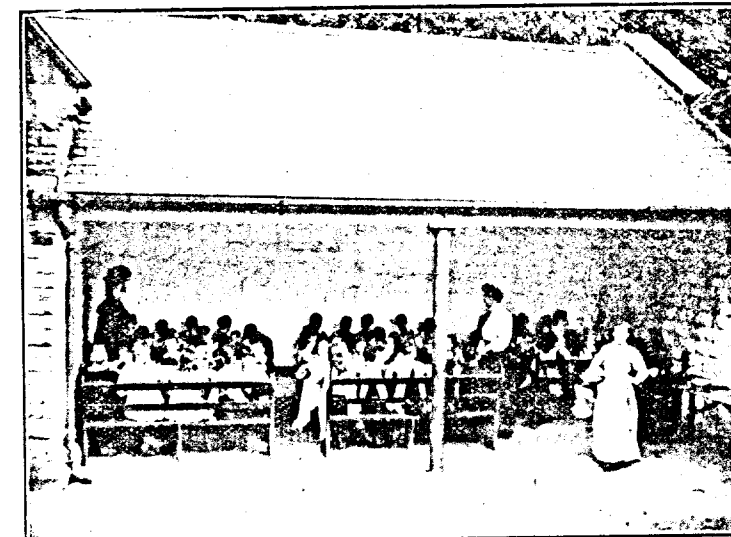
TREATMENT OF TEETH.

The teeth of all the children were examined by Mr. Frank Harrison, M.R.C.S., L.D.S., senior dental surgeon to the Sheffield Royal Hospital, and seven boys and five girls were operated on by him at the Royal Hospital. The parents of these children were interviewed by Dr. Williams and their consent obtained prior to the dental operations being performed.

When the school is re-opened Dr. Williams hopes to select the cases early in the year, and to arrange for dental treatment, if required, before attendance at the school is commenced.

The feeding arrangements are thus described:—

Three good meals were provided daily. The diet sheet was drawn up by me, with the help of the Principal of the School of Cookery, and all meals were served in the open shed originally attached to the school. On arrival at 9.20 a.m.,



THE MID-DAY MEAL.

TRANSIT OF CHILDREN.

The children assembled at the Leopold Street car terminus at 8.45 a.m. A special car was kindly provided by the Tramways Committee, on which the children were taken to Ecclesall. Here they were met by two wagonettes and conveyed to the school, a distance of about two miles.

The children left the school at 5.45 p.m., and walked down through the fields to the Fulwood car terminus, where a special car left at 6.20. It was found that this walk was one of considerable difficulty to many of the children during the first few weeks. The children arrived at Leopold Street again at 6.45 p.m., and then returned to their homes.

The school was closed on Saturdays, but remained open throughout the summer holidays.

breakfast, consisting of porridge and milk, was served; dinner was partaken of at 1 p.m., and tea at 5 p.m.

No intermediate meals were given, as it was not thought advisable to put too great a strain on the digestion of the children, many of whom had previously been underfed.

The cost of feeding worked out at slightly less than 2s. 6d. per head per week (three meals daily for five days).

The parents contributed to the cost of the food, their contributions varying from 2s. 6d. to 6d. a week.

The caretaker was assisted in the kitchen work by her sister, who also helped to bathe the children. The girls and boys, in the course of their housewifery work, also rendered some assistance in preparing food, cleaning knives, drying plates, etc.

The work and routine of the school is thus described:—

The intellectual work was cut down to the minimum of 3½ hours daily, whilst extended time was given to gardening, housewifery, Nature study, and personal hygiene.



IN THE GARDEN.

The latter was a prominent feature, and habits of cleanliness were impressed on the children by the regular daily cleansing of the teeth, the washing of hands before all meals, together with the use of the brush and comb.



RESTING.

Each child had a washable bag containing a numbered brush and comb. A separate numbered tooth-brush and towel were also provided, other numbered articles being the deck-chair used during lessons and resting time,

the blanket, and also a rain cape, which was most necessary on many days during the walk from the school to the car.

REST.

All the children rested, in the deck-chairs provided, for a period of two hours after the mid-day

meal. The chairs were placed in the playground, each child being wrapped in a blanket.

The bad weather necessitated the sheds being used on many occasions during the hours of rest, and several times the weather was so severe that

the children had to be brought into the school-room. This, however, was fortunately very efficiently ventilated.

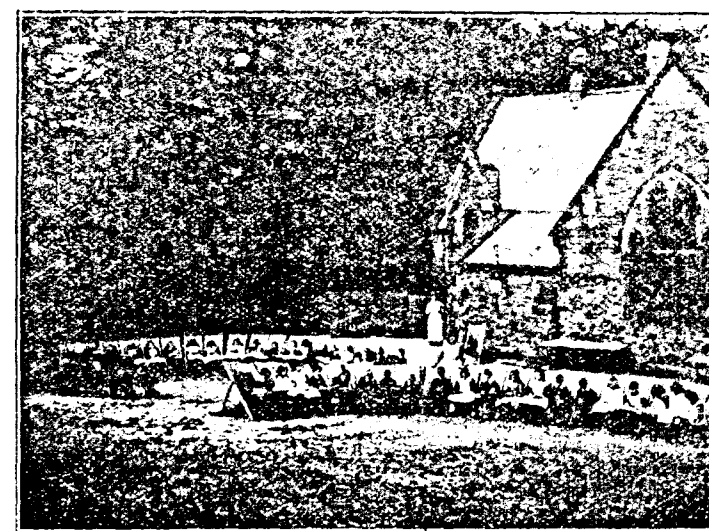
After the first week the children quickly settled down, and 90 per cent. slept throughout the whole

two hours. The rest provided, which is a most important factor in the open-air cure, no doubt largely contributed to the success of the school, insufficient and disturbed sleep being amongst the prominent causes of malnutrition in the children of the poor.

During the first six weeks certain children also rested for an hour in the morning. As time progressed, however, it was found that with increasing strength they were able to undertake the ordinary curriculum.

WEATHER.

The summer, with the exception of a fortnight in August, was wet, cold and stormy, and the fact of the results of the school being so good under such adverse conditions shows how essential it is that children should be educated as far as possible in the open air.



AN OPEN-AIR CLASS.

SHOWER BATHS.

Each child had two warm shower baths weekly. The four showers provided were satisfactory, and were thoroughly enjoyed by the children; indeed, an extra bath was looked upon as a most satisfactory reward for merit. Soap and loofahs were provided, and after a preliminary shower (98 deg. F.) the children soaped themselves thoroughly, after which the shower was again turned on, the temperature being reduced from 98 deg. to about 85 deg. Each child had a separate clean bath towel, the whole process being supervised by the caretaker's assistant.

The shower baths are not only valuable as a cleansing agency, but they also act most beneficially on the child's health, the nutrition of the skin in all the children being much improved during their stay at the school.

COST.

Dr. Williams deals with the important question of cost and points out that—

In considering cost it is necessary to remember that a considerable amount of the expense is that on establishment. The chairs, blankets, kitchen utensils, etc., will be ready for use next year, together with the well-equipped kitchen, bathroom, etc.

Again, any movement such as the present one, improving the nutrition and vitality of the children, will tend to reduce the number of cripples, and thereby save the considerable expense which will have to be laid out on special schools for crippled children. Diminishing the number of ill-nourished children will also lessen the risk of these children in after-life becoming incompetent by lowered vitality; therefore the expense of maintenance in workhouses, etc., will be lowered. Below is given a statement of the cost of the school:—

OPEN-AIR SCHOOL.—EXPENDITURE SINCE COMMENCEMENT TO END OF OCTOBER.

Working Expenses (Maintenance).

Salaries of Teachers ...	£67	10	3
Provisions ...	98	18	0
Conveyance of Children ...	80	7	0
School Equipment ...	88	14	4
Fuel, Light and Cleaning, and Rates ...	31	7	1

Gross cost ... £366 16 8

Less—Estimated £70 in grant and £18 3s. 6d. in parents' contributions.

RESULTS.

Dr. Williams regards the results of the school as very satisfactory, and he gives the following summary of the notes he made at the end of October, when the last examination took place:—

Cured, 17.

Improved, 32.

Same condition, 1.

Charts and tables are given which show that the increases in height and weight were most satisfactory, and it is stated that in general appearance and in character the children showed marked changes for the better. The school had to contend against various unfavourable circumstances. The weather was bad, the school was situated at a considerable distance from the car terminus, which entailed considerable expense in providing wagonettes to bring the children to the school, and the insufficient clothing of many of the children was a serious drawback. At one time eighteen children had boots quite incapable of keeping out water. Dr. Williams' general conclusion is as in the following terms:—

The results of the school from the medical point of view are certainly very satisfactory.

Educationally, although many of the children will be found to have lost ground in their ordinary curriculum, they return to school much brighter, more alert, and more able to cope with their daily work. Their knowledge of nature and powers of observation are no doubt greatly increased, and all who were in contact with the children agree that their conduct at meals, during games, and throughout their school work improved immensely during their stay at the Open-Air Recovery School.

I have every confidence in recommending that the school should be continued next year for the increased number of children (seventy-two) approved by the Board of Education, and that other schools of a similar kind be established.

THE ORIGIN AND SPREAD OF TUBERCULOSIS.

THE *Zeitschrift für Hygiene und Infektionskrankheiten* (Vol. LXIV., Part 3) contains an article by Dr. Hillenberg on the epidemiology of tuberculosis, in which the subject is attacked in a somewhat novel and very instructive way—the essence of which consists in a thorough following up of the family histories (combined with some experimental work) of the inhabitants of a small agricultural, stationary community which are in any way infected with tuberculosis.

At the outset the author expresses the opinion that the origin and spread of tuberculosis is not to be settled in the laboratory alone, but inquiries must be instituted among the general population. It is impossible to do this in large cities, owing to the moving nature of the population and the insuperable difficulties of unravelling reliable histories from the very complicated conditions of city life. This can be done much better in a small town or country place, where the general conditions of life are much more simple and family history can be traced and sources of infection more easily discovered.

The first difficulty which presented itself was

that of discovering tubercle bacilli "carriers" somewhat analogous to those in enteric, but this was overcome by the adoption of Pirquet's reaction. This consists of vaccinating with some of Koch's old tuberculin on the arm, when a small papule appears in a few days in those who are harbouring a tubercular focus.

The inquiries were made in Springe, a small country town of 3,000 inhabitants, mostly engaged in agricultural pursuits, or those depending on these, only about 120 inhabitants being engaged in industrial pursuits. The population has remained constant for very many years, the influx of strangers being very small owing to the unfriendly attitude of the Town Council to new industrial enterprises, and the efflux of natives was also small. The houses were in many cases occupied by one family, but in the majority by two, and these seldom changed their residences.

The author next enumerates and describes the inquiries which were made, the larger part of the paper being taken up with an analysis of the results.

The inquiries comprised the following:—(a) All children in the elementary and grammar schools were examined by Pirquet's method, both with Koch's old tuberculin and with bovine tuberculin; (b) teachers made strict inquiries as to nourishment of children, especially during first year or so of life; (c) children reacting positively to Pirquet were carefully examined clinically and inquiries made into family history with the help of an old teacher who knew every family intimately for years; (d) the families in which a "positive" case occurred were in most cases visited by the author, who extended the inquiries into the family history and tried Pirquet's reaction on all the members, where permitted, with both bovine and human tuberculin—in suitable cases a clinical examination was made; (e) a considerable number of the general inhabitants were tested by Pirquet's reaction to find out the prevalence of tubercular infection among the general population; (f) the deaths from phthisis were extracted from the death returns of the years 1893 to 1908—their residences were also ascertained and any changes they had made in these during the three years prior to death; (g) inquiries were also made into deaths from tuberculosis among domestic animals from the veterinary inspector for the district.

The next section of the paper deals with the results of the examination of the school children. The ages of those examined ranged between five and fifteen years, and numbered 650. Of these, 175, or 26.9 per cent., gave a positive reaction. Of this number, 74, whose ages varied from five to seven years, had only just entered school, and of these only 6, or 8.1 per cent., gave a positive reaction with the old tuberculin. Thirty-one children were examined who had just been one year at school; and of these, 10, or 35.57 per cent., gave a positive reaction. The

difference is difficult to explain. The explanation suggested is based on Binswanger's statement that old tuberculin is a reagent for illness not infection by tuberculosis—viz., that some old, quiescent gland has become more active during the first year of school life, probably from the profound influence which the sudden change to it produces on the organism. Not reckoning the new-comers, 576 children gave a percentage of 29.37 positive reactions. This great difference before and after entrance into school was not found in Altona, but the explanation here is probably that the conditions of city life in general are so unfavourable to children that the change to school life does not alter the environment so much. In the case of the children the examination with bovine tuberculin was made some weeks later; and out of 516 children examined, 37, or 7.15 per cent., gave a positive reaction. Positive results increased steadily with age, and only occurred in those which had previously reacted to the old tuberculin. This was the case also with adults. There is no satisfactory explanation for this; but the author, as the result of about 1,000 inoculations in healthy and consumptive patients by bovine tuberculin, is inclined to think it only occurs where the patient is infected by bovine bacilli.

The examination of adults with the two tuberculins was undertaken among all classes to ascertain the prevalence of tuberculosis among the apparently healthy adult population. Three hundred and two in all were examined, and positive reactions with old tuberculin were obtained in 50.82 per cent., and with bovine tuberculin in 9.66 per cent. The result of the former differs from Nägeli's post-mortem results, which showed that in 284 deaths only six were free from tuberculosis. In those examined with bovine tuberculin there were 9.66 per cent. positive reactions against 7.15 per cent. among the children. The author suggests that this may be explained by the consumption of butter by adults.

As regards the children's nutrition during infancy, of 335 "negative" children 62.33 per cent. were breast-fed and 32.53 per cent. bottle-fed, and 5.07 per cent. unknown. Of 158 "positive" children 60.75 per cent. were breast-fed and 33.53 per cent. bottle-fed, and 5.69 per cent. unknown. No conclusion can, therefore, be drawn as to the influence of the mode of feeding on tubercular infection.

In general the health of the "positive" children was found to be good; 40.63 per cent. presented some signs of so-called scrofula, or disturbances of nutrition, or admitted having had one of these. In only one case, a girl of thirteen years, decided lung changes could be found. Inquiries were made regarding the health of the families to which 175 "positive" children belonged. These were 143 in number, of which only 94 were examined by

Pirquet's method. Of the 143, 22, or 15.37 per cent., had one or both parents dead or ill of phthisis at the time of inquiry. Of the 94 examined for Pirquet's reaction the result was negative in 21 families, or 22.34 per cent. The father was "positive" in 33 families, or 35 per cent.; the mother in 22 families, or 23.4 per cent.; both parents in 18 families, or 19.14 per cent.; and the total positive families were 73, or 77.65 per cent. Of 18 older brothers or sisters 4 were "positive," and in 30 families more than one child was "positive." The author thinks that the fact that in 15.37 per cent., or one-sixth, of the 143 "positive" families there was manifest tuberculosis is an important one as indicating that the source of infection was the family. He asks, What is the source of infection in the remainder? In answer to this question four alternatives are suggested: (1) Tubercular subjects may have lived in the house, and the children have become infected at an early age; (2) neighbours may have had tuberculosis; (3) food, such as milk, may have become infected with human T.B., but against this is the fact that no person connected with the milk trade has died of tubercle since 1897; (4) the tubercle bacillus is ubiquitous. Flügge says this last is not true in the strict sense of the word, that "droplet" infection is the most important, and ubiquity can only be spoken of in the sense of the large number of human foci of infection. The author thinks that "droplet" infection, however, does not here play the important rôle attributed to it by Flügge, for in 120 "positive" children there was no consumptive in the family, and in 22 of their families the relatives did not react to Pirquet. The only source in these cases is tuberculous neighbours, with whom the children did not live, so that the infection here would be called "contact" infection and not "droplet" infection.

The author had a block plan of the town of Springe constructed, and marked on it the houses where persons died of phthisis, and also the various residences they had occupied for the last fifteen years, also the houses where "positive" children lived. Looking at this plan it becomes evident that there is a grouping of cases in the neighbourhood of these foci, and that phthisis has not only a tendency to fasten itself to certain neighbourhoods, but to certain houses. To sum up this section—(1) For 31 children out of 175 the source of infection was the family; (2) in remaining 144, 36 lived in 27 houses where tuberculous cases had occurred; (3) 17 houses where 18 "positive" children lived were close to other houses where tubercular deaths, etc., had occurred; (4) for a further 54 children a possible source of infection was found, so that of the 175, 85, or about half, there was a demonstrable source of infection by contact or inhalation ("droplet"). For the remaining half no source could be found. These facts are

sufficient to prove that sources of tubercular infection are very obscure, and much further inquiry and experiment is required to elucidate the subject.

The author then deals with "heredity" and "disposition," and his results are very important and interesting, though not new. Of 362 healthy persons there were 72, or 19.88 per cent., in whose families tuberculosis exists or did exist. These 72 included 16 women whose husbands died of or were suffering (2) from phthisis. Of these, 10 were negative to Pirquet after several trials, and 5 positive, but with no clinical symptoms. Only one of the 16 had clinical symptoms, and she had used the same bed as her husband. One of the "negative" women had lost both mother and husband with phthisis, and was sharing her bed with a phthisical daughter. Of 10 mothers who cared for and used the same bed as phthisical children, 6 were negative and 4 positive. None had any clinical symptoms. Of 17 grown-up children one or both of whose parents had died or were ill of phthisis, 12 were "negative" and 5 "positive." Of 8 men whose wives had died or were suffering from phthisis, 4 were "negative" and 4 "positive." None had clinical symptoms. Of 6 fathers some of whose children had died of or were suffering from phthisis, 2 were "negative" and 4 "positive." Of 15 adults some of whose brothers or sisters died of phthisis, 8 were "negative" and 7 "positive." These facts would seem to confirm that there is an innate immunity from or disposition to phthisis apart from the question of environment. It might be objected that many of the above had not passed incubation stage, but the Pirquet test in the large majority of adults took place twelve years after the occurrence of the phthisis in the family.

The author winds up with a general *résumé* of his results, which can be sufficiently gathered from the above abstract. In conclusion, he discusses the question of the relative importance of the two methods of tubercular infection, viz.: (1) Contact infection, and (2) inhalation infection.

1. *Contact Infection.*—Commonest in youth, and is assumed where there is no immediate obvious source. There may have been phthisical people, etc., previously in the house, and such cases cannot be put down always to unhygienic conditions of the house. The infection is often trifling and the general course favourable.

2. *Inhalation Infection.*—In this case the quantity of bacilli inhaled is large, and the acute fatal cases can generally be traced to this source.

As regards prevention, the author lays stress on—(1) destruction of tuberculous sputum; (2) disinfection of dwelling; (3) training of consumptive; (4) training of people generally in hygiene; (5) examination of all school children by Pirquet method by school doctors, special care being devoted to the "positive" cases, and also to children in whose family there is consumption.

THE ANNUAL REPORT OF THE MEDICAL OFFICER OF THE LOCAL GOVERNMENT BOARD FOR 1908-9.

ALTHOUGH Dr. Newsholme has issued three annual reports as Medical Officer of the Local Government Board, the third report, that for the year 1908-9, is the only one that is concerned solely with work which has been carried out during his term of office. It is not surprising to find, therefore, that this report presents some new features of interest, which considerably enhance its value and practical utility. The early appearance of the report is welcome: the issue of so important and elaborate an official document within nine months of the end of the year to which it relates is something in the nature of a departmental record. Dr. Newsholme begins his review of public health in 1908 with a discussion of the year's mortality, the chief object of which he states is "to draw attention, not to the happy reductions in general mortality that have occurred, but to the marked differences in the incidence of mortality in the towns comprised in the Registrar-General's returns." With two interesting diagrams he shows that there is still much to be done to check the mortality from preventable disease, not only among infants, but also in the general population. It is interesting to note that materials are now being collected in the Board's medical department for a review of the conditions affecting the mortality of children in the first five years of life, and of the possibilities of reducing this loss. The publication of this document will be awaited with much interest.

In dealing with small-pox, Dr. Newsholme refers to the outbreak in Bristol during the early part of last year. Altogether thirty-five cases occurred in the city, and twenty-two in the neighbouring districts, and Dr. Newsholme expresses the opinion that the outbreak would have been on a much larger scale had it not been for the prompt measures for securing vaccination and re-vaccination, and the "consummate skill in tracing sources of infection and in watching contacts displayed, not for the first time, by Dr. D. S. Davies, the medical officer of health of Bristol."

An interesting table is given showing the relative death-rates from all causes, and from certain special causes in through and back-to-back houses respectively. This table clearly shows the excessive mortality in back-to-back houses, and it is of special interest at the present time in view of the provisions relating to such houses in the Housing, Town Planning, etc., Act. Statistics as to the Notification of Births Act are given, from which it appears that the Act has been adopted by large urban communities having an estimated population of nearly thirteen millions,

while similar communities with a population of over eight millions have not adopted it. In smaller urban districts the Act is in operation over a population of only some 350,000 out of a total population of over six millions.

The conversion of conservancy into water-carriage systems is discussed with special reference to the experience of Leicester and Nottingham. In the year 1896 Leicester had approximately 20,000 water-closets, 7,000 pails and 2,000 middens; while Nottingham had 7,200 water-closets, 40,225 pails and 440 middens. At that time Leicester had entered upon a scheme of conversion of all its middens and pails into water-closets, which was completed a few years later. On the other hand, in 1908 Nottingham had still 100 middens and 36,531 pails as compared with its 26,729 water-closets. Turning to the incidence of diarrhoea and enteric fever on the two towns, Dr. Newsholme gives the following instructive table:—

PERIODS.	Leicester.				Nottingham.			
	Mean Death-rates.		Proportional Figures.		Mean Death-rates.		Proportional Figures.	
	Diarrhoea per 1,000 births.	Enteric Fever per 1,000 of population.	Diarrhoea.	Enteric Fever.	Diarrhoea per 1,000 births.	Enteric Fever per 1,000 of population.	Diarrhoea.	Enteric Fever.
1889-93	48	19	100	100	31	26	100	100
1894-98	49	18	103	94	40	26	127	99
1899-1903	36	10	76	51	40	30	128	115
1904-08	33	04	70	22	37	15	117	57

Dr. Newsholme's comment on this table is as follows:—

A gigantic experiment has been performed on these two communities under circumstances which enable fairly trustworthy comparison to be made; and at the present time it remains true that in Nottingham a large number of deaths from diarrhoea and from enteric fever are occurring every year, which would cease to occur were this city, in every part of it, to adopt, like Leicester, a more cleanly system of disposal of excremental matter.

The report contains three appendices. In Appendix A are various reports by members of the Board's medical staff, including a report by Dr. Buchanan on the work of the inspectors of foods during the year and a memorandum on water supplies showing capacity to act on lead, in which it is suggested that lead-poisoning due to domestic water might be made a notifiable disease. Appendix B contains the results of special investigations, including a report on the prevalence of hernia by Dr. Basil Cook, which opens up a new field for workers in preventive medicine. Professor Delépine submits an exhaustive report on the prevalence and sources of tubercle bacilli in cow's milk, in which he expresses the opinion that it is

possible by means of the microscopical method to detect tubercle bacilli in the *unmixed* milk of more than 90 per cent. of the cows that yield tuberculous milk capable of infecting guinea-pigs.

From this necessarily brief review it will be seen that Dr. Newsholme's annual report has exceptional interest and value, and has a marked bearing on administrative action. Stimulating direction of this kind from the central Public Health Authority cannot fail to produce beneficial results throughout the country.

REVIEWS.

DOMESTIC SANITARY ENGINEERING AND PLUMBING.

By F. W. Raynes, Assistant Lecturer in the Civil Engineering Department, Glasgow Technical College. London: Longmans, Green & Co., 1909. Price 10s. 6d. net.

In his preface the author expresses a hope that his book will be found of value by students preparing for examination and by those entrusted with the execution or supervision of this branch of engineering work; but we venture to think that the book will appeal to a wider class of readers, and particularly to the intelligent householder who wishes to know something of the ingenious contrivances that the plumber and sanitary engineer have provided for his comfort and health. The first five chapters, though written with admirable lucidity, are technical, and deal with plumbing materials, roof work, the fixing, bending, and jointing of pipes, solders, etc.; but most of the remaining portions of the book require but little special knowledge for their due appreciation. The three chapters on sanitary fittings and drainage are exceedingly well done; there are two excellent chapters on water supply, and the author is specially to be thanked for a useful chapter on domestic hot water supply, which contains information not easily to be obtained from text-books. The illustrations are copious, and show clearly what they are meant to show, and the printing, binding, and general get-up are excellent. We can cordially recommend this interesting and instructive manual.

AIR AND HEALTH. By R. C. Macfie, M.B., C.M. London: Methuen & Co., 1909. Price 7s. 6d. net.

The influence of atmospheric conditions on health and disease is a vast subject, on which much yet remains to be said. Modern experiments have considerably shaken not a little of the teaching of the older sanitarians, and there is much need of more exact knowledge not only of ventilation but of the whole question of air and health. In the meantime, however, Dr. Macfie has earned our gratitude for his admirable statement of what is known on the subject at the present time. He has collected from many and

varied sources a vast amount of information on such matters as the physical and chemical properties of air, the physiology of respiration, dust, fog, and other atmospheric impurities, air-borne epidemics, and ventilation. The book, however, is no mere compilation; the facts have been selected with keen critical insight, and presented in an ordered and well-knit sequence with very considerable literary ability. The book will be found useful as well as interesting by practical sanitarians. It is one of the best volumes of the excellent series in which it appears.

MODERN METHODS OF STREET CLEANING. By George A. Soper, Ph.D. London: Archibald Constable & Co., 1909. Price 12s. net. •

This book is based on the author's practical experience of street cleansing in America, and on his observations during a three months' tour in Europe as a member of an Advisory Commission on Street Cleansing, appointed by Major McClellan, of New York. In this tour some twenty large cities in this country and on the Continent were visited, and it is interesting to find the author freely admitting that in their method of street cleansing the European cities are often more progressive than the American, and that sanitation is due to European initiative. The book, which is copiously illustrated with photographs, contains much valuable information as to the cleansing methods adopted by the more progressive cities, and the information is presented in an interesting form. Berlin comes in for special commendation, while New York is severely criticised. Though the author deprecates generalizations, one gathers from this comparative study that street cleansing becomes more efficiently done in proportion as it is recognized to be a matter to be dealt with directly by the municipality. Private scavenging, which is still common in New York, is a sign of inefficiency.

OUTLINES OF BACTERIOLOGY (TECHNICAL AND AGRICULTURAL). By David Ellis, Ph.D. (Marburg), and D.Sc. (Lond.). London: Longmans, Green & Co., 1909. Price, 7s. 6d.

In this volume it is intended to give a general outline of the subject of bacteriology, and as such it will be found serviceable to those whose vocations bring them into touch with this science.

The author has eminently succeeded in his task, and has produced a very readable and useful volume. In a work of this kind it is impossible to avoid technical terms, but these have been kept within bounds, and where used are thoroughly explained; and while the non-technical person will find it interesting, the technical person will find it sufficiently scientific to act as a good introduction to more advanced and purely specialist work on the various matters touched on.

The book consists of 262 octavo pages, is well printed on good paper, and contains a large number of excellent illustrations, many of which are coloured.

The first eight chapters deal with the morphology structure, cultivation and distribution of bacteria and the influence of the various agencies on their growth. Chapter IX deals with the pathogenic bacteria, both in the animal and vegetable kingdoms. Chapter X and XI describe the thermogenic, thermophilic, chromogenic iron and sulphur bacteria, and Chapter XII, bacteria in their relation to food preservation. Among the best and most interesting chapters are Nos. XIII and XIV, which deal with soil bacteria, and explain the various stages through which organic matter passes by the agency of micro-organisms. Chapters XV, XVI and XVII are devoted to fermentation processes, and the last of these, explaining their application to various trades, is particularly useful. Among those dealt with are the brewing of alcohol and vinegar, making of butter and cheese, tanning, retting of flax, jute, etc., tobacco curing, indigo growing, and the cultivation and drying of tea and cocoa. Chapter XVIII, which is the last, deals with sewage and sewage disposal.

From this description of the contents the scope of the work can readily be gathered, and it can be recommended as a good introduction to anyone wishing to study the application of bacteriology to industrial processes.

CORRESPONDENCE.

The Editor does not accept responsibility for the opinions of correspondents.

To the Editor of "PUBLIC HEALTH."

THE RELATIONSHIP OF THE MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER.

SIR,—It would be of value if details of the arrangements that are now being generally made between medical officers of health and school medical officers were available in PUBLIC HEALTH. It appears that compulsory closure of schools and exclusion of scholars for a specified time to prevent the spread of disease remain in the hands of the sanitary authority and medical officer of health. Certain responsibilities with respect to the investigation of outbreaks of infectious disease in the school and the voluntary closure of the schools by the education authority are now placed with the school medical officer, who has to give his formal approval. Further, the school medical officer is in a position to exclude certain children from the school in order to prevent the spread of disease, or on other medical grounds. The order of procedure as regards the compulsory closure of schools appears, however, to be modified. In practice it has been the custom for the medical officer of health to arrange, as soon as an infectious

case is notified to him, for the temporary exclusion from the school of the infected child, or of "contacts" or "suspects," without resorting to the formal procedure of Article 57. If such exclusions are to be deemed to be on "reasonable grounds" they must be endorsed at the time or subsequently by the school medical officer. Thus a working arrangement between the medical officer of health and the school medical officer as regards the temporary exclusion of scholars is necessary, and should be extended to the closing of the school, for the medical officer of health is required to confer with the school medical officer, and *vice versa*.

We find that both the medical officer of health and the school medical officer can initiate a voluntary closing of the school by the education authority, the medical officer of health doing so chiefly on public health grounds, and the school medical officer on all other.

The school medical officer must arrange apparently that he and the medical officer of health receive information of the occurrence of infectious disease, whether notifiable or not, and both school medical officer and medical officer of health must confer with each other if the exclusion of children or the closing of a school (except in emergency) is contemplated. It would also be interesting to know the various details of the medical administration for school officers that have been formulated to carry out this scheme, and what is the usual procedure as to who is to take the initiative or give directions on receipt of notification of cases to the school medical officer and medical officer of health by the teacher.

F. G. BUSHNELL,

Late Deputy Medical Officer of Health, Herefordshire C.D., etc., and Bacteriologist, Croydon Borough Hospital.

To the Editor of "PUBLIC HEALTH."

DEAR SIR,—It is in no cavilling spirit that I desire to draw attention to the comforting conclusion you arrive at in the February number that "no medical officer of health is ineligible to serve in Parliament unless he is a county medical officer engaged to give his whole time to such employment." From a logical point of view that conclusion appears incontrovertible so far as the statutes dealing with the matter are concerned. But in practice how would it work out? For myself I do not propose attempting a test case. My experience would teach me not to. For some years I acted as the hon. secretary of our local division of the British Medical Association; at an outside computation that work involved two evenings work a month; it served as a hobby and had the important effect of bringing me into closer and more friendly contact with the local medical profession than could have been done in any other

way; the division saw fit to "black-list" the Coventry Provident Dispensary on account, shortly, of its enormous abuses by well-to-do people, who through it obtained their medical attendance at a penny a week. As the hon. secretary it became my duty to record the fact of the black-listing in the advertisement of the *British Medical Journal*. The local negotiations in the matter were prolonged, too prolonged, and it occurred to some of the members and supporters of the dispensary (some of whom are members of my Council) to attack the division by attacking the secretary, and the opinion was loudly expressed in my Council that a public official whose salary was paid out of the rates ought not to be associated with a professional movement inimical to the interests of a number of the ratepayers. The matter is now merely one of history. The Local Government Board was appealed to as to whether it was competent for me as medical officer of health for the city to act as hon. secretary of the Coventry division of the British Medical Association. The Board replied that they would not raise any objection to my holding an honorary appointment, such as that in question, providing that the duties attaching thereto were not incompatible with those of the office of medical officer of health and that the Council were satisfied that the discharge of these did not prejudicially affect the due discharge of my official duties, or *bring me into inconvenient conflict with the Council or their constituents*. (The italics are mine.) By the ruling of the Board, the leisure time of a whole-time medical officer of health—if he has any—must be occupied in twiddling his thumbs or some other innocuous pastime. Acting on this ruling, I now feel myself compelled to estrange the friendship of members of my Council by declining to address their "P.S.A.'s" and other meetings, and I am distinctly brought into conflict with some by adopting a course of action which I presume they regard as a neglect of the interests of the community. At the present moment I am almost the only principal local municipal official whose name does not appear in a series of "Citizenship" lectures organized by a "P.S.A." I do not feel myself endowed with that skilful mastership of rhetoric which would enable me to deal with local health matters honestly without hurting the feelings of some of my Council and their constituents. The result is a personal comfort in lessened Sunday labour, but it certainly exposes me to adverse criticism of another character.

I shall certainly leave to others any attempt to work out in practice your conclusions in regard to Parliamentary work.

I am, yours faithfully,

E. H. SNELL.

COVENTRY, February 19th, 1910.

PROCEEDINGS OF THE SOCIETY OF MEDICAL OFFICERS OF HEALTH.

FOUNDED 1856. RECONSTRUCTED 1888.
INCORPORATED 1892.

AN ORDINARY MEETING of the Society of Medical Officers of Health was held in the Society's Rooms on Friday, February 11th, 1910, at 5 p.m. Present:—Dr. H. Cooper Pattin, President; Drs. W. G. Willoughby, R. E. Lauder, J. M. Martin, J. M. Clements, F. J. Allan, W. H. Symons, C. R. Harper, E. H. T. Nash, H. M. Richards, T. W. N. Barlow, S. C. Lawrence, D. A. Carruthers, J. F. J. Sykes, J. W. Cook, R. A. Dunn, R. H. Wilshaw, C. W. F. Young, R. Ashleigh Glegg, E. H. Snell, Sir Shirley Murphy, G. F. McCleary, J. F. Taylor, F. Robinson, A. Bygott, R. Burnet, W. A. Bond, J. Tate, R. Dudfield, G. C. Taylor, Chas. Sanders, R. A. Lyster, Herbert Jones, A. E. Williams, and Mr. W. Whitaker.

MINUTES.—The minutes of the previous meeting held on January 14th, 1910, having been published in *PUBLIC HEALTH* (p. 185), were taken as read, were approved and duly signed by the chairman.

CORRESPONDENCE.—Letters regretting inability to attend were read from Drs. Herbert Manley, J. W. Hembrough, and Ridley Bailey. A letter was read from the Midland Branch offering the Society a portrait of Dr. George Reid, and it was resolved unanimously that the offer be accepted with thanks.

ELECTIONS.—The following candidates, who had been duly nominated, were balloted for, and the President declared them duly elected:—

FELLOWS.

Henry A. Ahrens, M.R.C.S., L.R.C.P., Long Lodge, Basingstoke; W. B. Bannerman, M.R.C.S., L.R.C.P., High Wycombe, Bucks; R. Harding Brembridge, M.A., M.B., County Offices, Trowbridge; Alexander Falconer, M.B., C.M., Tyrconnell House, Earby, near Colne; D. Dryburgh Gold, M.D., D.P.H., Southend, Aylstone Hill, Hereford; J. E. Gould, M.D., D.P.H., Town Hall, Bolton; Henry William Harding, M.D., D.P.H., 2 Chalsey Road, Brockley, S.E.; David Rocyn Jones, M.D., D.P.H., Holmeswood, Clytha Park, Newport, Mon.; C. Hutchinson Lindsay, M.D., D.P.H., Albert Road, Widnes, Lancs.; James McConnell, M.B., B.S., B.Hy., D.P.H., 25 Percy Gardens, Tynemouth; Robert P. McDonnell, F.R.C.S., D.P.H., 20 Lower Leeson Street, Dublin; W. Stewart Stalker, M.B., D.P.H., County Offices, Trowbridge; F. E. Wynne, B.A., M.B., B.Ch., Leigh, Lancashire.

The Hon. Secretary read a list of nominations for election to the Society.

At the request of the President, Dr. R. Dudfield explained the steps that had been taken to improve the ventilation and heating of the Society's meeting-room.

PROVINCIAL MEETING.—It was resolved that the Provincial Meeting be held at the end of July, and that the actual date be left to the hon. secretary to arrange.

Dr. J. M. Martin called attention to the inconvenience of being without proofs-in-advance of

papers to be read before the Society, and the hon. secretary promised to do his best to remedy the matter in future.

Dr. R. A. Lyster then read a paper upon "The Medical Treatment of School Children."*

Midland Branch.—The last meeting was held on February 3rd, 1910, at the Council House, Birmingham, at 3.30 p.m. Present:—Dr. J. H. Garrett, in the chair; Drs. Bostock Hill, John Robertson, Reginald Green, W. H. Davison, T. Shadick Higgins, M. Gepp, Lawrence W. Pole, H. Gordon Smith, Joseph Cates, S. Barwise, D. Dryburgh Gold, H. D'Arcy Ellis, J. W. Miller, Killick Millard and E. H. Snell. Apologies for non-attendance were received from Drs. Henry May, Ridley Bailey, and J. Orton.

On the recommendation of the Council, the Branch decided unanimously to ask the Society to accept a portrait of Dr. George Reid, a past president of the Society, to be placed in the meeting room of the Society in London.

Dr. Killick Millard read a paper on "The Use of Dried Milk at Infants' Milk Depôts." The following took part in the discussion:—Drs. Bostock Hill, Barwise, Snell, Gepp, Reginald Green, J. Robertson and J. H. Garrett, and Dr. Millard replied.

Dr. J. W. Miller read a paper on "Filtration and Other Methods of Purification, on a Large Scale, of River Water Used for Drinking Purposes." Dr. Barwise briefly discussed some points raised by the paper, but owing to the lateness of the hour the discussion could not be continued.

Home Counties Branch.—The fifth meeting of the session 1909-10 was held on February 16th, 1910, at 1 Upper Montague Street, Russell Square, W.C., the President, Dr. A. E. Porter, in the chair. A large number of members and some visitors were present to take part in a discussion on the treatment of the school-child, which was opened by Dr. James Kerr, School Medical Officer of the London County Council, with notes on "Some Aspects of the Treatment of School-Children in Relation to Public Health." Dr. Kerr confined his observations to three points, viz.: (1) the cleansing of the child; (2) the care of the child's teeth; and (3) tubercle.

Divergent views on these points exist amongst the members, so that, as anticipated, an animated and instructive discussion followed. Amongst others, Drs. B. Collins, Edwin Nash, W. Butler, A. Bygott, M. Richards, Sowden, Sharman, and Mr. Fremantle joined in the debate, which was brought to a close by some remarks from the President, who aptly voiced the grateful thanks of his branch to Dr. Kerr for accepting the invitation to open the debate and doing so in a highly successful manner.

Yorkshire Branch.—A meeting of the Yorkshire Branch was held at the County Hall, Wakefield, on Thursday, January 20th. The President (Dr. Martin, of Brighouse) was in the chair, and there were also present at the meeting the following members: Drs. Adam (Wakefield), Anderson (Wortley), Atkins (Wombwell), Atkinson (Settle), Burman (Wath-on-Deane), Katherine S.

* Published in the present number.

Clark (Castleford), Clark (Leeds), Gibson (Wakefield), Haliwell (Dewsbury), Langdon (Wakefield), Elizabeth McVail (Halifax), Milne (Mirfield), Orr (Wakefield), Pearce (Huddersfield), Stedman (Selby), Sutherland (Cleckheaton), Wilson (Beverley), and J. R. Kaye (Wakefield), hon. secretary.

Dr. T. Adam, of the County Health Department, read a paper on "An Inquiry into the Mortality Statistics of Tuberculosis in Yorkshire," and Dr. A. Anderson, medical officer of health for the Wortley Rural District, gave a paper on "The Infectivity of Enteric Fever." Both papers proved their interest by the enthusiastic manner in which the discussions were taken up.

The discussions on items 4 and 5 of the agenda were deferred to a future meeting.

Southern Branch.—A Meeting of this Branch was held at the Municipal Offices, Southampton, on February 4th, 1910. Present: Drs. Willoughby (president), Barclay, Bartlett, Dick, Fraser, Gibson, Hamilton, Harris, Hemsted, Livingstone, Lauder, Lyster, Maturin, and E. C. Brown.

Consideration was given to a circular letter issued by some part-time medical officers of health, calling attention to the action of the British Medical Association with regard to part-time appointments, and inviting all medical officers of health to join in an effort to get rescinded a resolution passed at the Belfast meeting of the British Medical Association.

After discussion the following resolution was carried:—"That the Council of this Society be requested to approach the British Medical Association with a view to securing the definition and possible amendment of the resolution known as 'Minute 234, Belfast Representative Meeting.'"

Dr. Lockhart Livingston read a paper to introduce a discussion on the recent official memorandum on "Closure of and Exclusion from School." After reviewing previous memoranda on this subject and the school codes previous to 1908, he showed how coercion had been brought to bear on the medical officer of health to close schools in order to get the grant. He mentioned the chief points and the divided duties and responsibilities under the new memorandum, and dealt with the conditions under which closure was necessary, also with exclusion as a useful alternative, especially if aided by bacteriology.

A letter from Dr. Forbes was then read giving his views, which were that the medical officer of health should have sole control of infectious fevers. Certain alterations in the code were suggested, which would define more clearly the duties of the medical officer of health and school medical officer.

Dr. Bartlett thought the memorandum a great improvement on former issues, as it strengthened the medical officer of health in resisting appeals to close. He illustrated cases where closure might be required in country schools, but thought the conditions of the grant should be reconsidered.

Dr. Fraser was in favour of re-establishing the old grant for excluded children.

Dr. Barclay wished power to be given to the medical officer of health to examine the cards of medical inspection in the schools, for guidance as to closure.

After Dr. Lyster had spoken, Dr. Gibson proposed:—"That the Council of the Society be

asked to approach the Board of Education with a view to the reinstatement of the grant for children excluded for public health reasons; also with the object of securing for the certificates of the medical officer of health with regard to exclusion and closure equal importance to similar certificates by the school medical officer."

This was carried.

Dr. Lauder criticised the exclusion of scholars by teachers, and thought that in actual work it was impossible to follow these up in the way suggested.

Dr. Hemsted also spoke.

Votes of thanks to the Mayor and to Dr. Lauder for the use of the room concluded the meeting.

OBITUARY.

CECIL ARTHUR REYNOLDS, B.A., M.B., B.Ch., D.P.H. (Oxon.), Medical Officer of Health, Shrewsbury.

We much regret to record the death of Dr. C. A. Reynolds, Medical Officer of Health of Shrewsbury, which took place on January 19th, 1910. Dr. Reynolds was born in 1872 and was educated at Charterhouse, and at Keble College, Oxford, where he gained a scholarship, and graduated B.A. with honours in 1894 and M.B., B.Ch., and D.P.H. in 1898. He was secretary of the Oxford University Athletic Club, and represented his University against Cambridge as a runner in the sports. After leaving Oxford he entered St. Thomas's Hospital, where he was Clinical Assistant in the Ear Department, and subsequently held the posts of Resident Medical Officer of the Hospital for Infectious Diseases, Brighton, and House Surgeon at Salop Infirmary. In 1898-99 he was assistant to the late Dr. Thursfield, County Medical Officer of Health, Shropshire, and then began private practice in Madely, where he was Medical Officer for one of the districts of the Madely Union and for the Madely Workhouse. Two years ago he was appointed Medical Officer of Health of Shrewsbury, and Medical Superintendent of the Borough Isolation Hospital. Dr. Reynolds was an enthusiast in his work, and he was a highly respected and popular officer. His death at the early age of 37 cuts short a career of distinction and promise, and is a sad loss to the Public Health Service. The cause of death was scarlet fever, contracted from one of the patients at the Isolation Hospital, and Dr. Reynolds' name must be added to the noble list of medical men who have died in the course of duty.

A SUGGESTION TO LEAVE OUT "PUBLIC."—What is required in the future to improve the public health? It would be well, I think, if the word "public" were deleted, as its continuance tends to perpetuate the idea that the health officer is concerned only with the causes and prevention of diseases affecting groups of individuals, and the idea that all disease is due to the neglect of authorities or their officials. The public is composed of units—if public health is to be improved that of each individual unit must receive attention.—*Annual Report of Dr. W. W. Stainthorpe, Medical Officer of Health, Guisborough.*

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THE INDUSTRIAL EMPLOYMENT OF MARRIED WOMEN AND INFANTILE MORTALITY.

THE importance of the industrial employment of married women as a factor in the causation of infantile mortality is a subject upon which the current of opinion has been gradually changing in recent years. Formerly it was almost universally held to be an etiological factor of preponderating importance; but the application of more precise methods of investigation has cast grave doubts on this view, and has called for a re-statement of the whole question. The inquiry that has lately been conducted at the suggestion of the Home Office will no doubt bring forth results that will enable us to estimate the importance of this factor with much more approach to scientific accuracy than has hitherto been possible, and the publication of these results will be awaited with great interest. In the meantime, however, much may be learned from a special report of this subject which has recently been issued by Dr. John Robertson, who has been one of the leading workers in the Home Office inquiry, and who in this report gives the results of that inquiry so far as it affects Birmingham. In Birmingham the area selected for the inquiry comprised the wards of St. Stephen and St. George, both of which have a high death-rate, a high infantile mortality, and a large proportion of married women industrially employed. The estimated population of this area in 1908, the year of the inquiry, was 41,884 persons, and during the year 1,503 children were born alive, giving the high birth-rate of 35.8 per 1,000. Of these children 36 were excluded because they were born in better circumstances than the others, and therefore were not comparable; and 209 infants were lost sight of before completing their first year, and could not be included in

the final statistics. This leaves 1,212 mothers, of whom 611 were industrially employed during pregnancy and 601 not so employed. Of the total mothers 31.5 per cent. were employed after the birth of the child and while the child was still alive, and 68.5 per cent. were not so employed. The mortality among the infants whose mothers were industrially employed either before or after childbirth was at the rate of 190 per 1,000 births, while among those whose mothers were not industrially employed it was 207 per 1,000 births.

The numbers dealt with in the report are small, and Dr. Robertson is careful to point out that too much importance must not be attached to them. At the same time, it is impossible to deny that these results are markedly at variance with the older views on this subject. Absence of the mother from home must necessarily place the infant at a disadvantage; but, as Dr. Robertson suggests, it is probable that among the class of women dealt with in this investigation there are more potent influences on infant life. He found that in many cases the additional income brought in by the mother had an important influence in preventing poverty, which he rightly regards as one of the chief causes of a high infant mortality, and his main conclusion is that "in Birmingham the type of industrial employment in vogue does not appreciably influence the health of the mother or her infant when the standard of comparison is that of women in equally poor circumstances who are not employed industrially." The whole report emphasises the importance of the economic factor in the etiology of infantile mortality, and it will strengthen the position of those who hold that, under existing economic conditions, any further State interference with the industrial employment of married women would aggravate rather than alleviate the very evil which the supporters of such interference would seek to remove.

DISINFECTANTS: THEIR SCIENTIFIC USES, THEIR QUACK USES AND THEIR DANGERS.*

By T. W. NAYLOR BARLOW, M.R.C.S., L.R.C.P.,
D.P.H., Barrister-at-Law,
Medical Officer of Health, Wallasey Urban District.

I HAVE not come prepared to relate to you a series of experiments showing that this or that disinfectant is capable of killing certain germs in X minutes in a strength of A, and Y minutes in a strength of B, or that some disinfectant, from some inherent properties it alone possesses, is better for certain purposes than another disinfectant, nor am I prepared to discuss whether the Rideal-Walker method of testing disinfectants is satisfactory or otherwise, nor whether disinfection by superheated steam is, or is not, preferable to that of current steam, nor yet whether spray disinfection is, or is not, of greater value than gaseous disinfection, and, if it is, what is the best spray to be used. I will leave these matters to be fought out between rival disinfectant manufacturers and the experts whom they employ. I do not even claim that you will find anything original in this paper. It is on the same lines as the one I read two years ago at the North-Western Branch meeting, when the resolution lately submitted to the Council was passed. My object is merely to review the situation with regard to disinfectants and the practice of disinfection, to provoke discussion, and to bring to bear on the question a little common sense and a due sense of proportion with respect to the value of the process as a means of preventing disease. It appears to me that this lack of a sense of proportion and the fact that most of the advocates for more frequent and general disinfection are not medical men (and, consequently, gentlemen who can have no practical knowledge of disease) are the causes of the wide differences of opinion which exist as to the necessity for certain disinfecting work, as is evidenced by the heated correspondence which has from time to time taken place in various newspapers and scientific journals. I am going to suggest to you (1) that a large amount of the disinfection which is carried out is nothing more than quackery in its worst form; (2) that of the remainder much is useless, either owing (a) to the fact that the disinfectant used is of no value, or (b) that its manner of use renders it useless; (3) that much public and private money is, in consequence, wasted in the purchase of disinfectants; (4) that

* Read before a meeting of the Society of Medical Officers of Health on March 11th, 1910.

the distorted view which the public have of the value of disinfectants and disinfection constitutes a real danger. Some of us here may have harboured the delusion, and the man in the street doubtless thinks, that medical officers of health, by reason of their intimate knowledge of, and association with, infectious diseases and the means taken to prevent their spread, are, or ought to be, authorities on disinfectants and disinfection, and that their opinion is distinctly of value in directing when, how, and where disinfection should be carried out. I assure you this is a great mistake. The gentlemen who direct operations, or who aspire to do so, are the manufacturers of disinfectants, or the scientists who are either engaged by them or who may be pecuniarily interested in the various firms. They tell us not only what disinfectant should be used, but also for what purposes; and, moreover, the methods adopted by some of them to obtain a market for their wares is open to very serious question. Let me give you some examples.

Not very long ago a medical officer of health of one of our large towns, occupying a very prominent position in the ranks of our profession, made a special report to his council on the incidence of scarlet fever in his district. He laid before his committee various facts which, in his opinion, made it reasonably clear that infected milk had had a good deal of influence in causing this special incidence of the disease. His report was adopted by the council and became more or less public property, whereupon a gentleman wrote a letter to one of the local daily papers severely criticising the deductions of the medical officer of health, pointedly stating that he had no grounds whatever for suspecting the milk, and that the reason for the special incidence of the disease was that he had not used the right kind of disinfectant when disinfecting the houses where cases had occurred. It has since transpired that the alternative disinfectant (a proprietary article) which was suggested was at the same time being "puffed" by this correspondent in a series of articles on disinfectants appearing in an obscure country paper.

In my next example I may actually mention the name of the medical officer concerned, since I have his permission to do so. In successive weeks in the month of September last there appeared in the columns of a medical journal two letters, each written under a *nom-de-plume* (the disguise of one of the writers has been pierced, and I am told he corresponds

so closely as to be indistinguishable from the gentleman I have referred to above), the first criticising a medical officer of health for some remarks he made in his annual report concerning the free distribution of disinfectants, the second criticising Dr. Kerr for some remarks he made in a report concerning the daily disinfection of schools. These letters were at once taken exception to by a gentleman writing under the *nom-de-plume* of "Antifad," and in the following week Dr. Marsh, medical officer of health for Macclesfield, also wrote to the journal eulogising the letter of "Antifad," and expressing himself as entirely in agreement with his views. This led to a newspaper correspondence of a somewhat heated character. Before the correspondence ceased the members of Dr. Marsh's health committee were supplied with copies of the newspaper in which the letters of his opponents had appeared and in which he had been severely criticised because his views on the necessity for the daily disinfection of schools did not coincide with theirs. These letters were heavily lined in blue pencil, by whom or by whose directions is not known, but it seems clear that they could only have been sent with the object of discrediting Dr. Marsh in the eyes of his committee, and perhaps getting the schools of Macclesfield disinfected daily. If otherwise, why were not copies of the issues sent in which the opposite views were set forth?

Another very interesting example of the methods of these gentlemen occurs in Liverpool, when periodically (the exciting cause apparently being either the occurrence of an epidemic of measles or perhaps an unusual incidence of scarlet fever) there appears in the Liverpool papers a letter signed "M.D.," always in the same strain, and always winding up by advocating the daily disinfection of schools. The occasion for sending a letter to the press which "M.D." never misses is when the annual estimates are about to be considered and contracts for the supply of goods (including disinfectants) are entered into.

Now, the scientific men interested in disinfectants, either as paid servants or directors, I do not mind which, may be men of the highest attainments as chemists, but I utterly deny that they are experts on infectious disease; in fact, the vast majority of them are not even medical men. They are gentlemen, therefore, whose knowledge of infectious disease must be purely theoretical; and all of us here will, I am sure, appreciate this fact: that

what theoretically may occur in the way of conveyance of infectious diseases and what actually does occur in one's practical experience are two very different things; and this will explain to some extent the fact to which I have previously referred, namely, the lack of a sense of proportion which is so often displayed by them in advocating certain practices, e.g., the daily disinfection of schools.

Let me deal first with what I have called the quack uses of disinfectants.

I may, perhaps, preface my remarks by drawing a moment's attention to the vast number of these so-called disinfectants on the market. Last year, although advertised only in the local papers, and for one issue only, I received tenders for the supply to my district of twenty-eight liquid disinfectants, in addition to powders and soaps without end. Now all these disinfectants, if one believes the recital of their qualities so fully set out on the label, would kill everything and everybody in a very short space of time. I have had a very interesting personal experience as to how some of these disinfectants get on the market, which, if you will allow me to digress a little, I will relate to you. A short time ago I was called upon by a very estimable gentleman whose real business was as far removed as it is possible to conceive from the manufacture of disinfectants. He informed me that he had just brought out a new disinfectant, to which he had given what he thought a catchy name. Like all other disinfectants, according to the label on the sample submitted its uses were numerous and its qualities extraordinary. He wanted two things of me. First of all, he wanted me to use it locally—he put it to me that local manufacturers ought to be encouraged, we all know the tendency of local authorities to encourage local tradesmen—and in the second place he wanted some advice as to the best way of getting it on the market. He said a friend of his was a member of a most important council in the country, and he had every hope through him of getting it used in that particular place. Judging from its smell and appearance I imagine the material was a mixture of crude carbolic with a little soft soap. No doubt many of these so-called disinfectants get a start by being used locally, on the principle of encouraging home industries.

I do not propose to say any more on this part of the subject. Everyone in this room knows that worthless substances are sold under the name of disinfectants.

Let me next enumerate some of the special

and peculiar uses to which disinfectants are put. They are—(1) Mixed with water for watering roads; (2) used for sprinkling in ashpits and ashbins; (3) poured into gullies, drains and sewers; (4) sprinkled on open places, ferry approaches, etc.; (5) evil-smelling tabloids are hung on the walls of the lavatories of hotels, ships, railway trains, and, strange to relate, there is one even in the lavatory of the building in which we are at present assembled. One is aghast to think of the horrible state of affairs which would arise if any of the foregoing measures were for one moment omitted! About two years ago two deaths from plague occurred in Liverpool, and in the Liverpool papers, when commenting on the fact, there appeared this: "Very strict precautions are being taken to prevent the spread of the disease, and even the landing-stage is sprinkled with a strong solution of disinfectant." Now, the landing-stage is nearly a mile in length, and the cases of plague had not been on it or near it. It is positively dreadful to contemplate the cost in life and money which might have ensued if this simple precaution had been neglected! I do not know what Authority (if any) ordered the sprinkling of the strong disinfectant on the landing-stage, or with what object it was ordered, but I mention the fact as showing the view of the man in the street on the subject. It evidently struck a reporter—and I suppose we may take a reporter as being even more intelligent than the ordinary man—as a wise precaution to have been taken in the emergency.

It is needless for me to dilate upon the utter absurdity of the above-mentioned uses of disinfectants. We know how utterly impossible it is to disinfect a drain or a sewer, and, indeed, I quite fail to understand what benefit would accrue if we were able to do it. Surely if a drain is defective, causing a nuisance, it ought to be repaired, and not to be subjected to such harsh treatment as being flushed with a disinfectant. Again, I have often puzzled my brains to understand of what earthly use are those evil-smelling tabloids, or so-called ozone-producing materials, which are placed in small cages in the urinals of ships, hotels, etc. The only reasons I can adduce are two—first, that their smell cloaks that of an uncleanly, unwashed urinal; second, that on ships their object is to give the final push to people who are on the borderland of sea-sickness. The man in the street imagines that you have but to show a disinfectant to the microbe for the

microbe immediately to succumb. He knows nothing about a minimum dilution or length of time exposure necessary for the germicidal effect to take place. He knows no difference between a deodorant and a germicide; in fact, not only he but others responsible for ordering these things, and who ought to know better, are in a fearful fog about the whole business, and literally believe everything which is printed on the cans containing the substances. And no wonder, especially when one considers that of the uses mentioned above, at any rate the first four of them have received more or less official sanction, in that disinfectants have been and are being made use of for the purposes mentioned by Sanitary Authorities! It may be said, "It is all very well to cast ridicule on these things, but why do you as a medical officer of health allow them?" The answer to that is obvious. The disinfectants are at present ordered by school education secretaries, borough engineers, sanitary inspectors, and occasionally by medical officers of health. We have heard very often of late at these meetings that there are somewhere about 1,200 medical officers of health in this country, of whom I should say considerably more than three-fourths are part-time officers, many of them receiving salaries of between £20 and £50 per annum, and, although I have no statistics on the point, I am perfectly certain that in more than half of these instances they are never consulted about the ordering of disinfectants, and in many additional instances the other officials would deem it an undue interference with their prerogatives if they attempted to give any advice on the matter—as, indeed, I know from personal experience. We must not forget, too, that the public have been so educated on the subject by reading the specious advertisements about disinfectants that they actually demand them, and consequently medical officers of health and other officials, having no very definite views regarding them and perhaps thinking that they do no harm, hesitate to discontinue their use or recommend their discontinuance for fear of getting at loggerheads with their fellow-officials. Up to eighteen months ago in my own district, whenever the ashpits or ashbins were emptied the men emptying such used to take a handful of so-called disinfectant powder and with great pomp strew it over the receptacle. This was called disinfecting the ashbin—save the mark! On my representation this and other silly practices were stopped, but I have had dozens

of letters from ratepayers complaining of the fact and prophesying that all sorts of evil results would follow. In what particular direction to look for these evils I am at a loss to know. They are certainly not to be found in the mortality statistics for last year, which, I am happy to say, were extraordinarily low.

I think I have said enough to convince you, if indeed any of you wanted convincing, that my description as "quack uses" is quite a justifiable one. Without doubt some so-called disinfection is quackery in its most objectionable form.

We now come to rational uses.

The only rational use of disinfectants, to my mind, is in connection with the infectious fevers. There one has some definite object in view—namely, to kill the germ causing the disease, and by so doing prevent the infection from spreading. In this connection it is needless to point out we are greatly handicapped, since we know so few of the germs causing the common infectious diseases and so little of the factors concerned in their spread. We do a lot of disinfection on assumption. The following diseases are looked upon as infectious: Small-pox, scarlet fever, typhus, typhoid, erysipelas, puerperal fever, diphtheria, measles, whooping-cough, chicken-pox, phthisis. Of these the first seven are compulsorily notifiable. Let us first consider what we know about the causes of these diseases, and, next, the practice as regards disinfection which obtains after their occurrence. There are three or four organisms held to be the cause of, or, at any rate, *always associated with*, diphtheria; and, although we are not absolutely certain that the bacillus typhosus is the cause of enteric, for our present purposes it will be sufficient to admit that the causes of phthisis, typhoid, and diphtheria are known, and are due to specific organisms. I suppose because of what we know with regard to the three just mentioned, we assume that similar causes, although as yet undiscovered, obtain for the other eight, and they are due to micro-organisms also. Is that a reasonable assumption? Is it, for instance, a reasonable assumption with regard to typhus? Probably not many here have had any experience with, or have ever seen, a case of typhus fever. Typhus is *always* associated with dirt and poverty. The infection, whatever it is, is in the presence of abundant fresh air rendered innocuous. The disease arises sometimes under circumstances which would seem to preclude the possibility of infection from a previous

case, and points strongly to a *de novo* origin. The *materies morbi* is, in my judgment, quite as likely to be chemical as microbic.

I quite recognise that it is most heterodox to express any doubt that the cause of those infectious diseases can be otherwise than microbic, and I quite expect that I shall have drawn upon me the wrath of all the bacteriologists present, but I am glad to say that I am not alone in having this opinion. Moreover, I err in good company, for since writing the above I have read in the columns of a contemporary a summary of an address given by Dr. Alexander James, consulting physician to the Royal Infirmary, Edinburgh. In that article he states that "he gladly accorded to public health authorities the credit of maintaining and improving the health of the people by efforts to improve the conditions under which people lived. *But when it came to saying that germs were the main cause of the disease*, and that it was therefore the duty of the State to undertake the treatment and isolation of everyone affected, it was another and very different matter." Again, he says that doctors had made two mistakes in the past, "first in the idea that disease organisms were always disease organisms, and always acted as such, and secondly, in the idea that as regards vulnerability to organisms all people were exactly alike. He illustrated the first of these two points by showing that the germ of pneumonia, the pneumococcus, could be found in the secretions of every healthy man and woman. Whilst all infectious diseases *might be due to or associated with* organisms, the importance of the organism as a factor in *producing* the disease varied enormously in different diseases, and the fact that isolation had done so little for typhoid, diphtheria, measles and scarlet fever indicated that these diseases had a resemblance to pneumonia which was not suspected," etc., etc. "The general conclusion, therefore, that they could draw was that inasmuch as the conditions surrounding the individual were the important factors in connection with those diseases, to them should the attention of the community be directed, rather than to the individual himself and the *organism*." The portion of the routine procedure with regard to infectious diseases in which we pay special attention to the organism is disinfection. Dr. James would apparently think that a mistake.

Again, it must be noticed that clinical observation shows that the organisms causing these diseases, if there be such organisms, differ

widely so far as their infecting qualities are concerned. For instance, the infection, whatever it may be, of scarlet fever is in many cases intensely persistent; that of measles is comparatively evanescent. Small-pox and chicken-pox have a striking distance greater than any of the others, and they may possibly be air-borne. Diphtheria requires fairly intimate contact, and so on. All these diseases have, perhaps, only one characteristic in common—namely, their infectiousness—however great may be the difference in the intensity of their infection and however varied their mode of spread; but in many places they are all bunched together, and the same disinfection is carried out after each. The difference in practice with regard to the diseases after which disinfection is carried out obtaining in different places is very astonishing. I think we may say that all sanitary authorities disinfect houses in some way or other after scarlet fever, diphtheria, typhus, and small-pox, although the methods adopted in many rural districts cannot be described as other than crude. Most of the large authorities disinfect after phthisis; many smaller ones do not. Some do so after erysipelas and typhoid; the majority do not. Measles and whooping-cough are two of the most intensely infectious diseases affecting children. I think we may say that disinfection is never carried out after whooping-cough, and not often after measles. In some places disinfection is carried out by request after measles, and in other places the practice of systematically disinfecting all houses after the occurrence of this disease has been tried, and has been discontinued—for instance, Bermondsey, in London. In PUBLIC HEALTH of January, 1908, appeared a paper by Dr. Brown, medical officer of health, Bermondsey, in which he stated that, after experimenting in Bermondsey, he had decided to give up the practice as being of no value. He mentioned in that paper that he had circularised the London medical officers asking their opinions with regard to the value of disinfection after measles; and out of twenty-five replies only eight were in favour, and of these eight, five simply for educational purposes. In Aberdeen notification and disinfection after measles and, in part, isolation of cases was practised from 1881 to 1903, when, on the advice of the medical officer of health, notification was stopped, and, of course, to a very large extent, disinfection also. Some medical officers of health attach great importance to disinfection, disinfecting not only rooms in which

patients have been isolated, but also rooms in which a contact has been, even if for only a few minutes. I know a town, indeed, in which the inspector, after removing a case to hospital and disinfecting the necessary rooms, has to go back to the disinfecting station, have his clothes disinfected, and himself take a bath—an ideal of perfection which, in my humble opinion, actual experience proves to be unnecessary. The incidence of infectious disease is not any less in that town than in adjoining towns in which that ideal of perfection is not aimed at. So with regard to infectious hospitals. I have known hospitals where the nurses before going out were made to wash their hair and completely change their clothing, and other hospitals where no precautions whatever were taken. The precautions mentioned were attended by no apparent benefit, since there never arose an instance—even in the hospitals where no special precautions were taken—in which there could possibly be a suggestion that the nurse had been the means of conveying any disease. Other medical officers of health—of whom, I must confess, I am one—attach very little importance to the house disinfection as commonly carried out, and still less to school disinfection. I know, indeed, a medical officer of health who boasts that he never buys disinfectants, and does what little work he wants in that direction with the samples sent to him.

I mention these matters to illustrate the fact that this portion of public health work rests on a very insecure foundation. One gets the widest differences of opinion as to the value of chemical disinfection, even amongst medical officers of health, who, as a class, are best able to judge of its merits; and it appears to me, moreover, that there is among them a rapidly increasing number who are sceptical whether or not any advantages result from the practice.

In considering how much and what kind of disinfection ought to be done, we must apply our common sense, and, as I have stated before, make use of our sense of proportion and our own experience. The example I have just given of the inspectors requiring to be disinfected and to have a bath before going home is very apt. Theoretically, having carried an infected child, and having handled infected bedding, they are infected, and, theoretically, the disinfection as described is justified; but, as a matter of solid experience, it is not necessary. Infection is not nearly so easily

conveyed as is popularly imagined. It is the same with the disinfection of schools. It is the opinion of almost everyone who has had an intimate association with infectious disease that infection is almost entirely personal. If you exclude infected children from schools your schools will not then be centres of infection. The advocates of school disinfection say that the school having harboured infected children the dust in the schools must of necessity contain the organisms associated with the diseases from which the children suffered. This presupposes the existence of organisms as the cause of the particular diseases, which, I submit, admits of reasonable doubt. Surely, to be logical, we ought also to disinfect the children's clothes, their boots, the utensils that they use, slates and pencils. The fact of the matter is we cannot do everything, and the main point is to get the infected children out of the place. All the other things are quite subsidiary, especially having regard to the reasonable doubt as to the cause of the diseases. The occasional disinfection of schools is not without its value, but daily disinfection is not necessary. As the medical officer of health for the County of Roxburgh says in his last annual report, "There is too great a tendency to disinfectants as being less expensive than thorough cleaning. The use of disinfectants is an excellent practice when they are applied to clean rooms; but it must be understood that they do not remove dirt, and therefore cannot take the place of cleaning, nor can disinfectants kill infection when it is buried in layers of dust. Disinfection should be applied after cleaning, not in place of cleaning."

Each disease should be treated on its merits, as Dr. Richards pointed out in a paper which appeared in the November issue of PUBLIC HEALTH; we must adapt our measures to the natural history of the disease, and we must retain that due sense of perspective and refrain from suggesting precautions for which there is no sufficient warrant. For instance, the measures suitable for typhoid must be vastly different from those applicable to diphtheria. Beyond disinfecting the bedding in typhoid and the house drains (the *materies morbi* being in the urine and stools) nothing further would seem to be necessary. In diphtheria the infective material is in the nose and throat, and consequently different measures should be employed. There is no doubt that the medical profession as a profession is very subject to

fits of fashion as regards treatment. For instance, it used to be the fashion to bleed everyone, willy-nilly, and now very few cases are bled, not as many as ought to be, probably. It has been the fashion to definitely ascribe diphtheria and typhoid as due to defective drains. So far as I am aware, no evidence worth anything has ever been adduced in favour of the connection. As a matter of fact the diphtheria bacillus has never been found in sewage at all, nor yet the typhoid bacillus in sewer air. It might be correct to ascribe ill-health to bad drainage, but that is quite another thing to ascribing definite illnesses to it. So it is the fashion nowadays to disinfect everything and everybody. The fashion began when the association of organisms with infectious—perhaps here I should use the term communicable—diseases was discovered. It was at once assumed that all infectious diseases were due to organisms, and having in the meantime discovered that certain chemical agents destroyed certain organisms then known, although definite strengths and time exposures were necessary, differing according to the organism and agent used, it was further assumed that these substances would destroy all organisms, and therefore it became the fashion to use these substances for all infectious diseases, and apply them all in the same way. The ideal to be aimed at was thought, and is thought by the public and some others even now, to be that of the surgeon in the operating theatre. With closer observation there has come a more accurate knowledge of these diseases. Such a policy of perfection has been found to be unattainable, and, indeed, unnecessary, and we therefore find the methods of disinfection given up altogether with regard to some diseases, *e.g.*, erysipelas and measles largely; and greatly modified with regard to others, *e.g.*, typhoid. While this process of limitation is going on it is interesting to note that on the one hand by the public who know nothing whatever of the subject, and on the other hand by the manufacturers of disinfectants whose interest it is to sell their wares, we are continually being asked to increase the scope of the work—*e.g.*, I am continually being asked to disinfect after cancer, heart disease, pneumonia, indeed after no particular disease, but occasionally simply because a death has occurred, and this without there being one particle of evidence to show that any benefit would be derived or would likely to be derived if this were done. It appears to me that, before undertaking any additional

work in regard to disinfection, the necessity therefor, and the advantage to be gained therefrom, should be clearly shown, for when once the practice has become established it can only be discontinued by disproving the necessity, which is always a much more difficult thing to do. I am not at all certain that the practice of disinfecting houses is of any value, or has any effect; in fact, such evidence as we have points the other way. It is interesting to learn, for instance, that in some places in America some medical officers of health have had the courage of their convictions and have ceased all house disinfection after diphtheria and scarlet fever, without any evil results. In April, 1908, there appeared in PUBLIC HEALTH a letter from the medical officer of health of Providence, U.S.A., in which he pointed out that for the last three years no house disinfection had been carried out after diphtheria. Eight hundred and fifty-nine cases had occurred, with 17.4 per cent. of recurrences. For the fourteen months previously, under exactly the same conditions, except that they disinfected the house by spraying, six hundred and forty-six cases had occurred, with 18.5 per cent. of recurrences.

I have endeavoured to show that while the rational uses of disinfectants lie in connection with the control of infectious disease, even with regard to them to a very large extent their value is problematical, a good deal of disinfection work is useless, and some of it unnecessary.

I want it to be clearly understood that anything I have said reflecting in any way on the efficacy of disinfection in connection with the infectious fevers does *not* refer to disinfection by steam of the bedding used, and clothes worn by, the infected person. This I look upon as the most important part of disinfection as now practised, and it is on an entirely different plane from chemical disinfection. I think there is distinct evidence that some of the infectious diseases can be conveyed by fomites, e.g., small-pox and typhoid, possibly also diphtheria and scarlet fever. It appears to me that we are on surer ground here, and I should strongly deprecate the neglect of this precautionary measure against the spread of disease.

Now, are there no dangers attending this universal practice of throwing disinfectants about? I suggest to you that the dangers are very real. Let us take the example of sick-rooms first. Many housewives, especially among the less intelligent class, to prevent the spread of disease, think that if they sprinkle plenty of disinfectant about no other

precautions are necessary. It is not necessary even to be ordinarily clean, certainly unnecessary to isolate the patient. A short time ago I went to a house where there were three cases of scarlet fever. The mother could not understand how it was that there should have been three cases. She produced in triumph a saucer from underneath the bed, and in the saucer she had some "strong disinfectant." The first child attacked had mingled with the other two, but that was a small matter, the disinfectant was there. The house, too, was very dirty; that also was a small matter, the disinfectant was there. We all know the sheet which is hung over the door of a room in which lies an infectious case. The doctor who does not direct the hanging out of that sheet does not know his business. I do not wish to say anything derogatory about the sheet; it no doubt acts as a danger signal; but why does the medical man bow down to the deity of Disinfection and sprinkle it with a disinfectant?

Take another example. Complaints are often received by Health Departments of smells from ashbins and ashpits, and, as I have told you elsewhere, these, in my district, have been put down to the fact that the doling out of a disinfectant powder has been stopped. The abominable nature of the contents of the bins is never referred to. An ashpit is meant for ashes. It is certainly not meant as a place for the deposit of all the decomposable material it is possible to collect in a house. How is it possible to educate the public in the correct use of ashpits and ashbins while you are serving out to them some deodorising powder which cloaks their own carelessness? The same remarks apply to urinals. If public urinals are thoroughly and regularly washed out there is no occasion for those evil-smelling substances one finds so frequently used. The practice, indeed, gives some warrant for the definition of a disinfection as one strong smell to kill another strong smell. I suggest that disinfectants are now very frequently used at the expense of cleanliness, and in an increasing number of instances. This is markedly so, in my opinion, in regard to the agitation for the daily disinfection of schools. It is a real danger to the public health, and I agree with Dr. Richards when he says that "the time has come when hygienists should free their minds from cant, and teach both their authorities and the public that chemical disinfectants are of strictly limited utility, and that by far the

greater part of the money now spent thereon would be better expended on soap, soda and scrubbing brushes."

To refute a popular error is often a thankless task. To refute an error sanctioned by tradition and authority will generally excite obloquy and opposition. When an error is maintained, however, as if it were the result of the deduction of the most enlightened scientific investigations, and is supported by names eminent in science and medicine, the task of opposing it is not alone thankless and unpopular, but it is likely to be stigmatized as retrograde and reactionary.

I think I have amply justified the title of my paper. I consider it is our duty to educate the public on this matter of disinfection; and I also think that a resolution, even if only a pious expression of the opinion of this Society, to the effect that much money is wasted in the purchase of disinfectants, that many of the uses to which they are put are farcical, that the practice is of limited value, and that in some respects the universal use of disinfectants is a positive danger, will to some extent arouse public attention, and will at any rate strengthen the hands of faltering officials who probably have little faith in the practice but who are somewhat chary of taking active steps to place the whole business on a common-sense, scientific basis, since by so doing the amount used will probably be materially diminished and possibly hostile influences be stirred up.

DISCUSSION.

The HON. SECRETARY read the following communication from Dr. J. T. C. Nash, County Medical Officer of Health for Norfolk:—"Dr. Barlow need not fear that he stands alone in the attitude he has taken up against the unscientific use of disinfectants and the preposterous claims of some manufacturers. He himself quotes Dr. Richards, Dr. Marsh and Dr. Brown, and there are, besides, a host of others. Bacteriological methods of diagnosis, together with expert clinical investigation, will as a rule speedily stamp out an outbreak of diphtheria or of scarlet fever among the children of a particular school without any disinfection of the premises; and this is the important point which should be clearly recognized—viz., that it is the mucous membranes of the throats and noses of the living children which require more attention than the school buildings and furniture, and in any scientific attempt to deal with the question should take precedence of all other measures of investigation and action. Pencils and books, if in common use, are much more likely to become infected than are school

buildings—pens and pencils particularly, because they are so often placed in the mouth. If common use of such articles is allowed (as in my opinion it should *not* be), they should be invariably exposed to such disinfection as is requisite; but of course it is preferable that each child should have its own pencils and pens kept separate from the others. The disinfection of school buildings after an outbreak of infectious disease is probably superfluous as a means of arresting the outbreak in ninety-nine cases out of a hundred. Almost if not quite as great destruction of germ life will be ensured by thorough scrubbing of floors and furniture and washing of painted walls with hot water and soap; and in any case this cleansing must not be neglected, whether preliminary attempts at disinfection are carried out or not. *Indeed, the mechanical removal of dirt is of the higher importance.* While protesting against a fetish, and against unnecessary and unscientific expense and waste of money on disinfectants employed in a manner which must be almost useless, we must yet be careful not to convey the false impression that disinfectants are of no use, for it cannot be denied that when properly applied, and *in their proper place, they are of considerable use.*"

DR. WILLIAM BUTLER (Willesden) said he agreed with the general principles laid down in the paper. He thought the time had come when someone should speak out on this subject. He himself recommended his council some years ago to give up the use of chemical disinfectants. They recognised, however, that to do so would be to bring down upon their heads the denunciation of the public for not taking advantage of a very innocent precaution, and he thought that was the problem they had to face. There could be no question, he thought, that the abuse of disinfectants was responsible for a great deal of harm, but that had to be put up with until the public was educated—and violent methods of educating them he did not think were likely to be successful. It was only by going gently about it that they could hope to bring about a rational view of disinfecting. At the same time it seemed wrong that they should countenance insanitary processes. He found the heaping up of horrible slimy masses in the streets—hideous to the eye and certainly insanitary—was tolerated by the public provided it was well sprinkled with a pink powder. In many cases they found the public put up with dirty and insanitary conditions because they were supplied with disinfectants. Let them substitute the real sanitary remedy. With regard to disinfection in scarlet fever, some of them might be sceptical, but there were many cases on record of scarlet fever being conveyed by infected surfaces, and they must go on taking this precaution. Moreover, disinfection carried with it other advantages. They did get the house cleansed, and they got the

people stirred up to take precautions where they would not otherwise do. There was ground for disinfecting after erysipelas, he was fully convinced. He had known two cases occur from puerperal fever, in one case as the result of erysipelas, where no disinfection was carried out, and in the other where no notification of the disease occurred. There was no doubt that erysipelas was a very real danger to puerperal women, and on that account he thought it was desirable a thorough disinfection of bedding should follow every case of erysipelas. He found it was customary to receive requests for disinfection after measles, chiefly from people such as the principals of private schools, who wished to convince the public that they took every precaution to prevent its spread. To prevent that he asked his council to make a small charge for all disinfections in such cases. That test had lessened very considerably the persistence of the requests made. The Society ought not to act hastily; the matter, he thought, was one for inquiry. He suggested that the best course to pursue would be to refer the matter to the Council to ascertain the views of the Society as a whole, and then to formulate an expression of opinion in which they might all concur. (Hear, hear.)

DR. F. J. ALLAN (Westminster) said he agreed with Dr. Barlow about the mistake that was made in distributing powders and fluids to the public in an indiscriminate way. He found one local authority spending £200 a year in distributing powders, and one old man was occupied in giving away the packets to the people who came for them. He suggested that the names of the recipients should be taken and the sanitary inspector sent round to see them. In a great many instances the sanitary inspector found that w.c.'s or drains had been stopped up for weeks, and the people were using the powders to keep the smell down. When these were seen to, the demand for the powder gradually decreased until hardly any was required at all. He thought medical officers should take a rather stronger line than they had done, and express their opinions to their authorities about it. He found his own authority were only too pleased to have a report on it, and he believed that last year their expenditure on disinfectants did not amount to £25. There was a time when a large amount of powder was put into dustbins and that sort of thing. One surveyor said he did not care what the powder was: what the public wanted was a nice pink colour! When they got a demand of that sort from a surveyor, it did not take very long to stop the whole proceedings. Dr. Barlow said one of his councillors thought they would have to clean out the ashbins. In London the local authorities were required to cleanse dustbins. He did not know that they always did it, but the Public Health Act required that they should. He

could hardly accept the view that the disinfection of houses was no good. As to there being no danger in the absence of precautions in hospitals, he presumed Dr. Barlow excluded the case of small-pox hospitals. He could give several cases where nurses from small-pox hospitals had undoubtedly conveyed infection to people outside. With regard to scarlet fever, it was always more difficult to trace such things, but he thought he had seen cases where he was pretty sure it had been spread by persons from a hospital; and he had also seen cases where without doubt the doctor had conveyed infection from one case to another. He had a very sad affair to investigate on one occasion, where doubtless the doctor conveyed small-pox from one patient to another person. The question of the disinfection of schools was a big one. There could be no doubt that they ought to insist as far as possible on greater cleanliness in the schools. The schools were not washed half often enough. He knew in London many of the church schools where he had inquired were washed once in six months, or when a holiday came round. They ought to have them washed far more frequently than that. The question was one of expense. The authorities said: "We cannot afford to pay the enormous cost of washing the schools every week; we had better spray them with some disinfectant." Occasional disinfection might do the schools some good, but he thought they ought to express their opinion—although they could not insist on it being carried out—that schools ought to be washed regularly. He did not suppose the public had any idea that schools were not washed often.

DR. S. C. LAWRENCE (Edmonton) described his futile efforts to get his local authority to reduce their expenditure on disinfectants, which amounted to £240 a year in a district where the rates stood at 10s. in the £1.

DR. P. CALDWELL SMITH (Battersea) said that for the last ten years, with a population verging upon 300,000, he had only spent from 10s. to 12s. a year on disinfectants, excluding formalin and sulphur. He did not think the incidence of disease in his district was any greater than in other districts—probably it was a great deal less. He thought a stop should be put to the indiscriminate giving away of disinfectants to people who did not know how to use them. He knew in one case in London where they gave away a lot of disinfectants that when inquiries were made it was found a Jew had been purchasing the stuff from the people, and had started a small store. (Laughter.) In one district £750 a year was spent in giving away disinfectants. This amount included the wages of two men and two boys engaged in delivering it—in some instances at people's homes. That sort of thing was waste of money. He joined issue with Dr. Barlow in some

things, because he thought that disinfection carried out by properly trained men was certainly advisable in all cases of infectious diseases. With regard to nurses, he had two fever hospitals in his districts, and there had been cases where he had been able to trace the nurses going out and paying visits to friends. Every precaution was taken in the hospitals to prevent that. Dr. Barlow did not touch on the question of steam disinfection; but if the matter was referred to the Council he thought the whole question of steam, as well as of chemical disinfection, should be considered.

DR. HERBERT PECK (Chesterfield) gave the result of observations which went to show that, to be effective, disinfection must be preceded by thorough cleansing.

MR. F. E. FREMANTLE (Hertfordshire) implored the Society not to take up in public a line diametrically opposite to that which the whole profession had been taking for thirty years. He thought it was inadvisable that they should have iconoclasts getting up and saying they had been all wrong in the past. Disinfection still had its uses. Then things which were useless in themselves were often useful to cover the further powers they were able to make use of. By having a staff of inspectors to go in and disinfect rooms they were able to turn out the whole room and destroy the litter of rubbish, which certainly must be unhealthy.

DR. E. SERGEANT (Lancashire) said he entirely agreed with the last speaker. He suggested that the resolution should read "That much money is wasted in the injudicious purchase of disinfectants, that many of the uses to which they are put are unnecessary," instead of the wording in the paper.

DR. HERBERT JONES explained how disinfectants used in the old-fashioned earth closets inhibited the action of the bacteria in the earth. In that sense it did a great deal of harm to have disinfectants used. He thought that what they ought to do was not to oppose the use of disinfectants altogether, but to point out definitely in what ways they did harm.

DR. G. F. MCCLEARY (Hampstead) said he thought it would be a pity to come to a decision at that late hour of the evening. He suggested that the matter should be referred to the Council, so that the opinion of the branches could be taken.

DR. HERBERT JONES said that no notice of that motion had been given, so that it could only be carried by a unanimous vote.

It was resolved that the matter be referred to the Council, with a recommendation that the whole question of disinfectants, including steam disinfection, be referred to the branches for consideration and report.

DR. BARLOW, in reply, said that time did not permit him to deal in detail with all the criticisms. He quite expected that all would agree with him

in what he described as the quack uses of disinfectants, and also in his statement that there was a danger in the promiscuous use of disinfectants by the public. He was quite prepared for more severe criticism than he had received respecting his views on house disinfection after infectious diseases. He had had two objects in view in writing the paper: (1) to protest against the methods of certain disinfectant sellers, and (2) to prevent, if possible, any increase in the scope of the work until our knowledge was increased. It was not so much the cost of the disinfectant as the cost of the men's time in using it, and having in view this expense and the doubtful advantages gained, it appeared to him that there were other ways in which a municipality could spend this money with the certainty (not the possibility) of doing some good.

PLANT TO DEAL WITH WASTE TINS.—The Liverpool Corporation are about to erect a plant for dealing with the old tin receptacles which are found amongst the house refuse of the city. Years ago these used to be carted to the tips, and subsequently they were sold to dealers, but now the Corporation have resolved to put down a plant for utilizing this waste material in a more profitable manner. First the tins will be placed in a heated chamber to separate the tin, which will be moulded into ingots; then the iron will be hydraulically pressed to reduce the bulk to facilitate handling, and finally it will be sold. By this means it is anticipated that the income to the Corporation will be about £1,200 per annum, or treble what it is at present.

COW WITH TUBERCULOUS UDDER.—On January 19th, George Titterton, a farmer, of Leek, was summoned at Manchester for failing to notify to the Manchester sanitary authorities that he had a cow suffering from tuberculosis of the udder. Titterton was in the habit of sending milk into Manchester for sale, and proceedings were taken under the provisions of a local Act. It appeared that on October 21st last a sample was taken of the milk sent into Manchester by Titterton for sale. In consequence of the analysis of this sample the veterinary surgeon of the corporation visited the farm a month later and found a cow there, part of whose udder was affected with tuberculosis of long standing. For the defence it was said that although part of the udder was affected he had ceased to get milk from that quarter, and had only drawn it from the other parts. The veterinary surgeon admitted that while one part of a cow's udder might be affected, the other three parts might be free from disease and the milk from them be free from infection. The defendant was convicted and fined 21s.

FILTRATION AND OTHER METHODS OF PURIFICATION, ON A LARGE SCALE, OF RIVER WATER USED FOR DRINKING PURPOSES.*

By J. W. MILLER, M.D., D.P.H.,
Medical Officer of Health, City of Hereford.

POLLUTION OF RIVERS.

THERE are a number of English towns which still derive their water supply from a riversource. London derives its water supply from the New River and the Rivers Thames and Lea, and inquiries which I have recently made show that the following provincial towns obtain their water supply from rivers: Darlington, Stockton and Middlesbrough (this town derives the larger part of its supply from a moorland source) from the Tees; York from the Ouse; Shrewsbury, Worcester, Tewkesbury and Cheltenham from the Severn (the last town for only a portion of the year); Plymouth from the Mew; Sandown from the Yare; and Hereford from the Wye. Lincoln also derives its water supply partly from the Upper Witham River. The water supply of Dublin is derived from the River Vartry, near its source in the Wicklow Mountains. Certain towns, which previously derived their water supply from rivers, now obtain it from another source—e.g., Durham, Carlisle, Ripon, Wakefield, Ely and Leamington.

All rivers are polluted to a greater or lesser extent. The worst form of pollution is that of crude sewage which is allowed to flow into rivers from towns or villages on the banks; then there is pollution from isolated houses on the banks, privies, refuse heaps, manured fields, sewage farms, etc., and streams which in turn receive refuse and other filth from farms and houses on their banks. The pollution is increased at times of heavy rain and snow, when matter of all sorts is washed into a river.

It is important where river water is used for drinking purposes that it should be kept as free from pollution as possible. Sewage from towns or villages and any isolated houses on the banks should be treated before being allowed to flow into a river. In the case of smaller houses where biological treatment would be too costly, and where privies are in use, earth closets should be substituted. Refuse should not be allowed to be deposited on the banks of a river, as during times of flood this material is washed in.

At various times outbreaks of typhoid fever have occurred through the contents of privies

* A paper read to the Midland Branch of the Society of Medical Officers of Health on February 2nd, 1910.

or crude sewage finding their way into a river and so reaching the waterworks of the town obtaining its supply from such a source. An outbreak occurred at King's Lynn and Gaywood (Norfolk) in 1892; the water from the Gaywood River flowed through cultivated fields and gardens. The intake was within the borough and filtration was insufficient. Before the outbreak occurred the contents of privy pits, into which the excreta from some typhoid fever patients were thrown, had been spread on part of a market garden abutting on the river and only one mile above the intake.

The Tees Valley epidemic which occurred in 1890 and 1891 is well known; at that time, either directly or indirectly, the drainage of some 20 villages and hamlets, as well as that of the town of Barnard Castle, was poured into the river above the intake of the water company. Heavy floods, due to abnormal rainfall and melting of snow, washed down accumulations of filth, and shortly afterwards typhoid fever became prevalent.

In the report of the Board of Health of Massachusetts for 1901 an account is given of outbreaks which occurred at Lowell and Lawrence. Prior to the outbreak the Lowell water supply had been contaminated by the faeces of typhoid fever patients discharged into a brook only three miles above the intake of the waterworks. This pollution was followed in about three weeks by a very rapid increase in the deaths from typhoid fever at Lowell and about six weeks later by an alarming increase in the number of deaths in Lawrence, nine miles below where the Lowell sewage enters the River Merrimac. The amount of sewage entering the river was estimated to be one gallon in 600 gallons of river water passing Lawrence, and there was no more impurity in the water than could be detected by chemical analysis in about half of the drinking water supplies of the State obtained from pools and streams. Even with the small amount of organic impurity in the water as shown by chemical analysis it was considered that the germs of this disease were able to pass from one city to another.

A recent example is that of Lincoln, and during 1904 and 1905 900 cases of typhoid fever occurred. It was found by Dr. Reece, who was appointed by the Local Government Board to inquire into the cause of the outbreak, that the River Witham and its tributaries were polluted by drainage from ground highly cultivated and occasionally manured with night soil. In the autumn of

1904, and in January, 1905, there was opportunity for typhoid germs to gain access to the water supply, which, owing to increased acceleration due to heavy demands, was not effectively filtered in the sand-beds. A stream, termed the Catch-water Drain, which flowed into the River Witham ran alongside the waterworks, and the river sometimes passed up this stream and also another tributary called the Pike Drain; both these streams were polluted at the time of the outbreak, and germs resembling the bacillus typhosus were found.

SELF-PURIFICATION OF RIVERS.

Boyce and his colleagues (from the result of a large number of experiments carried out in 1899 to 1901 in connection with the River Severn before and after its waters pass the town of Shrewsbury) have shown that a certain amount of natural purification occurs in connection with river water. They showed that a reduction in the number of bacteria in the river takes place as the result of dilution, sedimentation, side-adhesion, and vegetation and light. Boyce considers that sedimentation and side-adhesion are most important factors in ridding the water of bacteria. It was also found that, although conditions for the multiplication were not met with, B. Coli and Typhosus could remain alive for a considerable length of time both in the mud and the river water, and it was considered that their presence in the mud might be the means of keeping up a tendency to pollution. Whilst in the purification the greatest sphere was taken by bacteria, in the case of B. Coli, and presumably also in the case of other pathogenic germs generally, temperature and environment were unfavourable to their multiplication; in substances like mud, teeming with bacteria, the available food was monopolised by the more hardy bacteria, and the putrefactive products formed acted detrimentally upon the pathogenic germs. In the case of the Severn, it was pointed out that the dilution of the sewage was considerable, and that the organic matter sufficed only for a comparatively small number of bacteria. Whilst the greater sphere in self-purification was taken by bacteria, help was also rendered by protozoa, higher forms of animal life, sewage fungi and river plants.

Sedimentation is also assisted when a river passes in a shallow stream over beds of gravel or rock.

Although a certain amount of self-purification goes on in connection with river water, it was shown by Boyce that Shrewsbury, with a popu-

lation of 29,000 persons, caused an average pollution of 600 B. Coli per c.c. in the case of the River Severn at the maximum point of pollution, and that this was felt sixteen miles lower down, as shown in the following table:—

Position of Examination.	Average total number of Bacteria per c.c.	Average number of B. Coli per c.c.
Asylum, 2 miles above Shrewsbury	7,000	13
Waterworks, opposite Shrewsbury	13,000	46
Ferry I., 0.6 of a mile lower down	20,000	177
English Bridge, 1.6 miles lower down	23,000	321
Ferry III., 2.5 miles lower down...	19,000	600
Uffington, 4.7 miles lower down...	17,000	142
Alcham, 9 miles lower down ...	13,000	48
Cressage, 16 miles lower down ...	5,000	36

The effect of the Shrewsbury pollution at Cressage had not had time to disappear before another town—Ironbridge—poured its sewage into the river, and it was in this way that rivers became gradually polluted from source to mouth.

It is important to remember that where pollution occurs—e.g., from the sewage of a town flowing into a river with a flow of two miles an hour—the effect in the case of a town twenty to thirty miles lower down might be slight; but at times of flood, with the rate of flow of the river increased to, say, eight miles an hour, the effect of the pollution higher up would be more marked.

Bacteriological examinations made of water from the Thames and other rivers show that the total number of bacteria, including sewage organisms, is considerably increased at times of flood; and in respect to London, Sir Shirley Murphy has found distinct increase in notified cases of typhoid fever following floods above the water intakes. It is therefore most important to stop pollution as far as possible. The recent Royal Commission on Sewage Disposal, in connection with the question of river pollution, have recommended that there should be a central administrative authority to deal with the whole question, and that the Local Rivers Board should, in accordance with the regulations framed by the Central Department, act as a Central Tribunal. Amongst the questions to be dealt with are:—

1. Protection of water supplies from pollution.
2. The settlement of standards for different reaches of water.

In addition to a chemical standard, a bacteriological standard of pollution would be useful.

In the fifth report of the Sewage Commission it is shown that from a bacteriological point of view land treatment of sewage is the most

efficient, provided suitable land is in use—*e.g.*, sand, gravelly loam, or soil and sand; clay is unsuitable. In the case of seven farms chosen for purposes of observation there was a reduction in the total number of organisms in the crude sewage of 94 to 99 per cent., and the number of *B. Coli* in the effluent varied from 1,000 to 10,000 per c.c. (at Altringham and South Norwood from 100 to 1,000 per c.c.). If the average number of *B. Coli* present in crude sewage be taken as 100,000 per c.c. (Houston), the reduction in the number of *B. Coli* was over 80 per cent. In the experiments referred to it was also shown that there was greater retardation in the passage of excremental organisms through soil than through artificial filters—"a factor of importance in the life and virulence of certain pathogenic germs."

Various tables are given in the above report showing the number of *B. Coli* after treatment by various artificial methods. The best bacteriological results obtained were by septic tank treatment and contact beds. In the case of Leeds, where the primary bed was of clinker and the secondary bed of coke, the number of *B. Coli* was 1,000 to 10,000 per c.c.; and similar results were obtained at Manchester, where clinker was used in both the primary and secondary beds. The results of these and other analyses show that a reduction of from 75 to 80 per cent. in the number of *B. Coli* in the crude sewage can be obtained with contact beds after preliminary septic tank treatment or chemical precipitation. Good results were also obtained by using percolating filters, the number of organisms present in the filtered effluent being on an average 1,000 to 10,000 per c.c., and sometimes the number was from 100 to 1,000 per c.c. Although the number of *B. Coli* was diminished, these germs were never entirely eliminated.

Klein, McConkey and others have shown that crude sewage or sewage effluent which has been sterilized is not a favourable medium for the growth of the *B. Typhosus*, and that this bacillus tends to die out quickly in the presence of other organisms. McConkey, as the result of experiments, concluded that if typhoid bacilli did find their way into a bacterial system of treatment they met with conditions hostile to their multiplication, and that even if these bacilli found their way on to biological beds or septic tanks they were present in small numbers, and the conditions were so adverse to their existence that they would not survive the treatment; "but if from any cause they

arrived at the beds or tanks in such large numbers as *B. Coli*, then they might appear in the effluent as *B. Coli* does, and, as in the case of the latter so in the case of *B. Typhosus*, there is no tendency to multiply."

There is reason to believe that as the reduction in the number of *B. Coli* is considerable in the case of sewage treated by either land or other artificial methods, in the case of *B. Typhosus* it would be still greater. Where septic tanks and filter beds are in use, there would be a delay of at least eighteen to twenty-four hours from the time the sewage entered the septic tanks till it left the filter beds.

To still further reduce the number of pathogenic organisms in an effluent, additional land filtration would be useful, especially if a gravel soil were available; and this method has been adopted at Hereford. The sewage of the town is treated by means of septic tanks and filter beds, and the effluent from the beds passes through gravel soil on its way to the River Wye. A greater degree of bacteriological purification of effluents could be obtained by means of sand filtration or by the addition of chloros or other chlorine preparation, although the Royal Commission on Sewage Disposal came to the conclusion that further purification of effluents by sand filtration or sterilization was not usually required.

In the case of a single house on a river bank the sewage could be allowed to flow first into a tank and afterwards over a bed of clinker, the flow being regulated automatically; and by its passage through gravel soil on its way to a river the effluent would still further be purified.

Whilst everything should be done to reduce the amount of river pollution, neither self-purification of the river nor the various methods of treatment adopted to reduce it will, in the majority of cases, purify the water sufficiently for drinking purposes, and various methods of storage and filtration must be adopted to render the water suitable for drinking purposes.

PRELIMINARY TREATMENT OF RIVER WATER.

River water generally contains a certain amount of sediment and this is largely increased at times of flood; at such times were the suspended matter not removed it would readily choke any good filter-beds and interfere with their bacterial action. It is therefore most important to get rid of the suspended matter.

Houston has shown that storage of river water will cause a reduction in the number of bacteria in the water, and that pathogenic germs, such as *B. Coli*, when the water is stored

for several weeks, will eventually die out. In addition the suspended matter is got rid of by sedimentation, algae and other vegetable growths are gradually destroyed, and the chemical composition of the water is improved, free albuminoid ammonia and organic matter being reduced in amount.

The longer the water is stored the greater will be the reduction of the pathogenic germs, and whatever system of filtration is afterwards adopted, previous storage should be made use of as a safeguard, as recommended by Houston.

In the case of eight provincial towns in England already referred to, where information was obtained, either storage reservoirs or sedimentation tanks were used, but in most cases the reservoirs would only allow of a period of storage of the river water not exceeding a few days. The Dublin water is obtained from an artificial lake formed by damming the River Vartry near its source in the Wicklow Mountains, and after filtration through sand the water passes into a service reservoir holding three weeks supply. In two towns, York and Hereford, the water is passed through gravity mechanical filters before passing to a reservoir for further sedimentation. In two towns sedimentation tanks are not used, and the water flows direct to the sand filter-beds.

Other methods have been adopted in America and England to remove suspended matter—*e.g.*, preliminary filtration through graded beds of coarse gravel and coke. Polarite has also been used for this purpose.

In America, coagulant in the form of sulphate of alumina of a strength of $\frac{1}{4}$ to $2\frac{1}{2}$ grains per gallon, the amount varying according to the turbidity of the water, is sometimes added to raw river water for ridding it of sediment; the water is then allowed to settle in large sedimentation basins before passing either to slow sand or mechanical filters.

The use of the coagulation basin usually prevents difficulty in the cleaning of the slow sand-filters through the coagulant getting into the beds.

At Steelton in America the water supply is derived from the Susquehanna River and the water is passed through roughing filters before flowing on to slow sand filter-beds. The roughing filters are 12 ft. 2 in. wide and 29 ft. 6 in. at the bottom, and contain 5 ft. of fine anthracite coal of low specific gravity; they are suitably underdrained by a number of parallel 2-in. galvanized iron pipes with $\frac{1}{4}$ -in. holes. The pipes are surrounded by 4 inches of $\frac{1}{4}$ -in. to $\frac{1}{2}$ -in.

gravel, and this rests on a second layer or fine gravel. At certain times of the year the river water contains a considerable amount of fine suspended red or yellow clay, and at this time the use of coagulant is unnecessary; when the water is fairly clear coagulant is added. There are special arrangements for washing the filters. A large amount of suspended matter can be got rid of by the use of pressure or gravity mechanical filters, even without the addition of coagulant. Greater clarification of the water can be obtained by the addition of a small quantity of coagulant, but it must be arranged so that the amount added is not in sufficient amount to remove the bulk of the bacteria, otherwise the formation of the gelatinous film on the surface of any slow sand filter-beds in use will be interfered with.

SLOW SAND FILTRATION.

This is usually called the English system as opposed to mechanical filtration, which is largely used in America. This system of passing the water through sand filter-beds is in use in connection with the London water supply, and inquiries which I have made in regard to the provinces show that in the case of ten towns using river water this method has also been adopted. In seven of these towns as I have already mentioned, preliminary treatment of the water in storage reservoirs or sedimentation tanks is in use. In one town the water is passed into a large storage reservoir and afterwards through fine copper screens into the mains without further filtration.

The sand filter-bed is a water-tight reservoir suitably underdrained and usually containing about 6 ft. of filtering material. The material is graded, and contains usually 3 ft. to 4 ft. of fine sand at the top, then pea gravel, and coarser grades of gravel passing downwards. The gravel serves the purpose for lateral movements of the water to the under-drains. The bottom and sides of the reservoir must be water-tight; it is useful to have tiles at the bottom, and these must be covered with gravel so as to allow the water to pass on to the bed gradually. The London filter-beds contain on an average from 2 ft. to 3 ft. of fine sand. It is important that the sand should not contain too much carbonate of lime, as this will tend to make the water hard, and it should not be too fine, as fine sand quickly clogs.

The important point of the process of sand filtration is the formation of a gelatinous cover on the surface of the bed, as it is in this cover that the suspended matter and bacteria

are entangled; in addition, the organic matter in solid form and in solution is attacked by the nitrifying organisms which form this layer of the surface. A new filter is of little use until the bacterial jelly has formed; this takes about a week, and during this time the water should not be allowed to pass into the mains.

The following analyses made by Kummel in connection with a filter-bed in which the sand had been renewed are quoted by Newman:—

	Organisms per c.c.
Before cleaning	42
One day after cleaning	1,880
Two days after cleaning	752
Three days " "	208
Four days " "	156
Five days " "	102
Six days " "	84

As the result of a large number of experiments conducted by the State Board of Massachusetts, it was found that not more than two million gallons per acre daily of water should be allowed to pass through a slow filter-bed, and experiments made by Koch in Germany have confirmed these views. The bacteriological standard recommended by Koch is that not more than 100 organisms per c.c. should be present in the filtered water. It is also important that *B. Coli* should be absent from 100 c.c. of the water.

After a certain time, depending on the amount of sediment and algæ in the water, the beds must be scraped. In the case of river water, even with preliminary treatment, suspended matter passes on to the filter-bed, and this may sometimes necessitate cleaning the beds once a month. At certain times of the year algæ present in the river water may form a thick layer on the surface like a blanket, and this prevents the water passing through the filters. On an average it will be necessary to clean the filter-beds every six to eight weeks.

The cleaning of the bed consists of scraping a fraction of an inch off the surface, and this is done by means of sharp, wide iron shovels. The sand can be cleaned and replaced, but this is not necessary until several inches have been removed. In the Massachusetts experiments it was shown that 85 per cent. of the bacteria were present in the upper quarter of an inch. There should be means for measuring the head of water in the bed; usually 4 ft. or 5 ft. are allowed. If the head exceeds this amount and the filtration becomes slower, there is indication that the beds need cleaning, and this will also be shown by the result of bacteriological analysis, as a number of organisms exceeding

100 per c.c. will be found in the effluent, and probably also *B. Coli*. Should the bed not be scraped when necessary, the pressure of the water will force it through at the sides of the reservoir and through boreholes which will be formed in the filter-beds; the water will then pass through unfiltered. At times of frost, if the beds are being cleaned, there is a danger, after cleaning, of the upper layer of the sand becoming frozen, and so the water passing over the bed is not properly filtered; it was such an accident as this in one of the filter-beds that caused the outbreak of cholera at Altona. In America the filter-beds are usually covered on account of the severe degrees of frost which are sometimes reached, but in this country that precaution does not seem necessary, although at times of frost, as a safeguard, it might be useful to run hot water from condensers on to the beds after cleaning. At Leeds there are special means of backing up the water from below after cleaning so as not to disturb the bed, and in addition there is an arrangement for regulating the flow of water on to the beds. After cleaning, to commence with, only a few inches of head are allowed, and this is gradually increased during the first few days until a head of 3 ft. or 4 ft. is reached.*

A sufficient number of beds should be available, so that, whilst some beds are being cleaned, too much water may not be passed over the remaining beds. On this account it is better that the individual beds should not cover too large an area. Beds 100 ft. to 200 ft. by 150 ft. will be found sufficient.

It is important that means should be provided for taking samples for analysis separately from each bed. After cleaning, the bed takes about three days to attain proper efficiency. Koch recommends that the water should be allowed to stand for the first twenty-four hours on the bed, and that during the first three days the water should not be used for drinking purposes.

Samples should be taken frequently from each bed for bacteriological analysis; the finer degrees of pollution of the water can only be detected by this means.

The following figures showing the results of slow sand filtration are taken from Dr. Houston's report to the Metropolitan Water Board on the examination of the London waters for the twelve months ending March 31st, 1909.

* Further particulars in regard to slow sand-filtration are given in "Water Supplies," by Thresh.

	Unfiltered Water.	Filtered Water.
1. From the Thames:—		
Number of samples	244	—
Average number of organisms on gelatine per c.c.	2,558	113
Percentage reduction	—	99.6
2. From the Lea:—		
Number of samples	245	—
Average number of organisms on gelatine per c.c.	8,794	18.9
Percentage reduction	—	99.8
3. From the New River:—		
Number of samples	245	—
Average number of organisms on gelatine per c.c.	1,118	6.1
Percentage reduction	—	99.4

In connection with the raw river water, *B. Coli* was present, in 1 c.c. (or less), in 47.8 per cent. of samples from the New River; in 87.5 per cent. of those from the River Thames; and in 93.9 per cent. of samples from the River Lea.

Out of 7,081 samples of all London waters which had been filtered, typical *B. Coli* were absent from 100 c.c. in 84.6 per cent.

MECHANICAL FILTRATION.

This system has been largely adopted in America, where a number of towns obtain their water supply from a river source.

There are two forms of mechanical filter in use—gravity and pressure. The following particulars relate to English filters. The pressure filter consists of a closed cylindrical tank, with sloping sides and domed top and bottom, constructed of cast-iron or steel and containing several feet of filtering material. The height varies from about 4 ft. to 15 ft., and the diameter from 1 ft. to 12 ft. The smaller size filters can deal with about 250 gallons per hour; the largest size can deal with as much as 15,000 to 20,000 gallons of water per hour. The term "gravity" explains the action of this filter, which is open at the top and contains fine sand or graded quartz (finest at the top and coarsest at the bottom). In the case of the pressure filter the water is forced through under pressure.

At the bottom of each filter there is usually an iron plate on which rests several feet (usually 3 or 4 ft.) of fine sand or quartz. Cleaning of the filters is affected by means of a reverse current of water, and can best be carried out by means of a number of nozzles placed close together and fixed at the bottom of the filter. Another method of cleaning is by passing a reverse current of water through a perforated grid-plate, and, in addition, by means of a steam blower large volumes of high-pressure air are passed through the filtering medium. It is

claimed for this method that during the process of cleaning the sand is thoroughly agitated, and no rakes are necessary for stirring up the surface of the sand. Rakes are usually provided in order to thoroughly stir up the sand when it is being washed; these are worked either by mechanical power or hand, and when arranged in two directions are more efficient. In some of the filters the upper few inches of the sand or quartz are raked; in others the rakes penetrate the whole thickness of the filtering medium. It is claimed for fine quartz that it is more readily cleaned on account of the particles being more angular. Sand particles are round and more adherent.

In addition to sand or quartz, other materials are used—e.g., filters are constructed by one firm in which the filtering material consists of sand, quartz and charcoal, resting upon a layer of fine copper gauze supported on a perforated grid plate. In the case of another filter oxidium or polarite are used along with layers of specially selected and graded silica, held in position by perforated and slotted grids. The oxidium is a granular black powder imperishable and porous, consisting of silicates of alumina, magnesia and lime, along with iron oxide and alkalis and carbonates. The polarite is a black porous magnetic oxide of iron. Five feet of filtering material are used.

It is claimed for these filters that as the water passes through the filtering material it is saturated with oxygen, which is forced into the pores and interstices of the filtering material; that the organic matter is effectively oxidized, and suspended matter and micro-organisms are in part removed. No coagulants are used in connection with this filter, but in certain cases hypochlorite is added to the water before filtration; it seems more adapted for getting rid of colouring matter (e.g., that caused by peat) and acid. The cleaning is effected by water under pressure, no stirrers or arms being used.

Mechanical filters such as those described above can be used with or without coagulant, but in the former case they have only a rapid straining action and there is no bacterial efficiency. At the same time they are very useful for removing suspended matter from river water and so preventing any sand filter-beds in use from becoming clogged.

USE OF COAGULANTS.

The coagulant is used to form a gelatinous cover on the surface of the sand or quartz of a mechanical filter, and takes the place of the scum formed by bacteria in the case of the

sand filter-beds. The coagulant generally used is sulphate of alumina; this combines with the carbonates in the water and forms alumina hydrate, which forms a white flocculent jelly-like precipitate and has a clearing action.

It is important that carbonates should be present in the water, as otherwise the formation of hydrate of alumina does not take place; and should there be no carbonates present in the water, or only a small quantity, some soda ash or its equivalent in lime should be added in equal or greater amount, depending on the composition of the water. About $\frac{1}{2}$ grain to 1 grain of sulphate of alumina per gallon may be sufficient for purposes of clarification, but, in order that bacterial efficiency may be attained, the addition of 2 grains to 4 grains per gallon to the water will be necessary.

In America the usual method for mixing the coagulant with the raw river water is as follows: The chemical is first placed in a dissolving tank or box holding about 240 gallons, and from this the fluid passes into two solution tanks, usually of concrete, and thence to an orifice box which is used for controlling the feed of the solution, which mixes with the raw river water. The water afterwards passes to coagulating basins built of concrete.

Water filtration plant has recently been erected at Sandusky, Ohio, a city of 25,000 inhabitants. A description of this plant will give an idea of the size of the various tanks and other apparatus in use in America. The dissolving tank or box is 4 ft. by 8 ft. by 1 ft., and holds 240 gallons. The solution tanks are built of concrete, and are 8 ft. square by 7 ft.; the bottom is in the form of a truncated pyramid, making a total depth of 8 ft. Paddles are placed at the bottom of each solution tank to agitate the fluid.

The orifice tank for controlling the feed of the coagulant solution is located underneath the solution tanks, and is 3 ft. by 2 ft. by 20 in. It contains an adjustable brass orifice for regulating the feed; from the orifice the solution is conducted by a 2-in. acid-proof pipe to a small chamber in the pump well, where it is carried by 2-in. lead pipes to the suction of the raw water pumps.

The coagulating basins are constructed of concrete, and are each 160 ft. long by 28 ft. 6 in. wide, with an average depth of 15 ft. 6 in. The floor slopes 2 ft. in its length so as to aid in flushing out the basins, which can be done by gravity. Each basin holds 500,000 gallons of water, and four hours' sedimentation are

allowed. The water finally passes to six gravity mechanical filters, each 18 ft. by 20 ft. at the sand line, and having a nominal capacity of 1,000,000 gallons per twenty-four hours. The above particulars are taken from the *Engineering Record* of October 16th, 1909.

Rakes with suitable teeth are usually placed in the dissolving tanks, and paddles in the solution tanks to facilitate solution and maintain a uniform strength. The coagulation or settling basin should be of a sufficient capacity to allow of the water remaining long enough for the chemical action to be complete. A certain proportion of heavy gelatinous matter produced by the coagulant settles to the bottom, and in doing so carries with it a considerable amount of suspended matter and a certain proportion of the bacteria.

The water afterwards passes from the coagulation basin to the filters, which are formed of wood, iron or concrete. The above account describes the process usually adopted in America. In England the process in connection with the use of the coagulant is not so elaborate, and after it has been dissolved in a wooden tank designed to hold from about 300 to 600 gallons, it is injected into the rising main to mix with the raw water on its way to the filters. Rakes or paddles to aid solution do not seem to be favoured. In America the various processes referred to are considered necessary, and are the results of experience over a considerable number of years.

Shrewsbury is the only town in England where mechanical filters are in use along with coagulant for filtering raw river water: a battery of pressure filters has recently been erected there.

In a paper which was read by Ross and Raymond, analytical chemists to the Burnley Corporation, before the Health Congress held at Leeds in 1909, the results of the filtration of the moorland water supplied to the town were given. At Burnley, both mechanical pressure filters (made by two different firms) and slow sand filters are in use. About one-tenth of a grain of sulphate of alumina and a certain amount of carbonate of soda were added to the water before mechanical filtration, and the bacteriological analyses of ten samples of filtered water taken during April, May and June, 1909, show that there was a percentage reduction of the total number of organisms of 79 per cent. in the case of one set of mechanical filters, and 72 per cent. reduction in connection with the other set. Three samples taken after

slow sand filtration showed a percentage reduction of 98.8 per cent.

The average number of organisms which grew on gelatine in the case of the unfiltered water was 44. *B. Coli* was only present in one instance in the unfiltered water, and was not detected in the water after filtration.

The same authors quote the results of bacteriological analyses from moorland water filtered through slow sand filters and through pressure mechanical filters at Bolton. In the case of the mechanical filters 2 grains of lime and 2 to 3 grains of sulphate of alumina were added to the raw water. The percentage reduction as shown by the results of the analyses of fifteen samples taken monthly from April, 1908, to June, 1909, was 96 per cent., and in the case of the sand filters 89 per cent. The average number of organisms in the unfiltered water was 311 per c.c., and the average number of *B. Coli* was 7 per c.c.; in no case were these organisms found in the water after mechanical filtration, and in three instances after sand filtration the number was 2 and in another case 1 per c.c.

It is stated by the writers that where the main object is the elimination of a considerable number of organisms, a large amount of sulphate of alumina must be added. In moorland waters the main consideration is the treatment of plumbo-solvency.

River water is at times very turbid, and unless the filters are cleaned every six hours a large number of bacteria will be found in the filtered water. The cleaning takes about ten minutes, and under ordinary circumstances once in ten or twelve hours is usually sufficient; the filtered water is used for cleaning purposes. The time a filter can go without cleaning depends on the turbidity of the water, and can only be ascertained by frequent bacteriological analysis, and it is also only by this means that the amount of sulphate of alumina necessary to be added can be ascertained. The water might be perfectly clear, and yet, through an insufficient amount of coagulant having been added, might contain large numbers of bacteria and sewage organisms. Any breakdown in the mixing apparatus and the water comes through unfiltered. Where mechanical filters are in use, preliminary storage of the raw water would appear to be a useful safeguard in the case of a river water.

Alumino-ferric is sometimes used as a coagulant, and also iron in combination with

lime. The use of iron is more troublesome than that of sulphate of alumina.

USE OF DISINFECTANT AS AN ADJUNCT TO WATER PURIFICATION.

In several towns in America bleaching powder is used for the sterilization of the raw river water before it passes to mechanical filters. When bleaching powder is added to the water the loosely formed combination splits up into chloride of calcium and hypo-chlorite of calcium. Chloride of calcium being inert, the hypo-chlorite is acted upon by carbonic acid, and splits up into carbonate of calcium and hypo-chlorous acid, which is a powerful oxidizing agent. Bleaching powder usually contains about 35 per cent. available chlorine and 40 to 44 per cent. of lime, which represents 7.9 per cent. available oxygen.

Sodium hypo-chlorite formed from sodium chloride electrolytically has the same effect, and to produce 1 lb. of available chlorine takes about 5 lb. to 8 lb. of common salt.

Experiments on the use of hypo-chlorite of lime have been recently carried out by the Baltimore County Water Company in America, and it has been found that by the application between the sedimentation tank and the filter beds of 1 grain of hypo-chlorite of lime, and with the alum solution reduced to 7 grains per gallon, and running the hypo-chlorite solution on the beds every other day, an absolutely sterile water can be turned out. The water first enters a coagulation basin providing four hours' sedimentation, and then passes to two 10 ft. by 20 ft. mechanical filters. The alum solution is added in the influent chamber of the coagulation basin, and the hypo-chlorite of lime solution is added to the water as it passes from the coagulation basin to the filters.

During 1908 and 1909 Clarke and Gage carried on a series of experiments, for the State Board of Health of Massachusetts, in connection with the sterilization of water. The water from the Merrimac River was used in connection with the experiments, and this was passed through a mechanical filter using sulphate of alumina as a coagulant along with soda. It was found that a clarifying effect could be obtained by the use of 5 to 1 grain of sulphate of alumina per gallon, but that an effluent containing low numbers of bacteria could be obtained only by the use of about 2 grains of coagulant per gallon. By the use of sulphate of alumina in these proportions a fairly satisfactory effluent was obtained, although one not as good bacterially at all times as those

obtained from sand filters operating at lower rates without coagulants.

In 1908 1.8 grains of sulphate of alumina and 1.5 grains of soda were used; in 1909 .9 grains of sulphate of alumina, 1.7 grains of soda, and bleaching powder equal to 1 part per million of available chlorine. Comparing the two results, it was found that in the former case there was a greater reduction in the colour of the raw water and in the organic matter present. Both waters were free from turbidity, and, although the organic matter and albuminoid ammonia were greater in the latter case, they were no greater in amount than in the case of a good many water supplies considered to be of good quality. There was 99.7 per cent. reduction of organisms using bleach, and 99.8 per cent. without. The effect was most noticeable in the character of the water as it flowed to the filter from the coagulation basin, the percentage of bacteria removed being 99.5 per cent. compared with 66.7 per cent. during the period when coagulants were used.

In conclusion, the authors state that complete sterilization of a highly polluted river, such as the Merrimac, cannot be obtained by the use of either permanganate of potash or bleaching powder, except in large amounts. They consider that the disinfection which occurs in the coagulation basin before the water reaches the filter introduces a factor of safety.

In the case of bleaching powder it was found that the power was exhausted in one or two hours if small amounts were used. When larger amounts were used four or six hours, or even longer, storage was necessary before the action was complete. Better results were obtained if .9 grain of alum and .7 grain of soda per gallon were used along with 1 part of bleaching powder per million available chlorine than when double amounts of sulphate of alumina and soda were used without the addition of disinfectant.

Rideal, in a paper before the recent Health Congress held at Leeds, showed that in the case of polluted waters the chlorine and hypo-chlorites act upon any free ammonia and other organic nitrogenous matters in the water to form chloramine (NH_2Cl) and other allied compounds having strong bactericidal properties. These substances produce an odour which is generally noticed in chlorine disinfection, but after a time it disappears and forms hydrazine (N_2H_4), which is inodorous, but has a strong bactericidal power. For killing typhoid

germs chlorine was found to be roughly 240 times stronger than carbolic acid, but was useless in the presence of sulphuric or hydrochloric acid, although its value was increased in the presence of urea. Rideal found that most drinking waters could be sterilized by sodium hypochlorite in the proportion of 1 part in a million available chlorine, and that after standing for two hours no smell or taste was perceptible.

At the time of the Lincoln epidemic in 1905 chloros, a crude preparation of sodium hypochlorite, was added to the water as it passed on to the filter-beds. The supply of disinfectant was continuous; the sand filter-beds were also treated. At first a strength of 1 in 10,000 was used, but later the amount was reduced to 1 in 50,000 before filtration and 1 part in 100,000 in the case of the filter-beds. At first, when the water was hot or cold, a smell and a musty taste were perceptible; but in the course of a few weeks, either on account of the organic matter present in the filter-beds being used up or oxidized, or on account of the lesser quantity of chloros used, the smell and taste became less, and on the first week of May, 1905, could not be detected. The scent was said to resemble the smell of nuts in an earthenware vessel which had been brought up from storage in a damp cellar.

COMPARISON OF THE VARIOUS METHODS OF PURIFICATION.

Whether mechanical or slow sand filtration is adopted in the treatment of river water, it would seem to be a useful plan to allow preliminary storage of the raw water in reservoirs of large capacity, capable of holding a supply for several weeks or longer, and such storage would act as a safeguard in the case of a breakdown in the filtering arrangements.

The only objection to the use of large storage reservoirs is the expense of construction, and and in the case of a small town such a scheme on this account might prove impracticable.

At times of flood river water becomes turbid, and some preliminary treatment is necessary where sand filter-beds are in use. Storage would considerably reduce the amount of suspended matter, but where reservoirs only capable of holding several days' supply are in use sufficient time is not available to allow of the bulk of the suspended matter being got rid of by means of sedimentation. In such a case mechanical filters, with the use of a small quantity of coagulant, would be useful to rid

the water of suspended matter before passing it on to the sand filter-beds.

In America use is made of large settling basins of considerable capacity to allow the chemicals and the coagulating organic matter to settle before passing the water on to the filter-beds, and basins of smaller size are thought necessary in connection with mechanical filters also. In England, in connection with the use of coagulant in mechanical filters, no settling basins are usually employed.

In comparison with mechanical filtration slow sand filtration appears on the whole to be safer, and the beds usually only need cleaning every six to eight weeks. In the case of mechanical filters the cleaning of the filters is necessary every ten or twelve hours, and in some cases oftener. The bacterial efficiency of the mechanical filter depends on the coagulant which has been added to the raw water, and any breakdown in the apparatus for mixing the coagulant and injecting it into the water causes the water to come through unfiltered. The amount of coagulant to be added and the frequency of cleaning of the filter will depend on the degree of turbidity of the water. These matters will require careful attention, and the amount of coagulant necessary can only be ascertained by means of bacteriological analysis carried out in a properly equipped laboratory.

With mechanical filtration, if samples are only examined bacteriologically once a month or at longer intervals, there would appear to be a greater element of risk than in the case of slow sand filter-beds, although in both cases frequent analyses are necessary.

At certain times of the year, generally during the summer, algae and other minute plants often develop on the surface of sand filter-beds, forming an entangled mass; other minute vegetable growths develop in the filter and produce a peculiar odour in the filtered water. Preliminary storage of the water for several weeks would get rid of this difficulty to a large extent; and where this was not possible, the use of mechanical filters would prevent this trouble arising.

Mechanical filters take up less space than slow sand filter-beds—viz., 400 to 600 sq. ft. of space per million gallons of water filtered in comparison with half an acre of filtering area necessary in the case of slow sand filter-beds.

During periods between cleaning, in the case of slow sand filter-beds, minute vegetable growths grow on the surface of the sand, especially in the summer, and may form a thick

layer on the surface, which in the case of the green algae can be rolled off like a carpet.

In comparison with slow sand filtration, if installation and working expenses are taken into account, the cost of mechanical filtration would appear to be less, but this will depend on the amount of coagulant used; and the cost of the chemical where a river water is used forms a considerable item.

In this country, the system which has been adopted in America of allowing the raw water after the coagulant has been added to stand in a settling basin for several hours is not in general use; in the settling tank a certain proportion of the suspended matter and bacteria are entangled in the precipitate of hydrate of alumina and fall to the bottom of the basin through sedimentation, and this process used in connection with either mechanical or slow sand filtration would appear to be necessary.

In certain cases the use of disinfectant such as bleaching powder in addition to the coagulant would appear useful, as the cost of the coagulant is reduced thereby, and in any case where there was a breakdown in the filtering arrangements the water could be sterilized by means of disinfectant, although the presence of even a slight amount of taste or smell in the water is a drawback.

A polluted water containing on an average several thousands of organisms per c.c. at all times, and with *B. Coli* in 1 c.c., will obviously require more careful treatment than a moorland water which contains on an average 100 to 300 organisms per c.c. and *B. Coli* only in small numbers. In the latter case the chief consideration is to get rid of the plumbo-solvency, and for this purpose mechanical filters would appear to be very useful.

In regard to river water, a high degree of bacterial purity of the filtered water and absence of pathogenic germs at all times and under all conditions is essential.

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NOTES ON THE BACILLUS COLI IN DEEP-WELL WATERS, ETC.*

By JOHN C. THRESH, D.Sc., M.D., etc., and
A. RICHMOND, M.B., D.P.H.

AMONGST medical officers of health there is a tendency to magnify the importance of bacteriological examination of water supplies and to belittle the importance of chemical examination. For this the following reasons are usually given. By means of bacteriological analysis much smaller quantities of polluting matter, if from a dangerous source, can be detected, and the interpretation of the results is much more easy. With reference to the first it may be said that bacteriological tests are too delicate to be always reliable, and with reference to the second that correct interpretation is not nearly so easy as many imagine. There is too great a tendency merely to divide waters into two classes—those which are said to contain no B. Coli and which are regarded as "good," and those which contain the B. Coli and are regarded as "bad" or polluted. This is a very simple interpretation, and if experience showed that it was correct it would save a great deal of anxiety. The purpose of this paper is to bring before the notice of medical officers of health a few recent instances in which the B. Coli has been found in large public supplies obtained from unimpeachable sources. It is only by such studies that anything can be learnt about the interpretation of results. The bacteriologist who confines himself to the mere examination of samples of water, and who has no experience in the examination of the sources from which they are obtained, cannot possibly interpret results with any degree of certainty, save in exceptional cases. He may pass as good and wholesome a water of high bacterial purity and condemn as polluted a water loaded with bacteria and abounding with those of intestinal origin, but what will be the value of his opinion upon the great majority of waters which are between the two extremes?

The first case we may consider is that of an important town which derives its water supplies from a series of very deep wells. All these are from 500 to 1,000 feet deep, and water is obtained from the chalk where it is overlaid by London clay 300 or more feet in thickness. The wells are perfectly constructed, and most of them are situated right in the open country. Chemically the waters are always of the very highest organic purity. Some time ago bacillus

coli was found in 5 c.c. of the mixed water supplying the town, and this led to various conferences between the M.O.H. and the waterworks manager. It was decided that dangerous pollution was absolutely impossible and therefore that there was no cause for alarm, but a free hand was given us to undertake any investigations necessary to clear up the origin of the bacillary contamination. All the wells were visited and samples taken of the waters coming from the rising main. On every rising main a small tap had been fixed to enable samples to be taken of the water as it came from the wells.

Fifteen samples in all were collected, and in two of these the B. Coli was found. Probably the whole of the results will be interesting to you as showing how these waters, taken from wells which it is absolutely certain cannot be polluted, varied in their bacterial contents.

TABLE I.

Source of Water.	Date of Collection.	Bacteria per c.c.		B. Coli: Smallest quantity of water giving.		
		On Agar.	On Gelatine.	Pre-sumptive test.	Confirmatory test.	All tests for the true coli
P. S.	7-8-07	—	260	5 c.c.	5 c.c.	5 c.c.
Deep wells:						
A	7-8-07	—	900	20 c.c.	—	—
B	7-8-07	—	440	5 c.c.	—	—
C	7-8-07	—	32	—	—	—
D	7-8-07	—	44	5 c.c.	—	—
E	7-8-07	—	48	1 c.c.	1 c.c.	1 c.c.
F	8-8-07	—	thousands	1 c.c.	—	—
G	8-8-07	—	1,020	—	—	—
H	8-8-07	—	68	5 c.c.	—	—
I	8-8-07	—	0	—	—	—
K	8-8-07	—	32	—	—	—
L	8-8-07	—	68	20 c.c.	—	—
M	8-8-07	—	10	—	—	—
N	8-8-07	—	12	20 c.c.	—	—
O	8-8-07	—	20	5 c.c.	—	—
P	8-8-07	—	2,600	5 c.c.	5 c.c.	5 c.c.
R	2-12-08	560	652	5 c.c.	5 c.c.	5 c.c.
S	2-12-08	126	124	1 c.c.	—	—
T	2-12-08	94	98	5 c.c.	—	—
U	2-12-08	32	102	10 c.c.	—	—
V	30-8-07	—	170	1 c.c.	—	—
W	13-9-09	5,410	2,850	5 c.c.	—	—
X	10-4-09	4,650	liquefied	5 c.c.	5 c.c.	5 c.c.

* Read before the Home Counties Branch of the Society of Medical Officers of Health on January 19th, 1910.

When these results were discussed with the waterworks manager a curious fact was brought to light. The wells, the water from which contained lactose-fermenting bacteria, were all of one type: those which did not contain such bacteria in the quantity examined were of another. The first type included all the wells which were carefully closed in to keep out dust and dirt; these contained the lactose fermenters. In the other wells not so covered, but which were open to light and air, not one of the waters contained these special bacilli. This very curious fact was confirmed at a later date, but we are quite unable to offer a satisfactory explanation. One well (E) yielded water containing B. Coli in as little as 1 c.c. This well was selected for special examination. In order to understand what follows, a description of the well must be given. At the top it is 9 feet in diameter, and it is sunk this width to a depth of 400 feet. From the bottom there are two bores lined with steel tubes which go down a further 600 feet, so that all the water entering the well comes from a depth of about 1,000 feet. When pumping, the water level is some 350 feet from the ground surface, and in order to raise the water to the reservoir it is twice pumped. The first pump raises the water to a tank fixed in the well on a staging at a depth of about 125 feet. From this tank

the second pump raises it to the reservoir. The inside of the well was examined and found in perfect condition, yet the water raised to the surface continued to show the presence of B. Coli in from 1 to 5 c.c. A little later a few streptococci were found, and still later the spores of bacillus enteritidis sporogenes were detected in 100 c.c., but on no occasion have all these been found in the water at one and the same time.

Arrangements were then made for taking a sample of water from the discharge pipe of the lower pump and from the water at the bottom of the well. We failed to get a sample from the latter, but obtained one from the outlet of the pump into the cistern, and at the same time a sample was taken from the top of the rising main. The difference between the two waters was extraordinary. The water as it reached the first stage contained very few bacteria and no B. Coli; that which reached the top of the well contained thousands of bacteria per c.c. and the B. Coli in 1 c.c. Next month similar samples were taken, and again there was a difference, though not so marked as before. A few days later the packing of the force-pump in the well was examined and found to be of tallowed hemp, having a disagreeable odour and swarming with bacteria, the B. Coli being very abundant. Later the

TABLE II.—BACTERIOLOGICAL RESULTS OF EXAMINATION OF WATER FROM WELL E, 1,000 FEET DEEP.

Well E. No. of Analysis.	Date.	Colonies per c.c.		B. Coli: Smallest quantity giving.			Remarks.
		On Agar.	On Gelatine.	Presumptive test.	Confirmatory test.	All tests.	
1	7-8-07	—	48	1 c.c.	1 c.c.	1 c.c.	
2	23-8-07	—	108	5 c.c.	5 c.c.	5 c.c.	
3	30-8-07	—	330	1 c.c.	1 c.c.	1 c.c.	
4	11-11-07	98	90	1 c.c.	1 c.c.	1 c.c.	Streptococci found.
5	24-4-08	13	9,500	1 c.c.	1 c.c.	1 c.c.	From lower pump.
6	28-4-08	2	12	Negative	—	—	
7	2-5-08	12	125	1 c.c.	1 c.c.	1 c.c.	As No. 6.
8	2-5-08	6	12	Negative	—	—	Ejected from ram.
9	9-5-08	31	90	1 c.c.	1 c.c.	1 c.c.	
10	9-5-08	1,000	2,000	1 c.c.	1 c.c.	1 c.c.	
11	30-10-08	278	31	10 c.c.	10 c.c.	10 c.c.	Bottom of well.
12	30-10-08	141	150	10 c.c.	10 c.c.	10 c.c.	
13	30-10-08	Innumerable	—	1 c.c.	1 c.c.	1 c.c.	As No. 9.
14	7-12-08	31	1,200	1 c.c.	1 c.c.	1 c.c.	
15	14-12-08	70	850	1 c.c.	1 c.c.	1 c.c.	
16	23-12-08	700	—	1 c.c.	1 c.c.	1 c.c.	
17	28-12-08	760	8,000	5 c.c.	5 c.c.	5 c.c.	
18	31-12-08	860	Liquefied	1 c.c.	1 c.c.	1 c.c.	B. E. S. in 100 c.c.
19	31-12-08	4,800	Liquefied	1 c.c.	1 c.c.	1 c.c.	B. E. S. in 100 c.c.
20	13-1-09	—	—	1 c.c.	1 c.c.	1 c.c.	
21	28-1-09	980	5,310	1 c.c.	1 c.c.	1 c.c.	
22	2-2-09	8	12	Negative in 36 c.c.			No. 1 bore-hole.
23	2-2-09	12	18	Negative in 36 c.c.			No. 2 bore-hole.
24	14-7-09	20	5,000	20 c.c.	20 c.c.	20 c.c.	

Save where otherwise stated, the samples were taken from the tap on the rising main in the well-house.

water from the lower pump showed the presence of *B. Coli*, and at every stroke of the upper pump some ounces of water squirted on to the sides of the well and ran down to the water below. In the water thus ejected through defective joints we found the spores of *B. enteritidis* or of allied organisms. The variation in the bacterial character of the water is shown in Analyses Nos. 11, 12 and 13 of Table II.

Samples were taken at intervals (Nos. 14 to 21), until arrangements could be made for getting at the bore tubes so as to take samples of water therefrom. This was done in February, 1909 (Analyses Nos. 23 and 24), and the water found to be of the very highest degree of bacterial purity. Since then the samples examined have been taken from the rising main, and the *B. Coli* is still present, and usually there is an abundance of other bacteria. The inside of the well has been limewashed, the pump rods have been cleaned and repainted, the packing of the pumps has been changed on several occasions, but all without avail. The water enters the well in a condition of extraordinary purity; it emerges from the well loaded with bacteria, some of which are of the type usually considered to be of intestinal origin.

The Well P has also been thoroughly examined. It is sunk 6 feet in diameter to a depth of 439 feet, and is then bored a further 336 feet into the chalk. The total depth is

775 feet. Pollution here is practically impossible, yet (as will be seen from the analyses on Table III) it frequently contains the *B. Coli*, and once these were found in so small a quantity as 1 c.c. The coverings from the well were removed, and the *B. Coli* disappeared. *Vide* Analyses 11 and 12, Table III.

The Well B is similar in character, but is 876 feet deep, and on occasions has yielded water containing *B. Coli* in 1 c.c. (Table III). In the three wells referred to the usual force-pumps are employed. In the next one to be considered, the well may be said to be hermetically sealed as the water is raised by means of an air-lift pump. The covering is such that not a particle of dust or dirt can get into the well. It is bored to a depth of about 400 feet and lined with steel tubes from top to bottom. Pollution is absolutely impossible, yet the water issuing from the air-lift generally contains a large number of bacteria, and on one occasion recently it was found to contain the *B. Coli* in 5 c.c. Frequent examinations of this water are made, but the two analyses on Table III (Well X) suffice to show the results obtained. The analysis dated 10-4-09 is the worst hitherto and that of 7-7-09 the best. All other analyses have come between these extremes.

Finally, we may refer to a deep well in the New Red Sandstone in the North of England yielding an enormous amount of water and used for the supply of a large and populous district. This water varies greatly in bacterial quality,

and experiments are almost continuously being conducted to endeavour to explain these variations. After the discovery that the Well E yielded a water from the rising main very different in character from that entering from the bore tubes, a systematic examination of this well was made. It was then discovered that the sunk portion was really a reservoir supplied with water from two distinct borings, and fortunately it was possible to obtain a sample of water from each of these tubes. Both samples proved to be of the highest bacterial purity, quite free even from glucose-fermenting bacteria. From this well the water is first pumped to a large iron tank at the ground surface, and from this tank a second pump forces the water to a distant reservoir. The water from this tank at the time contained numerous bacteria, including the *B. Coli*. It was therefore emptied and the sides and bottom found to be covered with a slimy deposit. This was examined, and had its source not been known it would have been certified to be a deposit from a sewage tank. It contained not only myriads of the *B. Coli*, but a large number of spores of the *B. enteritidis* sporogenes. Where these bacteria can have originated is a mystery. A little dust and probably a stray leaf may get into the tank, but nothing more. It is under the floor of the engine-house and approached by steps enclosed in a room protected by a door.

After cleaning the tank the water was better for a time, but it still continues to contain the *B. Coli*.

The tables given are worthy of study apart from the mere presence or absence of the *B. Coli*, as they directly contradict many statements found in text-books. For example, take the number of bacteria per c.c. These vary enormously, and it is not always the sample with most bacteria which contains *B. Coli*. Again, regard the ratio of the number of bacteria growing on gelatine to the number growing on agar. Instead of the agar counts being less than one-tenth those of the gelatine they often exceed the number growing on the latter. The ratio is so variable that I have ceased to regard it as being of any significance. The great variations from time to time are most curious, especially as this is limited to the bacterial contents, the waters being, chemically, remarkably constant in composition.

It is in reference to this last variation that Dr. Richmond commenced an investigation to

"ascertain if the slight delay in transit from the wells to the laboratory could possibly account for it." Unfortunately pressure of other matters has prevented the completion of his work.

The results of experiments made in relation to the effect of storage have on many occasions been published, and it is well known that bacteria multiply rapidly for a time and then appear to decrease, and that in pure deep-well waters and well-filtered waters this multiplication is more rapid than in waters less pure. In pure waters the multiplication is usually rapid and transitory, whilst in impure waters the multiplication is slow and more permanent. Most of the experiments have extended over lengthened periods, the waters being examined daily or every few days, whereas the extent of the multiplication in 6, 12, or 24 hours is the information now required. Whipple has, however, shown from the examination of thirteen waters (source not stated) kept at temperatures varying from 24 deg. to 23 deg. C. that there is a slight decrease in 3 to 6 hours, but a marked increase in 24 hours, and at all temperatures an enormous increase in 48 hours. Wolffhugel and Riedel state that the increase is less marked in closely stoppered bottles than in bottles closed with cotton-wool plugs, and Whipple finds multiplication is much greater in bottles which are only partially filled than in those filled completely. Further, he finds that at any given temperature there is a far less increase in water kept in large bottles than in water stored in small bottles. These results are so extraordinary that we should like to see them confirmed. They, however, have little bearing upon the point under consideration, since at the temperature of 13 deg. C. he finds that there is practically a decrease of the bacteria in all sized bottles save the smallest (2 ozs.) in 3, 6, 12 and 24 hours, the increase taking place between the 24 and 48 hours.

The great difficulty to overcome in such an investigation is the determination of the initial number of bacteria. Take, for example, the samples Nos. 19 and 20 in Table II. These were collected one after the other from the same tap on the rising main from the well, but after half filling the second bottle it was shaken most vigorously for a time, then filled up and again shaken. The result was that the shaking increased the agar counts from 860 to 4,800 per cubic centimetre. There is no doubt that bacteria are very rarely uniformly diffused through a sample of natural water, but occur

TABLE III.—BACTERIOLOGICAL RESULTS OF EXAMINATION OF WATERS FROM WELLS P, B AND X.

No. of Analysis.	DATE	Colonies per c.c.		Smallest quantity giving <i>B. Coli</i> .			Remarks.
		On Agar.	On Gelatine.	Presumptive test.	Confirmatory test.	All tests.	
Well P:							
1	8-8-07	—	2,600	5 c.c.	5 c.c.	5 c.c.	
2	23-8-07	—	124	10 c.c.	10 c.c.	10 c.c.	
3	30-8-07	—	540	1 c.c.	1 c.c.	1 c.c.	
4	4-9-07	—	1,000	1 c.c.	—	—	
5	11-9-07	30	Liquefied	10 c.c.	—	—	
6	24-4-08	100	950	1 c.c.	20 c.c.	20 c.c.	
7	2-12-08	146	120	1 c.c.	5 c.c.	5 c.c.	
8	7-12-08	23	130	5 c.c.	—	—	
9	7-12-08	10	189	20 c.c.	—	—	Dripping from tap at well top.
10	11-12-08	340	4,320	20 c.c.	—	—	
11	14-12-08	2	307	—	—	—	Covering all removed to let in light and air.
12	18-12-08	21	10	—	—	—	
Well B:							
1	7-8-07	—	440	5 c.c.	—	—	
2	2-12-08	340	298	101 c.c.	1 c.c.	1 c.c.	
Well X:							
1	10-4-09	4,650	Liquefied	5 c.c.	5 c.c.	5 c.c.	Air-lift pump.
2	7-7-09	30	Liquefied	—	—	—	Air-lift pump.

in minute masses, and that considerable agitation is necessary to get uniform diffusion. These zoöle masses can usually be found in all waters showing specks of suspended matter.

Experimenting with water from the deep well X, Dr. Richmond obtained the following results:—

Initial Temperature.	Temperature at which Sample was kept.	No. of Bacteria per c.c.							
		On Agar.				On Gelatine.			
		Initial	6 hrs.	12 hrs.	24 hrs.	Initial	6 hrs.	12 hrs.	24 hrs.
11° C	22° C	84	80	570	3500	230	240	105	1700
11° C	12° C	84	61	24	156	230	114	75	84
11° C	0° C	84	44	32	18	127	68	64	86

Another deep-well water gave—

5° C	22° C	7	7	9	3000	78	90	210	5000
5° C	12° C	4	4	2	3	78	44	56	34

Samples collected from Well A at 11 a.m. unfortunately did not reach us until 5 p.m., so they could not be set on earlier. The results were:—

Initial Temperature.	Temperature at which Sample was kept.	No. of Bacteria per c.c.							
		On Agar.				On Gelatine.			
		6 hrs.	12 hrs.	18 hrs.		6 hrs.	12 hrs.	18 hrs.	
4° C	22° C	800	2610	3400		640	200		3600
4° C	12° C	800	—	330		640	760		760

These and other results are neither entirely harmonious nor conclusive, but apparently a very marked increase may on occasions occur within 12 hours in summer weather, and within 24 hours at any season. It is very rarely indeed that 24 hours elapses between the taking of a sample and its reception at the laboratory, but unless the bottle containing the sample of water is packed in ice it is useless enumerating the bacteria if it has been kept much over 24 hours. Even if packed in ice the results will not be reliable, as under this condition there is often a marked decrease in numbers. As less and less stress is being laid upon the mere enumeration of bacteria, the extent of the variation is perhaps not of great importance, but it is evident that anyone wanting a close approximation of the number of bacteria in a sample of water from any

source must either undertake the examination himself or see that the sample reaches the laboratory where it is to be examined within 12 hours. Fortunately, however, there is no evidence to indicate that such organisms as the bacillus coli multiply in a water to any appreciable extent even in 48 hours, but that on the contrary they tend to decrease. In our laboratory experience, when samples of the same water have been examined on two or three successive days, the B. Coli results have always been identical; but with reference to this matter we shall have more to say hereafter.

INTERNATIONAL CONGRESS ON DISEASES OF OCCUPATION.—This Congress will be held, under the patronage of the Belgian Government, on September 10th–14th, 1910. The subscription for membership is 16s., which entitles each subscriber to printed copies of all contributions in advance, and later to a printed report of the proceedings. The Brussels International Exhibition will be open at the time the Congress is being held, and among the exhibits will be a display of models illustrating methods of protection in dangerous trades and the fencing of machinery. The president of the Executive Committee of the British National Committee is Sir Thomas Oliver, and the hon. secretaries are Dr. W. F. Dearden and Dr. T. M. Legge. Inquiries should be addressed to Dr. W. F. Dearden, 15, Salisbury-buildings, Trafford-road, Manchester.

BIRTH-RATE LOWER THAN DEATH-RATE.—Dr. J. Lawson, medical officer of health of Hebden Bridge, in his annual report states that the birth-rate of the district in 1909 was 12.0 per 1,000, while the death-rate was 12.5 per 1,000. It is doubtful whether there is another district in England and Wales in which the death-rate exceeds the birth-rate.

THE LACK OF COTTAGE ACCOMMODATION IN RURAL DISTRICTS.—So long as no legal power exists to compel landowners to provide their quota of cottages, so long will Housing Acts prove ineffective. Naturally, parishes object to being rated to provide cottages for the benefit of landlords. I cannot help thinking that this is mistaken policy on the part of landowners, and that it is as much against their own interests as it is against that of the community. The lack of decent cottages drives all the best blood out of the villages, and leads to farmers preferring to employ unmarried men or men with small families. The folly of this action must be evident to anyone who has studied the subject.—*Annual Report of Dr. J. C. Thresh, Medical Officer of Health, Chelmsford.*

EXAMPLE OF A CREEPING OUT-BREAK OF TYPHOID FEVER, WITH SOME EVIDENCE OF PERSONAL COMMUNICATION.

By D. S. DAVIES, M.D., D.P.H.,
Medical Officer of Health, Bristol.

THE occurrence of an explosive outbreak of typhoid fever such as attends the implication of a public water supply, a milk supply, or of oyster-beds, while it makes for notoriety, is, perhaps, of less intimate importance to the community than the elucidation of the factors which conduce towards the endemic persistence of the disease amongst populations, and thus supply the material, when circumstances favour, for an explosive outbreak.

The typhoid fever bacillus needs little else in order to secure its continuance as a parasitic species than opportunity of transference from bowel or bladder of its present host to the mouth of a succeeding host. This transference is readily made by soiled hands during domestic food preparation, or in other ways, given ordinary carelessness in domestic habits, while the insidious and often prolonged sickening period gives ample opportunity for the infective but unsuspected patient to become an "effective" centre of infection.

The following outbreak gives an example of a steady creeping infection persisting over some months. In this method of spread it is essential to note the importance of personal infection; drains have no concern with the transference of infection.*

During the fourth week in August the following cases were notified:—

1. Albert D., father, age 49;
2. Mabel D., daughter, age 9; and
3. Albert D., son, age 4; all of 13, C—road, Brislington;

and were admitted to the Royal Infirmary, where the father died on August 30th. He had apparently been ill for some time before the nature of his illness was recognized, and was probably the first case of the series. It is uncertain where he contracted the infection. He was in the employ of a market gardener, took vegetables to market, and carried back manure from town stables.

On September 15th the family moved into 87, P—street, Totterdown, and from this address came the following cases in September–October:—

* The drains were carefully tested in each instance, but no defects found. Some of the houses are comparatively new, and in others the drains have only recently been reconstructed.

4. Charles D., son, age 6, and
5. Mrs. D., wife, age 46; both of 87, P—street, Totterdown.

It appears that, some time in October, a boy named Albert B-n, aged eight, attended the Bristol Dispensary, and received treatment for "pneumonia." If we consider him as possibly a "missed" case of typhoid fever, he may supply a connecting link. He lived at 98, P—street, almost opposite 87, and was a playmate of the D—family.

6. Albert B-n, age 8; 98, P—street, Totterdown.

In October–November the following cases were notified:—

7. Edith B-t-n, age 7; 4, K—terrace, near to P—street; a playmate; died.
8. Dinah C., age 56; 19, C—road, Brislington; nursed cases 2, 3, and 4; died.
9. Doris S., age 7, 8, H—cottages, near to P—street; a playmate.
10. Violet W., age 7; 14, F—street, Totterdown. This child visited 87, P—st., and nursed the baby while Mrs. D. (Case 5) was visiting the patients in the Infirmary, and on her return had tea and supper.

In November–December the family of the boy Albert B-n (Case 6) furnished the following notifications. The infection may have been derived through him or from children of the D. family, who were playmates:—

11. Gladys B-n, age 7;
12. Sarah Jane B-n, age 36;
13. Mabel B-n, age 6;
14. Samuel B-n, age 4; and
15. Samuel B-n, age 37; all of 98, P—street, Totterdown (opposite 87).
16. Edward S., age 24; 8, G—street, Bedminster; uncle of Case 7, visited her early in October; notified early in November; died.

In Jan., 1910, the following cases occurred:—

17. Grace W., age 9; 94, P—street, Totterdown. The mother of this child assisted in nursing the B-n family before their removal to hospital.
18. Frank M., age 5; 2, C—cottages, near P—street; a playmate.
19. Ernest M., age 12; brother of Case 18. This boy was detected, and removed to hospital for observation during initial stage.

This group of nineteen cases, ten (or eleven, counting Case 6) of which were supplied by two families, and in which a link of personal com-

munication can be traced in the remaining cases, points to a strain of considerable virulence, indicated by the four fatal cases and the ready implication of playmates, and illustrates the creeping method of spread, extending over five or six months, which may occur through a family and contacts where the possibilities of complete isolation and strict sick-room routine are small. The infection in both families was probably distributed before the first case in each came under observation, as the father in the D. family was ailing for some time before he sought advice, and the first case in family B-n was apparently very mild, and therefore "missed" (Case ?6). The indefinite onset of typhoid fever conduces to the difficulty of securing early recognition. Although the mother was attacked in both families, and may have contributed to the distribution of the disease by hand-fouling of food, the evidence as to this is not conclusive. The course of the outbreak is instructively dissimilar from the explosive outbreaks associated with the implication of water or of milk as distributors.

An outbreak of this kind presents considerable difficulties in control, as it is impossible to obtain a full list of casual playmates and watch them as contacts. Supervision was exercised from the first over the households known to be affected, but the occurrence of a "missed" case in a fresh family (such as Case ?6, Albert B-n) sets at naught the effect of

such supervision, and affords opportunity for unchecked infection of a new group of cases.

The D. family consists of six persons, of whom five were attacked, including the father and mother. These were all removed to hospital; the remaining child, May, age 1, was admitted to the Guardians' Scattered Homes and remained well.

The B-n family consisted of seven persons, of whom five were attacked, including the father and mother. These were all removed to hospital; the remaining two children, Albert, age 8, and Ivy, age 2, were admitted to the Guardians' Scattered Homes, and remained well.

After the occurrence of the B-n group of cases, we decided to adopt the method of *warning notices* to medical practitioners in the district, which has proved so useful with small-pox, in order to put them on the *qui vive* in the case of indeterminate "continued" fever, so that no time might be lost in securing isolation. At the same time the affected houses were kept under particular supervision. The wisdom of this course of action was soon apparent, for on February 4th, District Inspector King reported that a boy, Ernest M., age 12 (Case 19), the brother of a previous case (18) notified during the third week of January, was ailing. Through the prompt kindness of Dr. Pinniger, the case was declared to be suspicious, and was at once taken into an isolation ward for

CREeping OUTBREAK OF TYPHOID FEVER FROM AUGUST, 1909, TO FEBRUARY, 1910.

No.	Case.	AGE.		Probable Date of Onset.	Date of Notification.	
		M.	F.			
1	A. D.	49	—	? August 17th, 1909	August 26th, 1909	Same family. Removal to P—street on September 15th.
2	M. D.	—	9	August 16th, 1909	August 24th, 1909	
3	A. D.	4	—	August 19th, 1909	August 26th, 1909	
4	C. D.	6	—	?	September 28th, 1909	
5	M. D.	—	46	October 6th, 1909	October 26th, 1909	Playmate of D. family. History of "pneumonia" in October. Same family as cases 11-15.
?6	A. B.	8	—	?	—	
7	E. B.	—	7	September 25th, 1909	October 1st, 1909	
8	D. C.	—	56	October 1st, 1909	October 11th, 1909	
9	D. S.	—	7	October 1st, 1909	October 25th, 1909	Same family; playmates of D. family.
10	V. W.	—	7	October 30th, 1909	November 10th, 1909	
11	G. B.	—	7	November 22nd, 1909	November 30th, 1909	
12	S. J. B.	—	36	November 20th, 1909	November 30th, 1909	
13	M. B.	—	6	November 22nd, 1909	December 3rd, 1909	Visited case 7. Died. Patient's mother nursed B. family.
14	S. B.	4	—	November 23rd, 1909	December 3rd, 1909	
15	S. B.	37	—	December 8th, 1909	December 15th, 1909	
16	E. S.	24	—	?	November 3rd, 1909	
17	G. W.	—	9	? January 1st, 1910	January 20th, 1910	Playmate. Sickened on Feb. 3rd, removed to hospital for observation on Feb. 4th. Brother of Case 18.
18	F. M.	5	—	? January 7th, 1910	January 24th, 1910	
19	E. M.	12	—	February 3rd, 1910	February 10th, 1910	

No further cases reported up to March 12th, 1910.

observation. At this time the Widal test proved negative, but the case developed into a typical attack of typhoid fever, and the positive reaction duly followed on February 10th. There were four other children in this family open to infection had the case been left at home. It is possible that early detection and isolation of this case has cut short the outbreak. No further case has come to light up to March 12th.

In 1899 a somewhat similar outbreak occurred in St. Philips's Marsh, Bristol, which was described in my annual report (pp. 27-34), and the facts suggested that personal communication was largely responsible for the spread of disease.

Thus, of forty-eight houses in A— and M—streets, seven were affected, and five of these were inhabited by relatives. At No. 32, A—street, a small general shop, occurred four cases and three deaths; three doors off lived a brother whose wife and two children sickened, two other children were removed to a relative at No. 1, where they subsequently sickened. At No. 23, A—street, and 3, M—street, cases also occurred amongst relatives. At No. 1, J—street lived a woman who acted as general nurse in the district, her son was amongst the early cases. At 16, T—street, a child of the person who nursed the case at No. 20, A—street, was ill with typhoid fever.

Reference may also be made to Dr. Priestley's account of three localised outbreaks in Lambeth, in which there was evidence pointing to personal spread of the disease amongst families and friends, in the *British Medical Journal*, January, 6th, 1900, p. 35.

LEAD PENCILS AS SPATULAS.—The best method for depressing the tongue is by the employment of ordinary lead pencils, a separate one being used for every child. The child knows what a lead pencil is, and when the medical inspector uses it he does not view it with the same distrust as that with which he looks upon metal spatulas or other unfamiliar objects. The pencil is easily used for pushing out the cheeks and lips to examine the teeth. Immediately after this has been done, it is placed fairly well back in the middle of the tongue, and without any pressure being used the tongue becomes depressed, and a good view is obtained of the fauces and pharynx. Immediately after use the pencil is placed in a bowl containing some disinfectant, and on the conclusion of the session's work the nurse takes them all out of the disinfectant, wipes them, and puts them aside for their ordinary use.—*Annual Report of Dr. Meredith Young, County Medical Officer of Health, Cheshire.*

THE ASSOCIATION OF MEDICAL OFFICERS OF HEALTH.

THE first meeting of this Association was held in the Chinese Room, Holborn Restaurant, on March 2nd, 1910, at 4 p.m. Present: Drs. Belilios, Crookshank, Dickson, Davison, Dykes, Flood, Gruggen, Gibbs-Smith, Hick, Butler-Harris, King, May, Maturin, Sells, Spreat, Senior, Sharman, Webb, Wilkinson and others.

Dr. F. G. Crookshank, having been voted to the chair, explained the objects of the meeting. He pointed out that at the annual meeting of the British Medical Association at Sheffield in 1908 the Council was instructed by the Representative Meeting to refer a certain proposition for the consideration of the divisions. The proposition was "that health officers should give their whole time to their work," and nothing more was suggested than that expressions of opinion should be invited from the various divisions. For the assistance of the divisions, the Public Health Committee of the Central Council of the British Medical Association prepared a memorandum setting forth what were considered to be the more important considerations on both sides of the question, and stating that it was proposed, on receipt of expressions of opinion from the divisions, to prepare a report indicating what the Association's general policy should be. Of the 204 divisions of the Association, up to July, 1909, only 96 had replied. Of these 5 expressed no definite opinion; 8 expressed a definite approval of the part-time principle in rural districts; 46 approved, without reservation, "the whole-time principle"; and 39 expressed approval of the general principle of whole-time appointments with various reservations. On the strength of these replies the Public Health Committee submitted this recommendation to the Representative Meeting of the Association Meeting held in Belfast last July:—

"That in the interests of the public health, and in view of the multiplicity of duties thrown upon medical officers of health by recent enactments, medical officers of health should be required to devote their whole time to the duties of their office, and be debarred from private practice; that they should be adequately paid, and if necessary districts should be grouped for the purpose"

When the chairman of the Public Health Committee brought forward this recommendation, Dr. Wales had tried to get it amended, but though he obtained a seconder, nobody voted in favour of his amendment, and the resolution was adopted with the addition of a proviso that medical officers of health should be allowed to practice as "consultants."

The minute stated that "medical officers of health . . . should be required to devote their

whole time to the duties of their office, and be debarred from private practice"; and this at first sounds like a pleonasm. But, Dr. Crookshank urged, many officers do not devote their whole time to their office, and yet are not engaged in private practice. According to the British Medical Association, a medical officer of health should be debarred not only from private practice but from such offices as hospital superintendent, police surgeon, or professor of hygiene. The restriction of a medical officer of health to the duties of his office meant clearly the duties as defined by the Local Government Board. The upshot of the resolution was that the only work in which a medical officer of health could engage outside the strict duties of his office as laid down by the Local Government Board was consulting practice; and it was open to a Harley Street consultant to become a medical officer of health and yet be within the terms of the resolution, while those engaged in the country in general practice were outside the ruling of the Association. He thought there was ample reason for asking the Association what they meant by their resolution.

Dr. Crookshank then proceeded to discuss the statement that this resolution was intended to affect future appointments only, and pointed out that the resolution, as it stands, condemns part-timers everywhere as inefficient; and if this verdict holds, it is immaterial whether the Association says that the existing part-timers should be retained or not. A lay body having this resolution brought before them are in a position to say that the Association has condemned the holders of part-time appointments as inefficient—so inefficient that no more should be appointed—and such a body would be likely, rather than continue existing part-timers' services, to take the first opportunity of displacing them.

Dr. Crookshank drew the attention of the meeting to the fact that the resolution appears not as a pious opinion of the British Medical Association, but under the heading of "Declarations of Policy." Anyone accepting an appointment in opposition to such a declared policy became liable to the penal and disciplinary measures that the Association can enforce. He did not suppose that such measures would be carried, but part-timers were under a deferred sentence that might be executed. Moreover, the Association had taken a further step. The Public Health Committee has long had in its pigeon-holes a Bill drafted to secure tenure of office to medical officers of health. Instructions had now been given to delete from the Bill all reference to part-timers. As soon as this fact became known Dr. Belilios wrote a forcible letter to the *British Medical Journal* suggesting that the time was now ripe for some organization of part-timers to be formed. The present meeting was called to start

that organization. They had no spirit of hostility to the Society of Medical Officers of Health, but they wished to co-ordinate themselves as a group in order to have some means of expressing their opinions. They had a good precedent for their action, for the county medical officers of health had already formed such a group, which met at the rooms of the Society of Medical Officers of Health.

After some discussion, Dr. Crookshank called on Dr. Belilios to read his report, from which it appeared that 224 part-time officers had expressed their willingness to join the organization, and that subscriptions and donations amounting to £52 14s. had been received. Dr. Crookshank next moved, and it was carried *nem. con.*, that an association be formed in the interests of those medical officers of health who do not devote their whole time to the duties of their primary office.

The draft rules were also considered and, after some amendment, unanimously approved.

On the motion of Dr. May, seconded by Dr. King, Dr. Crookshank was unanimously elected chairman of the Association for the first year; and, on a motion from the chair, Dr. Belilios and Dr. Gibbs-Smith were with like unanimity chosen as hon. secretary and hon. treasurer respectively.

The following gentlemen were all unanimously elected members of the Council:—Dr. Barrow (Northumberland), Dr. Chronnell (Handley), Dr. Cross (Downham), Dr. Davison (The Maldens), Dr. Dykes (Buckhurst Hill), Mr. Fremantle (Herts), Dr. Gough (Northwich), Dr. Major Greenwood (hon. secretary Poor Law Medical Officers' Association and deputy medical officer of health for Shoreditch), Dr. King (Watford), Dr. Marsh (Macclesfield), Dr. May (St. Albans), Dr. Porter (Reigate), Dr. Senior (Esher), Dr. Sharman (Rickmansworth), Dr. Silles (Northfleet), Dr. Wales (Downham R.), and Dr. Wilkinson (Penge).

The meeting terminated with the usual votes of thanks.

A Council Meeting of this Association was held on March 24th at the Holborn Restaurant, with Dr. Crookshank in the chair. There was a good attendance.

The hon. secretary (Dr. Belilios) reported the accession of new members and read letters offering co-operation from societies and persons of influence.

A cordial vote of thanks was passed to the Poor Law Medical Officers' Association for their resolution, and appreciation was expressed at the proposed action of other bodies.

It was reported by the chairman and Dr. Gough that the Richmond and Altrincham divisions of the British Medical Association had passed resolutions instructing their delegates at the next

representative meeting to press for the rescindment of Minute 234, and it was noted that other divisions were considering the matter. The further steps which had been taken were reported and other measures agreed on. A full report of the meeting inaugurating the Association is to be circulated among interested persons and bodies.

It was agreed to hold a general meeting in London during the annual meeting of the British Medical Association, and to communicate with the Council of the latter body on the subject. It was further resolved that the meeting should be followed by a dinner, to which influential guests would be invited.

The hon. secretary reported that at the last meeting of the Home Counties Branch of the Society of Medical Officers of Health, Dr. Crookshank (chairman of the Association) had been nominated for the presidency of the Society in succession to Dr. Cooper Pattin.

It was unanimously agreed that steps be at once taken to support Dr. Crookshank at the election, which would take place at 1, Upper Montague Street, Russell Square, on April 8th, at 5 p.m.

OPEN-AIR CLASSES.—I have made inquiries at each school as to the holding of classes in the open air, in addition to the usual drill lessons, and have strongly advised the head teachers to hold these classes as often as practicable. It affords a welcome change from the class-room, and, moreover, under no ordinary conditions does the air inside the school remain nearly as pure as that of the outside. Only a few of the schools have suitable sheds. These places, however, when closed on three sides, are often far from ideal places in which to have a large class of children. Although open at one side they may in hot weather be quite unbearable if there is little or no breeze, or if it is blowing on to the closed sides. What is far preferable to sheds (unless, of course, they are lofty and well ventilated from all sides) is just sufficient shelter in the open to keep off the sun's rays and excessive wind. In many cases outside classes would be more frequently held if there were seating accommodation.—*Annual Report of Dr. Pierce, Medical Officer of Health, Guildford.*

DIPLOMA IN PUBLIC HEALTH (MANCHESTER UNIVERSITY).—The following gentlemen have satisfied the examiners at the March examination, 1910:—John Allen, M.B., Ch.B., Vict.; William Bradley, M.B., Ch.B. Vict.; William Fenton, M.B., Ch.B., Edin.; William James Hoyten, M.R.C.S., L.R.C.P., Lond.; Richard Arthur Needham, M.B., Ch.B., Vict. (Capt., I.M.S.); Richard Timmis Turner, M.D., Vict.

REVIEWS.

FOOD INSPECTION. A Practical Handbook by Hugh A. MacEwen, M.B., Ch.B. (Glas.), D.P.H., Assistant Medical Officer of Health for Cumberland. London: Blackie & Son, 1909. Price 5s. net.

Dr. MacEwen's book possesses several advantages, not the least important being its low price. Its appeal will be to a wide circle of readers, especially students, and these will find in it—with regard to meat inspection, at any rate—information which will be of value to them in the examinations for meat certificates. The other advantages of the book are that it is well printed, well bound and (in certain sections) exceptionally well illustrated.

Though the author has not apparently had much actual experience in connection with meat and food inspection and seizure in this country, he has had—it is obvious from the preface—many opportunities of studying the procedure and observing the methods in vogue elsewhere, notably Germany and America. The book is based chiefly on the observations thus made; and Dr. MacEwen acknowledges Ostertag as his master, and the assistance obtained from the superintendent of one of the Glasgow slaughter-houses.

The matter in the volume is well arranged to form four sections, the first dealing with the inspection of meat; the second with slaughter-house construction and management; the third with unsound food (other than meat) and the law relating to unsound food; and the fourth with methods of preserving meat and causes of unwholesomeness in food.

Section I is the longest of all. The description of disease conditions is introduced by a chapter on the anatomy of bovines, etc., one on methods of slaughter, and another on methods of inspection. Tuberculosis is discussed in some twenty pages, and much useful information is given regarding the disease. Anthrax, swine fever and other diseases are less fully dealt with, but most of their important features are referred to. There is a good section on animal parasites.

Three appendices to Section I deal with bacteriology, and German and American slaughter-house methods. The notes on bacteriology are very short, and need not have been included, as they are useless to the professional man and cannot help the non-professional student.

In Section II, on slaughter-houses, the author condemns private slaughter-houses, and gives a description (with plans and photographs) of several well-known public abattoirs. Fish, poultry, game, fruit, etc., and the statute law as to unsound food

are considered in Section III, which occupies about thirty pages. In Section IV there is a description of canning methods and some reference to other methods of preserving meat—freezing, salting, etc. The final chapter, on causes of unwholesomeness in food, deals with three of such causes, and contains a list of the most important recent outbreaks of meat-poisoning in Great Britain. The chief symptoms of meat-poisoning are also described.

The book, on the whole, is not so practical as it might have been, but it is accurate and concise, and may safely be used as a guide by students and others who are interested in and working at the subject of meat inspection.

HOUSING AND TOWN-PLANNING IN GREAT BRITAIN.
By W. Addington Willis, LL.B., Barrister-at-Law. London: Butterworth & Co., 1910.

The Housing, Town-Planning, etc., Act, 1909, has effected changes of such magnitude in the law relating to the housing of the working classes that the text-books written prior to the passing of the Act have now become obsolete, and a fresh crop of new books and editions is now appearing. Among these Mr. Willis's book is specially welcome, for it not only contains the full text of the Act of 1909, but it gives also an explanatory statement, as clear and as free from technicalities as the subject permits, of the whole of the existing housing legislation. The plan of the book is to arrange the subject-matter of the various Acts in logical sequence under headings, below each of which the legal provisions are carefully explained. This plan has much to recommend it in dealing with legislation that is so complicated by cross-references, and the book will be found useful by all who are concerned in housing matters.

PRACTICAL HOUSING. By J. S. Nettleford.
London: T. Fisher Unwin, 1910. Price 1s.

The second edition of Mr. Nettleford's admirable book, to which a preface is contributed by the Right Hon. Alfred Lyttelton, has been brought up to date by the inclusion of the text of the Housing, Town-Planning, etc., Act, 1909, by various alterations in the text, and by the addition of a new chapter in which Mr. Nettleford endeavours to explain what can be done under the Act of 1909. The author is well known as one of the chief workers in the town-planning movement, and his book—lucid, well thought out, and packed with information and suggestion—is indispensable to every housing and town-planning reformer. The second edition makes an opportune appearance at the present time, and will, we hope, be widely read, especially by health officers and members of local authorities.

CORRESPONDENCE.

The Editor does not accept responsibility for the opinions of correspondents.

THE CONSTRUCTION OF COWSHEDS.

To the Editor of "PUBLIC HEALTH."

SIR,—I feel bound to enter a demurrer against a string of resolutions passed by the Midland Branch of the Society at its last meeting, upon the subject of milk production, when I chanced to be occupying the chair.

The greater number of the members of the Branch will see these resolutions for the first time as they are printed in the Journal, but considering that their subject-matter is contentious, better notice should have been given (such as sending them round to each member some time before the meeting) so that each might have a chance of attending to discuss them. As it was, these propositions, being strongly fathered, were carried in a limited meeting by force of this fatherhood, with very inadequate discussion indeed.

Personally, I strongly question the desirability of placing under County Councils the whole business of milk production, those bodies being often largely dominated by the landowners whose interests are affected. The County Council is too large a unit for proper control by the central authority, and there must be an effective central management. It is equally essential that sanitary districts of appropriate size and convenience for working should be created in the place of those existing, which are so wasteful in expenditure, chaotic in method and notoriously ineffective.

I also dissociate myself from the proposition that it is necessary or desirable for the Government to provide facilities for the cheap borrowing of money in order that cowsheds may be built or rebuilt. In the first place, elaborate and costly buildings are not required in which to keep cows. The custom of shutting up cows in closed houses wants ridiculing out of existence, for I believe that every cowhouse should have an open front, and the idea that the erection at a great cost is required of numerous new buildings is the result of a wrong conception.

Further, it is the owners and not the occupiers who are responsible for the buildings; and the supposition that the owners, being in the main the large landed proprietors, are too impecunious to make their buildings appropriate for the business to be carried on in them, but must needs have the assistance of a Government loan, is sufficiently absurd, it appears to me, upon the face of it. Money can at any time be borrowed by mortgage upon land at a moderate interest.

Yours, etc.,

J. H. GARRETT,

Medical Officer of Health, Cheltenham.

CHELTEHAM, March 17th, 1910.

THE ASSOCIATION OF MEDICAL OFFICERS OF HEALTH.

To the Editor of "PUBLIC HEALTH."

SIR,—I have been invited to join a recently formed body termed "The Association of Medical Officers of Health," in the formation of which Dr. Crookshanks, medical officer of health to the Barnes Urban District Council, is taking a leading part, and of which he is, I believe, chairman. Doubtless other members of the Society have also received a similar circular.

I am of opinion that the multiplication of associations of medical officers of health is a mistaken policy. Our own Society has had a long and honourable career; it has had as presidents a number of gentlemen distinguished in the public health service, who have striven hard to advance the interests and to strengthen the position of medical officers of health throughout the country; the attempt, therefore, to weaken its influence by setting up a rival society is keenly resented by many.

The ostensible reason for the formation of this new association is the protection of the interests of part-time officers, and apparently it is the result of the recent badly worded resolution passed by the British Medical Association which would enforce ridiculous restrictions on the character of the appointments held by medical officers of health.

Now is it not a fact that in our Society of Medical Officers of Health the "part-timers" outnumber the "whole-timers"? Surely, therefore, our Society may be confidently trusted to take all the steps necessary to safeguard the interests of the former. Take the resolution above referred to: this has already received the unanimous disapproval of some of the branches, and the Council will doubtless take in regard to it the necessary action to secure its members from any unfair treatment.

Further, the interests of the "part-timers" will be better served, and the arguments advanced in their support will carry far more weight, from the subject being dealt with by the Society of Medical Officers of Health rather than by any new association.

The Society of Medical Officers of Health, when it takes action, does so backed by the support of all the leading medical officers of health in the country, both "half-timers" and "whole-timers," and is a force to be reckoned with; this new association will only represent a certain number of medical officers, mostly "part-timers," who are associated together avowedly to further the interests of a certain section and not the interests of the public health service generally.

I am afraid that this new association of Dr. Crookshanks, whilst incapable of urging the claims of the "part-timers" with the same influence and authority as our own Society, will at the same

time tend to produce dissension and lack of cohesion in our ranks, and this at the very time when, in view of any action that may be taken as a result of the Poor Law Commission, there is urgent need for medical officers of health throughout the country to be a strong and united body.

Yours, etc.,

A. MEARN'S FRASER,

Medical Officer of Health, Portsmouth.

The Town Hall, Portsmouth,
March 21st, 1910.

BATHS.

To the Editor of "PUBLIC HEALTH."

DEAR SIR,—Will you kindly enable me to ask my confrères this question? What is the quantity of water required to afford a good bath for an adult? I mean a cleansing bath of hot water, using soap.

I shall be much obliged for the information soon, as the question is now before me in relation to the baths of a nursing home and poor law infirmary.

It is said that in calculating water supply engineers allow a maximum of 60 gallons. In a bath of usual size, this quantity makes a vertical depth (in the middle) of 14 inches, before the bather steps in. In such baths, overflow from the "concealed" overflow pipe occurs at 17 inches.

Yours faithfully,

SIDNEY C. LAWRENCE,

Medical Officer of Health, Edmonton.

The Town Hall, Edmonton, London, N.,
March 23rd, 1910.

SCHOOL INFECTION.—There is no doubt that schools are the chief agencies in rural districts whereby infection is spread. It is sometimes suggested that the daily sprinkling of the classrooms with a disinfectant is capable of preventing this dissemination. The fallacy underlying such a suggestion lies in the fact that the diseases are chiefly spread by infectious persons, and, unless these are identified, the sprinkling of floors is a useless expense. Moreover, of inanimate sources of infection personal articles—pens, pencils, books, etc.—are far more important than the floors. Unfortunately, in too many of the schools it is still the custom to allow such articles to be used indiscriminately by a class; some of the more progressive managers, however, have made the necessary arrangements whereby each child, even in the infant departments, has his own pencils, etc., though the individualizing of books appears to present special difficulties. Apart from this, if dry sweeping and dusting were replaced by the frequent application of cleansing methods whereby dust is removed without being raised, the use of disinfectants in schools might be practically abandoned. There are some excellent applications on the market for dressing the floors of schools and other public rooms, by the use of which dust can be swept up without being distributed broadcast, and such applications can be strongly recommended to school managers.—*Annual Report of Dr. A. E. Porter, Medical Officer of Health, Reigate.*

PROCEEDINGS OF THE SOCIETY OF MEDICAL OFFICERS OF HEALTH.

FOUNDED 1856. RECONSTRUCTED 1888.
INCORPORATED 1892.

AN ORDINARY MEETING of the Society of Medical Officers of Health took place at the Society's Rooms, No. 1, Upper Montague Street, Russell Square, London, W.C., on Friday, March 11th, 1910, at 5 p.m. Present:—Dr. H. Cooper Pattin, President (in the Chair); Drs. J. Tate, R. A. Lyster, T. W. N. Barlow, S. C. Lawrence, James Kerr, F. Robinson, E. H. T. Nash, W. G. Willoughby, F. J. Allan, G. B. Millson, H. M. Richards, J. W. Cook, R. H. Wilshaw, W. G. Savage, J. S. Tew, R. Dudfield, J. M. Clements, R. E. Lauder, T. H. C. Stevenson, Wm. Butler, Sir Shirley Murphy, W. A. Bond, J. A. Gibson, A. E. Porter, P. C. Smith, O. Field, Herbert Jones, J. W. Hembrough, C. G. Pugh, G. F. McCleary, H. Peck, E. Sergeant, and Mr. F. E. Fremantle.

The minutes of the previous meeting held on February 11th, 1910, having been published in *PUBLIC HEALTH* (March, 1910, p. 226), were taken as read, were approved, and duly signed by the chairman.

Letters regretting inability to attend the meeting were read from Dr. Herbert Manley and Dr. Ridley Bailey.

ELECTIONS.—The following candidates, who had been duly nominated, were balloted for, and the President declared them duly elected:—

FELLOWS.

J. H. Cooke, M.B., 12, High Holme Road, Louth, Lincs.; Albert Ernest Cope, M.D., D.P.H., 26, Bessborough Gardens, London, S.W.; Charles E. P. Forsyth, M.B., Ch.B., M.R.C.P., D.P.H., Consumption Hospital, Liverpool; Annie Chapman Gowdey, M.B.; Charles Albert Jones, M.R.C.S., L.R.C.P., Thornciliffe, Penarth; Saml. L. Melville, L.S.A. Lond., The Lindens, Middlewich, Cheshire; Arthur Richmond, M.B., Ch.B., D.P.H., Spergula, Chelmsford; Harold Christopher Simpson, L.M. and L.S.A. Lond., Skirlaugh, near Hull; Percy William Spaul, M.R.C.S., L.R.C.P., D.P.H., 1, Stanwich Road, West Kensington, London, W.

NOMINATIONS.—The Hon. Secretary read a list of nominations to membership of the Society.

Dr. Reginald Dudfield (Paddington) moved: "That in the opinion of this Society the enactment of the quinquennial enumeration of the population is essential to the promotion of public health." This motion, he remarked, was a somewhat ancient one, and one which he was sure the members would agree to at once. The first point, of course, was that without their statistics they could not tell how the public health administration was going on. At the present moment they were in the position of knowing their income in the shape of births, their expenditure in the shape of deaths, and the depreciation in the shape of sickness, but they did not know their stock-in-trade,

which was the living population. Consequently they could not do what they ought to be able to do in their annual reports and prepare a proper balance sheet. There was a general consensus of opinion that the time had now come when they should have a quinquennial enumeration. He used the word enumeration advisedly, because the proposal was not that they should have a full census. It should be simply a counting of the people, taking account of sex and age, but not of house, occupation, or marriage conditions. When he put that notice of motion down the Bill had not been introduced in the House of Commons, and he was not expecting to see it introduced until after Easter. He was therefore surprised to see on Saturday morning that Mr. John Burns had introduced it, and that it had gone through its first reading. The Bill, which was down for second reading that night, gave them nearly everything they had asked for on the new schedule. Some might think points had been omitted, but they were matters which could be dealt with administratively, and did not require the special sanction of Parliament. As an illustration of the need of a quinquennial enumeration, he mentioned the case of East Ham. In the last inter-census period the population increased at the rate of 200 per cent. At the present moment the Registrar-General was basing his calculations on that, but it was obvious it could not go on increasing at that pace. Proceeding, Dr. Dudfield read a letter from Dr. Spottiswoode Cameron, who writes:—

"I feel strongly that a decennial census is quite insufficient for modern requirements and I think our Society ought to use all the influence it can to secure that at least an enumeration should take place at the intermediate period. Even for large towns, a dead reckoning of ten years is far too long for estimating the total population, and where, as some of us attempt to do, we are watching the changes in mortality, say from consumption, in districts of our towns, any attempt to estimate the population of these smaller districts on the data obtained ten years earlier is almost ridiculous.

"I enclose a statement in regard to one particular district in Leeds, the mortality of which I have been comparing with other districts of similar size, especially in regard to consumption. You will see that the estimated populations taken in different ways vary enormously, and that any statistics based upon them are valueless."

ILLUSTRATION FROM LEEDS.

"In one particular case of a Leeds district, intercepted by the boundaries of the Potternewton township and the North East Ward, various methods of estimating the population produced enormously different results. For

instance: as the population was 102 in 1881 and 171 in 1891, on the assumption of an increase by A.P. the population at the time of the census in 1901 should have been estimated at 240; similarly on the assumption of an increase by G.P. it should have been 287; but the census showed that it was 6,210.

"The attempt to estimate the population for this district for 1909 is therefore an exceedingly difficult one. By A.P. from the 1891-1901 censuses, to the middle of 1909, it should be 11,192, and by G.P. 120,274. By a continuation of the method of interpolation of differences, from the results of the 1881, 1891 and 1901 censuses, it might be estimated at 1,218,131. By the Registrar-General's present method we are entering it in our statistics for the year just passed as 11,293. From a rough census, by counting the houses in the autumn of 1906 and again in 1907, it is estimated as more probably 14,460.

"Obviously any death-rate, say from phthisis, in regard to this growing neighbourhood, will be utterly valueless after the 1911 census, whereas, if we had had a reliable enumeration in 1906 we should not have been nearly so far astray."

Dr. Dudfield, in concluding, said he might remind members of what he would call the classical examples of the differences between estimated and enumerated populations mentioned in *PUBLIC HEALTH* in 1899.

Dr. F. J. Allan (Westminster) seconded. He remarked that in his own district he found the Registrar-General had two methods of calculation, one for the population and another for calculating certain rates. There was a difference between them of 600 in a population of 170,000.

Dr. C. T. Stevenson, Superintendent of Statistics at Somerset House, said the increase of the country as a whole was reckoned by geometrical progression. He admitted the case of East Ham was a very crying one.

The motion was adopted unanimously.

Dr. Dudfield then moved: "That the Council be instructed to take all necessary steps to place the above opinion before the Government and to secure the co-operation of other learned societies interested in the matter." He pointed out that if any alteration was to be made in the Bill now before Parliament no time must be lost, and he hoped a special meeting of the Council would be called at once. He thought they ought to ask the following societies to co-operate with them: The Royal Statistical Society, the Royal Society, the Royal Society of Medicine, the Royal Society of Edinburgh, the Royal Academy of Medicine (Ireland), the Society of Actuaries; the Statistical Society of Manchester, and the Faculty of Actuaries (Scotland). Then there were the

Universities—though he was doubtful if it was much use going to them—and the Royal Colleges of Physicians and Surgeons. He would also venture to ask that the help be sought of the Association of County Councils, the Association of Municipal Corporations, the Convention of the Royal Boroughs of Scotland, the Association of County Councils of Scotland, and the Councils of the great towns and large towns in England, Scotland and Ireland.

Sir Shirley Murphy (London County Council) seconded the motion, and suggested that it be left to the Finance Sub-Committee to take such other action as might be necessary.

Dr. W. G. Willoughby (Eastbourne) suggested that the motion be amended by referring the matter to the Finance Sub-Committee to take all the necessary steps to secure the enactment of the quinquennial enumeration.

Dr. Dudfield accepted this amendment, and with this alteration the motion was carried unanimously.

A paper was read by Dr. T. W. Naylor Barlow upon "Disinfectants."

North-Western Branch.—A Meeting of the North-Western Branch was held at the Victoria Hotel, Manchester, on Friday, February 18th, 1910. Present:—Dr. Herbert Peck, in the chair; Drs. Hamilton, Sergeant, Greenwood, Chronnell, Brindley, Daley, Buchan, Paterson, Kingsford, Talent, Osborne, Hibbert, Cargin, Welsh, Marsden, Meredith Young, Wilkinson, Corbin, Dearden, Wheeldon, Hitchon, Wood, Holt, Merry, Smith, and Barlow (hon. sec.). Apologies for inability to attend were received from Dr. Garstang and Professor Délépine.

Minutes of meetings held on December 3rd and January 21st were read and confirmed.

The nomination of Dr. Samuel L. Melville, M.O.H. Middlewich U.D., as a Member of the Branch was reported.

On the proposition of Dr. Marsden, seconded by Dr. Sergeant, a vote of thanks was accorded to the Lord Mayor of Manchester and to the Lady Mayoress for their kindness in making arrangements for the visit to the new Royal Infirmary, and for the invitation to tea.

A resolution of congratulation to Dr. Carnwath on his appointment to the staff of the Local Government Board was passed, and the Secretary was requested to convey the same to Dr. Carnwath.

The resolution of the British Medical Association with regard to part-time medical officers of health was mentioned, and was referred for consideration at a committee meeting to be held before the next monthly meeting.

It was also resolved that, on the agenda paper, after the principal business of the meeting, there should be a heading "Casual Communications,"

under which head members should be able to mention matters of urgency and local difficulty.

The President and Secretary were appointed as delegates of the Branch to the Congress of the Royal Institute of Public Health to be held at Birkenhead in July.

A long and interesting discussion then took place on the Treatment of Defects discovered in the Medical Inspection of School Children, which was introduced by Drs. Wilkinson and Greenwood, and continued by Drs. Buchan, Corbin, Marsden, Talent, Young, Chronnell, Dearden, Osborne, Hibbert, Kingsford, Brindley, and Hamilton.

Midland Branch.—A meeting of this Branch was held on Thursday, March 3rd, 1910, at the Council House, Birmingham, at 3.30 p.m. Present: Dr. J. H. Garrett (in the chair), Drs. Bostock Hill, J. M. Cowie, W. H. Davison, A. Hamilton Wood, T. Shadick Higgins, Mabyn Read, Henry Malet, J. Doig McCrindle, Philip Boobbyer, John Robertson and E. H. Snell. Apologies for absence were received from Drs. Henry May, Herbert Manley, Ridley Bailey and J. Orton.

It was resolved to send a letter of regret to Dr. Manley concerning the indisposition that prevented his attendance.

It was resolved to hold the annual meeting in July, at Cheltenham.

A report received from the Council on the questions of cowsheds and a veterinary service was considered, and, with slight alterations, approved. The resolutions as carried were as follows:—

“The Midland Branch of the Society of Medical Officers of Health are of opinion that no satisfactory improvement in the production of milk and milk products in this country will be obtained unless the following general principles are adopted:—

(a) The replacing of insanitary by wholesome farm premises. It is not thought necessary here to add details as to what should constitute wholesome premises.

(b) The granting of loans (to landlords or tenants) which shall be available for short periods to enable rebuilding or reconstruction of farm premises to be carried out. In the opinion of the Branch such loans will greatly facilitate this work being done to a proper standard.

(c) The transferring to county councils of all the powers of local authorities in regard to dairy premises, so as to ensure better administration with greater uniformity.

(d) The appointment by county councils of a staff of properly qualified veterinary officers in the department of the medical officers of health to deal with all questions relating to the prevention of disease among dairy cows, particularly with regard to tuberculosis.

(e) The payment of compensation under proper conditions from a national fund for the slaughter of diseased cattle, when such slaughter is required in the public interest.”

“And the Branch further recommend that—

The proper training of all candidates for public health qualifications in practical meat inspection, so that the medical officer of health may have the requisite knowledge in ultimately deciding on all matters relating to meat and food for human consumption.”

Dr. J. Doig McCrindle read a paper on “The Details of Three Months’ Experiment in the Feeding of Necessitous School Children.” A

discussion followed, which was joined in by the Chairman, Drs. Snell, Boobbyer, Bostock Hill and Mabyn Read, and Dr. McCrindle replied.

Home Counties Branch.—The sixth meeting of this Branch for the Session 1909-10 was held on March 16th, 1910, at 1, Upper Montague-street, Russell-square, London, W.C., the President, Dr. A. E. Porter, in the chair.

It was unanimously resolved that Dr. F. G. Crookshank, medical officer of health of Barnes, be nominated for the presidency of the Society during 1910-11. Dr. Crookshank is a past-President of the Branch, and an able representative of the existing part-time medical officers of health.

Dr. Meredith Richards, medical officer of health of Croydon County Borough, then opened a discussion on “The Theoretical and Practical Training of the Medical Officer of Health.” His notes were so pregnant with material for debate that nearly all the members present expressed their views thereon. Later, Dr. Richards proposed the following resolution:—“That the Council be asked to take into consideration the course of training at present passed through by men qualifying for the D.P.H. and Degrees in State Medicine, with a view to recommending modifications of the curriculum and examinations to the authorities concerned.” This resolution was seconded by Dr. Wm. Butler, and carried unanimously.

A vote of thanks to Dr. Richards brought the proceedings to a close.

Yorkshire Branch.—A Meeting of the Yorkshire Branch was held at the Town Hall, Leeds, on Thursday, March 17th, when Dr. Martin (as president) occupied the chair. There were also present at the meeting Drs. Angus (Bingley), Atkins (Wombwell), Bailey (Horsforth), Bampton (Ilkley), Burman (Wath), Cameron (Leeds), Clark (Leeds), Halliwell (Dewsbury), Hebblethwaite (Burley-in-Wharfedale), Jackson (Denholme), Johnstone (Harrogate), Milne (Mirfield), Moore (Huddersfield), Neech (Halifax), Orr (Wakefield), Russell (Todmorden), Scatterty (Keighley), Stedman (Selby), Sutherland (Cleckheaton), Mitchell Wilson (Beverley), and J. R. Kaye (Wakefield), hon. secretary.

Dr. F. W. Martin delivered his presidential address on “Fixity of Tenure,” for which he was cordially thanked.

After a rather lengthy discussion on the question of nomination for the presidency of the Society, the following new members were elected: Dr. A. Falconer, medical officer of health Earby; Dr. G. E. Atkins, medical officer of health Wombwell; and Dr. H. C. Simpson, medical officer of health Skirlaugh R.D.C.

The meeting then took into consideration the Government memorandum on the closure of schools and exclusion of scholars, and also the

medical aspect of the Housing, Town-Planning, etc., Act of 1909. Attention was next drawn to the circular of the Local Government Board relating to the payment of medical practitioners out of the rates when summoned by midwives in cases of emergency.

It was arranged to hold the Annual Dinner at the Hotel Metropole, Leeds, on April 13th, and to invite Dr. Bruce Low, of the Local Government Board, to be the chief guest.

Scottish Branch.—A Meeting of this Branch was held in the North British Station Hotel, Glasgow, on Saturday, February 26th, at 11 a.m. Present:—Drs. Macdonald, Munro, Bruce, Templeman, Trotter, Dewar, Stevens, Strain, Lauder-Thomson, McVail, Wilson, Brown, Wright, Robb, Duncan, Macdonald (Lanark), Watt, A. K. Chalmers, and Graham. Dr. C. R. Macdonald, President, was in the chair.

Apologies for absence were received from Drs. Shirra Gibb, E. Watts and Douglas.

The further consideration of the draft Midwives (Scotland) Bill was resumed, Dr. Munro describing in detail the various amendments and alterations proposed, reference being made more particularly to clause (2), and the effect it would have if the adoptive principle were approved as agreed to at the last meeting of the Branch. This was fully discussed by the members present, the general feeling being that it would weaken the Act and allow local authorities to evade its provisions in districts where such an Act was a clamant necessity. It was finally agreed to accept Dr. McVail’s amendment to clause (2), which would now read: “This Act shall apply to Scotland, excepting to such areas as, owing to sparsity of population or difficulties of locomotion or otherwise, the Local Government Board may by order (which they are hereby empowered to make) exclude from the operation of the Act.” The Bill was finally remitted to the council to give effect to the various recommendations and alterations, and also to prepare a memorandum to accompany copy to be sent to the Council of the British Medical Association for their consideration.

Dr. McVail then addressed the meeting on the the Poor Law report, dealing more particularly with Public Medical Service and the constitution of the supervising local authority. He emphasised the fact that any remedy for the existing defects in the Poor Law medical system must (to be successful) take cognisance not merely of paupers, but of poor persons who have not reached the state of pauperism, and who it is desirable to prevent becoming unfit to maintain themselves owing to ill-health. After an interesting review of the subject, Dr. McVail was cordially thanked.

Dr. Lauder-Thomson, assistant medical officer of health and bacteriologist for the County of Ayr, exhibited two microscopical specimens which

were of considerable interest owing to their origin. They showed an organism which both morphologically and in plate culture resembled the anthrax bacillus. The interest lay in the fact that the organism had been isolated from a sample of bean meal which had been submitted to the county laboratory by the owner of a cow which had died of anthrax, the meal being the same as used at the time of the cow’s death. Other samples of meal had been sent from the same farm, but were found negative. The bacillus isolated grew on plate culture with the typical wavy appearance at the edge of the colonies, and in stained specimen it was seen to be the same size as the anthrax bacillus and gram positive. The organism was non-mobile and developed a spore that was centrally placed. Dr. Thomson said that if, after inoculation experiments had been carried out, the bacillus proved to be the bacillus anthracis, the question came to be, where the meal became contaminated. The beans were from China, and it was possible for them to be infected (1) before shipment; (2) during transit on board ship, by contact with contaminated hides; or (3) after the arrival in this country, either during transit to the mill or at the farm after they had been formed into meal. As bean meal was being very extensively used, the fact of its being liable to such contamination was of great importance. There had been a great increase in the number of cases of anthrax in Ayrshire recently, and in nearly all instances it had been found that bean meal was used at the farms. Further investigation was necessary in order to find out if the disease was carried by the agency of this food stuff.

Dr. Trotter then brought before the members a report of a meeting of superintendents and matrons of fever hospitals held in Glasgow, on July 25th, and at which it was resolved to ask the Scottish Branch of the Society of Medical Officers of Health to arrange a joint meeting to consider the advisability of having the training of fever nurses in fever hospital schools recognised as equivalent to part of the training required for registration purposes. After discussion, it was agreed that the Council have a joint meeting with the superintendents and matrons on an early date.

INTERNATIONAL CONGRESS OF REFRIGERATION AT VIENNA.—The second International Congress of Refrigeration will be held at Vienna on October 6th—12th, 1910. The subjects to be discussed are the scientific study of cold; the industrial production of cold; the application of cold to alimentation and other industries; transport; legislation. A large and influential British Committee is now in course of formation, and all inquiries should be addressed to the hon. secretary for the United Kingdom, Mr. R. M. Leonard, 3, Oxford Court, Cannon Street, E.C.

LAW REPORTS.

COURT OF JUSTICIARY, SCOTLAND.

December 14th, 1909.

BEFORE LORD JUSTICE CLERK AND LORDS
ARDWALL AND MACKENZIE.

KENN v. BELL.

Public Health (Scotland) Act, 1897, Sect. 43.—
Unsound Meat—Penalty—Separate Pieces of
Same Animal—Oppressive Penalty.

When a person is convicted under the Public Health (Scotland) Act, 1897, of having on his premises several pieces of unsound meat, he is liable to a penalty in respect of each, and it is immaterial that they are all parts of the same animal. A penalty of £250 in respect of ten pieces of meat was held not oppressive after a previous conviction.

John Kenn, butcher, Methil, was charged at the Burgh Police Court of Buckhaven, at the instance of the Town Council, for having on his premises five articles—pieces of beef—which were exposed for sale and intended for the food of man, and which were diseased and unsound and unfit for such food; and also of five other articles, also pieces of beef, intended for human food, and deposited for the purpose of preparation for sale, and which were likewise unsound and unfit for food of man.

The accused pleaded guilty, and also to a previous conviction. He was sentenced to pay a fine of £250, and in default to three months' imprisonment.

The accused brought a bill of suspension, in which two points were raised: (1) That the pieces of beef were all parts of the same animal, and that under Sect. 43 of the above-mentioned Act he was only liable to one penalty of £50; and (2) that the penalty was oppressive. The Court refused the bill.

Sect. 43 (2) provides: "If it appears to a sheriff, magistrate, or justice that any animal or article which has been seized, or is liable to be seized, under this section is diseased or unsound or unfit for food of man, he shall condemn the same . . . and the persons . . . in whose premises the same was found shall be liable to a penalty not exceeding £50 for every animal or article, or, if the article consists of fruit, vegetables, corn, bread, or flour, for every parcel thereof so condemned."

It was contended that it was unreasonable that so long as the animal was not cut up the penalty should be only £50, but that it should be multiplied by the number of pieces into which it was cut.

The LORD JUSTICE CLERK said he saw no reason for holding that part of an animal hung up in a butcher's shop was not an article. If a person sold ten parcels of flour out of one barrel he would clearly be liable to ten penalties under the section, and there was no real distinction between that and parts of an animal.

On the question of oppressiveness he said the accused was an old offender, and the offence was one highly dangerous to the public, as the spreading about of pieces of diseased meat might be most disastrous to life or health. He thought it was a most heinous offence.

LORD ARDWALL, in agreeing, said that the Act must be interpreted reasonably, and would not extend to every small piece into which the animal might be cut.

LORD MACKENZIE also agreed.

[For full report see 47 *Scottish Law Reporter*, 163.]

PERVERTING JUSTICE.—MILK PROSECUTION.—At Bristol Assizes, on February 15th, before Bray, J., Frederick James Eddols, a dairyman, was indicted for attempting to pervert the course of justice and committing perjury in connection with a prosecution against him for selling milk below standard. When summoned he told the police that he was supplied under warranty, and had sold the milk as he received it. He requested the police to test the milk as he received it. They visited him to do so, and it was alleged that before they arrived he impoverished the milk in the churns by pouring the richest part down a drain. The perjury charge was that during the Police Court proceedings he had denied so pouring the milk down the drain. He was found guilty, and sentenced to six months' imprisonment in the second division.

DISEASED VEAL.—At Clerkenwell Police Court, on February 17th, Arthur Cart, cattle dealer, and William Watson, both of Leicester, were summoned in respect of four sides of veal which had been seized and condemned as being unfit for human food. The defence set up was that the meat belonged to one Charles Morris, known as "Jennings," but the prosecution alleged that there was no such person. The magistrate, in convicting Cart, said that the chief facts as to the sending of the meat were admitted, and the defendant was, in fact, the beneficial owner of the stuff to a certain date. He was acting as the owner, and he should convict. Every possible obstacle had been put in the way of the Court. He imposed a fine of £100, with £25 costs. The summons against Watson was withdrawn.

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THE MIDWIVES BILL.

THE Midwives Bill, which the Lord President of the Council has recently introduced into the House of Lords, is for the most part based upon the recommendations of the Departmental Committee appointed to consider the working of the Midwives Act, 1902. Generally speaking, the Bill is a practical and useful measure, which will greatly improve the law relating to midwives; although in one important matter, to which we shall presently refer, it stands much in need of amendment. The first clause increases the membership of the Central Midwives Board from nine to thirteen by the addition of four members, one each to be appointed by the Local Government Board, the Association of Municipal Corporations, the British Medical Association and the Society of Medical Officers of Health. The inclusion of our Society amongst the bodies appointing representatives on the Central Midwives Board is in accordance with the recommendation of the Departmental Committee, and is a welcome recognition of the Society's work and influence, all the more welcome because that Committee, as originally constituted, contained no representative of the public health medical service, and it seemed that the important functions of the medical officer of health in relation to the Midwives Act were in some danger of being overlooked in high places. The inclusion of the British Medical Association is also welcome. The Association represents the main body of the general practitioners of the country, whose co-operation is essential for the successful working of the Act, and whose claims for proper recognition have hitherto received scant consideration from the State.

The Bill considerably strengthens the control both of the Central Midwives Board and the local supervising authority over the practice of midwives. For instance, it gives the supervising authority power to enter any premises believed

to be a lying-in home conducted for profit, or a place where a certified midwife is employed or practises. The Central Midwives Board are empowered to pay the reasonable travelling expenses of their members, and the expenses of any midwife who may be required to appear before them in her own defence. Section 9 of the Act of 1902, which enables county councils to delegate the administration of the Act to district councils, is repealed, and any delegation that may have taken place is revoked. Clause 13 of the Bill is specially important: it empowers local supervising authorities to aid the training of midwives, whether within or without their area, and to make grants for that purpose.

In Clause 17 an attempt is made to remedy a serious defect in the Act of 1902, which made no provision for the payment of a doctor called in on the advice of a midwife in a case of emergency. The Bill provides that in these cases the doctor shall be entitled to recover his fee from the Board of Guardians, who may treat the payment of such fees as relief by way of loan, and recover them accordingly. In providing security for the payment of the doctor, this clause removes an injustice that has been keenly felt by the medical profession, and it is much to be regretted that the wishes of the profession should have been disregarded in the arrangements by which it is proposed that the payment should be made. It will be remembered that in the evidence laid before the Departmental Committee by the British Medical Association and by the Society of Medical Officers of Health, strong opposition was expressed to the intervention of the Poor Law authority in this matter. The view of the Association, as stated by Mr. Smith Whitaker, was that "the matter should be dealt with through the local health authority, and not through the Poor Law, as it is undertaken more in the interests of the public than in the interests of the individual." Dr. J. H. Taylor, who also gave evidence on behalf of

the Association, stated that "the whole object of the Midwives Act is to get women to accept assistance at the earliest time, to prevent possible future bad health to themselves and to the community, and any deterrent influence should be minimised as far as possible." Similar views were put forward by Dr. Sergeant on behalf of the Society of Medical Officers of Health. The provisions of the Bill that bring the machinery of the Poor Law into the administration of the Midwives Act are, therefore, in direct opposition to the representative opinion of the medical profession.

It is not easy to see why the authors of the Bill should seek to depart from the precedent laid down in the Education (Administrative Provisions) Act, 1907, and the Local Education Authorities (Medical Treatment) Act, 1909. The first Act enables a local education authority to provide medical treatment for school children, and by the second Act the authority can recover the cost of the treatment from the parents. The Boards of Guardians and their relieving officer are not brought on the scene. If the Midwives Bill passes in its present form we shall see a curious anomaly. The council of a county or a county borough, which as a local education authority is invested with ample powers to provide for the medical treatment of school children, can, as a local supervising authority, do nothing more, when it comes to a question of providing for the treatment of a woman in her extreme need, than refer the whole matter to a system of Poor Law relief, which both the Majority and Minority Reports of the Poor Law Commission, widely differing as they do on many points, agree in condemning as discredited and obsolete. Whether a person receiving this relief becomes technically a "pauper" is a theoretical question of small practical importance. The practical point is that in the public mind a pauper is a person receiving relief from the Guardians. Dr. J. H. Taylor, on behalf of the British Medical Association, urged that "any deterrent influence should be minimised as far as possible," and no other view could be expected from the representative spokesman of a profession rightly proud of its high ideal of humanity and its sympathy for the poor. The present Bill, however, raises the deterrent influence to a maximum, and is, therefore, fraught with danger to the public health.

Fears have been expressed that if the matter were placed in the hands of the authority charged with the administration of the Midwives

Act the result would be an enormous development of indiscriminate medical relief, owing to the difficulty it is assumed the local supervising authority would experience in the recovery of the cost of treatment. This, again, is a purely theoretical objection, which is opposed to the practical experience of Manchester and Liverpool, where the City Council has for several years paid the doctors' fees. In Manchester during the year 1908 the number of calls for medical assistance was 1,634, but in only 315 cases did the doctors apply to the council for the fee, and in no case was a patient who was able to pay relieved from payment. The councils of the counties and county boroughs, who are already entrusted with the recovery of the cost of medical treatment under the Local Education Authorities (Medical Treatment) Act, 1909, should find no serious difficulty in dealing in a proper manner with the comparatively small number of cases that would arise under the Midwives Act. After all, the recovery of the fee is not the only, or even the most important point to be considered. Compared with the supremely important public health issues that are at stake the recovery of the fee is a minor matter. The Midwives Act is essentially a public health measure, and medical officers of health will be singularly unmindful of the best traditions of their service if they fail to resist the thrusting of obsolete Poor Law machinery into the field of public health administration.

A WELL-DESERVED HONOUR.

WE have much pleasure in recording that the University of Aberdeen, at the graduation ceremony on March 31st, conferred the honorary degree of LL.D. upon Dr. James Niven, Medical Officer of Health, Manchester. The Dean of the Law Faculty presented Dr. Niven, and referred to his distinguished career at Cambridge, where he took a high position among the Wranglers and was elected a Fellow of Queen's College, and to his successful administrative work at Oldham and Manchester. The Dean also spoke in the highest terms of Dr. Niven's work in the investigation of various public health problems, notably the etiology and prevention of tuberculosis, which was characterized by thoroughness and accuracy, as well as by openness of mind and sanity of judgment. We congratulate Dr. Niven on this well-deserved recognition of his services to preventive medicine.

THE PROPOSALS IN REGARD TO MEDICAL RELIEF MADE IN THE MAJORITY REPORT OF THE ROYAL COMMISSION ON THE POOR LAWS AND THE RELIEF OF DISTRESS.*

By C. S. LOCH, B.A., D.C.L., LL.D.

IN this paper I propose to deal shortly (1) with the present position of medical relief and its organization; (2) with the general and other recommendations of the Majority of the Poor Law Commission in regard to it; and (3) with the sufficiency of their suggestions in relation to the organization of Public Health.

First, then, the present position.

In the first instance, medical relief must be broadly considered in relation to the Poor Law infirmary, the public health hospital, the voluntary hospital, and in regard to outdoor medical relief, the out-patient departments, the public elementary schools, the free and provident dispensaries, friendly societies, and the large system of sick clubs managed chiefly by general practitioners in different parts of the country.

The Poor Law infirmary is detached from the workhouse, and is becoming a general hospital. It has its own organization, and is placed under a medical superintendent. It has an ever enlarged and improving staff of nurses. It often does a considerable amount of surgical work, especially in districts where voluntary hospitals are few. It is becoming popular. People resort to it who can pay for themselves or for relations. Consequently the payment system by or on behalf of in-patients tends to increase. The infirmary deals very largely with chronic cases: but they do not so entirely predominate as they used to do; and the conditions of the new regime, of suitable buildings, much improved nursing, and medical superintendence of themselves, make a great difference. The newer requirements of medical treatment are altering both supply and demand. The customers alter as the business itself changes. They are not centres of teaching, though for many reasons suitable for that purpose.

Under other more criticized but improving conditions, there are infirmary wards in workhouses under a workhouse medical officer. Here and elsewhere the Majority of the Commission and Dr. McVail in his report state the criticisms temperately and frankly.

* Read before a meeting of the Society of Medical Officers of Health on April 8th, 1910.

There should be a more constant professional inspection of both infirmaries and sick wards.

Next we may take the public health hospitals. They have been built mostly for infectious cases. They are built out of the municipal, urban or rural district rates, and are under the Sanitary Authority. They are thus connected with the public health service. There are 1,800 sanitary authorities. Their hospitals number, it is said, some 700—very various in size. The Poor Law unions number 643. The Poor Law infirmaries and the workhouse sick ward are in every union. They provide for the largest number of patients—in towns often for a number considerably in excess of the number of patients in voluntary hospitals.

The voluntary hospitals deal with many patients who are practically paupers. The London Hospital, for instance, deals with about 40 per cent. of these cases. Usually the voluntary hospitals exact no payments—like the Poor Law infirmaries—in cases in which payments might be forthcoming. They tend to draw in not merely the poor but also people of a higher class, just as do the new Poor Law infirmaries. They deal chiefly with acute cases, and chronic cases they transfer to the Poor Law infirmaries. They are served chiefly by an honorary staff. They are frequently centres for teaching. They are subject to no inspection.

We pass to outdoor relief.

The unions are divided into districts under district medical officers. They are as a rule paid a low and relatively insufficient salary. They provide most of the drugs which they use in treatment. They act on the order of the relieving officer. This is sometimes a deterrent to sick persons who should otherwise apply. In one town union, a friend tells me that he finds the relieving officers of great use in making a first selection of patients. But the relation to the relieving officer is said by some to place the district medical officer "at the beck and call of the relieving officer." In some rural unions, to save a heedless journey to him, the relieving officer may contrive arrangements to prevent delay, as, for instance, to have signed orders available, so that an applicant in a distant hamlet may apply for them at a shop, and thus be enabled to go straight to the district medical officer. In country districts, but also in towns, the nursing of the Poor Law out-patient, if one may so call him, is often very defective. The medical comforts, diet, etc., which the patients require

are supplied on the order of the relieving officer. About this there may be friction and misunderstanding as between the relieving officer or the Board of Guardians and the district medical officer. A difference like that which may arise between the governors and the staff of a hospital may assert itself. The district medical officer will ask for what he thinks best medically; the lay guardians may have by questions in view, as, for instance, the prevention of pauperism in connection with sickness. Each may be right in its aim; each may be at fault as to the opportunity of settling general issues, which is afforded by the circumstances of the individual case. The work of the district medical officer is said to be disheartening, for he deals with many chronic and hopeless cases. He is hampered by low pay and want of means, even for the supply of necessary drugs. But it is admitted that, subject to those conditions, he generally does well necessary work, which after all some one must do. Often when called for he does not wait for the relieving officer's order: he will thus deal with the case as a private case, though it should more properly be cared for and medicined at the cost of the Guardians. His position tells of an old state of administration. At present preventive work, so far as it is possible, is out of his reach. In the country medical men hold sometimes the double office of district medical officer and public health officer. There are about 3,000 district medical officers. In connection with these officers and their outdoor work and the Poor Law infirmaries and sick wards there is a system of medical relief throughout the country which is capable of much useful development, if certain changes are made. But the present method of giving unconditional and unsupervised out-relief in sick cases is a very serious evil, often altogether neutralizing any good that might otherwise be effected.*

The public health officers have no out-patients. They are, in a sense, a non-case section of the profession, except so far as infectious diseases go. Their work is preventive, and deals largely with the conditions out of which disease may arise. This is somewhat of an anomaly, and suggests changes. Yet there should be a division of labour. The problem of prevention is not the problem of cure—

* In this paper I have taken for granted that the services of the district medical officers will be required in the future. I have not contemplated a time when, owing to the spread of a provident or insurance method of medical relief, their work will be merged in the work of provident institutions. This is, however, contemplated in the Report of the Majority of the Royal Commission, as a final outcome of the introduction of the provident sick club system in public medical relief.

though treatment for cure or amelioration may suggest treatment that is preventive. It can hardly be said that there is overlapping between the public health officer and the medical officers of the Poor Law. Rather they stand apart. Poor Law medical officers are required to report matters to the Public Health Authority; but they do not do it. Neither branch helps the other. Yet there is much necessity for their co-operation. It is said that there is a great rivalry between the two branches or sections of professional service. Of course, each criticises the other, but I do not admit that there is "rivalry."

Then there comes a new "rival." We have now a medical inspection of children. It generally attaches itself to the public health officer or his department. It results in the detection of certain children who require medical attendance or advice. Unsuspected maladies are thus discovered, defects of eyesight, bad teeth, adenoids, besides (if the home be taken into account) insanitary, dirty and verminous conditions at the home. But in relation to the medical inspection, there is no proper means of inquiry, of planning, of assistance or of treatment. To provide these things would necessitate a duplication of public services which would be needlessly expensive, and, after all, relatively insufficient.

Then we come to voluntary associations. The out-patient departments of hospitals are some of the largest voluntary charities in the world. The people come from anywhere. Their number, in spite of safeguards, often hampers the staff available for attending to them. Besides out-patients, the "casualty" cases are frequently very numerous. Usually at the hospitals little is known of the homes or habits of the out-patients. The staff have no means of uniting hospital attention with home supervision. Hence the work of cure may be half done or fail altogether. Many cases, no doubt, are chronic; but in these, too, home conditions should be considered. To be made effectual, therefore, the out-patient department requires supplementation. Where there are almoners who are trained to the duties of almonership at hospitals, and to the work of discriminate charity—not inquiry officers or untrained almoners put into office to meet the requirements of the King's Fund—there the difficulty is met, or is in the way to be met. The almoner's aim is to get the cases properly attended to otherwise than merely at the hospital. In the course of the inquiry made

in this connection "frauds" come to light. For a first attendance medical relief is forthcoming; for further attendances it is not—for the "fraud," for the man or woman who seeks free relief but can and ought to pay an ordinary practitioner in an ordinary illness.

The out-patient department is a centre for teaching. The services of the medical man are given gratuitously. Yet, as is generally understood, voluntary service at a hospital has a *quid pro quo*. Professionally it advances the holder of office, and in the result he may be much more than compensated financially by the work that comes to him in practice as a consequence. All these are factors for consideration in any proposed changes or reforms.

Lastly, we have the great natural provision for patients of the working classes and the poor. Throughout the country there are doctors' sick clubs, provident dispensaries in many places, often very large and strong organizations, and friendly societies. If the lines of healthy social growth are in general an indication of the proper lines of social development, these various forms of provident supply or insurance suggest the policy of the future; at least, according to the canons of sociology this would be so. We should not, therefore, run counter to this social impulse, but develop it.

This, then, very briefly summarized, is a presentation of the case, of the conditions that lie to our hand, and out of which we would mould a better system. It suggests not a question of public health officers *versus* district medical officers, but a large problem of mixed institutions and varying interests. It takes into account the human nature of the patient seeking to spare his own resources at the expense of the medical man, and of the medical man, also, seeking to use the opportunities afforded by institutions for his personal advancement. It likewise takes into account the competition between medical men in their hard struggle, as unfortunately it often is, for an exiguous salary at the cost of much laborious work.

II.

If what I have stated is correct, a free system of medical relief paid for by the State, and the transformation of the medical men of the country into a very large State staff, is open to the gravest objection. It would run counter to the healthy growth of our social structure. It would weaken social effort—in which lies ultimately the foundation of health and of well-being. Whatever our plans may be, that must

be preserved, as far as possible, consistently with necessary reforms. We put free medical relief accordingly out of court, even though there be some registrar pictured to us who is to obtain ultimately some possible payment according to laws and orders not yet formulated.

Clearly, then, we have to consider the question primarily from the reciprocal point of view: the medical man on one side—his client, the patient, on the other.

Competent evidence was submitted to the Commission to the effect that, in fairness to the profession, the rule should be everywhere adopted that the patient should pay according to his ability. The justice of this is self-evident. It would follow that at every hospital or free dispensary (as I personally think) or Poor Law infirmary or dispensary, or in connection with all the forms of outdoor medical relief, *exceptis excipiendis*, there should be payment. The medical man is worthy of his hire, and he should receive it. What should be paid and who should and who should not pay would be a question of settlement on inquiry. This settlement would be made with tact and discretion, and there need be no fear that it would be exacting. The probability is that it would tend to err on the side of leniency. It is, after all, as sick clubs and dispensaries show, the people's own method.

Against this, then, what is to be said? First, we want to bring the people to accept medical relief. They do not know when they are ill. We want to prevent illness. To the community it matters relatively little whether a man who can pay pays. That he should not have an illness which he might have avoided, this matters. Medical treatment is in itself a salutary moral lesson. He who is made well by treatment will become independent. You can risk the possibility of his failing to be self-supporting or looking to the State to be his father and mother throughout life. If he does so, he will at least be a healthy dependent, and produce healthy children. Practically, environment and the earliest possible preventive treatment are the sole problems.

Now, it is quite possible to kill by kindness. The suggested policy would be an organized effort to kill by kindness. Very much can be done to deal with coming illness at the earlier stages. The people can be educated to think. In the case of phthisis, tuberculosis exhibitions are a strong stimulant to thought. The whole child population now comes under inspection.

In conjunction with the parents many precautions may be taken, much illness prevented; and there are many opportunities for imparting advice and seeing that it is carried out. Every centre of medical aid, and I have shown that there are many, can be used not merely for curative and alleviative purposes, but for preventive. Dr. Philip's dispensary in Edinburgh shows what can be done in relation to phthisis by specialization and visiting. But the system is not applicable to phthisis only. It suggests a form of co-operation between persons and authorities which may be introduced into other branches of medical treatment. The patient comes to the dispensary. The nurse and the medical officer visit the home and its surroundings, and examination is made as to whether there are other similar so-called contact cases. The patient, if he is past cure or beyond any effectual limitation of the disease, goes to the Public Health Hospital (if one may so call it), or, if he may be effectually relieved, he may go to the voluntary sanatorium or colony for consumptives, or, under certain conditions, he may remain at home. This is a system similar to that which I have described in regard to the almoners' work at the hospital—similar in principle, though, rightly, very markedly specialized. This method, in my opinion, diversely applied, meets the new and entirely proper demand for earlier treatment and preventive intervention.

But it may be said, Where is payment here? Obviously, in the case of the poor and very poor the purse would not supply the means for such treatment. Usually there are expenses at home, and the community may well afford means for treatment and recovery in these cases, provided that the condition of the home be kept in view throughout, and that those who can pay should do so. Also, if I may add it, the medical men who do the work should be paid some sufficient honoraria: so, I believe, would there be better service and a better use of talent.

Still, however, the question is raised, Can we not trust to treatment merely? It will be its own salvation, physically and morally. The man who is freely treated will be for that reason the more inclined to become self-supporting. Of this there is no evidence. The problem may require closer examination. But the evidence of relieving officers is almost without exception that the receipt of casual medical relief tends to general dependence, or is closely associated with it. Also it must be

admitted that medical treatment in itself tends often to a kind of medicalization of the patient, which it is the object of the judicious physician to avoid. And environment we must not, in these days of advancing knowledge, make responsible for everything. As if the alteration of environment would entail an alteration of the whole man!—though constantly we may change the conditions of environment with the best general results.

Thus we conclude that the mere freedom of medical relief and treatment, as some suggest, cannot suffice as a social policy; but that another system—that of association between authorities and workers inside and outside medical institutions, and payment on the patient's part, so far as it is rightly obtainable, as a general rule—may do so.

III.

We now turn to the scheme of the Majority of the Commission, only insisting that it is not a Poor Law scheme, but a very different thing—a scheme of Public Assistance.

First, in Public Assistance a new principle is introduced. It is represented by such paragraphs as these: The Public Assistance Committee, which would take the place of the Board of Guardians, would have to make careful inquiry into the circumstances and condition of all persons applying for assistance within their area, with a view to ascertaining the cause and nature of their distress; to decide upon the best mode of assisting applicants with a view to removing the cause of distress; to co-operate with voluntary-aid committees and other public and voluntary agencies; to secure periodical visitation of all cases in receipt of home assistance. Clearly this is a quite different regime from that of the Poor Law.

Next, even at present the word "destitution" in Poor Law phraseology, in relation to medical relief, means no more than "inability to provide whatever medical relief is necessary"—so Dr. Downes has stated in evidence. Further, according to the legal adviser of the Local Government Board, the following is the actual definition of "destitution" generally. "The word, when used to describe the condition of a person as a subject for relief, implies that he is for the time being without material resources (i) directly available and (ii) appropriate for satisfying his physical needs, (a) whether actually existing or (b) likely to arise immediately. By "physical needs" in this definition are meant such needs as must be satisfied (i) in order to maintain life, or (ii) in order to

obviate, mitigate or remove causes endangering life, or likely to endanger life, or impair health or bodily fitness for self-support."

This definition plainly gives ample scope for prevention and immediateness of action when it is required. The word suggested by the Majority of the Commission, instead of the much-controverted word "destitution," is "necessitous." But it is clear that in view of this definition the plea that a "Destitution Authority" must fail in its purpose, whether dealing with sickness or any other department of relief, is quite beside the mark. Under this new policy and this new definition there is ample scope for new organization on co-operative and inclusive lines.

We have, then, under these new conditions—a Public Assistance Service with institutional and home medical relief, a Public Health Service with chiefly institutional accommodation for dealing with infectious disease, and the means of assisting the community by many preventive measures, by inspection of houses, by the supply of medicine quickly in an emergency or in the expectation of some particular inroad of sickness, by examination of sputum, and so on. We have the budding elementary school system in part connection with the Public Health Authorities. We have also a voluntary system of hospitals and dispensaries, connected with neither the present Poor Law nor the Public Health service; and we have the large natural club and sick-pay system. Further, connected with all these, but supplied only by the Poor Law at present and by voluntary agencies, there is the necessary relief which in connection with the outfit of the patient, with his after-treatment and convalescence, and generally with his family needs and requirements, has often to be provided from some source. The Majority of the Commission proposed to alter the conditions of public relief, and to set on foot a policy of co-operation with voluntary agencies. Thus from public assistance or from voluntary sources would be forthcoming that supplementary assistance which is required, if the cases are to be properly dealt with—that is, both at the institution and at the home; for this double consideration of the affairs of the patient is now, I take it, agreed to.

What, then, are our conclusions? Have we, in order to meet the needs of the present time, to merge the Public Health system into the Poor Law system, and thus make a Medical *plus* Public Assistance Department, while there

are some four or five other similar departments—such as an Education *plus* Public Assistance Department, and so forth? No, we say: That will not meet the difficulty. There are other agencies that we cannot overlook. In our proposals we must include the voluntary hospitals and dispensaries; and we cannot exclude the large sick club organizations. We must find a broader basis, therefore.

Further, we must make assistance—general assistance supplementary of effectual medical aid—available as it may be wanted all along the line; and further, to avoid needless duplication of officials, we must make one system of public assistance serve for medical relief, whether it be of adults or children; and we must bring voluntary assistance into relation with it also.

It follows that the solution of the problem lies in unification or association with a recognition of differences of function. Hence the proposal of the Majority of the Commission that there should be, in connection with the Statutory Committee, the Public Assistance Authority of the County Council or County Borough Council, a Medical Assistance Committee, and in the public assistance areas similar committees so far as they may be necessary. And consequently there come the following recommendations:—

3. That there should be systematic co-operation between Public Assistance Authorities, the Sanitary Authorities, the Education Authorities, and the voluntary medical institutions, based on a clear definition of their several functions.

6. That in taking over the existing powers and duties of Boards of Guardians in regard to medical relief the new Poor Law Authority, or, as we shall call it, the Public Assistance Authority, shall undertake the following functions:—

- (i) To co-ordinate, and when necessary supplement, the medical institutions of the county or county borough and to suggest methods of co-operation with the Sanitary Authorities and the authorities in charge of Voluntary Hospitals.
- (ii) To organize an outdoor and provident medical service easily accessible in all parts of the county or county borough; this service to include the provision of competent midwives.
- (iii) To develop an adequate nursing service throughout the county or county borough, preferably in connexion with voluntary nursing associations.
- (iv) To subscribe, when necessary, towards these purposes.

- (v) To arrange for adequate supervision of, and report on the efficiency and adequacy of, the medical institutions and medical service through the county or county borough.

ESTABLISHMENT OF MEDICAL ASSISTANCE COMMITTEES.

7. That, to assist the Public Assistance Authority in carrying out the above functions, they shall appoint a committee from among their number, to which shall be added representatives of the Health Committee of the County Council, or of the County Borough Council, and of the local branch or branches of the British Medical Association. This Committee shall be called the County or County Borough Medical Assistance Committee, as the case may be, and shall have power to co-opt representatives of local hospitals, county or county borough nursing associations, dispensaries and registered friendly societies.

8. That, where necessary, a local committee on similar lines shall be appointed by each Public Assistance Committee for the purposes of the local administration of medical assistance. This committee shall be termed the Local Medical Assistance Committee.

9. That all, or any, of the functions defined in No. 6 may be referred by the Public Assistance Authority to the County or County Borough Medical Assistance Committee.

10. That the following shall be the lines of procedure for carrying out the functions mentioned in No. 6:—

INSTITUTIONS.

- (i) To consider in conjunction with each "Local Medical Assistance Committee" the needs of the county or county borough, and the needs of each relief district in the way of hospital (including infirmary) accommodation.
- (ii) To reorganize existing Poor Law medical institutions throughout the county or county borough, with a view to making them most effective for different classes of patients. (This would be done in conjunction with the committees in charge of work-houses, schools, etc.)
- (iii) To organize schemes of co-operation between Public Assistance institutions and voluntary hospitals.
- (iv) To develop a system of paying and free cottage hospitals in conjunction with voluntary and endowed charities, these to include provision for confinement cases.
- (v) To arrange schemes of co-operation between hospitals and provident dispensaries or outdoor medical service.

OUTDOOR MEDICAL SERVICE.

- (i) To require the "Local Medical Assistance Committee," in conjunction with the local

doctor, to map out their district into convenient medical districts, or "dispensary areas."

- (ii) To approach any free or provident medical institution, including private medical clubs, already existing in the district and invite them to fall in with the scheme. (Refusal not to check procedure.)
- (iii) The local authority may subscribe to the provident dispensaries, subject to the sanction of the Local Government Board, and under the conditions mentioned in section 10 of the Poor Law Act, 1879.

RELATION OF THE POOR LAW TO PROVIDENT DISPENSARIES.

11. That where any applicant for medical assistance is not a member of a provident society, he shall apply to and at once be treated by a district medical officer.

12. That the relieving officer or (as he will be called in future) the assistance officer, shall inquire into and report the case to the Public Assistance Committee, whose action shall be directed towards:—

- (i) Recovery of cost.
- (ii) Strengthening of provident agencies.

13. That with a view to enlisting the services of all competent medical practitioners in the locality of a provident dispensary, the British Medical Association be requested to suggest a general scheme, or scale of fees and wage limit to be applied by their local branches as local circumstances may suggest.

14. That under such scheme all local medical practitioners consenting to come under it shall be on the list of dispensary doctors, and any applicant who is a member of the dispensary shall be entitled to select such practitioner as he may prefer.

15. That arrangements should be made, where necessary, for the reception of patients in voluntary and general hospitals by the payment of their cost or by some other agreement between the Public Assistance Committee and those in management of the hospital.

16. That any practitioner attached to a provident dispensary may, where the patient is a member of such dispensary and in need of institutional treatment, recommend him for admission to the local Public Assistance infirmary, and in certain cases, where arrangements have been made, to a voluntary or general hospital.

17. That so far as the patient is concerned, admission under such conditions shall be covered by the subscription to the provident dispensary.

18. That as regards certain cases in receipt of public assistance (such as the aged and widows with young children) the Public Assistance Committee may enrol all such cases as members of a provident dispensary by paying the necessary fees.

On the details of this scheme I need not lay stress. The chief point for our purpose now is the institution of the Medical Assistance Committee as a centre of co-operation. Instead of the present dissidence there would be association. A new factor would be brought into the field, and this subject to the main conditions which are now advocated in the interest of progress. There would be fair and proper payment. There would be preventive, medical, and other assistance. There would be a constant effort to ensure that, so far as may be possible, self-support follows assistance. All the misunderstanding and folly about "stigma of pauperism" and "destitution authorities" and the like would disappear. There would be a general system of assistance which is rate paid, and, parallel to it, voluntary aid. In dealing with cases there would be a generally recognized method, based on the functions of the several co-operating parties. The assistance officer would notify to the Public Health Authority, and, *vice versa*, the public health officer would notify to the Public Assistance Authority. They would be partners, each using the information of the other. The Health Authority would see to "contacts," etc., etc. Frequently also the application to the Public Assistance Committee would be the occasion on which the case would be in the first instance notified to them. The district medical officer of the future would not have to supply his own drugs. The British Medical Association would, it is hoped, see that he secures a reasonable salary. The voluntary hospitals would, on arrangement with them, be asked to take certain cases, and to fulfil a part in the common work. The public health officer would not be a "caseless" medical man, but he would be called in constantly on the ground of his own service and his special knowledge. It may be difficult to get the public health lion to lie down with the public assistance lamb. But association in work will remove many difficulties. I conclude, then, that no mere amalgamation of Public Health and Poor Law Medical Authorities will meet the case. On the contrary, it will leave some of its chief difficulties unconsidered and unmet. Association in a common Medical Assistance Committee, under the conditions, not of the present Poor Law, but, as I hope, the future Public Assistance, will go far. Once established it will work to unity—a large and effective unity. In any case, it is, in my opinion, the first step towards effectual reform.

DISCUSSION.

DR. A. H. BYGOTT (Barking), in opening the discussion, said: There is a statement in the Majority Report that we cannot satisfy those enthusiasts who wish everyone to be inspected from the cradle to the grave, and expressing a fear of making hypochondriacs on a large scale. When these words were written the Notification of Births Act and the medical inspection of school children were not working. We are able to answer such objections by practical experience. I had some notion as to the value for the cure and prevention of disease of inspection and education, but my ideas as to its value were far short of the reality. Such work prevents and cures hypochondriasis. As a doctor who does not give out physic is the best person to deal with a hypochondriac, and the infallible means of preventing it in its milder forms I strongly object to such statements. The medical work of the future must follow these lines. It would be a very interesting study to get a body of men such as the Commissioners to give their honest opinion as to how they think a doctor does his work; it would probably be a suggestion of drugging and faith-healing. Medical men were never able to render more valuable service to the community than they are now, but they must work under new conditions. Ordinary medical work amongst the poorer sections of the community, even if done by the ablest men, is often a farce owing to the want of an intelligent system. All the knowledge possible must be got, full scope given to specialism, and, what is more, the very doctors themselves need inspection, and, as they find in the army, periodical visits to school for higher education when they get rusty. I was much struck this week to see in the *British Medical Journal* that in arranging for men to work school clinics the local doctors are not satisfied with ordinary registered qualifications, but they want special experience in such specialities as eye and throat work, and the L.C.C. medical officer is to go into the clinic and actually see the men at work to know if they are up to the modern standard. This is as it should be. One notices gratefully, too, the tender regard given to the general practitioner by the Commissioners, in the desire to organize for him medical clubs. I understand the Commissioners saw that excellent pamphlet published by the British Medical Association on contract practice. I cannot reconcile this attitude with the terrible state of things revealed in that volume. Is it not better to let the medical profession make its own arrangements, and protect it by placing at the disposal of the public a skilled salaried service, supported by well-equipped institutions capable of rendering help to the poor or of helping the practitioner at any point, such as providing X-ray assistance, or indoor treatment, and safeguarding him by

charging those able to pay a proper fee, if anything rather more than is paid for such work nowadays? We hear a great deal about the encouragement of thrift. I strongly advocate the teaching of thrift in schools and proper places. I want to discover the best way to make people thrifty; but I am sure it is not by punishing people when they are ill. When I was in the Poor Law service we found the association of the doctor most helpful in dealing with the malingeringer and the loafer, and it is a curious thing, but one need never be afraid of giving if you attach to the reception of the gift suitable conditions. It is an old principle, and was most effectual in the case of Naaman the Syrian. Make everyone seeking public assistance co-operate in their own cure, even if it is only to carry out their doctor's instructions—the choice of doctors could never safely be allowed when State aid is required, because it would be found that the ignorant public would select mostly those who insisted as little as possible on their co-operation, and who gave them the least trouble by making proper examinations. Organization of charities has failed; contract practice has failed. We come back finally to the point from where we started: that if we are to fight any enemy, whether it be soldier or disease, it must be by a well-disciplined co-ordinated force, with its separate departments working together under one head, staffed by professional people making the utmost use of specialism, not mixing it with any side issue like destitution, but proceeding along an absolutely straight course. It was the line on which Cromwell perfected a system which remained for some time a bulwark of English liberty, and, even at the risk of being called by Lord George Hamilton a fluffy-headed person, I do not object to attempt to solve these problems on the same rational lines.

MR. F. E. FREMANTLE said he was sure they all appreciated Mr. Loch's kindness in coming there and giving them the third paper they had heard on the Commission's Report. Many of them did not wish to pledge themselves definitely to one report or the other as a whole. At the same time they did feel very strongly that the theory that prevention was better than cure and that the Poor Law ought to be amended in the direction of prevention went to the very root of society. That had been most strongly and vigorously stated by the Minority Commissioners, and therefore much sympathy was felt with them. Mr. Loch, however, had made them realize that prevention was equally at the bottom of the theory of the Majority Commissioners. It seemed to him that the Minority Commissioners had gone almost purely on theory, and that in practice it would mean an enormous expense which the community would not be prepared to undertake, and that the great blow at personal thrift was not equalled

by the advantage to public health. That was a personal view, but he thought in practice it would be impossible to carry out the Minority Report because of the expense. The Majority scheme was not so complete from the theoretical point of view, but from the practical point of view it was much more likely to be adopted. He hoped there might be some combination of the two systems, and that as a Society they should vote not for one or the other report, but for the common ground which was in the two reports. He would like to ask Mr. Loch whether it would not be possible that the Public Health Committee should be a part of the new Public Assistance Authority, and so get combination between prevention and cure, which he believed they as a Society were bent on attaining.

DR. E. H. T. NASH (Wimbledon) said he did not think Mr. Loch quite meant what he had stated in his paragraph in reference to sick clubs being managed chiefly by general practitioners. He was sure Mr. Loch must know that there was nothing further from the truth. The general practitioner had little or no say in the management of those clubs. He was practically under the thumb of the lay management of the club. It was that which they wished to be changed. He would like to know what would be the effect of the Majority Report read in the light of what was bound to come in the near future, namely, invalidity insurance. That was going to take a larger field than the Majority Report. It would take people with an income up to £150 a year. If it did come it would be much on the lines of Colonial schemes coupled up with Continental schemes.

DR. F. S. TOOGOOD (Lewisham Infirmary) said that as superintendent of a Poor Law infirmary he should like to say how much superintendents deprecated the idea that there was any rivalry between the public health service and that in which he served. There should be no rivalry because they were all working for one common end. It was generally agreed that boards of guardians had had their day and broken down. For twenty-five years he had been in association with the Poor Law, and he had seen a steady deterioration in the *personnel* of boards of guardians. A fatal blow was dealt when J.P.'s no longer had a seat upon the board, and also when the £40 qualification was done away with. He thought that a fetish had been made of prevention. They all desired prevention, but really it was a fact that prevention had made such small strides that the majority of diseases they had to treat were in being. The solution of the thing was in having much larger areas, so that there could be more specialization than could be effected at present. There was an abundance of room for co-operation between the preventive service and the clinical service.

THE CHAIRMAN expressed the thanks of the Society to Mr. Loch for his paper.

MR. LOCH, in replying on the discussion, said in reference to Mr. Fremantle's suggestion that the Public Health Committee should, in his view, form a joint committee with the others. Until they had got association they might argue in different rooms to the end of the chapter. What he meant with reference to sick clubs was the private organization got up by the doctor for his own purposes, and not the provident club. In regard to invalidity assurance, much would turn upon the line that was taken—whether they were to have an insurance staff or work through the present individual members of the profession; but undoubtedly it brought in a new item which would affect public assistance largely. He believed in proper remuneration of the medical men concerned. All progress depended on that.

THE SCIENCE MUSEUM.—Mr. Walter Runciman, President of the Board of Education, has appointed a Departmental Committee to consider and report upon various questions in regard to the present condition and the future development of the valuable collections comprised in the Board's Science Museum at South Kensington and Geological Museum in Jermyn Street. In particular the committee are asked to advise him (a) as to the precise educational and other purposes which the collections can best serve in the National interests; (b) as to the lines on which the collections should be arranged and developed, and possibly modified, so as more effectively to fulfil these purposes; and (c) as to the special characteristics which should be possessed by the new buildings which it is hoped will shortly be erected on the South Kensington site to house these collections, so as to enable the latter to be classified and exhibited in the manner most fitted to accomplish the purposes they are intended to fulfil. The committee is as follows:—Sir Hugh Bell, Bart., D.C.L. (chairman); J. J. Dobbie, F.R.S., LL.D.; Sir Archibald Geikie, K.C.B., F.R.S.; R. T. Glazebrook, D.Sc., F.R.S.; Andrew Laing, M.I.C.E.; the Hon. Sir Schomberg McDonnell, K.C.B., C.V.O.; Sir William Ramsay, K.C.B., F.R.S., LL.D.; Professor W. Ripper, D.Eng., M.I.C.E., Hon. M.I.Min.E.; Sir W. H. White, K.C.B., F.R.S., LL.D., with Mr. F. G. Ogilvie, C.B., one of the secretaries of the Board of Education, as secretary.

THE Good Service Reward of £100 a year, vacant by Surgeon-General Hinde's death recently, has been awarded to Surgeon-General G. J. H. Evatt, C.B., than whom no medical officer has a better claim.

THE ETIOLOGY OF TYPHOID FEVER, WITH SPECIAL REFERENCE TO THE DRAIN THEORY IN CONNECTION THEREWITH.*

By T. W. N. BARLOW, M.D., D.P.H.,
Medical Officer of Health, Wallasey.

THIS paper was suggested to me by reading an account of a trial which took place at the last Liverpool assizes. This trial was most interesting, not only because it showed how widely divergent the views of medical men (shall we say experts?) could be with regard to the probable cause of an outbreak of typhoid, but interesting also as showing that the evidence which we medical men have hitherto considered strong enough to prove that this or that epidemic was due to milk, or oysters, or water, as the case may be, would not, in many cases, be held in a court of law to be strong enough to prove our contention.

In the action above alluded to damages were given to a gentleman who alleged that he himself, his wife, and some pupils of his school, had contracted fever through the medium of the milk supplied to the establishment from a certain farm. Very briefly stated the facts were as follow:—

A woman not fully recovered from typhoid was brought back to the farm in question from an isolation hospital. About 18 days afterwards a case of typhoid arose among those drinking the milk from the farm. In the following two and a half months 24 cases of typhoid, occurring in eight houses, were notified to the medical officer of health, the majority of whom were children, and *all* of them drank milk which was obtained *in every instance* from this farm. *No other cases* occurred during that period in the district except among those drinking the milk supplied therefrom. Among those infected were three inhabitants of the farm in addition to the woman who was alleged to be the source of the outbreak, namely, the farmer, a little girl, and a servant. When the milk supply was stopped and the cows were sold no other cases occurred.

Various alternative theories as to the cause of this outbreak were suggested as more probable than milk infection. Particular stress was laid on the drain theory (the drains, by the way, were perfect at the school), and it occurred to me that it might be useful to shortly review the recognized modes of conveyance of typhoid. This I propose to do, and to deal

* Read before the North-Western Branch of the Society of Medical Officers of Health on December 3rd, 1909.

especially with drain defects as a cause of the disease.

Typhoid, as we all know, is a disease widely distributed throughout the world. It is a disease of youth and early adult life. The sexes are equally liable to it, and its incidence varies according to season, most cases occurring in the autumn.

Modes of conveyance:—

1. Air: Osler says (a) "the possibility of its direct transmission through the air from one person to another must be acknowledged," although a few lines farther on he adds (b) "the nurse and the attendants who have to do with the stools and body linen of the patient are alone liable to direct infection." If (a) be true, and one can hardly deny its possibility, it must be a possibility so remote as to be negligible. How otherwise do other patients in the same wards as typhoid patients escape contracting the disease? In scores of general hospitals throughout the country every day in the year typhoid patients are treated side by side with other patients not so suffering, without any untoward result. It would appear from quotation (b) that Osler himself attaches little importance to the air-borne theory. However, whether he does or does not, it is, I am sure, a theory which is not held by the vast majority of medical men having charge of fever hospitals in this country.

It is a fact well known to all of us that many medical men and most members of the public hold extreme views as to the possibilities in the transference of infection from one to another. Typhoid is a long way the least infectious (using the term in its commonly understood sense) of all the fevers. It came as a shock to me, therefore, to hear a medical witness state his belief that a person by simply going into a room in which a typhoid patient lay could not only possibly carry the disease germs with him and infect other people a distance away, but, in fact, *there was a distinct danger of his doing so*. Surely this gentleman was an alarmist.

2. That an epidemic can be caused by infected water is universally admitted. Examples of wide-spread water-borne infection are Maidstone, Worthing, and, recently, Lincoln. At first sight it seems a remarkable fact that in the history of all water-borne epidemics the *Bacillus Typhosus* has never been isolated in the infected water—in other words, that the most important link in the chain of evidence should be missing. In reality it is not so remarkable as one would imagine. With

regard to water epidemics we must remember the extreme dilution which the infecting material undergoes; and with regard to both milk and water epidemics we must remember that these media begin to be suspected only after many cases have arisen, when, perchance, favourable opportunities for discovering the bacillus have vanished. To analyse the particular sample which caused the disease is, of course, impossible.

3. There are about 160 authentic records of milk epidemics, all of which, as in those of water, depend upon circumstantial evidence. There is no case on record, to my knowledge, where the missing link has been supplied by the discovery of the *Bacillus Typhosus*. As I have before stated, this is necessarily an almost impossible piece of evidence to provide.

4. That typhoid is spread by means of flies is universally conceded. I think it may be said to be proved that *Bacillus Typhosus* has been satisfactorily demonstrated on the feet of flies, and also in the intestines of flies. Flies doubtless had great influence in spreading typhoid in the South African and Cuban wars, and may be said to always have an influence in spreading typhoid in hot countries like South Africa, India and Australia. It must be remembered that in these countries excreta is to a very great extent buried, often only superficially buried, and the conditions are altogether different from those obtaining in England. I do not think it can be said that flies exert in England *widespread* influence in conveying this disease, except, perhaps, in towns in which privy middens abound. In this connection one might refer for a moment to the Chicago epidemic of 1902. Flies were captured (1) from two undrained privies; (2) from two yards; (3) from a room in which a typhoid patient was lying. Eighteen tubes were inoculated by the flies so captured, and from five of these typhoid bacilli were isolated.

5. Dust: My remarks with regard to flies will almost all apply to dust.

6. Oysters and mussels: Several authentic, though limited, outbreaks have been traced to oysters and mussels, and in several the *Bacillus Typhosus* has been discovered in oysters. It may be admitted that some cases are caused by eating shellfish gathered from obviously contaminated sources, but I should imagine that the percentage of these cases to the total number of typhoid cases cannot be very large. In my own district I know that mussels are gathered in large quantities quite near to the

sewage outfalls, and these mussels are sold in Liverpool, Bootle, and my own district. For the last five years in every case of typhoid into which I have inquired the question has always been asked as to whether or not shellfish has been eaten. I have only once got a history of shellfish having been eaten within a month of the onset of the illness. I mention this for what it is worth, but it suggests to my mind that if the eating of shellfish were an exceedingly common mode of contracting typhoid, I, being favourably situated, ought to have met with many cases. I have not. I may add that the evidence oftentimes adduced in favour of shellfish being the cause of typhoid is of the nature designated by Americans as "thin." It consists in many instances simply of the fact that shellfish have been eaten within a few days of the commencement of the illness. Nothing whatever is known of the origin of the shellfish, or whether other possibly incriminating food has been eaten. The mere fact that shellfish has been eaten seems to be, in the opinion of many, strong presumptive evidence that the disease was caused by such fish.

7. Ice-cream: A few outbreaks.

8. Butter-milk: One (Hamburg).

9. Soiled blankets and carpet cloth: A few cases happened in the South African War.

10. Privy infection: In my opinion this is an exceedingly common source of typhoid. There are many instances on record in which the abolition of privies has resulted in a marked decrease in the number of cases of typhoid. I cannot give a better example than what has happened in my own experience.

In Bootle—

In 1896, 132 cases of typhoid were notified.

In 1897, 154 " " "

In 1898, 124 " " "

Privies began to be converted in 1897, and large numbers were taken in hand every year, with this result:

In 1904, 22 cases of typhoid were notified.

In 1905, 24 " " "

In 1906, 40 " " "

In 1907, 42 " " "

but in the last-named year about 15 of them were sailors who had certainly contracted the infection abroad.

The same thing has happened in Wallasey.

In 1895, 190 cases of typhoid were notified.

In 1896, 132 " " "

In 1897, 154 " " "

In 1898, 124 " " "

Privies began to be converted in the year 1896, with this result:

In 1904, 39 cases of typhoid were notified.

In 1905, 61 " " "

In 1906, 65 " " "

In 1907, 31 " " "

In 1908, 34 " " "

In 1909, 18 " " "

Many other towns can give a similar reduction. If one gets a privy specifically infected with the typhoid bacillus one can easily understand how the infection may be carried by flies.

11. Carrier cases: Several records of epidemics due to carrier cases have recently been investigated.

12. Lastly, we come to drains. Before the discovery of the typhoid bacillus in 1880 (Eberth) and 1884 (Gaffky) nearly all epidemics of typhoid were in a measure ascribed to sewer or drain gas. That was before it was found that the disease was capable of being carried by water, milk, flies and dust. It is to this aspect of the question that I desire to draw particular attention. I do not think there is a single epidemic in which any evidence, direct or circumstantial, has been adduced in favour of the sewer and drain gas theory. It seem to have been a rule, "If you cannot find anything else, blame the drains." Every layman and a large majority of medical men have acquired the habit of looking upon defective drains as the *causa causans* of not only the cause of typhoid and diphtheria, but possibly of scarlet fever also. I have never heard defective drains blamed as the cause of other infectious diseases, such as measles and smallpox, with the exception of smallpox in such strong anti-vaccination towns as Leicester and Northampton; although in earlier times smallpox was generally regarded as due to insanitary conditions. Medical textbooks were formerly unanimous in ascribing a connection between the above three diseases and defective drainage. They are not so unanimous now that people have begun to inquire into the nature of the evidence adduced in favour of the common belief. It is an exceedingly difficult matter to give anything like a definite answer to the question as to what is the effect on the health of the community of emanations from drains and sewers. I suppose we may take it as a fact that people must necessarily breathe pure air, and according to the extent to which air is polluted by emanations from defective drains and sewers and other causes, *ceteris paribus*, to that extent the health of the people breathing this polluted air

will fail to reach the standard of perfection; but that is a different matter to ascribing, as is so often done, definite illnesses to air impregnated with sewer gas. If we accept the teaching of bacteriologists that typhoid is caused by the *Bacillus Typhosus*, and I suppose few of us would be so daring as to fly in the face of Providence as represented by the bacteriologists and deny it, it follows that no accumulations of filth and emanations therefrom can cause typhoid unless impregnated with the *Bacillus Typhosus*. It follows also that emanations from drains cannot give typhoid unless the bacillus is in the drains. *A priori*, therefore, first cases of typhoid in houses must very rarely be caused by emanations from house drains, because no bacilli can have got there from the house itself. How else can they get there? It is suggested, from the sewers. If the drains are properly intercepted that avenue seems cut off; but supposing they are not so cut off by an interceptor? Bacteriologists tell us that typhoid organisms are not very tenacious of life. They are rapidly overgrown by more vigorous organisms, and starved out. For instance, typhoid bacilli will live longer in pure water than they will in impure water for that reason. They teach us that the *Bacillus Typhosus* must soon disappear in sewage. What do bacteriologists tell us of the nature of sewer air? (1) Levy and Miquel (Paris, 1891) found that sewer air contained half as many bacteria as fresh air examined at the same time. (2) Petri (Berlin) confirmed the above results. (3) Carnalli and Professor Haldane examined sewers of Dundee, Westminster and Bristol (in the last-named places sewers are not ventilated, and, therefore, conditions would be very bad); they found fewer bacteria in sewer air than in fresh air. They also said that bacteria in sewer air came from the fresh air outside. (4) Parry-Laws and Andrewes (1892-3) found that there were fewer bacteria in sewer air than in fresh air, that the bacteria in sewer air were identical with those of fresh air, and that the splashing of sewage and the bursting of bubbles in stagnant sewage did not affect the number of bacteria in sewer air. (5) Laws and Andrewes again (1894) found that sewage did not give up any of its bacilli to the air in sewers.

What do the latest experiments on the air of sewers teach us? The more recent experiments of Andrewes and Major Horrocks very largely upset the former results. In the report of the Local Government Board for 1906-7, in summarizing his results, Dr. Andrewes says: "From this evidence, no less than from that

obtained by Major Horrocks, it may be taken as conclusively proved that, under certain circumstances at all events, *sewage gives up its bacteria to sewer and drain air*. Such bacteria may form but a small proportion of those present in sewer air. This is likely, or they would not otherwise have escaped detection by previous discoverers"; and in the last paragraph he says that "the organisms which I have been able to detect in sewer air are not in themselves known to be prejudicial to health, being for the most part well-known saprophytes of the normal alimentary tract, yet their value is evidence as indices of the possible presence of more harmful sewage-borne microbes."

I may mention that the experiments to which these remarks refer were carried out in the sewers in St. Bartholomew's Hospital, where it is more than probable that among the patients there were one or two cases of typhoid.

In the next year Dr. Andrewes elaborated his experiments, and I will quote you Dr. News-holme's remarks on them:—"The broad fact that the total number of bacteria in sewer air is less than in the fresh air remains undisturbed by these experiments. In order to prove the presence of sewage bacteria at all in drain air, it has been necessary to expose plates of a selective culture media for a considerable time, and it is probable that their proportion to the total number of bacteria present in such air must be a small one. The importance of the facts recorded by Dr. Andrewes rests in the demonstration that sewage bacteria may be present in the air of a drainage system in ordinary use, and, as a matter of fact, are present after splashing has occurred. This strong proof is much modified by the observations that the effect of a single splashing is transient, lasting only a few minutes. Further experiments are needed as to the extent to which air currents can waft the disengaged sewage droplets, and as to the possibility of detecting sewage microbes in the air of houses with defective drains before it is permissible to conclude that infective disease can be so borne in this manner."

These, then, are the findings up to 1907, and in two of these series of experiments Andrewes took part.

I should like further to point out that although the *Bacillus Coli* exists in millions in sewage, Andrewes repeatedly failed to find it on his special plates, though he exposed these plates for an hour within a few feet of the sewage. In one case he specially infected the

sewage, specially flushed it into the sewer, and exposed special plates to catch the bacteria for three-quarters of an hour. Out of four plates thus exposed he found the bacillus he himself had put in on one only.

With regard to Major Horrocks's experiments, these were carried out in Gibraltar, where the atmospheric conditions are different from English conditions and are more favourable to the bacillus. His experiments were made under artificial conditions. Enormous numbers of microbes were used. He says, in six experiments, that "a rich emulsion of the bacillus was purposely put into the drain-pipes" with which he experimented. In his experiments (on page 187) he states that he passed a sewage containing typhoid excreta no less than twelve times backwards and forwards through the drain he was testing. Moreover, he passed this infective sewage through a pipe $1\frac{1}{2}$ inches in diameter into a 6-inch drain, a condition which is not usually met with in practice. He says on page 188: "a disconnecting trap undoubtedly prevents the passage of bacteria present in the air of a sewer into the house drainage system."

Bearing in mind the facts that the *Bacillus Typhosus* must be rare in sewers, that the *Bacillus Coli* which are innumerable in sewage are uncommonly found in sewer air, and bearing in view the intercepting trap, the fresh air inlet and the outlet of drains, it appears to me to be exceedingly improbable, if not absolutely impossible, for typhoid to be contracted from sewer air under any but almost inconceivably bad conditions of any drainage system, coupled with infected sewage.

So much for the drain theory in typhoid. These remarks would apply with equal, or greater, force to diphtheria, because, although we do find the *Bacillus Coli* in sewage, and although it has not yet been shown what is the exact blood relationship between the *coli* bacilli and the typhoid bacilli, I have never read of any of the four or five bacilli associated with diphtheria having ever been found in sewer air, or even in sewage itself. It was suggested in the trial before alluded to that the foul state of the foreshore of the estuary of the Conway was possibly the cause of the outbreak of typhoid, and further, that all estuaries which receive sewage are a possible source of danger of this kind. I must say that I, for one, disagree with this theory. It is difficult to imagine how danger of this kind can arise. If it is true that the bacilli of

typhoid rapidly disappear in sewage, it appears to me it would be more than doubtful if any ever got into the estuary. Suppose they do. Is not the sewage immediately on entering tidal waters diluted millions of times?—and if any of the bacilli are left they will probably soon die. This theory seems to presuppose that once in the estuary the ubiquitous bacilli make for the shore, and, having safely ensconced themselves there, are we to understand that they are blown about with dust (although twice a day covered by the tide), or spread about on the feet of flies? This theory is only interesting as showing how wide speculative bacteriologists (I say bacteriologists because the whole theory rests on a bacteriological basis) will cast their net in order to catch a working hypothesis.

FLIES AND DISEASE.—The house-fly is the carrier of many preventable diseases, especially infantile diarrhoea (a most fatal disease in children), enteric fever, and sometimes scarlet fever. The presence of flies in a house or shop is always an indication of the existence of dust or dirt in or near the house or shop. To prevent flies:—(1) All accumulations of dirt, dust or manure should be removed. (2) On the first appearance of flies, fly-papers should be used; in this way preventing the laying of eggs. (3) All ashes, refuse, vegetable or otherwise, should be stored in a covered bin. (4) All foodstuffs should be protected from the fly, and the place where food is stored should be limewashed frequently. (5) All milk should be protected by a fine gauze or other substance which will prevent the entrance of flies. It has been demonstrated that one fly can carry 100,000 bacteria.—*Annual Report of Dr. W. M. Hamilton, Medical Officer of Health, Borough of Eccles.*

ANONYMOUS COMPLAINTS.—The sanitary department of Tunbridge Wells have been troubled with anonymous complaints which in certain instances have been sent, it is supposed, for some malicious purpose. It has therefore been decided that in future no notice will be taken of complaints unaccompanied by the name and address of the complainant. Although anonymous communications are not satisfactory, it would appear that the evil ought to be very considerable before such a decision should be arrived at in reference to complaints of nuisance. The relationship between landlord and tenant, or between tenants themselves, is sometimes of such a character that complainants hesitate to append their names to these communications for obvious reasons.—*Annual Report of Dr. Howarth, County Medical Officer of Health, Kent.*

SOME POINTS IN THE INFECTIVITY OF TYPHOID FEVER.*

By ALEX. ANDERSON, M.B., D.P.H.,
Medical Officer of Health Wortley Rural District, Yorks.

RECENT researches on the influence of the personal factor in the spread of typhoid fever, and on the vitality of the *Bacillus Typhosus* under varying external conditions, have to some extent modified our conception of the disease and of the means by which it is transferred from one person to another. The subject in its practical bearings is a large one, and in this paper I can only refer to certain points that seem to be more especially worthy of consideration at the present time.

The points that stand out as of importance in recent work are: the extraordinary persistence of the bacilli in the urine and gall bladder of a certain proportion of convalescents, their presence for short periods in the *faeces* of "contacts," and the large number of cases, especially amongst children, that go unrecognized. The difficulty of freeing chronic carriers from the bacilli is also of great importance from an administrative point of view. The existence of paratyphoid fever as a separate clinical entity is of practical as well as scientific interest.

As regards the vitality of the bacillus outside the human system, our knowledge, unfortunately, is not yet very exact. Until quite recently, most experiments led to the inference that the bacillus, though it could not multiply, was capable of a fairly prolonged existence in soil of various kinds, and in clothing. The work of Morgan and Harvey,† however, has thrown some doubt on the validity of conclusions drawn from experiments made with artificial cultures. Working with bacilli excreted by chronic carriers, they have shown that the organism rapidly dies out in water, raw milk, in urine exposed to daylight, and in soil contaminated with infected urine. *Faeces* disposed in a dry earth-closet retained the infection only for a week, except in the centre of a dried *faecal* mass, from which bacilli could be recovered up to eighteen days. Cotton fabrics soaked in infected urine lost their infective properties in four days when exposed to daylight, and in eleven days when kept in the dark. Blankets smeared with infected *faeces* retained the infection for forty days.

It is important that these observations should

be confirmed, but if we accept them as substantially accurate it would appear that, as regards local foci of infection, the greatest danger is to be apprehended from *faeces* exposed in a pail or privy midden, and from infected bedding and clothing.

Speaking generally, recent work has emphasized the paramount importance of the personal factor in the spread of the infection, but does not lend support to the view that insanitary environment is to be disregarded.

Though the sequence of events is not clear in some of the instances reported, still no reasonable doubt can be entertained that chronic carriers are capable of giving rise to, and in several instances have given rise to, serious outbreaks. The most dangerous carriers, naturally, are those engaged in the preparation of food, as cooks, bakers, milk purveyors, etc. Children also are frequently responsible for spreading the infection, as they often suffer from attacks so mild that no medical advice is sought, or an incorrect diagnosis is made and no precautions taken. Personal infection is more common in their case owing to their habits and their being so often crowded together in the same bed. An example of this sort occurred in my district in 1903. Typhoid fever broke out in a miner's cottage, a boy and his mother having sickened on October 24th and November 7th, respectively. Both were removed to hospital on November 17th. The youngest child, one and a half years of age, was thereupon sent to another house and slept in the same bed with a girl nine years of age. This girl sickened on December 7th. During her stay in this house the baby was said not to have slept with any of the other four children, none of whom was attacked. This baby had diarrhoea and "looked poorly," but had no medical treatment. On November 29th it was sent to her grandmother, whose son-in-law, living in an adjoining house in which the baby spent a considerable portion of her time, fell ill with typhoid fever on December 25th. A sample of the baby's blood, taken on December 31st, gave a fairly well-marked *Widal's* reaction. I think it is very probable that this baby acted as a carrier, infecting these two houses.

Mothers in working-class families, who have to act as nurse and cook at the same time, are very liable to carry infection to other members of the household, and to be themselves attacked. Of 115 houses invaded with typhoid fever in my district, during the last eight years, multiple cases occurred in nineteen instances where

there was reason to suspect infection from the primary case. Nine of these houses were responsible for thirty-nine cases.

Charwomen may introduce infection into their own homes by washing the soiled and imperfectly disinfected linen, etc., of a patient, as in the following outbreak, which is also of interest in other respects:—

On November 24th, 1908, a coal miner (H. Y.), *at.* 24, fell ill with typhoid fever and refused to go to hospital. After a long illness he recovered, and on February 12th, 1909, the house and bedding were disinfected. His father was, during the greater part of that time, off work but never took to bed, and the doctor in attendance considered his malaise to be a form of influenza. Probably he suffered from a mild attack of typhoid fever. On February 26th the housekeeper (Mrs. F.), *at.* 40, sickened, and was removed to hospital on March 3rd. About the same date a girl (A. B.), *at.* 18, who lived in a neighbouring cottage, and who had acted as charwoman during H. Y.'s illness, fell ill, and a few days later her brother, *at.* 20, also sickened with the same complaint. After A. B.'s illness the clothing, etc., of Y.'s household was washed by Mrs. S., who lived in a cottage a few yards away. On March 19th, her daughter, *at.* 6, on April 2nd, her son, *at.* 12, and on April 14th her husband, *at.* 46, all fell ill. All these cases were removed to hospital. Mrs. S. herself apparently remained well until May 5th, when she also was notified. Her illness was of a very mild type. Meantime, at Y.'s house, a sister of the lad first attacked came home to assist in housekeeping, and she fell ill on March 26th. A step-brother of H. Y.'s, who lived in a neighbouring cottage, sickened on March 19th, and his wife on April 2nd. In a cottage next door to Y.'s a boy (J. E.), *at.* 8, one of a family of five, sickened on April 16th. The other members of the Y. family, consisting of four children, were not attacked. In the same neighbourhood two other doubtful cases occurred, one on May 24th and the other on July 15th, but in both cases *Widal's* reaction was negative.

Thus twelve undoubted cases of typhoid fever occurred in five families closely associated with one another, and living in a corner of a straggling mining village with a population of nearly 3,000, amongst whom, during the same period, only four cases were notified. Without going into details, I may say that all the usual causes could be excluded, and that personal infection, direct or indirect, afforded the most

feasible explanation of the spread of the disease in and from the house primarily attacked. Infection may possibly have been transferred from the privy and ashpit, but there were practically no flies at the time, though fowls were kept and allowed at times to stray into the ashpit. They may have been the means of distributing infection about the premises. Only one case (J. E.), however, could be more easily explained on this supposition.

All the members of the Y. family were regarded with suspicion as possible carriers and the strictest precautions advised. I regret that during the height of the epidemic I did not have their urine and *faeces* bacteriologically examined, but afterwards, samples were obtained from H. Y. on one occasion, and from all the other members of the family on two occasions, and examined at the Lister Institute, with negative results.

Whether any practical benefit would have resulted from an earlier examination I am somewhat doubtful.

The practical difficulties in the way of a systematic examination of the excreta of convalescents and contacts in private cases are considerable. The mere collection of samples is troublesome, and one is not always sure of obtaining honest samples. When the cases are removed to hospital, there is, of course, no difficulty, which is an argument in favour of more strict isolation in hospital of typhoid cases than has hitherto been considered necessary. There is the further difficulty that, as in chronic carriers the bacilli are intermittently discharged from the gall bladder into the intestinal canal, comparatively small value attaches to a negative result. Even if carriers are found, it is a puzzle to know what to do with them. It is doubtful if they can be cured, and isolation for prolonged periods could not be enforced. I am afraid stringent measures could be taken only in those instances where carriers are engaged in the preparation of food.

In such cases bacteriological investigation must be made more systematically in the future.

The search for unrecognized cases, especially in children, should also be undertaken more vigorously than has been the custom. This would be rendered more easy if medical men were to notify all doubtful illness of this description as continued fever. This term has, unfortunately, almost fallen into desuetude, so much so that some medical men do not even know that it is scheduled as a notifiable disease. If this term were more frequently employed

* Read before the Yorkshire Branch of the Society of Medical Officers of Health, on January 20th, 1910.

† Journal of Royal Army Medical Corps, June, 1909.

doubtful cases could be investigated and true cases of typhoid distinguished from those of paratyphoid fever. It is also worthy of consideration whether some forms of diarrhoea in children should not be made notifiable.

Delay on the part of the medical attendant in diagnosing the case is not infrequently responsible for the disease spreading in the household. If doubtful cases were notified as continued fever such an outbreak as the following might be obviated: On February 1st, 1909, a boy, six years of age, living in a hamlet consisting of ten cottages, fell ill, but was not notified till March 15th, when his mother, who had sickened on February 27th, was also notified as suffering from typhoid fever. Both were removed to hospital on March 16th, but four other members of the family were attacked on March 23rd, 30th, 31st, and April 8th respectively. They were all removed to hospital, and there was no further spread of the disease.

The practical difficulties in the way of ascertaining the existence of and controlling infective persons are, however, so great that, as a general rule, we have to fall back upon our second line of defence for the protection of the public. We have to assume the existence in any large population of a certain number of carriers (especially unrecognised cases and chronic carriers), and we must try and arrange that their environment shall be such that the risk of their becoming effective is reduced to a minimum. This means, in short, a continuation of those measures of isolation, disinfection, and improvement of the sanitary conditions in and around the home, which have already done so much towards reducing the prevalence of typhoid fever.

Where the environment is sanitariously good there is little risk of a carrier becoming effective, unless he is in a position to contaminate food or drink. Though considerable numbers of carriers and unrecognised cases are constantly passing through large hospitals, asylums, and similar institutions, yet they are rarely effective. For example, in the South Yorkshire Asylum, during the last ten years only nineteen cases of typhoid fever were notified amongst a daily average of 1,600 patients, and only on one occasion was there any spread of the disease amongst the patients or the staff. One would expect more frequent outbreaks in asylums, the mates of which are drawn from districts where typhoid fever is endemic, and who are, from their personal habits, especially liable to infect one another.

The environmental conditions which, in the light of recent researches, would appear to specially conduce to the spread of the disease are: the existence of privies or pails, the fouling of common yards and approaches, and overcrowding.

The abolition of privies and pails is still a necessary requirement in all districts provided with a satisfactory water supply and sewerage system. The dangers of the disposal of uncovered faeces in privies or pails are real, as there is ample time before their death for the bacilli to be transferred by flies, or other agents, to food in the house. The much greater prevalence of typhoid fever in houses provided with privies or pails than in those with water closets has been proved in Nottingham and other places. My own experience in South Yorkshire, however, does not tend to incriminate the privy as a serious factor in the spread of the disease, the occasions on which the disease invaded a family using the same or adjoining privy with the patient being very infrequent. Probably this is partly explained by the habit—largely prevalent in my district—of burying the faeces of typhoid patients in garden soil—a practice to which, as a scientific method of disposal, no serious objection can be taken, except in cases where there is risk of contamination of the water supply.

Common yards and approaches are, in the poorest localities, not infrequently fouled by the excreta of children, or by leakage from the ashpit. Fowls or other animals may also distribute specific organisms about the premises. The paving of common yards is thus desirable, because they can be more easily, and are more likely to be, kept clean if paved.

The difficulty of nursing cases of typhoid fever in small and frequently overcrowded houses is so great that isolation in hospital is essential to preventing the spread of the disease amongst the other members of the household. The number of occupants of the house may be diminished during the illness of the patient by boarding out some of the children, but this is by no means a satisfactory substitute for hospital isolation owing to the risk of conveyance of the infection to other houses by carriers or unrecognised cases.

APPOINTMENT.—Dr. Thomas Orr, at present assistant to the medical officer of health of the West Riding of Yorkshire, has been appointed medical officer of health of Shrewsbury.

AN OUTBREAK OF ENTERIC FEVER DUE TO A "CARRIER."

By H. MEREDITH RICHARDS, M.D., D.P.H.,
Medical Officer of Health, Croydon.

THE following series of cases of enteric fever, ultimately traced to a "carrier," presents several features of general interest. During the last eighteen months five persons associated with a large country house were attacked by enteric fever. The tenant was naturally alarmed and consulted my friend Mr. Woodroffe, F.R.I.B.A., of Lincoln's Inn Fields, who asked me to assist him in inspecting the premises and making any other necessary investigations.

The house is situated in a sparsely populated country district, being about a mile and a half from the nearest village, though there are about half a dozen cottages within a quarter-mile radius occupied by gardeners, gamekeepers and others.

HISTORY.

Case 1.—In 1903 the butler of a former tenant suffered from enteric fever. The exact dates and particulars cannot now be ascertained, but I am informed that no source of infection was discovered.

In 1906 the present tenant took possession, and all went well until October, 1908.

Case 2.—Mr. A., aged 26, fell ill with enteric on October 22nd, 1908, taking to his bed on November 1st or 3rd. He had a very severe attack.

Case 3.—Miss B. lunched at the house on October 17th, 1908, and on November 4th failed with enteric fever. No other source of infection could be suggested.

Case 4.—Kitchen maid, C., failed with enteric fever about November 1st, 1908. The exact date was not noted, but she was removed to hospital on November 16th, and is believed to have been ailing for about three weeks previously. She left the neighbourhood after convalescence.

Case 5.—A boy, D., living in one of the adjacent cottages failed with enteric on January 17th, 1910.

Case 6.—Kitchen maid, E., fell ill with enteric on March 11th, 1910.

On the occurrence of Cases 2, 3 and 4 the present tenant had the premises thoroughly inspected and certain defects in the drains were made good. At the time it was surmised that the outbreak might have been due to a polluted well in the stable-yard which was possibly used occasionally for domestic purposes. The pump attached to this well was

accordingly dismantled. The occurrence of the additional cases in 1910 made it necessary to reconsider this explanation, which was never regarded as entirely convincing. It should also be stated that the question of infection by oysters or similar extraneous food was carefully investigated by Dr. Hussey of Farnham, with negative results.

The additional facts ascertained by Mr. Woodroffe and myself were briefly as follows:—

Drainage.—This was substantially satisfactory. We noted, however, that the effluent from the septic tank passed into a trench filled with breeze and thence into a ditch which ultimately passed at the rear of the garden where the boy D. (Case 5) lived. Presumably, therefore, it was possible for him to have derived his infection from specifically infected material entering the septic tank attached to the large house. On the other hand, there had been no known case at "the house" since November, 1908, and Case 6 at "the house" did not occur until eight weeks subsequently to infection at the cottage.

Water Supply.—Water is pumped to a large storage tank from a shallow well situated in a field 240 yards from the house and well away from the drainage system. The well is probably sunk in a pocket of drift or plateau gravel, yields a fairly adequate supply and is properly protected by a brick parapet. The total depth is about eighteen feet, and at the time of inspection there was about ten feet of water. The well is covered by wooden doors through which passes gearing for a pump driven by horse power for forcing the water to a storage tank. A hand pump allows the cottagers to pump what water they require for their own use. The water has been analysed on several occasions. In March, 1910, Mr. Hartley reported that "as far as chemical analysis can show the water is one of great purity"; while Dr. Andrewes found 700 organisms per c.c., with B. Coli in 10 c.c., but not in 1 c.c. Dr. Andrewes added that "it is not the classical B. Coli communis, but the variety fermenting cane sugar, to which a less sinister significance is usually attached. From the bacteriological point of view I cannot call the water first class, but it is not bad for a surface well, and I do not think it can have had anything to do with the typhoid outbreak."

Careful inspection of the site and of the water main (which was exposed where necessary) convinced us that the water supply could be provisionally exonerated from responsibility

for the outbreaks. The presence of *B. Coli* was explained on our finding that several toads were living in the well.

Other Means of Infection.—Having excluded water and drainage defects the ground was cleared for investigation of the possibility of infection being due to a "carrier." Excluding Case 1, which occurred in 1903, while the house was occupied by another tenant, two hypotheses suggested themselves. Firstly, Cases 2, 3 and 4 might possibly have been due to use of polluted water, as was originally considered probable in 1908, and one of these patients might have become a carrier. If so, suspicion could only be attached to Case 2. On the other hand, this patient spent more than three-fourths of his time at another house where there had been no enteric fever. His excreta were, however, examined, with negative results, though his serum reaction was still positive.

Secondly, assuming that Cases 2, 3, 4, 5 and 6 had a common origin, suspicion could only attach itself to those members of the household who were on the premises in 1908 and 1910. These were found to be three in number, viz., the cook, who entered on her duties about March, 1908; a housemaid who had lived in the house since May, 1904; and the milker, whose history will subsequently be given in detail. Naturally, one's thoughts were first directed to the cook; but not a shadow of corroborative evidence could be obtained from her past history, which was entirely negative both as regards history of illness or of association with enteric fever while in service elsewhere. Similar remarks apply to the housemaid. The excreta of both cook and housemaid were, however, submitted for examination, with negative results. So far the results had been negative; but examination of the excreta of the milker yielded the clue for which we were searching, as Dr. Ledingham was able to isolate the *B. Typhosus* from his stools, and apply all necessary confirmatory tests by March 28th.

History of the Milker.—States that he has never had enteric fever or anything like it, but his wife had an attack in 1894, when they were living in another village. He came to the present address in 1902, during the time of the former tenant of the estate, and was milking at the time that Case 1 was infected in 1903. He left the district in September, 1906, but returned on October 10th, 1908, when he entered upon his present duties. It should be

noted that Case 2 failed about October 22nd, 1908.

Between September, 1906, and October, 1908, this man was employed in a dairy in another district where a comparatively large amount of milk and butter were sold. During that time, I am informed by the medical officer of health, no case of enteric fever appears to have occurred among the customers.

Particulars of Milk Supply.—The supply is derived from three or four cows, and amounts to seven or eight gallons per diem. The milk is for the most part consumed in the house, some being set for cream, some made into butter. The excess milk, both sweet and skim, is disposed of in variable quantities to eight adjacent cottages, including the one occupied by Case 5.

The population consuming the milk would vary from time to time, but was approximately as follows:—

The house, four or five in family and six servants.

The cottages, thirty-six in all.

Time did not allow my ascertaining the exact ages, but I was informed that there would be fifteen children or young people in the cottages, and one child occasionally lived at the house.

Concerning the consumption of milk by the patients the following facts were ascertained:—

Case 1.—Cannot be traced, but as he was an indoor servant he doubtless consumed the milk supplied to the house.

Case 2.—Not only took milk, but was especially fond of cream.

Case 3.—Recollection now imperfect, but believed to have had cream in coffee, and probably with fruit or tart.

Case 4.—Consumed both cream and milk.

Case 5.—Came to the house daily for milk.

Case 6.—Consumed milk and cream. Very fond of milk.

Remarks.—This series of six cases is instructive, not only as affording another instance of carrier infection, but because it demonstrates how intermittently and over what a long period such infection may operate. It is curious that only some half a dozen persons were infected, though forty-six or forty-seven people consumed the milk at various times. This is probably accounted for by the fact that the amount of milk consumed per head was small except in the large house, where most of the cases occurred. Furthermore, there is every probability that the milker was not at all times

discharging bacilli, and even if he were there are great odds against his infecting everything that he handles. The dose, too, would be likely to be small. Some extra suspicion possibly attaches to the cream, and this may be explained by the infecting bacilli growing rapidly in the milk set aside for creaming. To those of us who work in large towns the fact that dropping cases of enteric may be due to milk infection is one to be remembered. The absence of any history of enteric fever in the district in which the milker lived in 1906 to 1908 suggests that the greater dilution of the poison would naturally occur in a large dairy acted as a safeguard. The past history of the man himself might be traced in greater detail than I have found possible. More especially one would like to know if his wife is also a carrier, if he was associated in any way with enteric before his wife's attack, and if either of them were associated with other cases of enteric in the village where they resided from 1894 to 1902. All these are points which I have had no opportunity of elucidating, nor have I been able to investigate the rumoured occurrence of other cases of enteric fever "many years ago" in the cottages adjacent to that occupied by him.

My thanks are due to Dr. Hussey not only for his careful account of the outbreak but for many useful suggestions whereby the investigation was greatly simplified. To Dr. Ledingham also I am specially indebted for the promptitude with which he examined the various specimens submitted to him, and for much valuable advice.

THE STATE AND THE CHILD.—Indeed, it is to the advantage of the State to provide or assist in providing, for the growth, development and education—moral, physical and intellectual—of every child born in it. It is a safe and sound doctrine to say that this work in its entirety should be under the control of one authority, viz., the education authority, and should, when necessary, include the feeding and cleansing as well as the teaching of the children, and even also medical treatment in needy cases.—*Annual Report of Dr. Ridley Bailey, Medical Officer of Health, Bilston.*

THE REGISTRATION OF MIDWIVES.—It may be interesting to note that centuries ago the registration of midwives was undertaken by the Church, chiefly because midwives were sometimes called upon to baptize infants. The parish clergy schooled them as to their duties, and they were enjoined not to substitute the child of one woman for that of another.—*Annual Report of Dr. Ridley Bailey, Medical Officer of Health, Bilston.*

VISION TESTING IN YOUNG CHILDREN.

By ELWIN H. T. NASH, D.P.H.,
Medical Officer of Health and School Medical Officer,
Wimbledon.

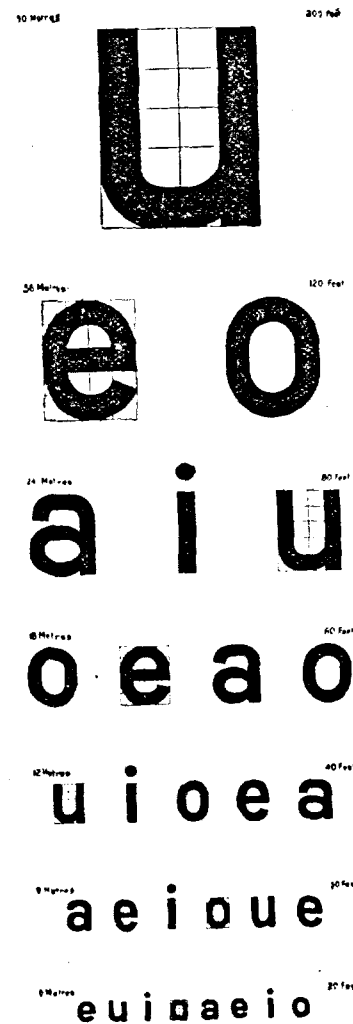
ONE of the chief difficulties that confront the school medical officer is that in connection with testing the vision of the smaller children. Fortunately for his patience, children under six are not examined unless there is reason to suspect visual defects; but even then there are a considerable number that require investigating. Even now it is not nearly widely enough recognized that the test of reading letters in the case of a small child is not only a visual effort but a mental effort, the mental effort being due to the comparative unacquaintance with the letters that are used as the test, and partly to the mental exertion caused by the concentration of the mind on the test itself. This latter can frequently be brought out during a test by the subtle influence of a sweet, which frequently has the power of visualising 6/9, when the blandishments of both teacher and doctor had availed nothing better than 6/12 or 6/18. The usual test types used are Snellen's, but the E test has been devised to overcome some of the difficulties. This consists of placing different sized block type E graduated to scale in different positions, and asking the child to place a similar E, which it is given, in the same position as the test E. This test, again, has a large amount of mental exertion in it, though not as much as the other, and has a great advantage, that the child need not know its letters, so that it obliterates that part of the mental effort. For practical purposes one may take it that practically all the five to six year old children know the vowels, which are the first letters that they learn, but the important point to bear in mind is that the letters they use are not the capitals which compose the ordinary test types, but that the first letters they are familiar with are lower-case type. This has led me to devise a test-card composed entirely of the vowels printed in this type, drawn to scale similar to Snellen's, so that even with six to seven year old children one is reducing the mental effort to a minimum as we are using the symbols they are most familiar with. In using this test with very small children the doctor or nurse must realize that to the modern child these letters represent sounds, and that they do not learn the names of the letters till later on,

so that those conducting the test must be quite familiar with the sounds the letters represent.

There is still another point which helps in vision testing in the case of very young children, and particularly in the case of those who are mentally below par, and that is to have someone to point to the actual letter that the child is to read, thus saving a certain amount of the mental effort of concentration.

THE INSPECTION EYESIGHT TESTS.

(Snellen's)



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In doing this, which is generally the function of a teacher or nurse, they nearly always put the pointer or their finger, as the case may be, touching the bottom or very close to the letter; it will be found that unless there is a good margin of white background completely round the letter that is being looked at the child cannot read it, besides greatly adding to the mental effort.

There is another important point, which is, never to correct any mistake the child may make, as once this is done there is mental disturbance and uncertainty. Much inaccuracy in all tests with young children may be obviated by taking them in batches of at least six at once in the examination room, and also, if possible, taking the sight and hearing tests of the batch that are leaving with the next batch in the room, by which means all nervousness is abolished by the familiarity gained by seeing their little schoolfellows going through the process of what can be made to appear a kind of game.

The test-card is made by the Central Education Co., Derby.

CLEANLINESS OF SCHOOLROOM FLOORS.—The most costly of the improvements, viz., the tarpaving or tar-washing of some of the school playgrounds, has been a great boon to the children, and has conducted to the greater cleanliness of the floors of the classrooms. I hold that the state of the surface of the playground and the provision of suitable and sufficient mats at the entrances are matters of vital importance to the children, as, owing to the almost incessant movement going on in the classrooms, the dirt on the floors as it dries is projected into the atmosphere and continually inhaled. I pointed out in July the schools which were in need of additional mats, and these are now being supplied. The best combination is probably a metal scraper mat or a strong wire mat to take off the greater part of the dirt from the feet and a fibre mat to brush off the remainder. The "sinnet" chain or skeleton mats are also very useful, as they do not cake so readily as the fibre mats, and are a compromise between the metal and cocoa-nut fibre mats.—*Annual Report of Dr. Pierce, Medical Officer of Health, Guildford.*

SUBURBS AS PATHOLOGICAL FORMATIONS.—The desire to live where there are green fields and open spaces is a most laudable one; but, under present conditions, its fulfilment leads to its frustration, for as soon as houses are built the fair conditions which led to their erection vanish. In fact, the growth of houses around London, with the dreary areas of decaying intermediate suburbs, reminds one forcibly of the progress of those pathological formations which invade healthy regions and leave behind them a track of atrophy or decay. In districts such as this the permanence of our parks and commons is an asset of incalculable value, but still the most vigorous action possible under the Housing and Town Planning Act is called for ere it be yet too late.—*Annual Report of Dr. Crookshank, Medical Officer of Health, Barnes.*

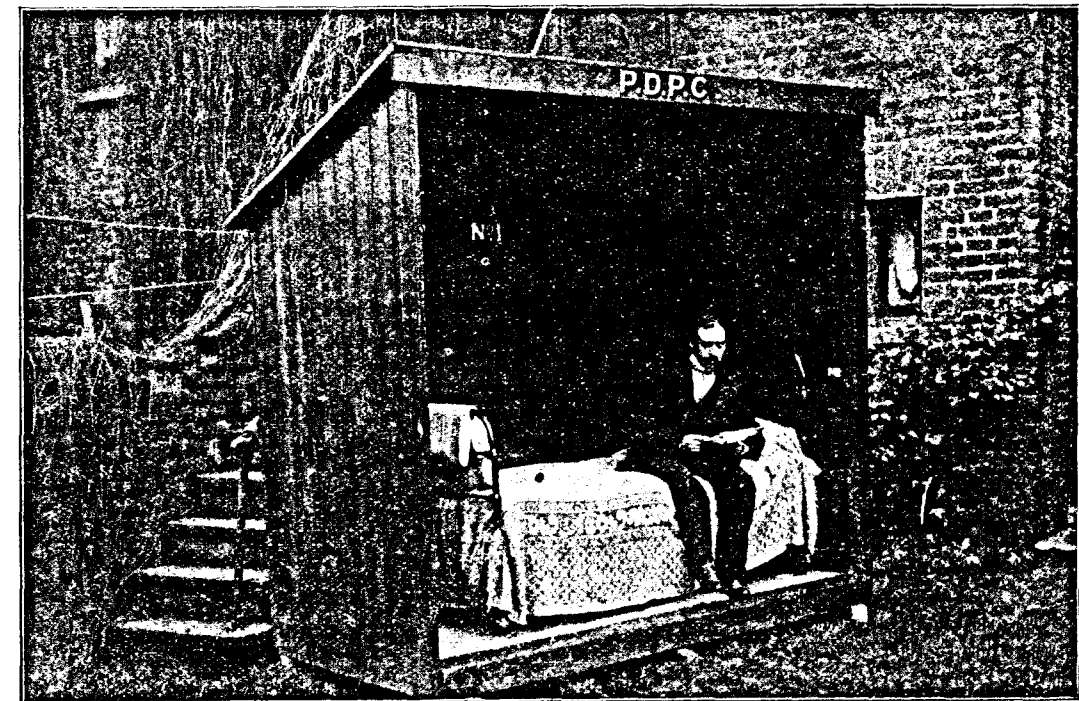
PADDINGTON DISPENSARY FOR THE PREVENTION OF CONSUMPTION.

THE first Annual Report of this Dispensary, which has recently been published, is a valuable contribution to the literature devoted to the prevention of tuberculosis, and it is to be hoped that it will be widely read. The Dispensary, which began operations on Jan. 7th, 1909, follows the lines of the Royal Victorian Dispensary, which was founded in Edinburgh in 1887 by Dr. R. W. Philip. It is supported by voluntary contributions, and is controlled by a voluntary committee which works in close co-operation with the Health Department of the borough, and which has for its chairman Dr. Reginald Dudfield, the medical

work. She visits the patients in their homes, and in co-operation with the medical officer teaches cleanliness, open windows, care in the disposal of sputum, etc. She also keeps records of the home conditions, and collects a large amount of valuable information.

3. A porter, who takes charge of and cleans the rooms at the Dispensary, keeps the register of patients, weighs the patients, receives messages, etc.

Visiting Committee.—There is also a Visiting Committee for the purpose of visiting some of the patients in their own homes. This work is done under the direction of the medical officer. The members of the Visiting Committee do not themselves give material relief to the patients, but



DISPENSARY SHELTER.

officer of health for Paddington, to whose efforts the Dispensary chiefly owes its existence. The building consists of a large dwelling-house, which has been adapted for the work, and the staff is as follows:—

1. A medical officer, whose time is wholly given to the work of the Dispensary. Besides seeing the patients during consultation hours, he visits them in their own homes in order to see the conditions under which they live, and also to examine any other members of the family who may have been exposed to infection. In this way large numbers of unsuspected cases are discovered, and a great deal of skilled personal teaching, as to preventive measures in the home is made possible.

2. A nurse, who gives her whole time to the

when it is found necessary they arrange for it through existing relief agencies. They endeavour to find employment for such patients as are unsuitably employed or have been discharged from sanatoria.

The report begins with a short statement by Dr. Dudfield explaining the aims of the Dispensary. From this we quote the following extracts:—

It is claimed that a Dispensary working in close co-operation with other agencies in the same field offers the best method of dealing with the consumption problem by the provision of

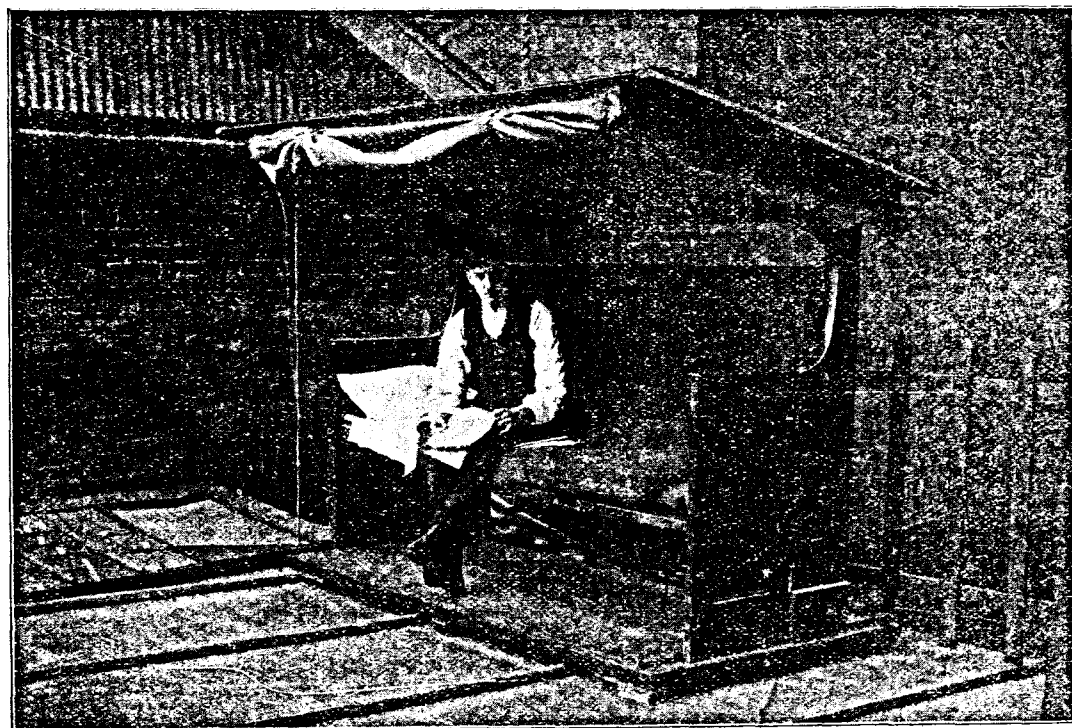
- (1) Effective curative treatment;
- (2) Effective method of prevention; and
- (3) Effective machinery for dealing with the problem as a whole.

The ordinary out-patients' department of a large hospital (whether general or special) only deals with a patient, unless he be selected for in-patient or sanatorium treatment, by prescribing for his ailment, and giving him instructions to be carried out at home and at work. No steps are taken by direct medical visitation to ensure that the instructions are carried out, and there is thus little control of the home conditions, which are such an important factor in the production and arrest of tuberculous disease.

The physician of the Anti-Tuberculosis Dispensary, on the other hand, visits the patients in their own homes, and by personal influence ensures that his instructions are carried out, while at the same time he obtains first-hand

Owing to its close association with the medical officer of health, and with hospitals and other institutions and societies, the Dispensary acts as an effective agency for the collection and distribution of tuberculous patients. Thus it may be expected that gradually the great mass of tuberculous persons in the district will be on the register of the Dispensary, unless they are receiving adequate medical treatment elsewhere. Such cases as cannot be satisfactorily dealt with at home will be passed on to that institution or society which can most appropriately deal with them.

From the larger standpoint the Dispensary provides information as to the extent and nature of the consumption problem, which is otherwise



SPEEDWELL SERVICE SHELTER.

information as to the conditions of home and other environments which have produced the disease.

Another most important department of the work lies in their becoming acquainted with members of the family, whom they thus find it easy to persuade to submit to examination by the physician. Thus a greater number of early cases are discovered which may be arrested in good time. These "contact" cases would, in the absence of a system of home visitation, probably be undiscovered until too late. The domiciliary visit has often the further advantage of discovering an active focus of infection in the person of a chronic consumptive not under any medical treatment.

unattainable, and is yet essential to a well-organized scheme for the eradication of the disease.

By a careful system of files and card indices a large amount of statistical material has been accumulated, which, year by year, will become of greater value in the study of the subject.

The relations of the Dispensary with local medical practitioners have been thoroughly harmonious. The Dispensary makes it a rule not to prescribe for any patient who is under the care of a medical man, except at his request or with his written consent.

The Dispensary co-operates also with the Paddington Health Society. The Phthisis Committee of that body has been fused with the

Visiting Committee of the Dispensary, so as to prevent any overlapping, and so as to enable the Dispensary to obtain the services of the voluntary visitors who have previously worked for the Health Society.

Dr. D. J. Williamson, the medical officer of the Dispensary, whose report forms the greater part of the Dispensary report, gives some valuable facts and statistics relating to the work of the institution. During the year 857 patients attended the Dispensary. The subsequent visits of those patients who were treated at the Dispensary amounted to 4,455, making a total of 5,310 attendances. The medical officer also examined and treated in their own homes 20 patients who were unable through weakness or other causes to attend the Dispensary. These cases bring the total number of patients for the year to 877; but only the 857 who actually attended the Dispensary are included in the statistics in the report. The medical officer paid 971 visits to the patients in their own homes, and the nurse paid 1,408 visits. Of the 857 patients examined at the Dispensary 298 were found to have definite pulmonary tuberculosis, and 15 to have other forms of tuberculosis; in 295 cases pulmonary tuberculosis was suspected, and 249 cases were found to be non-tuberculous. Of the 298 patients found to be suffering from pulmonary tuberculosis 66 had had no former treatment and 123 had only had indefinite treatment—*e.g.*, had been given cough mixtures, etc., without having their chests examined.

Of the 857 patients attending the Dispensary, 286 were examined as "contact" cases—that is to say, they came to be examined in consequence of being related to patients already attending the Dispensary. Sixty-four of these patients were found to be suffering from pulmonary tuberculosis, three from other forms of tuberculosis, and in 104 cases pulmonary tuberculosis was suspected. Many of these consumptive cases were complaining of few (if any) symptoms, and had not been under any definite treatment before coming to the Dispensary.

Careful inquiries were made in order to discover sources of infection, and the report contains some interesting tables and charts which afford striking evidence of the infectious character of consumption. The home conditions were ascertained, and where these were unsatisfactory efforts were made to improve them. In some cases open-air treatment was secured by the provision of open-air shelters in the following way:—

The Dispensary has taken in hand the improvement of home conditions by the loan of open-air shelters for use on flat roofs, leads, or in the back-yards and gardens. Two types of shelter are in use by the Dispensary. The first is a smaller copy of the shelters in use at the

Royal Victoria Hospital for Consumption, Edinburgh, but so constructed that they can be taken to pieces easily and moved from one house to another.

The second type, called the "Speedwell Service Shelters," are the property of Miss K. Bruce, but are kindly lent to the Dispensary for the use of patients. These shelters are constructed from some old church pews, the seats being broadened sufficiently to support a mattress, and a roof and rain-screen added to protect the occupant from the damp.

The use of such shelters will no doubt have a high practical value in dealing with tuberculosis when they become more widely adopted.

In Paddington we have as yet only used them for more or less advanced cases. When used for these cases they form a valuable means of preventing infection, and at the same time a useful adjunct to treatment. But two of their main uses in the future will be (1) for the continuation of sanatorium treatment at home, and (2) for the treatment of early cases who do not wish to give up their work in order to go to a sanatorium.

It may be remarked that the cost of a shelter is about the equivalent of three weeks' treatment at most of our sanatoria (30s. a week), and that such a shelter should remain in good condition without needing repairs for about three years.

The report deals with the year ending December 31st, 1909, but since that date efforts have been made to extend the work of the Dispensary in relation to children. We understand that a scheme has been drawn up by the committee of the Dispensary to provide for the education of children who are suffering from pulmonary tuberculosis, and also of those who, the offspring of patients attending at the Dispensary, are not actually so suffering but are in need of special care to combat the tuberculous tendency. The proposals have received the approval of the Education Committee and of the London County Council, and now await the final confirmation by the Board of Education.

Briefly stated, the scheme of the Dispensary Committee is as follows. The committee will obtain a house and alter and adapt it for the purposes of education, such adaption to be on lines suited to the special treatment the children require. The school is to be staffed and equipped by the Education Committee, and maintained by that Committee as a public elementary school. The Dispensary Committee have undertaken to bear all expenses except those of the education itself, and the Education Committee have agreed to keep the school open for a period of three years. The further progress of the scheme will depend on the results of the three years' experiments.

Such a school should be in the country, but the house which the Dispensary Committee hope to be almost immediately in possession of is, although in Paddington, peculiarly suitable to the proposed use. It is a suburban mansion standing in its own grounds (upwards of three-quarters of an acre), the rooms of which are lofty and the provision of windows specially ample. The site is open to the south and protected by high walls on the north, east and west, so that a maximum exposure to sunshine and protection from the colder winds can be secured.

The school, we understand, will have its own committee of managers, on which the Dispensary Committee will be well represented. Education will be carried on in the open air, the rooms being used only when such course is impossible through weather. The needs of the children as regards rest, etc., will be fully met.

It was announced at the annual meeting that arrangements have been made to extend the work of the Dispensary to the northern parts of Kensington. A joint committee consisting of representatives of Paddington and Kensington has been appointed, which will take entire charge of the Dispensary. Independent committees in the two boroughs will be responsible for the raising of funds, provision of sanatorium treatment, etc. The staff of the Dispensary is to be increased at an early date.

THE SPREAD OF INFECTIOUS DISEASE BY "HOLIDAY CHILDREN."—Scarcely a year passes without cases of diphtheria or scarlet fever, or both, being caused by visitors to the district from London or other large centres of population. This occurs especially in the summer. In August we had six diphtheria patients in the hospital, five of whom were either visitors or their victims. Cases that are actually notified, though costly to the ratepayers, are of little public importance, but it is the "missed" cases—so liable to occur—that become a serious matter. It is extremely doubtful if either scarlet fever or diphtheria arises *de novo*, and the suspicion is almost inevitable that epidemics similar to that of scarlet fever in Charlwood and Horley [referred to in a previous section] are indirectly due to the objectionable system practised by philanthropists of boarding out children in cottage houses during the summer months. Unfortunately, it cannot be prevented, but it occurs to a far too considerable extent in this part of Surrey. The only administrative step that can be taken, and I am afraid it must be considered as a partial remedy only, is to distribute circulars to the cottagers receiving such children, pointing out the necessity of calling in medical advice should the visitors or the hosts' children develop suspicious symptoms. This procedure was adopted in Charlwood during the summer, and will be further developed during the summer of 1910.—*Annual Report of Dr. A. E. Porter, Medical Officer of Health, Reigate.*

A CHICAGO "PNEUMONIA SERMON."

THE Health Commissioner of Chicago, in a recent bulletin, has addressed the following "Pneumonia Sermon" to his fellow citizens:—

Pneumonia is responsible for one-quarter of the deaths at the present time, there being 168 fatalities from this impure air disease during the week just closed. It is estimated that 2,400 Chicagoans will succumb to this preventable affection during the next four months. If you would avoid the dangers of developing this disease, pay heed to the department's advice along these lines.

For the next few weeks the *Bulletin* will carry a pneumonia sermon in each issue. The pneumonia season will last for four more months. During this time several thousand men and women, now in the flower of strength, will die of this disease—and these deaths need not be.

What can be done to prevent it?

The most necessary thing is that a man should keep himself right. The men who die from pneumonia are usually strong and robust when taken sick. Fat men and women are especially prone to pneumonia. If all of our men and women weighing 140 lb. and over would reduce their food and beverages one-half for the next four months at least 500 lives would be saved.

At a pneumonia conference held in the department this last week, Doctors Rosenow, Wells and Tice were of the opinion that the condition of the man had more to do with pneumonia than the bacteria. The full-stomached, full-blooded people are those who are in danger. The lean and hungry Cassius in this situation has the laugh on the fat, rotund Falstaff. So the first lesson is—Eat and drink lightly at each meal until May.

The next point is that there is some truth in the statement that a "bad cold may run into pneumonia." A few days of a bad cold seems to prepare the way for a pneumonia infection. This does not mean "snuffles" and minor colds. If you get a bad cold do not neglect it. Quit eating, absolutely; take a purgative, throw open the windows, get into bed, and send for a doctor. When you get a bad cold you are in waters where there are several snags below the surface and easily capable of sinking a ship. You had better take a pilot aboard. In this way you will save time and prolong your life.

Do not shut the windows and take hot drinks to sweat yourself. That would be very foolish.

The second lesson, then, is—Do not neglect a bad cold. Treat it by starvation and fresh air.

How many men and women will pledge themselves as followers? This may be foolish as a way to keep from having pneumonia, but it is simple, easy and sensible from most viewpoints. It can not do much harm to try it for four months. "I will make these my rules of life until May."

THE CONTROL OF SCARLET FEVER AND DIPHTHERIA.*

By A. E. PORTER, M.D., D.P.H.,
Medical Officer of Health, Reigate.

WITH regard to the two common notifiable diseases of childhood, scarlet fever and diphtheria, it is becoming more and more clearly recognized that the early routine procedures—notification, isolation, disinfection, closure of schools, and removal of insanitary conditions—give, if taken alone, unsatisfactory results, at all events when applied to districts where these diseases are not normally endemic, and where, therefore, a large majority of the inhabitants is unprotected by previous attacks. Notification by no means brings to light all cases of the diseases; whilst as regards diphtheria certainly, and scarlet fever probably, persons who have been in contact with definite cases may carry the infection to others without themselves suffering in health. Moreover, the infection of scarlet fever appears frequently to linger in the system of patients weeks or even months after they have become convalescent, and to occasionally assume an active form; whilst when diphtheria affects the nasal passages the health of the individual may be little if at all impaired, and yet case after case of a severe type may arise among the persons who come in contact with the particular individual.

Hence the control of these diseases is by no means so simple as formerly appeared to be the case. A continuous and careful watch has to be maintained, and the previous rule-of-thumb procedure has to be supplemented by attention to the individual and the particular circumstances in connection with each case or each outbreak—circumstances which are liable to variation in different years and in different localities.

The method adopted in the borough for reducing the likelihood that attacks of infectious diseases may be overlooked by parents of children attending the public elementary schools was described fully in my last annual report. Shortly, it consists of a daily notification of children absent from school to the school-attendance officer, or to the sanitary inspector should the absence be known to arise from illness. At their visits certain definite leading symptoms are inquired for. If the inquiries suggest that the illness may be of an infectious nature, and if no doctor has been consulted, the child is seen by Dr. Blackler (the assistant medical officer of health), who is authorized to obtain the assistance of the usual medical attendant at times when there is a considerable pressure of work, a fee being paid by the Borough Council for each certificate obtained in this manner. Formerly the work of examination was shared by Dr. Blackler and myself, the

* Annual Report, 1909.

alteration having been made in the summer after the office of medical officer to the Education Committee was transferred from myself to Dr. Blackler. I still, however, visit a limited number of the absentees when necessary, and have duplicates of the lists that are sent to Dr. Blackler, with the results of his investigations.

Local authorities are still hoping to see the re-establishment of the former allowance for children excluded in the interests of their school-mates. It is legitimate for a school to be closed on proper authority where infectious disease appears to be spread by school attendance, and in such cases the grant is not lost. Hence it is often cheaper to allow an epidemic to develop than to search out and exclude cases of infection and thereby arrest an outbreak. The position is one that scarcely commends itself to those interested in preventive medicine, nor does it encourage local authorities to adopt a rational procedure of this kind.

Within the limits referred to in my last annual report, the system has proved of very great value to the Health Department of the borough, and the head teachers of the various schools have given us their loyal co-operation. Owing, however, to the considerable difficulty which exists, in a scattered area like the borough, of paying prompt visits to all houses of absentees during bad weather when the lists are large, the initial information is sometimes delayed for a day or two longer than is desirable.

Occasionally certain classes of parents appear to have taken offence at what they consider to be unnecessary attention on the part of the officers, and information has in some instances been refused, whilst in others the replies have lacked strict accuracy, but on the whole the amount of friction seems to have been small, and will no doubt diminish when the novelty of this close supervision has worn off.

The number of absentees reported during the year has been 705, of which 385 have been medically examined. The investigations brought to light 2 cases of scarlet fever, 8 of diphtheria, 53 of chicken-pox, 23 of measles, 3 of mumps, 60 of whooping-cough, 13 of ringworm, and 5 of infectious sore-throat associated with the pseudo-diphtheria bacillus. Two further cases of scarlet fever and one of diphtheria were also reported, but the parents had already sent for their medical attendant. At no time has the necessity of closing a school or department on account of scarlet fever or diphtheria arisen during the year.

As regards other general measures equally applicable to these two diseases, disinfection of infected premises is carried out by the sanitary inspector's staff, fumigation or spraying with formalin being the methods usually adopted. The disinfection of schools should be seldom necessary,

and it is doubtful if either fumigation or spraying is of much benefit. The two objects to be aimed at are the periodical and frequent removal of dust from the rooms and furniture by moist processes, and the supply of individual school articles (including reading books) to each child. Improvements in both directions are still needed in several of the schools. There are preparations on the market which, when applied to floors, prevent dust from rising, and these would probably prove to be good and economical substitutes for the repeated washing of floors.

A MILK-BORNE OUTBREAK OF ENTERIC FEVER IN CAPE COLONY.*

By A. JOHN GREGORY, M.D., D.P.H.,
Medical Officer of Health, Cape Colony.

THE general belief throughout the whole of rural Cape Colony is that *running* water is always safe to drink, no matter how polluted, and as a rule no care whatever is taken to avoid or prevent pollution of streams forming common sources of drinking water.

In the following example the outbreak was also due to specifically polluted water, but in this case it was conveyed by the addition of the water to a milk supply. In the beginning of June a European lady, who had been invalided at her home for two months previously, became ill with enteric fever. As no source of infection could be found to which she had been exposed, and as the household milk was supposed to be boiled, the true nature of the disease was at first doubted. It was, however, eventually discovered that that portion of the household milk supplied to the patient had, by a misunderstanding of the cook, been served unboiled to the patient. This fact, as it afforded the only possible explanation of the source of the infection, caused attention to be directed to the purity of the milk supply, and the premises of the dairyman, which were situated off the Lansdown Road, Claremont Flats, in the area of the Cape Divisional Council, were investigated by a medical officer of this Department, and a list of the dairyman's customers was obtained under the provisions of Section 34 of the Public Health Amendment Act, 1897. There were fifty-one families and premises supplied by him, including a boys' school, and it was found that among them were, in all, three cases of typhoid fever at Claremont, one case in Wynberg, one in Rondebosch and another at Sea Point, the latter, a child of a family who had removed there from Claremont on June 1st, becoming ill with enteric twelve days later.

These six cases occurred on separate premises, five in Europeans, and one in a coloured female, between May 31st and June 13th. One of these

cases proved fatal, while two or three of the others were of a very severe type, which only terminated in recovery after a prolonged and costly illness.

Our inquiries went to show that in all the cases the patients had consumed the milk unboiled, while so far as we could ascertain in regard to the consumers who escaped, they only took the milk boiled or in small quantities with hot tea or coffee.

At the dairy twenty-four cows were kept, and the water supply was derived chiefly from a shallow polluted well situated in the farmyard and sunk in sand, the water from which was found on examination to contain numerous intestinal organisms of the Coli group. No proper facilities for obtaining boiling water and sterilizing milk vessels existed on the premises. There was no evidence that anyone connected with the dairy had recently suffered from enteric fever, although the blood of one, an elderly European female, gave a doubtful reaction to the Widal test, which roused the suspicion that she might be a "typhoid carrier," and her excreta were therefore carefully examined in the Public Health Laboratory bacteriologically, but with negative results. It was not, however, found possible to obtain a sufficient number of specimens of the excreta to enable a definite decision on this point to be arrived at.

Within the three months preceding the outbreak there had occurred, however, no less than thirteen cases of enteric in persons in the vicinity of the dairy, some of them in cottages adjoining the premises, and within 100 yards of the above-mentioned well, and, as these dwellings were without sanitary conveniences of any kind, the infected stools and urine being for the most part disposed of by being thrown out on to the ground in the vicinity, it is highly probable that in this way the well of the dairy became infected.

Upon pressure being brought to bear upon the proprietor, he agreed to vacate these premises and to remove to more satisfactory ones within the area of the Claremont Municipality, where a pure water supply and proper facilities for sterilizing the milk vessels and for boiling water were provided. No other case occurred among the customers of this dairy after these precautions were taken.

A DISADVANTAGE OF THE MODERN BABY CARRIAGE.—Many of the deaths are caused by undue exposure of young children. It is common to find infants who have never been outside for weeks suddenly exposed, whatever the weather conditions may be. Another factor in the exposure of infants is the growing use of the small baby carriages, which, besides being harmful from the upright posture which the child has to assume, are more exposed than the heavier but more comfortable and hygienic perambulator.—*Annual Report of Dr. Brebner, Medical Officer of Health, Widdnes.*

MIDWIVES NOTES.

CIRCULAR FROM THE LOCAL GOVERNMENT BOARD TO GUARDIANS.

1. *The Practitioner's Fee.*—The Departmental Committee reported last year that they were "unanimously of opinion that the Act should be amended by giving the practitioner summoned by a midwife in cases of emergency a secure expectation of payment." Pending the introduction of the proposed Midwives Act Amendment Bill, the Local Government Board repeated, in a circular to Boards of Guardians dated February 18th, 1910, their suggestion made in a circular dated July 29th, 1907, that the Guardians should undertake to pay this fee, and should notify medical men and midwives accordingly. We note that the Local Government Board "desire to impress upon Boards of Guardians that they should"—they have no power to compel, in this instance. Compulsory powers are proposed to be given by the Bill now before Parliament.

Meanwhile the Guardians have power under the Poor Law Amendment Act, 1848, to provide for the casual relief, by "medical or other assistance," of "any poor person" under certain circumstances of urgency. A poor person is a person too poor to pay from his own resources for the necessary assistance. Some Boards have made arrangements accordingly.

2. *Guardians and District Nursing Associations.*—The circular of the Local Government Board proceeds to call the attention of the Guardians to the desirability of their exercising their powers to contribute to the support of district nursing associations.

3. *The Training of Midwives in Workhouses.*—Finally, the Guardians are reminded of the facilities existing in the maternity wards of Poor Law institutions for training midwives; as, even if the institution as a whole cannot be recognized as a training school, the matron and medical officer may be approved as teachers by the Central Midwives Board.

This suggestion is much to be commended to those who have influence in rural districts, where it may be possible to give homely village women sufficient training in the local workhouse to pass the examination of the Central Midwives Board, to be able to conduct a normal labour and to recognize abnormalities requiring medical assistance; when a course at a distant training-school may be too great a deterrent.

NEW RULE OF THE CENTRAL MIDWIVES BOARD.

There was some evidence before the Departmental Committee last year, chiefly from the West Riding, Derbyshire and Wales, to the effect that hardship would occur in scattered districts in and after April, 1910, through the restriction of practice of women who had failed to be enrolled,

as required by the Act, before April, 1905. It was pointed out that in some areas the local supervising authorities under the Act had done nothing to administer the Act; and that it was quite possible that these women might have remained in ignorance of the requirements of the Act.

The Committee suggested, therefore, that under such conditions a fresh opportunity should be given for the enrolment of these women. At the same time it was obvious that safeguards would be necessary to prevent an abuse of such provisions. It should be confined to genuine cases and to a limited period, as there is no intention to make any lasting departure from the standard, none too high, of the trained midwife adopted in the examination of the Central Midwives Board.

The following addition has therefore been sanctioned by the Privy Council to Rule B 2 of the Central Midwives Board ["2. Candidates must pass an examination as hereinafter set forth (see C. below)"]:

2.—A candidate who has failed to claim to be certified under the Midwives Act within the time limited by Section 2 of the Act, and who satisfies the Central Midwives Board that but for her failure so to claim she would have been entitled to be certified under the Act, may be admitted by the Central Midwives Board to the roll of midwives upon such conditions as the Central Midwives Board shall think fit, and shall receive a certificate in the form set out in the schedule, and her name shall be entered by the secretary on the roll of midwives. (Schedule, Form II B.) Provided always that no such candidate shall be admitted to the roll of midwives after September 30th, 1910.

It will be of interest to know on what conditions the Board "shall think fit" to insist. But the intention of the rule, as of the Departmental Committee, is evidently to give a last chance to the women who could previously have been certified, solely in virtue of a year's *bona-fide* practice, but could never be induced to face the course of training or an examination.

It is most desirable, therefore, that in every corner of the country where there may be serious deficiency of midwives to attend on the poor, the medical officer of health—whether of a local supervising authority or not—should bring this new rule at once to the notice of any suitable uncertified woman whom he certifies to fill this deficiency.

MIDWIVES BILL, 1910.

A Bill has been introduced by the Government into the House of Lords, to be passed into law, if possible, this session. Under present political conditions the fate of any such Bill is sealed if it is either contentious or long. This Bill limits

* Annual Report, 1908.

itself, therefore, to the chief and more pressing requirements, viz. :—

1. An enlargement of the Central Midwives Board to thirteen in number, including a representative nominated by the Society of Medical Officers of Health.
2. Readjustment of finance of Board as to apportionment of balance between local supervising authorities, according to population instead of number of midwives.
3. Provisions for ensuring accuracy in the roll.
4. Definition of power to suspend midwives for infraction of rules.
5. Prohibition of certified monthly nurses from acting as midwives without giving notice to the local supervising authority.
6. Repeal of powers of delegation from county council to district councils.
7. Supervision of lying-in houses.
8. Security of fee of medical practitioners summoned according to Rule 18.

REVIEWS.

UMFANG UND ART DES JUGENDLICHEN KRÜPPELTUMS UND DER KRÜPPELFÜRSORGE IN DEUTSCHLAND.* [The Scope and Nature of Juvenile Deformity and the Measures for its Relief in Germany.] By Dr. Conrad Biesalski. Hamburg: Leopold Voss. Price 30 marks. Quarto, pp. 316.

The rapid advance of orthopædic surgery of recent years has done much to bring the cripple within the domain of curative therapy. The cripple is, however, in a class by himself, and the improvement of his lot is mainly a social problem which cannot be relegated entirely to followers of the gentle art of healing. On the contrary, the brightening of his existence can only be successfully accomplished by the concerted action of a number of social factors. That the means and machinery for bringing about a happier state of things are well within the powers of every State, and that it is also in the interest of national economy that this should be effected, it is the object of Dr. Biesalski to demonstrate.

This object has certainly been attained as far as Germany is concerned. Perhaps no country stood in greater need of having the truth brought home to it, for the number of cripple children in the Empire is appalling. The population of Germany amounted in 1905 to 60,600,000, which included 21,000,000 children under 15 years. The statistical inquiry discussed in this book revealed the fact that there are over 75,000 crippled children belonging to the poorer classes in the German Empire. This may safely be taken as understating the actual figures very considerably, for it was

impossible to prevent many individuals slipping through the meshes of the statistical net. It has been estimated that there are 15 of these crippled children of the poorer classes to every 10,000 of the population. Of these 15, 8 stand in crying need of institutional care and 12 require at least special clinical treatment.

Dr. Biesalski gives a short account of the evolution of the statistical scheme, and of the mode of inquiry and the method of utilizing the collected data adopted. It is both instructive and interesting, and inspires one with respect for the persons responsible for bringing the undertaking to a successful conclusion. It must be remembered that the sum of the principalities and provinces into which Germany is divided and subdivided exceeds the number of counties in England and Wales, and that to attain uniformity in the collection of very complicated data in the face of many administrative diversities was a task of considerable magnitude.

In 1906 all the inquiry forms were filled in and returned to the Kultus-Ministerium, who handed them over to a special statistical department. The result of this work now lies before us in 316 pages of statistical tables, which represent a vast amount of labour. While the statistics are characterized by that amplitude of detail which is an inherent quality of German work, the attention is nevertheless systematically focussed on one vital point, to which all other details are subordinated. The salient point of inquiry in each case was, Is the child *Heimbedürftig* or *Nichtheimbedürftig*? In other words, Is his case one which can successfully be dealt with only in a special institution, or can he safely be left in the surroundings in which he was found? This question cannot be answered exclusively from the pathological side, for the social factors must be taken into account.

The word *Heim* is used by Dr. Biesalski in its widest sense, and is taken to represent a combination of orthopædic clinic, elementary school, convalescent home, and crafts school.

It cannot be denied that Germany has done a great deal already in this connection, and yet there is a grievous discrepancy between provision and requirement. Germany has 39 homes for crippled children, giving a total of 3,371 beds. Dr. Biesalski states that there are, in round numbers, 56,000 children who ought to be in such homes—*i.e.*, there are 800 such children to every million of the population. Of these 800, experience has proved that not more than 300 would go into homes. He suggests, therefore, that the deficit might be met if a cripple home of 200 beds were provided for every million inhabitants. That would bring the number of homes to 60 and the number of beds to 1,200. It looks promising for the attainment of Dr. Biesalski's ideals that since the statistical inquiry was set afoot over a dozen

homes have sprung into being and eight more are in process of construction.

The statistical tables form an interesting study with regard to the numerical incidence of certain conditions. Ninety-one per cent. of all cripples were mentally normal. Infantile paralysis is the most frequent deformity, representing 16 per cent. of all cases. Then follow deformity from tubercular bone-lesions, 15 per cent.; scoliosis, 12 per cent.; and rachitis (producing dwarfing and contraction or distortion of single limbs), 9.5 per cent. These four groups outweigh all other varieties of deformity added together. The cases of scoliosis in these tables are entirely collected from markedly deformed children. A minor degree of this terrible "school disease" is found among hundreds of thousands of the 12,000,000 German school children. This is essentially a condition where prophylaxis is of the utmost value, but must necessarily be preceded by early recognition on the part of school teacher and school medical officer.

The book is very well printed in clear type, and its value is greatly enhanced by an excellent bibliography containing a list of 237 works in different languages. Dr. Biesalski has performed his task in a thorough and masterly manner, and the book before us forms a most valuable contribution to sociological literature. It merits careful study from all who are interested in kindred problems.

CORRESPONDENCE.

The Editor does not accept responsibility for the opinions of correspondents.

THE MIDWIVES BILL.

To the Editor of "PUBLIC HEALTH."

SIR—Will you allow me to call attention to a proposed grave injustice to thousands of poor women? At present, when a woman in her hour of trial is attended by a midwife, the midwife is required by statute to summon a doctor if any complication ensues. No provision is at present made for the payment of the doctor whom the State, not the patient, insists on summoning. This is an injustice to the doctor.

Now, the Government proposes (in the Bill just introduced by Lord Wolverhampton) to require the Board of Guardians to pay the fee (as parochial relief to the woman and her husband). This is a grave injustice to these poor families. The woman and her husband are not paupers—they are not even destitute persons. Through the exercise of thrift they have made for themselves the normal provision for childbirth of their class, *i.e.*, a midwife. The Government proposes to make them compulsorily into paupers (even if they subsequently repay the full amount it makes no difference in this respect); their homes will be

visited by the relieving officer with his hated inquiries, often to the detriment (as any nurse or midwife will testify) of the woman's health; they will be liable to be proceeded against by the Board of Guardians if (as is intended by Clause 17, Sub-Clause 2) the "relief" is given "on loan," and compelled to repay a charge which they have never incurred, but which the State, in the public interest, has chosen to require.

I cannot believe that the House of Lords will choose this moment to thrust thousands of poor women involuntarily into pauperism, or that the House of Commons will think of tolerating such an injustice.

When the police call a doctor to attend to a patient in an emergency the fee is paid out of the municipal funds, and the patient is not thereby made a pauper. The Town Councils of Manchester and Liverpool are already, with the knowledge and consent of the Local Government Board, following a similar course with regard to the doctors called in by the midwives; and this course is open to any other sanitary authority (under Sec. 133 of the Public Health Act). There is accordingly no need for the degrading and insulting Clause 17 of Lord Wolverhampton's Bill; and I hope the Government will withdraw it.

I am, etc.,
BEATRICE WEBB
(Mrs. Sidney Webb).

41, Grosvenor Road, S.W., April, 1910.

To the Editor of "PUBLIC HEALTH."

SIR,—Will payment by the Guardians of the fee for medical assistance summoned on the advice of a midwife under Rule 18 of the Central Midwives Board pauperize the recipient?

Pauperization essentially means electoral disqualification; but this will not be a consequence. The payment will be made under the Poor Law Amendment Act, 1848, which provides for casual relief under certain circumstances of urgency. It will not come within the definition (2 Will. IV., ch. 45, sec. 36) of "parochial relief or other alms," which disqualify the voter.

It is a question, then, of the "hated inquiries"; for the Guardians are bound to recover the cost where possible; and the inquiries of the relieving officer are a needful basis on which to decide whether it be irrecoverable. But those who, with Mrs. Webb, advocate payment by "the health authority," or by the local supervising authority, in the idea that they are thereby promoting the aims of the Minority Report on the Poor Law, admit the need for recovery from those who can pay; "the health authority," or the local supervising authority, must therefore make inquiries, which doubtless will be similarly hated by those found able to pay.

What, then, is the subtle difference between the hated inquiries, which in the one case are said to

the nomination, but he hoped no one in the room would vote for Dr. Hope.

Another member pointed out that under the Parliamentary ballot system the president might be elected by a minority of those voting. That would not be satisfactory either to the gentlemen voting or the gentleman elected.

SIR SHIRLEY MURPHY said he had seconded the nomination of Dr. Chalmers, who was one of the most distinguished medical officers in the United Kingdom, and it would be a distinction to this Society to have him as president. But from what he knew of what had been taking place, he would withdraw Dr. Chalmers's name if he could. He did not intend to vote for him, and he hoped no one else would do so.

It was stated in further discussion that Dr. Hill's nomination would not be pressed; and the Chairman announced that Dr. Wilson was not properly nominated.

DR. R. A. LYSTER said it seemed almost incredible that a meeting of apparently intelligent and normal individuals was considered to be incapable of deciding in what method it should vote.

The Chairman repeated that he was advised that the election must be by Parliamentary ballot.

One Member moved that the meeting should be adjourned as far as the election of president was concerned; and another moved that the voting should be by the system of proportional representation.

The Executive Secretary, Mr. Lawton, was called into the room to advise, and said that these motions could not be accepted. They were limited by the Articles of Association, and there was nothing for them but the ordinary legal Parliamentary procedure. If they desired to make alterations it must be done by special resolution at an extraordinary meeting and subsequent confirmatory meeting in the usual way.

The Chairman then ruled the discussion out of order and the ballot was proceeded with.

ELECTION OF FELLOWS.—Candidates who had been duly nominated were balloted for, and the President declared the following to be duly elected—

James Henry Ashworth, M.D., M.R.C.P. (Ed.), Halshead, Essex; George Ernest Atkins, M.R.C.S., L.R.C.P., The Hollies, Wombwell, near Barnsley; Stanley Colyer, M.D., M.R.C.P., D.P.H., Health Department, Southampton; Michael Arthur Curry, L.R.C.P., L.R.C.S., D.P.H., 25, Kenilworth Court, Putney, S.W.; Thomas E. Francis, M.D., B.S., D.P.H., 1, Gwydr Crescent, Swansea; Hugh Fraser, M.B., C.M., Westlands, Harpenden, Herts; A. Butler Harris, M.A., M.B., B.Ch., Loughton, Essex; Charles Alfred Hodgetts, M.D., C.M., L.R.C.P., Parliament Buildings, Toronto, Canada; Henry E. May, M.B., C.M., Fifield House, St. Albans; John Muir, B.Sc., M.B., Ch.B., 22, Hazlewell Road, Putney, S.W.; George Pender-Smith, L.S.A., Quay House, Wivenhoe; Frank C. Shrubbsall, M.D., M.R.C.P., D.P.H., 34, Lime Grove, Uxbridge Road, W.; Daniel Stewart, M.B., Ch.B., D.P.H., Gladdenhill, Cambuslang, N.B.; John Alfred Ward, M.D., L.R.C.P., M.R.C.S., Grays, Essex; John A. Watt, M.B., Ch.B., D.P.H., District Offices, Hamilton, Lanark; H. G. Keith Young, M.R.C.S., L.R.C.P., Lyncroft, Braintree, Essex.

Nominations were received for the election of fellows and associates.

DR. R. A. LYSTER moved the following resolution, of which he had given notice:—

That in the interests of the medical profession the influence of the Society should be used in opposition to the suggestion made in Circular 596 of the Board of Education that contributions may be made by local education authorities to the funds of hospitals, dispensaries, and nursing associations in connection with the medical treatment of school children.

He said the resolution was in reality submitted to the Society two months ago, and the reasons in favour of it were submitted pretty fully, as far as he was concerned, in a paper which he gave at that time. He was voicing the Southern Branch in proposing the resolution. The matter was considered at a meeting of the Southern Branch, and they unanimously recommended the Society to consider the matter. Their view was expressed exactly in the words of the resolution. The Southern Branch thought this was an unsound way of extending an altogether unsound principle, so far as the medical profession was concerned. He had every confidence in submitting the resolution to the meeting.

SIR SHIRLEY MURPHY said that whatever the merits of the resolution might be as to whether it was desirable or undesirable for local education authorities to adopt this course, he did not think it was the business of that Society to take any steps which might say that they were going to consider as medical officers the special interests of their profession in this matter. He took it that this was really a monetary question for the profession. They, as paid officers, should give the best advice they could to their authorities in the public interest; but it was not for them to commit themselves to a resolution as to how the interests of their profession would be affected.

DR. G. F. McCLEARY associated himself with the remarks of Sir Shirley Murphy. He thought such representations should come, not through the medium of their Society but through the medium of the British Medical Association. The latter was an organization of medical men which could put forward a resolution of this kind, but they, as public officers, would make a great mistake in adopting the motion.

DR. R. E. LAUDER said they were always depending upon the medical profession in their work, and practitioners were always of opinion that medical officers were trying to take work from them. That opinion would be confirmed if the Society did not adopt this resolution. He contended that it was quite a reasonable motion to bring before the Society.

DR. LOCKHART STEPHENS said he could quite understand Sir Shirley Murphy and the gentleman who supported him making objections, because the whole of their professional life had been spent

as full-time officers. But the Society was not made up entirely of full-time officers; there were part-time officers who were also general practitioners. He did not consider that whole-time officers surrendered their professional rights. There was more in this matter than appeared at first sight. An attempt had been made to obtain an enormous amount of professional work gratuitously. That emanated from the Education Department, but as soon as they found the feeling which had been aroused it was struck out.

DR. WM. BUTLER submitted that they had no right, as medical officers of health, to express an opinion on a matter of this kind. General practitioners had their own organization. This Society represented a number of officials, and it would be most detrimental to the influence of this Society if it identified itself in an official capacity with the interests of the medical profession as a whole body. The public interest should be paramount with it. Its influence would be lost if it ever became the mouthpiece merely of the profession. As a matter of Society policy they were bound not to support the resolution, however much they might personally like it.

DR. R. A. LYSTER, in reply, said this was more than a matter of the protection of the medical profession. There were wider principles involved. The question of representation where public money was spent had to be considered. If they put public money into the hands of hospital committees, where was representation and control? That was a burning question at the present time. The whole principle was totally unsound, and an influential society of this kind should try to guide public opinion as far as it could. To simply say it had nothing to do with them was a poor way of dealing with the matter. Practically it meant saying that they were not members of the medical profession. That was an idea which was widespread among general practitioners, and if this resolution failed to go through it would greatly widen the breach which existed. They were first medical men and secondly medical officers of health. It should go forth that they sympathised with the profession and resented public money going to the extension of gratuitous treatment.

A rider referring the matter to the consideration of the Council was adopted on a show of hands by 28 votes to 17, and the resolution as thus amended was adopted.

At this stage in the proceedings it was announced that Dr. W. G. Willoughby had received 55 votes in the ballot for the presidency, giving him a clear majority of those Fellows present and voting.

The Chairman said he had great pleasure in declaring Dr. Willoughby elected president, and he wished him as pleasant and happy a time as he was having himself. (Laughter.)

Mr. C. S. Loch read a paper* upon "The Majority Report of the Royal Commission on the Poor Laws and Relief of Distress."

North-Western Branch.—Minutes of a meeting of the members held at the University, Liverpool, on Friday, April 1st, 1910. Present: Dr. Herbert Peck (in the chair), Drs. Corbin, Dearden, Meredith Young, Buchan, Marsden, Arnold, Forsyth, Hope, Sergeant, Berry, Mussen, Hawksley, Paddock, Paterson, Currie and Barlow (hon. sec.). Apologies for absence were received from Sir Robert Boyce, Drs. Wynne, Wheatley, Garstang, Fraser, Brindley, Greenwood, Buckley and Chronnell.

The nomination of Dr. Angus Graham Macdonald as a Fellow was approved.

Letters were read from the Lord Mayor of Manchester and Dr. Tylecote, acknowledging letters of thanks from the Branch, and from Dr. Carnwath, thanking the Branch for their congratulations on his new appointment.

The minutes of last meeting were read, confirmed and adopted.

It was resolved that Drs. Garstang and Dearden be the representatives of the Branch at the Congress of the R.I.P.H., to be held at Birkenhead in July.

Dr. Hope read a short note on "The Necessity for a Quinquennial Census," and on his proposal, seconded by Dr. Sergeant, it was resolved:—

That in the opinion of this Branch of the the Society of Medical Officers of Health, it is eminently necessary that a census enumeration should be taken every five years, even although the enumeration made in the interval of the decennial census does not include more information than the age and sex distribution of the people.

At the conclusion of business a motor bus was in waiting, and conveyed the members to view the new boulevard, 80 ft. wide, which is being constructed by the Corporation of Liverpool under the Town Planning Act, on the outskirts of the city. Afterwards the members visited the new park of the City of Liverpool, "Calderstones," lately the residence of Mr. MacIver, where they were entertained to tea.

Home Counties Branch.—The seventh and last ordinary meeting for the Session 1909-10 was held at 1, Upper Montague Street, Russell Square, W.C., on Wednesday, April 20th, 1910. The President, Dr. A. E. Porter, was in the chair.

Mr. Fremantle, county medical officer of health for Hertfordshire, read a paper entitled "Part II. (Town-Planning) of the Housing and Town-Planning Act, 1909." He drew a sharp distinction between "garden suburbs" like Hampstead, which are purely residential in character, and "a

* Published in the present number.

garden city" like Letchworth," which is intended to be a self-contained community of industrial and residential portions, surrounded by "an agricultural belt." Members who took part in the subsequent discussion dwelt on the difficulty of forming town-planning committees free from persons who as builders, estate agents, etc., have vested interests in the area proposed to be dealt with.

The Hon. Secretary expressed his anticipation of good results from the Conference on May 6th, arranged by the National Housing and Town-Planning Council between representatives of the London County Council and the Local Sanitary Authorities within fifteen miles of Charing Cross.

Southern Branch.—Minutes of meeting at the Guildhall, Winchester, April 1st, 1910. Present: Drs. Willoughby (president), Cameron, Fraser, Griffith, Hemsted, Livingston, Lyster, Maples, Milburn, E. C. Pern, Roberts, Routley, Walker, Watts, and Dr. Fenton (visitor).

The minutes of the previous meeting being confirmed, it was agreed to hold the next at Hove on May 6th.

Dr. Fraser introduced the subject for discussion, "The Provision of Open-air Sanatoria by Sanitary Authorities (with special reference to a Proposed Sanatorium for the County of Hants)." He mentioned that in 1901, when this matter was brought forward by the Portsmouth Council, considerable advance was made, and eighteen authorities, representing 70 per cent. of the population of the county, were in favour of some action being taken, but the effort broke down through the smaller areas fearing the expense.

Dr. Lyster referred to the various ways in which a sanatorium could be jointly erected and maintained, and thought the best would be for the county council to undertake it, if the consent of the districts could be gained. He advocated the treatment and education of all cases, early and advanced, and thought it could best be done by having one county institution, supplemented by local hospitals and infirmaries as educational agencies.

Dr. Roberts suggested that if neighbouring areas would unite in joint hospitals for small-pox, some existing buildings would be set free for use for phthisis.

Drs. Maples, Walker, Watts, Milburn, Griffith, Hemsted and Routley also spoke, some members pointing out that there were many partly empty institutions in the county which could be used for the purpose.

Dr. Milburn mentioned that the Winchester council had fifteen beds available for phthisis at their isolation hospital, and had already taken in several patients.

After the meeting a visit was paid to the

Winchester sewage farm and pumping station, after which tea was provided.

Yorkshire Branch.—The members of the Yorkshire Branch of the Society of Medical Officers of Health held their annual dinner at the Hotel Metropole, Leeds, on Wednesday night, April 13th. The function was provided over by Dr. F. W. Martin of Brighouse, the president of the Branch, and he was met by some forty colleagues from various parts of Yorkshire. The chief guest was Dr. R. Bruce Low of the Local Government Board, London, and amongst others there were also present as guests Dr. Towers, the chairman of the Leeds Sanitary Committee, Dr. Dennison and Mr. Alderman Broadbent of Huddersfield.

After the loyal toast had been duly honoured, Dr. Bruce Low proposed "The Public Health Service," and in doing so went back to the early seventies, when he was appointed medical officer of health to a rural district under the Act which made the appointment of such officers compulsory throughout England and Wales. He referred to the ignorance on sanitary matters at that time, and to the fewness of reliable text-books—the concentrated nutriment for which hungry medical officers of health were then eagerly watching. It was about this time (1872) that a movement was started to found a Society of Medical Officers of Health, and he and other young men flocked at once to the banner. Dr. Low acknowledged the benefits he had received through his connection with the Society, and also his indebtedness to its officials, past and present. Looking back over the thirty-eight years during which he had been connected with the public health service he said one must admit that enormous advances have taken place in the improvement of the sanitary condition of the districts in England and Wales, and in their sanitary administration. Many factors had contributed to this, and no one would deny that the medical officers of health have had a very large share in bringing about this advance. The tendency of modern legislation is to place more difficulties and more responsibilities upon these officials, and perhaps it is not too much to ask those whom it may concern whether the time has not arrived when their often inadequate salaries and their insecurity of tenure should receive consideration. It is to the devotion to duty and the determined and strenuous efforts of the medical officer of health that many in this country are indebted for a good water supply, a good system of drainage and a good method of sewage disposal, isolation hospital benefits and all the other sanitary equipments of a well-administered district. It is to the credit of the medical officer of health that he has done a great deal of this, notwithstanding the difficulties of his position, and in spite of his inadequate remunera-

tion and insecurity of tenure, and notwithstanding that his private interests and public duties have often clashed.

Dr. Towers, in responding to the toast, spoke in eulogistic terms of the work done by the medical officer of health, work not always appreciated, however, in all quarters. His was a spending not an earning department in the ordinarily accepted sense, but personally he would prefer to see a reduction in the death-rate rather than an improvement in, say, the tramway receipts.

Dr. Kaye, West Riding county medical officer, also responded, and welcomed Dr. Bruce Low back again to Yorkshire. He referred to the rapid advances made in recent years in the study of preventive medicine, and said that this branch of the medical profession had for its aim the art of keeping well, not that of getting well. He drew attention to the fact that the Army authorities had now awakened to the importance of sanitation, and quoted figures showing the havoc caused in recent wars by disease of a preventable character. Dr. Kaye referred to the benefits hoped for as a result of the medical inspection of school children, spoke of the advantages to the community through the supervision of midwives, and referred to the treatment of tuberculosis as evidence of the extent to which preventive medicine could be carried.

The toast of "Our Guests" was proposed by Dr. Scatterty of Keighley, and responded to by Captain Burdett and Mr. Alderman Broadbent.

The toast of "The President" was proposed by Dr. Milne of Mirfield.

LAW REPORTS.

HIGH COURT OF JUSTICE.

KING'S BENCH DIVISION.

January 17th, 1910.

BEFORE LORD ALVERSTONE, L.C.J., BUCKNILL, AND BRAY, JJ.

DRAPER v. NEWNHAM.

Sale of Food and Drugs Acts.—Milk—Verbal Contract—Warranty in Writing.

If on the face of a written warranty it can be seen to refer to the consignment in question, then such warranty will afford a defence to proceedings for selling milk not of the nature, substance and quality demanded, although there is nothing in writing to connect the warranty with the consignment.

This was a case stated by justices for the North Riding of the County of York, on the hearing of a summons against the respondent Newnham, under the Sale of Food and Drugs Act, 1875,

Sect. 6, for selling milk not of the nature, substance and quality demanded. The summons was taken out by Joseph Draper, the appellant, who was inspector of nuisances to the Saltburn-by-the-Sea Urban District Council. The sale in question took place on August 18th, 1909.

The defence set up was that such milk had been supplied on the said day to the respondent by William Kell, farmer, who had for several years, under a verbal contract, supplied the respondent with all the milk required by him in his business of milk-vending; that the said contract had continued up to that date without suspension; and that the respondent had not been for some years, and was not on that day, supplied with milk from any other than the said William Kell.

That in September, 1908, the said William Kell gave to the respondent the following letter in writing:—

"To Mr. William Edward Newnham,
"Garnet Street, Saltburn.

"I hereby guarantee and warrant that all milk supplied by me to you is of the nature, quality and substance demanded by law. And I give this warranty for the purposes of the Sale of Food and Drugs Act, 1899.

"(Signed) WILLIAM KELL."

The said William Kell deposed to having made the said contract with the respondent for the said supply of milk, and that he gave the written warranty, and that the milk in question was the milk he intended should be delivered under the warranty. The milk sold to the appellant on the said eighteenth day of August was not purchased with any written warranty except in so far as the above letter constituted a warranty. There was no evidence in writing to connect the milk in question with the above letter.

For the prosecution it was contended that this was not a sufficient warranty within the statute, as there was no evidence in writing to connect the milk in question with the warranty. The justices decided in favour of the defendant, and dismissed the summons. The Divisional Court dismissed the appeal.

LORD ALVERSTONE, L.C.J., said that nice distinctions had been drawn in these cases, but the safe test was that if on the face of the document it can be seen that it refers to the consignment in question, then there is a sufficient warranty in writing. This case was near the line, but it was possible to read the warranty as meaning "I guarantee and warrant from this date that as long as I supply you with milk that milk shall be within this warranty." He thought the case came within the principle of *Evans v. Weatherett* (1907), 2 K.B., 80.

BUCKNILL and BRAY, JJ., concurred.

[For full report, see 74 J.P. 124.]

March 21st, 1910.

BEFORE CHANNELL, J.

HOBBS v. WINCHESTER CORPORATION.

Public Health Act, 1875, Sects. 116, 117, 308.—
Unsound Meat—Unsuccessful Prosecution—
Compensation—Not in Default—Loss Re-
coverable.

A person who has been unsuccessfully prosecuted by a Sanitary Authority for selling unsound meat is entitled under Sect. 308 of the Public Health Act, 1875, if not in default, to recover as compensation the costs incurred in defending himself in such prosecution and the damage to his trade and reputation occasioned by the prosecution. The fact that some of the meat in question was unsound will not of itself make such person in default, if he and his servants and agents were unaware that the meat was unsound and could not have discovered the fact by any examination which they could reasonably be expected to make.

This was an action brought to recover the sum of £1,518, the amount awarded to the plaintiff Hobbs as compensation by an award made under Sect. 308 of the Public Health Act, 1875.

The matter arose out of the delivery of certain meat to the authorities at the Winchester barracks as ration meat for the troops stationed there, such meat being delivered under a contract made between the War Office and the plaintiff. By that contract it was provided that the beef to be supplied, if heifer or cow beef, should not be of more than four years old, and that no portion of the udder should be cut away. The meat in question was delivered on May 5th, 1908, and consisted of two complete forequarters, one complete hindquarter, and part of the other hindquarter of the same animal. The animal was a cow of the age of about twelve years, and the whole of the udder had been cut away. This meat was rejected by the special officer who inspected it on behalf of the War Office, and that officer called the attention of the medical officer of health for the City of Winchester to it. He and an inspector of nuisances examined it, and they considered that it was diseased and unsound, and unfit for food of man, and they accordingly seized it, and it was afterwards condemned by a justice.

Subsequently, at the instance of the Corporation, proceedings were taken against Hobbs, for a penalty under Sect. 117 of the Public Health Act, 1875, and the justices dismissed the summons. Before these proceedings, however, the military Director of Supplies ordered that another contract made between the War Office and Hobbs for the supply of meat to the Salisbury Plain camps should be determined under a power contained in that contract. It was also ordered that the said Hobbs should not be accepted as contractor for any War Office contracts. Several tenders for the supply of meat made by Hobbs to the War Office

were in consequence subsequently refused, although in some of them his tenders were, in fact, the lowest.

Hobbs then made a claim for compensation against the Corporation of Winchester, under Sect. 301 of the Public Health Act, 1875. This claim amounted to £2,118 11s. 9d., and was made up of four items: (1) Costs of defending himself in the prosecution, £118 11s. 9d.; (2) loss of profit on the Salisbury Plain camp contract, £750; (3) estimated loss of profits on contracts for which his tender was rejected, £250; (4) general loss of and injury to his trade as a butcher, which he carried on at Southampton, and damage to character and reputation, £1,000.

Arbitrators were appointed and an umpire. The umpire by his award found that when the Director of Supplies issued the orders above referred to, though aware that the said meat had been seized by the local authority, was not aware that it had been condemned, nor that any prosecution had been commenced or was in contemplation against Hobbs; but the said orders were issued solely on account of the breach of his contract with the War Office in supplying thereunder a twelve-year-old cow from which the udder had been cut away. The umpire estimated the loss to Hobbs on the Salisbury Plain contract at £500, and the loss in connection with the rejection of contract at £100.

The umpire also found the left forequarter of the meat at the time when seized was unsound and unfit for the food of man, but that the rest was sound and wholesome and fit for such food. He also found that Hobbs, at the time of delivery of the meat, was not aware that any portion of the meat was unsound or unfit for the food of man, and his servants and agents were also unaware, and the fact that the same was diseased and unwholesome and unfit for food could not have been discovered by any examination which he or they could reasonably have been expected to make. But the umpire found that Hobbs was aware that the said meat was not in accordance with the conditions of his contract with the War Office.

The umpire, in addition to the sums of £500 and £100 mentioned above, awarded Hobbs the sum of £118 11s. 9d., the costs of his defence, and £800 for general damage to his business and reputation. As the Winchester Corporation refused to pay these sums this action to recover them was brought.

At the trial, counsel for Hobbs stated that he abandoned the claim for £500 and £100 in connection with the contracts, but claimed the costs and the general damages. For the defence it was contended that the plaintiff was a person in default, and not, therefore, entitled to recover any compensation under Sect. 308, and further that the prosecution was not an exercise of the powers of the Act.

Sect. 308 provides that "where any person sustains any damage by reason of the exercise of any of the powers of this Act in relation to any matter as to which he is not himself in default full compensation shall be made to such person by the local authority exercising such powers."

CHANNELL, J., in the course of his judgment, said the first question he had to decide was as to whether the plaintiff was in default within the meaning of the section. He was not in default unless the effect of Sects. 116 and 117 of the Public Health Act, 1875, was to cast an express duty upon him to ascertain at his peril that any meat which he delivered for the purpose of being used as food was in fact sound. He thought that the statute did not cast such a duty, and that guilty knowledge on the part of the person charged was necessary to be proved by the prosecution in order to constitute an offence under the section. The umpire had found that there was no such guilty knowledge, so that this point must be decided in favour of the plaintiff.

On the question of damages he was personally of opinion that as they were the result of the prosecution and not of the seizure, the plaintiff ought not to be entitled to recover. He thought, however, that he was bound by the decision of the Court of Appeal in *Walshaw v. Brighthouse Corporation* (1899), 2 Q.B., 286. Judgment for the plaintiff must therefore be entered for £918 11s. 9d.

BORIC ACID IN POTTED MEAT.—At Hull Police Court, Robert Booth, pork butcher, Hull, was fined 20s. and costs for selling potted meat containing 0.43 per cent. of boric acid, equivalent to 30.1 grains to the pound. Mr. Hay Halkett, the stipendiary magistrate, in convicting, after referring to the decided cases said he had come to the conclusion that the question was one of fact. A purchaser might reasonably expect to find a certain amount of preservative in potted meat, but as the taking of boric acid in appreciable quantities was harmful to digestion, a purchaser would not reasonably expect to find it in so large a quantity as 30.1 grains to the pound. He would not lay down any rule as to what should be a maximum, but in the case of potted meat, which if eaten at all was frequently made a meal of, the percentage was too high, unless the purchaser was given notice of the fact.

EXCHANGE OF MILK AT RAILWAY STATIONS.—At the County of London Sessions on April 14th, before Wallace, K.C., chairman, and a jury, Alfred Ingham was indicted for stealing a milk-churn containing seventeen gallons of milk. The prosecutors were the Great Western and Metropolitan Dairies Company, Limited, and from the evidence it appeared that out of twenty-four churns of milk consigned to them at Paddington

station on a particular occasion one disappeared after a sample had been taken from it. An empty one was found in its place. The accused's defence was that he had no intention of stealing the milk. It was a common practice, he said, for milk-dealers' foremen to borrow and lend milk, and to buy and sell milk at the station. Milk borrowed from one consignor's churns was replaced by milk from the churns of another consignor.

The Chairman said he hoped the result of the trial would be to put an end to the practice. It tended to make the warranty of the farmer absolutely worthless.

The Jury, in finding the accused not guilty, added that they considered the practice most reprehensible and calculated to encourage fraud.

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THE ROLE OF THE DISPENSARY IN THE PREVENTION OF TUBERCULOSIS.

IT is not easy to understand why the tuberculosis dispensary has not taken a more prominent place in the measures that have hitherto been adopted in this country for the prevention of consumption. In France the dispensary system has long been widely spread, and at the British Congress on Tuberculosis in 1901 the methods and advantages of the French dispensaries were brought prominently before British workers in preventive medicine by Dr. Calmette, of Lille, to whose efforts the initiation and development of the Continental dispensaries must largely be attributed. But it is not necessary to go abroad for instruction in these matters. In the organization and operation of a tuberculosis dispensary, as in the sanatorium treatment of consumption, the pioneer work has been done in this country. Just as the German sanatorium system owes its origin to the late Dr. George Bodington, of Sutton Coldfield, so the French dispensaries are similarly indebted to Dr. R. W. Philip, who founded the Royal Victorian Dispensary in Edinburgh as long ago as 1887. Bodington's work, however, had to be taken up by the Germans before it could be appreciated by his fellow-countrymen, and it is only within a very recent period that Dr. Philip's example has found followers in this country. In our last issue we gave a full account of the first year's working of the Paddington Dispensary for the Prevention of Consumption, which, opened on January 7th, 1909, follows closely the lines laid down in Edinburgh by Dr. Philip; for some years a municipal dispensary has been at work in Dundee, owing to the efforts of Dr. Templeman, and there is reason to believe that Dr. Walford will be successful in his endeavour to secure a municipal dispensary for Cardiff. These are instances of fully organized institutions, but in other districts certain

departments of the many-sided operations of a dispensary have been taken up with a varying degree of completeness, and it seems highly probable that this work will be greatly developed in the near future.

No one, we hope, will claim that the dispensary is the only important measure for the prevention of tuberculosis. Nothing is gained by extolling one preventive weapon at the expense of others. Valuable as the dispensary is, it cannot take the place of a sanatorium or a well-administered system of notification. But it has its own place in a comprehensive scheme of prevention. It provides systematic medical supervision of consumptives in their own homes; it detects early cases of the disease; it selects suitable cases for sanatorium treatment, and takes in hand the patients discharged from the sanatorium; and where necessary it affords material aid for the patients and their families. Much of this work can, no doubt, be done in the absence of a dispensary, but not, we think, so completely or effectively.

As a co-ordinating agency, the dispensary is of special value, but in order that the full benefit of this part, as well as the other parts, of its work may be reaped, it is important that it should be under the immediate control of the medical officer of health, and, generally speaking, this control can only be secured when the dispensary, as at Dundee, is a municipal institution. No doubt it is possible, as the experience of the Paddington Dispensary has shown, for the medical officer of health to exercise a preponderating influence in a voluntary organization; but as a general rule we may safely affirm that it is only by making the tuberculosis dispensary an integral part of the department presided over by the medical officer of health that it will be possible to secure that concentration of responsibility that is as essential in the fight against consumption as in other forms of warfare.

THE FREQUENCY OF HUMAN INFECTION IN TUBERCULOSIS.

By J. H. L. CUMPSTON, M.D., D.P.H.,
Medical Officer to the Central Board of Health, Perth,
Western Australia.

TUBERCULOSIS IN WESTERN AUSTRALIA DURING 1909.

It has been found that a State like Western Australia offers many advantages for the study of the epidemiology of infectious diseases. The centres of population are comparatively scattered, and as a general rule the movements of individuals from place to place are known, or can be ascertained, with a considerable degree of accuracy. Added to that is the useful fact that in general the communities are small enough for the existence of any infectious disease to be known to the whole population.

An attempt was made to utilize these advantages in the direction of gaining some accurate information on the subject of pulmonary tuberculosis. Primarily the object in view was the collection of facts that might assist in the settlement of the vexed question of the relative importance of human or bovine infection in the causation of human tuberculosis.

Pulmonary tuberculosis has been for some years a notifiable disease in Western Australia, and all cases have to be notified both to the local and to the central health authorities.

The method adopted was as follows:— Upon receipt of the notification of a case of pulmonary tuberculosis, a printed form of inquiry was sent to the local board of health in whose district the case had occurred. The health inspector visited the case and obtained the required information.

The form used was as follows:—

TUBERCULOSIS PATIENT.

Name. Sex. Age.
Occupation.
Date notified.
Attended by (name of medical practitioner).
Patient's present address.
Patient's former addresses for past ten years.
Has patient any knowledge of how he might have contracted infection?
(State details very particularly.)
Has patient ever resided in same house with a tubercular person?
Cause of death of patient's parents.
If alive, what is the state of their health?
Any brothers and sisters?
What is the state of their health?
Has any relative ever had tuberculosis?
Ascertain as far as possible what sources of milk supply the patient has had access to during the past ten years.

Ascertain from medical attendant:—

As nearly as possible the duration of the illness, fixing as accurately as may be the appearance of the first symptoms.

Whether the lesion is "open" or "closed," *i.e.*, is capable of spreading infection by means of sputum or not.

Describe the present circumstances of the patient from a public health point of view.

Has the patient been instructed how to prevent the infection spreading to others?

Is the patient able to spend his time out of doors?

Has he been provided with the means and instructions to have his sputum disinfected and destroyed with safety?

Is he able to maintain himself and provide for himself all necessary nourishment and treatment, and can he afford to make provision (canvas, etc.) for sleeping out of doors?

Have arrangements been made for periodical disinfection by the Local Board of the room occupied by the patient?

The total notifications received by the Central Board was 188, and the number of inquiry sheets returned to the central office was 153. That is to say, inquiry sheets were returned in about 81 per cent. of the cases notified.

These 153 returns were analyzed at the end of the year. It was then found that 26 had to be discarded for the reason that there was not given about these cases sufficient information to enable any reliable deductions to be drawn.

The reasons for which these 26 cases had to be discarded were:—

Deaths before investigation	...	...	...	12
Left institution or address given, before investigation	...	...	...	11
Unknown in district	...	...	...	2
Senile dementia	...	...	...	1
				26

This reduces the number to 127, or 67 per cent. of the cases notified.

In any investigation the data must almost necessarily be to a certain extent incomplete. Still, in this instance the number of useful returns is sufficient to provide some information. The percentages must, of course, be calculated on the reduced total.

The 127 returns have been grouped as follows:—

Group A.—Cases in which there is no evidence of human infection. The number of these was 75, or 59 per cent.

Group B.—Cases in which a possible source of human infection appears to have existed but in which the probability of that source having acted as the origin of the disease is

doubtful. The number of these was 9, or 7 per cent.

Group C.—Cases in which the disease was probably due to human infection. The number of these was 43, or 33·8 per cent.

Tables 1 and 2 are given showing in detail the cases in Groups B and C.

It will be noticed that of the nine cases in Group B, six had been in contact with infected members of their own family, and had thus certainly been exposed to infection. Of the other three, one was a nurse, whose occupation must have necessitated at some time an exposure to infection; the other two had almost certainly run the risk of infection. So that these nine cases definitely show the possibility of infection.

In an inquiry of this kind, however, the greatest care must be taken to avoid sources of error. It has been thought desirable, therefore, to group these uncertain cases together.

Group C, however, as the table shows, is composed of cases about which there is little reasonable doubt. Very careful consideration was given to each one, and each was only included after all the facts relative to it had been critically weighed.

The fact revealed by this table is that of 127 cases about which details are available 33·8 per cent. show such exposure to infection as to make it probable that their disease originated in this way.

The only deduction legitimate from this result is that already stated, *viz.*, that 33·8 per cent. of the cases investigated probably contracted the disease by human infection directly from other cases.

What light does this throw on the question of bovine infection? As it stands, the only preliminary deduction is that, at the most, bovine infection is probable in 66·2 of all the cases in the series.

It will appear that this maximum of 66·2 per cent. is open to reduction. In the first place it is reasonable to exclude Group B. If this is done it reduces the "probable bovine percentage" to 59 per cent.

Further, a consideration of the table giving the cases collected in Group C brings prominently into view the fact that in the large majority of cases the infecting person was a near relative of the patient under consideration.

Two explanations of this fact would appear to be permissible:—

1. That the range of activity of tubercular infection is limited, and that close and continued

association with a consumptive is necessary for infection.

2. That the existence of tuberculosis in a near relative is an obvious, and, unfortunately, too easily remembered fact; and that while a patient would not forget such a likely source for his own disease, other less obvious or less prolonged sources may have been forgotten, or likely enough never have been realized.

Both these explanations are probably to a certain extent correct; but while there are no known facts supporting the former, the latter theory will commend itself as being at least reasonable.

So that inasmuch as Group C reveals sources of infection all of which are strikingly obvious, it would seem to be permissible to assume that some at least of the cases in Group A (those in which no human source of infection is revealed by the inquiry) have derived their disease from pre-existing cases.

One instance stands out clearly in this connection—that of a male, aged 30, whose occupation was second-hand furniture dealing. It is justifiable to assume that one who is constantly handling second-hand furniture runs a large risk of contracting a disease such as tuberculosis, the infectivity of which is known to be of long duration.

The position, finally, is as follows:—

About 34 per cent. of the cases investigated during 1909 were probably due to human infection, and a large balance of cases is left in which it is possible that bovine infection was the determining factor.

A little light is shed on the question by the answers given as to what source of milk supply the patient has had access to during the past ten years. As some of the patients had lived during all that period in the remoter districts of the Northern and Eastern goldfields, it was thought that probably it would be found that tinned milk was the only source of milk supply.

It was found that in Group A there were fifteen who definitely stated that for the last ten years they had been either "entirely" or "principally" dependent on tinned milk.

So that the 59 per cent. above referred to becomes susceptible of reduction to the extent to which importance is attached to this fact, *viz.*, that the milk supply was entirely or principally tinned.

In only one case was there definite evidence of the possibility of bovine infection. This was the case of a male, aged 16 years, who had

been employed in milking cows in his father's dairy in Victoria, and who ascribed the infection to affected cows.

OCCUPATIONS.

Unfortunately, it was assumed that the occupations of the patients would be stated on the original notifications, and therefore this item was omitted from the inquiry form. The records of the occupations are therefore incomplete. Such, however, as are obtainable are given, but only for males; there did not seem any useful purpose to be served by analysing the occupations of the females.

Total males investigated	...	98
Occupations specified	...	58
Occupations unspecified	...	40

The separate occupations were as follows:—

Miner	...	9
Clerk	...	3
Postal employee	...	3
Carpenter	...	3
Youth	...	3
Clergyman	...	2
Bush labourer	...	2
Photographer	...	2
General at hotel	...	2
Shop assistant	...	1
Electrician	...	1
Bootmaker	...	1
Dairyman	...	1
Caretaker	...	1
Draughtsman	...	1
Furniture dealer	...	1
Cook	...	1
Military instructor	...	1
Accountant	...	1
Foreman	...	1
Fisherman	...	1
Shipbuilder	...	1
Bricklayer	...	1
Steel trunk maker	...	1
Restaurant keeper	...	1
Groom	...	1
Billiard marker	...	1
Butler	...	1
Wood carter	...	1
Timber stacker	...	1
Printer	...	1
Mill hand	...	1
Inspector	...	1
Baker	...	1
Painter	...	1
Station hand	...	1
Assayer	...	1
Engine driver	...	1

The proportion of miners to total males whose occupations were specified was 9.58, *i.e.*, 15.5 per cent.

The figures are incomplete, however.

An interesting series of cases is that of children reported as suffering from tuberculosis in regions other than the lungs. These cases

are not compulsorily notifiable, but through an arrangement with the Children's Hospital authorities the Central Board of Health received notification of all cases of tuberculosis of any anatomical region treated in that hospital. These cases are not included in any of the foregoing tables.

Six cases were reported under the arrangement described as follows:—

Sex.	Age.	Disease	Source of infection.	Milk supply
M	11	Tub. hip.	Sister has hip disease with weak chest.	Mostly tinned.
M	6	Tub. mening.	Unknown.	Unspecified.
M	5	Tub. hip.	Mother suffers from consumption.	Fresh milk.
M	12	Tub. glands.	Unknown.	Mostly tinned.
M	4	Tub. hip.	Unknown.	Fresh milk.
M	2	Tub. mening.	Mother died from consumption. One of the cases of Group A lived in the same house.	Mostly tinned.

It is interesting to note that in half of the cases an obvious human source of infection is present, and that only two of the five cases in which information as to the milk supply was forthcoming had had fresh cow's milk at all regularly.

The facts prominently revealed by this inquiry is the danger to the community of cases of phthisis. This applies in a very special way to members of the same family as the sufferer. Exact methods of inquiry forbid the use of speculative deductions, and therefore an attempt has been made to draw only such conclusions as are legitimately permitted by the facts ascertained. For this reason no statement can be made as to the frequency of bovine infection as a cause of tuberculosis.

I have been unable to find any direct reference in the literature at my disposal here to the frequency of possible human infection in cases of pulmonary tuberculosis. Carstairs Douglas, however, quotes, without giving the reference, a result obtained by C. J. B. and Theodore Williams that "a history of the disease in the parents, brothers and sisters of the patient occurs in about 33 per cent." ("Laws of Health," 1908, p. 196.)

This figure of 33 per cent. agrees remarkably with the figure of 33.8 per cent. obtained in Group C in this inquiry.

The results recorded above are sufficient in themselves to call attention to the need for supervision of and provision for infectious human tubercular cases. This has hitherto

been a somewhat neglected field of operations in all countries.

GROUP B.

No.	Sex.	Age.	Duration of illness (years).	Source of possible infection.
1	F	32	5/12	Trained nurse. Has not to her knowledge nursed a tubercular case for over two years. Was district nurse in Perth nine months prior to inquiry.
2	F	30	—	Aunt died of phthisis when patient was 18 months old. Until this aunt's death patient was in close contact.
3	F	35	16/12	Lived with tubercular patient 16 years ago.
4	M	23	—	Two aunts died from phthisis. Unascertained whether contact or not.
5	F	65	—	Mother died from phthisis when patient was a young girl.
6	M	49	19/12	An uncle died from phthisis. No contact with him for many years.
7	F	26	2 (at least).	Two uncles died from phthisis. No contact for several years.
8	F	40	3	Occupied a house recently tenanted by a person suffering from phthisis.
9	M	27	16/12	One sister suffering from phthisis, whom patient has not seen for several years.

GROUP C.

10	F	40	—	Lived with mother and sister who had phthisis, and with husband who died from phthisis.
11	F	38	—	Husband and husband's father died from phthisis.
12	F	36	2/12	Father suffered from "miner's" complaint.
13	M	22	—	Father at present under treatment for phthisis.
14	F	24	4	Father died from "miner's" complaint.
15	F	39	—	Washing for family of No. 49 for five years. Father died of phthisis.
16	M	45	3/12	Frequent and close association with half-caste girls who died from phthisis.
17	F	9½	3/12	Sister, aunt and cousins of patient's mother died from phthisis.
18	F	10½	2/12	
19	M	20	—	Mother consumptive.
20	F	21	6/12	Sister died four years ago from phthisis.
21	F	24	—	Two years ago lived in the same house with a tubercular patient.
22	M	37	—	Two brothers died from phthisis.
23	M	30	Over 7 yrs.	Brother died from phthisis.

No.	Sex.	Age.	Duration of illness (years).	Source of possible infection.
24	M	—	3	Lodged in same bedroom for long periods on two occasions with a known consumptive a little more than three years ago.
25	M	40	—	Brother, aged 36, died from phthisis. (This case is father of No. 27.)
26	M	49	1	Became caretaker at railway latrines at workshops a year ago; succeeded a man invalided for phthisis.
27	M	14	—	Father (No. 25) suffers from phthisis; brother died from same disease four months ago.
28	F	34	4	Proprietress of an hotel in which lived a lodger known to have phthisis. Gave up hotel four years ago.
29	M	32	4	Worked in same shop as a man who had phthisis.
30	F	8	—	Mother suffers from phthisis.
31	F	28	—	Sister suffers from phthisis.
32	F	17	—	Father died from "miner's" complaint.
33	F	18	6/12	Lived with cousin who died from phthisis.
34	M	50	—	Lived with father who died from phthisis.
35	F	27	—	Lived with cousin who suffers from phthisis.
36	F	19	—	Father died from phthisis.
37	M	44	3	Lived with mother who died from phthisis.
38	F	15	8/12	Lived with consumptive just before the onset of her disease. Mother died from phthisis eight years ago.
39	F	44	—	Father died from phthisis.
40	M	27	Advanced.	Mother died from phthisis eight years ago.
41	M	17	—	Mother and sister died from phthisis.
42	M	38	1	Consumptive friend used frequently to visit patient. Father died from phthisis.
43	F	22	—	Two sisters suffer from phthisis.
44	M	25	3	Lived with mother until her death from phthisis.
45	M	22	—	Two months ago lived in a house with a tubercular patient.
46	M	13	2/12	In a close and constant association with a Case 16 above.
47	M	32	—	Patient's brother died from phthisis, under her care 6 years previously.
48	F	31	Some years.	Brother died from phthisis. Mother suffers from phthisis.
49	F	28	—	Was working for some time with a consumptive mate.
50	F	26	—	Lived in same house with a tubercular patient.
51	M	24	—	
52	—	—	—	

It may not be out of place here to refer to another phase of the tuberculosis question, more especially in its relationship to the vexed question of the relative importance of bovine and human infection. It will be instructive to place in two columns the quinquennial death-rates from tuberculosis in Western Australia and the ascertained numbers of cattle in the State for the same periods.

	Death-rates from phthisis per 1,000 of mean population.	Number of cattle in the State.
1873	...	47,640
1878	...	56,158
1883	0.768	64,558
1888	.993	95,822
1893	.713	173,747
1898	.669	269,947
1903	.651	497,617
1904	.837	561,490
1905	.647	631,825
1906	.820	690,011
1907	.781	717,377

This table shows that during twenty-five years the death-rate from phthisis remained about the same for the whole period, while the number of cattle increased during the same period from 64,558 to 717,377, *i.e.*, the total was multiplied more than eleven times in that time. If tuberculosis in animals played any considerable part in the production of tuberculosis in man, then it would appear to be reasonable to assume that with this rapid rise in the number of cattle in the State there would be a corresponding rise in the incidence of human tuberculosis in the State, and therefore a progressive rise in the death-rate from phthisis.

The table shows that this has not been so.

Of course, the contention that there has been a diminution in the amount of bovine tuberculosis might be raised, but there are no data on this point.

Unquestionably the facts revealed by the inquiry reported in this paper direct attention to the grave importance of human infection in tuberculosis.

A LOW DEATH-RATE.—Dr. F. W. Andrew, medical officer of health for the urban district of Hendon, in which the Hampstead Garden Suburb is included, says that the death-rate in the suburb last year was only 1.6 per 1,000, and infant mortality none. Three of the four deaths that took place were those of persons more than sixty-five years of age.

We regret to hear that Dr. Zenchallo, Medical Officer of the International Sanitary Commission, has died of plague at Jeddah as the result of infection when examining rats.

MORTALITY FROM PHTHISIS IN YORKSHIRE.*

By T. ADAM, M.A., M.B., Ch.B., M.R.C.S., L.R.C.P., D.P.H., Assistant County Medical Officer for the West Riding of Yorkshire.

IN the present paper it is desired to investigate statistically the mortality from phthisis in the Registration Counties of the West Riding, the North Riding, and the East Riding,† and in England and Wales as a whole.

In order to get a broad basis for a standard of comparison, the mean annual death-rates from phthisis for the different age-groups in England and Wales during the decennium 1891-1900 are calculated. This is accomplished by first calculating the number of lives at risk in the various age-periods for England and Wales during 1891-1900, and finding from the Registrar-General's returns the number of deaths from phthisis during the same decennium. The mean annual death-rates for all the age-periods can then be ascertained. The results are set forth in Table I.

In passing, it may be noticed from Table I, which refers to England and Wales during the decennium 1891-1900, that while the mean annual death-rate from phthisis is much lower for females than for males, being 12.14 per 10,000 females, and 15.80 per 10,000 males, there are three age-groups, *viz.*, 5-10, 10-15, and 15-20, at which the death-rate from phthisis among females is higher than among males.

Having found the death-rates for the several age-periods, as shown in Table I, the next step is to apply these death-rates to the populations in the corresponding age-periods of the communities whose death-rates it is desired to compare. These calculations will give the number of deaths that would happen in these communities if the death-rates were the same as for England and Wales. The deaths so calculated for the age-periods are then added for the males and females separately, and a hypothetical death-rate is thus obtained for males and females respectively, and also for the two collectively. These are called standard death-rates, and they have been calculated for phthisis for the populations of the West Riding, the North Riding, and the East Riding, as set out respectively in Tables II, III and IV.

* Read before the Yorkshire Branch of the Society of Medical Officers of Health on January 20th, 1910.

† West Riding, North Riding, and East Riding in this paper always mean the Registration Counties of the West Riding, North Riding, and East Riding respectively.

TABLE I.

Ages.	Lives at risk in England and Wales, 1891-1900.		Deaths from Phthisis in England and Wales, 1891-1900.		Mean Annual Death-rate from Phthisis in England and Wales, 1891-1900 per 10,000 living at each group of ages and at all ages.	
	Males.	Females.	Males.	Females.	Males.	Females.
Under 5	18,095,730	18,223,078	7,987	7,018	4.41	3.85
5-10	17,160,482	17,248,890	2,978	4,115	1.74	2.39
10-15	16,400,589	16,409,757	3,830	8,231	2.34	5.02
15-20	15,317,559	15,571,248	15,235	20,088	9.95	12.90
20-25	13,515,549	15,143,571	25,498	24,094	18.87	15.91
25-35	22,724,829	25,108,663	53,832	48,280	23.69	19.23
35-45	17,593,089	18,777,028	54,457	39,826	30.95	21.21
45-55	12,864,066	13,982,182	40,444	22,958	31.44	16.42
55-65	8,338,792	9,556,028	21,831	11,838	26.18	12.39
65-75	4,604,435	5,698,340	7,293	4,597	15.84	8.07
75 and upwards	1,716,887	2,384,056	956	838	5.57	3.52
All ages	148,332,007	158,102,841	234,341	191,883	15.80	12.14
	306,434,848		426,224		13.91	

TABLE II.—WEST RIDING (REGISTRATION COUNTY).

Ages.	Mean Annual Death-rate from Phthisis in England and Wales 1891-1900 per 10,000 living at each group of ages.		Population of Registration County of West Riding in 1901.		Calculated number of Deaths from Phthisis in Registration County of West Riding in 1901.	
	Males.	Females.	Males.	Females.	Males.	Females.
Under 5	4.41	3.85	156,971	159,326	69	61
5-10	1.74	2.39	143,240	145,946	25	35
10-15	2.34	5.02	135,561	138,045	32	69
15-20	9.95	12.90	135,324	139,562	135	180
20-25	18.87	15.91	132,549	143,931	250	229
25-35	23.69	19.23	225,465	241,524	534	464
35-45	30.95	21.21	170,404	178,276	527	378
45-55	31.44	16.42	123,461	129,600	388	213
55-65	26.18	12.39	76,181	85,703	199	106
65-75	15.84	8.07	35,285	44,607	56	36
75 and upwards	5.57	3.52	10,568	14,942	6	5
			1,345,009	1,421,462	2,221	1,776
			2,766,471		3,997	

∴ Standard Death-rate: Males, 16.51 per 10,000; Females, 12.49 per 10,000.

∴ Standard Death-rate (M. + F.) per 10,000 = 14.45.

TABLE III.—NORTH RIDING (REGISTRATION COUNTY).

Ages.	Mean Annual Death-rate from Phthisis in England and Wales 1891-1900 per 10,000 living at each group of ages.		Population of Registration County of North Riding in 1901.		Calculated number of Deaths from Phthisis in Registration County of North Riding in 1901.	
	Males.	Females.	Males.	Females.	Males.	Females.
Under 5	4.41	3.85	22,087	22,148	10	9
5-10	1.74	2.39	20,465	20,573	4	5
10-15	2.34	5.02	19,957	20,172	5	10
15-20	9.95	12.90	19,461	19,155	19	25
20-25	18.87	15.91	16,809	18,122	32	29
25-35	23.69	19.23	27,521	28,962	65	56
35-45	30.95	21.21	21,510	22,331	66	47
45-55	31.44	16.42	17,143	16,811	54	28
55-65	26.18	12.39	11,793	11,727	31	15
65-75	15.84	8.07	6,563	6,827	10	5
75 and upwards	5.57	3.52	2,707	3,074	2	1
			186,016	189,902	298	230
			375,918		528	

∴ Standard Death-rate: Males, 16.02 per 10,000; Females, 12.11 per 10,000.

∴ Standard Death-rate (M. + F.) per 10,000 = 14.04.

TABLE IV.—EAST RIDING (REGISTRATION COUNTY).

Ages.	Mean Annual Death-rate from Phthisis in England and Wales 1891-1900 per 10,000 living at each group of ages.		Population of Registration County of East Riding in 1901.		Calculated number of Deaths from Phthisis in Registration County of East Riding in 1901.	
	Males.	Females.	Males.	Females.	Males.	Females.
Under 5 ...	4.41	3.85	26,667	26,878	12	10
5-10 ...	1.74	2.39	24,361	24,581	4	6
10-15 ...	2.34	5.02	23,745	23,314	6	12
15-20 ...	9.95	12.90	23,012	22,850	23	29
20-25 ...	18.87	15.91	20,820	22,554	39	36
25-35 ...	23.69	19.23	34,082	37,143	81	71
35-45 ...	30.95	21.21	26,181	27,367	81	58
45-55 ...	31.44	16.42	20,163	20,404	63	34
55-65 ...	26.18	12.39	13,320	14,218	35	18
65-75 ...	15.84	8.07	7,350	8,361	12	7
75 and upwards ...	5.57	3.52	2,771	3,794	2	1
			222,472	231,464	358	282
			453,936		640	

∴ Standard Death-rate: Males, 16.09 per 10,000; Females, 12.18 per 10,000.

∴ Standard Death-rate (M.+ F.) per 10,000 = 14.10.

From the three foregoing tables, the results as set forth in Table V are obtained:—

TABLE V.

STANDARD DEATH-RATES FROM PHTHISIS PER 10,000 PERSONS.

	Males.	Females.	Both Sexes.
West Riding ...	16.51	12.49	14.45
North Riding ...	16.02	12.11	14.04
East Riding ...	16.09	12.18	14.10
Mean Annual Death-rate from Phthisis in England and Wales 1891-1900 — (see Table I) ...	15.80	12.14	13.91

The standard death-rate from phthisis for the year 1901 for each of the Ridings being higher than the mean annual death-rate from phthisis in England and Wales during 1891-1900 must be due to differences in age and sex distribution, for which an allowance in each case ought to be made before they are on a strictly comparable basis. It will be noticed that the standard death-rate from phthisis in the West Riding is the highest, so that here the greatest allowance must be made. The crude or recorded death-rate from phthisis in the West Riding must therefore be decreased in the ratio of the mean annual death-rate from phthisis in England and Wales during 1891-1900 to the standard death-rate from phthisis in the West Riding for the year 1901. The ratio thus expressed gives what is called the factor for correction.

Factors for correction of age-distribution

have been calculated separately for males and females, and also factors for correction of both age and sex distribution together, and the results obtained from the use of these factors are shown in the following Tables VI, VII and VIII.

TABLE VI.

RECORDED AND CORRECTED DEATH-RATES PER 10,000 MALES FROM PHTHISIS IN ENGLAND AND WALES, WEST RIDING, NORTH RIDING, AND EAST RIDING.

	Standard Death-rate from Phthisis for 1901.	Factor for Correction for age distribution.	Recorded Death-rate from Phthisis per 10,000 Males for 1907.	Corrected Death-rate from Phthisis per 10,000 Males for 1907.	Comparative Mortality figure for Phthisis among Males for 1907.
Cols.	1	2	3	4	5
Engl'd & Wales	15.80	1.0000	13.42	13.42	1,000
West Riding...	16.51	0.9570	13.22	12.65	943
North Riding...	16.02	0.9863	12.99	12.81	955
East Riding ...	16.09	0.9820	12.44	12.22	911

∴ Factors for correction of crude death-rate of males:—

$$= \frac{15.80}{16.51} = 0.9570 \text{ in West Riding.}$$

$$= \frac{15.80}{16.02} = 0.9863 \text{ in North Riding.}$$

$$= \frac{15.80}{16.09} = 0.9820 \text{ in East Riding.}$$

TABLE VII.
RECORDED AND CORRECTED DEATH-RATES PER 10,000 FEMALES FROM PHTHISIS IN ENGLAND AND WALES, WEST RIDING, NORTH RIDING, AND EAST RIDING.

	Standard Death-rate from Phthisis for 1901.	Factor for Correction for age distribution.	Recorded Death-rate from Phthisis per 10,000 Females for 1907.	Corrected Death-rate from Phthisis per 10,000 Females for 1907.	Comparative Mortality figure for Phthisis among Females for 1907.
Cols.	1	2	3	4	5
Engl'd & Wales	12.14	1.0000	9.52	9.52	1,000
West Riding...	12.49	0.9720	8.94	8.69	913
North Riding...	12.11	1.0025	9.59	9.61	1,009
East Riding ...	12.18	0.9967	10.79	10.75	1,129

Factors for correction of crude death-rate of females are calculated in same manner as in Table VI.

TABLE VIII.

RECORDED AND CORRECTED DEATH-RATES PER 10,000 PERSONS FROM PHTHISIS IN ENGLAND AND WALES, WEST RIDING, NORTH RIDING, AND EAST RIDING.

	Standard Death-rate from Phthisis for 1901.	Factor for Correction for age and sex distribution.	Recorded Death-rate from Phthisis for 1907.	Corrected Death-rate from Phthisis for 1907.	Comparative Mortality figure for Phthisis for 1907.
Cols.	1	2	3	4	5
Engl'd & Wales	13.91	1.0000	11.40	11.40	1,000
West Riding...	14.45	0.9626	11.02	10.61	931
North Riding...	14.04	0.9907	11.26	11.16	979
East Riding ...	14.10	0.9865	11.60	11.44	1,004

Factors for correction of general crude death-rate are calculated in same manner as in Tables VI. and VII.

Before entering on this inquiry into the ravages of phthisis in Yorkshire as compared with England and Wales as a whole, the writer had fully expected that the West Riding, with its enormous industrial population, would suffer from this disease more severely than either the North or East Riding or than England and Wales. The crude mean annual death-rates for the decennium 1891-1900, so far as deductions can be drawn from them, seem to prove that this expectation as to the relative severity in the different areas mentioned was correct for that period.

The crude and also the corrected mean annual death-rates are shown in Table IX.

The factor for correction in each case has been applied to the crude mean death-rate, thus giving the corresponding corrected mean death-rate. This process is permissible, because of the stability of age and sex distribution in large districts.

TABLE IX.

CRUDE AND CORRECTED MEAN ANNUAL DEATH-RATES FROM PHTHISIS PER 10,000 PERSONS (1891-1900).

Area.	Sex.	Crude Mean Annual Death-rate 1891-1900.	Factor for Correction.	Corrected Mean Annual Death-rate 1891-1900.
England & Wales	M.	15.80	1.0000	15.80
	F.	12.14	1.0000	12.14
	M.&F.	13.91	1.0000	13.91
West Riding	M.	16.00	0.9570	15.31
	F.	12.31	0.9720	11.97
	M.&F.	14.12	0.9626	13.59
North Riding	M.	11.93	0.9863	11.76
	F.	11.87	1.0025	11.90
	M.&F.	11.90	0.9907	11.79
East Riding	M.	14.21	0.9820	13.95
	F.	11.89	0.9967	11.85
	M.&F.	13.03	0.9865	12.85

It will be observed from Table IX that the crude mean annual death-rates from phthisis (1891-1900) were higher for both males and females in the West Riding than in England and Wales, or in either of the other Ridings, while the crude mean annual death-rates in each case in the North Riding and in the East Riding were lower than for England and Wales as a whole, the North Riding rates being considerably lower.

In the column of Table IX showing the corrected mean annual death-rates (1891-1900) it is seen that the West Riding rates are lower than for England and Wales as a whole, though higher in every case than for either of the other Ridings.

In Column 1 of Table VIII it is seen that the standard death-rates from phthisis, taken in the order of their magnitude, are:—

14.45 in the West Riding

14.10 „ East „

14.04 „ North „

13.91 in England and Wales.

This means that the deduction from the crude or recorded death-rate for age and sex distribution must be greatest in the West Riding, next greatest in the East Riding, and least in the North Riding—the constitution of the population of the North Riding as to

age and sex distribution most nearly approximating to the population of England and Wales as a whole. The fraction therefore which represents the factor for correction (Column 2, Table VIII) is least in the case of the West Riding, next smallest in the case of the East Riding, and largest in the case of the North Riding.

Column 3 (Table VIII) gives the recorded death-rates from phthisis during 1907. The West Riding rate is 11.02 per 10,000 persons, and is lower than any of the others given, the next being the North Riding with a rate of 11.26, then England and Wales with 11.40, and lastly the East Riding with 11.60, which is the highest of the four.

Column 4 (Table VIII), giving the corrected death-rates from phthisis for 1907, shows that the same order is maintained as in the recorded death-rates, although the corrected death-rates for the three Ridings are somewhat reduced from the recorded death-rates, the greatest decrease being made in the death-rate in the West Riding.

The figures in Table X show the *actual decrease or increase* in the corrected death-rates per 10,000 persons from phthisis in 1907 as compared with the corrected mean annual death-rates from phthisis 1891-1900.

TABLE X.

	Males.	Females.	Males & Females.
England and Wales	2.38 decrease	2.62 decrease	2.51 decrease
W. Riding..	2.66 "	3.28 "	2.98 "
N. Riding...	1.05 increase	2.29 "	0.63 "
E. Riding...	1.73 decrease	1.10 "	1.41 "

It would be interesting here to see, as in Table XI, the *percentage decrease or increase* in the corrected death-rates from phthisis in 1907 as compared with the corrected mean annual death-rates from phthisis 1891-1900.

TABLE XI.

	Males.	Females.	Males & Females.
England and Wales	15.1 decrease	21.6 decrease	18.0 decrease
W. Riding..	17.4 "	27.4 "	21.9 "
N. Riding...	8.9 increase	19.2 "	5.3 "
E. Riding...	12.4 decrease	9.3 "	10.9 "

The above Table XI indicates the percentage reduction in the death-rate from phthisis in West Riding: 21.9 for males and females, 17.4 for males, and actually 27.4 for females during the last ten or twelve years. Of course, it must

be noticed that the figures showing the corrected mean annual death-rate due to phthisis (1891-1900) indicate a worse condition of things in the West Riding than in either of the other Ridings, whereas in 1907 the corrected death-rate due to phthisis is smaller in the West Riding than in either of the other Ridings. This change in the West Riding from having the least favourable to having the most favourable death-rate with regard to phthisis in the three Ridings explains why the West Riding shows such a large percentage decrease when comparing the corrected mean annual death-rate from phthisis during 1891-1900 with the corrected death-rate from phthisis in 1907. The corrected mean annual death-rate from phthisis in the North Riding (1891-1900) is much more favourable than in the West Riding, and there being less room, as it were, for improvement, explains to some extent why the decrease from the corrected mean annual death-rate of 1891-1900 to the corrected death-rate of 1907 is relatively so small for males and females taken together. It is somewhat remarkable that the 1907 corrected death-rate for males in the North Riding shows a percentage increase of 8.9 over the corrected mean annual death-rate of 1891-1900.

Column 5 in Tables VI, VII, and VIII shows the comparative mortality figure respectively for males alone, for females alone, and for males and females together.

The figures in Column 5 of Table VIII signify that the same number of persons (male and female), among whom in England and Wales there occurred 1,000 deaths from phthisis during 1907, only gave 931 deaths from phthisis in the West Riding during the same year. From the same number in the North Riding 979 deaths from phthisis would have occurred during 1907, and in the East Riding 1,004.

Column 5 of Table VI shows that the same number of *males* who during 1907 gave 1,000 deaths from phthisis in England and Wales would have given 943 in the West Riding, 955 in the North Riding, and only 911 in the East Riding.

Column 5 of Table VII shows the comparative mortality figure for females of the West Riding during 1907 to be so small as 913, while both in the North Riding and in the East Riding the figure is larger than for England and Wales as a whole, that for the East Riding being as high as 1,129.

The foregoing figures indicate the marked improvement with regard to phthisis among

the population of the West Riding. From having during 1891-1900 a higher corrected mean annual death-rate from phthisis than either the North Riding or the East Riding, the West Riding in 1907 had a lower corrected death-rate from phthisis than either of the other Ridings.

At this point one naturally inquires as to the reasons for this remarkable result.

The areas of the Registration Counties of West, North and East Ridings may be considered for all practical purposes to coincide with the geographical areas. It will be understood, then, that probably nine-tenths of the population of the West Riding is urban in character and a very large proportion industrial in occupation. On the other hand, the population of the Registration Counties of the North and East Ridings may be regarded relatively as rural in character and agricultural or pastoral in occupation. It will be conceded that the West Riding, because of the industrialism and aggregation of its population, is less favourably situated than the other two Ridings with regard to phthisis, and one would *a priori* conclude that a higher death-rate from phthisis would obtain in the West Riding than in either of the other two. This fact was the case in the decade 1891-1900. What has happened since that time to produce such a remarkable change in the death-rate from phthisis in the West Riding? It cannot be attributed to a change in the type of inhabitant, or to a change in the occupation of the people. There has been no change in climate to account for it. Trade has not improved since then, so that improved trade cannot be given as a reason for the improvement. The great rateable value of the West Riding has doubtless enabled the sanitary authorities to carry through many public works for the betterment of the conditions of life, but probably the great factor in the reduction of the death-rate from phthisis in the West Riding has been the education of the people themselves as to "preventive forces." The county medical officer's report for the year 1898 records the initiation of a campaign having for its object the enlightenment of the people as to the nature of tuberculosis and as to the best means of combating the disease. The successive reports of the county medical officer show that this campaign has never slackened, and its scope has been continuously widened up to date.

The "preventive forces" which have been operative might here be shortly reviewed. First

in importance should be placed the specific education of the people as to the nature of tuberculosis: its infectivity, prevention, and cure. This education has been promoted by means of lectures, handbills, and the Press, whose pages have been at all times open to promote the good work. Whilst thoroughly instilling into the people this fundamental lesson, continuous attention has also been given to the administrative control of milk and meat supplies, with inspection of milk-cows, cowsheds, dairies, etc. The Bacteriological Laboratory established in the West Riding in 1901 has served in a practical way to show the people that the sputum of a phthisical patient is the principal vehicle for the dissemination of the tubercle bacilli, and that therefore the patient's surroundings may be readily contaminated. The people have also recognised the advisability of disinfecting the houses, clothing, sputum, etc., of those affected, a precaution which is largely practised where there is voluntary notification of phthisis. Following, naturally, came the adoption by the West Riding Sanitary Committee of a by-law for the restriction of the spitting habit in certain public places.

The members of the medical profession have borne a large share in the education of the sufferers, teaching them the valuable lesson of "How to live." In this respect, though in a minor degree in the West Riding, sanatoria have played a useful part. Patients have been shown that by following a few simple rules they can reduce almost to zero the chances of their spreading infection. The gospel of fresh air in living-rooms, bedrooms, etc., has been unceasingly preached, as a means both of prevention and cure. Improved sanitation in houses, schools, workrooms, factories, etc., has been playing a useful part. It has been clearly demonstrated that anything which debilitates the body renders easier the inroads of the disease; and, conversely, that those conditions which tend to build up the body enhance its resisting power, and hence the people have been taught, among other things, the advantages of (1) the improvement of diet and (2) the promotion of temperance. Other important lessons, full of cheer, which have been learned are (1) that the disease is not hereditary, but acquired; and (2) that when properly treated at an early stage it is eminently curable. Medical science has clearly established that while susceptibility to the disease varies in different people, the development or cure of the

affection may rest largely in the hands of the individual himself.

On all the lines indicated above, and in other ways, the people of the West Riding have been undergoing continuous education at the hands of the various local authorities and sanitary reformers since 1898 or so; but teaching of a like nature has, of course, been proceeding over the whole country, and it is not suggested for a moment that the North and East Ridings have been neglected in this respect. What, then, can account for this relatively great advancement of the West Riding? May it not be that the same industrial aggregation which in 1891-1900 rendered the West Riding specially suitable for the reception and dissemination of tubercle has, under the subsequent educational reform, been specially favourable to the reception and dissemination of knowledge as to the nature and prevention of the disease. Naturally, in a large industrial community like the West Riding the modern teaching would more rapidly permeate the general mass of the people than would be the case in the less densely populated Ridings, where the channels of intercourse are fewer, and where, therefore, the influence of the sanitary authorities, the medical profession, the Press, and other agencies would necessarily be more tardy in its leavening process. The same line of thought suggests a further reason for the disproportionate betterment in the case of the West Riding. Possibly the people, having suffered a greater incidence of the disease, and being under conditions where its ravages could be more plainly seen, were in a mood to be converted at once to the new gospel of prevention.

If these theories be accepted, then the indications are (1) that the North and East Ridings will steadily creep up to the West Riding in their good results, and (2) that the West Riding is par excellence the place in which to carry further reforms to fruition.

This should afford the greatest encouragement to the various sanitary authorities in the West Riding to persevere in the course of action outlined for them by the West Riding Sanitary Committee.

At the same time, it is necessary to point out that to maintain a uniform compression of the death-rate from phthisis in the West Riding will demand the application of forces not hitherto extensively employed, viz., sanatorium treatment, and possibly the notification of phthisis. The latter has often formed the subject of lively discussion, and weighty

arguments for and against have been advanced; but to ensure a proper chance of grappling successfully with such a disease as phthisis, it is necessary that the health authorities get to know the particular cases at the earliest possible moment. Only after the cases are known is there a proper chance to detect and remove the conditions which have tended to produce the disease in each patient.

The function of the sanatorium in the elimination of phthisis is twofold: (1) to cure the disease, and (2) to teach patients "how to live." The second is by no means the less important. Too often the consumptive, after his residence in a sanatorium, goes back to the old abode and to the same conditions of employment as before. These in most cases could be vastly improved, and indeed it seems to me that the full value of a sanatorium is only to be hoped for when the standard of home and industrial conditions generally has been greatly raised. Although a patient after, say, three months' residence in such an institution may not be cured, and although his ordinary environment may leave much to be desired, he is enabled on returning to his home and to his work to put into practice there, so far as the conditions will permit, the valuable principles of living which he has learned. Thus not only does he himself benefit, but he becomes a centre of light for the guidance of all with whom he comes into intimate relation. Although, therefore, residence in a sanatorium may often fail to cure a patient, it can hardly fail as an educative force. Apart altogether from the humanitarian aspect of the question, when it is remembered that the incidence of this great plague is in large measure confined to adolescents and adults, and that therefore lives are lost through it at the period when most valuable to the State, it will be seen that the outlay entailed in providing sanatoria as educative centres would in the end prove a profitable investment.

SCHOOL CLOSURE FOR DIPHTHERIA.—In theory school closure should seldom be required during an outbreak of diphtheria, which can be kept in check more efficiently while an affected school remains open than when it is closed, if frequent visits be paid for the medical examination of suspicious cases and contacts. In practice, however, it is often found that fright among the parents of children attending a school in which three or four cases of diphtheria have occurred reduces the attendance so much that work can hardly be continued, and closure becomes necessary on that account.—*Annual Report of Dr. T. Henry Jones, Education Medical Officer, Surrey.*

RETURN CASES IN SCARLATINA: AN ANALYSIS OF EIGHT YEARS.

By JOHN RITCHIE, M.B., Ch.B., D.P.H.,
Senior Medical Assistant, City Hospital, Edinburgh.

THE following investigations were undertaken, firstly, with a view to determining how far the experience of the City Hospital, Edinburgh, corresponded with that of other institutions in regard to "return cases" of scarlatina; and, secondly, to decide whether it were possible to draw any distinction between the type of return cases and that of scarlatina generally.

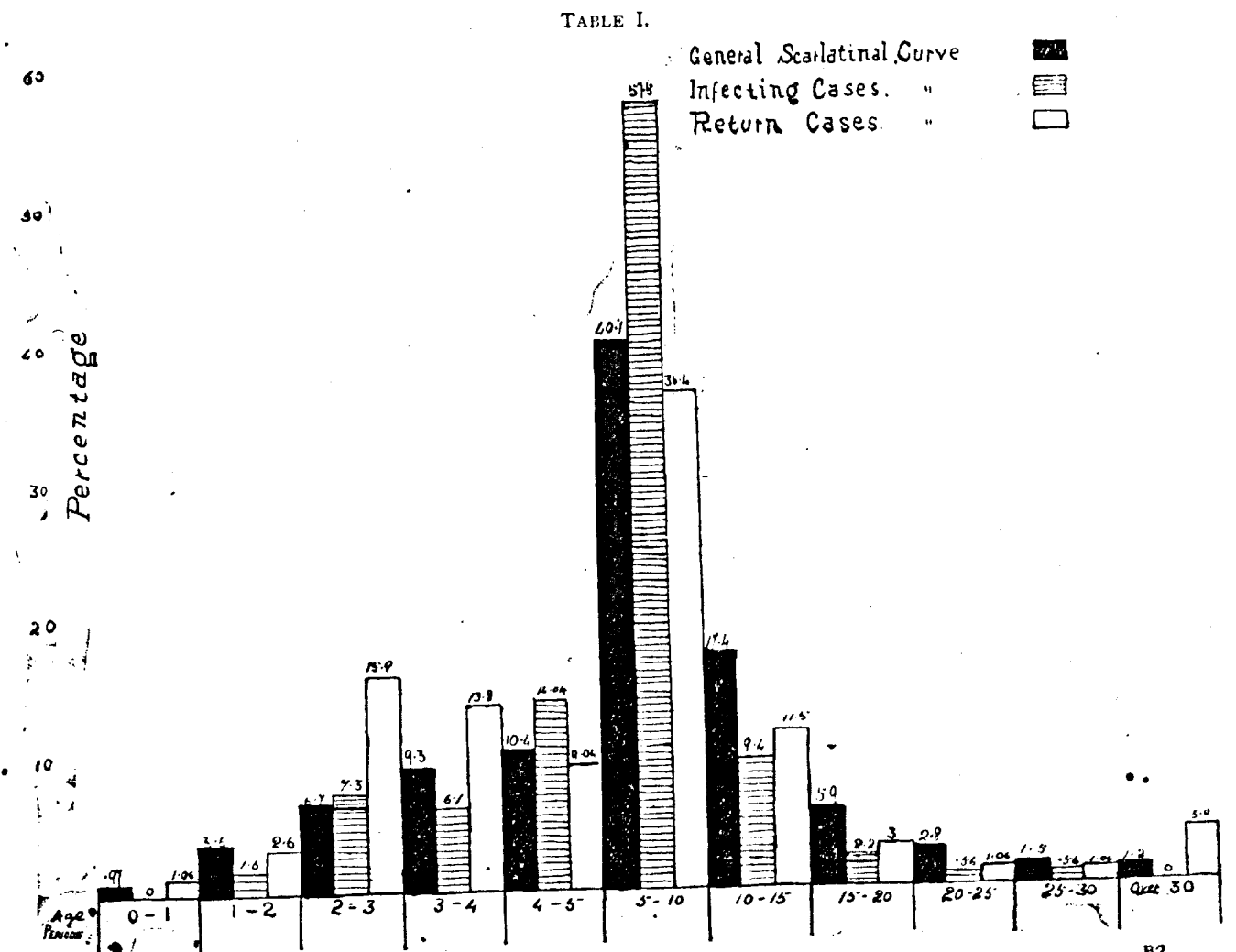
Cases of scarlatina occurring in a house to which a post-scarlatinal patient has been discharged within the previous six weeks are accepted as return cases. The period is, of course, an arbitrary one, but experience shows that return cases practically never occur after a longer interval. Most fever hospitals, I believe, accept the same convention.

My series is based on the figures for the period 1901-1908 inclusive. During that time 7,748 cases of scarlatina were discharged from hospital. Of those 188 were return cases, which were traced to 178 infecting cases, giving a return-case percentage of 2.42 per cent., and an infecting-case percentage of 2.29 per cent., which may, I think, be considered a fairly satisfactory ratio.

AGE INCIDENCE.

The age incidence of both infecting and return cases is shown in Table I, compared with the age incidence of "all scarlatina." The figures for the latter curve are obtained from Foord Caiger's table in "Allbutt's System of Medicine" (1), which is founded on a series of 167,840 cases.

The most obvious deduction to be drawn from these curves is the preponderance of return cases in the first five years of life—42.4 per cent., as against 30.97 per cent. of "all scarlatina," and 29.04 per cent. of infecting



cases. This may be ascribed to the fact that children during the first quinquennium are but little affected by school influence and the ordinary sources of scarlatinal infection, while they can be easily infected by a case in the actual home. (This point is also of interest in regard to the so-called "coincidence cases," on which I shall touch later.)

In this particular my results differ from those of Millard (2), who found that the age distribution of his 171 cases corresponded almost exactly with that of his "all scarlatina"—a series of 4,810 cases.

The "over 30" period again shows a rise in the number of return cases—3.9 per cent., as against 1.2 per cent. of "all scarlatina." This group consists entirely of parents infected by their children on return from hospital.

Infecting cases during the first five years correspond closely to "all scarlatina"—29.04 per cent. and 30.97 per cent. In the 5-10 age period, however, they are markedly in excess—57.5 per cent. infecting cases to 40.1 per cent. "all scarlatina." This is in accord with the statement of Cameron (3), who states that a majority of infecting cases occur between four and ten years of age.

In my series there were no infecting cases under one year of age or over thirty.

SEX.

Neither the infecting nor the return cases showed any peculiarity in regard to sex distribution. The former comprised 98 males and 80 females, the latter 93 males and 95 females.

DETENTION OF INFECTING CASES.

Only three of the infecting cases were discharged after a shorter detention than five weeks. Of those two were admitted desquamating, and were discharged after thirty days. The third showed no signs of scarlatina on admission, did not desquamate, and went home after thirty-two days' observation.

	Under										Over
	Weeks	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12		
Cases	...	3	10	48	42	27	13	9	9	17	
Percentage		1.6	5.6	26.88	23.5	15.1	7.2	5.05	5.05	9.5	

It is noteworthy that no less than 9.5 per cent. were detained over twelve weeks on account of persistent discharges, while only 7.2 per cent. were discharged before six weeks. This is in accord with the now generally accepted view that prolonged detention in hospital is no safeguard against return cases. Sørensen (4), indeed, states that it is the best method of prevention; but as 77 of his 273 cases occurred after a stay in hospital of eleven to twenty days, and most of the remainder after correspondingly short periods, his results cannot be considered parallel with those of observers in this country.

Assuming the usual incubation period of scarlatina to be two to four days, it is not surprising that only 2.65 per cent. of the return cases were admitted within three days of the discharge of the infecting case. It is rather astonishing, however, that no less than 69 per cent. occurred after an interval of a week. Turner (5) in his report to the Metropolitan Asylums Board found the maximum

TABLE III.
INTERVAL BETWEEN DISCHARGE OF INFECTING AND ADMISSION OF RETURN CASE.

Days ...	1-2	2-3	3-4	4-5	5-6	6-7	7-10	10-14	14-21	21-28	28-42
Cases...	3	2	8	15	11	18	40	38	36	13	4
Percentage ...	1.59	1.06	4.24	7.96	5.84	9.55	21.24	20.17	19.11	6.91	2.12

TABLE IV.
TYPE OF INFECTING CASES, RETURN CASES AND ALL SCARLATINA.

	Case Mortality.	S. Anginosa.	Nephritis.	Arthritis.	Otorrhœa.	Rhinorrhœa.	Adenitis.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
All Scarlatina, 1905-08 ...	2.72	4.01	4.55	3.94	9.99	9.63	10.92
Return Cases, 1901-08 ...	2.12	4.25	3.72	3.72	24.46	19.14	26.87
Infecting Cases, 1901-08 ...	—	2.8	5.05	3.37	20.22	16.85	19.66

number of return cases to occur on the fifth day after the discharge of the infecting case, and a steady decline after the seventh. In my series the maximum falls about the seventh day, and the decline does not begin for some days later. Preisich (6) found the interval in 80 per cent. of his cases to be three to fifteen days, but he appears to have included no case occurring after twenty days.

It is of course impossible to draw any very exact deductions from the length of interval. In many cases one obtains histories of the recurrence of discharges after the patient has left hospital; in others the susceptible members of the patient's family may have been sent away before his return home, and are therefore not exposed to infection for some days or weeks.

Type (Table IV).—As the complete complication rates for the first half of the period under consideration are unfortunately not available, I have taken the statistics for the second half (1905-1908) for the purpose of comparison. This comprises 4,411 cases.

In the series of 188 return cases there were four deaths, giving a case mortality of 2.12 per cent. Two of those cases were complicated by diphtheria, and were those deducted the return case mortality would be reduced to 1.06 per cent. Accepting 2.12 per cent., however, it compares favourably with the hospital "all scarlatina" case mortality for 1905-1908, which was 2.72 per cent. It would appear that Edinburgh has been unusually fortunate in this respect. Cameron (7) found a slightly higher case mortality among return cases than the average, though Turner (8), continuing his investigations, found a slight preponderance in the other direction. Millard (*loc. cit.*) found a return case mortality of 7.6 per cent., as against 4.8 per cent. for all scarlatina during the same period. Greenwood (9) and most other writers report return case mortalities above the average.

The percentage of return cases of the anginose type is in my series slightly higher than of "all scarlatina." Among the infecting cases, however, it is distinctly lower—2.8 per cent. against 4.01 per cent. This may be merely a coincidence, but may be due in part to the fact that anginose cases are isolated when in hospital, and, so far as possible, nursed in the open air.

Amongst complications nephritis and arthritis correspond fairly closely in infecting, return, and all cases; but the more specially infectious

complications—otorrhœa, rhinorrhœa, and adenitis—show a marked difference. Among the infecting cases this is only to be expected, but it is to be noted that among the return cases those complications are more than twice as frequent as in "all scarlatina." This almost suggests that a strain of scarlatina of an unusually infective type was responsible for those outbreaks.

33.5 per cent. of the infecting cases were quite uncomplicated during their stay in hospital.

Judged by complications alone the type of return case in this series has been distinctly more severe than that of "all scarlatina."

INFLUENCE OF COINCIDENCE AND SO-CALLED "HOSPITALISM."

It is, of course, obvious that the fact of a child developing scarlatina within a few days of its brother's return from hospital does not necessarily mean that the infection has been contracted from the discharged case. In any town where scarlatina is prevalent there are always possibilities of infection from extraneous sources which may be responsible for the second case, as they doubtless were for the first.

Again, however carefully house disinfection is carried out, cases may arise when the parents deliberately deceive the disinfecting officer by concealing some article which has been in close contact with the patient—a new dress or a favourite toy—under the impression that it may be injured by disinfection. Such articles remain untouched until the patient's return from hospital, and, being then produced may act as a source of infection.

Again, though in the present state of ignorance as to the causative agent of scarlatina it is inadvisable to dogmatize as to "carrier cases" and "intermittent infection," it is possible that house disinfection may sometimes altogether fail to accomplish its object owing to the presence of a "carrier" in the house—an individual who has passed through an unrecognised attack, and has remained infective.

In support of the view that some return cases are in reality instances of coincidence, I quote the following cases, all of which occurred in 1908 and 1909:—

M. L. discharged January 31st. J. McD. admitted from the same house on February 1st, on the third day of the disease.

H. D. discharged on the evening of Feb. 21st. Her brother, aged ten, developed scarlatina the same night. Unless we assume that the

incubation of scarlatina may be reduced to a few hours, this must be considered as a coincidence.

R. Y. discharged March 11th. His sister admitted February 29th.

M. D. discharged March 27th. A. D., aged four, admitted March 26th.

M. W. discharged July 17th. B. W., aged six, admitted July 10th.

N. C. discharged August 14th. C. C., aged five, admitted July 23rd.

J. S. discharged October 16th. As she was leaving hospital her brother (A. S.), aged twenty, was admitted.

M. R. discharged December 30th. E. R., aged twelve, admitted December 23rd.

M. McG. discharged January 29th. K. McG., aged four, admitted January 13th.

N. McL. discharged March 9th. H. McL., aged six, admitted March 1st. In this case N. McL. had been detained seven weeks and two days in hospital. Had she been discharged after six weeks H. McL. must have been accepted as a return case.

J. H. discharged March 27th. M. H., aged three, admitted March 23rd.

B. S. discharged April 6th. F. S. admitted April 12th *with rubella*.

R. I. discharged June 26th, and went direct to the convalescent home at Campie. Before he had returned home A. I., aged nine, who had never been in contact with him, was admitted on July 14th with scarlatina.

B. T. discharged November 11th. J. T., aged four, admitted October 6th.

R. McN. discharged November 11th. J. McN., aged six, admitted October 21st.

Those cases of second outbreaks of scarlatina occurring within a comparatively short period before the return of the first case from hospital are obviously not due to any infection contracted from the discharged case. Some other source of infection must have been responsible, and it is probable that some of the cases occurring shortly after the discharge of the primary case may be due to similar causes.

It is interesting to note that the majority of those coincidence cases are of higher ages than the one to five age period, which, as I have shown, contains a specially large proportion of return cases.

Greenwood (*loc. cit.*) quotes a series of 101 cases for 1904-1905, in which second cases appeared before the return of the first case from hospital. The majority, however, occurred three to four days after removal, and were

doubtless due to infection by contact with the primary case before its dispatch to hospital. During the same period he had 44 secondary cases in houses when the first case was nursed at home. The intervals between the first and second outbreak in such cases varied from one to sixty-five days, with an average of 14.8.

Chapin (10), discussing the value of home isolation in scarlatina, records a series of 1,671 susceptible children sent away from home on the outbreak of scarlatina. After an absence averaging five to six weeks those children returned home, and came into contact with the post-scarlatina patient. Thirty-one, or 1.2 per cent., then developed scarlatina. His results indicate that the prolonged infectivity of scarlatina is a phenomenon not confined to hospital-treated patients.

Newsholme (11), discussing the possible influence of hospitalism in the causation of return cases, admits that such cases occur in undue proportion in connection with hospital-treated cases, but points out that home-treated cases have not hitherto been rigidly investigated in regard to "return" infection, that home-treated cases are generally "picked" cases, nursed under favourable conditions, and that secondary infection when it does occur is usually ascribed to some failure in house disinfection. After an exhaustive study of the whole subject he decides that hospital treatment is a non-essential concomitant, or at the most an auxiliary of protracted or recrudescence infection.

It seems possible, on the other hand, that home influence, to which the patient is exposed on his return from hospital, may be in some cases the cause of a return of infectivity. The indifferent sanitary conditions and the absence of ventilation which prevail in some of the houses of the poorer classes may be sufficient to excite a sore throat, a nasal catarrh, or even perhaps an unobserved relapse in a case which has not developed a complete degree of immunity after its first attack.

The experience of the convalescent home at Campie, to which a certain number of patients are sent after discharge from the City hospital, is of interest in this respect. During the period 1901-1908 there passed through Campie 1,562 cases convalescent after scarlatina, and 1,325 convalescent after other infectious diseases. Among those 1,562 post-scarlatinal cases were 25 which after their return home from Campie caused return cases. Only two case of scarlatina, however, occurred

among the non-scarlatinal convalescents during that time. (It is hardly necessary to remark that convalescent are sent to Campie only after they are presumably quite free from infection.) This might be taken as indicating that under the conditions at Campie—good ventilation, adequate cubic space and sufficient separation in dormitories—the infectivity of those 25 cases remains in abeyance, to be lit up afresh on their return to less hygienic conditions at home.

It must, however, be noted that the non-scarlatinal population at Campie is probably not particularly susceptible to scarlatinal infection. For administrative reasons children under six years of age are not admitted, and a fair proportion of the inmates are adolescents and young adults convalescent from diphtheria and typhoid, many of whom may have been protected by a previous attack of scarlatina.

On the figures obtained from this series of cases I base the following conclusions:—

1. That the return case incidence is unduly heavy on the first five years of life.
2. That the case mortality of return cases is practically the same as that of "all scarlatina."
3. That the more specially infectious complications of scarlatina—otorrhœa, rhinorrhœa, and adenitis—are more frequent in both infecting and return cases than in "all scarlatina."
4. That a certain proportion of so-called return cases are really due to coincidence.
5. That the return to insanitary home conditions may in some cases be the cause of recrudescence of infection in a patient who was not infectious when leaving hospital.

I have to thank Dr. C. B. Ker, medical superintendent of the Edinburgh City Hospital, for permission to publish these results.

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THE USE OF DRIED MILK AT INFANTS' MILK DEPOTS.*

By C. KILLICK MILLARD, M.D., D.Sc.,
Medical Officer of Health, Leicester.

THE increasing use which is being made of dried milk as a food for infants makes the question of its use at infants' milk depots one of special interest to medical officers of health. At the Leicester Infants' Milk Depot dried milk has almost entirely superseded humanized milk, and the results obtained have been very satisfactory. As this change in our practice is of rather a fundamental character, it will be well to consider the advantages and disadvantages of dried milk in detail.

The dried milk used in the Leicester Depot is milk dried by the following process. In this process a thin film of milk is passed over a revolving metal cylinder heated by steam to a temperature considerably above the boiling point (say 250 F.). The temperature being so high and the film of milk very thin, the greater part of moisture in the milk is rapidly dissipated, what remains being afterwards taken up by the milk-sugar as water of crystallization. The film of dried milk is automatically separated by a knife-edge as the cylinder revolves, and is collected in a receptacle below. The process is beautifully simple, and, owing to the duration of the heating process being so extremely short, the composition of the milk solids is altered comparatively little—a very important point.

Dried milk as thus obtained is a coarse, granular, cream-coloured powder, easily miscible with water, in which the greater part of it readily dissolves. The relative proportion of fat, proteids, and lactose remain the same as in the original milk. After reconstitution as liquid milk by the addition of water the consistency, colour, and taste are all found to be somewhat modified, and the fat rises more readily to the surface, owing to the cream globules being ruptured. It is by no means unpalatable, but is not very suitable for use with tea or coffee.

As a food for infants it has one outstanding and all-important advantage, viz., that it is more easily retained—i.e., is more digestible—than fresh cow's milk. Possibly this is due to the fact that it does not tend to form a hard cheesy curd in the stomach, as is so often the case with the latter.

It is only necessary to try dried milk in a few cases of infants who are sick after almost every

* Read before the Midland Branch of the Society of Medical Officers of Health, February 3rd, 1910.

meal and making little or no progress, to satisfy oneself of the value of dried milk. The improvement is often very striking: the child takes to the milk at once, ceases to be sick, and puts on weight more rapidly. The mothers are usually so pleased with dried milk and find it so convenient that it is rarely they wish to return to the humanized milk.

Another important advantage possessed by milk dried by the process I have described is that the temperature to which it is submitted in the process of manufacture has been proved experimentally to destroy tubercle bacilli. Yet another advantage, especially during the hot months of summer, is that so long as it remains in its desiccated state it will keep good almost indefinitely. Packed in air-tight tins, samples have been sent round the world. Moreover, if the precaution is observed—as it always should be—of only preparing each feed as required, the ever-present danger in the case of ordinary milk of contamination by flies is entirely obviated. For this reason dried milk specially commends itself as a preventive of epidemic diarrhoea.

Hitherto almost all existing infants' milk depots in this country have adopted the *goutte de lait* principle, and supply milk modified by the addition of water, cream, and sugar—i.e., "humanized"—and dispensed in separate bottles for each feed, the amount and strength varying according to the age of the child. This method certainly has several advantages over the ordinary method of infant feeding in that it secures uniformity and regularity and safeguards the infant against an ignorant or careless mother, as well as against bacterial contamination. One of its chief drawbacks, however, is the great expense involved. In the first place, the installation of special machinery is necessary, involving considerable capital outlay; but more serious is the continuous expenditure entailed by the large amount of labour required for the process of bottling and washing of bottles, and the heavy loss incurred on broken bottles. Owing to this it is, I believe, the experience of all depots conducted on this principle that the milk has to be sold considerably below cost price if it is to be kept within reach of the poor, for whom it is primarily intended. Another drawback exists, too, in the necessity for the milk being fetched (or delivered) from the depot daily. Poor people living at a distance often find this difficulty insuperable, and hence the depot can only supply, so far as the poor are concerned, a

comparatively small area in its immediate vicinity. Those who are better off, however—even though living at a distance—can afford to pay extra to have the milk fetched or delivered, and thus the benefits of a depot tend to some extent to be diverted to a class who do not really require a subsidized milk supply. If, however, branch depots are opened all over a town the expense is, of course, still further increased, and is apt to become prohibitive.

With dried milk the financial difficulty is largely got over. As there is no labour in bottling or washing of bottles, and no loss on broken bottles, dried milk can be sold at cost price, and yet still be within reach of the poor—i.e., it need not cost more than ordinary milk. The only loss, then, incurred is the cost of upkeep of the depot. Moreover, as a week's supply or more can be purchased at a time the difficulty of fetching the milk daily does not exist, and one centrally placed depot can supply the whole of an ordinary provincial town.

In Leicester when we supplied humanized milk on the *goutte de lait* principle our depot cost nearly £300 a year, whereas now that we have practically abandoned the humanized milk and adopted dried milk the net cost will only be about a third of that sum. The fact that in the case of an infants' milk depot started *de novo* for dried milk only no capital outlay on machinery is necessary, makes the provision of an infants' milk depot in a small district a comparatively easy matter.

Dried Milk v. Patent Foods.—One reason why dried milk is so popular with the mother is because it possesses all the convenience of the "patent" food made from cereals. Indeed, they like to refer to it as a "food," rather than as milk. Yet it is evident that the serious objection to the use of patent foods of the class referred to—viz., that they tend more or less to supplement milk in the infant dietary—does not apply to a "food" which, after all, is milk.

It is possible that dried milk may help largely to oust these proprietary foods, with great benefit to our infant population.

It now remains to consider the objections to dried milk as a food for infants. The immediate and palpable effects of substituting dried milk for fresh milk is in many cases, as has been said, distinctly beneficial. Is there any danger, however, that the ultimate effect of its prolonged use may be detrimental? At first, it must be confessed, the writer was rather apprehensive that the dangers supposed to lie in the use of sterilized milk would exist

a fortiori in dried milk, and that a tendency to the morbid condition often referred to as "scurvy rickets" might sooner or later manifest itself. Before going further, it may be observed that the highest authorities now deprecate the term "scurvy rickets," as really indicative of two distinct conditions, which, though they may co-exist, have an entirely different etiology. Scurvy is believed to be chiefly due to a lack of anti-scorbutic properties (whatever their nature may be) in the food; whilst the essential factor in the causation of rickets is now believed to be a deficiency of fat in the infant dietary. If this view is correct, there is not much need to fear that the use of dried milk will produce rickets, providing the proportion of fat is not diminished. As regards scurvy, however, the case is different, for it is reasonable to suppose that the anti-scorbutic properties in dried milk will be affected. It is a question, therefore, for experience to decide, and from the outset I have kept careful look-out for any untoward symptoms. We have now used dried milk at the Leicester milk depot for something like 400 infants, and for periods ranging from a few weeks up to ten or twelve months. In addition to seeing most of the cases personally from time to time, I have made inquiries from fifteen medical men practising in the districts whence most of the cases are drawn, and inquiries have also been made from the mothers subsequent to the infant having been taken off the depot; but in no instance have any cases been discovered in which there was reason to think that the prolonged use of dried milk had been detrimental.

DISCUSSION.

DR. BOSTOCK HILL prefaced his opening of the discussion by thanking Dr. Millard for his excellent paper, which, he said, was one of great value, dealing as it did with a question of much interest to medical officers of health. He had always urged the use of sterilized milk as a means of remedying the present defects of dealing with the milk supply, and he was pleased to have the corroboration of Dr. Millard. He was convinced, from constant observation, that there was no danger from the use of sterilized milk; but he did not think that the milk should be heated beyond 104 deg., as the constant use of super-heated milk would be prejudicial. One point to be urged for the use of dried milk was that it would satisfy the yearnings of the average mother to give the child some form of solid food. He laid particular stress upon the fact that the use of dried milk would do away with the use of artificial foods, upon the worst types of which a great

many hand-fed children were brought up. There are certain kinds of artificial foods in general use which are very prejudicial to the health of infants, he said, and if we can get the mothers to use dried milk in preference to these artificial foods it would be an advance in infant feeding.

DR. BARWISE said that he could bear eloquent testimony to the investigations made by Dr. Millard. Dried milk certainly had another advantage which Dr. Millard had not mentioned, and that was that in India and Ceylon, where there is no milk to be had at certain periods of the year, dried milk would be invaluable.

DR. ROBERTSON said that he had an open mind on the question of dried milk, but he still had a preference for fresh milk. The reason of his hesitation in advocating the use of dried milk was that there was a large amount of evidence in regard to the production of rickets as the result of feeding not only babies but adults on things that were not fresh, and he thought probably all of them would agree that where we could get clean and good milk, we did not want dried milk. We are, he said, very grateful to Dr. Millard and medical officers of health in other towns for the testing they have done in regard to dried milk, which is very valuable. He did not believe the giving of an imperfect food for a short time would do any baby harm, but he would ask Dr. Millard if dried milk had been used over long periods. There were one or two interesting points upon which he would like information. Dr. Millard said that tubercle bacilli were destroyed in dried milk; but he would like to know whether Dr. Millard had made this experiment himself. Dr. Millard said that the dried milk was more easily digested, and he believed that this was correct, but he did not know how it could be proved; some experiments were made which showed that in the laboratory it was more easily digested. Children who had sickness with ordinary milk would, he thought, have sickness with dried milk.

DR. GARRETT said that this was a subject of particular interest from the fact that artificial feeding was so largely practised. It was very useful to have information concerning some new kind of milk food which could be relied upon. Personally, he thought that a great many of the arguments used against dried milk were wrong and ill-founded; artificial feeding could be resorted to without success, but the fault mainly lay in the feeding being so badly done, and in the poorer classes the amount of food was insufficient. In regard to sterilized milk he believed that the scurvy which was met with at times was often due to insufficient feeding. A very great number of infants had been fed on sterilized milk and had done very well, and some had done very badly where there was a difficulty in getting a milk to suit them. No doubt, as Dr. Robertson said, if

we had *pure* fresh milk this would be best. Milk is a very great danger in regard to tuberculosis and other infectious diseases, such as scarlet fever, etc., and these dangers are obviated, he said, by the use of dried milk.

Dr. MILLARD, replying on the discussion, said that he was extremely obliged for the criticism of his paper. It was quite true that some people did not find dried milk palatable, but some did, and certainly *all* babies did. Babies, he said, showed a decided preference for dried milk over fresh milk, and he believed this was because the former was much more easily digested. Speaking on the question of cost, he said that he used castor sugar, as he did not think it necessary to use milk sugar, and he further stated that it cost very little more to feed a baby on dried milk than on dairy milk. The most serious criticism, he thought, was whether one could rely upon the complete elimination of tubercle bacilli; he had not personally made experiments to prove that this was the case, though such experiments had been made. If it were true that dried milk gained immunity from tubercle bacilli this would be a great advantage, as it was impossible to safeguard all fresh milk, and would do away with infants getting the seeds of consumption from the cradle. Replying to Dr. Robertson, he said that in Leicester there were possibly fifty babies who had been fed on dried milk for over nine months, and perhaps 200 for over six months; about 190 babies were being fed at the present time. In some cases where dried milk had not given satisfaction, fresh milk had been tried successfully, but this had not happened in many cases.

THE NEGLECT OF TUBERCULOSIS.—It may not be inappropriate to contrast the disproportionate fear of the public as regards scarlet fever, with its comparative lack of suffering and small death-rate, to their singular apathy and carelessness in reference to tuberculosis, a disease which is also infectious but frequently entails months or years of great suffering and expense, and has a mortality higher than all the zymotic diseases put together. If this disease were called a "fever" it might receive more attention from the legislature. It is also interesting to contrast the amount of money spent out of the public funds in this country for the purpose of limiting the spread of these diseases; in Margate the approximate annual expenditure of isolating and treating patients suffering from scarlet fever, diphtheria and enteric fever is £3,000, whereas the amount of public money spent on attempting to check the spread of tuberculosis came to only about £7 during the year, and there are no public funds available for the treatment of the disease except at the work-house.—*Annual Report of Dr. Bertram Thornton, Medical Officer of Health, Margate.*

UNWHOLESOME PASTEURIZED SKIMMED MILK.

By CHARLES PORTER, M.D., B.Sc., M.R.C.P. Ed.,
Barrister-at-Law,
Medical Officer of Health, St. Marylebone.

AS the following case refers to a method which may be adopted in dealing with impure milk under the sections as to unsound food in the Public Health Acts, it has been thought worth while to relate it.

Some time ago the Public Health Committee of the Metropolitan Borough of St. Marylebone instructed their medical officer of health to take samples of various foods and submit them for bacteriological examination to Dr. Eastes at the Laboratories of Pathology and Public Health. A considerable number of the samples taken were of milk, and amongst these was one of pasteurized skimmed milk from an itinerant vendor whose "walk" lies mainly in those poorer parts of the district affected by Jewish and other aliens. The fluid is sold at 2d. or 2½d. per quart, and is dispensed from an ordinary 11-quart hand-can, which is filled from time to time from a large churn on a hand-cart.

The report received regarding this milk was dated December 11th, 1909, and was to the effect that "this sample contains a distinct trace of pus, a few red blood discs, and a large number of streptococci, which are sometimes phagocyted. The amount of extraneous matter (vegetable and mineral) is negligible. The streptococci have grown vigorously in culture, and also staphylococci and some bacilli. Spores of the *B. Enteritidis sporogenes* are present in every 10 c.c. of the milk. *Remarks:* The milk is quite unfit for human consumption by reason of its pus content, and apart from this the pasteurization has been inefficient."

Immediately on receipt of this report a communication was sent to the managing director of the pasteurizing company supplying the milk, directing his attention to the findings of the bacteriologist, and advising him that greater care should be exercised in the future. Communications were also sent to the medical officer of health of the district in which the premises of the firm are situated, and to the medical officer of health of the London County Council. At the same time consideration was given to the possibility of dealing with the milk under the sections in the Public Health Act relating to unsound food, and having the milk condemned and destroyed after seizure in the usual way. The only possible course seemed

to be to have an examination made before seizure, and the difficulty with regard to this was the time which might be required. The Council's bacteriologist having gone into the matter, stated that he believed he could, if given at least an hour in order to centrifugalize the milk and examine the deposit, give an opinion regarding it which would be of assistance in arriving at a conclusion as to whether or not the fluid should be seized.

The next step was to discover where the hour necessary for the making of the examination was to be found, and also to ensure that the milk should be kept under observation in the interval between the taking of the sample and the making of the seizure, if such were considered justifiable. The food inspector was instructed to follow the vendor on several days in order to find out where he usually was at 10 a.m. and where at 12 in the forenoon. This was done, and both spots, though the former chanced to be outside the writer's district, were considered suitable.

The final arrangements were then made as follows:—The bacteriologist was advised of the day when the examination would have to be made (January 11th, 1910), and was asked to supply sterilized bottles for the samples. The food inspector was instructed to take two assistants to the spot usually reached by the vendor at 10 a.m. and there await his coming. A quantity of the milk was to be taken (purchased), placed in a sterilized bottle and carried with all speed by one of the assistants—provided with a bicycle—to the bacteriologist. The duty of the second assistant was to follow the vendor and to be able to report as to whether or not anything had been added to the milk from which the sample was taken. The food inspector himself, after taking the sample, was directed to go to the laboratory to receive the report, and, after communicating its contents to the medical officer of health and receiving his instructions, make his way to the district usually reached by the vendor at 12 a.m., ready to act on instructions as to seizure.

The arrangements made worked absolutely smoothly. The sample was taken at 10 a.m. and was in the hands of the bacteriologist within ten minutes. The examination was completed at 12 noon, and the report—to the effect that "this milk has a high cellular content; a very high proportion of the cells are polymorphonuclears, evidence of the presence of a trace of pus: there is also an enormous number of bacteria, amongst which some long

streptococci were seen: in my opinion this milk is unfit for human consumption"—communicated to the medical officer of health by telephone immediately, and his instructions to seize carried out at 12.45 p.m. The quantity of milk seized amounted to 13 quarts, part being in the hand-can and part in a churn on the vendor's cart. After seizure the milk was mixed and further samples taken for bacteriological examination and also for submission to the magistrate. The material was somewhat dirty and contained a considerable quantity of visible dirt. With the fair sample laid before the magistrate was the bacteriologist's certificate mentioned above, and on these a condemnation order was granted.

In connection with the taking of proceedings a certain number of difficulties were encountered. At the time of seizure the vendor (who may be called A) stated that he was employed by a person whose name he gave, and who may be represented by the initial B, to sell the milk on commission. Both A and B had been prosecuted for offences under the Sale of Food and Drugs Acts, and were well known to the food inspector. B being the person responsible for the pasteurizing of the milk, if not its owner, was regarded as the person morally if not legally liable to prosecution, but in order to make doubly sure it was determined to summon both parties.

Application was therefore made for the issue of two summonses—one against A as being in possession of unwholesome milk, and the other against B as being the owner thereof—but before they were heard it transpired that B since the last occasion upon which he had been prosecuted had formed his business into a limited liability company, of which he was managing director. In order to meet this a further summons was applied for against the company as owners of the milk, and when the case came on for hearing there were three defendants—A, the vendor; B; and the company, represented by a solicitor who at first defended all the parties, but after the second day only B and the company.

Evidence for the prosecution was given by the food inspector and the men who assisted him, and also by the Council's bacteriologist, who put in the certificate already mentioned and two others, one relating to a fuller examination made of the first sample and the other to the sample taken after seizure. He laid stress upon the fact that though this was a pasteurized milk enormous numbers of bacteria (22,415,000

per c.c.) were found, including streptococci. As evidence of the presence of pus, he pointed to the high cellular content, and to the fact that a very high proportion of the cells were polymorphonuclears.

In order to prove the responsibility of B and his company the prosecution produced copies of handbills distributed by the vendor A while on his rounds. In view of the conditions found on examination of the milk these handbills are interesting and worth producing:—

MILK! MILK!

A real boon to Householders and Heads of Families.

Pasteurized Skimmed Milk, Free from Preservatives. A safe, cheap, nutritious, wholesome article of food.

It is not what is generally known as "Separated" or "Machine Skimmed," devoid of all its cream, inasmuch as it DOES contain a GOOD PROPORTION of Cream. A trial will prove this.

"Pasteurized Milk" is being strongly recommended by Scientific and Medical Men: bacteriological tests having shown the treatment it undergoes effectually destroys germs of Tuberculosis (Consumption), Typhoid, Diphtheria, etc., with which it may by any chance, be contaminated.

Whilst taking every possible care to ensure supplies being obtained from healthy cows and farms, Pasteurization is adopted as an extra precaution.

THE ABOVE WILL BE DELIVERED IN THIS STREET DAILY.

Price per quart 2½d., for cash only.

A trial respectfully solicited.

Limited.

Steam-working dairy fitted with the most up-to-date Pasteurizing and Refrigerating Machinery.

Having been dropped by the solicitor, the vendor A elected to enter the box. His evidence, however, though it revealed many interesting facts regarding the traffic in skimmed milk, more especially of the pasteurized variety, showed conclusively that on taking up work with the company he had signed an agreement which put him in the position of owner of the milk which he sold, inasmuch as he agreed to purchase a fixed quantity and hire the appliances necessary for hawking it. After that there was little hope for him, and the magistrate decided that the case against B and the company must fail, inasmuch as though the prosecution alleged that they were the persons to whom the milk belonged at the time of seizure they had failed to prove it.

Without hesitation he found that the case against B could not prevail, and with regard to the company he considered that they were protected by the agreement signed by A, though he was not at all sure that, if the evidence given by this party had been given by the prosecution and found reliable, a court of summary jurisdiction might not have held the case proved against the company even in the face of the agreement.

The evidence of A could not be used against the company, and it was perfectly clear that, whoever was the owner of the milk, A was in possession of it when the seizure was made, and he must pay a penalty of £5 and £3 3s. costs.

THE ANTE-NATAL CAUSES OF INFANTILE MORTALITY.—I invite special attention to the deaths attributed to "premature birth," "debility" and "congenital defects," because these suggest antecedent conditions unfavourable to the child, and affecting its nutrition and viability, through its mother, prior to its birth. I claim consideration of these influences because well-meaning philanthropists so commonly assume that infantile mortality is due almost entirely to imperfect or improper feeding of the child. Infantile mortality cannot be dissociated from *pre-natal* causes, and must not be regarded as due solely to *post-natal* influences. A proportion of the parents are naturally of debilitated constitution—some are intemperate drinkers, some are underfed, some not so much under as unwisely or intemperately fed. Again, some mothers induce in themselves undesirable conditions of debility by working too hard during the latter stages of pregnancy, or by bearing children too rapidly to admit of systematic recuperation, etc. In short, we have carefully to allow for, and rightly to estimate the antecedents to death, and it is in respect of these that *ante-natal* influences become important if we would realize the inherent sagacity of Burke's definition of a community, viz., that it is "a partnership not only between those who are living, but between those who are living and those who are dead, and those who are to be born."—*Annual Report of Dr. Cooper Pattin, Medical Officer of Health, Norwich.*

DR. C. HARRISON has resigned his appointment as medical officer of health of the City of Lincoln, which he has held for forty-four years. The City Council have placed on record their very great appreciation of his services, and they have recommended that Dr. Harrison be appointed consulting medical and sanitary adviser to the Corporation, at a salary of £50 a year.

FIXITY OF TENURE.*

By F. W. MARTIN, M.R.C.S., L.R.C.P. Ed., D.P.H.,
Medical Officer of Health, Brighouse.

IT will have been noticed that there has been very little legislation during the past year with reference to Public Health matters, if I make exception in the cases of the Local Education Authorities (Medical Treatment) Act and the Housing, Town Planning, etc., Act.

I desire to call your attention particularly to Part III, Section 68, of the latter Act, which provides that every County Council shall appoint a medical officer of health under Section 17 of the Local Government Act, 1888. The officer's duties are to be prescribed by general order of the Local Government Board. He shall have the same power of entry on premises as are conferred on a medical officer of a district; he shall be removable by the County Council with the consent of the L.G.B., and not otherwise; he shall not be appointed for a limited period only, except that the County Council may, with the sanction of the L.G.B., make a temporary arrangement for the performance of all or any of the duties of the medical officer of health of the county.

If fixity of tenure be necessary for the county medical officer of health—and I hope we are all thoroughly in accord on that point—then in my opinion it is equally as necessary, even if not doubly so, in the appointments of medical officers to county-boroughs, boroughs and all other districts, because in all these places the medical officer of health is, I think, brought more intimately into contact with members of his council, and also more frequently into collision with them.

It must be common knowledge to you all that year by year it is customary in a great number of districts, both urban and rural, for the chairman of the Sanitary Committee to propound the following:—"I hereby give notice that at the next meeting of this Board I shall propose that Dr. —, our medical officer of health, be appointed for a further period of twelve months." I have mentioned this space of time, though in some instances three- and five-year terms of appointment are made, on account of its being the most usual one. It seems strange that the reappointment of the sanitary officials—for this system holds good for inspectors of nuisances also—should be allowed to continue on what can only be

* Presidential Address read at Meeting of the Yorkshire Branch of the Society of Medical Officers of Health, March 17th, 1910.

considered very unsatisfactory conditions. For some time past the creation of a post of Minister of Public Health or State Medicine has been advocated, and it is possible to anticipate such contingency: in that event medical officers of health no doubt would be controlled by the new Department, instead of as now by the Local Government Board. And we ought to be servants of the State rather than of municipalities.

Medical officers of health should be remunerated by the State, and corporations should contribute towards their salaries. The official would then be removed from all local influences.

The stipends would be more uniform than at present, the necessity of canvassing members of local authorities would disappear, and the possibility of local authorities appointing men of influence over the heads of others perhaps of greater experience would no longer exist. The salaries should be arranged in proportion to the number of the population, with a certain allowance according to the area of the district. This would mean that there would be positions commencing with a minimum and advancing to a maximum salary, and sanitary officials would be graded as in other governmental departments.

Usually when a man is appointed to a public office he retains the same so long as he carries out his duties satisfactorily. The clerk to the Guardians and Poor Law medical officers can only be dismissed from office by the consent of the Local Government Board. Why should not the same safeguard be extended to all members of our Society, whose work involves public interests and whose duty it is to protect those interests? Why should the medical officer of health be in this matter placed upon a lower plane than, say, is the factory inspector of the present time? The latter, by virtue of the condition of his appointment, has much greater power with reference to matters connected with a local authority than has the medical officer.

In case of necessity arising at one of the factories or workshops for his reporting to the council the subject is attended to at once. But is that the same in connection with any complaint brought forward by the medical officer of health or the inspector of nuisances to the notice of his committee? To a great extent it depends upon the constitution of such committee, and often the greatest difficulty arises in getting the evils complained of

remedied. Many instances are on record of medical officers of health losing their posts for doing their duty—some even in the West Riding—and it is not many years since that a very great injustice was perpetrated on one of our confrères stationed not many miles from here.

It is common knowledge that energetic health officers have frequently injured their private practice, and also that many medical officers of health and inspectors of nuisances do not conscientiously carry out the duties imposed upon them by law. I do not see any reason for lengthening the evidence of the necessity for establishing, if we can, this security of tenure. It is a subject that has been before the Society for very many years, but unfortunately nothing of a definite character has resulted from the deliberations that have taken place. I expect any scheme promoted towards its attainment would not meet with the approval of all medical officers, perhaps; but it is worth striving for, if only for the further reason that in the event of its becoming an accomplished fact there would be more uniformity in carrying out the important work which devolves upon the members of the Society.

The Public Health Bill, as it was termed, which included security of tenure in its provisions, was introduced into Parliament in 1905, but was withdrawn after its first reading, and nothing has been done in the matter since.

Is the time not now ripe for further strengthened action, if possible, to be taken? But if we decide that any action in the near future is advisable, then I submit we must be unanimous and agreed amongst ourselves as to its desirability. "In union is strength."

I can assure you that it is from no personal motive that I have addressed these few words to you, for I have not been for some years past placed in what must be looked upon, at least, as a humiliating position of being reappointed yearly.

I thank you for your kind attention, and I am sorry I have perhaps not given you such a lengthy or academic address as is usually provided on these occasions. My excuse must be that, for one thing, I have had little leisure recently, and for another there arose the great difficulty of choosing a subject. It is the great penalty of being your president for the year that I was in duty bound to address you on some topic; and, as most subjects in connection with Public Health work have been worn pretty well threadbare, I chose the one that I considered the most free from this stigma.

A MILK OUTBREAK OF TYPHOID FEVER.*

By F. G. CROOKSHANK, M.D.,
Medical Officer of Health, Barnes.

ON February 9th I received from Dr. G. Hovenden intimation that a child in Barnes was, in his opinion, suffering from typhoid fever.

On February 10th the case was removed to a London hospital, where the diagnosis made by Dr. Hovenden was contradicted, a fact of which I did not become aware until some weeks later, when the authorities finally corroborated the perfectly accurate diagnosis originally made. Within the next two or three days two cases of children suffering from intestinal disturbance occurred in my own practice, and, as inquiry established a possible common factor for the three, I was enabled to make a diagnosis of typhoid fever with some confidence. On February 14th I saw a fourth case, a child of eighteen months, and in this instance the common factor was also present.

Inquiries and activity had, however, already been set on foot, and a purveyor of milk, whose premises were outside this district, agreed to sterilize all milk sold by him.

Dr. Caldwell Smith, the medical officer of health for Wandsworth, was communicated with, and he satisfied himself that there was no fault to be found with either the condition of the purveyor's premises or the health of his employees.

In the meantime a circular had been sent to the practitioners in this district, with the result that in the course of a few days seven cases more were discovered in Barnes. Dr. Smith also became aware of four cases in Wandsworth. Inquiries as to the source of the milk revealed the fact that it was derived from thirty-six farms in Wiltshire, and by February 19th it had been found that at a certain farm one child had been ill for weeks with typhoid fever.

The father of the child, though under contract to inform the London purveyor of any case of illness at his farm, had omitted in this case to do so, and had allayed suspicion by using an ordinary billhead instead of the proper contract note, as if he had been temporarily without the usual forms.

The supply of milk from this farm was at once stopped, and a little later the place was visited by Dr. Caldwell Smith and myself, in company with Dr. Streeten, the medical officer of health for Swindon and other districts.

By this time the mother of the child just alluded to was also recognized to be suffering from typhoid, and we learned that some months previously another child belonging to the same family had suffered from an illness thought at the time

* Annual Report, 1909.

to be tuberculous meningitis. We found, moreover, that one of the farm hands was said to be ill with pneumonia, and suggested further investigation. The case turned out to be typhoid. Assuming that the cases in Barnes and Wandsworth were indeed connected with the state of affairs at this farm in Wiltshire, it may be asked what was the exact nature of the relation. From a comparison of dates it appeared probable that the infection might have been due to a misuse of certain utensils during the first and second weeks in January, when the second child was sickening. But what was the source of the original infection? The most careful inquiry failed to reveal the most remote contingency that we could think of for the infection of the first child, who at the time was thought to have tuberculous meningitis.

Only the water supply of the farm from a neighbouring hill could be implicated by those who are not ashamed to believe in the *de novo* origin of typhoid fever at times. This water supply might have become fouled by simple pollution, but the probability of specific infection was negatived.

Of the eleven primary cases which occurred in Barnes all recovered. Two secondary cases occurred and also recovered. I believe that the cases in Wandsworth also did well. Clinically the outbreak was interesting on account of the number of quite young children infected. I had one case, as already narrated, aged but eighteen months.

Quite a number of the cases began with symptoms and some with physical signs of acute lobar pneumonia, and most had a heavy crop of spots. There are several other points of interest, notably the enormous importance of the correct diagnosis made, under difficult circumstances, by Dr. Hovenden.

This diagnosis was arrived at on clinical grounds, though disputed for weeks by the pathologists of a first-rate London hospital.

Although, of course, most of the cases were notified after the probable medium of infection was recognized definitely on February 14th, all of them were infected before the sterilization of the milk commenced on February 15th, and as nearly 20,000 persons were being supplied daily by the one purveyor, the possibilities for mischief were very great.

Dr. Caldwell Smith was most kind and helpful in his co-operation with me, and we both received all possible assistance from the purveyor, who did everything to help us in elucidating the facts.

One or two practical recommendations may perhaps be made. Valuable as it is for medical officers of health in towns to be supplied by purveyors of milk with lists of their sources of supply, it would be infinitely better were dairy farmers compelled to furnish local medical officers

of health with the names of the purveyors to whom they send supplies.

If this had been done in the case I am discussing it would have been useless for the farmer to juggle with his contract note, as immediately that the presence of typhoid at the farm had been known the local medical officer of health would have communicated with Dr. Caldwell Smith and myself.

Another point is that it is doubtful if statutory powers exist to prevent cheese being made from infected milk.

Immediately that the supply of milk to London from his farm was rejected the farmer began to make cheese from it.

What happened to the cheese I know not; but medical officers of health should certainly have the power at once, on discovery, to suspend the sale of such stuff.

THE VALUE OF DISINFECTION.*

By A. H. HOGARTH, M.B., D.P.H.,
County Medical Officer of Health, Buckinghamshire.

EXAGGERATED value has hitherto been attached to disinfection in the control of infectious disease. But expert opinion is coming more and more to regard disinfection of premises as a measure of secondary importance. Cleanliness is, as always, of the utmost importance, and a thorough cleansing of walls and scrubbing of floors with soap and water is of greater use than any system of spraying or fumigation that has yet been evolved.

The study of bacteriology is throwing light on the subject of infection. It would appear that persons become infected mainly by direct contact, and that infective material must be comparatively fresh to cause disease. Efficient disinfection by means of steam of a patient's clothes and effects, which may or may not contain living germs, is a useful safeguard, and all local authorities should be in a position to employ a steam disinfectant of an approved type. In Buckinghamshire very few authorities appear to be thus provided, though some of the district medical officers of health specially report as to the necessity for such a disinfectant.

But the crucial problem is to be found in the infectivity of the patients themselves and of their discharges, even after convalescence has been established. For instance, a typhoid patient may continue to excrete active typhoid bacilli for years after convalescence, and measures are too seldom taken to render his discharges innocuous. Thus typhoid fever occurs sporadically from such "carrier" cases. Similarly with regard to scarlet fever. The peeling stage once over, the patient

* Annual Report, 1908.

is given a carbolic bath and pronounced free from infection, although the danger probably lies not in the skin but in the throat and nasal and aural passages, which often remain full of living germs, and are consequently potential sources of infection. The same is true of diphtheria.

Hence, to be of real efficacy, the ordinary measures for disinfection require very careful revision.

THE IMPORTANCE OF CLEAN DWELLINGS.*

By R. W. C. PIERCE, M.D.,
Medical Officer of Health, Guildford.

IT is, of course, impossible to lay down a hard and fast rule as to what is dangerous or injurious to the health of the inmates in the matter of dirty walls and ceilings of living rooms, but I am becoming more and more convinced that, as far as the sanitary authority is concerned, their chief work for the advancement of the health of the community in places where general sanitation is as far advanced as it is in Guildford, lies in the improvement of the internal conditions of the dwellings. That a real difference exists between the inside air of even a well-ventilated dwelling and that of the outside is shown by the remarkable difference in the effects produced by the two conditions in those suffering from consumption of the lungs—the actual open-air treatment having been proved to be essential for improvement or recovery. There is far too much living indoors even for our changeable climate; but, accepting the habits of the people, we can but do our best to purify the inside air of dwellings, so as to minimize the difference between it and the external air. Now, it is impossible for the air of rooms to be pure if the surfaces with which in its continuous movement it must come into contact are dirty. This "dirt" is mostly decomposing organic matter. The porous surfaces of the rooms retain the condensed exhalations from the breath and bodies of the inmates, accumulated, perhaps, during many years. The working class family lives practically always in the kitchen, so that, taking the average number of persons as five, there may be said to be almost perpetual overcrowding in this living room. Hence the special necessity of keeping this room clean, and thorough renovation every year is in most cases required. The doctrine of pure air inside dwellings is, I feel sure, the one to be preached, but, before it can be fully taken advantage of, the following conditions at least are, in my opinion, necessary:—

- (1) The people must be well and properly fed—for unless sufficient bodily heat is produced, one is susceptible to the action of

cold air—and hence the inlets for fresh air will be kept closed. The matter of proper feeding is, however, only partly a question of economic prosperity, but to a great extent one of proper choice and suitable preparation of food stuffs.

- (2) They must be properly clothed, so that there is no excessive loss of bodily heat. Our chief hope in both these matters appears to be in the education in domestic subjects of the girls' classes in our elementary schools.
- (3) Provision should be made in building by-laws for the permanent ventilation of living rooms without producing draughts. Reliance is now placed on windows and doors for inlets, and, perhaps, a chimney flue for outlet. As, however, foul and heated air rises, the outlet should be at the ceiling level and into the chimney flue, or preferably into a separate flue by the side of the chimney, and the inlets should be by shafts which open into the rooms in an upward direction, so that the air admitted is less likely to be felt as a draught.
- (4) Two-storied back additions to rows of cottages should be prohibited, as they must necessarily diminish the light in the living room, and interfere with the play of sunshine and fresh air around the premises. There are a great many such houses in Guildford, where the window of the living room is almost flush with the wall of the back addition, with the result that the light in the room is very poor, and it is also often interfered with by the addition to the next house.
- (5) For small dwellings it would be very much healthier to have one good sized living room rather than a small kitchen and a small parlour which is rarely used.

SCOTTISH LOCAL GOVERNMENT APPOINTMENTS.—The Local Government Board for Scotland have made the following appointments to the additional posts which have been created on their staff, namely:—Mr. J. Walker Smith, burgh engineer and master of works, Edinburgh, to be engineering inspector; Dr. Thomas F. Dewar, M.D., C.M., D.Sc., medical officer of health for the counties of Fife and Kinross, to be a medical inspector; Mr. John Wilson to be architectural inspector; Miss Elizabeth M. M'Vail, M.B., Ch.B. Glasgow, D.Ph. Camb., to be lady inspector. Miss M'Vail is a daughter of Dr. M'Vail, medical officer of health for the counties of Stirling and Dumbarton, who was President of the Society of Medical Officers of Health in the session 1900-01.

THE PROVISION OF DENTAL AID FOR NECESSITOUS SCHOOL CHILDREN.

THE following report has recently been presented to the Norwich Education Committee by Dr. H. Cooper Pattin, medical officer of health and school medical officer, Norwich:—

I reported to the Attendance and Physical Care Sub-Committee upon the above subject and am instructed by it to report to your committee substantially to the same effect, adding such information as will enable your committee more fully to apprehend the recommendation which the sub-committee will make at your next meeting.

Upon the desirability and importance of securing early professional attendance to defective teeth everybody is agreed. We all know that defective teeth lead to the rejection of large numbers of candidates for the services, and are in other ways a serious handicap in after life. Upon their detrimental influence to the general health we are also all agreed, or all doctors are anyway. Of the need of such provision of dental assistance in our own City the fact that out of 3,709 children examined by Dr. Mathieson last year (entrants and leavers only) more than three-fourths, or nearly 3,000, had one or more decayed teeth, gives abundant evidence. 500 boys and 500 girls (leavers) at the age of 13, who were differentiated more carefully, yielded the following results:—

Only 15.2% boys and 14.4% girls had sound teeth,	
whilst 16.0% " 16.4% " 1 carious tooth	
and 20.2% " 21.6% " 2 " teeth	
" 18.0% " 18.4% " 3 " "	
" 16.2% " 13.2% " 4 " "	

The remainder had more than four carious teeth. I specially cite these figures because they show the extent of the trouble at the time children leave school. It is reasonable for us to suppose that had dental aid been available directly any defect appeared in the teeth, the greater amount of this mischief would have been checked and stayed.

Now as to methods of providing assistance. In this City there is no public institution at which children's teeth are treated other than by extraction. The issue is thus narrowed down to provision being made (a) either by voluntary contributions or (b) by the Education Authority. For our, and for all practical, purposes we have to deal only with the latter.

The Education Authority can make provision in three ways: (a) by establishing a dental clinic with a whole-time officer as at Cambridge, (b) by establishing a clinic and providing part-time officers, and (c) by sending children to dentists and paying for their treatment.

Your sub-committee, after considering these alternatives, decided unanimously that it would recommend your committee to establish a dental clinic with a whole-time officer.

From inquiries I have made I have satisfied your sub-committee that a clinic can be fitted up at a cost not exceeding £100, and that the total cost of maintenance can be kept within the product of a farthing rate, i.e., £435. (The cost of maintenance of the Cambridge clinic is limited to £410 per annum. This includes the pay of the dentist (£300), of the attendant, rent of rooms, and cost of materials.)

I estimate expense of maintenance of a dental clinic for Norwich at:—

- (a) Salary of dentist, £250 to £300.
- (b) Pay of surgery attendant, £40.
- (c) Materials, renewals, etc., £40 to £60.
- (d) Rent ?

I put down no sum for rent. It is possible that the Corporation may be able to provide premises, either gratuitously or for a nominal sum. The actual site of the clinic is, however, a detail which can be left over for consideration later.

It will, I think, be desirable for the dentist to examine the teeth of children himself, and to select those most suitable for treatment. The aim, of course, will be to do as much preventive work as possible. To this aim careful inspection of the first permanent molars (grinders), which appear at 6-7 years of age is all-important—these and the succeeding permanent molars being the most valuable teeth. If we assume that, as at Cambridge, the dentist conducts inspections in the schools on two half-days a week, carries out treatment on eight half-days, and makes up his statistics, etc., on the remaining half-day, we may pre-suppose that when in full working about 1,000 children will be treated efficiently per annum. It will be good policy to let no extractions take place at the clinic. At Cambridge the dentist extracts teeth on one half-day at Addenbrooke's Hospital. It is very doubtful if the Norfolk and Norwich Hospital would place its dental operating room at the disposal of the authority here. Anyway, I am satisfied that all idea of tooth-drawing must be dissociated from the clinic in the minds of the children.

From the figures obtained at the routine medical inspections—78.5 per cent. of all the children examined—(and dental examination of school children here, in Germany and in America yields a percentage of over 95 per cent.—examination by a dentist with mirrors, etc., being directed more to the earliest signs of decay, and examination by the medical inspector to the more gross evidences of defect)—it will be obvious that we have in this City abundant employment for a whole-time officer. There being some 20,000 children on the books, I estimate that at least one-fourth of these can properly be described as "necessitous" in the sense of their parents being unable to pay for private dental treatment. If

other information be required I can give it to your committee in person.

As a result of this report the Education Committee made the following recommendation to the City Council, who adopted it on May 24th:—

Passed.—That, subject to the sanction of the Board of Education, provision be made for the treatment of the teeth of necessitous school children by establishing a dental clinic with a whole-time officer, at a cost, for equipment (including instruments), estimated not to exceed £100, and for maintenance estimated not to exceed the amount produced by a rate of $\frac{1}{4}$ d. in the £ per annum (£435).

THE PROTECTION OF SHELL FISHERIES.*

By CHARLES GRANT PUGH, M.D., D.P.H.,
Medical Officer of Health, Southend-on-Sea.

THE preventive measures adopted in the past against typhoid fever in the Borough of Southend-on-Sea have been detailed in the annual reports for previous years by Dr. Clough Waters and Dr. Nash, my predecessors as medical officer of health. As a result of the bringing up to modern standards of the house drainage in the older portion of the town, and of the care taken to prevent the consumption of shell-fish obtained from doubtful sources, a marked fall in the incidence of typhoid fever can be traced between the years 1893 and 1904, the number of indigenous cases per 1,000 inhabitants declining from 9·7 in the former year to 2·3 in the latter. The incidence, however has since remained approximately constant, being 3·4 in 1905, 2·9 in 1906, 3·5 in 1907, and 3·48 in 1908, and the majority of the cases which have occurred in these years have been associated with the consumption of oysters, which, however, were not obtained from a fish shop or a reputable oyster dealer, but were either picked up by the patient or his friends from the foreshore of the Thames Estuary or bought from street hawkers who had themselves obtained them in a similar way. Not only have many of the cases which have arisen in the borough been attributed to shell-fish procured in this manner from other than properly protected beds, but medical officers of health of some London boroughs and extra Metropolitan urban districts have assigned the cause of many of the cases which have arisen in their districts to the consumption of shell-fish either gathered by the patients themselves when on a visit to the neighbourhood or sent to them by their friends.

The foreshore of the Thames Estuary is admitted to be unusually fertile as regards shell-fish, especially oysters, which rapidly "fatten" and improve in condition when deposited on it. By no

stretch of the imagination, however, can it be regarded as a "properly protected shell-fishery," from which alone should oysters be taken for human consumption without prior purification, and this was recognised by the Council as long ago as 1897, when upon Dr. Waters' advice they extinguished at considerable cost an oyster fishery which up to that time had existed on the foreshore. The consumption of oysters gathered from the foreshore at any portion of the estuary must necessarily be regarded as not free from danger unless such shell-fish has first been placed in pure layings for a sufficiently long time to purify. Impressed by this consideration, and being anxious in the interests of the public health that no person should at any rate run any risk of developing typhoid fever from the consumption of oysters gathered from that portion of the foreshore which is owned by the Corporation, the health committee, acting upon a report which I presented to them at the end of 1908, represented to the pier committee (under whose control the Corporation's foreshore is) that steps should be taken to prevent unauthorized persons from collecting shell-fish from it either for their own consumption or for the purpose of sale. The pier committee at once agreed to take action, and pending further arrangements employed three men to watch the foreshore, with instructions to prevent a continuance of the practice of collecting the shell-fish for human food. It was soon found, however, that these men were defied by the offenders, who, accustomed to gather the oysters lying on the foreshore, resented any interference with their supposed rights, and as the then town clerk advised that under existing circumstances proceedings against them might fail on legal grounds, it was apparent that other measures had to be taken.

The suggestion that all the shell-fish on the foreshore should be collected by the Corporation and destroyed was deemed impracticable not only on account of the extent and fertility of the foreshore but because oyster spat, etc., floating in the estuary from perhaps distant beds was constantly being deposited on it; moreover, it was borne in mind that only a portion of the foreshore of the Thames Estuary was under the jurisdiction of the Corporation, that a year or two would elapse before the whole of this portion could be dealt with, during which time the Corporation would be unable to prevent the shell-fish being gathered and perhaps sold for human consumption, and that great expense would be annually entailed for an indefinite number of years to come, owing to the fact that no sooner had the whole of the foreshore been dealt with than it would be necessary to commence again at the portion first attacked.

After much consideration the pier committee came to the conclusion that the best method of

dealing with the question was the leasing of the foreshore to a responsible person or company who should comply with certain conditions regarded by the health committee as being essential in the interests of the public health.

The agreement with the Southend Shell-fish Company, to whom the tenancy of the foreshore was granted for three years at a rental of £10 per annum, stipulates, *inter alia*, that no oysters or other shell-fish (except cockles) shall be removed from the foreshore by the tenants except for the purpose of being placed in suitable beds for a period of time sufficient for purification, and that cockles removed from the foreshore shall before sale be boiled, steamed, or otherwise treated by the tenants so as to render them sterile from a bacteriological point of view; that the tenants use every endeavour to prevent unauthorized persons removing oysters or other shell-fish from the foreshore; that the laying on the foreshore of spat or of any shell-fish obtained from beds elsewhere is prohibited, and that no shell-fish or spat removed from any one portion of the foreshore be deposited on any other portion of the foreshore; and that as far as possible the foreshore be cleared of all shell-fish, more especially oysters, as soon as practicable after they are detected.

It will be seen that these conditions were so drawn up as to prevent any possibility of the return to the old state of affairs in which oysters were deposited in definite beds on the foreshore. It was recognized that it would be impossible to prevent at all times unauthorized persons from gathering the shell-fish and possibly disposing of them for human consumption before purification, and, as the object in view would be defeated if the tenants carried out their operations in such a manner that there would at any time be an increase in the number of edible oysters or other shell-fish lying on the foreshore, clauses were inserted in the agreement so as to preclude any possibility of this occurring.

The leasing of the foreshore was a measure undertaken not with the object of financial gain, but solely with a view to the safeguarding of the public health, not only of the inhabitants and visitors to the borough, but of other districts to which the shell-fish might be sent without purification. The Shell-fish Company selected is a local one, the partners being all prominent tradesmen in the borough. Although doubtless some unauthorized removal of oysters, etc., does take place in spite of the steps taken to prevent it, the terms of the agreement are, so far as I am aware, being carried out by the company, who have in several instances taken proceedings on account of the illegal removal of shell-fish.

Without claiming too much for this measure, I think it may be said that results have justified the action of the Corporation. That some such

steps should be taken to prevent the consumption of oysters from the foreshore before purification was suggested by Dr. Clough Waters in his annual report for 1900, as medical officer of health for the borough, but no measures were taken, except that in the following year, upon the advice of his successor, Dr. Nash, notice boards were erected at intervals along the foreshore, warning the public against collecting the shell-fish, and pointing out that care should be taken to eat only such shell-fish as are cultivated under proper supervision. These notice boards, however, did not remain up long, as their erection did not meet with universal approval in the borough, it being thought to cast a reflection upon the cleanliness and freedom from pollution of the foreshore—an inference in my opinion quite without justification.

Other districts on the Thames Estuary have not shown any corresponding diminution in the prevalence of typhoid fever, and the same remark applies to other seaside towns where the proximity of an unprotected shell fishery has led to an undue incidence of typhoid fever in previous years. Sporadic cases will doubtless continue to occur in our borough; in spite of all warnings persons will continue to eat oysters obtained from other than reputable oyster merchants; cockles obtained from polluted sources and insufficiently cooked may from time to time be sold in the borough notwithstanding constant watchfulness on the part of the health officials; some misguided individuals will doubtless continue to eat before purification shell-fish gathered surreptitiously from the foreshore, either in the neighbourhood of Southend or in the adjoining districts, and a proportion of these will inevitably pay the penalty for their folly by developing the disease; visitors, and in some cases residents, will from time to time arrive in the borough in the incubation of incipient stages of the illness; "typhoid carriers"—i.e., persons who, although seemingly in good health, long after an attack of typhoid fever excrete from time to time typhoid bacilli—may give rise to occasional cases.

Although the consumption of polluted shell-fish was unquestionably the main cause of the excessive prevalence of typhoid fever in past years, it is possible that other factors even now not definitely recognized may have assisted towards the same end, but whether this be so or not they are certainly not now operative, as the typhoid incidence in the borough is far below the average for other English towns, whether inland or on the coast.

With increased knowledge on the part of the public and with the greater attention now paid by shell-fish merchants to the necessity of purifying before sale all oysters, etc., obtained from doubtful sources, one is justified in the hope that in the future cases of typhoid fever will only exceptionally occur, and that deaths from the disease will be correspondingly rare.

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A MILK-BORNE OUTBREAK OF TYPHOID FEVER.*

By EDWARD A. BRASH, L.R.C.P.,
Medical Officer of Health, Exeter.

IN reviewing the outbreak due to milk one must take into consideration that during the first eight months of the year 1909 only six cases of typhoid fever had been notified, and with the exception of two cases, one of which was contracted in Paris, and in the other the patient had been nursing a probable case of typhoid, no case had been notified since April 8th, so that one may fairly assume that until the commencement of this outbreak Exeter was free from this disease.

On September 8th notification of a case of typhoid fever was received, and the patient was removed to the sanatorium and died from hæmorrhage on September 16th. Inquiries were instituted as to the cause of this case, but none were found to account for the disease. The milk was supplied from two different dairies, one being the dairy in question. The next case was notified from an entirely different district of the city; it had no connection with the dairy in question and eventually proved not to be typhoid fever.

On September 13th two specimens of blood were received from suspected typhoid; both gave positive reaction to Widal's test, and were notified the following day. One case had no connection with the dairy in question, being in a different part of the city; the other case was in the same neighbourhood as the case notified on September 8th, and had milk from the same dairy. Between September 15th and September 17th eight cases were notified, seven of which were obtaining milk from this dairy.

On September 16th the premises in which the dairy was carried on were examined and inquiries instituted as to any probable cause, but nothing was found to account for the outbreak. On September 17th samples of milk were taken and submitted for examination, with a negative result. Later in the day the premises were again inspected, when it was noticed that a child residing there looked very ill; the parents' attention was called to it, and they were advised to have medical assistance.

On September 18th three notifications were received, and in two of these cases they were obtaining milk from this dairy. I at once obtained particulars of the various farms, four in all, which supplied milk to this dairy, and I visited each farm, but could find nothing either in the condition of the premises or those residing or employed there. On September 19th I again inspected the dairy, and was informed that the child before mentioned was then being attended by a medical man. Shortly afterwards the sanitary inspector

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informed me that he had received information that another child of the family residing at the dairy had been ill about three weeks ago, and that he had interviewed the occupier and was informed that a boy three years of age was ill some time ago and was medically treated. I arranged an interview with the medical attendant, who informed me that this child had been under treatment from the middle of July to September 3rd, when it appeared quite well. He informed me that this child suffered from pyrexia, but there were no indications of typhoid fever. He then mentioned that he had just been called in to see another of the children: he was suspicious that it might be a case of typhoid and asked me to see it with him, which I did, and advised removal to the sanatorium, which was carried out. This case was confirmed by Widal's test. Precautions were at once taken. I closed the premises, and caused all milk and other foods to be destroyed.

From September 19th to October 16th twenty-one more cases were notified, of whom twenty had received milk from the dairy in question. The onset of the disease in these cases coincided with the previous cases.

The total number of cases notified from September 8th to October 16th was thirty-seven; of this number thirty-three were partaking of milk from the suspected dairy. Two other cases that were notified later contracted the disease from one of the previous cases.

Investigations disclosed the facts that about seven hundred customers were supplied by this firm, who delivered their milk from two distinct sources, one being from the dairy in question, and the other from their farm, which is just outside the city. About five hundred of the customers were supplied direct from the farm, and no notification of this disease was received either by myself or by the medical officer of health of the adjoining district in which some of the milk was distributed. The other two hundred customers were supplied from the dairy in question and in the area in which all these cases occurred.

The premises were closed for about one month, during which time they were disinfected, cleaned, and the infected family moved to another house.

From the foregoing facts it is probable that the first child ill at the dairy in question had suffered from a very mild attack of typhoid fever, and that the contamination from this source was the cause of the outbreak, and is evidenced by the fact that this cause being removed the outbreak ceased.

MEDICAL INSPECTION OF SCHOOL CHILDREN.—As regards the results of medical inspection it is too early to give any definite opinion, but teachers inform me that the children are coming to school much cleaner.—*Dr. J. B. Wilkinson, Oldham, 1909.*

PHYSICAL CONDITION OF JEWISH SCHOOL CHILDREN IN LEEDS.*

By ALGERNON WEAR, M.D., B.S.,
School Medical Officer, Leeds.

IN drawing conclusions from the statistics in this report one is able to compare the various classes of schools, and also the Jewish schools with Gentile schools. There is a large population of Jews in this city, and as they inhabit practically one locality it becomes possible to compare the schools of this district with those of the other districts. A good deal has been published from time to time as to the physical superiority of Jewish children over Gentile children, but a study of the returns in this report does not show that the comparison is as favourable to the former as has been thought. The Jews appear to suffer from the variable and damp climatic conditions of this country, as well as from overcrowding, and in the poorer districts from a want of knowledge of the most elementary ideas of sanitation.

They are thus more subject to chest and lung complaints, to adenoids, enlarged tonsils and enlarged glands. On the other hand, they show to advantage as regards height and weight and defective teeth, and are on a par with Gentile children in regard to rickets and deformities generally.

Under the head of tuberculosis the Jews show the highest figure—namely, 4.8 per cent., compared with a Gentile average of 1.7 per cent. Strangely enough, no Jewish children show tubercular disease of joints.

With regard to deformities, poor-district schools show 9.5 per cent. affected, as compared with 6.1 per cent. in Jewish schools, and an average for the whole of the Gentile schools of 6.6 per cent.

The highest percentage of rickets is shown by the poor-district schools—namely 8.8 per cent.—whilst the average for all schools is 5.7 per cent.

The returns of children with decayed teeth show that the Jewish schools compare very favourably with the other schools, their average being 40.7 per cent., as against 56.1 per cent. in Gentile schools. Taking the scholars examined at the leaving age, the average of the Jewish schools is 33.1 per cent., of the poor-district schools 56.3 per cent., and of the better-district schools 68.5 per cent. Taking the scholars examined on admission, the Jewish schools show 42.8 per cent. with defective teeth, the poor-district schools 41 per cent., and the better-district schools 44.4 per cent.

In the Jewish schools the number of children with decayed teeth is 10 per cent. lower among the older scholars than among the infants. In the Gentile schools the reverse is the case; there

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are 18 per cent. more children with bad teeth among the older scholars than among the infants, and in the better-district schools the percentage is very high. From this it would appear that children whose parents are comparatively well off have, as a rule, superior teeth when young, but that after the age of six their teeth deteriorate, giving a much higher percentage of decay than one would anticipate. The increased facilities for purchasing sweets and richer foods may have some bearing on this deterioration.

Taking the children examined at the leaving age, it is observed that 17.2 per cent. in Jewish schools, 5.5 per cent. in poor-district schools, and 6.4 per cent. in better-district schools are suffering from adenoids. Of the Jewish scholars 26.2 per cent., as compared with 16.7 per cent. of poor-district schools, have enlarged tonsils, and 25 per cent. of Jewish children, as compared with 12 per cent. poor-district schools, have enlarged glands.

The Jewish schools show no returns of "very poor" nutrition, but under the heading "poor nutrition" we find the Jewish schools have the highest percentage, namely, 14.3, as compared with 8.3 per cent. in the Gentile schools.

As regards weight, the Jewish children, as a rule, are heavier than Gentile children of the same age. Upon comparing heights it is found that the girls in better-district schools are the tallest; and, as might be expected, the boys and girls in the poor-district schools are the shortest, as they are also the lightest. There is little difference in the height of boys in Jewish, suburban, and better-district schools.

THE ELIMINATION OF BOVINE TUBERCULOSIS.—On the question of the elimination of tuberculosis from our herds, it appears to me that if we are to obtain any substantial advantage from a system of compensation, that system should be of such a character as to render it unprofitable to breed or possess tuberculous animals. The compensation should be disbursed in such a way as gradually to eliminate tuberculosis, and I suggest that it should take the form of a contribution for the encouragement of a general resort to what is known as "the Bang system." Under that system every effort is made to eliminate tuberculosis from individual herds. The animals composing the herd are tested with tuberculin. Those which react are separated from the healthy animals. No new animal is introduced which does not stand the tuberculin test. A Government grant might be utilized by local authorities in the establishment of large experimental farms on the Bang system, from which tubercle-free animals could be obtained at a moderate price by farmers who undertook to carry out the Bang system on their farms. The elimination of tuberculosis would be a slow process under this scheme, but it would be thorough. With each new herd established on the Bang system a definite step forward would be made.—*Annual Report of Dr. A. Campbell Munro, County Medical Officer of Health, Renfrew.*

THE SIGNIFICANCE OF THE DECLINING BIRTH-RATE.*

By A. CAMPBELL MUNRO, M.B., B.Sc.,
County Medical Officer of Health, Renfrew.

THE declining birth-rate of the country is, to my mind, a sure sign of decadence. If the decline persists it will undoubtedly lead to national decay. For it is to be observed that the decline is unequal, that it is great among the more capable classes of the population, while there is but little decline amongst the least capable. If this tendency persists the result is inevitable. In a few generations the least capable will have swamped the more capable elements of the population, and Britain's predominance amongst the nations will have passed away.

The principal influence at work in the reduction of the birth-rate amongst the more provident and capable classes of the community is the retardation of the age at marriage. Taking this "age at marriage" factor alone, the result can be wrought out arithmetically. An average early age at marriage acts in a threefold way. First, it results in larger families; second, it produces more generations in a given time; third, there are more generations alive at the same time. Take as an illustration two men, M. and N., both aged twenty-two, and each with an expectation of life of thirty-three years. M., the casual labourer, marries at once; his descendants will marry at the same age. N. delays marriage in order to make some provision for the future. He does not marry until he is thirty-three, and his descendants marry at the same age. Race M. will probably produce an increase of $1\frac{1}{2}$ in the next generation, and $3\frac{1}{2}$ generations in a century, while N. produces an increase of only $1\frac{1}{2}$ in a generation, and only $2\frac{1}{2}$ generations in a century. It follows that the increase in race M. at the end of a century will be greater than that of race N. in the proportion of 18 to 7. In two centuries the product of race M. will be more than six times that of race N. But the proportion of race M. in the total population will be greater than that of race N., owing to the greater number of generations of race M. alive at the same time. The ratio of race M. at the end of a century will therefore really be as 40 to 27, and at the end of the second century race M. will number ten times race N. In other words, the race inferior in character—which term includes ability, energy, health, manliness and courtesy—will be ten times as numerous as that which is higher in character. And this calculation leaves out of account the relative fertility of the two races, which, if taken into account, would very greatly increase the disparity in numbers between the two races.

This question of race suicide is a very grave one, much more serious than questions of politics

* Annual Report, 1909.

and armaments which absorb the interest of the people, and it is a matter which health officers ought to press upon the attention of their constituents. Legislation could effect a good deal in the matter. If, for instance, it were determined that every man who passes the age of twenty-five unmarried, and who pays income-tax, should lose his vote and pay a doubled income-tax, there would be a considerable stimulus to earlier marriages, and a wholesome public opinion on the subject would be created.

There are other directions in which race suicide proceeds. Parenthood ought to be made impossible to the chronic inebriate or dipsomaniac, to the irreclaimable criminal, to the irreclaimable tramp and loafer, to the feeble-minded. "Inebriate reformatories" have been established—and given up because of their comparative failure to reform. But Dr. Branthwaite, the inspector of such reformatories, found that out of 2,227 cases of inebriates 62.6 were mentally defective. Of these Dr. Branthwaite says: "They are not in the least affected by orthodox temperance efforts; they continue to propagate drunkenness. . . . Their children, born of defective parents, educated by their surroundings, grow up without a chance of decent life, and constitute the reserve from which our present army of habituals is maintained." What we require are inebriate colonies, not "reformatories," in which, while every effort is made to reform the reformable, the main object will be to segregate the irreformable and prevent him or her from reproducing their kind, to the detriment of the race.

THE DUNDEE MUNICIPAL DISPENSARY FOR CONSUMPTION AND DISEASES OF THE CHEST.

THE following account of the Dundee Municipal Consumption Dispensary appears in the Annual Report for 1909 of Dr. C. Templeman, medical officer of health for Dundee:—

The Municipal Dispensary for Consumption and Diseases of the Chest has been carried on during the third year on much the same lines as formerly, with only such modifications as experience in its working has suggested.

We are indebted to the directors of the Royal Infirmary for the use of the out-patient department of that institution, and for the supply of medicines to the patients.

The number of new patients was 260—a slight increase on that of last year. Of these, 70 were due to other diseases, which at their onset gave rise to a suspicion of commencing consumption. Patients with consumption presented themselves at all stages of the disease; 105 were actively infectious, while a large number were either slight cases or showed very indefinite symptoms. This

increased number of early cases seems at least to show that the working classes are beginning to pay more attention to their health at the first sign of a serious breakdown, such as the onset of tubercular disease of the lung implies.

All the patients save one belonged to Dundee, and with scarce an exception they came from the working classes. The attendance of old patients numbered 2,133. While the patients were of varying ages, it is important to note that a half of those affected with consumption were between the ages of twenty and thirty, and thus just at the time of life when for man and woman the active responsibilities of life, both in the factory and in the home, should least be crippled by such a debilitating, and withal in many cases preventable, disease.

The work of a municipal dispensary, while it carries out treatment by drugs such as one gets in the out-patient department of any infirmary, has, with its attached nurse and its home visitation of the patient, a different function to perform. Education of the patients and their friends in the nature of the disease, and the best means of assisting in its cure, as well as preventing its spread, is its great aim from the public health standpoint.

A constant attempt is made to put before the patients the cardinal points to be attended to in dealing with a disease which is infectious and yet which can be largely controlled, and its spread to other members of the household prevented by careful attention in certain ways. Once the patients have grasped the fact that consumption is infectious, and that they personally though unwittingly may have been in some measure responsible for its spread, there is naturally a desire to carry out such simple regulations as are required to prevent further infection.

The need for fresh air and for the open window in the home, both for the general health of the inmates, as well as for the improvement of the consumptive, is one that takes much enforcing, but at the same time the rapid benefits that may follow its adoption have made an impression on not a few.

The active endeavours at present being made to improve the housing conditions in Dundee should do much to help the work of the Dispensary in providing homes with larger air space, but even as important as this housing reform is the urgent need for a better knowledge of the value of fresh air in the home by day and also by night. Rather one should say that the knowledge of the principles of hygiene is far in advance of their practical application.

Consumption is a disease whose cure is helped very largely by the provision of good nourishing food, but in not a few instances ignorance of cooking and the foods that go to make up a sound,

nourishing and yet cheap diet has told very greatly against progress. Closely allied to this, of course, is the not infrequent absence of any woman from the home, and the consequent difficulty that the nurse has in trying in any way to influence the general household arrangements.

Disinfection of the house on the occurrence of a death or a removal is being systematically carried out. Fifty-one disinfections were carried out on removals, but as only a small proportion of the cases of consumption in our midst is notified under the present voluntary system, it is evident that the community is allowing many houses to remain as centres of fresh infection. The need for a knowledge of the whereabouts of every active case of consumption, such as only compulsory notification can give, is bound ere long to bring the earnest-minded public here into line with other districts which do not find it to be the hardship so often alleged.

Thirty-three consumptive patients attending the Dispensary died during the year—18 at home and 15 in institutions. The provision that the Town Council is making for the hospital treatment of advanced cases will allow us in future to advise their removal from homes where it is evident that the amount of space or the lack of care is such as to lead to the possibility of the spread of the disease to other members of the family.

SANATORIUM TREATMENT.

As the free gift which enabled us to send six patients to the Sanatorium was exhausted early in the year, the present time seems to be a good one for passing in review the after-history of these patients, who were sent to the Sanatorium through the Dispensary from its start in 1907 to the end of December, 1909. There has been no part of the Dispensary work which has been more promising, and none that has helped so much to make the patients grasp the nature of their disease and the conditions that make for improvement or cure.

The number of patients who went to the Sanatorium through the Dispensary from its start was 22. Their ages varied considerably. Two were children at school. Most were just on the threshold of life. One or two were already married, and had families depending on them for support. All, except two or three, appeared to be in what is called the early stage of the disease; 13 were males and 9 females. The length of the stay in the Sanatorium varied from a minimum of three months up to six months, or more in some cases. Of these 22, 17 have kept well (11 males and 6 females), of whom 13 are working (10 males and 3 females). The two children are well and at school. Two women are able for light household duties. Two patients have kept only fairly well; two are confined to bed. One patient, who

stayed but a week or two, came home and died from a laryngeal complication.

The experience that has been gained in regard to the selection of those patients has convinced us more and more of the value of Sanatorium treatment if the patient be sent there in the earliest recognizable stage of the disease, and if at the same time the patients are willing to co-operate with the nurse in the continued open-air treatment on their return to their homes and their daily work. The combination of a municipal dispensary with a sanatorium, to which suitable patients can be sent, and from which on their return a medical supervision of their condition can still be kept up for a time, gives the best promise of any scheme of combating consumption amongst the workers of a city.

Dundee, by its grant through the Town Council to the Sidlaw Sanatorium in its newly constituted form, will be able in the future, although it be on a small scale in comparison with the widespread ravages of the disease in its midst, to do something to help in restoring to health and working capacity not a few of its citizens, while at the same time the progress made in this direction may pave the way for its extension at a later date.

AN OUTBREAK OF THE "FOURTH" DISEASE.*

By RICHARD PRICHARD, M.D., D.P.H.,
Medical Officer of Health, Llandaff Rural District.

AS a matter of fact a large number of the cases notified as scarlet fever during October, November and December at Gabalfa (Llandaff) were not that disease, and there were also many at Whitchurch which were not reported to me at all because the medical attendant recognized the true character of the complaint. Seven of these cases were admitted into the hospital, and six others were kept at home on my advice. Of the seven taken to hospital two contracted scarlet fever there, the other five were segregated, as far as possible, from the other patients, and sent home at the end of a week or ten days. There were no means of isolating them in separate wards, as the accommodation was at that time fully taxed with the other cases. About two months afterwards one of these cases returned to hospital with scarlet fever contracted from another source.

I reported as follows on November 30th last:—"The disease from which they were suffering is an infectious fever, which has not yet been given a medical name. It has been called 'fourth' disease, because it is not one of the three common

eruptive fevers—which are scarlatina, measles, and German measles. There is no reason to suppose that it is a new disease, but it is so similar to scarlet fever that it has hitherto been regarded by the medical profession as a mild attack of scarlatina. The two complaints are, however, perfectly distinct; an attack of the one disease does not render the patient immune against the other. It is extremely rare for a person to suffer from a second attack of the same fever; but if a child who has not had a bad scarlet fever, but who is suffering from the 'fourth' disease, were placed by mistake in a scarlet fever ward he would soon develop an attack of scarlatina, and he would probably convey the 'fourth' disease to the other patients. The onset of the latter complaint, the appearance of the tongue and the throat, correspond very closely with those of scarlet fever, but there is a difference in the rash which it is difficult to define in terms. The eruption of scarlatina consists of minute rosy points so closely placed that they soon amalgamate to form a uniform scarlet blush spreading from head to foot. The redness disappears readily under the pressure of the fingers, returning immediately the pressure is withdrawn. In the rash of the 'fourth' disease the red papules are larger and isolated, yet not raised like that of measles or rubella." It appears first on the face on the second day of illness, when there are only a few sparse red points on the trunk and none on the limbs. By the third day the eruption is fading on the face; it has now become a uniform red rash on the body, and papules are appearing on the limbs. The uniform eruption on the trunk very closely resembles that of scarlet fever, and may be readily mistaken for it. It does not disappear so completely under the pressure of the fingers as the rash of the scarlet fever, the latter being more of a blush. In the "fourth" disease, which I shall provisionally name rhodoid (rose-like) fever, the eruption passes in a wave from head to foot; the points do not coalesce on the limbs to form a confluent redness. The young patients do not suffer any discomfort beyond a slight sore throat at the onset of the fever. There is very little rise of temperature, and then only for a day or so, and correspondingly the pulse is very little accelerated.

The subsequent peeling or desquamation is much less pronounced than even in mild cases of scarlatina, and it rarely amounts to more than a slight "braniness" about the trunk. When the essential features of this fever are recognized, it is readily distinguished from scarlet fever. Fortunately, the matron (Miss Evans) made a correct diagnosis of every case on admission, and took precautions accordingly, otherwise there is no doubt the disease would have spread to the other patients.

* Annual Report, 1909.

QUINQUENNIAL CENSUS.

ON March 11th, 1910, the Society passed the following resolution:—

That, in the opinion of the Society of Medical Officers of Health, the enactment of the quinquennial enumeration of the population is essential to the promotion of public health.

A copy of this resolution was sent to the following members of the Government:—

1. The Prime Minister.
2. The Chancellor of the Exchequer.
3. The President of the Local Government Board.
4. The President of the Board of Education.
5. The Secretary for Scotland.
6. The Chief Secretary for Ireland.
7. The Registrar-Generals of England and Wales, Scotland and Ireland.

A copy of the letter sent to the Government was sent to the following learned societies, etc., who were asked to support the Society in urging the Government to establish a quinquennial census:—

1. The Royal Society.
2. The Royal Society of Medicine.
3. The Royal Statistical Society.
4. The Statistical Society of Manchester.
5. The Institute of Actuaries.
6. The Royal Sanitary Institute.
7. The Association of County Councils.
8. The Association of Municipal Corporations.
9. The Faculty of Actuaries, Scotland.
10. The Royal Society of Edinburgh.
11. The Convention of Royal Burghs, Scotland.
12. The Association of County Councils, Scotland.
13. The Royal Academy of Medicine, Ireland.
14. The British Medical Association.
15. The Royal Colleges of Physicians of England, Scotland and Ireland.
16. The Royal Colleges of Surgeons of England, Scotland and Ireland.
17. The Editor of the *British Medical Journal*.
18. The Editor of the *Lancet*.

Subjoined are—

1. Copy of letter sent to the members of the Government, and
2. Copy of letter (enclosing copy of letter sent to the members of the Government) sent to learned societies.

1 Upper Montague Street,
Russell Square,
London, W.C.,
March 29th, 1910.

Sir,

Re QUINQUENNIAL CENSUS.

On behalf of the Society of Medical Officers of Health, I have the honour to transmit to you the following resolution, which was adopted

unanimously by the Society at their meeting held on March 11th, 1910:—

That, in the opinion of the Society of Medical Officers of Health, the enactment of the quinquennial enumeration of the population is essential to the promotion of the public health.

You will be good enough to note that the resolution does not necessarily mean that a full census shall be taken in 1916, or other corresponding date, the Society being of opinion that a simple enumeration of the population (sex and age) will be sufficient to furnish those checks on intercensal estimates of population which are necessary to make the national vital statistics accurate and reliable.

The need for a more frequent count of the inhabitants of the United Kingdom has been pressed upon His Majesty's Government on so many occasions, both by deputations and by resolutions from this and other Societies, that it appears to be unnecessary to submit further evidence in support of the Society's above resolution at this juncture.

I am desired by the Society, in transmitting to you the above resolution, to convey their expression of satisfaction at the improvements proposed to be made in the forthcoming census 1911, both as regards information to be obtained and as regards procedure. At the same time the Society ventures to express regret at the omission from the Census Bill now before Parliament of any provision for setting up a quinquennial count.

I have the honour to be, Sir,

Your obedient servant,

JOSEPH PRIESTLEY,
Honorary Secretary.

1 Upper Montague Street,
Russell Square,
London, W.C.

March 29th, 1910.

Sir,

Re QUINQUENNIAL CENSUS.

I am instructed, by the Society of Medical Officers of Health, to forward to you the enclosed copy of a letter, addressed by the Society to His Majesty's Government, with reference to the need for a more frequent enumeration of the population (sex and age) of this country. In doing so, it is hoped that, in the event of your Council agreeing with the views set out in the accompanying letter, your Council will cause a similar letter to be sent to the principal members of the Government.

Yours faithfully,

JOSEPH PRIESTLEY,
Honorary Secretary.

THE ASSOCIATION OF MEDICAL OFFICERS OF HEALTH.

A COUNCIL MEETING of the above Association was held at the Holborn Restaurant on April 28th, and in the unavoidable absence of Dr. Crookshank Dr. Rashell Davison was voted to the chair.

The Treasurer (Dr. Gibb-Smith) reported that many new members had joined the Association since the last meeting of the Council, and there was a good balance in hand after all the expenses had been paid.

The Secretary (Dr. Belilios) stated that Mr. Fremantle, county medical officer for Hertfordshire, would read a paper in the Public Health Section of the British Medical Association on "The Influence of Part-time Medical Officers of Health on Public Health," and the council expressed the hope that the section would be well attended.

It was noted that the Rochdale, Richmond and Salford divisions of the British Medical Association would instruct their delegates to vote for the rescission of Minute 234 at the representatives meeting, and that the Salford division would move:—

That in every form of public medical service the system of part-time appointments of medical practitioners should be maintained as far as such appointments can be made consistently with the requirements of the services, and that all public medical officers should be protected in carrying out their duties, should be secured from capricious dismissal or reduction of salary, and should be allowed to participate in any superannuation scheme approved by a Local Government Board.

It was decided to recommend those members who belong to both Associations to move so that this resolution would be supported by their delegates at the representative meeting of the British Medical Association.

Dr. Davison informed the meeting that a paper was to be read at the meeting of the Urban District Councils Association next July on the advantages of the present part-time public health service.

A Meeting of the Council of the Association of Medical Officers of Health was held in London on May 28th, at 3 p.m. Dr. Crookshank presided over a good attendance.

The Treasurer (Dr. Gibbs Smith) reported a satisfactory increase in both the subscriptions and membership. A letter from the medical secretary of the British Medical Association was read giving the consent of the Council to a meeting being held during the meeting in July next of the British Medical Association. It was decided to arrange for the meeting to be held on Friday, July 29th, and for a dinner to take place on the evening of the same day.

It was resolved to oppose in Parliament any Bill differentiating between whole-time and part-time medical officers of health in respect of tenure, and to issue to members of the Association a memorandum stating the position now taken up by the British Medical Association with regard to the appointment, security, and superannuation of medical officers of health.

CORRESPONDENCE.

The Editor does not accept responsibility for the opinions of correspondents.

To the Editor of "PUBLIC HEALTH."

DEAR SIR,—With reference to my paper on "The Disinfection of Books," in the March number of PUBLIC HEALTH, I should like to add the following:—

The experiments were made in a hot-air sterilizer, the bottom shelf of which I covered with asbestos sheeting $\frac{1}{4}$ in. thick. My sterilizer is rather an old-fashioned one, and the thermometer is placed horizontally beneath the bottom shelf. I have lately found that when the horizontal thermometer is reading at 150° C. the temperature taken with a maximum thermometer lying on the asbestos on the bottom shelf is only 110° C. Again, when the former temperature was reading at 162° C. the temperature of the middle shelf (as registered by the maximum thermometer) was only 102° C.; so that my experiments were really done successfully with a very much lower temperature than the horizontal thermometer registered.

I should state that my sterilizer has double walls and is made of sheet-iron, the outside being covered with asbestos.—Yours faithfully,

H. RENNEY.

Town Hall, Sunderland, May 5th, 1910.

A MILK OUTBREAK OF TYPHOID FEVER.—In October a number of cases of enteric fever were notified to me in various parts of the town. They numbered 21 in all, 10 of which were children; 7 were males and 14 females. On inspection I found all the houses provided with town water. The drainage was good. But there was one factor in common in all the cases, the milk supply was the same. That this was the cause of the disease is proved by the fact that when the milk supply was stopped no fresh cases occurred. On making further investigations I was able to complete the chain of evidence with regard to the infectivity of the milk. I found that at the beginning of October a case of typhoid fever occurred in the house of the milker of the cows. Further, I found the adjoining wells polluted with sewage and the water used for washing utensils and other purposes on the farm. Thus the missing link was found. It is another instance of the great necessity of extreme carefulness on the part of cowkeepers and dairymen, and of pure water, and the absence of infectious disease in the neighbourhood.—*Annual Report of Dr. Alford, Medical Officer of Health, Taunton.*

REVIEWS.

BACTERIAL FOOD POISONING. By Prof. Dr. A. Dieudonné, Munich. Translated and edited, with additions, by Dr. Charles Frederick Bolduan, Bacteriologist, Research Laboratory, Department of Health, City of New York. New York: Treat & Co., 1909. Price \$1.

The Americans seem to make a habit of translating all and sundry of German scientific publications, and occasionally find something worth the trouble. Prof. Dieudonné's manual is certainly one worth doing into English, and thanks are certainly due to Dr. Bolduan for giving sanitarians in this country unacquainted with German, an opportunity of studying the book.

The volume is not a large one, but it contains a great amount of useful matter. Poisoning, by meat, fish, cheese, ice-cream, potatoes and canned food is very fully considered, the symptoms, prophylaxis and treatment of each form being carefully described. An important feature is the inclusion of historical notes regarding various outbreaks of food poisoning which have occurred in Germany and America. Reference is also made to a certain number of English cases, though these do not seem to have been given the amount of attention they deserve.

Not unnaturally, most space is given to the consideration of meat poisoning, and separate sections dealing with poisoning through diseased meat; poisoning due to decayed meat, and sausage poisoning are included. There is also a good description of the technique of the bacteriological examination of unsound meat which should prove useful. The chapters on potato poisoning and poisoning through canned foods contain several new points, and will be found valuable.

The work of the editor and translator has been well done. The matter is well arranged, and the book is readable and exceedingly interesting, and may be safely recommended.

COWS, COWHOUSES AND MILK. By G. Mayall, M.R.C.V.S. London: Baillière, Tindall and Cox. 1909.

Mr. Mayall's object in publishing this little book is to spread information with regard to the making of clean, pure milk. Like many others, he believes that there is no real necessity for our dependence on foreign countries for so great a part of our supply, and that we ought to produce more and better quality milk than we do at present. If this volume could be placed in the hands of milk producers and—more important still—in those of the milkers and workpeople, and they could be induced to read it, there is no doubt

that an immense amount of good would be done. Education of a class so conservative as farmers and milk producers is at best a very slow process; but books of this kind are certain to help considerably.

The subjects dealt with are very numerous, and all of the important points are well brought out. The matter is well arranged and simply and interestingly written. The illustrations, which are chiefly from photographs, are particularly well done. Several of the chapters have appeared already in certain of the trade journals, and here and there one may note a picturesque touch, almost journalistic, which increases the readability of the book.

Practically on every page information of value is to be found, but those chapters dealing with cowhouses, new and existing, and the diseases of cows that may affect the milk, deserve special mention.

We have no hesitation in recommending Mr. Mayall's book to those for whom it is intended, and medical officers of health and others preparing pamphlets or lectures on milk and related subjects will find it exceedingly useful.

AMERICAN MEAT AND ITS INFLUENCE UPON THE PUBLIC HEALTH. By Albert Leffingwell, M.D., late President of the American Humane Association. London: George Bell & Sons, 1910. Price 3s. 6d. net.

Dr. Leffingwell suspects the existence somewhere in America of something he calls a "Meat Trust." This is not a business entity, but simply an influence which proceeds from the financial interests involved, and makes itself felt in connection with everything that touches the trade in flesh. Having such suspicions, the author carried out a long series of observations and investigations into the meat business in America, visiting stock yards, slaughter houses and packing houses. He came to the conclusion that, despite the apparent stringency of the regulations passed after the recent disclosures, meat inspection is not so well carried out in the States as it ought to be, and that it is probable that at least that brand of meat which is used for canning purposes is not always above suspicion.

The results of the investigations and the conclusions are evidently published with the object of bringing the matter prominently forward, but if the meat trust is so strong as the writer seems to believe, it is doubtful if any great amount of good will be done. The book does not appear to be one likely to have any wide appeal elsewhere than in America, but as it throws some interesting side-lights on Transatlantic methods in connection with the meat traffic, it is worthy of consideration.

PROCEEDINGS OF THE SOCIETY OF MEDICAL OFFICERS OF HEALTH.

FOUNDED 1856. RECONSTRUCTED 1888.
INCORPORATED 1892.

North-Western Branch.—A Meeting of this Branch of the Society of Medical Officers of Health was held at the Victoria Hotel, Manchester, on Friday, April 15th, 1910. In the absence of the President, Dr. Edward Sergeant was voted to the chair. Present: Drs. Garstang, Meredith Young, Wheatley, Rees Jones, Hamilton, Corbin, Arnold, Paterson, Melville, Harris, A. J. Young, Daley, Wilkinson, Marsden, Moffatt, Hitchon, Holt, Buchan, Dearden, Hanna, and Barlow (hon. secretary).

The minutes of last meeting were read, confirmed and adopted.

The Hon. Secretary gave a report as to the last meeting of the Council.

A letter was read from Mrs. Kenyon thanking the Branch for their letter of sympathy on the death of her husband.

It was agreed that the June meeting be held at Chesterfield on the invitation of the President, who stated his intention to arrange an excursion to Hardwick Hall after the meeting.

A paper was read by Dr. Hanna entitled "Observations on the Interaction of Concurrent Smallpox and Vaccination." The paper was illustrated by photographs. Drs. Meredith Young, Marsden, Wheatley, Corbin, Hamilton, Jones and Sergeant took part in the discussion, and a vote of thanks was accorded to the writer of the paper at the close.

A Meeting of this Branch was also held at the Victoria Hotel, Manchester, on Friday, May 13th, 1910. Present: Dr. Peck (in the chair), Drs. Martin, Chronnell, Berry, Sergeant, Dearden, Greenwood, Hitchon, Meredith Young, Marsden, Corbin, Daley, Holt, Harris, Wynne, Scarisbrick, Fraser, Wood and Barlow (hon. sec.). Apologies for absence were read from Drs. Garstang, Wilson and Brindley.

Before the business of the meeting commenced, it was resolved that this Branch desires to place on record its respectful condolence with the members of the Royal Family in their present trouble, and also their sense of the great loss the nation has sustained in the death of His Late Majesty, King Edward VII.

It was resolved that the date of the June meeting be altered to the 24th prox., and that the meeting be held at Chesterfield.

The minutes of the last meeting were read, confirmed and adopted.

The secretary read a letter from the Manchester and Salford Sanitary Association and Smoke Abatement League, with reference to a memorial

to the President of the Local Government Board praying that further powers be granted with the object of diminishing the amount of smoke emitted from factory and other chimneys and thus minimizing the resulting evil effects. The Branch expressed themselves as heartily in sympathy with the efforts of the Manchester and Salford Sanitary Association and Smoke Abatement League, and recommended each member of the Branch to obtain the support of his Local Authority in the matter. It was also decided that a copy of the memorial be sent to the Central Council, with the request that they should appoint a member on the deputation which is to meet Mr. John Burns.

The Branch adopted the recommendations of the committee with regard to the matters referred to them by the Council.

A paper was then read by Dr. Dearden on "The Artificial Greening of Preserved Vegetables."*

An interesting discussion followed, in which Mr. Reid of Edinburgh, Drs. Greenwood, Corbin, Sergeant and Martin took part.

The following resolution was passed:—"That action be taken by the Local Government Board with a view to ensuring uniformity in dealing with imported food-stuffs in connection with which artificial colouring matters have been used."

At the close a vote of thanks was accorded by the members to the reader of the paper.

Northern Branch.—A Meeting of the Northern Branch was held at Whickham on April 22nd, 1910. Present: Dr. Andrew Smith (chairman), Drs. James Smith, T. Wilson, Mostyn, Raffle, Kerr, Trotter, Renney, Foggin, Stainthorpe and Taylor, also Mr. Renton, surveyor to the Whickham Urban Council.

The minutes of previous meeting were read and confirmed.

Dr. Stainthorpe read a paper on the "Duties of the Medical Officer of Health: Should they be Revised?" The paper was fully discussed and sympathetically criticised by the members present.

The Shore system of sewerage, which manipulates the conveyance of sewage from a portion of the Urban district to an outfall in the river Derwent, was shown and explained by the Urban Council's surveyor, Mr. Renton.

The members of the Branch were very kindly entertained to lunch and tea by Dr. and Mrs. Smith.

Cordial votes of thanks were passed at the end of the meeting to Dr. and Mrs. Smith for their hospitality; to Mr. Renton for his time and trouble in showing and explaining to the members the working of the Shore system of sewage lifting; and to the Urban Council of Whickham for the use of their Council Chamber in which the meeting was held.

* This paper will appear in an early number of PUBLIC HEALTH.

LAW REPORTS.

OLIVE OIL.—At the City of London Guildhall on April 19th the Produce Brokers Company, Limited, Great St. Helen's, Bishopsgate, were summoned under the Food and Drugs Act for having on August 31st, 1909, in respect of an article of food, sold by them as principal or agent, unlawfully given the purchaser in writing a false warranty that the article in question was olive oil. There were also summonses under the Merchandise Marks Act for applying the false trade description "Olive oil" to a mixture of olive oil and arachide nut oil.

The proceedings were instituted by the County Council for the West Riding of Yorkshire. It was stated that in February last one of the Council's inspectors made a purchase of "olive oil" of a grocer, and this upon analysis was found to contain 20 per cent. of olive oil, the remainder being what was commonly known in this country as earth nut oil, or arachide nut oil. Proceedings were taken against the grocer, and the summons was dismissed upon the strength of a warranty. Inquiries were then made, and the purchase of this oil was traced back to the defendants. The oil was sold in a bottle labelled "Finest olive oil—guaranteed to answer all the tests of the British Pharmacopœia." This was strictly true, because the adulterant in this case was not at that time discoverable by any known test.

The case was adjourned until April 23rd, when it was stated that the defendants wished the matter tried by a jury. A limited company, however, could not appear at the Central Criminal Court, and the result of a committal for trial would be the removal of the case into the High Court. As this was an inconvenient procedure, new summonses were asked for against two of the officials of the Company and the original ones were adjourned.

The matter came on again on May 5th and 9th. The summonses under the Merchandise Marks Act were proceeded with. The presiding Alderman dismissed these summonses, holding that the defendants had acted innocently, as they had bought the article and sold it in the belief that it was pure olive oil. The other summonses were then withdrawn, and the defendants did not ask for costs. The Alderman observed that if the prosecution only led to the publicity of the fact that arachide oil was being used as an adulterant with olive oil the West Riding Council had done the public an immense benefit.

BORIC ACID IN PORK PIES.—At Westminster Police Court on April 28th Messrs. Frost & Co., Limited, were convicted of selling, to the prejudice of the purchaser, a pork pie the meat part of which contained boric acid in the proportion of about 24 grains to the pound.

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At a Special Meeting of the Council it was resolved unanimously to send an Address of Condolence and Loyalty to His Majesty the King, and the following has been forwarded to the Home Secretary:—

To His Most Excellent Majesty, George the Fifth.

May it please Your Majesty—

We, the President and Fellows of the Society of Medical Officers of Health, representing the preventive branch of the Profession of Medicine, engaged in protecting and promoting the healthiness of Your Majesty's subjects throughout Your Empire, desire humbly to proffer a loyal and dutiful expression of condolence with Your Majesty in the great sorrow which has fallen upon Your Majesty, Her Majesty, the Queen-Mother, Your Royal House, and all Your Empire, through the death of Your Majesty's Father, Our ever illustrious King, Edward the Seventh.

We record, with pride and gratitude, the great interest Your lamented Father took in all labours that tended to promote the healthiness of His peoples. We recall, with thankfulness, His efforts to secure better housing to the poorer classes of His subjects; to ensure such pecuniary stability to our Hospitals as will enable them uninterruptedly to afford comfort and succour to the maimed, the sick and the suffering poor; to promote researches into the origin of cancer; and to combat and control, and, if it be possible, ultimately to eradicate, tuberculosis. These Kingly services to His subjects alone suffice to ensure to Your ever-to-be-remembered Father an imperishable and affectionate memory.

We are well assured that Your Majesty will delight to follow in Your Father's footsteps.

We beg to be permitted loyally to proffer our dutiful homage and warmly to wish for Your Majesty and Your Royal Consort, Queen Mary, and for all the Royal Family, health and longevity.

(Signed) H. C. PATTIN,

President.

May 19th, 1910.

NOTES ON THE PRACTICAL STERILIZATION OF POTABLE WATERS BY MEANS OF CALCIUM HYPOCHLORITE.

By JOHN C. THRESH, M.D., D.Sc., F.I.C., etc.,
Medical Officer of Health, Essex County Council.

SINCE general attention was directed to the fact that exceedingly minute quantities of chlorine were destructive to the bacteria in potable waters, and especially to the organisms of the colon and typhoid groups, this method of purifying water has been adopted at several important works. In this country experiments have been conducted on a large scale, 7,000 gallons of water being treated per hour, and it has been found that with waters of great organic purity even one part of chlorine in 10 million parts of water will destroy the *Bacillus Coli*, and practically all the other bacteria found associated therewith. Two or three waterworks are using chlorine experimentally, but we must look to America and South Africa for works using calcium hypochlorite for sterilizing the whole of the water supplied by waterworks.

At Nashville, Tenn., the water supply, 15 million gallons a day, is obtained from the Cumberland River, and since August 9th, 1909, the whole of this has been treated with one grain of aluminium sulphate and 1 grain of calcium hypochlorite per gallon. The American river waters are generally turbid and difficult to clarify without the use of alumina. Even filtration through fine sand often fails to remove the opalescence, hence the general use of alumina in the States as a coagulant. The Cumberland River receiving a certain amount of sewage, and the water often being laden with bacteria, even after the use of alumina, the addition of calcium hypochlorite was tried and found to give such satisfactory results that its use has been continued. As an example of these results the following may be quoted:—

	Raw river water.	Treated water.
Bacteria per c.c. ...	6,100	110
25 + 1 c.c. tubes tested for the <i>B. Coli</i> ...	+ in 24 tubes	— in all 25

Apparently there is no excess of chlorine in the water. Doubtless the organic matter present removes the whole. Commercial aluminium sulphate, I find, removes a slight trace.

At Minneapolis, Minn., water is obtained from the Mississippi, and as cases of typhoid fever had occurred in towns above the intake of the waterworks, and the disease showed

signs of spreading in the city, an emergency plant was erected to treat 20 million gallons of the river water a day with $\frac{1}{4}$ grain of hypochlorite per gallon. This commenced work on February 28th of this year. The chlorinating solution is added at the works near the river and flows through a long length of main to the town. Two days after commencing to chlorinate, the water supplied was free from the colon bacillus.

In Montreal, during the past winter, there has been an epidemic of typhoid fever in the city, which derives its water supply from the St. Lawrence River. The company has therefore installed a chlorinating plant capable of treating 40 million gallons of water a day. The amount of chlorine necessary to produce satisfactory results is 1 in 2½ millions, and this quantity is being used. Before treatment the bacteria have varied from 29 to 1,600 per c.c. of water, and after treatment from 2 to 46 only. The cost of the treatment is stated to be 1/6 per million gallons and this includes labour, light and heat.

At Harrisburg, Pa., which obtains its water supply from the Susquehanna River, the water has been chlorinated since September 25th, 1909. About 10 million gallons per day is dealt with, and the results are said to be gratifying. As the water is generally turbid, a little alumina is added also. Using 1 grain of hypochlorite per gallon no taste or odour was perceived in the water when delivered to the town; but 0.7 grain was found to be sufficient to destroy all the colon bacilli. In the raw water the *Bacillus Coli* was found in 59 per cent. of the samples examined; in the treated water it has not been detected in 307 samples.

At Quincy, Ill., and Hartford, Conn., experiments have been conducted on a large scale. At Quincy they commenced by using too large a quantity of hypochlorite, and complaints were numerous. With 14 grains per gallon the results have been satisfactory so far as smell and taste are concerned, but the bacteriological results published make no reference to the colon bacillus. At Hartford the experiments were made by the State Commissioners, and the treated water was not supplied to the town. The water supply is from upland surfaces, but in summer this has to be supplemented by water from some abandoned works which derived water from the polluted Connecticut River. The old pumps here were utilized and the hypochlorites run in at the entrance to a main 16 in. in diameter and 1 mile long.

Samples were collected at intervals along the main. The experiments commenced on December 19th, 1909, and continued until January 1st, 1910, and varying quantities of chlorine were used. The best results were obtained at the end of the mile run, and Professor Newlands reported: "It will be seen by these results that when one part per million or more of available chlorine was used the removal of the bacteria was always greater than 99.5 per cent., and the colon bacillus was not found in the treated water."

When Dr. Porter, medical officer of health, Johannesburg, visited this country last summer he evinced great interest in the subject of water purification by chlorine, and I had afterwards the pleasure of sending him the results of my latest experiments. I have no doubt he will shortly communicate the extremely interesting results now being obtained at the Johannesburg Waterworks, where chlorine treatment is used to sterilize several millions of gallons of water per diem.

At the present time, and especially in this country, there is a prejudice against the chemical treatment of water; but the time will probably come when the prejudice will be overcome, and the purification of water by means of chlorine be adopted generally for all supplies of a suspicious character. The cost is so infinitesimal and the results so certain that no other process is likely to prove anything like so economical, and it is scarcely possible for results to be more satisfactory. In this country, where waters containing more than an infinitesimal trace of organic matter are rarely used, very small quantities of hypochlorites will be required, but it may be necessary in many cases to remove the final trace of chlorine by passing the water through polarite or charcoal or iron filings. In this way the water can be purified without affecting the palatability of the water, and the only effect ascertainable by chemical analysis is a decrease in the organic matter as shown by the albuminoid ammonia and oxygen absorbed tests.

A MEDICAL MANIFESTO AGAINST ALCOHOL.—A manifesto signed by 101 medical practitioners in North Wales, 34 of whom are medical officers of health, has been issued in support of total abstinence from alcohol. The signatories of the manifesto appeal to all their medical brethren in North Wales to join them in their endeavour to remove the popular errors that still largely prevail upon the subject.

OBSERVATIONS ON THE INTERACTION OF CONCURRENT VARIOLA AND VACCINIA.*

By W. HANNA, M.B., D.P.H., etc.,
Assistant Medical Officer of Health, Port of Liverpool.

THERE is no subject of medical or scientific interest which has given rise to such controversy as that of the value of vaccination as a protection against smallpox.

The systematic observations of many qualified observers have, however, long since turned this controversy into one of complete victory for the upholders of vaccination as a scientific and prophylactic measure, and it is unnecessary, nowadays, to draw attention to the convincing figures which have proved its value, for they are well known to every member of the medical profession, and especially to those whose duties lie in the domain of preventive medicine. It is sufficient to state that from a long study of the pock diseases of animals, especially vaccinia or cow-pox, and from experiments and observations made by scientists, the relationship of variola and vaccinia has now been established on a firm basis of fact. The experiments of such observers as Thiele, Ceely, King and Hime, and more recently of Klein and Copeman, have shown that it is possible to inoculate a calf with smallpox material and to obtain a vesicle at or near the site of inoculation, identical, or almost so in the first instance, with a human vaccine vesicle. This vesicle becomes even more typical in the case of successive inoculations, and the result is practically the same as if the animal had been inoculated with vaccinia, for it is no longer susceptible to vaccination. In addition, the lymph from these vesicles has been transferred and used to successfully inoculate human individuals, and the attenuated virus confers protection against human smallpox as ordinary vaccination does. Cow-pox or vaccinia may therefore be considered as an attenuated descendant of smallpox.

In connection with this close relationship, if not absolute identity, of these two affections, the examination of the following series of 75 cases of smallpox with a concurrent vaccination may prove of interest to those engaged in the work of public health. These cases have been collected during the past nine years in the City and Port of Liverpool. The majority of them were persons who were landed

* Read at a meeting of the North-Western Branch of the Society of Medical Officers of Health on April 15th, 1910.

suffering from or incubating the disease, and were removed to the Port Isolation Hospital; many of them were cattlemen from Boston, who landed incubating smallpox during the severe outbreak in that city in 1902-3. The cases may be examined in the light of the relative effects produced on one another, firstly as regards success of the operation when performed subsequently to infection; and secondly as regards the effect of the vaccination on the course and severity of the disease. Cases of this kind have rarely been given the prominence which they deserve, and it was with this object that the present series was collected. The series then gives information of the effect of vaccination and revaccination performed after exposure to infection.

THE SUCCESS OF THE VACCINATION.

The success of the operation may first be considered, and the series may be conveniently divided into two groups, viz.: (1) Those who have never been vaccinated until infected with smallpox (Chart A); (2) those who have been primarily vaccinated in infancy (Chart B).

On examining the charts it will be seen that the period of twelve days has been taken as the duration of the incubation period; this has been found to be practically correct for all the cases, they were all carefully investigated both as to the symptoms of onset and initial rash, and found to correspond to the periods set forth in the charts.

It cannot be disputed that possibly cases may occur with a day or so longer or shorter incubation period, but very few of this sort can be quoted as evidence for an incubation period other than that stated; for public health administration the average period generally accepted and acted on is twelve days, a period which has been found to work out well in practice, the rash appearing three days after initial symptoms.

The first point to notice about these cases is that all have been exposed to the infection of smallpox, and all, with three exceptions, have contracted the disease.

The cases have been set out showing those vaccinated and revaccinated on different days during the period of incubation, or after the onset of symptoms and even until three days after the rash has appeared. It is unnecessary to say that vaccination performed before exposure to infection of smallpox in susceptible people will, almost without exception, prove successful, and will protect the individual from the results of infection.

VACCINATION DURING INCUBATION.

On examining the charts it will be found that all the vaccinations and revaccinations have been *successful if performed during the incubation period* and even up to the day of onset of symptoms. When the term "successful" is used it must be understood that the phenomena at the site went through the typical and normal course of human vaccination. These phenomena may be shortly described as follows: A slight inflammatory reaction may appear at the site, but nothing of moment occurs until the end of the third day, when firm, flat, elevated papules appear at the site of the operation; these become surrounded by a halo of hyperæmia. Vesicles appear on the fifth or sixth day, and are especially marked at the periphery. These are filled with clear lymph and the zone of hyperæmia has increased, with acute swelling; the vaccination area is red, firm and the axillary glands may be swollen. Cloudiness begins to appear in the vesicles on the eighth day, and subsequently they become opaque and yellow. The height of the vaccination is reached on the ninth or tenth day, and from this date there are signs of rapid desiccation. The changes most characteristic of vaccination are found during the third, fourth, fifth and sixth days.

The successful vaccinations and revaccinations recorded in the chart were therefore more or less of the above described characters, and they all showed the characteristic ring or vesicle situated on a papule and going on to supuration and desiccation.

VACCINATION AFTER ONSET OF THE DISEASE.

The operations performed subsequently to the onset of symptoms were unsuccessful: the papule did not reach its typical character, the areola may not have developed and vesicles did not appear, or the vaccine pocks appeared stunted in development and rapidly dried up. In other cases, and notably in those vaccinated late in the disease, no reaction appeared at the site, or simply a slight traumatic reaction occurred. It will be well to mention at this point that fallacious conclusions may be drawn from the appearance of the vaccination area under the following conditions; it is well known that an especially abundant eruption is not infrequently observed on parts of the body which before the eruption appears have been affected by mechanical or inflammatory irritation. Such areas of rash are sharply marked off, and take on strikingly the form of the area of irritation, e.g., a patient

who has been previously carrying heavy bags on his back will show a more profuse eruption on his shoulders, or the irritation in front of the neck caused by a collar-stud will cause a little crop of vesicles to appear at this point. Other examples might be mentioned, such as an eruption round the thigh when a garter has caused pressure, or a confluent eruption on each side of a scratch on the hand. Similar phenomena can be seen after chemical irritation. When a vaccination has been performed, therefore, from the day of onset onwards until the rash appears the inflammation and irritation due to the operation and the slight local reaction which occurs may cause a crop of smallpox vesicles to appear around the area, and this is especially the case in severe or confluent smallpox. These vesicles may coalesce and give rise to a false appearance of success of the operation of vaccination. Many cases therefore said to be successful are really due to coalescence of smallpox vesicles and pustules around the area of the vaccination. This, I am convinced, is the case; it is only likely, however, to give rise to doubt in cases of severe or confluent smallpox where the eruption is profuse.

CLINICAL SOCIETY'S REPORT.

These observations were completed almost a year ago, when attention was drawn to a report, published in 1878, of a committee of the Clinical Society of London formed to investigate the periods of incubation, contagiousness of smallpox, etc. In this report there are twenty-two cases of concurrent variola and vaccination recorded by Dr. Birdwood, of the Metropolitan Asylums Board's hospital. Some of the cases are incomplete in their details, but I have taken those which can fairly well be used in comparison. These have been arranged in the same type of chart as that of the present paper, and it is surprising to find a very close agreement (Chart C).

It will therefore be abundantly evident from the charts that the operation of vaccination performed at any time during the incubation period will be successful. This may be true even during the first period of onset, but if carried out subsequently to the initial symptoms the vaccination will not be successful. Dr. Birdwood states that he has "only found one vaccination which was successful if vaccinated on the day of eruption or after." In my opinion, and for the reasons which have been given, the case was probably not a successful one, the appearance of success having been given by

the coalescence in a confluent case of the vesicles and pustules around the irritating zone of vaccination. In the same report Dr. Colclough, who was at that time assistant medical officer at the hospital ships, in a note says, "The few instances in which I have vaccinated patients on their admission, when the eruption has been in the macular or papular stages, the revaccination has failed, and the reports of over fifty cases of revaccinations (taken from the case books) in various stages of eruption coincide with my few instances."

I have often heard the statement made by medical men, that, when persons have been vaccinated and the operation is not proving successful, there is a likelihood of them developing smallpox, or that these cases ought to be watched and isolated. In my opinion, it is those cases of vaccination which show evidences that the operation will probably be successful, and where there is a low immunity, in which smallpox is likely to develop; these are the cases which require observation. Some time ago, a vessel arrived in Liverpool having had a case of smallpox on the voyage; the man died and was buried at sea five days before reaching Liverpool. All the crew were vaccinated on arrival; one of them who had assisted in burying this man developed a very mild rash of smallpox ten days after vaccination and the arrival of the ship; his vaccination had taken in three places, and showed typical vesicles and other associated signs. Therefore, assuming that the vaccinations have been properly performed with active lymph, the cases to be watched more particularly are those showing signs of the vaccination "taking."

INFLUENCE OF VACCINATION ON COURSE OF THE DISEASE.

Another side of the subject may now be studied with advantage, namely, the influence of this vaccination on the course and severity of the disease.

The degrees of severity have been classed into six groups, numbered in columns 1 to 6. Column number 3 is the type representing a moderate attack; column 2 represents mild, and column 1 very mild; a severe type is represented in column 4, and very severe in column 5; whilst deaths are recorded in the last column.

On an examination of the thirty-one cases with *no primary vaccination* in Chart A, it will be seen that of cases one to five, vaccinated within the first three days of infection, three

CASES UNVACCINATED BEFORE INFECTION WITH SMALLPOX.

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CASES WITH PRIMARY VACCINATION BEFORE INFECTION WITH SMALLPOX.

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		Incubation Period.										Onset.													Rash.							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20											
1																								Successful	x	1	2	3	4	5	6	Six or seven papules A few papules
2																								"	x	1	2	3	4	5	6	Thirty to forty papules Ten to twelve papules
3																								"		1	2	3	4	5	6	
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DR. BIRDWOOD'S CASES OF CONCURRENT VARIOLA AND VACCINIA.

DR. BIRDWOOD'S CASES OF CONCURRENT VARIOLA AND VACCINIA.																						
C	No.	Probable day of Infection.	DAY OF DISEASE ON WHICH VACCINATION WAS PERFORMED.																Result of Vaccination.	Severity of Disease.		REMARKS.
			Incubation Period.						Onset.						Rash.					Discrete.	Confluent.	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
		V	...	...	V	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
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3	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
4	4	...	...	...	V	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
5	5	...	...	...	V	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
6	6	...	...	...	V	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
7	7	...	...	...	V	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
8	8	...	...	...	V	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
9	9	...	...	...	V	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10	10	...	...	...	...	...	V	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
11	11	...	...	...	...	...	V	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
12	12	...	...	...	...	...	V	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
13	13	...	...	...	...	...	...	V	...	...	...	...	...	...	...	...	...	...	...	...	...	
14	14	...	...	...	...	...	...	V	...	...	...	...	...	...	...	...	...	...	...	...	...	
15	15	...	...	...	...	...	...	V	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	16	...	...	...	...	...	...	...	...	V	...	...	...	...	...	...	...	...	...	...	...	
17	17	...	...	...	...	...	...	...	...	...	+	...	...	...	...	...	...	...	...	...	...	
18	18	...	...	...	...	...	...	...	...	...	+	...	...	...	...	...	...	...	...	...	...	
19	19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

developed no symptoms or signs of the disease, whilst two had an exceedingly mild attack after an initial malaise. In these only a few spots appeared which never became vesicles, but simply died away; in these aborted cases, the smallpox had just overcome the protective effect of the vaccination.

Tracing the cases further on in the disease, we find that the type becomes more or less severe, according to individual susceptibility, until we come to those of moderate severity, vaccinated from the eighth day of infection up to the onset; following on this the cases vaccinated after the onset of the disease will be seen to have been of the very severe type; three of them ending fatally, showing that cases vaccinated at the stage of onset and after the rash has appeared benefit very little, if at all.

If attention be now turned to Chart B, showing forty-four cases of smallpox with a *primary vaccination*, it is of interest to find that in this group the effect of the primary vaccination is shown on the course of the disease, and along with the vaccination performed concurrently has assisted in modifying its severity.

Further, it will be noticed that in this chart of cases which show a primary vaccination, there are no cases found vaccinated on the day of infection or on the first three days following. This may be accounted for by the fact that the double vaccination has prevented the onset of symptoms or appearance of rash in cases vaccinated on these days, and therefore I have been unable to obtain cases to place on the chart in the position corresponding to these days; this view is also supported by the chart of Dr. Birdwood's cases. It may be remarked, however, that the number of cases is quite too small to draw such conclusions; still, I draw attention to the fact as being one of probably some importance from an administrative standpoint.

On examining the cases vaccinated before the onset of symptoms, it will be seen that in nearly all, the disease was of a mild or very mild type. Taking this portion of the Series B, there are only two cases which lie on the severe side of Column 3 (which represents cases of moderate severity), and in this column only two.

The cases vaccinated after the onset of the disease, and subsequently to the appearance of the rash, show a more pronounced type of the disease; in this case most of the patients had the disease in a moderate or severe form.

It must not be understood, when it is stated

that the vaccination and revaccination were unsuccessful as an operation, that the modified organisms implanted in the system may not have exercised an appreciable immunising effect. Case No. 27 amongst the unvaccinated (Chart A) illustrates this point. A lady, unvaccinated in infancy, contracted smallpox abroad and was vaccinated two days after the appearance of the rash; a slight traumatic reaction occurred at the site of vaccination, with ill-defined papule and aborted vesicle, forming a yellow crust, which was quite atypical. The case passed through a severe attack; towards the twelfth or fourteenth day of the disease, however, when the suppurative stage ought to have been reaching its height, it was surprising to find the pustules rapidly drying and falling off, so that within a day or so they had entirely gone; the resulting scars were totally absent and only marked staining remained, which disappeared under a year, and no trace of the disease can now be seen after some years. This case was, to my mind, a convincing proof of the value of vaccination done subsequently to onset of symptoms, and the operation ought therefore to be performed on all cases admitted to hospital; other cases, not so striking, might be quoted.

The remarkable antagonism of these two diseases can only be explained by a consideration of the question of immunity or concurrent immunities.

This question of immunity would take us too far afield in a paper of this description, and must be omitted; but it may suffice to say that in smallpox and vaccination it is a race between the virulent and the modified organisms; the less virulent and more saprophytic forms grow faster and produce immunity quicker than the more virulent ones. Protection is not acquired at any particular time, but there is a gradual accumulation of immunity in the blood, which usually shows itself to be completed by the beginning of the second week after vaccination.

It would seem from an examination of the charts that nine days after vaccination is the period required to give real evidence of the increasing protection against smallpox.

It is therefore evident that the intensity of the disease bears an inverse ratio to the period of vaccination; the later the disease appears after vaccination the more opportunity for the vaccination to be successful and develop its counteracting immunity; when the smallpox appears early in the course of a vaccination the more severe the course of the disease.

On referring to Chart A of unvaccinated cases it will be seen that cases of smallpox vaccinated within three days after infection will develop very slight or no symptoms of smallpox; and a reference to Chart B shows no cases occurring within the first three days. One may safely infer, therefore, that vaccinations done *within the first three days* of infection in persons with a *primary vaccination* will not develop smallpox, and in those who are *unvaccinated* the chances are that the disease will not develop; or, in other words, vaccination requires nine days to develop an immunity which will neutralize or mitigate an attack of smallpox.

CONCLUSIONS.

The following are the conclusions to be drawn from the series:—

1. That vaccination performed subsequently to infection with smallpox will "take" up to date of onset.
2. That protection is afforded against smallpox by vaccination when performed within three days after infection; but this may not be absolute in cases vaccinated for the first time; the course of the disease will, however, be exceedingly mild.
3. That there is abundant evidence of the value of vaccination in mitigating the severity of the disease when performed at any time after infection up to the day of onset, and even afterwards.

A MEDICAL OFFICER'S GOLDEN WEDDING.—Dr. David Corbet, medical officer of health of Kidderminster, and Mrs. Corbet celebrated their golden wedding last month. Dr. Corbet, who qualified in 1858, has been medical officer of health for Kidderminster for more than a third of a century.

APPOINTMENT OF MEDICAL OFFICER OF HEALTH FOR MERIONETHSHIRE.—The Merioneth County Council has decided to appoint a county medical officer of health, his duties to include the medical inspection of school children, at a salary of £450 per annum, including travelling expenses, a knowledge of Welsh being necessary.

APPENDICITIS.—At a recent meeting of the Farnham Rural Council, Dr. Tanner, the medical officer of health, drew attention to the increased prevalence of appendicitis, stating that he had seen thirty cases in the year. He suggested that it might be due to the use of preservatives in food, the preservatives acting by hiding the presence of decomposition in the food. Dr. Tanner was instructed to write to the Local Government Board on the matter.

THE DUTIES OF THE MEDICAL OFFICER OF HEALTH: SHOULD THEY BE REVISED?*

By W. W. STAINTHORPE, M.D., D.P.H.,
Medical Officer of Health, Guisborough Combined Districts.

AS the object of this paper is to invite discussion on a subject of interest to us all, no apology for its shortness is needed. The practical value of many papers lies in the discussion thereon, and it is through discussion that we obtain instruction.

It may appear presumptuous on the part of an official to even suggest that his duties require revision. If presumption it be, I must plead as excuse—

1. That the legislation of recent years has made the medical officer responsible for the performance of a large amount of routine work.
2. That much of this routine work is unproductive.
3. That such work can very well be carried out by the sanitary inspector or other specially appointed official.
4. That this increase of routine work has considerably decreased the time at the disposal of the medical officer, which could be devoted to such work as specially attaches to his office.
5. That a continuously increasing proportion of his time and energy is being absorbed by clerical work.

Let me enumerate the more important Public Health Acts which have been passed during the twenty-seven and a half years I have been a whole-time medical officer:—Factory and Workshop Act, 1883; Housing of the Working Classes Act, 1885; Dairies, Cowsheds and Milkshops Order, 1885; Infectious Diseases (Notification) Act, 1889; Infectious Diseases (Prevention) Act, 1890; Public Health Act Amendment Act, 1890; Housing of the Working Classes Act, 1890; Factory and Workshop Act, 1891; Public Health Acts Amendment Act, 1907; Housing, Town Planning, etc., Act, 1909; and in addition numerous Regulations of the Local Government Board.

I have stated that the medical officer is responsible for the due performance of the duties imposed by the Acts mentioned. It may be answered that the actual work does not devolve upon the medical officer but upon the sanitary inspector or other official. This may be so in boroughs and large towns where the

* Read at a Meeting of the Northern Branch of the Society of Medical Officers of Health, April 22nd, 1910.

health officer has at his disposal a staff of inspectors. It is quite different in rural areas and in combined districts; in many of these the inspector is also surveyor, and in addition may be rate collector, cemetery superintendent and waterworks manager. Nor is it to be forgotten that, practically, the medical officer has no control over the inspector. No doubt the Sanitary Authority can resolve such instructions as will enable the medical officer to direct or superintend the work of the inspector. But is it to be expected that a Sanitary Authority whose inspector combines with this appointment a number of other offices will so resolve? It is useless to attempt to hide the fact that in many instances the amount of salary paid to the inspector who is also surveyor is so apportioned that he receives about two-thirds as inspector whilst probably nine-tenths of his time is absorbed by his work as surveyor. It will be seen that the medical officer is not only, under such conditions, responsible for the performance of the duties, but in fact has himself to perform them.

That much of this work is routine and unproductive needs little or no argument. Take the Factory and Workshop Act: what a large amount of time and energy is expended in formal visits to small workshops and domestic workshops. Consider the time spent in the inspection of cowsheds in large rural districts: will it be denied that the larger portion of such work can be as efficiently carried out by the sanitary inspector?

Only those of us who have to perform our own clerical work can appreciate the enormous increase in this which has taken place in recent years. Consider the amount of clerical and office work involved in recording particulars of the systematic inspections and special visits made, and of cases of infectious disease notified; in corresponding with the sanitary inspectors, with owners or agents of property, with the Local Education Authority or School Managers, with the factory inspector, with the Local Government Board and County Council; in the checking of accounts for notification fees, for the registrar's returns of births and deaths, for bacteriological examinations; in the preparation of the monthly reports, and of the annual report and the statistical tables required by the Local Government Board. Under Section 69 (2) of the Housing, Town Planning, etc., Act, the clerical work will be increased. After the performance of the routine and clerical work connected with his control of a

large area, what time and what energy has the medical officer of health left to consider and initiate needed reforms or schemes?

When the duties of medical officers were first formulated the main object of legislators and their advisers was the prevention of diseases which attacked groups of individuals. At that time comparatively little was known as to the causation and spread of such diseases. It was therefore necessary that the work of investigation should be placed in the hands of skilled workers. Certain broad facts as to the part played by impure water, inefficient scavenging, defective drains, unhealthy dwellings are now understood and recognized. The work of inspection for the purpose of ascertaining whether or not such injurious conditions exist can now in the main be left in the hands of sanitary inspectors.

I will not attempt to discuss the several (18) paragraphs embodying the duties of medical officers of health contained in the Order of the Local Government Board, but will simply indicate broadly the lines on which revision might proceed.

The medical officer should be relieved of the larger part of the formal and routine work which devolves upon him or can be required of him by his authority under the Local Government Board Order, and his clerical work reduced to the minimum. This necessitates that the relationship between the medical officer and the sanitary inspector, and the extent of control of the former over the latter, should be definitely fixed by the Local Government Board. Apart from the fact that in a large number of cases the duties of surveyorship occupy by far the larger part of the time of the official who is also inspector, it is natural that he should give more attention to that branch of his work which is more in accord with his tastes and training. Many of these officials holding dual posts endeavour, so far as lies in their power, to carry out the duties of both offices faithfully. The duties as surveyor admit of no delay: roads must be metalled and rolled at the proper time, dwellings in course of construction examined, the work of street-making or repairing carefully supervised, the laying of drains minutely inspected, etc. That which can be delayed—sanitary inspection—is delayed. What is the result? The larger part of the work of inspection falls upon the medical officer: this, of course, should be done by the inspector, the medical officer making his systematic inspections not so much for the

purpose of reporting specific nuisances which may come under observation as for ascertaining what parts or areas of his district require the supervision of the inspector or the attention of his Authority. The Order of the Local Government Board as to the duties of the medical officer is so comprehensive as to permit of the Sanitary Authority practically requiring him to act as sanitary inspector, for Paragraph 17 says: "... he shall observe ... the lawful orders and directions of the Sanitary Authority applicable to his office."

Our legislators appear to overlook the fact that the time and energy of officials are not unlimited. It needs no argument to show that as routine work increases skilled work must decrease. If the full value of the professional and special training of medical officers of health is to be obtained, it is necessary they be relieved of much of the present routine and clerical work. Nor must it be forgotten that the physical and mental weariness induced by routine work inhibits rather than stimulates mental activity.

Would not the time and energy of the medical officer be more profitably employed—more profitably to the public—in undertaking the bacteriological examination of "swabs," sputum, etc.; in making special investigations; in giving addresses on personal and domestic hygiene to parents and school-children, and in work of similar nature? Bacteriological work is becoming more and more important and necessary. In the recently issued Memorandum on School Closure, under the head of Diphtheria, the desirability of examining by bacteriological means the throats of "contacts" and the non-return to school of convalescents until three successive negative swabs have been obtained is urged. When this work is carried out by any research society or at any school of medicine, the cost—if carried out to the extent suggested—is almost prohibitive. Would not the health officer be better employed in doing such work rather than in inspecting blacksmiths' shops, carpenters' shops, and domestic workshops under the Factory and Workshop Act, or in measuring up rooms and making records under the Housing, Town Planning, etc., Act, as no doubt he will be required to do?

I am, of course, aware that the conditions which necessitate the medical officer undertaking so large an amount of routine work do not exist in boroughs and large towns. In such districts the medical officer has his "sanctum" in the town hall or other public

building, with his staff of officials and clerks at call.

In conclusion, let me say that in bringing this subject before you for discussion I am influenced not by a desire to decrease work but by the desire to increase the value of our work as medical officers of health.

PRESERVATION OF DEAD BODIES.—As an illustration of the utility and efficiency of the apparatus installed at the City Mortuary for the preservation of unclaimed bodies, I bring the following facts to notice:—The body of a man drowned in the River Thames was received at the Mortuary on April 27th last. As the body had been in the river for at least a month, it was in such an advanced state of decomposition as to be quite unrecognizable. It was therefore placed in the machine immediately after the post-mortem examination was made. The action of the formalin vapour upon the body had the effect of gradually restoring it to its natural appearance, and at the present time it is not only deodorized, but could be readily identified by the friends or relatives. I have noticed in other cases of the kind that Dr. De Rechter's method of preservation has effected improvement in the appearance of decomposed bodies, but the good effects in the one under notice were so marked that I considered attention should be directed to the matter.—*Special Report of Dr. Collingridge, Medical Officer of Health, City of London.*

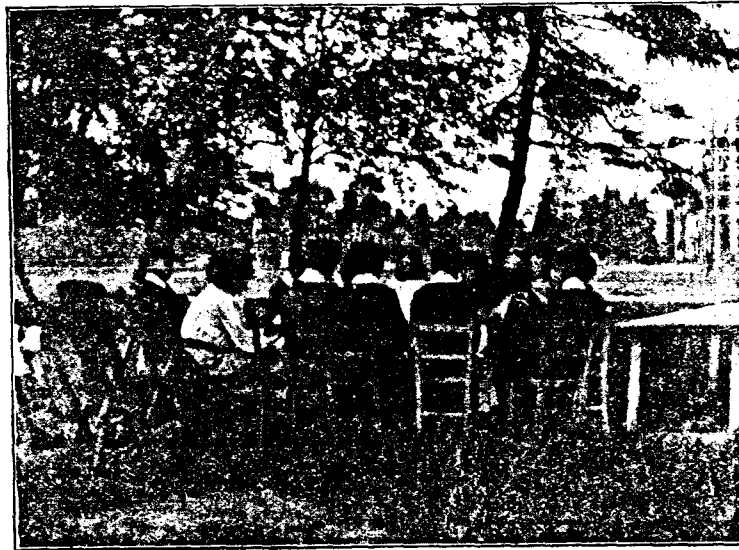
CAVE DWELLINGS IN SHROPSHIRE.—A striking feature of some of the older dwellings at Bridgnorth is the manner in which they are built into the rock or against the steep hill sides. Until quite recent years some dwellings actually cut in the sandstone were inhabited. These, however, have been condemned as unfit for human habitation and now serve as store-houses, poultry houses, and the like. But many dwellings are built against the rock so that the natural sandstone *in situ* forms part of the back or side wall. Likewise the rock is seen cut away here and there to form communicating passages and stairs leading from one house to another. Such passages are occasionally very narrow. Many of these dwellings have cellars which are 'caves' in the rock, opening out of the dwelling room, and used as store places or sculleries. These caves derive light and air only through the living room. Some occupiers denied that their 'caves' were damp; others owned to occasional dripping of water from the ceiling of the cave.—*Report of Dr. F. St. George Mivart to the Local Government Board on the general sanitary circumstances and administration of the Borough of Bridgnorth and the Rural District of Bridgnorth.*

AN OPEN-AIR SCHOOL FOR PHYSICALLY SUBNORMAL CHILDREN.

By D. MORLEY MATHIESON, M.A., M.D. Edin., D.P.H.,
Assistant School Medical Officer and Deputy Medical Officer of Health, Norwich.

AN open-air school for physically subnormal children was held at Norwich during the summer of 1909—from May 25th to October 1st.

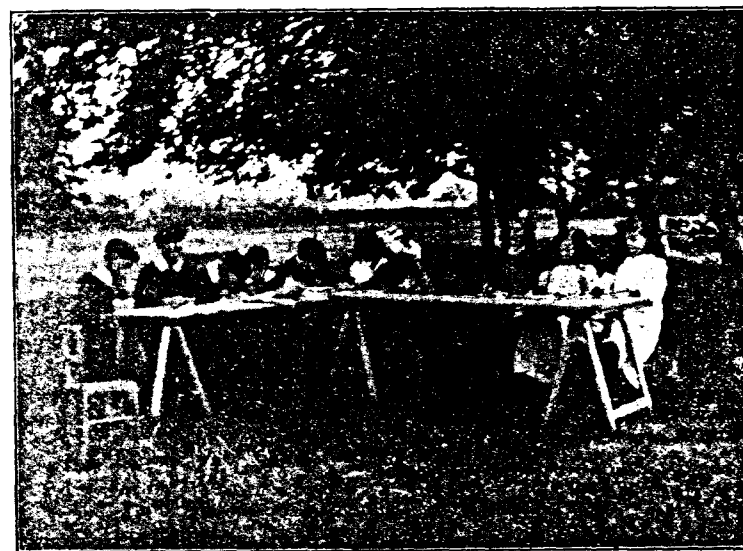
vision of a large shelter 60 feet long, 20 feet wide, and 12 feet high, which was used as a dining shed. (At the 1908 school, meals were served in a room of a disused house near the grounds.) The shelter was also used to a certain extent for teaching purposes in wet weather; but one side was entirely open, and rain was carried in with uncomfortable freedom when the wind was



A CLASS AT WORK.

The conditions as regards site, etc., were identical with those of the first Norwich open-air school, held in 1908, for mentally defective

blowing towards the open side. To meet this difficulty hanging shutters have now been added, which in fine weather are kept up by vertical



EXAMINING SPECIMENS.

children, an account of which I wrote for a previous number of PUBLIC HEALTH (Jan., 1909). The principal modifications were the pro-

poles, forming a veranda. When necessary, some or all can be lowered, so as to form a closed class-room.

SELECTION OF CASES.

In selecting cases, I examined 197 children who were considered suitable by the four Health Visitors in the Public Health Department who act as school nurses. From these, 108 were chosen and sent to the open-air school for varying periods.

These children were all physically "sub-normal" rather than "defective." The term *physically defective* is apt to suggest some degree of more or less permanent cripplement, and might, for the sake of clearness, be reserved for children with paralysed or amputated limbs, ankylosed joints, etc.; while *physically sub-normal* might be used for the totally distinct class of children who are weakly or debilitated, who fall short physiologically, who are essentially suited for open-air school teaching, and who, it

Several children who were suffering from nasopharyngeal obstruction or advanced dental caries received treatment for these conditions at the Norfolk and Norwich Hospital and elsewhere, before being sent to the open-air school.

DAILY ROUTINE AT OPEN-AIR SCHOOL.

The time-table in use was as follows:—

Mornings.	
8.30 to 9.30	Assembly and breakfast.
9.30 to 10.0	Hymns, prayers, and registration.
10.0 to 10.15	Drill.
10.15 to 10.50	Arithmetic.
10.50 to 11.0	Organized games.
11.10 to 11.45	English.
11.45 to 12.15	Singing or geography.
12.15 to 1.15	Dinner, preparation for, etc.
1.15 to 2.15	Rest.



GARDENING.

may reasonably be expected, can be gradually raised toward the normal level of physical health by removal to, and life in, a thoroughly healthy environment.

The following is a summary of the conditions present in the 108 children selected:—

Condition.	Number of children in whom present.
Subnormal nerve and muscle tone...	76
Enlarged glands	31
Anæmia—slight	28
" marked	13
Mouth breathing	23
Incipient tuberculosis (lungs, glands, skin)	19
Tubercular tendency or heredity	22
Mental subnormality or dullness	14
Eye disease (corneal opacities, conjunctivitis)	8
Contracted chest	6
Chronic headaches	3
Spinal curvature	3
Hereditary asthma	1
Stammering	1
Chorea	1
Giddiness	1

Afternoons.

2.30 to 3.30	Handwork.
3.30 to 4.0	Handwork, or drawing, or literature.
4.0 to 5.0	Games, housewifery, gardening, or walks.
5.0 to 5.30	Tea and preparation.
5.30 to 6.0	Free play, and dismissal.

In the curriculum special prominence was given to manual instruction, gardening, etc.; while the girls helped to prepare and serve the meals. Nature calendars and weather charts were kept, and much attention was given to the training of observation by the study of trees, plants, and physical geography.

An hour's rest in deck chairs was insisted on after dinner, rugs being used when the weather was cold. Though at first the children were slow to settle down, they soon came to

take the rest-hour as a matter of course; and many slept.

DIETARY.

Three meals were provided: (1) Breakfast—bread with butter or treacle, and milk or cocoa.

supply of food is necessary than for children living under ordinary conditions; in particular, the supply of proteid must be increased—the part of the dietary which principally is concerned with muscle-building and general development.

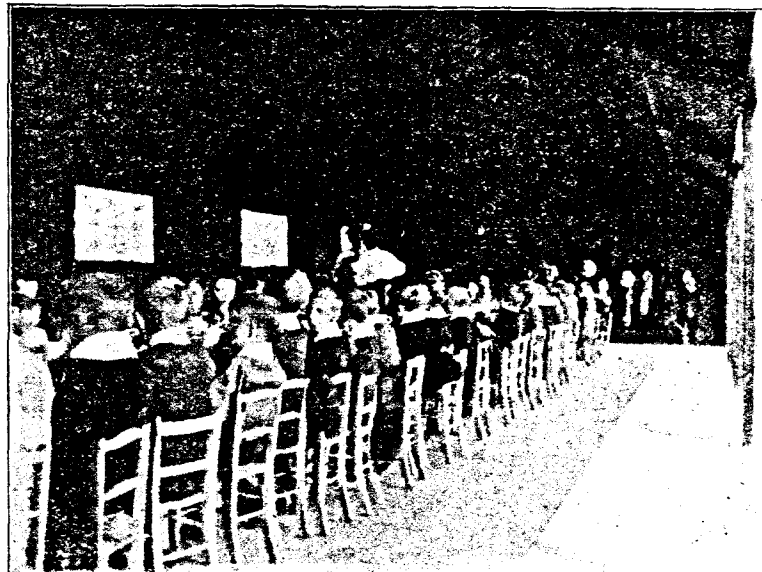


SAYIN' GRACE.

(2) Dinner—shepherd's pie (twice a week); bread and cheese, with rice pudding; roast mutton, with vegetables; bread, custard, or cornflour, with stewed fruit (once each). (3) Tea—bread, with butter or jam, and milk.

CIRCUMSTANCES MODIFYING RESULTS.

The results of the school might have been even more satisfactory had certain handicaps not been present. The principal of these were:—



DINNER.

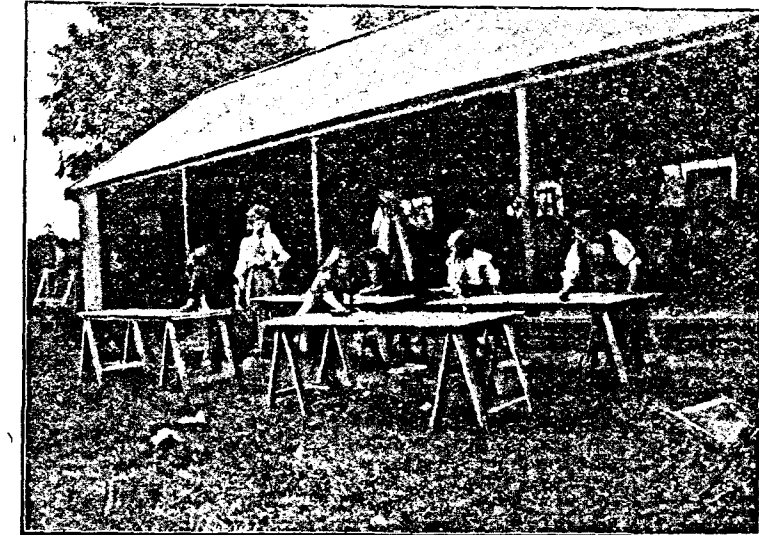
Most of the children ate heartily, their appetites quickly improving under open-air conditions. One of the most marked effects of life in the open air is that metabolism is increased. To cope with this increase a larger

1. The very inclement weather which prevailed throughout the summer. On forty-seven out of the eighty-three days the working arrangements were interfered with by rain; on ten of these days the school was closed

altogether for want of weather-proof classroom accommodation. This point has already been referred to.

2. Irregularity of attendance of the children, due partly to the weather conditions, and partly

in carriage and in mental and physical alertness, there were definite proofs, on medical examination, of increased functional activity among the children. The condition of the blood was improved, the circulation strength-



WASHING UP.

to an epidemic of measles in the city which affected the families of many of the children attending the open-air school. During some weeks the attendance fell to 76 per cent. of the number on the register.

ened, the lung capacity increased, and in many cases diseases were checked and cured.

I have enumerated some of these results in the table printed on p. 364.

I examined the blood of the children who



BOYS RESTING.

RESULTS.

1. *Improvement in Tone, Blood Condition, etc.*

Apart from the increases in height and weight (detailed later) and general improvement

were markedly anæmic on entering and on leaving the open-air school, using Haldane's modification of Gower's Hæmoglobinometer. Ten of the cases attended for a satisfactory period (average ten weeks). The average



GIRLS RESTING.

increase in the hæmoglobin index was 9.3 per cent. (from 72.8 per cent. to 82.1 per cent.).

Condition.	Number of Children in whom the condition was present.	Number in whom the condition was cleared up.	Number who showed improvement.	Number who showed no improvement.
Subnormal nerve and muscle tone	76	38	35	3
Enlarged glands ...	31	10	17	4
Anæmia—slight ...	28	26	2	—
„ marked ...	13	3	7	3
Incipient tuberculosis (lungs, glands, skin)	19	5	11	3
Mental subnormality ...	14	—	13	1
Eye disease (corneal opacities, conjunctivitis)	8	3	5	—
Chronic headaches...	3	1	2	—
Hereditary asthma ...	1	1	—	—
Stammering ...	1	—	1	—
Giddiness ...	1	—	1	—
Chorea ...	1	—	1	—

2. Height and Weight.

The children were weighed and measured each week at the same period of the day, and a graphic record of each case was kept on a specially prepared chart. The tables given below show the gain in weight and height of ninety-six children (the records of others were rendered valueless by interrupted attendance).

With reference to the gains in weight, the figures in connection with the children who were at school for the whole period (eighteen

weeks) are of most practical importance. Later examination of those children who stayed for short periods shows that their increase (often marked during the first week or two) tends to be lost on returning to ordinary school conditions, while the increase of the children who stayed for longer periods is more permanent.

(This marked temporary increase is analogous to that which is found to occur in children who, after having been insufficiently fed for a considerable period, receive a course of good feeding. It is evidence merely of an increased amount of absorption, not necessarily of permanent improvement in physiological efficiency.)

BOYS.			GIRLS.		
Number of weeks at O.A.S.	Weight gain in pounds (average).	Height gain in inches (average).	Number of Children.	Weight gain in pounds (average).	Height gain in inches (average).
1	5	—	1	7	—
2	2.2	2	2	2.0	2
3	1.9	2	7	1.5	2
4	1.5	2	1	1.4	5
5	2.7	5	6	4.0	5
6	3.7	6	2	3.5	8
7	5	6	1	—	—
8	2.0	7	2	3.0	4
9	3.4	5	4	2.7	1.1
10	3.5	4	1	3.5	4
11	3.5	5	1	—	1.2
12	8.5	2.0	1	2.7	9
13	2.5	5	2	—	—
14	2.2	1.1	2	—	—
15	7.0	6	1	9.2	9
16	—	—	—	—	—
17	4.5	7	2	—	—
18	3.375	1.02	12	4.07	1.14
			48		48

3. Educational.

After a careful investigation, Mr. D. O. Holme, the Organizer of Elementary Education, came to the conclusion that:—

(a) *In mental alertness* distinct improvement was made at the school in about half the cases. In about three-sevenths of the cases this improvement was well maintained after the return to ordinary schools.

(b) *In reading, arithmetic, etc.*, the progress at the open-air school was not equal to that made at the ordinary schools. This he considered might be accounted for by the change to different methods of teaching.

SUBSEQUENT PROGRESS (AFTER LEAVING OPEN-AIR SCHOOL).

The importance of keeping the children under observation after their leaving the open-air school, in order to determine the degree of *permanence* of the results obtained, was not lost sight of. The home conditions to which many of the children returned were not such as were likely to favour progress or improvement in health.

I have examined ninety-five of the children at an interval of four to six months after the closing of the open-air school, and from a consideration of their general condition, tone, weight, etc., I have found that:—

A. of children who were at the open-air school for a period of 1 to 9 weeks.		B. of children who were at the Open-air School for a period of 10 to 18 weeks.	
6%	Have continued to make progress after leaving the school.	44%	
64%	Have maintained the improvement made at the school, or have gone back very slightly.	51%	
30%	Show evidence of no marked permanent benefit.	5%	

The very satisfactory and lasting results that were obtained in the cases which attended the open-air school for nine to eighteen weeks, and the comparatively uncertain results in the cases which went for shorter periods, make it, I think, desirable that in future a *minimum period of three months be fixed for all exceptional cases.*

ILLUSTRATIVE CASES.

The following are short extracts from the notes on a few cases:—

	Condition on entering Open-air School.	Number of weeks at Open-air School.	Condition on leaving Open-air School.	Condition 4 to 6 months after leaving Open-air School.
1. Boy Age 9	Incipient tuberculosis of lungs; cough; losing flesh; much depression.	18	Lung condition cleared up; no cough; much brighter; gained 11½ pounds in weight, 1½ in. in height, ½ in. in chest measurement.	Lungs still clear; slight cough; gain ½ in. in height; lost only ½ lb. in weight.
2. Boy Age 11	Anæmia (marked); nervous and muscular tone subnormal; corneal opacities; enlarged glands; listless.	18	Anæmia distinctly less marked; sight improved; wiry and active.	Improvement in sight and general tone maintained.
3. Boy Age 9	Asthma (hereditary, father died of it); face pale; no anæmia.	13	Marked improvement while at O.A.S.; had cough occasionally, but no seizures; healthy colour.	Improvement maintained.
4. Girl Age 11	Mentally subnormal; mouth breather; very anæmic.	18	Distinctly more alert mentally; mouth breathing only slightly improved; anæmia cured.	Improvement maintained; now breathing habitually with mouth closed.
5. Girl Age 11	Subnormal nervous and muscular tone; not putting on flesh; slightly anæmic.	12	Tone robust; gained 7½ lb. in weight, 2 in. in height, 2 in. in chest measurement; no anæmia.	Improvement progressing; has gained 2½ lb. in weight and 1½ in. in height.

COST.

The net cost of the school, inclusive of teachers' salaries, was £277 6s. 2d., after deducting the amount contributed by the parents. The latter amount was £26 3s. 6d.

MEDICAL OFFICER OF HEALTH FOR 35 YEARS.—Dr. William Hoffmeister, who has been medical officer of health of Cowes for 35 years, has resigned his position on his retirement from practice. Dr. Hoffmeister was formerly surgeon to Queen Victoria and the Royal Family at Osborne, receiving for his services the Jubilee Medal and the Victorian Order. He was also surgeon to the Royal Yacht Squadron.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

NATIONAL VITAL STATISTICS.

Report of Conference (as approved by the Council of the Society and finally agreed to by Drs. Newsholme and Stevenson).

A CONFERENCE was held at the Local Government Board Offices on April 29th, 1910, at 2.30 p.m.

Present: Dr. Newsholme and Dr. Stevenson, and the following members of the Sub-Committee appointed by the General Purposes Committee of the Society of Medical Officers of Health—Drs. Dudfield, Spottiswoode Cameron, A. E. Porter, Mitchell Wilson, Sir Shirley Murphy, and Priestley (hon. secretary).

The reference from the General Purposes Committee was explained by the Hon. Secretary.

The letter, dated March 22nd, 1910, from Drs. Newsholme and Stevenson, together with their draft proposal of a scheme for co-operation between medical officers of health and the Registrar-General with respect to the statistical treatment of causes of deaths, was considered, and it was agreed: "That the Registrar-General be thanked for his proposal to replace, subject to Treasury sanction of any necessary increase of expenditure, the vital statistics now published in his annual reports for registration areas by statistics for sanitary areas* for the year 1911 onwards."

The following details of the scheme have been finally approved:—

(1) Medical Officers of Health and the Registrar-General.

Systematic and continuous co-operation and mutual assistance to exist as between medical officers of health and the Registrar-General, so as to avoid, or minimise, the possibility of seriously discrepant results, and at the same time to secure improvement both of local vital statistics and of the tables compiled by the Registrar-General.

(2) Allocation of Deaths.

Inward and outward allocation of deaths of non-residents to be made in the case of

(a) Institution† deaths.

(b) All other deaths, except those occurring in premises which are "dwellings"; and

* This change does not imply that present registration areas will be altered, but simply that the area of collection will not necessarily govern that of presentation.

† Except deaths in such institutions as orphanages, almshouses, etc., where residence is of a continued nature, and where the inmates may be presumed to be of average healthiness.

that, for this purpose, it is desirable that the local registrars should send particulars of deaths—

(a) To medical officers of health of the areas, *i.e.*, local sanitary districts, wherein the deaths occur;

(b) To medical officers of health of the areas, *i.e.*, counties or county boroughs, wherein the deceased had last resided.*

N.B.—Where no address in England and Wales is given, the death is to be allocated to the district in which it takes place.

(3) Certification of Causes of Death.

The various causes of death in an official extended list of causes (to be agreed to between the Registrar-General and the Local Government Board) to bear each a number, to be marked on the weekly lists of deaths supplied by the local registrars, together with such corrections in the certification as may be found necessary, after correspondence with, or inquiry from, certifying practitioners—such numbering and correcting to be carried out:

(a) For large districts—by medical officers of health;

(b) For small districts—by (1) county medical officers of health, or (2) local district medical officers of health (after conference with the county medical officer of health).

Generally speaking, medical officers of health of counties and of county or metropolitan boroughs will carry out the numbering and correcting, as the number of medical officers of health with whom the Registrar-General can correspond is necessarily limited by considerations of practical convenience.

N.B.—It is proposed that all medical officers should approve of the above scheme, and, for that purpose, that the Society of Medical Officers of Health should take such steps as may be found necessary to bring it to the notice of their members.

The advantages which will, it is hoped, result from the scheme now in contemplation may be summarized as follows:—

1. For the first time the vital statistics of the various administrative areas throughout the country will be rendered available for comparison by being assembled in a single volume (The Annual Report of the Registrar-General).

2. All these statistics will be compiled for the first time on a strictly uniform basis, and

* The medical officers of health of the counties or county boroughs to distribute the particulars received to the local medical officers of health.

THE CLEANING OF SCHOOL PREMISES.*

By W. SPENCER BADGER, M.B., Ch.B., D.P.H.,
Medical Officer to the Educational Committee,
Wolverhampton.

THE cleanliness of elementary school premises is a matter which, perhaps, throughout the country, has received less attention in the past than its importance would justify.

Apart from the direct relation of this question to health, it should be remembered that the education of many scholars in matters of cleanliness is limited to the time spent by them in school. In such cases, therefore, it is doubly important that the most should be made of every opportunity of cultivating their sense and appreciation of cleanliness.

Until we adopt systematic health visitation we cannot perhaps deal very successfully with parents in cases of dirty homes; but we might possibly do more to raise the standard of cleanliness of school premises, as well as, sometimes, that of the scholars educated therein.

Notwithstanding the dependence of many children entirely upon school for their ideals of cleanliness, very few elementary school premises conform to such a standard of cleanliness as would be considered necessary for her home by a good housewife.

There are several reasons which combine to make school premises difficult to keep clean. Their extent is frequently very great; their age, defective lighting, and faulty construction are often contributory causes; desks also add immeasurably to the difficulty of cleansing class-room floors; whilst the general practices of pinning up papers, diagrams, pictures, etc., upon the walls, together with occasionally that of storing upon the floors discarded slates, books, etc., increase still further the difficulty of maintaining their cleanliness. In bad weather, children entering school with dirty foot-gear introduce a large amount of dirt; this is increased in many cases by the defective nature of the playground surface. In some cases the condition of scholars' boots and stockings is such that the removal of both would conduce to the child's health and comfort, as well as to the cleanliness of the school floor.

In this respect it is desirable that greater attention should be paid to the provision of adequate means for cleansing dirty foot-gear. In most schools the provision is somewhat scanty; in two departments wire mats only are provided; and in one school, with an average attendance of over 400 children, no door mat exists at all. Where, however, adequate provision already exists, greater attention is needed to ensure proper use of the

so be rendered as nearly as possible comparable.

3. For the first time complete correction for institutional deaths of non-residents will become possible, and will be applied in the Registrar-General's Annual Report.

4. Undesirable consequences of these forms contemplated by the Registrar-General will be avoided.

5. County medical officers of health will have an opportunity of carrying out complete tabulation of causes of death without dependence on summaries already prepared for local sanitary areas.

6. More complete inquiry will become possible into indefinite and incomplete certificates of the causes of death.

7. The existing overlapping of effort in the case of doubtful certificates at present inquired into will be avoided.

8. By the proposed comparison of local and central tabulation there is reason to hope that both will be improved.

9. The association of medical officers of health with the General Register Office will enable the latter to keep in closer touch with the general body of medical statisticians than has hitherto been possible.

A MUNICIPAL HOUSING TOUR.—A deputation of the Birmingham City Council has recently visited Germany and Austria for the purpose of studying matters relating to town planning, housing, and tramways. The deputation consisted of the Lord Mayor (Alderman Bowater), Councillor Nettlefold, Councillor Ellaway, Councillor Harrison Barrow, Dr. Robertson (medical officer of health), Mr. Stigoe (city surveyor), and Mr. Baker (manager of the tramways department). They visited Berlin, Vienna, Munich, Ulm, Mannheim, Frankfurt, and Düsseldorf, travelling 2,500 in eleven days, and gathered a mass of information, which will be the basis of a report. Everywhere the Lord Mayor and his colleagues were received in the most gratifying manner, and the deputation returned deeply impressed, not only by what they had learned concerning continental municipal administration, but by the good feeling manifested towards England. The deputation were furnished with letters of introduction from the Foreign Office, and before their departure for the Continent the oberbürgermeister and burgermeisters of the towns visited were communicated with. The details of the journey were mainly arranged by Councillor Nettlefold, who acted also as interpreter when necessary, and in token of their appreciation the deputation presented him with a silver loving cup.

* Annual Report, 1909.

same; this end can only be secured under the personal supervision of a teacher.

Requirements of ventilation necessarily result in the admission of dust through open windows; in schools adjoining busy thoroughfares this factor contributes a considerable proportion of the school dust, and is likely to contribute still more with the development of the motor traffic.

The perpetual movement, and occasional stamping, of classes and scholars stirs up the dust in school; this settles upon all exposed horizontal surfaces. Inaccessible horizontal surfaces inside schools should therefore be avoided as far as possible, both in construction of premises and in the provision of school furniture; the ordinary tall cupboard, for instance, with an almost inaccessible flat top, is a powerful dust-trap and a convenient but undesirable resting-place for rubbish. Stamping should be discouraged.

In sweeping class-room floors, damp sawdust is generally used. Dry sweeping is occasionally practised: it should be prohibited entirely, as tending to stir up and scatter the dust. For similar reasons, dry dusting and the use of a dry duster for cleaning blackboards are practices open to serious objection.

This question of dust is perhaps the most important consideration in the matter of school cleanliness.

Unfortunately, children frequently attend school in an infectious condition. Large numbers of them also suffer from nasal and bronchial catarrh. Their acts of coughing, sneezing, or even talking, may then disseminate infectious particles around them. In some cases at least it is known that infectious particles thus deposited upon floors or desks may become incorporated with the general dust, and being stirred with the latter may convey infection to others.

It need not, however, be supposed that the inhalation of infectious dust is the chief mode of spread of the recognised infectious diseases in schools; it is nevertheless a factor to be reckoned with. The dust, moreover, is a constant source of irritation to mucous membranes, and is probably more or less responsible for sore throats and for the very large amount of bronchial and nasal catarrh which exists among school children.

From every point of view, therefore, cleanliness and freedom from dust are desirable.

The duty of maintaining cleanliness of school premises rests with caretakers. The duties of the latter are defined by printed instructions issued by the committee. These instructions provide for the washing of class-room floors once a month, and a "thorough" scouring of class-room floors twice a year. (Instructions to school caretakers, May, 1908.)

Under existing circumstances, these provisions,

even if carried out, are quite inadequate to maintain class-room floors in a condition of cleanliness.

With regard to dusting, the instructions provide for the sweeping of class-room floors daily, immediately after school closure in the afternoon or school meeting in the evening. Desks and all school furniture are to be dusted daily before 8 a.m.

The latter provisions would be adequate for their purpose, were they capable of being satisfactorily carried out; in many cases, however, this is impracticable.

The supervision of cleanliness of school premises rests with head teachers. Their reports indicate very generally a satisfactory performance of caretakers' duties. Such reports are, no doubt, generally justified. It should not, however, be inferred that the standard of cleanliness reached is ideal, but that it is the best attainable under existing circumstances.

An instance may be given of the practical difficulty attending satisfactory performance of caretakers' duties.

In Dudley Road Council School there are six class-rooms each in the boys' and girls' departments; four class-rooms each in the infants' and mixed departments; three workshops; and a cookery centre. These together comprise a floor surface of approximately 16,477 square feet, or considerably more than one-third of an acre, which is covered with school furniture; the whole having to be swept and dusted daily, outside school hours, as stated above. The proper treatment of this enormous area is, of course, rendered extremely difficult by the school furniture referred to; the number of desks may be estimated from the fact that the school in question provides total accommodation for over 1,300 scholars. There are, in addition, 32 fires to be lighted not later than 8.30 a.m. daily during the winter, and supplies of coal to be carried for these fires; also 17 partitions, which consist largely of glass, to be cleaned once a week; and 125 windows to be cleaned once a month. Under existing conditions, the task seems well nigh impossible.

The foregoing constitute, however, a portion only of the caretaker's duties.

No account has been taken of corridors, entrances, cloak-rooms, lavatories, conveniences, playgrounds, and other matters—with all of which he is equally concerned.

It should be pointed out that caretakers' wages include an allowance for extra help, as well as for whatever soap, brushes, cloths, dusters, leathers, blacklead and sawdust may be required for the efficient performance of their duties.*

It may be questioned, however, whether this arrangement, which allows their pecuniary profit,

* In one school, however, sawdust is apparently provided separately by the committee.

to depend largely upon economy exercised by them in the amount of washing and the use of soap, is the system best calculated to secure cleanliness of school premises.

DISINFECTION.

At the present time considerable attention is being paid to the question of routine disinfection of school premises; and there is some risk of the practice becoming regarded as a satisfactory alternative to more thorough and frequent cleansing.

Periodic disinfection of schools receives official approval in a Memorandum of the Scotch Education Department issued in November, 1907, conjointly by that Department and the Local Government Board of Scotland. The Memorandum includes the following statement: "Hence to cleanse a school-room properly it is necessary to destroy the germ life, as well as to remove the visible dirt. This is why periodic disinfection is advisable even when no known infectious disease has been present."

The same view is held by some public health experts; a recent publication, for instance, recommends that every well-organized school should possess a spray, "so that class-rooms, etc., may be disinfected from time to time, say once a week" ("Sanitary Law and Practice, 1909," Robertson and Porter, page 256).

An experiment in disinfection was accordingly carried out by your medical officer's staff in one of the Council schools during the closure of the latter on account of measles. This afforded at least a valuable practical insight into some of the difficulties attending efficient disinfection of school premises. In attempting the latter it is necessary to secure the active co-operation of teachers. On behalf of the committee this was asked for in the case of Brickkiln Street School; in two departments it was readily accorded. The first requirement was obviously to destroy all papers, diagrams, copies, etc., which could safely be dispensed with. These constitute a serious obstacle to disinfection; in some schools the papers pinned to the walls are to be counted almost by hundreds; they are generally covered with dust, and without their removal it is impossible to deal with the walls. This proceeding needs, of course, the authority of the head teacher. Accumulations of rubbish, such as long-discarded slates and books, also interfere with proper access to floors and corners of rooms.

The premises of the girls' and infants' departments were then treated in the following manner: Maps, books, and pictures were taken down from the walls and treated in the open air by being shaken and wiped over with a cloth wrung out of disinfectant. An automatic spray employed, with which walls, floors, and desks were treated with an efficient disinfectant; all school furniture, and

in suitable cases the walls also, were subsequently wiped over with cloths wrung out of the same solution. Distempered walls were allowed to dry after spraying; the latter being done from below upwards, practically no mark was left upon the walls. Cloak-rooms and hat-pegs received special attention. A large watering-can with a fine spray assisted in saturating the floors with disinfectant. Windows, doors, and corridors all received treatment. The experiment involved 2½ days hard work for all concerned. At its conclusion one could not fail to be struck with the freshness of the atmosphere as well as with the appearance and sense of cleanliness pervading the whole premises. Credit is due to the teachers and all who were concerned in carrying out this wholesome, if laborious, experiment. Its precise value, from the standpoint of disinfection as distinct from cleansing, can hardly be determined; practical knowledge, however, has been gained which otherwise could not have been acquired, as to the precise conditions and difficulties to be met with in attempting any systematic disinfection of school premises. From the standpoint of cleanliness alone, however, the value of such a thorough cleansing as these premises received can hardly be over-estimated.

In the boys' department failure of the necessary co-operation of head teacher rendered efficient disinfection impossible; the experiment was therefore abandoned.

CLEANLINESS V. ROUTINE DISINFECTION.

Cleanliness without recourse to routine disinfection is advocated by an increasing number of medical authorities.

Thus Dr. Kingsford (Liverpool Education Committee) says:—"But even should it be proved that the dust may at times be infectious, what is called for is its removal rather than its attempted sterilization."—PUBLIC HEALTH, November, 1909.

Dr. Meredith Richards (Croydon) takes a similar view, and, after stating that the evidence in favour of daily disinfection of school-rooms is meagre and unconvincing, says:—"By far the greater part of the money now spent thereon (*i.e.*, chemical disinfectants) would be better expended on soap, soda, and scrubbing-brushes."—PUBLIC HEALTH November, 1909.

These opinions are also strongly supported by an official Memorandum of the Board of Education issued September, 1909, which points out that "the frequent and thorough washing of class-rooms and cloak-rooms is an efficient means of removing both dust and infection" (Memorandum on School Closure, p. 12, sec. 22).

It should be noted, however, that nothing short of frequently repeated scouring would suffice, under existing circumstances, to maintain class-room floors in a satisfactory condition of cleanliness. A higher standard than that at present attained might, however, under supervision be

secured by the scholars themselves as part of practical instruction in domestic cleanliness: the importance of the latter being inculcated mainly in theory in school, whilst frequently neglected in practice at home. That such an achievement is not impossible of attainment by the scholars themselves (granted the necessary authorization) is shown by our day industrial school, which exhibits a standard of cleanliness not reached by any elementary school in the borough, and the floors of which are cleansed entirely by its own scholars. If girls in elementary schools were similarly taught to scrub and clean their own classrooms there would be some chance of cleanliness being reflected subsequently in homes of their own.

Whatever opinions may be held as to the precise value of routine disinfection, the desirability of cleanliness is beyond question. Dust and dirt may harbour germs of disease; as Dr. Kerr says—"the organic contents of school dust show that it may be a source of specific disease.*" It is therefore desirable on all grounds to avoid or remove the dust. If school premises are kept scrupulously clean and free from dust there can be little or no need for the use of chemical disinfectants. If, however, these conditions cannot be satisfied, the question of disinfection may reasonably call for serious consideration. Reports of improved school attendance consequent upon daily disinfection of school floors by spraying or by use of a watering-can have not, however, been very convincing, nor has the improved attendance hitherto recorded been such as might not equally, in my opinion, have resulted from the use of plain water distributed in a similar manner.

DUST-BINDING OILS.

In attempting a satisfactory solution of this problem, a method of treatment which has obtained popularity in Germany is the use of some variety of "dust-binding" or "dust-laying" oil. The practical utility of the latter depends upon the effect of an oily material distributed upon the surface of floors in securing freedom from dust; the oil partially sinks into the floor and has the effect of laying the dust, rendering it less likely to rise and more easy to remove.

There are several preparations of this kind on the market. Their use is attended by few if any drawbacks, and in some cases appears to have been very successful.

It is not improbable, in my opinion, that a "dust-laying" oil may assist towards a satisfactory solution of what is admittedly a difficult problem.

An experiment might profitably be made in the utility of such preparations; in the first instance, their efficiency should be tested at one or two schools.

* Annual Report, London C.C. Ed. Com., 1908; quoted in PUBLIC HEALTH, November, 1909, p. 49.

REPORT ON SCHOOL CLINICS AND THE ESTABLISHMENT OF A CONTRIBUTORY SCHEME FOR THE TREATMENT OF SCHOOL CHILDREN.*

By W. LLOYD EDWARDS, L.R.C.P., M.R.C.S.,
D.P.H.,

School Medical Officer, Barry.

NOW that the Medical Inspection has been well established all over England and Wales, it is becoming recognized everywhere that, to render it complete, treatment of defects found on the medical inspection must follow. The Act of 1907 clearly gave the right to local Education Authorities to provide treatment, and in many instances the Board of Education has sanctioned such provision, *e.g.*, in Barry, for minor ailments. The only stipulation is that, according to the Act passed last year, a charge for such treatment must be made where the parents can afford it. Various plans have been adopted. In some cases the children are referred to the hospitals, though this is not satisfactory, as these hospitals object to doing the work which they think should be done by the Education Authority.

In other cases vouchers are given to the parents to go to any doctor they choose, the Education Authority paying a certain fee arranged.

In other places school clinics have been established. These are held at a centre, and a good instance is the one at Bradford.

There the school medical inspectors and nurses attend on certain days in the week at the central office and treat minor ailments, such as sores, sore eyes, discharging ears, ringworm, and also the testing of eyesight for spectacles.

At Barry, though not organized in the same way, much of this has been done on a small scale. At present the school nurse attends to such minor ailments, and already it has become the practice of the school medical officer to attend on Saturdays at the central offices, where parents bring children to see him.

These are sent by the teachers, or, in the case of children absent from school, by the school attendance officer. The school medical officer advises the parent what to do, and refers them to their own medical attendants, or, if cases of evident poverty, he suggests the treatment.

All that would be required to do on a small scale what is done at Bradford would be to provide a bench for parents waiting outside, and to have the nurse also to attend on Saturday mornings with simple dressings, etc. The only treatment that would not be done would be refraction work. This is done in some places, though the local medical men have objected, as in some cases a

* Annual Report, 1909.

parent earning £5 a week, *e.g.*, at Salford, has had free treatment.

Where a Public Medical Service has been established in a town, *e.g.*, Fulham, Hampstead, etc., it has been arranged that those children whose parents cannot afford the payment for treatment are sent to be treated at the Public Medical Service, the Authority paying a fee of 6s. for each child treated, or, where there is an anæsthetic given, £1 is. (*i.e.*, 10s. 6d. for each of the two medical men). The X-ray treatment for ringworm is estimated to cost 15s. a case, as the installation of the apparatus costs £100.

The Public Medical Service is a species of co-operative club managed by medical men, where each subscriber pays, say, a penny per week per member. Most of the medical men of the town belong to it, and subscribers are allowed once a year to choose the medical men to whom they shall pay their contributions. In other words, it is a club managed by medical men, and with no special club doctor. This brings me to the question as to whether some such contributory scheme could be adopted for Barry, and the whole question turns upon whether the parents can be got to subscribe a small sum every week or month in a large proportion.

Happily, in Barry, if they will do so, we are in an exceptionally favourable position for adopting such a scheme, as we are, perhaps, the only place in the kingdom where our hospital system has been municipalized.

At Letchworth the parents do subscribe fairly generally a penny a week to pay for the services of a school nurse and also the cost of spectacles.

I feel confident that if the whole scheme is properly placed before the parents they will be willing to pay a small sum to enable them to have the necessary treatment, which may even include the supply of spectacles free of any extra cost to those requiring them.

I have prepared a scheme, but since doing so I have heard of a similar scheme which is being instituted by Dr. Barwise, the school medical officer for Derbyshire.

In the Derbyshire scheme for every child the parents contribute 1s. a year. This entitles them to special treatment similar to what I specify in my scheme under the heading "A."

I learn that already the response of the parents to the circular sent out explaining the scheme has been most gratifying, and there is every prospect of its being a great success.

I have every confidence that it will meet with the approval of the local medical men, as it is entirely based on the scheme of the Public Medical Service which has been suggested by the British Medical Association.

On the other hand, it must be evident that a

scheme which entails some sacrifice on the part of parents able to afford it must surely be preferable to one where the treatment is entirely at the public expense, and where it will be perhaps necessary for your Authority to take steps for the recovery of the cost from parents who are found, after inquiry, to be able to afford payment.

You will see that my scheme is in two parts, and if you think that scheme "B," the provision of ordinary treatment, makes it too complicated, it might be started for the special treatment only, and, if found successful, the scheme "B" can be added to it.

Doubtless, the essential part is the special treatment, as we have at present no provision such as the Cardiff Infirmary for it.

I feel certain your teaching staff will lend their hearty co-operation, as upon them will devolve the collecting of the weekly or monthly pennies. This is work that they are already familiar with, as many schools have saving banks where considerable sums are deposited by some of the children in the course of the year. In some of the schools as many as 50 per cent. of the children are depositors. This in itself is proof of the ability of the parents to contribute to the school medical service, provided it is well explained to them and is taken up with enthusiasm.

In addition to the scheme, I have appended certain rules, as well as a specimen of circular to be sent out to the parents, which your committee possibly might modify and probably improve. But, in addition to this, meetings would have to be arranged in each central hall with some members of the Education Authority, as well as other prominent townspeople, to explain the scheme and submit it to the favourable consideration of the parents.

I also think it would be possible, if you adopt this scheme, to arrange a systematic canvass of the whole town by a body of voluntary workers, who would explain the whole scheme personally to the parents.

SCHEME FOR SCHOOL MEDICAL SERVICE.

Medical inspection reveals two types of ailments which require treatment, viz. :—

A. Special Treatment.

Errors of Refraction: These cases go to the Cardiff Infirmary, which is about nine miles away from Barry, or are seen by local medical men, some of whom make a reduced charge of 6s. to poor children.

An arrangement has been made with local opticians to supply spectacles at a small charge (2s. 6d. to 3s. 6d.), at the cost of the parent, or, in necessitous cases, at the cost of the Education Authority. So far nothing has been done to provide for the free testing of defective eyes.

Removal of Tonsils and Adenoids: These generally go to the out-patient department of the Cardiff Infirmary, as we have no local hospital to do this work. Some parents take their children to a local doctor to be operated upon.

Teeth: Though most of the children have bad teeth, nothing is done besides extraction. Very rarely is any filling done.

B. Ordinary Medical Treatment.

This includes all that would be done by private practitioners or by the club doctor.

SCHOOL MEDICAL SERVICE.

I suggest that a school medical service be started in Barry. All the local doctors would be invited to send in their names, and the parents would be given the choice of doctors at the beginning of each year. The management would be in the hands of a committee appointed jointly by the Education Committee and the medical men. The parents would be invited to contribute at two rates:

(A) One penny a month, or 1s. a year;

(B) One penny a week, or 4s. a year.

The lower rate would include all special treatment, and the higher rate both special and ordinary treatment (*vide* A and B). The medical men would be paid the whole of the money received for ordinary treatment—*i.e.*, 3s. a year—whilst a sum of 1s. a year would be available for the provision of the special treatment at a school clinic, which possibly could be held at the town hospital.

As there are from 7,000 to 8,000 children in the schools, a sum of £350 to £400 a year would be available if every child were included. This would be for special treatment.

I think a very large proportion of the parents would agree to contribute the sum of 1s. a year under Scheme A, and that is the important part as far as Barry is concerned, because there are no means of obtaining this special treatment in the cases of those children whose parents are unable to afford the fees of a medical man. The sum of £350 to £400 a year would be ample to pay for special medical men who would be appointed to do the special work such as refraction, adenoids, etc. The medical men would be paid at the rate of £50 a year for an attendance of one afternoon every week (*i.e.*, about two hours). The rooms, together with administration expenses, would be provided by the Education Authority.

Briefly to recapitulate: All medical men who wished could share in Scheme B, being paid at the rate of 3s. a child per annum. A few selected medical men would be appointed and paid for all the work under Scheme A (special treatment).

Now the success of this scheme depends upon practically the whole of the children being included in Scheme A (special treatment), but there would be a proportion of children outside the scheme:—(1) Those parents who are able to afford but will not pay into the fund, which, of course,

must be a voluntary one; (2) those parents who are in a pecuniary position to pay the 1s. a year.

The latter cases could be dealt with by the Education Authority, who could pay the fee of 1s. a year on behalf of these poorer children. With regard to those children whose parents could afford, it would be possible, if the parent desired, and had treatment for his child, to recover the cost of such treatment, in accordance with the Local Education Authorities Act (Medical Treatment), 1909.

In the case of children under the Poor Law, numbering about 4 per cent. (350), very probably the Guardians would pay the small sum of 1s. a year for each child just as they pay to hospitals and infirmaries. It would be of advantage for them to do so, as none of the work under Scheme A is included in the work of their district medical officers, and they would have to defray the expenses of the child who attended the Cardiff Infirmary (nine miles away), where they would have to go for treatment unless they made special terms with their own medical officers.

Under this scheme the cost to the Education Authority would be very little, as the scheme, being contributory, is practically self-supporting. The most important feature would be to induce nearly all the parents to include the children under Scheme A for the special treatment.

With regard to Scheme B, I do not anticipate that all will agree to pay the 4s. a year, as some will have made other arrangements, such as clubs and friendly societies, but for those who do the scheme ought to work well, as the parents will have the choice of doctor, and, on the other hand, the medical man will only have to attend those who prefer his services instead of having to go to the club doctor whether they like him or not. The medical men would also have the fees, without any deduction for the working expenses of the medical fund.

The Education Authority would greatly benefit by the better health of the scholars and consequent increased attendance grants. It would be also possible to have greater co-operation with the medical men who participated in these schemes, as cases of illness amongst the school children could be notified to the Authority at an early date, and the attendance officers would not have to make useless visits to the houses of the children who were absent owing to illness.

This is a brief outline of a scheme which I think it is possible to inaugurate in Barry, and which certainly would be the most economical. In any case, the only alternative to such a scheme is for the Authority to undertake the treatment of the children found needing it in school; in other words, by establishing a school clinic at the cost of the ratepayers, making those parents who can afford pay for the cost of treatment.

WATER SUPPLY FROM ARTESIAN WELLS IN THE CITY.*

By W. COLLINGRIDGE, M.D., D.P.H.,
Medical Officer of Health, City of London.

IN the Annual Report for 1908 reference was made to the increase in the number of artesian wells sunk in the City owing to the revised charges made for water services by the Metropolitan Water Board. It was also stated that a full inquiry was being made on the subject, and that a summary would be issued at a later date. This investigation being now concluded, I have the honour to submit the following observations for your consideration.

The water supplied to the City of London by the Metropolitan Water Board is obtained from the following sources:—

- (a) The New River District (formerly the New River Company), the sources of supply being from Chadwell Spring, the River Lea and eighteen chalk wells.
- (b) The Eastern District (formerly the East London Water Company), the sources of supply being from the River Lea, the Thames at Sunbury, and chalk wells and springs.

The New River District embraces the whole of the City with the exception of a few supplies in the parishes of St. Botolph, Bishopsgate, and St. Botolph, Aldgate, which are in the Eastern District.

It will be seen that both districts are dependent for some part of their supply upon water derived either from the River Thames or the River Lea. Although every effort is made by the Water Board to ensure that the water supply under their control is free from impurity, the fact remains that no navigable stream passing through thickly populated areas should be used as a source of public water supply if other and better sources are available.

In making these observations no condemnation of the Water Board's methods is implied, but they bear upon the question under consideration.

Taking all the circumstances into consideration, I concur in the conclusions of the Royal Commission on Metropolitan Water Supply of 1892:—

"That the water as supplied to the consumer in London is of a very high standard of excellence and of purity, and that it is

* From a Special Report.

† In the Sixth Report of the Rivers Pollution Commission, dated 1874, the use of water for domestic purposes from both the Thames and the Lea was unsparingly condemned, but very soon after that Report was written it became quite evident from things that occurred in connection with the London water supply that organic matter in solution, as well as suspended impurities, was removed by filtration. At the time of the Sixth Report of the Rivers Pollution Commission it was scarcely known that filtration removed anything more than suspended impurities, and that only to an imperfect extent (see evidence of Dr. E. Frankland before the Royal Commission on Metropolitan Water Supply—p. 150, "Minutes of Evidence").

suitable in quality for all household purposes. We are well aware that a certain prejudice exists against the use of drinking-water derived from the Thames or the Lea, because these rivers are liable to pollution, however perfect the subsequent purification, either by natural or artificial means, may be; but having regard to the experience of London during the last thirty years, and to the evidence given to us on the subject, we do not believe that any danger exists of the spread of disease by the use of this water *provided that there is adequate storage, and that the water is efficiently filtered before delivery to the consumers.*"

The italics are mine, and it is this qualification that influences me in preferring a water that is of unquestionable character *at all times*. Even admitting that the citizens have no reason to take exception to the quality of the water sold to them by the Metropolitan Water Board, there can be no question that they complain bitterly of the charges levied on them for an indispensable element. It is therefore not difficult to account for the great increase in the number of artesian wells sunk within the City during the last two years, it being most unlikely that property owners would fail to avail themselves of a water supply of the highest quality lying beneath their feet.

This method of obtaining a water supply in the City is by no means a novel one, since an artesian well sunk at No. 20, Old Broad Street (formerly the site of the Excise Office) is described in the Transactions of the Institute of Civil Engineers, Vol. I., p. 155, published in 1836. (This well became subsequently contaminated with polluted surface water, and a new boring was made in 1908 on the old site.)

One well was also sunk in the City in each of the following years, viz.: 1851, 1874, 1883, 1885, 1887, 1891, 1892, 1901, 1902, 1905 and 1907. Two were sunk in 1903, and eleven each in 1908 and 1909.

It will be seen that fourteen wells were sunk during the seventy-one years 1836-1907, the remaining twenty-two, or 61 per cent. of the whole number, being made in the years 1908 and 1909.

CHARACTER OF DEEP WELLS IN THE CHALK.

[Table A attached to this report gives the particulars of the chemical analysis of samples of water drawn from each of the thirty-six artesian wells in the City of London, which, with four exceptions (Nos. 13, 14, 16 and 34), are situated within about 2,000 feet of Merchant Taylors' Hall in Threadneedle Street.]

With regard to their purity, Dr. Teed reports that—

"The waters are highly pure so far as organic contamination is concerned; they

are soft, but on the other hand they are somewhat saline. The total solids average 49 grains per gallon, whereas London water runs about 20 grains to the gallon. The London deep-well waters contain fair amounts of bicarbonate of soda and sodium sulphate, which I have known to be a source of considerable trouble to steam raisers.

"Lead and copper were absent in all cases."

It has been suggested that water from artesian wells in London is of special value in certain trades—in dairying, for instance—in consequence of it never rising above the comparatively low temperature of 51 degrees Fahrenheit.

With regard to this statement I may mention that the average temperature of the samples collected from the wells in the City was 57.4 degrees Fahrenheit, the lowest reading being 54 degrees and the highest 60 degrees.

PERMANENCE OF WATER SUPPLIES DRAWN FROM THE CHALK.

Figures have been published in the Press claiming that, in consequence of the present high charges of the Water Board, great economy can be effected by sinking an artesian well and drawing water therefrom.

An example which may be quoted is that of a large West End hotel which was paying £900 a year water rate. A well and pumping plant was installed at a cost of £800, and the total cost of running this plant, including repairs, has been found to be £200 a year. Thus a saving of about £700 appears to have been effected by a capital expenditure of £800.

It is obvious, however, that if the yield of water proves later insufficient for the intended service, the Water Board's supply will have to be laid on to the premises and the money sunk in the well written off as a loss.

This leads to the consideration of the question of the fall of water level in the London Basin, which is the geological formation upon which the City is situated.

Much difficulty has been experienced in getting reliable information in the City upon this point. While it is generally admitted that the water level is falling, the rate of fall does not appear to be uniform. This discrepancy would probably disappear if the normal rest level of the water in each case could be determined with accuracy.

In many wells the depth at which the water stood in the bores when completed can be obtained from the well sinkers; but, except in those cases where a well shaft has been sunk before commencing the bore hole, it is difficult to ascertain the water level at the present day.

A disturbing factor it is impossible to eliminate, when making exact estimates, is the proximity of the wells to one another in the City and the intermittent character of the pumping.

In the City alone there are thirty-six of these wells in use, all being supplied with water from the same source. Moreover, the Metropolitan Water Board largely tap the water supply before it reaches the City, and there are now no less than forty-nine wells belonging to the Board drawing upon the water in the chalk.

This depletion cannot be expected to continue indefinitely without seriously affecting the interests of well owners.

On this point the views of Mr. W. Whitaker, B.A., F.R.S., taken from the Memoirs of the Geological Survey of England and Wales, in the first volume of "The Geology of London and Part of the Thames Valley, 1898," p. 508, may be quoted:

"In London and the neighbourhood the increased demand for water led to the increase in the number of wells, and to the comparative exhaustion of the limited supply in the tertiary sands. Many wells were therefore deepened to the chalk and new wells were made to that foundation, and the large quantity of water taken from these wells, amounting to several million gallons a day, has lowered the underground water level in the chalk under London, until it becomes questionable whether further well sinking in most parts is likely to be successful, though there are still overflowing wells in suburban spots."

Although, as I have pointed out, there are difficulties in measuring with exactitude the rate of fall in the water level, a fair approximation can be arrived at.

Messrs. Le Grand and Sutcliffe have kindly favoured me with figures relating to seventeen wells sunk in the Metropolis between the years 1883 and 1889. These show an average annual fall in water level of 3.18 feet.

Measurements have been made at a well belonging to the Corporation of London sunk to supply water to several "blocks" of artisans' dwellings in Stoney Lane, Houndsditch.

The late Colonel Haywood, reporting on this well in 1893, gave the normal water level at 123 feet from the surface. From recent measurements made under the direction of the City Engineer it is shown that the level has fallen on the average 3.37 feet per annum.

It will be seen from the foregoing that there is an element of speculation in investing money in well sinking in London. In the first place, owing to unforeseen circumstances they may be costly investments, the City well at the artisans' dwellings referred to above costing no less than £5,610,* while the cost of pumping alone costs 5½d. per 1,000 gallons. This is allowing for all contingencies except interest on capital outlay and depreciation of plant, etc. It must be pointed out, however, that this particular well was an exceptional case.

* See Report of City Engineer to Streets Committee (April 19th, 1898).

Since it was commenced, twenty-three years ago, far less costly methods of construction have been adopted.

The practice of commencing the well with a shaft upwards of 200 feet deep, and lining the same throughout with impervious material to avoid dangerous leakage from contaminated surface-water, and beginning the boring at the bottom of such shaft, is now rarely followed. The progress of the work on the City well was at times very slow, Colonel Haywood mentioning that 110 working days were occupied in passing through 5 feet 10 inches of conglomerated rock. Begun in 1887, the well was not finished until 1891.

Further, when the work is completed, the supply of water yielded may be so scanty as not to be worth spending money on pumping, labour and maintenance. This latter has actually been the case in at least two instances in the City, but I have no means of knowing how many other wells in the City have been abandoned for the same reason.

When the well at the Manchester Hotel, Aldersgate Street, was sunk in 1891, the water level was 133 feet from the pavement level. This distance was reported to be 172 feet on a Monday morning in May, 1908, a drop of 39 feet in seventeen years, showing an average lowering of the water level of 2.3 feet per annum.

Again, at a well sunk at Salisbury House, London Wall, in 1901, the water level fell 19 feet in seven years, or 2.7 feet per annum.

In the course of the inquiry conducted by the Royal Commission on Metropolitan Water Supply, appointed in 1892, many experts gave evidence regarding the falling of the water level in the chalk beneath London. Thus Professor W. B. Dawkins gave an illustration of a well that had fallen 18 inches a year for many years, and stated that beyond all doubt the water level was falling, but that the rate of falling was extremely irregular.

Mr. J. Francis (Chief Engineer to the New River Company) was of opinion that under London there was a fall of nearly 18 inches a year, and he attributed the lowering of the water level under London to the increased pumping that had taken place under London itself. Mr. A. R. Binnie, Chief Engineer to the London County Council, said there had undoubtedly been a general fall in the water level in the chalk under London of about one foot per annum. It does not fall regularly, and there may have been rises at intermediate periods owing to wet weather. Further, the quantity of available water in the immediate neighbourhood of the basin of the London chalk was becoming exhausted.

This last view is not quite so disquieting as it appears. This falling of a water level does not necessarily lead to the immediate abandonment of

a well. The simple expedient of lowering the pump will give the well a new lease of life, and as many well-makers put the pump 100 feet below the water level, the well will last for some years at the present rate of fall of water level. Further, by deepening the bore the well may give an increased yield.

CONCLUSION.

It hardly falls within my province to express any opinion as to the advisability or otherwise of attempting to secure an economical water supply in the City by means of artesian wells. As before stated, there must be an element of speculation in the matter, and the only persons qualified to answer the question authoritatively are geologists and hydraulic engineers who have made a special study of the subject.

When it comes to the question of the quality of the water obtained from this source of supply, there can be no doubt that it is of unquestionable wholesomeness, and that from the fact of its being very "soft" it is better suited for domestic and manufacturing purposes than that delivered by the Metropolitan Water Board.

THE PROVISION OF DENTAL TREATMENT FOR SCHOOL CHILDREN IN SURREY.—The subject of dental treatment for school children is now being considered in several districts in the county. Definite arrangements for systematic treatment have already been made in Haslemere, a long-established Dental Aid Society having been revived for the purpose. The scheme includes provision for the regular inspection and treatment of the teeth of all the children between eight and nine years old attending the Haslemere Church of England School, together with treatment of any children of other ages who may be found during the medical inspections to have defective teeth. It is intended that both inspection and treatment shall be carried out at suitable times, not including school hours, in the rooms of a dentist practising in the district, in order that the scheme may not be trammelled by official regulations. No parents who can afford to pay are to receive free treatment for their children. Another voluntary scheme was initiated in 1909 by a newly formed Dental Aid Committee for providing dental treatment for the children attending Shottermill Church of England and Hindhead Council Schools. Under this scheme it is proposed to apply to the Board of Education for recognition of the dental inspection as a part of school medical inspection. A definite scale of charges has been drawn up. The Care Committees of the respective schools will make themselves responsible for payment to the dentist, but only parents unable to pay any fees will be assisted from charitable funds.—*Annual Report of Dr. T. Henry Jones, Educational Medical Officer, Surrey.*

THE SALE OF HORSEFLESH IN THE EAST END OF LONDON.*

By D. L. THOMAS, M.R.C.S., L.R.C.P., D.P.H.,
Medical Officer of Health, Stepney.

SEVERAL statements have recently been made that horseflesh is openly sold as human food in the East End, as well as in some of the other poorer parts of the Metropolis. These statements, I believe, originated in a report made towards the end of the year 1907 by the medical officer of health to the London County Council, in which it was stated that "there can, of course, be no doubt that much cat's-meat is still eaten by human beings in London. It is largely sold in extremely poor neighbourhoods, and the women seen buying four pennyworth or five pennyworth are clearly not buying for cats." It is also stated in the same report that the bulk of the cat's-meat is consigned to the East End of London.

The bulk of horseflesh sold in London is brought from the country, but from 60 to 70 tons a week are produced by a firm of knackers in London itself. With the exception of three firms, the trade is in the hands of East End firms, who import 75 to 80 tons a week from the country and sell it to the various retail cat's-meat shops in London.

About 40 years ago, an East End trader imported a small quantity of horseflesh from the provinces. Previous to this time, all the horseflesh sold as cat's-meat was produced in London. His business increased, with the result that others started in the same trade in the immediate vicinity. This is probably the reason why the East End is the chief dumping-ground or the centre of distribution of cat's-meat for the whole of London.

Very little horseflesh is utilized for the feeding of cats in the provinces, hence its despatch to London. The meat is boned and boiled before it is sent by rail.

On an average eight horses are required to be boiled down to produce one ton of cat's-meat. The flesh loses about one-third in the process, so that to supply the existent demand between 1,000 to 1,100 horses are required every week.

About 10 tons of horseflesh used to be brought into London every week from Glasgow and other parts of Scotland. This trade has now diminished to less than one-half, owing, I am credibly informed, to the fact that in Scotland horseflesh is pickled and exported to Sweden and other Continental countries.

Several years ago, at a time when there was a glut of horseflesh on the London market, an East End firm attempted, under official supervision, to carry on a similar trade. Some of the

meat was pickled and some smoked. It had soon to be given up, as it was found that the price obtained for it on the Continent was not much more than could be obtained in London, when it was sold as cat's-meat. It is true that it was possible to convert the pickled portions into sausages, but it would be impossible to utilize the smoked portion in this manner. An attempt was also made to salt and afterwards to smoke horse tongues and sell them as reindeer tongues, but this did not prove a success, because horse tongues were found to be too thick to be passed off as reindeer tongues, although bearing a general resemblance to them. The difference between horse tongues and ox tongues is so great as to be obvious to anyone, and it is almost impossible for the horse tongues to be sold as human food when they are fresh. The tongue of the horse is longer, narrower and more pliant than that of the cow. The surface is smooth, while that of the ox is comparatively rough. The end of the tongue of the horse is broad, while that of the ox tapers almost to a point. Of course, it is a much simpler matter to distinguish horse tongue from that of the ox when fresh than after salting.

Apart from other marked differences, horseflesh is drier than ordinary cooked meat, and it is most unappetizing in appearance. Horse meat in general has a dark red colour, which assumes a bluish sheen on the surface after lying for a long time. It is stated that in cooking and on the addition of sulphuric acid the distinctive odour of the horse stable is developed. I have been unable to obtain this myself, for although the odour is distinctive enough it is of a very disagreeable character and quite different from that given off when any other kind of meat is treated in the same way. The fat of the horse is light golden in colour and more oily. In cattle the breast-bone is broad and flattened, while in the horse the front portion is keel-shaped. The ribs in cattle are flatter and broader in the middle and lower third than in the horse.

It will therefore be seen that the difference between horseflesh and beef are so marked and distinctive that raw horseflesh exposed for sale in butchers' shops would at once attract the attention of the sanitary inspector. No horseflesh has been seized in the Borough of Stepney since its inception nearly ten years ago.

With respect to horseflesh sold as cat's-meat, there are in the borough 35 purveyors of this article, 14 of whom sell in shops only, three have rounds only (*i.e.*, hawk it in the street or call from door to door), 13 have a shop and round, while five sell it on stalls in market places. These retailers sell on an average about seven tons of cat's-meat every week, including about 30 horse tongues.

In a certain newspaper it was stated that in Whitechapel, within a short distance of Aldgate

Station, there are several shops where horseflesh is sold for human food. There is, of course, no shop in the East End of London licensed to sell horseflesh as human food, and to sell it for anything but for human food a licence is not necessary. Curiously enough, there are only three cat's-meat shops in the whole of the Whitechapel district, which includes the parishes of Whitechapel, Mile End New Town, Spitalfields, etc. There is therefore less cat's-meat sold in this part than in any other part of the borough for the following reasons:—

1. The high proportion of Jews, relatively, to the rest of the population. Jews do not as a rule keep cats. When they do, they do not often feed them with cat's-meat. Jews are great fish eaters, and the fish heads and entrails are given to the cats instead of, or in addition to, the cat's-meat. I found this to be the case in other parts of the borough where streets have recently been occupied by Jews. The trade in cat's-meat in these streets has practically disappeared.

2. The great number of model buildings in this area. Fewer cats are kept in model buildings than in houses. The result has been that the cat's-meat trade has disappeared almost entirely in the Whitechapel district.

In other parts of the borough the cause of the decline of the trade has been unemployment. Purveyors of cat's-meat, who had occupied the same cat's-meat shops for many years in a part of the district where the residents are casual dock labourers, informed me that the diminution in the sale of cat's-meat has been enormous in that part of the borough where there is a large number of unemployed. Two purveyors who had lived in the same shop for over thirty years attributed the decline of their trade to less than one-half entirely to this cause. As the unemployment increased poverty also increased, and the cats were naturally got rid of. If there were any foundation for the statement that poor people eat cat's-meat, the sale of cat's-meat would have increased in recent years in proportion to the increase of unemployment and poverty. This is not so. In every part of the borough there has been an appreciable decrease, both in the amount sold by each purveyor and in the number of people who sell cat's-meat.

Besides, in market places in the district, scrags of mutton are sold for 2d. to 2½d. per lb., a price as low as that of cat's-meat. It is true it is frozen meat, but no one can deny that it is more nutritious and more palatable than cat's-meat.

The retail price of cat's-meat varies from 2d. to 2½d. per lb. The usual amount expended by each customer for cat's-meat in this borough is a farthing to a halfpenny, and rarely does it exceed the latter sum. Occasionally a customer buys one pennyworth. Only ten purveyors had sold a

pound of cat's-meat at a time, and then it was to neighbouring tradesmen who were well known to them, and were also known to keep dogs. Three purveyors only sold four pennyworth at a time, and, as in the case of the one-pound customers, the buyers were not only well known, but were also known to keep large dogs as well.

It is curious that in some streets cat's-meat dealers sell cat's-meat at every house, while in other streets hardly a single occupant buys cat's-meat. As I have already stated, throughout the whole borough about 30 horse tongues are sold every week. There is a considerable amount of waste attached to tongues, so that dealers prefer not to have them, and they are sold as cheap rough meat for dogs.

I have interviewed every single dealer in cat's-meat in the borough, and each one was emphatic in his statement that none of his customers bought it for human food. Even the very poorest persons insist on the farthing's worth being wrapped up in paper, and then they carry it home in a gingerly fashion as if it were something unclean and revolting.

It is true that when I inquired at two shops near the docks I was told that sometimes foreign sailors asked to be served with cat's-meat, but they are told that it is not meant for human food. Some persist, admitting that they know it is horseflesh, and that they have been accustomed to eat it abroad. They are never served. This happens in two shops about once a year, and has never occurred in any of the other places.

At present there are three shops in the borough in which human food is sold as well as cat's-meat. In two of them, however, the cat's-meat is not horseflesh, but lungs of sheep, ox, etc., which are boiled for the purpose. In the third, tea is the only article that is sold for human consumption, and in addition feathers are curled—a curious combination of trades, the purveying of cat's-meat and tea and feather-curling.

There has been a great improvement in this respect during the last few years. Eight years ago a man who sold human food as well as cat's-meat in several shops in the borough was heavily fined for exposing diseased meat for sale. His defence was that it was not intended for human food. Very wide publicity was given to the heavy penalty inflicted and to the remarks of the magistrate on the occasion, with the result that several shops were closed, and the sale of articles not intended for human food was discontinued.

A mistake has possibly arisen from loose statements made with regard to the eating of offal. Offal is defined in the dictionary as "waste meat—the parts of an animal butchered which are unfit for use or rejected—carrion, refuse, rubbish, whereas offal in the butchering trade includes the stomach, sweetbread, liver, head, tail, kidneys,

etc., and does not mean refuse, rubbish, or waste meat. A butcher, in using the word "offal," may be referring to the most dainty bit of the carcase, while a layman may interpret it as designating something objectionable.

A great danger lies in the fact that country knackers, who send horseflesh to London, occasionally send beef and mutton as well. Cows and sheep that have died are taken to them, and in most cases are sent by them to London dealers to be sold as cat's-meat. Sometimes, however, an unscrupulous knacker will send such meat carefully boned, with the obviously diseased portion cut off, to an equally unscrupulous butcher. I examined recently the books of a railway station in Essex, and discovered that large consignments of meat were sent to butchers in London by a knacker in the village, although his licence did not allow him to slaughter any animal intended for human food. Boned meat if intended for human food should always be looked upon with a great deal of suspicion, if not prohibited altogether. The Local Government Board appreciated this danger and the difficulty of recognizing diseased meat when boned, so that in their Public Health (Foreign Meat) Regulations, 1908, boned meat is prohibited from being landed at British ports.

In connection with the subject of the sale of horseflesh, some reference may be made to the exportation of worn-out horses and the importation of sausages.

From September until the end of March about 120 to 150 horses a week are exported from a certain wharf in South London to Ghent. These horses are in a poor condition, but they are carefully examined to see whether they are in a fit condition to make the journey, and whether they are suffering from glanders. These horses are undoubtedly killed for the purpose of sausage making.

About 110 to 150 horses are exported from a wharf in the City of London to Rotterdam every week throughout the year, as well as about 45 horses a week from the London Dock. These horses are in a better condition than those exported to Ghent, and they are also carefully examined before they are taken on board ship. These horses are really in a fit condition to work, but on their arrival at Rotterdam they are escorted by Government officials and the police to the slaughterhouses, where they are killed within three days. They are afterwards sold in the ordinary way in butchers' shops, and are not converted into sausages. Rotterdam, as well as other Continental towns, are supplied with sausages from Ghent.

German sausages are only sold at eight shops in the borough, the price being 1s. 8d. to 2s. per lb. They are therefore too expensive to be sold extensively in the East End of London.

It is stated that the presence of horseflesh may be inferred when a fairly large quantity of glycogen is found to be present by chemical examination. Mutton and pork do not contain any glycogen, but it may be present in beef under certain circumstances. In the presence of bread it is impossible to obtain the glycogen reaction without first separating the starch. This complicates the analysis of sausages, which generally contain bread and other starchy matter.

I have examined German sausages from each of these eight shops, but have failed to detect the presence of horseflesh in any of them.

It is true that there are other shops in the borough where German sausages are supposed to be sold. These so-called German sausages are manufactured in the Borough of Stepney, entirely by Jews. The meat is therefore not horseflesh, as Jews will neither eat nor prepare for human food any animal that has not been slaughtered according to the Jewish religion.

I have had over 24 years' experience of the East End of London, including five years' as a medical man in general practice and 13 years as a medical officer of health and public analyst. I have found no evidence whatever that poor people in the Borough of Stepney eat cat's-meat, and I have not the slightest hesitation in saying that they do not knowingly eat horseflesh, either as cat's-meat or sausages.

PROSECUTION UNDER THE CHILDREN ACT.—Rosa Levy, of Backchurch Lane, Whitechapel, was summoned on May 27th at the instance of the London County Council for taking a child to nurse under the age of seven years without notifying the local authorities within 48 hours. Mr. Carter, who prosecuted for the Council, stated that in consequence of a communication a lady inspector attended an East End inquest, where it was elicited that an infant, four weeks old, was taken ill on Sunday morning and a medical man was not summoned before the following day. Defendant took the child to nurse when it was 14 days old, and received 10s. a week for its maintenance. Mr. Dickinson, in imposing a fine of 40s. and 23s. costs, said that the defendant was liable to a fine of £20 or six months' imprisonment, and those persons who undertook the nursing of children must be given to understand that the law would have to be complied with.

Dr. J. M. MASON, consulting medical officer to the Dominion of New Zealand, was on June 8th called to the Bar by the Benchers of Gray's Inn.

Dr. H. PECK, medical officer of health for the Borough of Chesterfield, has been called to the Bar at Lincoln's Inn.

MOSQUITO EXTERMINATION IN SHANGHAI.*

By ARTHUR STANLEY, M.D., B.S., D.P.H.,
Health Officer, Shanghai.

AS there seemed to be a general desire for something more in the matter of mosquito extermination than the plodding work of the last ten years, the object of which has been to eliminate stagnant water by filling in ponds and ditches, the opening and cleansing of tidal creeks and the promotion of surface drainage, a more elaborate plan of campaign was put into operation, which included direct measures for the destruction of mosquito larvæ on private property. A special staff was organized in 1909, which worked from the middle of April until the end of October. The results, so far as they went, are considered satisfactory, a diminution in the number of mosquitoes, estimated at from 25 per cent. to 75 per cent., having been effected. The work of the Chinese staff required very careful foreign supervision, as the results of good work were not directly apparent, and the detection of bad work required assiduous observation on the part of the foreign inspector. As the staff of the Health Office had been, since the beginning of the year, strenuously employed in warding off the threatened invasion of plague, the assistance of the police was called for and eight men were temporarily transferred for the work, acting under the sanitary inspectors. The work being undertaken at a time when the whole of the staff was overworked should be allowed for in assessing the value of the results obtained. As it was impossible to have the work done under the immediate supervision of foreigners, trial was made of a plan of letting the native staff work in couples, giving them definite areas of operation, paying them well and fining heavily for each dereliction of duty discovered by the foreign staff. The Chinese generally looked upon the work as "fool pidgin," though the inspectors, by roadside lectures in Chinese and practical demonstration of the mode of propagation of mosquitoes, succeeded in many cases in convincing the natives of the simplicity and utility of the measures recommended. The cost of the work was about 6,000 taels, but it should be remembered that the arrangements were somewhat tentative in character and capable of considerable development. More attention could have been given to the work had not the more important plague prevention operations monopolized most of the time that could be spared from routine work. Mosquito extermination work in Shanghai is by no means easy. In the foreign staff thoroughness and enthusiasm are mostly called for, and the goal to be striven after is the total extermination of mosquitoes in the area

operated. The men drafted from the police for this work, with two or three exceptions, were unable to fulfil these conditions; and it is expected that the permanent addition of two assistant inspectors, who will receive the special training necessary for this and other sanitary work, will be the best course, should it be decided to go on with the work.

In the Chinese staff it is necessary to have men with intelligence and initiative, who can enter native premises with some degree of authority and get rid of stagnant water without friction or dishonesty. The results required are of a negative nature—absence of mosquitoes—there being nothing tangible to show as an immediate result of the work. Coolies working alone do not like to appear a source of annoyance to householders by too diligently searching their houses for larvæ; this is not felt when they work under the immediate supervision of a foreigner, as any little trouble the people are put to would naturally be attributed to the foreigner.

The work itself was conducted somewhat as follows:—The sanitary districts were divided into areas worked by a couple of coolies. Each couple was provided with an oil-can for oiling gully-traps and small accumulations of stagnant water which could not be removed, a pail for holding oil, a garden syringe for spraying larger pieces of stagnant water, a broom for sweeping away small accumulations of water, and a spade for cutting trenches for draining low ground and filling up depressions, etc. Barrow coolies (with two barrels) conveyed oil to the coolies and removed tins, jars and what not, capable of holding water for mosquitoes to lay their eggs in. Every part of and every house in the districts were supposed to be visited weekly, and notices in English and Chinese distributed and explained. The best admixture of oil for the months of April, May and October was found to be half crude oil and half of lamp oil, for June and September two parts crude oil to one part of lamp oil, and for July and August four parts of crude oil to one part of lamp oil. At no time was crude oil alone found to form a good killing film.

Co-operation was obtained from most foreigners, but the majority of Chinese showed a complete indifference, amounting occasionally to active opposition. No prosecutions were undertaken to enforce these mosquito extermination measures, but this would appear desirable in flagrant cases after repeated warning.

For future work the following points may be noted. The work should begin on April 1st. A good class of coolie should be obtained, who should be paid at the rate of 10 dols. monthly, and heavy fines inflicted on finding mosquito larvæ in a place recently worked through. The coolies should work in couples in an area exactly

delimited. Each area should be further subdivided into seven for each day in the week and a time-table kept so that it may be known exactly where each mosquito couple is working at any time. The assistant inspector should accompany, and give detailed instructions to, each pair of coolies early in the season and make written notes of those unusual places where stagnant water is likely to be found, such as native gardens, empty houses, defective paving, gullies in unfrequented places, etc. (*i.e.*, those places which are likely to be beyond a coolie's intelligence to think of or beyond his courage to enter); these places subsequently to receive the special attention of the assistant inspector. Practical roadside demonstrations should be given of the way mosquitoes develop, and how to prevent them developing by getting rid of all collections of stagnant water.

MOSQUITO NOTICE.

NO STAGNANT WATER—NO MOSQUITOES.

Mosquitoes carry *malaria* and other diseases.

Mosquitoes cannot multiply except in *stagnant water*. Where stagnant water cannot be *abolished* the use of kerosine sprinkled on the surface so as to form a film will kill mosquito "wrigglers," as it prevents them breathing when they come to the surface.

Old tins and bottles, broken crockery, flower pots and unconsidered articles of this kind capable of holding rain water should be carefully collected from the garden and back-yard and placed in the house refuse receptacle for removal.

Tubs, kongs, water plants, flower-pot saucers or other vessels of water which cannot be dispensed with should be emptied or sprinkled with kerosine once a week.

Gardeners' kongs, dug-outs, wells and water barrels should be done away with, water for the garden, etc., being derived directly from the tap; or, if that be impossible, the kongs, etc., should be oiled once a week or kept securely covered, so that mosquitoes cannot get to the water to lay their eggs.

Have the water from kennels, chicken coops, etc., regularly emptied out.

Keep drains and rain-water roof channels clean and clear and in good repair. Gully traps that are not frequently flushed should be oiled weekly.

Shallow rain-water pools and slushy places can generally be obliterated by a scratch drain or levelled with house ashes ponds and ditches by filling-in with house refuse covered with a little earth or ashes.

Ornamental ponds may be kept free from mosquitoes by small fish, but, if mosquito "wrigglers" be found, the water should be oiled weekly preparatory to filling-in.

A weekly inspection of house and surroundings should be made. It may be remembered that a small unheeded pot of water will suffice to breed sufficient mosquitoes to irritate a whole neighbourhood.

MOSQUITO EXTERMINATION WORK.

Stagnant waters on land removed	...	2,204
Stagnant waters in and around houses removed	...	149,529
Stagnant waters oiled weekly	...	109,893

BASEMENT WORKROOMS.—During the year 26 new basement workrooms have come into occupation, and 26 were closed, there being at the end of the year 55 basement workrooms in the borough, with accommodation for about 400 workers. The sanitary conditions of these basement workrooms are by no means satisfactory in respect of lighting, warming, ventilation, and in some cases aerial disconnection from water-closets. As stated in my annual reports for 1904-1908, I am of opinion that regulations should be made by the Secretary of State for the Home Department prohibiting the use of underground rooms for workshops unless they complied with certain conditions. If such regulations were in force, architects, in designing new buildings for use as shops on the ground floor and residential flats or sets of chambers on the upper floors, would cause the underground rooms to conform with the regulation, so that the shops and basements might be let at the full rental value. I would suggest that the regulations to be framed should require (1) a certain proportion of glazed fanlight area (above the street level), according to the floor surface of the basement room, a certain proportion of this fanlight area to be made to open for ventilation; (2) that no room should be used as a workroom which has not some means of through ventilation, either by a window or through a door and adjoining room with window, to the back area of courtyard; (3) that the w.c. should not be in a vault under the street ventilating directly into the workroom, or into an area which is only top-lighted, without means of ventilation, and which either is part of the workroom or has a window from the workroom opening into it; (4) that the w.c. should not open directly or be ventilated into an underground workroom; (5) that there should be an open fireplace and flue in every basement workroom; or, if a gas stove is to be used, a proper flue should be provided to carry off the products of combustion. It probably would not be possible to make existing underground workshops comply at once with the regulations to be framed; but it might be feasible to apply the regulations to existing workshops after a certain period, in the same manner as the Factory and Workshops Act sections were made to apply to underground bakehouses after a certain period, which allow owners and occupiers to make the necessary alterations after due notice.—*Annual Report of Dr. Parkes, Medical Officer of Health, Chelsea.*

MIDWIVES NOTES.

THE RESIDENT NURSE SYSTEM.

THE Rural Midwives Association and the parent body, the Association for Promoting the Training and Supply of Midwives, have recently made an effort at amalgamation, but without success. A joint committee was appointed of five ladies from each body, presided over by a county medical officer of health, and reported, after three meetings, that amalgamation was advisable, but at present impracticable. The obstacle was the question of the resident cottage nurse. The latter Association point to the professional and moral objections, proved in some instances by experience, to the nurse taking up her residence in the cottage in which she is attending a confinement; it aims at the employment of a woman of higher standard, who will not be satisfied with the conditions and household duties thus involved. The former admit the higher ideal, but deny the moral objections where the nurses are properly looked after, and contend that (1) many cottagers are unable to afford the expense of a help-woman as well as a midwife to do the necessary household duties during the confinement; (2) in scattered areas the midwife must live in if she is to be present at a confinement; (3) the actual presence of the midwife during and for some days after confinement is a safeguard in case of complication and a great comfort to the mother; (4) many supporters of local nursing associations will only employ midwives on this system; and the practice of the Rural Midwives Association is to provide midwives trained for any work required by those who are prepared to engage them.

It is obvious that the higher ideal is the one for which all must work. It is becoming equally certain that no well-trained midwife or cottage nurse will take up the responsibilities of her calling in rural areas except under some guarantee of income; and the guarantors will of course decide the method of work to be adopted by the nurse-midwives they employ. The old ideal of giving the village women sufficient training for them to undertake midwifery in addition to their usual home duties in their villages is, with few exceptions, found impracticable, and the village nurse-midwife of the future must be a professional. But in most rural areas we can only advance slowly; the advance during the past ten years has been immense. There is room, therefore, for the work both of the Rural Midwives Association and of the Association for Promoting the Training and Supply of Midwives; and it is to be hoped they may yet see their way, with their influential backing, to join forces, to economize their expenses and to increase their influence.

The difference between these two Associations

is also shown in the fact that the Associations for Promoting the Training and Supply of Midwives pay the whole expenses of training (in 1909 thirty-four) midwives, except those trained on behalf of county nursing associations and county councils, and keep in touch with them afterwards; whereas the Rural Midwives Association act mostly as the intermediary, being repaid by their members, or by local nursing associations, nearly the whole cost of training some ninety-five women in 1909, of whom, however, they lose sight at the end of their contract term of three years. Both bodies now give their nurses general training, the Rural Midwives' Association aiming at seven to sixteen months in addition to the midwifery training.

At the same time it is well to remember Miss Broadwood's Cottage Benefit Nursing Association, which works only on the Holt-Ockley or resident system; while the Queen Victoria's Jubilee Institute for Nurses has a midwives committee which, through the admirable county organization of the Institute, includes in its survey the village nurses trained by all three of these bodies. A general amalgamation, in alliance with the Queen's Jubilee Institute, is an end much to be desired.

THE MIDWIVES BILL, 1910.

Twenty-seven women, heads of training schools or other institutions, directly concerned with the work of midwives, have addressed to the Lord President of the Council a memorial from the Incorporated Midwives Institute as to the following clauses of the Midwives Bill, 1910:—

1. Clause 1. The Institute to have a second representative, not of necessity a midwife, on the Central Midwives Board.
2. Clause 7. Date of annual registration to be the same as that of notification of intention to practise.
3. Clause 11 (1) will dissuade medical men from employing midwives as monthly nurses.
4. Clause 11 (2). A week, instead of two days, should be allowed in which to notify change of address.
5. Clause 13. Local Supervising Authorities should have power to give direct grants in aid of maintenance as well as training of midwives.
6. Clause 15 will tempt unmarried women to go for confinement to houses not kept by midwives in order to escape inspection. Inspection of lying-in homes "is to a great extent a question for a Public Health Act, and not a Midwives Act." The requirement of medical aid is an "accident," not a case of destitution, and should be paid for by the Local Supervising Authority, not by the Guardians.

In reply, Lord Wolverhampton promises to consider these proposals, but points out that any

considerable amendments may jeopardize the passing of the Bill.

With regard to Clause 11 it may be noted that any midwife wishing to be employed as a monthly nurse by a doctor who objects to this clause has only then and there to notify to the Local Supervising Authority her intention to practise in the locality, and she will be under no further obligation; the medical man is then responsible for the whole case. But the clause is a real safeguard against a midwife practising without any supervision, either by the Local Supervising Authority or by a medical man.

The proposal for the Local Supervising Authorities directly to maintain midwives would be a precedent for the far more necessary maintenance of medical men, and could not well be entertained at present. But the Departmental Committee pointed out in their report that the Guardians have this power under the Poor Law Amendment Act, 1848. It is significant that this fact is not mentioned in the recent circular of the Local Government Board to Guardians on the subject of this Act.

NATIONAL ASSOCIATION FOR THE PREVENTION OF CONSUMPTION AND OTHER FORMS OF TUBERCULOSIS.

THE National Association for the Prevention of Consumption and other forms of Tuberculosis, which up to the present has held its annual meetings in London, has this summer convened the eleventh annual meeting at Edinburgh.

At the same date as the annual meeting, and under the auspices of the Association, a conference will be held regarding consumption, especially the questions as to its causation and prevention. Professor Osler, M.D., F.R.S., Regius Professor of Medicine at Oxford, will preside.

In connection with the conference there will be a Tuberculosis Exhibition, including the exhibition of the National Association.

The annual meeting will take place in the U.F. Assembly Hall, on Monday, July 4th. The conference will be held in Rainy Hall, New College, on Monday, July 4th, and Tuesday, July 5th.

The exhibition will be held in the New College Buildings, Mound, and will continue for a week from July 1st to July 9th inclusive.

The annual meeting will be open to the general public. The conference will be open to members of the Association and (by special card to be obtained from the secretaries) to all medical practitioners and representatives of public health departments and local authorities. Membership of the Association is constituted by payment of 5s. (minimum subscription).

The Tuberculosis Exhibition will be open each day to the public entirely free of charge.

The chairman of the executive committee is Sir Alexander Christison, Bart.; the hon. treasurer is R. W. Philip, Esq., M.D.; the hon. secretaries are W. Leslie Lyall, Esq., M.B., Geo. A. Mackay, Esq., Local Government Board, and James Miller, Esq., M.D.

SCIENTIFIC RESEARCH.

IN connection with the annual grant voted by Parliament in aid of scientific investigations concerning the causes and processes of disease, Mr. Burns, the President of the Local Government Board, has authorised the following special researches:—

1. A continuation of an investigation into protracted and recurrent infection in enteric fever, by Dr. Theodore Thomson, Medical Inspector of the Board, in conjunction with Dr. Ledingham of the Lister Institute.

2. A continuation of an investigation into protracted and recurrent infection in diphtheria, by Dr. Theodore Thomson and Dr. C. J. Thomas.

3. A continuation of an investigation into flies as carriers of infection by Dr. Monckton Copeman, Medical Inspector of the Board, in conjunction with Dr. Graham Smith and Mr. Merriman of the University of Cambridge, Dr. Nicholl of the Lister Institute, and Dr. Bernstein of the Bacteriological Laboratory, Westminster Hospital.

4. A continuation of an investigation on the injurious gases evolved during artificial illumination, by Dr. J. Wade, D.Sc., of Guy's Hospital.

5. A preliminary inquiry into the relationship of certain special types of bacteria to the diarrhoea of infants, by Dr. C. J. Lewis of Birmingham, Dr. Sheila M. Ross of Manchester, Dr. Thomas Orr of Shrewsbury, and Dr. R. A. O'Brien of the Lister Institute.

SCHOOL DUST.—Dust in schools, as elsewhere, consists of:—1. Inorganic or mineral matter derived from the roads outside, brought in on children's boots, and from the chalk and wear of the materials inside the school. This is comparatively unimportant. 2. Organic dust, derived from the children's bodies, scales from the skin, hair, bacteria, etc. This dust is important; it is decomposable, and so becomes foul if not removed; it may also contain germs of disease. The close, stuffy odour, so obvious in a class-room, especially if the windows are closed, is due to this organic dust. Hence the more free the school from dust the healthier it is. For this reason it is important to limit the number of maps, pictures, paper, etc., hanging on the walls, and to see that the furniture and fittings are as far as possible so designed as not to harbour dust.—*Annual Report of Dr. Sowden, Medical Officer of Health, East Ham.*

REVIEWS.

THE HYGIENE OF SCHOOL LIFE. By Ralph Crowley, M.D., M.R.C.P. London: Methuen and Co., 1910. Price 3s. 6d. net.

As medical officer to one of the most enterprising and public-spirited Local Education Authorities in the country, Dr. Crowley has enjoyed the advantage of an everyday practical experience of the questions on which he writes, and his book is distinguished by the mark of authority that belongs only to writings that come from the inside. The volume is not bulky—it contains, including index, not more than 403 pages—but it is comprehensive, and there is no subject of importance in school hygiene omitted from Dr. Crowley's suggestive and illuminating treatment.

After an introductory chapter on the history of medical inspection and the duties of a school medical officer, the author devotes three chapters to the physical condition of the child, in which he gives an admirably lucid and concise account of the chief ailments found in school children. A chapter on the methods of medical inspection is followed by three chapters on feeble-minded and defective children, and a chapter is given to each of the following subjects:—Infant schools, the treatment of school children, the provision of school meals, school baths and bathing, physical exercises and games, and the open-air recovery school. The important subject of the relation between the school and infectious disease is discussed in three chapters, three chapters are devoted to the school buildings, while in the concluding chapter the author considers the respective spheres of the parent and the State in relation to the child. The book includes a good index, seventeen illustrations, and an appendix containing a selection of the more important official documents dealing with school hygiene.

Dr. Crowley treats his subject in an eminently practical way. His aim is to get something done. He sees that defective physical conditions of various kinds stand in the way of that full development of our children's character and intelligence that we as a nation are spending annually many millions to secure, and he endeavours to show how these conditions may be removed. His book, informative and suggestive, will be found helpful and stimulating not only by school doctors but also by teachers and members of Education Authorities. It is free from technicalities, and can readily be followed by the non-medical reader. From an administrative point of view it is the best book on school hygiene with which we are acquainted, and we strongly advise all school doctors not only to read the book themselves but to recommend their committee members to read it also.

PROCEEDINGS OF THE SOCIETY OF MEDICAL OFFICERS OF HEALTH.

FOUNDED 1856.

RECONSTRUCTED 1888.

INCORPORATED 1892.

Southern Branch.—Minutes of meeting, held at Town Hall, Portsmouth, on June 3rd, 1910. Present: Drs. Willoughby (president), Bushnell, Fraser, Gibson, Griffiths, Lauder, Lyster, and Stott.

The minutes of the previous meeting having been read and confirmed, consideration was given to various matters which had been referred by the Society, and the following resolutions were passed unanimously:—

1. The method of nominating the President of the Society—

- (i) That each Branch should have the option of sending in the name of its member whom they would wish to see next president.

- (ii) That, other things being approximately equal, some regard should be had to rotation of Branches in proportion to numbers: (this would have the effect of giving a proper proportion of vice-presidents to each Branch).

- (iii) That the council of the Society, being proportionately representative of the Branches, should nominate one from among the names sent in by the Branches for election at the general meeting.

2. Poor Law Reform—

This Branch supports the resolution of the General Purposes Committee.

3. Disinfectants—

- (i) That this Branch is of opinion that every medical officer of health should endeavour to spread among the public of his district a more correct knowledge of the use of disinfectants, chemical or otherwise.

- (ii) That this Branch considers that steam disinfection should be undertaken free of charge in cases where in the opinion of the medical officer of health it is necessary.

- (iii) That this Branch considers that disinfection of premises should be undertaken free of charge in cases where in the opinion of medical officer of health it is necessary.

- (iv) That the resolutions with regard to disinfection which may be agreed to by the Society be sent to all local sanitary authorities.

4. Diphtheria—

- (i) That while this Branch is in agreement with the sentiments of (a) (b) (c) and (d),

it considers it inadvisable for the council to issue a circular or take any action in the matter, but is of opinion that each medical officer of health should be left to act according to his discretion.

- (ii) That this Branch agrees with (e) as amended by the General Purposes Committee, and considers that each local authority should carry out such steps as are advised by the medical officer of health.

5. The establishment of laboratories—

The Branch, being ignorant of what it is asked to consider, requests further information on this subject.

Midland Branch.—The annual meeting of this Branch will (by the kind invitation of Dr. John Robertson) be held on Thursday, July 7th, 1910, at the Salterley Grange Sanatorium, Cheltenham.

A convenient train (with restaurant car) leaves Birmingham at 1.45 p.m., arriving at Cheltenham at 2.47. For members arriving by this train Dr. Robertson is kindly offering to provide conveyances, providing that they intimate to him by July 4th their intentions of so doing. Members arriving by other trains can best reach the Sanatorium by cab or tram to Leckhampton, from which the Sanatorium can be reached in 30 minutes by a stiff climb. The members will view the Sanatorium, and Dr. Robertson has kindly offered to provide tea.

Afterwards the annual meeting will be held, the agenda for which is as follows:—

1. To appoint officers and council for the ensuing year.
2. Arrangements for next session.
3. Vote of thanks to the Corporation of Birmingham for lending the Branch a committee room.
4. Matter referred to the Branch: The method of nominating the President of the Society.
5. Any other business.

(Any member willing to read a paper or to open a discussion at a meeting next session is requested to communicate with the hon. secretary.)

A convenient return train leaves Cheltenham at 6.12 p.m., arriving at Birmingham at 7.15 p.m.

THE HYGIENIC ADVANTAGES OF CLOGS.—In view of the large number of children with defective foot-wear, I would point out that, speaking generally, clogs, the familiar foot-wear of Lancashire working-class children, are far superior hygienically to boots. The latter are too frequently inferior in quality and are ineffective in keeping the feet dry.—*Annual Report of Dr. Burnet, Medical Officer of Health, Bury.*

OBITUARY.

PROFESSOR ROBERT KOCH.

THE world has sustained a severe loss in the death of Robert Koch, which took place at Baden-Baden on May 27th from arterio-sclerosis and myocarditis. Koch's genius was of the kind that transcends frontiers, and as the fruits of his splendid achievements in preventive medicine have been reaped in all countries, there is no country in which his name is not held in honour. For many years he was an honorary fellow of the Society of Medical Officers of Health, and though his work is well known to all who are engaged in preventive medicine, it may not be superfluous to give the following brief notes of his career.

Robert Koch was born in 1843, at Clausthal, in the Hartz Mountains, and received his medical training at the University of Göttingen, where he graduated in 1866. For a short time he held the post of house physician to the Hamburg General Hospital, and then entered into general practice, first at Langenhagen, near Hanover, and subsequently at Rakwitz. In 1872 he was appointed district officer of health at Wallstein, in the province of Posen, where he remained eight years. At Wallstein he began his research work. He first devoted himself to the improvement of bacteriological technique, and by his introduction of solid nutrient media he made the modern science of bacteriology possible. In 1876 he published his paper on the etiology of anthrax, in which he announced the isolation of the bacillus and formulated the canons ("Koch's postulates"), the fulfilment of which is necessary to establish the causal relation of a micro-organism to a disease; and this paper was followed in 1878 by his essay on "Wound Infections," in which he appeared as a strenuous champion of the surgical methods of Lister. In 1880 this essay was translated into English by Sir Watson Cheyne and published by the new Sydenham Society under the title "Investigations into the Etiology of Traumatic Infective Diseases." In 1880 he was appointed to a position in the German Imperial Health Office, where he was soon joined by Loeffler and Gaffky, who became his first assistants. His first official labours were devoted to improving the methods of disinfection in use at that time, but he soon turned his attention to tuberculosis, and in 1882 he published his discovery of the tubercle bacillus. In the following year he was commissioned by the German Government to visit Egypt and India to study the etiology of cholera, and when in Calcutta he discovered the cholera bacillus.

In 1890 Koch was unfortunately induced by his friends to put forward his newly discovered tuberculin as a remedy for tuberculosis, and his announcement was followed by a great pilgrimage

of tuberculous patients from all parts of the world to Berlin. The disappointments that ensued gave rise to a reaction of feeling in the profession against the new remedy, and Koch's authority was seriously impaired. Fortunately, however, he lived long enough to see tuberculin firmly established as an agent of great diagnostic value, and, when properly employed, of considerable use in the treatment of tuberculosis.

In 1897 Koch was engaged by the British Government to investigate the rinderpest in South Africa, and in 1898 he visited Italy at the request of the Italian Government to study the etiology and prevention of malaria. In 1901 he attended the British Congress on Tuberculosis and made his famous declaration on the distinctions he thought he had demonstrated between bovine and human tuberculosis. The extensive researches that were immediately prosecuted in various countries showed that Koch's views were erroneous, but he held to his position, with slight modifications, to the last. In 1905 he was awarded the Nobel prize and delivered an address at Stockholm on "How the Fight Against Tuberculosis Now Stands."

Robert Koch was one of the intellectual giants of the nineteenth century, and his name stands high amongst those who have revealed to us the secrets of Nature. He had the defects of his qualities, and the strenuous thrusting character that brought him success drove him also to make mistakes, which, however, were of small moment compared with the enormous value of the benefits he conferred upon the human race.

COMMEMORATION DAY AT LIVINGSTONE COLLEGE.—At the Commemoration Day proceedings at Livingstone College on Saturday, June 11th, 1910, the Principal (Dr. C. F. Harford) drew attention to the statement of the aims and objects of Livingstone College, showing the vital necessity for medical training for those going abroad as missionaries, both for the preservation of their own health and for relieving the natives by whom they are surrounded, and who are cut off from any qualified medical assistance. Although Livingstone College students could not call themselves "medical missionaries," they knew how to apply their knowledge, whilst at the same time they recognized their limitations. He desired above all to emphasize the great importance of Livingstone College training as enabling students to join in the great campaign against malaria and other tropical diseases. Professor Ronald Ross, in his address (which he had prepared for the Commemoration Day proceedings), extracts from which were read in his absence by the Principal, expressed the opinion that the missionary of to-day should, like the priest of old, be a healer both of the mind and of the body; and in address-

ing the meeting in commemoration of the greatest of explorers, travellers, and perhaps civilizers, he hoped that missionaries might again come to the front in connection with the remarkable development of science which had been witnessed during the last ten years with regard to malaria and other insect-borne diseases. After alluding to the means by which the extent of malaria in any given district might be ascertained, he spoke of the measures that could be adopted for combating the disease, whether by giving quinine to the children, or by helping in the extermination of mosquitoes, or by providing protection from mosquito bites. He alluded to the great success that had attended anti-malarial measures, stating that the disease had been practically banished in Ismailia, Durban, Khartoum, Klang and many other isolated spots, and that it had been greatly reduced in Italy, Panama, the Federated Malay States and elsewhere.

A HIGHLAND MEDICAL OFFICER'S HEROISM.—A Lochbroom correspondent of the *Scotsman* writes:—"Dr. Gunn, medical officer of the parish of Lochbroom, in response to a call to a keeper's house some twenty-five miles distant, left in the early morning cycling. Before he had gone far a gale sprang up, which gradually increased to a hurricane. Sheets of rain came down in the valleys. On the hill-tops and mountain ridges snow fell, and sweeping downwards melted into coldest sleet. A stormier day has seldom been experienced in the district. The keeper's house was reached after a trying journey. But that was not all. Dr. Gunn left behind him a patient who, if not visited that night, would be in imminent danger. To cycle back, or, indeed, to cycle at all, was quite out of the question, but to return somehow was a necessity of which Dr. Gunn had never lost sight. By this time the day had worn into evening. To walk back by the road would mean not reaching home until well into the following morning. To take a short cut over the hills was the only possible course. Securing, therefore, a trustworthy guide, Dr. Gunn walked out into the late evening and on to the mountain side and over it, and through the darkest night and wildest he walked or scrambled somehow over a famous spur of Benmore Coigach called the Coigach Rock. The mountain is based on the rock in question, which rises sheer for many hundred feet out of the sea. There is no path, and so dangerous was the route taken by the doctor and his guide in the night that only men of nerve would dare try it in daylight. With almost superhuman strength the worthy doctor pushed forward and arrived at the house of his suffering patient in a state verging on collapse, but rewarded by the sense of having done his duty and saved a life."

LAW REPORTS.

HOUSE OF LORDS.

April 8th, 1910.

BEFORE LORD LOREBURN, L.C., THE EARL OF HALSBURY, AND LORDS JAMES OF HEREFORD, ATKINSON, COLLINS AND SHAW.

AIRDRIE MAGISTRATES AND COATBRIDGE MAGISTRATES *v.* LANARK COUNTY COUNCIL.

Rivers Pollution Prevention Acts, 1876 and 1893.—Stream Turned into Sewer—Pollution.

Natural burns and streams which discharge into a river, and which have been covered in and used for the discharge of sewage for a number of years, are nevertheless "streams" within the meaning of the Rivers Pollution Prevention Act, 1876, and local authorities will be restrained from continuing to discharge crude sewage matter into them and treating them as sewers.

This was an appeal from the First Division of the Court of Session, Scotland, and arose in connection with proceedings taken by the County Council of Lanark against the Town Councils of Airdrie and Coatbridge, to obtain a declaration that these latter councils were committing an offence against Section 3 of the Rivers Pollution Act, 1876, and that they should be restrained from so doing.

It was alleged that these councils allowed the town sewage to pass into certain small streams in a crude state, and that those streams afterwards flowed through part of the County of Lanark into the River Clyde. The defence was that the small streams had long ago been turned into, and were practically, sewers. They were covered in, and it was contended that no offence had been committed, because they were in fact sewers and not streams within the meaning of the Act. The First Division decided that these burns were still streams, and that the defendant councils were each guilty of an offence.

A "stream" is defined by the Act as including "rivers, streams, canals, lakes and watercourses other than watercourses at the passing of the Act mainly used as sewers and emptying directly into the sea or tidal waters." There is also a provision in the Act saving the discharge of sewage into streams which discharge existed at the time of the passing of the Act, providing the person doing so uses the best practicable means to render the sewage harmless.

The House of Lords dismissed both appeals, intimating that the argument for the appellants was quite hopeless. The object of the Act was to prevent streams being turned into sewers. These were undoubtedly streams which the appellant councils were fouling, and they had not brought themselves within any of the exceptions or excuses provided in the Act.

[Full report in Law Reports, 1910, A.C. 286.]

COURT OF APPEAL.

June 17th, 1910.

BEFORE COZENS HARDY, M.R., FARWELL AND KENNEDY, L.JJ.

HOBBS *v.* WINCHESTER CORPORATION.

Public Health Act, 1875, Sections 116, 117, 308.—Seizure of Unsound Meat—Vendor Unaware of Unsoundness—Right to Compensation—"In Default."

A person who sells unsound meat, although he and his servants were unaware thereof and could not by reasonable examination have discovered the fact, is nevertheless a person in default, and is not entitled to recover any compensation under Section 308 of the Public Health Act, 1875.

This was an appeal from a judgment of CHANNELL, J., reported at p. 306 ante, and the appeal was allowed.

The action was brought on an award made under Section 308 of the Public Health Act, 1875, by which the plaintiff was awarded £1,518 as compensation in consequence of the costs he had been put to and the damage caused to his trade by reason of the defendant corporation having seized certain unsound meat and afterwards unsuccessfully prosecuted him. CHANNELL, J., entered judgment for the plaintiff for £818 11s. 9d. He held that the fact that the meat was unsound did not make the plaintiff in default within the meaning of Section 308 of the Public Health Act, 1875, unless it could be shown that the plaintiff knew the meat to be unsound or could have discovered it by reasonable inspection. As to the items of compensation, he felt bound to follow the case of *Walshaw v. Brighthouse Corporation* (1899), 2 Q.B. 286, with much of which he did not agree.

The facts of the case are set out in the previous report (p. 306 ante). Section 308 provides as follows:—"Where any person sustains any damage by reason of the exercise of any of the powers of this Act in relation to any matter as to which he is not himself in default, full compensation shall be made to such person by the local authority exercising such powers, and any dispute as to the fact of damage or amount of compensation shall be settled by arbitration."

The view taken by CHANNELL, J., was that in order to convict a person under Section 117 of the Public Health Act, 1875, it was necessary to prove guilty knowledge on his part. The Justices had taken the same view and had dismissed the summons. In the Court of Appeal it was held that such proof was not required. This was the only point argued, and the question as to the correctness of the case of *Walshaw v. Brighthouse Corporation* was left undecided, but the Court intimated that it was not to be taken that they agreed with it.

COZENS HARDY, M.R., in giving judgment, said the object of Sections 116 and 117 of the Public Health Act, 1875, was to prevent danger to public health by the sale of meat in an unwholesome state for human consumption. The question raised was whether the offence was complete by the sale of meat unfit for human consumption, or whether it was necessary to prove that the butcher knew it was unfit. It seemed plain, both on the true construction and on the authorities, that the offence was complete when the meat was exposed for sale, and that it was no use for the butcher to say that he himself was unaware, and that his men, having regard to their position in life, could not have discovered, that the meat was unsound. His Lordship then reviewed the authorities at length, and concluded by pointing out that the Legislature trusted to the good sense of the magistrates, who would not send a man to prison on a summons when neither he nor his servants were aware of the condition of the meat, and might impose only a nominal penalty. In his view the plaintiff was in default and entitled to no compensation.

FARWELL and KENNEDY, L.JJ., concurred.

[For a fuller report see *The Times* of June 21st.]

"KARMO-MARGARINE" ON WRAPPER.—At Clerkenwell Police Court on June 14th a test case was raised by summons under the Margarine Act, 1907, and it was stated that the intention of the parties was to take the matter to the High Court. The point was as to whether, in addition to the word "Margarine" on a wrapper containing margarine, other printed matter might be used. The wrapper in question had "Karmo-Margarine" printed on it. The Magistrate convicted and inflicted a nominal penalty.

DISEASED MEAT AT SLAUGHTER-HOUSE.—At East Ham Police Court on June 16th Henry Lawrence Cockerell, a slaughterer, was summoned for having on his premises a diseased carcase of a cow intended for the food of man. For the defence it was said, and evidence was called to show, that the defendant had no interest in the animal except that he was paid 4s. for slaughtering it, that it showed no signs of disease before it was killed, and that the inspector walked in just after it had been killed and before the disease had been discovered. The inspector would have been sent for as soon as the disease was discovered. It was contended that there was no evidence that the carcase was intended for the food of man. The defendant was convicted, and fined £20 and £5 15s. costs.

THE Rutland County Council have appointed Dr. C. Rolleston county medical officer of health and school medical officer.

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Public Health

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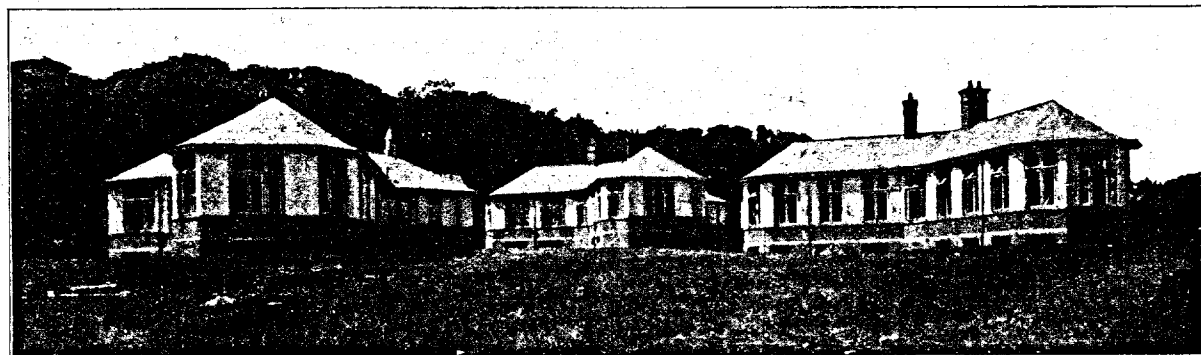
THE REFORM OF DEATH CERTIFICATION.

THE Coroners' Law and Death Certification (Amendment) Bill, which was presented to the House of Commons on April 27th by Sir William Collins, is a measure of great importance not only to the medical profession but also to the general public. The Bill, which is printed in full in the *British Medical Journal* of July 9th, is based on the recommendations of the Departmental Committee on Coroners' Law of 1908, and the Select Committee on Death Certification of 1893, and if passed it will introduce some important reforms that have long been demanded by medical officers of health. In some respects, however, the Bill falls short of the recommendations of the two committees, and in these respects it is defective and requires amendment. The provisions of the Bill that are of most immediate interest to medical officers of health are those contained in Part II, which deals with the registration and certification of death and burial. The defects of the present system were exposed by the Select Committee of 1893, the medical members of which were the present Lord Ilkeston, Sir Charles Cameron, and Dr. Farquharson; and the evidence the committee adduced amply justified their finding that "the present law of death certification offers every opportunity for premature burial and every facility for concealment of crime." The committee were convinced that many deaths occur every year from foul play and criminal neglect that remains undetected, and in view of the grave dangers they brought to light it is surprising that hitherto no official action has been taken on their report. But, apart from the prevention of crime, an accurate system of certification and registration is needed as a basis for trustworthy national and local vital statistics, upon which public health work so largely depends; it is well known that under the present system the statistics relating to certain

diseases are seriously untrustworthy. Some of the more important recommendations of the committee are embodied in Sir William Collins's Bill, which requires that no death shall be registered without a certificate signed by a medical practitioner or by a coroner, after holding an inquiry or inquest; that before giving a death certificate a medical practitioner shall personally inspect and identify the body and certify to the fact of death as well as to its cause; that the death certificate shall be sent by the practitioner direct to the registrar; that no person shall bury a dead body without notifying the burial within five days to the registrar; that stillbirths shall be registered.

These reforms will increase the responsibilities of medical practitioners in the matter of death certification, and it is unfortunate that the Bill contains no provision for carrying into effect the opinion expressed by the Select Committee that, in accordance with the precedent of the Infectious Diseases (Notification) Act, a practitioner should be entitled to a fee for the important service he renders to the State in issuing a death certificate.

It is to be regretted also that no provision is made in the Bill for the appointment of medical registrars. This reform, which was suggested by Dr. Farr as long ago as 1864, would do much to improve the accuracy and scientific value of death certification, and although it is not included among the recommendations of the Select Committee, it is referred to favourably in their report. The suggestion is not that all registrars should possess a medical qualification, but that in each district there should be a medical chief registrar who should inquire into cases of defective certification. There would be obvious advantages in entrusting these duties to the medical officer of health, who being in touch with the local practitioners and with local conditions generally, is exceptionally well placed for obtaining the required information.



THE ROYAL VICTORIA HOSPITAL FOR CONSUMPTION, EDINBURGH.
Exterior View of Ward-Pavilions.

A COMPLETE ANTI-TUBERCULOSIS ORGANIZATION FOR LONDON: THE DISPENSARY SYSTEM.*

By D. J. WILLIAMSON, M.D.,
Medical Officer Paddington and Kensington Dispensary
for the Prevention of Consumption.

I HAVE to thank you for the honour you have done me in asking me to read a paper to this important meeting of your Society on the Dispensary System as a means of putting into force an efficient anti-tuberculosis movement in this Metropolis. We are, I take it, on the eve of some epoch-making developments in our administrative control of this disease.

Since Koch's discovery in 1882, which classified tuberculosis as a preventable disease, surprisingly little has been done on the whole in this country to prevent the spread of infection. The same was true of other countries till within quite recent years, but during the first ten years of this twentieth century France, Germany and the United States have shot ahead with lightning rapidity, and left us more or less in the lurch. There are, however, many evidences that this period of inactivity is over, and that the country has at last wakened up to the fact that something needs to be done, and that on a large scale.

Now there is a great danger that schemes may be put on foot at this time which are the result of a partial and one-sided consideration of the needs of the problem. For instance, on the assumption that the eradication of tuberculosis consists in the proper treatment of all those affected, it might be supposed that the provision of sufficient sanatorium accommodation would meet the needs of the problem in any great centre of population such as London.

* Read before the Metropolitan Branch of the Society of Medical Officers of Health, June 1st, 1910.

But this is not the case. The control and eradication of tuberculosis means far more than the treatment of a certain limited number of patients, and we must from the very outset take a broad view and gain a comprehensive understanding of the actual extent and the true needs of the problem.

Let us first of all recognize the fact that our aim is, or should be, not merely the alleviation of the symptoms, nor even the prolongation of the lives, of a certain number of cases, but the total eradication of the disease from the community. And it is in the light of this ambition that all our measures past and present and future must be judged. We must be continually asking ourselves: "Does this or that measure fulfil these conditions and assist in the final eradication of tuberculosis, or does it merely temporize with the state of affairs and waste our time and money?"

Now the eradication of any disease depends on two main principles:—

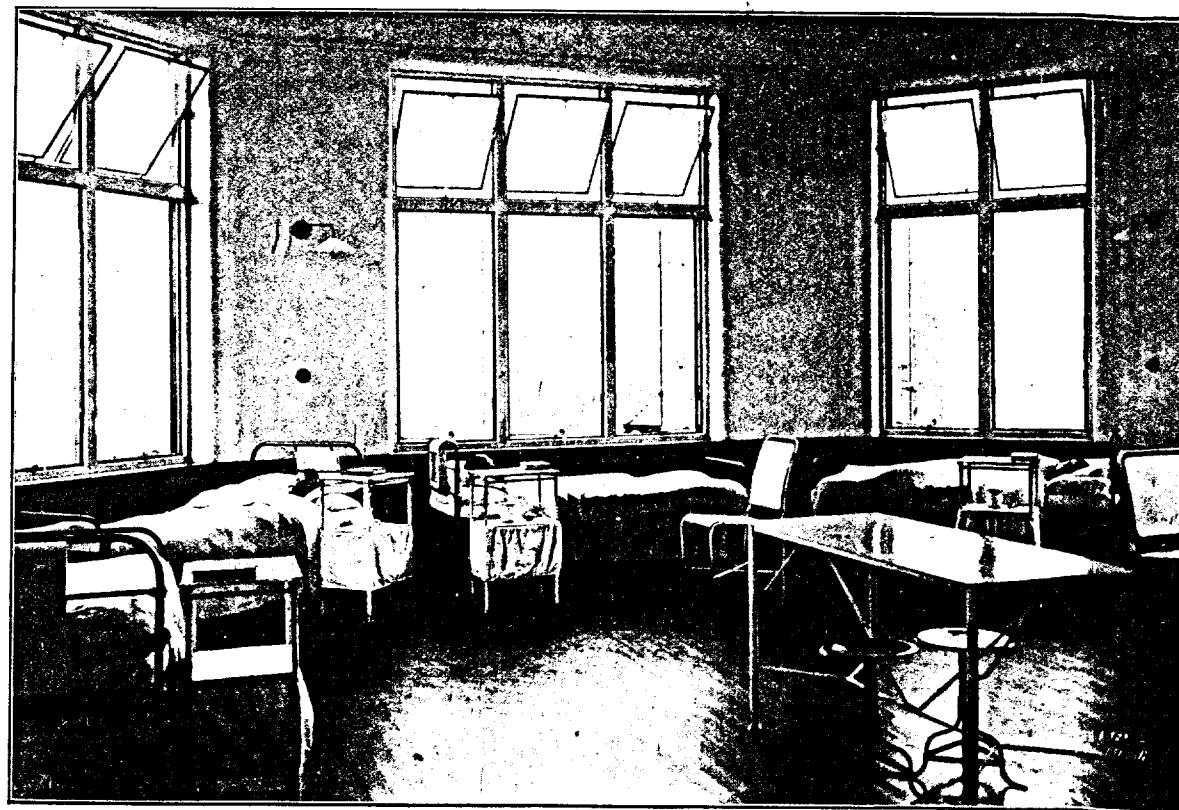
1. The cure of those already affected by the disease; and
2. The safeguarding of others from infection.

Past efforts have been almost entirely concerned with the treatment of those already infected, and very little attention has been given to preventive measures. Yet preventive measures offer the most obvious and reasonable means of eradicating the disease. For if preventive measures could be successfully and universally carried out, it follows that tuberculosis would cease to exist when the last person at present affected had died. If the treatment of all persons affected by the disease would lead to the cure of these persons, then treatment would certainly form a very powerful factor in the eradication of tuberculosis from the community, and there would be justification

for the large sums of money which have been spent on it in the past.

But unfortunately this is only true of an extremely small percentage of cases, or at least of the cases who come for advice to our hospital and out-patient departments. The great majority of these cases are past the curable stage, and the treatment of them, even when successful, has merely the effect of prolonging their lives. The prolongation of the lives of consumptives may occasionally have the effect of enabling, for instance, a consumptive father to support his family for an extra year or two,

of every five consumptives four, or 80 per cent., have probably got beyond the stage when treatment can be expected to result in a permanent cure, leaving 20 per cent. curable. I am speaking here only of the "definite" cases of consumption, *i.e.*, those who would be diagnosed by the average doctor by the aid of physical signs alone. The total number of such "definite" cases is stated by different authorities as from three to ten times that of the annual mortality. Taking the mean of these figures, we can safely say that there are five times as many cases living in any district as die of the disease in that district



THE ROYAL VICTORIA HOSPITAL FOR CONSUMPTION, EDINBURGH.
Interior View of one of the Wards.

perhaps until the children are old enough to take care of themselves, but there is always the great danger that the prolongation of life may merely mean the extension of the time during which a patient may be infecting his friends. As the treatment of patients in the past has been usually given without any attempt being made to prevent the patient infecting his friends, it is quite reasonable to suppose that such treatment has done more harm than good.

Now the proportion of early, and therefore curable, cases to those who have got beyond this stage is at a guess 1:4, or, in other words,

during one year. Thus in London, where the mortality from phthisis in 1908 was 6,246, or, roughly, 6,000, there would be 30,000 consumptives living who had reached this stage of "definiteness," of whom, as we have just said, 20 per cent., or some 6,000, are curable, and 80 per cent., or 24,000, incurable.

It must, however, be recognized that by the time the tubercle bacillus has caused sufficient tissue reaction and changes in the lungs for its presence to be diagnosed clinically with anything like certainty, the disease must be already somewhat advanced. It is therefore probable

that the annual mortality might be safely multiplied by ten or even twenty to find the total number of persons in whose lungs the tubercle bacilli have found a lodgment and are developing.

Even these figures, though they may sound enormous, are nothing compared to the figures which have been actually found in the post-mortem room. Thus Hughes Bennett found healed tubercle in the lungs of from one-third to one-half of *all* the individuals who die after the age of forty. While the observations of Rogié and Boudet, made at the Salpêtrière Hospital in Paris, amongst individuals generally above the age of seventy, showed the proportion in such persons to be respectively half and four-fifths.

Let us, however, be content for the moment with the low figure of ten times the annual mortality as representing the total number of persons in whose lungs there are foci of potentially active tuberculosis.

Then in London, with a mortality of 6,000, we have at least 60,000 such persons. Of these we have seen that 24,000 are incurable. This leaves 36,000 persons who are curable if discovered and put under treatment at once. Of these 36,000 curable cases, only some 6,000 belong to the definite class in whom the disease is sufficiently advanced to show itself by characteristic symptoms and physical signs. The question for us to decide is whether the remaining 30,000 are to be left alone until such time as the fatal symptoms begin to show themselves. It is this policy of *laissez faire* which has characterized our past measures. If we mean to make an organized effort to eradicate the disease from the community, it is imperative that we should search out these 30,000 indefinite cases and put them under proper treatment or surveillance.

But it may be well asked: "How are they to be found if they complain of no symptoms, and if their physical signs are so indefinite?"

Experience teaches us that with only a few exceptions tuberculosis is a domestic disease, and that in the great majority of cases infection takes place in the home. That means that most of these 30,000 infected persons will be found amongst the relatives of the more definitely consumptive cases. Hence the great importance (1) of examining all the relatives of every patient known to have the disease; (2) of looking with suspicion on the most indefinite physical signs if they occur in a person related to a consumptive patient; and (3) of treating

such a person as a consumptive at once without waiting for more definite physical signs to appear.

These remarks apply with particular force to children, especially those of about school age. A very large percentage of children become infected with the tubercle bacillus, as is shown by the high percentage of children found to react to tuberculin tests. Thus Monti and Hamburger, working in Vienna, tested a large number of children in hospital for diphtheria, scarlet fever and other acute infections (except measles). They found that, in children aged five to six, 51 per cent. gave a positive reaction; in the seventh to tenth year 71 per cent. were found to be tuberculous, and from the eleventh to the fourteenth year of life no fewer than 94 per cent. were positive. Despite this large percentage of children known to be tuberculous the diagnosis of the disease by clinical examination presents many difficulties. It is, however, not right that we should neglect such signs of latent disease as do appear, and wait until the child grows up and develops a more evident and far more progressive form of the disease.

We have already seen that there are probably some 30,000 "definite" consumptives living in London to-day. Suppose each of them to belong to a family consisting of, on an average, five persons. Then I say what we want in London is not so much the means to treat those 30,000 definite cases (of whom, as we have seen, 24,000 are probably incurable), but a very complete organization for the examination of the 150,000 or so apparently healthy people who are related to those 30,000 patients, and for the advice, guidance, and (if necessary) treatment of any thus found to be infected. The idea of treatment is unfortunately intimately associated in the public mind with the administration of drugs, but the phrase "to put under treatment" should, I think, convey three separate ideas.

1. There is the old form of treatment—*i.e.*, by the administration of various drugs. This is nowadays practically confined to the treatment of the more advanced cases—*i.e.*, those who have got beyond the curable stage—and is the form of treatment universally carried out by the out-patient departments of our great general and chest hospitals.

It is useful for the amelioration of such symptoms as cough and hæmoptysis, but is valueless in the attempt to eradicate tuberculosis from the community.

2. There is the more modern treatment

carried out at all our up-to-date sanatoria. This consists mainly in supplying the patient with an abundance of fresh air, good food, and carefully graduated employment. The class of patient suitable for this treatment is the definite but still curable case.

In proportion as this treatment is successful—that is to say, its main object is attained (*i.e.*, the permanent cure of such patients)—it becomes valuable in its power to assist the final eradication of the disease.

3. There is that form of treatment (if treatment it may be called) which should be applied to those indefinite but suspected cases chiefly found in the families of those known to be

what is commonly called home treatment, which generally means the mere supplying of medicines to patients living at home and attending the out-patient department of a hospital. The dispensary treatment, which may be called preventive treatment, has no necessary relationship to the giving of medicine. Such treatment sounds simple, but it is in reality far more difficult than either of the other two. It needs not only the skill and science of the physician, but the close co-operation of the philanthropist, the social worker, and all charitable societies and institutions engaged in the improvement of the social welfare of London's poor. The improvement of the dwellings; the



THE ROYAL VICTORIA HOSPITAL FOR CONSUMPTION, EDINBURGH.
General View of Open-Air Shelters.

suffering from the disease. This consists in building up the suspected person's strength, increasing his individual resistance, and if possible safeguarding him from the risk of further infection. This form of treatment can only be successfully carried out by the tuberculosis dispensaries, for it needs the personal supervision of the home conditions by the doctor attending the case. The large number of such suspected cases and the indefinite character of the diagnosis render it impossible to remove them from their homes or to send them to sanatoria. It, therefore, is necessary to carry out this form of treatment in the homes themselves. This must be distinguished from

teaching of domestic economy and cookery; the inculcation of thrifty, sober and cleanly habits; the care, nourishment and education of children; and the finding of suitable employments for the breadwinners are some of the problems concerned. It may be said that these are merely the problems of prevention. That is so, with this difference—that the treatment of these suspected cases consists in our application of the general methods of prevention, not at random, but to certain definite houses and to certain definite people in those houses whom we suspect of being already infected; and with this further advantage—that the control of these preventive measures is centred in the

medical man in attendance and constitutes his treatment, the patient being kept under his surveillance permanently and examined by him from time to time to see that the disease is making no headway. Thus the patient is converted from a focus of infection into a focus of prevention.

Lest what I have said be taken to imply that I underrate the value of sanatorium treatment, let me here state emphatically my belief that for certain cases sanatorium treatment offers by far the best and possibly the only means of cure, and that in a large percentage of cases it is of some educational value. There are, however, certain facts which are commonly forgotten.

1. As before stated, only some 20 per cent. of all the definite cases of consumption are in the curable stage.

2. That many of those in this early stage are suffering from other complications, tuberculous or non-tuberculous, organic or functional, which render their treatment less effectual.

3. That a large percentage of the remainder are unsuitable for sanatorium treatment in view of their social and economic conditions. Thus to send patients to sanatoria whose families have to be supported in their absence, who will be unable to find employment on discharge, and who will live in overcrowded, airless homes with insufficient nourishment for the rest of their lives, or until such time as they are forced to go into the workhouse or infirmary, is the height of folly.

In view of these facts, my experience in Paddington has been that the difficulty lies not in finding sufficient sanatorium accommodation for my patients, but in finding cases suitable for sanatorium treatment.

I am aware that certain of the boroughs have subsidized beds in various sanatoria, and I am told that in the case of Woolwich this has had very satisfactory results. I would, however, point out that in Woolwich the position is a far more ideal one than in many of the other boroughs. The home conditions are better there, and the patients belong to a more thrifty and independent class of people. The treatment is therefore not prejudiced by a return to bad home conditions, unemployment, and semi-starvation. I believe that, taking London as whole, far more good could be done by concentrated efforts to improve the home conditions of patients than by increasing the present amount of sanatorium accommodation, and, contrary to the orthodox teaching, I

believe this to be especially true in the case of children.

To summarize, then, our requirements in London. There are some 30,000 definite cases of consumption living, of whom 6,000 are in the early stages, and of these, say, 3,000 are suitable in every way for sanatorium treatment.

Of the remaining 27,000, some 6,000 are so advanced that they will die in the course of the year. A certain number of these, say one-half, or 3,000, are living in such conditions as to be a great danger to their families, and should therefore be isolated in special hospitals for advanced cases. Between these two extremes we have 24,000 definite cases who are on the one hand unsuitable for sanatorium treatment, and on the other hand are not sufficiently dangerous to their friends (provided proper precautions be taken) to necessitate their being isolated in homes for the dying.

Besides these 24,000 definite cases, many of whom are still earning their living at different trades and occupations, there are, as we have seen, some 30,000 persons suffering from the disease in such an early or possibly latent stage that their symptoms escape observation, but who none the less require medical supervision and perhaps treatment. We have therefore altogether some 54,000 consumptives who require to be treated at home. Now this treatment cannot be efficiently carried out by our out-patient departments, for, as has already been said, it requires the personal supervision of the home conditions by the medical man in attendance. Moreover, apart from the 3,000 dying cases who should be isolated in special hospitals, there are probably some 9,000 cases permanently confined to their beds, and who cannot therefore attend an out-patient department of a hospital. The only public institution which can offer treatment based on a knowledge of the home conditions, and which will further undertake the medical examination of the relatives of all these patients is the tuberculosis dispensary. In fact, it may almost be said that any institution which does undertake these responsibilities is *ipso facto* a dispensary. Of course, for all those patients who are in such a pecuniary position as to be able to afford the constant attendance of a private doctor the general practitioner will take the place of the dispensary. We may assume that one-third of these 54,000 patients will come under this category—that is to say, that 18,000 can be dealt with by the general practitioners, but that 36,000 will require the services of the

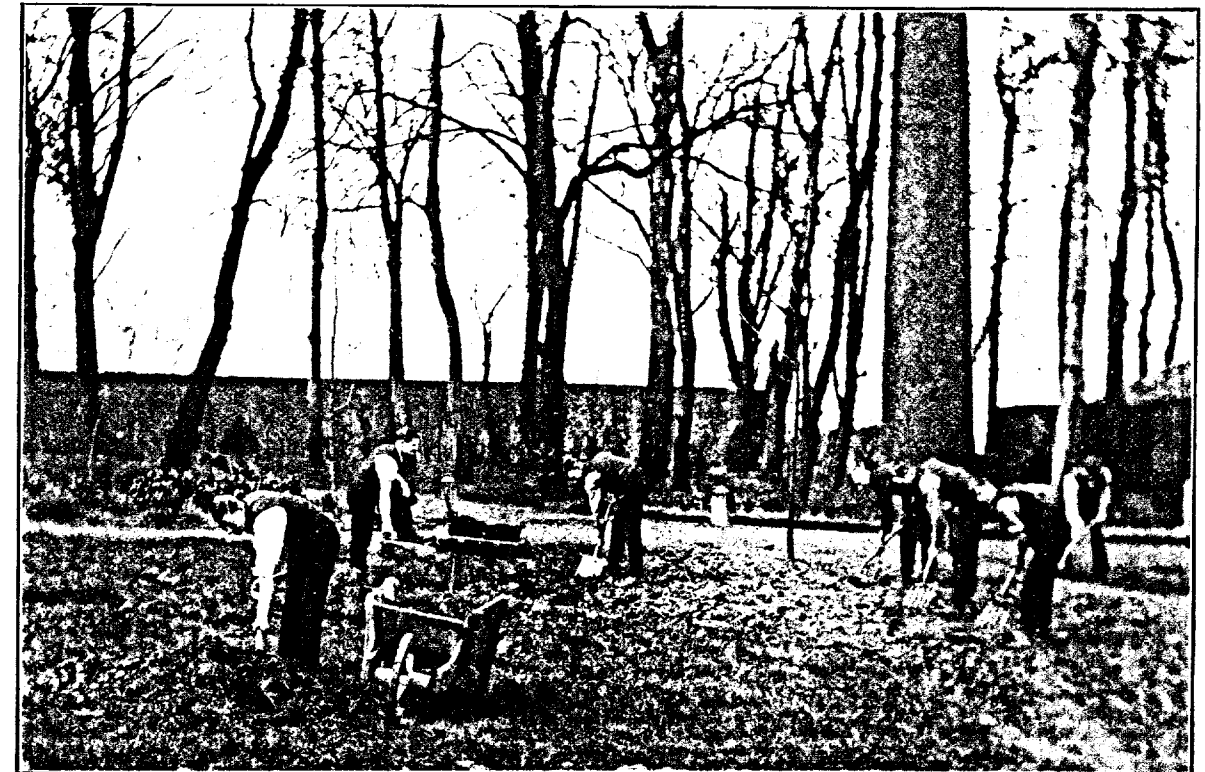
dispensary. Taking, then, 60,000 cases (ten times the mortality) as representing our total number of consumptives in London, we should have, to deal with them efficiently, the following organization:—

1. Sanatorium accommodation for the treatment, with a view to cure, of 3,000 cases.
2. Hospital accommodation for the isolation of 3,000 cases.
3. Dispensaries for the treatment and supervision (on the lines already stated) of 36,000 cases.

diture of much larger sums of money, and an organization such as this will prove to be the most economically sound method of dealing with the problem.

It would be well here to discuss rather more fully the functions of a tuberculosis dispensary, such as the Victoria Dispensary, Edinburgh, which was founded in 1887, and was therefore the pioneer in this movement, or the Paddington and Kensington Dispensary, which is as far as possible an exact copy of the former.

It is surprising how little these functions are



THE ROYAL VICTORIA HOSPITAL FOR CONSUMPTION, EDINBURGH.
Patients at work in the Grounds (Grade D).

4. Private medical attendance of the remaining 18,000 cases.

I should like here to emphasize the fact that the provision of such an organization is not a mere matter of option, and that the dispensary is not just an expensive luxury which can be employed by the richer boroughs, but that the possession of a complete organization such as this is a matter of vital importance, and that the tuberculosis dispensary is an integral part of such an organization, and is every bit as much an absolute necessity as, if not more than, the sanatorium. Moreover, the establishment of dispensaries will in the end save the expen-

understood by the general public, or even by the members of the medical profession. Thus many people think of a dispensary merely as a modified out-patient department of a hospital, but without the hospital beds; others think of it as a means of depriving the struggling general practitioner of his bread and butter; and, finally, a common error is to think of the dispensary as an isolated institution, a means in itself of dealing with the tuberculosis problem, offering a rival method of treatment to that carried out at sanatoria. All these ideas are entirely wrong, and if those holding them would take the trouble to visit a dispensary or to make

inquiries as to what are its functions and methods they would soon be undeceived.

Firstly, then, the dispensary does not pretend to be a complete means in itself of dealing with all aspects of the problem, nor does it offer any rival method of treatment to that carried out at a sanatorium. What is claimed for the dispensary is that it forms an essential link in, and in fact the fundamental basis of, any complete anti-tuberculosis organization for a given district. Secondly, it has very little in common with an out-patient department. Thirdly, in no way does it prejudice the interests of the general practitioner or of provident and other dispensaries.

The functions of a tuberculosis dispensary are expressed in the programme of the Victoria Dispensary, which runs as follows:—

1. The reception and examination of patients at the dispensary, the keeping of a record of every case, with an account of the patient's illness, history, surroundings, and present condition, the record being added to on each subsequent visit.

2. The bacteriological examination of expectoration and other discharges.

3. The instruction of patients how to treat themselves, and how to prevent or minimize the risk of infection to others.

4. The dispensing of necessary medicines, sputum bottles, disinfectants, and, where the patient's condition seems to warrant it, foodstuffs and the like.

5. The visitation of patients at their own homes by (1) a qualified medical and (2) a specially trained nurse, for the double purpose (a) of treatment and (b) of investigation into the state of the dwelling and general conditions of life and the risk of infection to others.

6. The selection of more likely patients for hospital treatment, either of early cases for sanatoria or of late cases for incurable homes, and the supervision, when necessary, of patients after discharge from hospital.

7. The guidance generally of tuberculous patients and their friends, and for inquiries from all interested persons on every question concerning tuberculosis.

These functions may be summed up as follow:—

1. The thorough examination of all patients.
2. The provision of appropriate treatment for the various classes of patients.
3. The supervision of the home conditions.
4. Co-operation with other agencies.

I.—THE EXAMINATION OF PATIENTS.

It draws its patients from the following sources:—1. Poor people suffering from coughs, etc., unable to afford treatment in the usual way, desirous of examination, advice, and treatment—that is to say, the ordinary class of hospital out-patients. 2. Cases suspected of, or suffering from, consumption sent up by the general hospitals, the private practitioners, Church and social workers, sanitary inspectors, etc., for advice or treatment, or both. 3. Contact cases—i.e., those related to, or exposed to, infection from existing tuberculous patients.

II.—THE PROVISION OF APPROPRIATE TREATMENT FOR THE VARIOUS CLASSES OF PATIENTS.

After examination, and if necessary after a prolonged period of observation, the patients thus received are sorted out as follow:—

1. The non-tuberculous are at once sent on to the general hospitals, or, if they can afford treatment, to their private doctor.

2. Those already under treatment elsewhere are not dealt with without the sanction of their present medical attendants.

3. The surgical cases of tuberculosis are (if needing treatment) sent to a suitable hospital.

4. The dying or otherwise highly infectious cases are, if living in such surroundings as to be a danger to others, removed if possible to a home for the dying or infirmary.

5. The advanced and bedridden cases, if living in such surroundings as not to be a danger to others, are treated at home.

6. The early phthisical cases are carefully considered with a view to sanatorium treatment, and if judged suitable are sent to one or other of these institutions.

7. Those cases in whom the diagnosis of tuberculosis is very doubtful, or those who are considered to be predisposed to the disease, are looked after as described in an earlier part of this paper under the heading of "Preventive Treatment"; but should any intercurrent illness occur, such as pneumonia or measles, or any gastro-intestinal disturbance, these cases are treated by their family doctor.

8. Delicate children, either phthisical or predisposed, may if considered advisable be sent away to the country, either to convalescent homes or sanatoria.

9. Such children may also be put in special open-air schools, where they may continue their education without injury to their health, and

at the same time be trained to become healthy and hygienic citizens.

10. The remaining cases—i.e., the bulk of the physical patients, too advanced or otherwise unsuitable for sanatorium treatment, and not sufficiently advanced to be sent to infirmaries or homes for the dying—are treated at the dispensary as at an out-patient department, with this difference, that the practitioner in attendance himself visits the homes and endeavours to discover and eradicate the source of infection and those unfavourable conditions which assist in the development of the disease.

the family. Any insanitary conditions are notified to the public health authorities. A schedule of inquiries is filled up by the nurse and countersigned by the medical attendant, and it will be seen that not only will the accumulation of such statistics be of great value, but that the treatment of patients, based on this knowledge of the home surroundings, pecuniary conditions, hereditary tendencies and sources of infection, must be more rational and beneficial than the treatment as given at out-patient departments and general dispensaries.



Photo by MARSHALL WANE & Co., Edinburgh.
THE ROYAL VICTORIA DISPENSARY FOR CONSUMPTION, EDINBURGH.
The "March-past" of the Relatives of a Consumptive Patient.

III.—THE SUPERVISION OF THE HOME CONDITIONS.

Both the medical man in attendance and the nurse visit the homes of the patients—the latter chiefly with a view to making certain inquiries of use for statistical purposes in relation to overcrowding, poverty, etc., and in order to give advice on the spot as to the best arrangement of rooms, distribution of sleeping accommodation and methods of preventing the spread of the disease; and the former with a view to the detection of possible sources of infection and the examination of the other members of

IV.—CO-OPERATION WITH OTHER AGENCIES.

The dispensary forms the centre for the reception and examination of all classes of patients, and for the sorting out of these different classes of patients with a view to giving them appropriate treatment.

It may here be remarked that there is no "letter system" at the dispensary, so that it is open to all who care to come for examination and advice. It may also be mentioned that each dispensary should strictly confine itself to its own district, and, in the event of dispensaries being opened in other districts, should

co-operate with them by the interchange of patients. The dispensary should form the centre or nucleus of the whole anti-tuberculosis organization in a district, the various elements composing such an organization being linked together through the dispensary.

The following diagram (Figure 1) illustrates my meaning, and is an actual representation of the scheme of operations in force at the present moment in Edinburgh. The diagram illustrates the fact that the dispensary works in harmony with the medical officer of health for the district, and that both the dispensary and the medical officer of health have at their service a

DIAGRAM ILLUSTRATING THE RELATIONSHIP BETWEEN THE DISPENSARY AND THE OTHER FACTORS IN THE ANTI-TUBERCULOSIS CAMPAIGN.

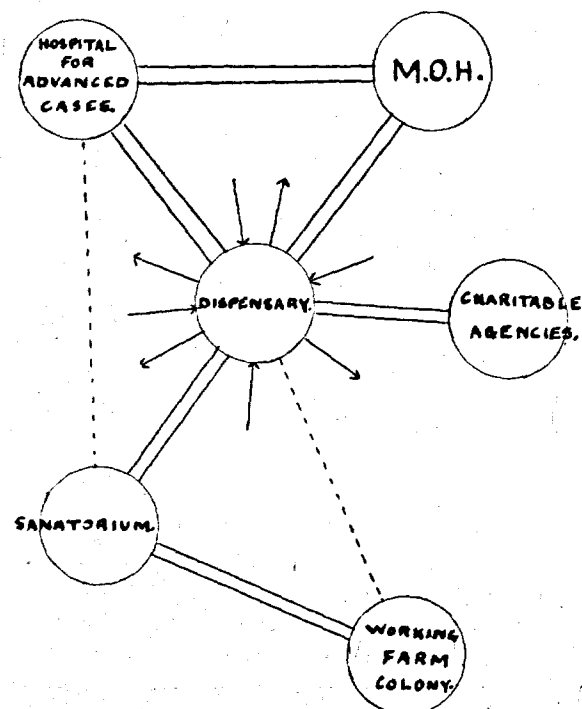


FIGURE 1.

home for the dying, an infirmary, or other accommodation which can be used for the isolation of those advanced cases who are living under such surroundings as to be a danger to the community. Again, the dispensary has at its service a sanatorium (or, it may be, beds in more than one sanatorium) to which it can send curable cases. In Edinburgh there is also now a working farm colony to which patients who have passed through the sanatorium and are fit for hard work, but for whom an immediate return to town life would be inadvisable, can be sent. Finally, the dispensary, recognizing the fact that consumption is a social disease both dependent on and causing poverty

and its associated evils, works in close co-operation with all manner of philanthropic and other bodies engaged in social work—e.g., the Church, the Charity Organization Society, the Invalid Children's Aid Association, Health Committees, the Poor-Law Guardians, etc.

The next diagram (Figure 2) shows a modification of the same scheme, more especially applicable to the dealing with tuberculous children. The parallel lines, as before, show the close co-operation which should take place between any two factors of the anti-tuberculosis organization.

DIAGRAM ILLUSTRATING THE ORGANIZATION OF THE VARIOUS FACTORS IN THE ANTI-TUBERCULOSIS CAMPAIGN DEALING WITH TUBERCULOSIS AMONG CHILDREN.

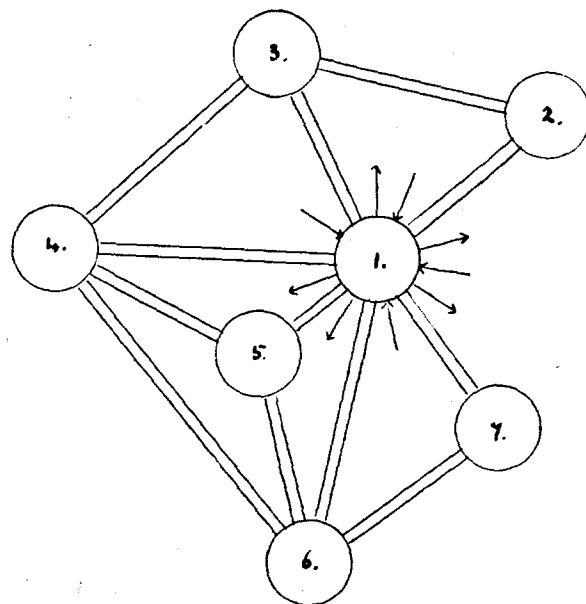


FIGURE 2.

- | | |
|--|--------------------------------------|
| 1. Dispensary. | 5. Surgical and General Hospitals. |
| 2. M.O.H. | 6. Sanatoria and Convalescent Homes. |
| 3. Isolation Hospital. | 7. Special Schools. |
| 4. Philanthropic Agencies, e.g., the Invalid Children's Aid Association. | |

A word or two of explanation is needed with reference to the co-operation (1) with the medical officer of health, (2) with the sanatorium, and (3) with the general practitioners.

1. *The Medical Officer of Health.*—In Edinburgh, where compulsory notification has been in force since 1907, all cases attending the dispensary are of course notified to the medical officer of health, and it is noteworthy that during the first year of compulsory notification in that city more than half the cases were notified by the Victoria Dispensary. In Paddington, where notification

is not in force, the dispensary has a special arrangement with the medical officer of health whereby the dispensary notifies *all* cases coming under its notice, even notifying as "suspected" those persons in whom the diagnosis is not yet certain. The medical officer of health in his turn does not send his sanitary inspectors to those cases notified by the dispensary, but leaves their supervision entirely in the hands of the medical officer and nurse attached to the dispensary, who, as we have seen, personally

sary. The sanitary inspectors, through the notification of Poor Law cases and of deaths, are able to send many suspected contact cases to the dispensary for examination. In this way the dispensary, though an independent voluntary institution, free of official trammels, becomes the most useful instrument in the hands of the medical officer of health for the prevention of disease and the supply of statistics and other information regarding the prevalence and distribution of the disease in his district.



Photo by MARSHALL WANE & Co., Edinburgh.

THE ROYAL VICTORIA DISPENSARY FOR CONSUMPTION, EDINBURGH.

The first visit of the Nurse to a typical home.

visit the homes of all cases. The notification of these cases is thus merely for the purposes of statistics. The dispensary collects (and has exceptional opportunities for collecting) various statistics and information regarding the social conditions of the district in which it is situated. This information is at the service of the medical officer of health or any others who may wish to use it. The medical officer of health undertakes the disinfection of premises after death or removal at the request of the dispen-

2. *The Sanatorium.*—As has already been said, the dispensary does not seek to compete with sanatoria in the treatment of early cases, as is often supposed. It has, however, been proved over and over again that where sanatorium treatment is not available through lack of funds, or where for one or other reason sanatorium treatment is not to be recommended, with the supervision and improvement of the home conditions as a part of the treatment given at the dispensary, country air and

sanatorium treatment are not a *sine qua non* of improvement and recovery, even in children. There is, further, this advantage—that the education of the patient is more definitely related to his home conditions, and that not only the patient but the whole family are at the same time educated. Also the patient thus treated does not suffer the discouragement and disappointment experienced by many sanatorium patients after discharge. Suitable cases are, however, sent to sanatoria, where such measures as constant discipline and graduated labour can be more readily carried out. With regard to the choice of sanatorium patients, the dispensary, by its knowledge of the home conditions, the family history, the prospect of future employment, etc., has exceptional opportunities for selecting only those in whom the benefits derived are likely to be permanent.

Again, with regard to the "after care" of patients on discharge from sanatoria, this difficulty is completely met by the dispensary, which takes charge of such patients at once, keeps them under supervision and treatment if necessary, teaches them how to apply the lessons they have learnt to their homes, and, if possible, endeavours to find them suitable employment.

Thus we see that the sanatorium benefits in every way by co-operation with the dispensary, having more selected patients sent to it, and being assured that the beneficial results will not be thrown away by a return of those patients to unsatisfactory home conditions.

3. *The General Practitioners.*—It has already been stated that all cases at present under treatment by private practitioners are at once referred back to those practitioners for their sanction to the patients' attendance at the dispensary. The following is the form of letter sent out for this purpose:—

PADDINGTON DISPENSARY FOR THE
PREVENTION OF CONSUMPTION.

20 Talbot Road,
London, W.
Date.

Dear Sir,—A patient
presented self to-day with evidence of

Ascertaining that had been under
your care, I should be glad to know if you
have any objection to h attending at this
institution.

Yours faithfully,

Medical Officer.

It may here be said that the same rule is strictly observed at Paddington with regard to patients attending various hospitals, but that St. Mary's Hospital, the only large general hospital in the district, is now sending almost all its phthisical patients, with a card from the lady almoner, to the dispensary. The reason for this is that it is realized at this hospital that the conscientious treatment of consumption implies a supervision of the patients' homes, and that this cannot be done by the ordinary out-patient department.

Returning to the general practitioner, it may be said that the class of patients attended by the dispensary cannot afford more than a very occasional sixpence for a bottle of medicine, and that they frequently allow these sixpences to accumulate and in the end never pay them; so that these patients are no pecuniary loss to the general practitioner. Further, every general practitioner knows that the giving of an occasional bottle of medicine (which itself must contain only the cheapest ingredients) does no good at all, and that he cannot afford the time, and the patient cannot afford to pay him for the time, expended in visiting and attempting to improve the homes.

At the two centres in this country where such dispensaries are in operation—Edinburgh and Paddington—no complaint has been heard from the general practitioners, but, on the contrary, in both centres many patients are actually sent to the dispensaries by their medical attendants. In some cases patients are actually sent for treatment; in other cases in order that the diagnosis may be corroborated or that the sputum may be examined. It must be realized that the general practitioners of the neighbourhood have thus in their possession a means of obtaining free consultations and the free bacteriological examination of sputum.

If I may I will now give a brief outline of the development of the dispensary movement in France, Germany, the United States and the British Empire.

As already mentioned, the first dispensary was the Victoria Dispensary, which was founded in Edinburgh by Dr. R. W. Philip, the pioneer of the movement, in 1887, five years after Dr. Koch's announcement of the discovery of the tubercle bacillus, and hence the final classification of tuberculosis as a preventable disease.

This dispensary was started in a very small way by charitable enterprise, and from this humble beginning the whole scheme which is

now known all over the world as the Edinburgh System has been evolved.

At the present moment the anti-tuberculosis organization in Edinburgh consists of the following factors working harmoniously together:—

1. Compulsory notification of the disease.
2. A dispensary in the heart of the city (under voluntary management).
3. An isolation hospital for advanced cases

countries, an afterthought—the younger sister, as it has been termed, of the sanatorium—but actually the starting-point of the tuberculosis campaign in the city of Edinburgh, from which the other agencies have emerged."

Another fact worth noting is that the Local Government Board for Scotland adopted the Edinburgh system as a national scheme for that country, in a circular dated March 10th, 1906, which recommended to all local authorities



Photo by MARSHALL WANE & Co., Edinburgh.

THE ROYAL VICTORIA DISPENSARY FOR CONSUMPTION, EDINBURGH.
A Patient kept under hygienic home conditions through the Nurse's surveillance.

(these being accommodated in the City Fever Hospital).

4. A sanatorium of 100 free beds for curable cases (voluntary).

5. A working farm colony, to which certain patients are sent after passing through the sanatorium (also voluntary).

A fact worth noting with regard to the Edinburgh system is that "in Scotland the tuberculosis dispensary was not, as in some other

the establishment of dispensaries, not necessarily municipal, on similar lines. Several towns in Scotland have recently followed this advice and established dispensaries.

A third fact worth noting with regard to the anti-tuberculosis campaign in Scotland is that the work has been carried through without any special legislation, the existing public health enactments having been adapted to the special requirements of tuberculosis. Thus the same

circular stated that "pulmonary phthisis—that is, tuberculosis of the lungs, or consumption—is an infectious disease within the meaning of the Public Health (Scotland) Act, 1897." . . . "Accordingly the sections of the Public Health Act applicable to other infectious diseases are equally applicable to pulmonary phthisis, and the obligation resting on the local authorities to deal with and control infectious disease extends to pulmonary phthisis."

Again, the same circular stated: "It is open to the local authority, with the approval of the Board, to add pulmonary phthisis to the list of diseases notifiable under the Infectious Disease (Notification) Act, 1889." The result of this is that at the present moment about half the population of Scotland is under compulsory notification.

What may be taken as probably representing the result of the working of a co-ordinated system in Edinburgh with a dispensary as its foundation is the fact that during the ten years 1897 to 1906 the death-rate in that city fell from 19 per 10,000 to 11 per 10,000—a fall of 42·1 per cent., as compared with a fall of only 17·65 per cent., or from 17 per 10,000 to 14 per 10,000 during the same ten years in London.

Also the fact that during the same ten years the death-rate from phthisis in Edinburgh fell more rapidly, and at the end of ten years was lower than in any of the large towns of Scotland.

Fourteen years after the foundation of the Victoria Dispensary, or in 1901, Professor Calmette founded the first dispensary (or "preventorium," as he calls it) in France.

In 1905 (four years later) there were already more than fifty dispensaries in France, and the number was rapidly increasing. The original ones gave no medical treatment, but a great deal of material assistance. Many of the more modern ones have found it necessary to give treatment.

The first dispensary in Berlin was opened in 1904. This grew rapidly and in a short time other dispensaries were opened, so that in 1907 there were five dispensaries in Berlin with a staff of seven or eight doctors and fourteen or fifteen nurses; and in 1908 there were 175 of these institutions in various towns and cities, besides 534 dispensaries of the Society of Women in Baden (of which the first was started in 1901). This made a grand total, seven years after the first was opened, of 709 tuberculosis dispensaries in the German Empire. In 1909 this total was increased to 763. One word needs to be said here, with regard to the

German dispensaries, to explain the reason why these institutions give no actual treatment themselves. The compulsory insurance system inaugurated in 1882 by the Emperor William I. authorized (in Clause 18) the various companies to make such provision for the treatment of disease as would be likely to prevent any persons insured from becoming a permanent charge on their funds. In 1894 this was held to apply to phthisis, and the insurance companies immediately commenced to erect large numbers of sanatoria. The result was that Germany quickly had a very complete means of providing treatment for its consumptives.

Two things, however, were still lacking and necessary—firstly, the means of discovering cases in the curable stage by the examination of contacts; and, secondly, the means of supervizing and improving the home conditions.

It was to meet these requirements that the German dispensaries came into being, and they were therefore the only logical outcome of the situation in Germany at that time, as they are of a somewhat similar situation in England to-day.

In 1904, the same year that the dispensary system was started in Germany, the first dispensary or clinic was opened in New York.

The growth of this movement has been just as rapid in the United States.

In 1908 New York had ten dispensaries in various districts, linked together as the Association of Tuberculosis Clinics of the City of New York. They are very similar in their methods to the Victoria Dispensary, and they realize more fully than the Continental dispensaries the value of a co-ordinated plan of campaign, having the dispensary as its fundamental basis. Several other American cities have tuberculosis dispensaries. Thus Chicago ordered ten of these institutions straight off. Dr. Philip was at the time of the Washington Congress presented with a map of Pennsylvania showing sixty-seven dispensaries on his lines in that one State alone. The dispensary at Boston is modelled on the Victoria Dispensary, and they publish a diagram of their organization showing the various hospitals and sanatoria linked together, with the dispensary in the centre, in much the same way as I have already shown you is done in Edinburgh.

In the last year of our late King's reign His Majesty opened the King Edward Institute for Tuberculosis at Montreal. This was a dispensary modelled on the Victoria Dispensary, and Dr. Philip was present in Canada to give the

opening address. Another institution of similar character exists at Ottawa. In January, 1909, the Paddington Dispensary for the Prevention of Consumption was started. From the first it was well received by the existing institutions and local authorities. The medical officer of the borough, Dr. Dudfield, was the chairman of the provisional committee, while its treasurer was the chairman of the Provident Dispensaries Council and treasurer of St. Mary's Hospital. The committee also contained the hon. sec. of the Paddington Health Society and an organizing secretary of the Charity Organization Society.

The dispensary decided to give no material relief except through the Charity Organization Society. It thus saves a good deal of overlapping of charity, and differs slightly from all other dispensaries. During the first year 877 individual patients were examined, and 2,379 visits were paid to the patients' homes by the doctor and nurse. Several patients were sent to the dispensary by private practitioners, while St. Mary's Hospital are sending practically all their phthisical patients to us. Sanatorium treatment and the provision of extra nourishment, etc., are procured for patients through the Charity Organization Society, or through the Invalid Children's Aid Association.

The existing Phthisis Committee of the Health Society was amalgamated with the Visiting Committee of the dispensary to form a joint visiting committee, consisting mostly of ladies who undertake the work of frequently visiting some of the more necessitous cases and continuing the work of the doctor and nurse. Besides the ordinary routine work, a course of lectures was given during the winter months to the visiting committee. Social workers and health visitors from all over London attended these lectures. The dispensary also took an active part in the Tuberculosis Exhibition of the National Association. Thus the dispensary has sought to fulfil its broader outlook, *i.e.*, of being an educational centre and a bureau for the collection and distribution of information regarding the disease. The inhabitants of North Kensington expressed the wish to undertake a similar work, and as the present building is situated close to the borders of North Kensington, and as the division between the boroughs is a purely artificial one, whereas the poorer districts of Paddington and Kensington are continuous, it was decided to amalgamate and double the staff rather than take a new building. The dispensary is there-

fore now known as the Paddington and Kensington Dispensary for the Prevention of Consumption, and a second doctor has taken up his duties.

There is no doubt that the dispensary movement is going to grow in England as it has done in other countries, for the simple reason that it affords the only logical method of effectively dealing with the problem. The question is often raised as to whether such dispensaries, if started, should be municipal or voluntary. By far the best arrangement appears to us to be that the dispensary should be, as in Edinburgh and Paddington, financed and controlled by a voluntary organization, but closely linked to the public health service. This gives freedom of action, which is important in a growing institution; whilst at the same time, without adding to the already large burden on the rates, it provides the medical officer of health with an effective piece of machinery for the control and prevention of the disease in his district.

A further advantage in the dispensaries remaining voluntary is that a great deal of preventive, educational, and relief work is already undertaken by other agencies, such as health societies, philanthropic and charitable societies, etc., and a voluntary dispensary can co-operate with these agencies and assimilate much of their work. Further, there is always a great deal of secretarial work, such as indexing, etc., in connection with a dispensary. A municipal dispensary has either to leave this work undone or employ a paid clerk, whereas at a voluntary institution much of this work can be done by persons who are anxious to give their services to the cause and whose talents lie in this direction.

The difficulty of raising funds in the poorer boroughs is often mentioned as an argument in favour of the future dispensaries being municipal, but something might be done in the way of raising a large private fund, with a central committee to control it, for the establishment of dispensaries all over London. This committee would be able to subsidize some of the dispensaries in the poorer boroughs. In Edinburgh the value of the dispensary to the city has been so fully realized, together with the importance of it remaining voluntary, that the suggestion to start a municipal dispensary was recently defeated, and, instead, the city have subsidized the Victoria Dispensary to enable it still further to extend its field of operations. Of New York's ten dispensaries only one is

directly under municipal control, the others being voluntary.

One important thing to be aimed at in London is that all the dispensaries when started should be on the same lines and should confine themselves to their own boundaries, should be free of the letter system, and should co-operate with each other in the exchange of patients.

When London gets her network of dispensaries, as Berlin, New York, Chicago, and many other great cities have recently got them, the day when tuberculosis ceases to be anything but a name will have been brought appreciably nearer, and it is an evidence of the fact that this happy state of affairs is drawing nearer that you have asked me here this afternoon to explain the dispensary system to you. I can only say that it has been a great pleasure and privilege to me to have had the opportunity of doing so.

THE APPOINTMENT OF HEALTH VISITORS.—The President of the Local Government Board has introduced a Bill to enable local authorities to appoint health visitors. The Bill contains two clauses, which are as follows:—

1. (1) The local authority for the purposes of the Notification of Births Act, 1907, of any area outside London in which that Act is for the time being in force, may appoint suitable women, to be known as health visitors, for the purpose of giving to persons advice as to the proper nurture, care, and management of children under five years of age, including the promotion of cleanliness.
- (2) The qualifications to be possessed by persons appointed to be health visitors under this section shall be such as the local authority may, after consultation with their medical officer of health, require.
2. This Act may be cited as the Health Visitors Act, 1910, and shall be construed as one with the Notification of Births Act, 1907.

SALE OF PUTRID RABBITS.—At the Hereford City Police Court on July 14th a hawker was summoned for selling five rabbits which were unfit for human food. The town clerk, who appeared to prosecute, said the rabbits were sold to a woman in Friar Street for 1s. 8d. When she came to inspect them they were full of maggots. Mrs. Clara Bevan, who bought the rabbits, said the stench made her daughter vomit, and she was ill for two days afterwards. Dr. Miller said he examined seventeen rabbits, all of which were unfit for human food, and likely to cause ptomaine poisoning. The defendant, who did not appear, was fined £20 and costs, or in default three calendar months' hard labour.

PAUPERISM IN RELATION TO PHTHISIS.*

By JOHN C. McVAIL, M.D., LL.D.,
Medical Officer of Health of the County Councils of
Stirling and Dunbarton.

WHILST engaged in an investigation three years ago of Poor Law medical relief in England, at the request of the Royal Commission on the Poor Laws, the importance of the phthisis problem in respect of the working man was brought before me more urgently and impressively than ever before. The question whether phthisis is a cause of pauperism or pauperism a cause of phthisis naturally made itself prominent from the beginning of the inquiry. The answer, broadly speaking, is that phthisis causes pauperism in one generation and pauperism causes phthisis in the next. The causes of tuberculosis in the working man include hereditary tendency, unhealthy occupations and workshops, irregular work, insufficient income, exposure, misconduct, especially alcoholic abuse, affecting health and surroundings; bad housing conditions in respect of structure, for which the owner is responsible; want of ventilation and cleanliness, for which the occupier is responsible; dirty skin and dirty clothing; dietary defective as to quality, quantity, and cooking; and general ignorance and neglect of domestic economy.

Having been impoverished in one or more of these ways, the working man comes under the charge of the Poor Law. I visited a large number of houses in which phthisical paupers were being treated at home. In many of them the conditions were such as to give phthisis all the opportunity possible for the operation of its infective power. Precautions as to sputum might be attempted or neglected, and if attempted might be more perfunctory than thorough. Often, I am bound to say, a window was open—a most valuable measure—but dirty skins, clothing, furniture and floors were common. The Poor Law Authority provided the weekly dole through the relieving officer, who might either call with or send it; but even where the relieving officer called and saw conditions requiring remedy, he was not at that time in any proper correlation to the Health Authority, and the same remark applies to the district medical officer. The Poor Law officials had knowledge which it was not their duty to utilize, whilst the Public Health officials, on whom the duty lay, were without the knowledge. That, I am glad to say, is largely altered

* Read at the Tuberculosis Congress, Edinburgh, July 5th, 1910.

now, as the Poor Law medical officer is required to intimate all cases to the medical officer of health. Such were often the conditions whilst the patient lived, and there was every opportunity for sowing the seeds of infection. When he died his widow and children were in no better plight. The Poor Law would give to the widow an allowance of perhaps 2s. a week in respect of each of three children, and would tell her to go out and work to eke out this income. The children would be left alone in a city slum. The house would be dirty and unventilated, and the slops unemptied. The kitchen table would be littered with scraps of food—cold tea, bread and jam and the like, left from breakfast. The woman, on her return at night, would be too tired or too ignorant to prepare a dinner. In these ways phthisis would have found for itself no stony ground nor thorns, but good ground excellently suited for its propagation. Thus the disease is encouraged to spread from one generation to another. The system is utterly unprofitable. The widow, with her children, should be sent away from the city slum into the country. She should be allowed enough money to feed the children properly, and the Local Authority should make a point of seeing that the money is expended properly, and that the elements of cleanliness and wholesome dietary are attended to. Also the children should come under periodical medical inspection, so that their general health would be supervised and disease if possible nipped in the bud.

As regards the working man himself, the prevention of phthisis is infinitely more profitable and more practicable than the cure of phthisis. A few days ago the Chancellor of the Exchequer made in Parliament a pronouncement of the greatest possible interest and significance as bearing on the possibilities of phthisis prevention. Next year he proposes to introduce a great scheme of invalidity insurance for the working classes. It is to be contributed to by the State, by the employer, and by the worker himself or herself. It is to embrace about thirteen millions of male and female workers, or well on to one-third of the total population of the United Kingdom. If this great scheme takes due cognizance not merely of relief during invalidity but of the prevention of invalidity, a tremendous step will have been taken towards the eradication of consumption. The scheme will of course involve medical attendance during illness. It

ought also to involve an annual or biennial visit by the medical attendant, quite independently of illness. His duty should be to ascertain in this way the general conditions of health of those who are committed to his care, and he should advise them both as to restorative and as to preventive measures. The condition of the house as regards cleanliness and ventilation should be noted, and the value of fresh air should be insisted on for the prevention and not merely for the treatment of consumption. Where required, a warning should be given as to any bad features in the domestic regime so far as bearing on health. All this should be in supplement to the inspection of factories and workshops which is already being increasingly practised.

As concerns isolation and cure of existing cases of the disease, I am of opinion that more attention should be given than at present to the boarding out of suitable patients. In country cottages, boarding out of Poor Law children and of certain classes of the mentally defective is already practised, with most admirable results. It could well be extended to many cases of phthisis. Many an old woman whose family has grown up and left her, and who is living in a little cottage in the country, could receive a boarder of this sort, say a working-class girl, who could sit out of doors in the garden, or on the roadside, or in a field during the day, or might have a little shelter provided for her if necessary, and could take such exercise as her condition permitted.

In speaking of the work done by the Poor Law, I should have mentioned that in large urban unions in England hundreds of cases of advanced phthisis are now removed to the union infirmaries, and in this way the spread of infection cannot but be diminished. Each case removed is a benefit to those who are left at home, as the risks of sputum infection are at once stopped, but the family should not be left without supervision. The Poor Law medical officer should call periodically to see whether they remain well, and their home conditions should be under systematic inspection; at the same time the allowance made by the Guardians should be adequate to provide them with proper food. On these lines a very decided advance can be made in the prevention and control of tuberculosis amongst the working classes.

DR. A. BANKS RAFFLE, medical officer to the South Shields Education Committee, was called to the Bar at Gray's Inn on July 8th.

PREVENTIVE MEASURES AND THE ADMINISTRATIVE CONTROL OF TUBERCULOSIS.*

By H. SCURFIELD, M.D., C.M., D.P.H.,
Medical Officer of Health for the City of Sheffield.

AS regards preventive measures, I suppose we shall all agree that if the whole population were well fed, well housed and able to lead healthy lives—in other words, if destitution of adults and children were abolished, we should have little difficulty in dealing with the rapidly decreasing amount of infectious material and stamping out tuberculosis.

Again, I suppose it may be said, from the experience of post-mortems, that the danger is not so much of contracting infection, but of contracting infections of such degree that our systems cannot successfully deal with them.

If the extra-healthy life of a sanatorium can deal successfully with an infection that has made considerable progress, it follows that an ordinarily healthy life ought to be capable of dealing with infections of minor degree.

I imagine most of us agree that infection usually comes from a human source.

With regard to milk, I will only say that, although most children apparently consume bovine tubercle bacilli without ill effects, in the interests of those who do not as well as in the interests of agriculture I hope a well-considered scheme for the extirpation of bovine tuberculosis on the lines adopted in Denmark will shortly be instituted in this country.

I will now pass on to measures for dealing with recognizable human infections.

The great thing is to have a comprehensive scheme, and for this purpose we want compulsory notification, and, as an aid to it, free examination of the sputum for tubercle bacilli; home-visiting of notified cases by visitors on the look out for other cases among the "contacts"; visiting of work-places where necessary, and, as a result of these visits, disinfection and removal of defects; with suitable hospital accommodation for the various stages of the disease.

I cannot do better than describe the Sheffield system in order to show to what extent we approach completeness.

EXAMINATION OF SPUTUM.

An arrangement has been made with the Bacteriological Department of the Sheffield University by which any practitioner can have specimens of sputum examined free of charge.

* A paper read at the Conference of the National Association for the Prevention of Consumption, at Edinburgh on July 4th, 1910.

HOME-VISITING.

When a case of tuberculosis of the lungs is notified, a special inspector visits and obtains the history of the case. He leaves printed advice, gives an order for a pocket spittoon, disinfected if necessary, sees that nuisances or defects in the house are dealt with, enquires as to occupation and place of work, etc. As a result it may be necessary to disinfect or deal with defects at the workshop, or report to H.M. Inspector of Factories. The printed reports of the Inspector, giving the family history, are filed at the Health Office.

Much of the subsequent visiting is done by the Queen Victoria district nurses in return for a subscription from the Sheffield Corporation. There are fifteen district nurses, and each sends in a weekly report of her visits and matters requiring attention. The matters which she is specially asked to note are:—Rooms requiring disinfection; cases wishing removal to Corporation hospital; cases removed, or which ought to be removed, to Union hospitals; changes of address; cases in overcrowded or dirty houses; failure to comply with instructions; other occupants of houses showing symptoms.

EXAMINATION OF "CONTACTS."

As regards delicate "contacts," if they are of school age, the nurse is asked to send them to the school medical officer for examination; if not of school age, to advise them to consult their medical adviser or go to the hospital out-patient department. I am hopeful that something may be done in the way of special consulting hours at the hospitals for chest cases and suspected "contacts."

If a more complete examination of "contacts" is found advisable, it will be necessary to appoint one or more medical men for this purpose. In Sheffield it means the examination of the members of about 700 families annually. If it is advisable to have a medical examination of all the "contacts," how often should it be repeated? It is obvious that in a slowly developing disease like consumption a "contact" who shows no signs in January may show signs in April, even although the source of infection has been removed to a sanatorium.

I should like to have some information with regard to the Edinburgh system, as to how many complete families are examined every year, how often the same family is re-examined, and what percentage of the estimated number of infected households it is found possible to deal with in this manner. For my own part, I

think it is sufficient for the nurse to keep the family "on the alert" for members who look delicate or who have coughs, etc., and especially to "rub in" the necessity for all the "contacts" or other members of the family leading healthy lives. Even under present conditions we may conclude that most "contacts," if they become infected, succeed in grappling successfully with the infection, because the number of deaths annually remains stationary, or shows a slight decrease, while the population increases. In other words, each victim to consumption bequeaths, on the average, a fatal legacy to one person only.

Important as examination of the "contacts" may be, it must be more important to deal with the actual "infecting" cases at the home—firstly, by educating them how not to infect, and for this purpose a short period of training at a hospital is far more efficacious than any amount of advice and domestic visiting; secondly, by removing them to hospitals for advanced cases when they have reached that stage of the disease which renders them dangerous occupants of a home with limited accommodation, no matter how careful they may be. Dr. Newsholme has produced evidence tending to show that the isolation in workhouse hospitals of advanced cases has been the most powerful factor in the decline of the consumption death-rate in recent years. I append a table giving the Sheffield statistics with regard to this matter.

Delicate "contacts" may be suitable for the open-air school or for convalescent homes. I hope part of the grant allocated by the Sheffield Council to sending consumptives to sanatoria will shortly be utilized for sending delicate "contacts" to convalescent homes. Undoubted consumptives found among the "contacts" are of course treated as ordinary notified cases.

HOSPITALS FOR SHORT PERIODS OF EDUCATIONAL TREATMENT.

Hospitals are provided by the Corporation of Sheffield for short periods of treatment for consumptives at any stage of the disease except the last.

By the short period of treatment it is hoped to educate the patient how to live without infecting others, to give the relatives a rest and a chance of increasing their resistance to the disease, to enable the home to be disinfected, and to select by the best possible method curable cases to be sent on for prolonged treatment at a sanatorium. I would here lay special

emphasis on the valuable educational effect of visiting-day.

SANATORIUM TREATMENT.

Sheffield has no sanatorium of its own, and £1,000 is put in the estimates for sending patients to other sanatoria. At present, there being no invalidity insurance scheme, we could not fill a 40-bed sanatorium with suitable cases from Sheffield. It might be more satisfactory to have a sanatorium of our own, one advantage in having the sanatorium directly connected with the complete scheme being that the preventive side may not be lost sight of. Thus, in many sanatoria, when the patient leaves he has not been educated, and he knows no more than when admitted how to deal with his sputum.

HOSPITALS FOR ADVANCED CASES.

If after the short period of treatment the patient is obviously going downhill, is at an advanced stage of the disease, and cannot have a bedroom to himself at home and has no means, every effort is made to get him persuaded to go straight into one of the Union hospitals, where there are separate wards for consumptives. The Union hospitals, therefore, provide for the most dangerous of the advanced cases. Compulsory power of removal would be useful in a few cases, but it is not likely to be granted for removal to a hospital administered under the Poor Law.

AFTER-CARE.

The cases which return from hospitals or sanatoria to their homes continue to be visited by the nurses. If cured, their names are removed from the list. There is, of course, the difficulty of finding work. The Guild of Help does what it can. An after-care committee cannot meet this difficulty until the great question of the better organization of the labour market as a whole has been completed.

NO NEED FOR ADDITIONAL MEDICAL INSTITUTION IN THE FORM OF A VOLUNTARY TUBERCULOSIS DISPENSARY IN SHEFFIELD.

As things have developed in Sheffield, a dispensary would be no advantage. The sub-department of the medical officer of health becomes in fact the dispensary and the bureau of information with regard to consumptives, and can do everything that a dispensary can do. The addition of a dispensary would only cause overlapping and duplication of work by the necessity for cross-reporting and a double system of registers and records. At present all the information is in one office.

The out-patient departments at both hospitals co-operate in the scheme.

We do not wish it to be thought that consumption is a thing to be shelved on to a special dispensary, and with which other medical institutions have no concern. All hospital wards and out-patient departments, both medical and surgical, will have to treat consumptives from time to time for complications; district nurses will be asked to visit them, and the Guardians will have to provide for them and also for their relatives if the breadwinner is in hospital. All these bodies must feel that the prevention of consumption is their business, and become allies in the campaign. I can well imagine that special out-patient hours for consumptives, or suspected consumptives, may be thought, in some towns, preferable to establishing a new medical charitable institution. Such out-patient consultations could be restricted to the use of delicate "contacts," or of patients unable to pay for a consultation in the case of whom the medical attendant desires a second opinion. The great thing is that the scheme should be comprehensive. It is too much to expect that each town will work out its salvation in exactly the same way.

One of the weak spots in the scheme is that the breadwinner of the family usually remains at work until the disease is past the curable stage. Although the Guardians co-operate by allowing outdoor relief while the breadwinner is at a sanatorium, this defect in the scheme can only be met adequately by invalidity insurance.

OTHER MEASURES.

In addition to the general measures to increase the resistance of the individual by the prevention of destitution and by rendering a healthy life possible, and special measures for dealing with consumptives, there are two other matters which require attention.

BY-LAW AGAINST SPITTING.

In the first place, the campaign against spitting on the floor should be pushed vigorously. It is probably easier to stop everybody spitting than to stop consumptives spitting, and, however perfect the system, many cases will develop an infectious expectoration before being notified.

We have in force in Sheffield the usual by-law, which runs as follows:—

"No person shall spit on the floor, sides or wall of any public carriage, or of any public hall, public waiting-room, or place of public entertainment, whether admission

thereto be obtained upon payment or not, or of any enclosed and covered market."

The prohibition ought to be extended to the insides of all buildings used in common, such as workshops, sale-shops, public-houses, etc., and also footpaths. It is surely not too much to ask people to spit in the roadway or gutter. If spitting generally is dealt with, the consumptive becomes less of a marked man, and it would be a good plan if chronic bronchitics used pocket spittoons.

OCCUPATIONAL CAUSES OF CONSUMPTION.

The second point is that more attention should be given to the effect of occupations in making people liable to die from consumption. Men are nearly always more liable than women. Is this due to the greater abuse of alcohol and to spitting in workshops? In seaports the male death-rate is not much higher than the female, owing to the more healthy occupations. In inland factory towns the male death-rate is frequently double the female. In places like Dundee, where many women are employed in factories, the female death-rate from consumption is equal to the male.

I do not think sufficient attention has yet been given in factories and workshops to the effect of occupations on health, as distinguished from the prevention of accidents.

TUBERCULOSIS OF THE LUNG AND PHTHISIS. SHEFFIELD.

Year.	Deaths.			Death-rate per 100,000 per annum in Sheffield.	Deaths of Notified Consumptives Classified Under Other Causes.
	City	Work-house Hospitals	Percentage in W. H.		
1889	552	62	11.2	168	—
1890	618	75	12.1	192	—
1891	551	81	14.7	169	—
1892	459	59	12.9	139	—
1893	552	74	13.4	165	—
1894	502	72	14.3	147	—
1895	473	76	16.1	136	—
1896	453	56	12.4	128	—
1897	522	90	17.2	146	—
1898	447	98	21.9	123	—
1899	502	117	23.4	136	—
1900	539	135	25.0	143	—
1901	580	142	24.5	141	—
1902	491	121	24.6	117	—
1903	573	142	24.8	134	—
1904	536	154	28.7	124	12
1905	490	135	27.6	111	17
1906	452	126	27.9	101	21
1907	524	146	27.9	115	24
1908	564	214	37.9	121	17
1909	523	174	33.3	111	13

DR. SCURFIELD, medical officer of health of Sheffield, has been nominated as Examiner in Preventive Medicine and Public Health at the University of Oxford for three years, from October 10th next.

ON THE MEANS OF DEALING WITH DENTAL DISEASE IN SCHOOL CHILDREN.

By STANLEY COLYER, M.D. Lond., M.R.C.P.,
Assistant to the Medical Officer of Health, Southampton.

THE problem of how to deal with the appalling condition of the teeth of school children is one that to-day is awaiting solution. Dental caries is without question the most important disease from which these children suffer, and one which is insidiously playing an important part in bringing about their physical deterioration. With such facts before one the answer would seem clear—establish school dental clinics and treat it; and this is the view which is generally held. The answer, however, is by no means so clear, for on carefully considering the question, one is brought face to face with the surprising fact that it would be impossible to do so, if for no other reason than that there are not the necessary number of available dental surgeons in the country to undertake the treatment. This is a most fortunate circumstance, and one that compels us to rely rather on the means of its prevention. It is the object of this paper to show, by a careful consideration of certain aspects of the ætiology, course and treatment of this disease, that such a means of solving the problem is not only the more rational and the more economical, but well within the range of possibility.

Unfortunately, despite the controversies that have raged over the question of the ætiology of dental caries, only certain important points have been more or less agreed upon. Thus it is agreed: firstly, that in a state of pure nature (whatever may be understood by that term) the disease does not exist; secondly, that with the advance of civilization it increases; and thirdly, that the micro-organisms of the mouth without the aid of certain pabulum are unable to induce it. A careful consideration of these points has led to the belief that the cause must lie in a certain factor, or factors, that has arisen with and increased *pari passu* with civilization; and further, that this cause lies in the food, the human organism itself playing but an indirect part. Caries thus is a food-disease, and the particular class of food with which it appears to be associated is the carbohydrate. It follows that a carbohydrate-free tooth cannot decay. This is the all-important, the critical knowledge, and the key to its prophylaxis. Such a disease does not depend upon the physical degeneration of the organism; it is an expression of

inability on the part of the organism to adapt itself to the particular environment which has been evolved during recent centuries.

If dental caries were all, we should have little need to fear it; though much of the beauty of the race would be lost, health would remain. But it is not all; it stands as the primary disease from which numerous sequelæ, or secondary diseases, may arise. It is by far the most important cause of oral sepsis—a condition the study of which during the last few years has shown that we have much to fear from it, and in it we have probably one of the most important ætiological factors of disease. Thus sepsis from the mouth may pass along the mucous surfaces, and give rise to pharyngitis, otitis media, and such-like troubles: it may pass down the lymphatics of the neck and inflame the cervical glands, which later may become tuberculous; it may be swallowed, and lead to gastric and intestinal disturbances, or be absorbed into the blood stream, giving rise to such diseases as septicæmia or endocarditis. In children all these sequelæ have repeatedly been observed; but, as a general rule, the child's wonderful capacities for recuperation and adaptation are sufficient to apparently withstand altogether, or to put off until puberty, or even later, the obvious effects of a chronic septic absorption. There is, however, one condition in children with which it is undoubtedly and frequently associated, namely, general debility. This elusive state of childhood is thought by many to be due to absorption of abnormal substances from the intestine; and, if this be so, there is no condition more likely to favour its incidence than a septic mouth, whereby the whole intestinal tract is infected, and from which the body is washed with toxins and invaded by inimical microbes. Lastly, there can be no question that it influences unfavourably all acute illnesses.

It must not, however, be thought that all sufferers from oral sepsis are necessarily affected by one or more of its sequelæ; it is only the very small minority. In country districts the relative immunity of children to its effect is sufficiently striking to suggest that there are other and perhaps more important factors in the environment of city children which are leading to their physical deterioration, and for which dental caries is so often blamed. It must be also remembered that those responsible for the literature are usually physicians and surgeons attached to hospitals, who, being mostly brought into contact with diseased

individuals, are apt to take an abnormal view of the health of the nation. It is probable that the more general examination into the physical condition of the race that is now taking place by means of school medical inspection will in a few years considerably modify many at present generally accepted ideas.

It is fortunate that the results of treatment and of the prevention of dental caries are satisfactory—nay, they are so brilliant that they give promise of a rapid decrease of the disease under a properly organized scheme. Those in a position to judge believe that the zenith of this disease has passed, and that we are now witnessing its decline. This decline is noticeable chiefly among those classes who are able to take advantage of skilled advice and treatment, and even among those which cannot, the effect of voluntary health lectures or information obtained in other ways is gradually becoming evident. These facts are most encouraging, and justify the belief that there is no disease in which the control is so entirely in the hands of the public. Most probably this improvement even under present conditions would continue; but the loss of money and life to the State and the misery and unhappiness to the individual that must occur before the improvement is very marked seem to suggest that more vigorous and energetic measures should be adopted.

So far the burden of medical treatment has for the most part fallen upon the voluntary charities, which in many places have been unable to cope with it. This inability has led to the establishment by many local authorities of clinics for the treatment of certain complaints, such as ringworm and scabies, which render children unsuitable colleagues. It has been shown clearly that the State has no right, by paying certain fees for the treatment of the poor, to make use of existing voluntary charities. Even supposing that such a method were correct, it would be impossible of adoption in dealing with the dental complaints of children. Dental surgery is a specialty, and, like any other, the true practice of it is confined to specially trained practitioners. The hospitals are few, and the output of work from them is strictly dependent upon the number of students, who are themselves in process of training and are not qualified. How, then, is it possible to meet this problem?

Voluntary effort being entirely unable to cope with the treatment of this disease, it follows that if it is needful for the general health, then

the State must undertake it. Let us grant for the moment that treatment is necessary, and endeavour to estimate what such an undertaking would cost. The subjoined estimates are based upon the cost of a clinic in a certain institution in London containing 350 children, to which a paid dental surgeon has been attached for the last ten years. This officer receives £50 per annum and attends one afternoon a fortnight and works for two hours. An anaesthetist attends about six times a year and receives two guineas a visit. The actual outlay in materials cannot exceed five pounds a year. It may be noted in passing that the success of this clinic has been remarkable; and that this success is attributed to two conditions which cannot at present be made to apply to the general public, namely, compulsory and complete treatment, and compulsory prevention.

It is assumed that a dental surgeon working five hours a day and five days a week could deal with the immediate needs of 3,000 children, and that within four years, all conditions being favourable, the mouths of these children would be in comparatively good order. Four-fifths of the 7,000,000 school children in England and Wales are said to require treatment—that is, 5,600,000 children. The salary of a whole-time dental officer should be an increasing one and commence at not less than £250 per annum. The upkeep of the dental surgeries, including materials and attendance, may be put at £50 per officer. By a simple calculation it follows that 1,800 dental surgeons, or a proportional increase in number of part-time officers, would be required, and the cost of the working of the scheme would amount to £560,000 per annum. This estimate does not include the initial outlay, which may be put at £40,000. In London, where, it may be taken, 600,000 children require treatment, the scheme would require 200 dental surgeons and would cost £60,000 per annum, and the initial outlay would come to £5,000. In other words, the cost would be two shillings for each child per annum.

Apart from the costliness of the scheme, there are two other important arguments that can be brought against its immediate adoption: one is that without the individual has the knowledge of prevention, and will adopt it practically, the disease will recur with almost mathematical certainty; the other is that there is not a sufficient number of qualified dental surgeons in the country to work it. This section of the profession is still understocked, and it would be unreasonable to suppose that many

would offer themselves for the posts. It follows, therefore, that the only reasonable way to meet this disease is by way of prevention.

The prevention, as has been said, is luckily simple: it consists merely in oral cleanliness; clean teeth do not decay—this is the one fact that has been stated authoritatively by dental surgeons. But if prevention is simple it requires unflinching attention, and before its effect upon the rising generations can be seen a long-continued effort will have to be made to instil the necessary prudential habits. This, then, is the first—and in the opinion of some, the only—step that should be taken, and its results awaited before any extensive scheme of treatment is undertaken, or even thought of. Moreover, it would cost very little; all that would be required would be to train the teachers, and make it their duty to convey the information to the scholars. Once made the special knowledge and the teaching of it compulsory, and more than half the battle will have been won. Further, no doctor should in future be appointed to a post of school medical officer unless he is able to furnish evidence that he has had some training in dental diseases. By such means in a very short time a body of men and women would be formed whose example and precept would be of incalculable value. In this connection it cannot be too strongly urged that the teaching should be of a uniform, clear, and elementary character, and that the rules for prevention should be simple, dogmatic, and easily remembered.

It is impossible to estimate what the State would gain by these measures. The number of men available for the Navy and Army would increase; the importance of this one fact at the present moment, when it is well known that there is not a marked superabundance of suitable recruits, is sufficient to prove the importance of dealing with this disease. A brief extract from an official report issued from the War Office will impress this importance:—“Examination of recruiting statistics for the Army for the years 1891-1892 shows a progressive increase in the number of men rejected for loss or decay of teeth from 10·88 per 1,000 in 1891 to 49·26 per 1,000 in 1902.” The statistics for the Navy for the period of one year, January 1st to December 31st, 1902, which deal with about four-fifths of the total naval recruiting, “show about 10 per cent. rejections for defective teeth by medical officers, but do not include rejections by recruiters. The recruit for the Navy under seventeen years

of age is rejected if he has more than 7, or above seventeen years 10, teeth defective or decayed, and both classes must possess some opposing molars.”

Dr. Newsholme has shown that the number of rejections from this cause has arisen because “with the increasing demand on the population for voluntary recruits a lower stratum of society has been touched.” This may be true; but it serves to show also that the disease tends to increase as a descent is made in the social scale, and is probably due to neglect of simple hygienic measures.

Valuable as these statistics are, they can only give the rejections for the men who present themselves for medical examination; they do not include “rejections by recruiters,” nor do they include “self-rejections”—this last most probably by far the greatest number. The invaliding out of the services for similar reasons has also been an important fact to reckon with; thus, 3,000 men were invalided home during the Boer War on account of defective teeth. In this case not only is there a loss of men, but the money which has been spent upon training them has also been partly wasted. This fact is obvious, and since attention has been directed to it the Government have appointed dental surgeons not only to the Army and Navy but in some cases to the Police. In doing so the Government has acted wisely, because such men in an efficient condition are necessary for the defence of the State; and if to-morrow it were felt that the State had immediate need for its own safety of the whole of the rising generation, it would be justified in spending the necessary money on such treatment.

Fortunately, then, in this disease, if reliance can be placed upon the opinion of dental pathologists, it is not necessary to wait for the knowledge of its prophylaxis. It is discovered. Only now is it necessary to diffuse this knowledge, and thereby throw the duty of its prevention upon the individual.

THE INDUSTRIAL EMPLOYMENT OF PROSPECTIVE MOTHERS.—I was at one time of opinion that the employment in factories of prospective mothers was responsible for the conditions which result in the birth of premature or deformed children, but investigation and experience do not confirm this view; unsuitable home-work, domestic or otherwise, and the carrying of heavy loads to and from warehouses by pregnant women are much more probable causes.—*Annual Report of Dr. Bate, Medical Officer of Health, Bethnal Green.*

SOME POINTS IN SCHOOL SANITATION.*

By THOMAS F. DEWAR, M.D., D.Sc.,
Medical Officer of Health of the County of Fife.

THE excellence or imperfection of the sanitation of a school is a product of many factors. First, there are the industrial conditions of the parish or division, which markedly, if indirectly, influence the general hygienic standard. Then, associated with the industrial state and prosperity of the neighbourhood, there is the age of the school building. In the flourishing mining areas of Fifeshire—Wemyss, Beath, Glencraig, Auchterderran, Markinch, and elsewhere—one finds schools of recent erection and modern type, handsome, spacious, and beautiful to a degree. In the comparatively stagnant or slowly decaying agricultural districts, old buildings must be tolerated so long as they continue moderately fit to serve their object.

A third factor in determining the hygienic attainment of a school is the lavishness or niggardliness of the managers. Generally throughout Fifeshire it is clearly recognised by those administering education that an extremely parsimonious policy is ultimately, in many cases, an extravagant one: either by the unwise postponement of necessary repairs; by the reduced grant from undue prevalence of "colds," or other minor infectious diseases which are fostered by unwholesome conditions; or, perhaps, at a remote period, by illness and death from consumption or similar diseases which gained foothold owing to the confinement of pupils in close and dingy rooms. But not everywhere has this knowledge permeated. I note that of the schools in Fifeshire and Kinross-shire which I have found defective in some essential sanitary respect (and these are only six to eight per cent. of the whole) several are situated in parishes which have a comparatively low school-rate.

In securing healthful and wholesome conditions in the school, the most important agency of all is the personality of the head master. True, by no degree of interest in the health and welfare of his pupils can a head master make an old and ill-constructed school into a new and good one. But, short of the impossible, in a great number of the schools of Fifeshire work excellent beyond all words is done by head masters in this respect. They have made themselves not merely teachers and administrators, but, each in his school, a benign pervading influence. This, more than any other factor, more even than the excellence of design or construction of the premises, more than the School Board's desire and intention to have everything bright and clean—this, one everywhere

finds, is the essential element in securing and maintaining a high standard of school hygiene.

At the routine visits of hygienic inspection (the results of which are subsequently noted in some detail for each school) many points attracted attention beyond those recorded in the schedules. The brightness, politeness, smartness, general cleanliness and alacrity of the scholars vary very much from school to school, reflecting the children's environment both personal and material. No one can be cheerful and alert and keenly responsive when the carbonic acid in the atmosphere amounts to two parts per 1,000. In one school it was noticed that a tendril of ivy had entered by the open window high on the wall and crept for a foot or more along the interior. Here one knew without further inquiry that there had been no preventable respiratory disease; for the window, it was clear, had remained continuously open for months, to the benefit of all concerned. At another school, visited in October, the flimsy paper decorations of the previous Christmas still adorned the picture frames and lamp brackets (or would have done so had they not been so dirty). One knew, without further investigation, that there could be no real cleanliness here.

In the endeavour to secure a high standard of sanitation in school premises and their surroundings, three distinct objects have to be kept in view. The first and most important consideration is the health of the children. Since the State compels attendance at school it is obviously its duty and that of those who administer its laws to provide for the pupil the very best hygienic conditions, so that the schools shall neither aid in dissemination of the acute infectious maladies of childhood, nor, by their faulty conditions, directly excite such disorders as bronchitis, catarrh of other mucous membranes, or the various forms of headache; so that, in other words, the children who are compelled to be educated may not necessarily from time to time be compelled also to be sick. Those who most appreciate the benefits of education are those who would least think of comparing its value with that of health, and, even for educational progress, health is an essential requisite.

Next in importance to securing the health of the child is the endeavour to provide for his due comfort. Again the corollary of compulsion is a duty on the part of those compelling. The school child should live in and breathe a pleasant atmosphere, neither close and overheated on the one hand nor draughty and unduly cold on the other. He should work under such conditions of light and posture as will allow him to accomplish the maximum of work with the minimum of unnecessary effort and the avoidance of conscious strain.

The third object to be achieved by proper school sanitation is of an educative nature. Not

only is the school age the period when the mind is most impressionable, but the impressions made at that time of life are the most vivid and indelible of all. The school, therefore, should be bright and fresh, clean and wholesome, not merely to secure the bodily health and comfort of the scholars, but also as an example and education to the mind. This condition as a model for imitation should apply both to the school itself, with its furniture and apparatus, and to the accessory external buildings. There can be no doubt that the children who have the advantage of such exemplary conditions set before them will, either by conscious or by unconscious imitation, derive great benefit. They will imbibe, along with their geography, and their multiplication, golden lessons of cleanliness, its meaning and its value.

Ventilation.—From the point of view of the sanitarian, this is doubtless the most important item in school hygiene. If the ventilation is radically defective no amount of systematic cleansing, no use of disinfectants or deodorants, will keep the room sweet and pure or the children bright and well. If, on the other hand, the ventilation is excellent, the systematic cleansing will be greatly facilitated and the need of all artificial disinfectants minimised.

In order to secure the effective ventilation of schools two things are essential. The first is the provision and proper situation of channels both of inlet and of outlet of air, so that a modicum of air-current is continuously passing into, through, and from the school-room, without the occurrence of disagreeable draughts. The second is the provision of openings in windows or elsewhere so that on occasion, as during the forenoon interval, at meal hours, after school is over, and on Saturdays, a very wind may sweep through the rooms, aerating and disinfecting every nook and corner. In no case should the school work be continued without interval for more than one-and-a-half to two hours. This interval not only permits the children to expand their lungs and stretch their muscles in the open air, but also allows every school-room to be freely flushed with fresh air. If, however, the school windows are so constructed that only small louvred panes open for a few inches, one of the advantages of this interval, and an important one, is in great measure lost both to teacher and scholars. It is obvious that when schools are empty, and especially when they are being cleaned, a far more vigorous ventilation is desirable, nay, essential, than would be tolerable while teaching is in progress. Yet one finds even in new schools in Fifeshire such inadequate apertures, such meagre provision for aeration generally, that any real ventilation, in the original sense of the word, is impossible. It is satisfactory and encouraging to note that at the meeting of the last

Congress of School Hygiene (London, 1908) there were many expressions of opinion in favour of sash or casement windows made to open freely according to opportunity and occasion, and against those mechanical systems of ventilation of schools in which permanently closed windows are a requirement.

It is important that the apparatus provided for ventilation be kept in order. The duty and responsibility here lie with the head master. If it is in disrepair the School Board should be informed. If it proves disagreeable in working it should be rectified, not closed or disused. Even in summer, when the fire is not lighted, the chimney should remain open as a valuable ventilating shaft.

Heating.—The subject of heating of school-rooms is essentially associated with that of ventilation. For rural schools open fires, despite the unequal temperature which they produce, are probably on the whole the best, since they add to the function of warming the air those of warming the walls and the objects within the rooms by direct radiation and of promoting ventilation. The temperature should not be under 55 deg. F. in any part of the room. The teacher, who is actively moving about, should remember that the child is required to sit still, and that, if pupils' fingers get blue and benumbed, their fitness both for physical and mental work is necessarily impaired.

Lighting.—Windows should be too large rather than too small, since it is easy to exclude superfluous light, and since the association of light with health and of darkness and dirt with disease stands now on a scientific basis as well as on that of popular experience. Defective lighting in the schools in Fifeshire (except in a very few buildings of early date and antiquated type) is almost invariably the result of some inconvenient but apparently necessary alteration of plan, as for the provision of a new class-room, the addition of a wing, or the like.

The moral is the extreme advisability of so designing the school originally that modification or extension can be attained without injuring the accommodation initially provided. The central-hall type of school lends itself fairly well in most cases to such extension; the pavilion or "Staffordshire" type of school still more so. Where the windows are too small, and lighting (especially in winter) is thereby rendered defective, frequent cleansing and a light-washed internal wall-surface will do much to rectify the defect.

Cleansing of Schools.—Within the last few years much practical interest has been taken in this subject, and it now receives almost everywhere the attention that is its due. In their circular on the subject, issued in 1907, the Scotch Education Department indicated very clearly what in their opinion was the ideal to be aimed at and what the

* Annual Report, 1909.

minimum to be attained in this respect. Already it has come about that only some six or eight schools in Fifeshire are to be classed without qualification as "dirty." The procedure followed in school-cleaning falls naturally into three divisions:—(1) The daily damp sweeping and dusting; (2) the scrubbing of floors at intervals of a month or so, accompanied by washing of all woodwork and furniture with soap and hot water—in many of the schools of moderate size with five or six rooms the practice is to scrub the floor of one room each Saturday in rotation; and (3) the general sanitary overhaul performed at least once a year in holiday time, when no place or article should escape—blinds, ventilators, maps and lintels, chinks and crevices of all sorts receiving attention. The daily dusting should be done with widely opened doors and windows (which implies that windows should be constructed so as to open widely). So far as possible it is preferably done in the late afternoon than in the early morning. Alike as to floors and furniture, the process should be a damp one. Dry dusting merely moves the noxious particles from one place to another, and, except as regards appearance, may do more harm than good. We must all have read of the "very large parlour which was full of dust, because never swept, the which, after he had reviewed a little while, the Interpreter called for a man to sweep. Now, when he began to sweep the dust became so abundantly to fly about that Christian had almost therewith been choked. Then said the Interpreter to a damsel that stood by, 'Bring hither the water and sprinkle the room,' which, when she had done, it was swept and cleansed with pleasure." One visit to a school-room where dry dusting and sweeping is going on, the operator's head enswathed in protecting flannel, is sufficient demonstration that the process is both objectionable and fruitless.

I am well aware that in the country it is often found very difficult to find anyone who will undertake the duties of school cleaner. Sometimes the difficulty is merely one of wage, the inducement offered being inadequate or disproportionate to the time and labour required. In other cases, no suitable person can be found. In certain places, on the other hand—and they are fairly numerous—I have been informed by the head master, and seen for myself, that the work of cleaning the school is done with the greatest care and thoroughness. At Mossgreen, Boreland, Kemback, and Kilconquhar—to mention but one school in each district—the routine cleaning is performed to admiration, and visits thereto recall the verse of George Herbert—

A servant with this clause
Makes drudgery divine;
Who sweeps a room as for thy laws
Makes that and th' action fine.

Disinfection of Class-Rooms.—This is admittedly a difficult subject, for, excellent as is the intention and the underlying motive, it has to be allowed that there is a general tendency to overdo the day-to-day use of disinfectants in schools. In a school-room which I have frequent occasion to enter there is invariably a notable odour of disinfectant. Yet, when I pass my finger along the top of mouldings and door lintel, I find the dust lying thick in the accumulation of many weeks. Here, despite much outlay, there is no real cleanliness; and disinfection without initial cleanliness is not possible—it is a contradiction in terms. I frequently enter another and smaller room where no chemical disinfectant is ever used. Here no trace of dust or dirt is permitted to remain; fresh air and sunlight, abundantly admitted, complete the good work which soap and water and divine assiduity have so well begun. This room positively smells of freshness. Which of these twain (it is almost superfluous to ask) is most likely to ensure the health and well-being of those who teach and learn within its walls? The moral is evident. The use of disinfectants without work means expense without efficiency; while labour and care and light and air can themselves secure conditions so excellent that disinfectants cannot improve them!

Frequently, after the occurrence of infectious illnesses in schools, a process of old-fashioned disinfection is adopted, such as the burning of sulphur or other evil-smelling substance, to purify the air. A few hours of wide open windows, if there be breeze enough to make a current, will achieve the same object. On the occurrence of cerebro-spinal meningitis ("spotted fever"), small-pox, or typhus fever, popular anxiety is so great that it may be permissible to offer up an oblation of sulphur or formalin on the altar of public sentiment. But in the diffusion of measles, and probably also of whooping cough, simple epidemic catarrh ("cold") and influenza, the school is probably never involved, except in so far as children are gathered together in close proximity within its walls. Thus it is likely that free currents of air, sunlight, and the element of time are the most reliable factors in disinfection in such cases.

In the fourth and last issued report on the medical inspection of school children in Dunfermline, Dr. Bridge, amid much that is very valuable and suggestive, gives expression to a similar opinion. "The value of any particular disinfectant employed in the disinfection of class-rooms may be considered as small, compared with the efficient cleaning of such a room by the use of soap and water, fresh air and sunlight, assisted by the mechanical removal of dirt by scrubbing. . . . I would recommend that money should be spent on more frequent washing rather than on the

purchase of any disinfectant, however valuable it appears theoretically as a germicide."

There are on the market a number of preparations whose object is the hygienic improvement of floors. These are of two groups: those of the one are intended to give a waxy or polished surface to floors, and are more suited to halls or hospitals than to schools; the other group contains an oil as its essential principle, and tends to remove from dust its fluffy flocculent character. Its use to a great extent replaces that of damp sawdust in sweeping floors. I have had considerable experience of a preparation of this sort in schools in Fifeshire. Its application darkens the floor and gives the appearance of dampness; but I am convinced that the use of this or similar preparations facilitates cleaning in considerable degree.

Wall Surface.—In the great majority of the schools of Fifeshire the walls are wainscoted to a height of four or five feet, and covered with a white or light coloured wash above that level. The latter, if renewed every second year or thereby, is satisfactory; though in the case of new schools it would probably prove eventually to be more economical to apply a washable paint, which can be simply cleaned with water by mop or spray at any time, and, with due care, will last for many years. The walls of the class-rooms of Kennoway Public School have been treated in this way with excellent and attractive effect.

Furniture.—Desks suitable in respect of height both of seat and writing surface are necessary if the children are to work comfortably and efficiently. Further, it is desirable that the teacher should have easy access to each child, and that each pupil should be able to leave his seat without disturbing his neighbours. A third consideration, which has a pertinent bearing on the spread of infectious and other ailments, is that the available floor space should be fully utilized, so as not to crowd the children unduly. The ideal provision is a desk for each child; but the dual desk may be considered to meet the essential requirements. In many parts of Fife, especially in the country districts, desks of old pattern, long, cumbrous and unwieldy, are still in use. They are retained on the plea that they are convenient when meetings and concerts are held in the school.

Slates and Jotters.—Throughout the County of Fife the slate as an article of school use is gradually being abandoned (or retained only for plasticine modelling), scribbling books or "jotters" being used instead. A small minority of thoughtful head masters do not favour the change. While slates, it is true, may be used in a clean and proper way, it is certain that they rarely are so. So long as they are passed from pupil to pupil and "cleaned" with saliva, so long may we expect schools to share in the diffusion of whooping-cough, diphtheria and scarlet fever.

Accommodation for Coats, Cloaks and Caps.—The ideal in this respect is to have a peg for each scholar, numbered so that it may be regularly used by the same pupil. When the peg accommodation is insufficient for the number of scholars, or when (as is still found in a few schools in Fifeshire) the pegs are in the class-room instead of in the lobby or cloak-room, the tolerable minimum has not been reached.

Wash-hand Basins, Soap and Towels.—The provision of these is now all but invariable in this county. Occasionally one finds that the basins are not in regular use, or are only used by girls at the commencement of a sewing class. Towels should be dried daily and removed for washing and replaced with reasonable frequency.

Provision of Mats or Scrapers.—The latter are more fitted to withstand the tear and wear of school use. One or other should everywhere be provided. At Ballingry Infant School, where the new playground is still very wet in parts, it was grievous to see the beautiful new floor of the lobbies and central hall sadly soiled and disfigured with mud. If such an effect is produced in the mind of the sanitary visitor, how much more painfully must the condition strike the school cleaner!

Playgrounds and Shelter Sheds.—The surface of playgrounds should be reasonably smooth and thoroughly drained. Hollows should be filled up with gravel or otherwise, and particularly the well-worn places at the approaches to school doors and offices. In rural schools the provision of shelter sheds is of special importance, since many of the pupils are unable to go home (on account of distance) during the dinner hour. In Fife, the provision of such sheds is now almost universal.

Closets.—For rural schools, which are not as a rule situated in proximity to any drainage system, the automatic earth closet is theoretically the best. It requires, however, continuous supervision, and in practice is rarely found to be in good working order. Next best, if a water supply is available and drainage can be secured, is the water-closet; but a water-closet or a water-closet system which is in disrepair, inadequately supplied with water, or insufficiently looked after, speedily becomes the worst of all. The alternatives that remain are the pail-privy and the privy-midden. The latter, unless emptied and cleansed with the greatest regularity and frequency, is to be condemned. The circular of the Scotch Education Department, already mentioned, says:—"The cess-pit closet is the worst form possible for a school. The combination of ash-pit and privy, the privy-midden or privy cess-pit should everywhere be abandoned and replaced by the pail-privy." With regular attention and the use of dry earth or other deodorant, the latter can be

made quite hygienic and inoffensive. The pails should be too large rather than too small, and should be emptied at least once a week, more frequently if necessary, especially in summer. Further, it is important that the "offices" be so constructed that they can be used with comfort in other respects. They should be airy and freely ventilated. The floors and the walls should be kept clean, and the latter and the roofs painted or whitewashed. The woodwork should be scrubbed and disinfected from time to time, and replaced whenever it shows signs of decay. The exterior woodwork should be painted. For every school a urinal should be placed beside the boys' closets. Its use tends to encourage sanitary habits and to simplify the cleansing of the privy pails; while it can be constructed cheaply and kept in satisfactory condition by means of hose-pipe or flushing-pails, with but little addition to the work of the caretaker.

THE TEACHING OF HYGIENE IN ELEMENTARY SCHOOLS.

DR. ADDISON has introduced into the House of Commons a Bill making provision for the compulsory teaching of hygiene in public elementary schools. The Bill contains two clauses, which are in the following terms:—

1. (1) Each Local Education Authority shall arrange, as hereinafter provided, that during each week during the school terms simple instruction in hygiene and the care of health, suitable to the age and understanding of the children, shall be given to all children attending public elementary schools, and, in particular, shall arrange that each girl of the age of twelve years or more shall be adequately instructed in the care and feeding of infants.
- (2) The instruction as hereinbefore directed to be given shall be such as shall be approved by the Board of Education.
2. This Act shall come into operation on the 1st day of January, 1913, and shall be entitled the Instruction in Hygiene and in the Feeding and Care of Infants Act, 1910.

WASHABLE CLOTHING.—It has struck me forcibly in dealing with verminous conditions that it would be a great advance in the direction of cleanliness if the clothing of all children were made of washable materials: the filthy old cloth stuffs worn by some of the boys contrast very unfavourably with the cotton dresses of the girls.—*Annual Report of Dr. Taylor, Medical Officer of Health, Leyton.*

A MUNICIPAL SUMMER CAMPAIGN FOR THE REDUCTION OF INFANTILE MORTALITY.

From *The Cleveland (U.S.A.) Medical Journal.*

MUCH has already been done in a preliminary way to clear the ground for a municipal campaign in Cleveland. There has grown up here very friendly co-operation between the philanthropic and charitable organizations. Last summer the work undertaken by the Babies' Dispensary and Hospital in co-operation with the Board of Health, Board of Education, Milk Fund Association and many other institutions demonstrated what could really be done, and pointed the way for larger things. The campaign this season may be briefly outlined as follows: It was thought best to organize with a medical director, and an advisory committee, the committee consisting of:

1. The Director of Public Health and Sanitation.
2. A member of the Committee of Public Health and Sanitation of the Cleveland Chamber of Commerce.
3. The Director of Schools.
4. The secretary of the Milk Commission.
5. A member of the Medical Board of the Babies' Dispensary and Hospital.
6. A member of the Women's Board of the Babies' Dispensary and Hospital.

The centre of the co-operative agencies carrying on this work will be the Babies' Dispensary and Hospital of Cleveland. At the central dispensary both well and ill infants of needy parents will be cared for. The attending physicians direct the feeding and hygiene of all well babies. Only sick infants of poor parents will receive medical treatment free; all others to be strictly referred to private physicians. Pure milk will be supplied at market rates to babies under the care of the Dispensary or of private physicians if a note accompanying the baby be sent to the Dispensary. The very poor may obtain milk at a special rate, or even free if necessary.

Six branch dispensaries with attending physicians and visiting nurses will be maintained to give intelligent direction to the feeding and hygiene of well babies. These will be located at Central Friendly Inn, Alta House, West Side Cottage, Perkins Day Nursery, Kinsman and Broadway Schools. The nurses outside of the regular dispensary hours (10 to 10.30 a.m.) will visit in the homes, and help in every way to carry on the education of mothers. Infants of needy parents, too ill to be corrected by simple changes in feeding, may be referred to the Central Dispensary for treatment. There will also be an outdoor ward similar to that of last summer, thoroughly equipped as a temporary hospital for sick infants. The outdoor ward last summer forcibly called

our attention to the great need in Cleveland of a permanent hospital for babies.

A very important part of the summer work will be the distribution of milk. Milk from carefully selected, tuberculin-tested cows will be modified, or put up on order of physicians, at the milk laboratory in the Central Dispensary and distributed from there to the regular milk stations, day nurseries and kindergartens, boarding homes for babies, branch dispensaries, summer tents and general hospitals. Two milk wagons, as well as the Electric Package Co., will aid in this part of the work.

The Health Department has been asked to equip and maintain a number of tents for well babies under two years of age. These tents to be placed as far as possible, on public school grounds where the greatest amount of shade is obtainable, and in districts where congestion exists. The tents should be near an entrance to some convenient room in the school building which could be simply fitted for the reception of mothers with babies. Here the babies could receive the necessary regular examination by visiting physicians, and attention of a nurse. Conferences of physicians and nurses with the mothers should be held from time to time. These summer tents may be used as temporary milk stations if they are on the regular milk route.

The visiting physicians to the branch dispensaries and summer tents will be selected by the medical director, and the director of public health from among physicians especially interested in babies, preference to be given those having had most experience with infant feeding and hygiene. Each visiting physician is to have general supervision over his individual branch. He is expected to examine babies, write out a brief history of each, give hygienic advice, and direct the feeding. The Health Department has promised to see that the tents are properly equipped. It has given the assurance that it will furnish two of the nurses for the summer work.

As far as possible, nurses from the Visiting Nurse Association will be employed in the summer campaign. The regular corps of nurses of the Babies' Dispensary, two nurses furnished by the Health Department, one of the school nurses, and as many others as may be needed will enlist in the work of caring for the babies and of educating mothers.

The Board of Education will co-operate by allowing the use of some of the school yards and an adjoining room for branch dispensary purposes. A school nurse will also be assigned to work at one of the schools. The privilege of distributing through the school children in the congested districts a concise statement for mothers regarding the benefit to be derived from bringing their babies to the dispensaries has been extended. In

this manner a very necessary part in the education of the mothers may be carried out.

All day nurseries and kindergartens in the city will take the pure milk, and the feeding of the babies under their care will be directed by visiting physicians. It is aimed to develop the closest possible co-operation with the boarding homes for babies. These homes need the intelligent supervision, and moral suasion to keep them up to a good standard. An endeavour has already been made to direct the feeding of babies in such homes, furnish milk from the dispensary at market prices, and have the nurses give kindly advice and instruction to the matrons. The ideal of having these homes take but one baby should constantly be kept in mind.

The fresh-air camp may be used as convalescent quarters for sick babies. A limited number of selected babies may be received at the Tent Colony. Other co-operative agencies may be summarized as: Rainbow Cottage, Tuberculosis Dispensary, obstetrical dispensaries, associated charities, Hebrew Relief, Humane Society, and general hospitals and dispensaries.

In order to make this work eminently successful the active co-operation of every practising physician in the city is necessary. It should be distinctly understood that in no way can this summer campaign really undermine their private practice. On the other hand, if rightly used it will greatly enhance their value to society. Only sick babies of those who cannot afford the fee of a private physician (this will be determined by a rigid investigation of material circumstances) will be treated at the dispensary. All well babies should be kept well by supplying pure milk modified according to physicians' directions. When this sort of social service has proved its true value there is no doubt that every city worthy of a name will establish a Municipal Bureau of Infant and Child Hygiene.

DR. HUGH A. MACWEN, assistant medical officer of health, Cumberland, has been appointed medical officer of health of the County of Fife. Dr. Macwen is a son of Sir William Macwen, of Glasgow.

DR. C. E. TANGYE has been appointed medical officer of health for the rural districts of Meriden, Rugby, Solihull, Southam and Warwick, the borough of Warwick, and the urban districts of Kenilworth and Rugby, by the Joint Committee of the Mid-Warwickshire Sanitary District.

DR. KIDD, of Carnoustie, has been appointed chief medical officer under the Dundee School Board.

THE NINTH INTERNATIONAL HOUSING CONGRESS.

THIS Congress was held in Vienna on May 29th to June 3rd, 1910. We are indebted to Dr. Sidney C. Lawrence, Medical Officer of Health, Edmonton, for the following report of the Congress.

The Congress was attended by about eighty-two delegates from the United Kingdom. Representatives were present from the following local authorities:—Bury (Lancs.), Bewdley, Chatham, Dudley, Dorchester, Golder's Green, Halifax, Liverpool, Nottingham, Rochdale, Sheffield, Swansea Rural, Walsall, Bournemouth, Bath, Cambridge, Dublin, Edmonton, Hanwell, Kidderminster, Oldham, Reigate, Southall-Norwood, Tynemouth, Birmingham, Cheltenham, Derby, Darwen (Lancs.), Exeter, Harrogate, Leicester, Plymouth, Southport, Swansea Borough, West Bridgford and Windermere.

Four chief questions were submitted for the discussion of the Congress:—

1. Communal (municipal) housing policy.
2. The organization of credit for providing money to build dwellings for the people.
3. The relative merits of cottage and block.
4. The cheapening of the cost of construction.

COMMUNAL (MUNICIPAL) HOUSING POLICY.

THE BURGOMASTER OF STUTTGART, speaking in favour of leaving the housing of the working classes to private enterprise or in the hands of semi-philanthropic societies, had many supporters at the first; but, stimulated largely by the able speech of DR. VON WAGNER, the Burgomaster of Ulm, the policy of municipal land purchase and control received the endorsement of the Congress. Dr. Wagner's policy at Ulm (South Germany) is for his city to buy large areas of land and sell building sites cheaply to prospective residents, so as to defeat speculators.

M. DUFOURMANTELLE, chief secretary of the French Society for Working-Class Dwellings, said that in his opinion the necessity for a communal policy, at least in France, is not apparent; that the operation of private ventures, supported by the local authorities in accordance with the Act of April 12th, 1906, can supply building sites at low prices and money loans at a cheap rate. The intervention of the local authorities, he proposed, should take the form of guaranteeing a minimum rate of interest to building societies, savings banks, etc., who find the capital outlaid, and of granting loans at reduced rates to the same.

HERR C. GRETZSCHEL (Darmstadt) advocated a municipal policy; indeed, he suggested that in large towns a Housing Department should be created, the director of which should be a member of the local authority who is an expert on the subject; that he should be assisted by the advice of some fellow-councillors, the medical

officer of health, the chief constable, and representatives of the tenants and landlords of the place. He advocated the erection of dwellings by the local authorities themselves, if local needs are not otherwise met. He also emphasized the importance of cheap and rapid transit from the centre to the suburbs, which he thought should be under municipal control too, and the necessity of co-operation with neighbouring authorities.

HERR E. BOOK (Helsinki, Finland) reported that in his town an architect has been appointed on the staff of the Health Department for the permanent and effective supervision of the erection of dwellings, and that his authority are buying large land areas outside their present boundary. The municipal dwellings of Helsinki at present are only those of the municipal employees.

MR. R. DE FOREST (First Tenement-House Commissioner of New York) said:—"There is no municipal housing in the U.S.A., and there should be none. Americans look for individual not Governmental initiative and aid in providing homes for workers. Individual effort on philanthropic, more particularly on commercial lines, is in a large measure solving the problems of American housing. We think that authorities should confine themselves to careful regulation of the conditions under which houses are erected, and supervise sufficiently well to enforce compliance with their regulations."

PROFESSOR RAUCHBERG (Prague) advised the creation of a Housing Department in the local administrations on lines similar to those advocated by Herr Gretzschel of Darmstadt.

THE ORGANIZATION OF CREDIT FOR PROVIDING MONEY TO BUILD DWELLINGS.

This question seemed to excite the greatest interest among the German-speaking delegates.

DR. LOSTÁK (Prague) declared that the State should form a guarantee fund maintained by annual additions, such fund to be established from contributions of the local authority and other parties concerned (he does not specify who these are). This fund must always amount to at least 5 per cent. of the total loans guaranteed, and from it should be paid any loss to the lender of money on the forced realization of the property. The person for whom the home is to be built has to find at once at least 10 per cent. of the total cost of the completed dwelling, and should raise 50 per cent. by mortgage absolutely secured (first class) from savings banks, insurance offices, etc., and the remaining 40 per cent. from similar institutions or building societies (second-class loan). The institutions concerned must, if needs be, obtain the necessary legal powers to grant mortgages to the amount of 90 per cent. of the total cost of the completed dwelling, which mortgages must not be foreclosed and may be repaid by annual instalments not beginning before the completion of the dwelling, the money to be

gradually paid out, as the building progresses, for work done and materials delivered.

PROFESSOR RAUCHBERG (Prague) said the housing question was a question of "credit." The State and the local authority should both be guarantors for the security of second-class loan and interest.

MR. KARL PRIBRAM (Vienna) pointed out that at present credit on dwellings was easy to obtain up to the Austrian legal limit of half the value of the property, but that suggestions were needed as to the best way to obtain credit for the last half, that beyond "the limit of absolute security"; that if authorised to do so, leading institutions must obtain a guarantee against loss from a responsible quarter. The local authorities on whom the task of providing this guarantee is mainly incumbent have hitherto in Austria only in exceptional cases commenced a housing policy of their own, hence the State should be requested to found a fund from which building mortgages could be granted direct or form the basis of guarantees to those granting the loans.

MR. J. NOLAN (the City Planner of Cambridge, Massachusetts, U.S.A.) said the sources of credit at present available in the United States are savings banks, insurance companies and building societies. Neither the Federal Government nor any individual State makes any money advances or other effort for the purpose of erecting dwellings. (This confirms the statement of Mr. de Forest, see Question 1.) The lending institutions mentioned will lend up to 60 or 80 per cent. of a conservative valuation of the land and buildings combined. The rate of interest is from 4 to 6 per cent.

HERR STENROTH (Finland) suggested that the difficulty there of obtaining loans over 60 per cent. of the value should be overcome by local authorities lending municipal money to building societies on easy terms of repayment, such moneys being previously lent to local authorities by the State.

HERR L. H. FABER (Holland) said that in his country the lending of money for housing purposes is already provided for under the Housing Reform Act of 1902. Under this Act the State lends money at the current rate of interest to local authorities for the erection of houses for the working classes by the authorities themselves, or to building societies through the medium of the authorities. Under the same law the State has power in special cases of giving subsidies to local authorities or building societies to cover losses incurred on housing schemes. Repayment must be within fifty years. He considered that loans might be paid direct to persons in rural districts willing to build homes for themselves. In Belgium the Post Office Savings Bank lends money for erecting dwellings.

•THE RELATIVE MERITS OF COTTAGES AND BLOCKS (TENEMENTS).

MR. HENRY ALDRIDGE presented an able paper

on this subject which much interested the British delegates, who were proud to see and hear everywhere on the tour how much Europe has been influenced of late years by the example of their country. In the debate itself constant reference of a flattering kind was made by the other delegates to English views and pioneer work in improved housing. He said that Britishers, whilst acknowledging the care and foresight in town-planning of the Continent of Europe, could not but see that cottage building was preferable to tenement raising as a hygienic method of housing the poor. He rejoiced that our recent Housing and Town-Planning Act gave authorities the power to limit the number of houses per acre, and the height and the character of such houses. In his indictment of the block dwelling he made three points:—(1) The cost of the block dwelling per room in England—apart from the cost of the land—is higher than the cost of the well-built cottage; (2) the block dwelling is less healthy for the tenants; (3) the block dwelling is less favourable for the development of a moral family life. He said that the by-laws of many European towns discouraged the building of cottages by imposing absurd and unnecessary conditions regarding the construction. The cost of block dwellings in England had been much increased by the cost of clearing the sites of slum dwellings previously there, or by the necessity of using a particular site regardless of its cost. The block method of building had its vogue with us between 1850 and 1880, but now only 10 per cent. of the inhabitants of London were housed in tenements, and even in Scottish cities the improvement of traffic facilities from the centre to the suburbs was checking the erection of block dwellings. He asserted that the erection of block dwellings in German towns was responsible for the inflated price of land and an unhealthy density of population, notwithstanding their broad avenues and numerous open spaces and parks. He quoted to their disadvantage the condition of New York tenements and the health of their tenants, also those of Paris.

MM. GEORGES RISPER and EDMOND JUGE, of the French Society for the Provision of Working-Class Dwellings, emphasized the opinion that cottages are preferable to blocks, as the former dwellings assure healthier conditions for a family, and that with a view to facilitate their erection local authorities should establish cheap transport between the centre and suburbs of a town.

CAVALIERE U. G. FERRINI (Milan) expressed similar opinions in regard to the building of cottages, and stated that encouragement can be given by the construction of narrow streets (but not close building lines) in the poor neighbourhoods and the relaxation of unreasonable by-laws concerning their construction.

DR. E. FERENCZI (Budapest) proposed that the

breadth of the streets in poor districts—"cottage districts," as he termed them—need not be more than 20 to 33 feet (6 to 10 metres), but that the distance between the back additions of cottages should not be less than 20 feet; a cottage plot to be as small as 50 square metres. These dimensions are to be incorporated in a town-planning scheme for Budapest. In the suburbs of Budapest the cost of land for cottage building is equal to one-third of the cost of the dwelling itself, but he thought that by a far-sighted municipal policy this proportion might be reduced to one-tenth.

THE CHEAPENING IN THE COST OF CONSTRUCTION.

HERR ZOEBINULDER (Utrecht) considered that (1) cottage areas should be established in which current regulations as to width of road and construction of road and building might be relaxed; (2) small dwellings should be grouped round small, unpaved (!), open spaces; (3) the building of small bedrooms should be permitted if sufficient light and air is provided; (4) thin walls should be permitted where the climate allows it.

HERR W. FABARIUS (Cassel, Germany) regretted that it seemed only possible to reduce cost by methods that might render dwellings unhealthy.

M. LACAU (Paris), Member of the French Society for Erecting Working-Class Dwellings, stated that the first condition was that the working man should obtain, through the State, the use of money at a low interest, or that the State should buy large areas of land to resell as building sites, without making a profit, to would-be resident owners. He quoted the English Co-operative Tenants' scheme with approbation.

DR. H. WOLFF (Halle) pointed out that the cheapening of the cost of erection is more essential for dwellings erected for sale than for cottages built by resident owners, as those concerned in the former naturally look for a profit on the transaction. The vertical and horizontal use of a building site is thus greater in the former than the latter case.

MR. ARTHUR WILLIAMS (U.S.A.) advocated the extended use of electricity in cottages, as less danger from fire rendered insurance rates lower, cooking being cheaper and ventilation easier.

MR. HENRY ALDRIDGE (Leicester) said that four difficulties seemed to bar the way to the abandonment of the block dwelling in Europe, and that their removal would cheapen the cost of erecting cottages: (1) The stringency of building by-laws which demanded of a one or two-storeyed cottage the same expensive construction as a building four or more storeys high. Therefore a special set of cottage building by-laws should be adopted. (2) Unnecessary expenditure in road construction. Ample space should be given between two rows of cottages and a good deal of it devoted to garden frontage, not to road width. (3) The cost of the land. This can be met

by State restraint of the land jobber or greedy owner, whose extortionate profits are made at the expense of the public health; also by the purchase of large areas of land by the State, local authority, or philanthropic society to resell as sites at reasonable rates to would-be resident owners. This plan has been already entered upon by the city of Ulm, in South Germany. (4) The difficulties of distance from work or places of recreation, which can be overcome by cheap trains, tubes and railways, and the provision of parks and other open spaces when a new area is developed. The modern tendency to remove factories from the centre of cities is helpful.

The five days' stay of the British delegates in Vienna was crowded with other interesting experiences besides the debates in Congress. In rooms adjoining the Congress Hall was a small exhibition of plans, models and photographs relating to housing and town-planning. The delegates were thus made aware of numerous trials of the British housing system which are taking place at the present time in Germany and Austria. There were also models of modern block dwellings in Rome, Milan and Paris, and of new flats in German cities. On May 31st a special demonstration in English was given to the British party at the Rathaus (City Hall) of the development of Vienna, past, present and future. There town-planning is conceived on broad and magnificent lines, worthy of the capital of an empire. This was followed by the guidance of the delegates through the City Museum by the director himself, who displayed his many treasures, so highly interesting to the historian, antiquarian and musician. In the afternoon of the same day the party made a pilgrimage to the Kahlenberg, to visit part of the girdle of woods and forests which by the enterprise of the municipality is being preserved as an open space and devoted to the health excursions of Viennese citizens and their children. The area of this "rural belt" is about 11,000 acres, and the total cost is estimated at fifty million kroners (24 kroners to £1). From the heights of Kahlenberg an excellent panoramic view of Vienna was obtained, which was especially appreciated by the delegates addicted to the use of the camera, brush or pencil.

The Vienna "Rowton House" was also open for inspection; it accommodates nearly 1,000 men.

The Emperor's Jubilee Workshops building represents an interesting attempt to remedy municipally the want of workshops amongst artisans and mechanics. There are 150 workshops, and alongside a suite of 40 dwellings for the users of the workshops; the site was given, but the total cost was 1,850,000 kroners.

No one who had the good fortune to be present will ever forget the reception of the 1,200 delegates by the burgomaster of Vienna at the new Rathaus on the evening of Tuesday, May 31st. It was indeed a great gathering of "all the nations."

PROCEEDINGS OF THE SOCIETY OF MEDICAL OFFICERS OF HEALTH.

FOUNDED 1856. RECONSTRUCTED 1888.
INCORPORATED 1892.

PROVINCIAL MEETING.

THE Provincial Meeting of the Society was held at Norwich on Friday, July 1st. The following members were present:—The President, D. H. Cooper Pattin (in the chair); Drs. Willoughby, Herbert Jones, J. T. C. Nash, R. A. Lyster, H. W. Harding, J. W. Richardson, A. N. Stevens, J. W. Cook, R. C. M. Colvin Smith, F. C. Linton, D. Morley Mathieson, Sidney C. Lawrence, J. W. Hembrough, Frank Robinson, J. Spottiswoode Cameron, J. Pringle; and the Lord Mayor, Sheriff, Chief Constable and Town Clerk of Norwich, and Drs. H. H. Back, D. Turner Belding, A. W. Thomas, John Shephard, Mrs. Morley Mathieson, Mrs. Nash, Mrs. Cook, visitors.

The proceedings began at 3 p.m. in the Norwich Guildhall, when the Lord Mayor (Dr. E. E. Blyth) and the Sheriff (Mr. A. J. Young) extended a welcome to the visitors.

The Lord Mayor said it gave him the greatest possible pleasure to welcome so many learned gentlemen, although it seemed to him, from what he could gather from the newspapers, that the medical profession were taking away little by little all that made life worth living. (Laughter.) Happily they were there as municipal officers, and not as private practitioners, and he trusted their deliberations would be fruitful. Municipalities had derived immense advantage from the advice and assistance of medical officers of health, and although public expenditure had gone up the death-rate had gone down, and the general health of the citizens had been vastly improved. People had learned that cholera, small-pox, and such-like diseases were not visitations from heaven, but the effects of well-known causes, and causes that might be dealt with by regulations as to cleanliness and so forth. It could not be denied that dwellers in cities were less vigorous than their forefathers, or even their contemporaries on the countryside. There were parts of most cities, certainly there were parts of Norwich, where one could not but notice a want of vitality, pale faces, and narrow chests; and he was glad to think that through the wise action of medical officers of health and of school medical officers people would be made to understand, or at any rate would come to realize, that misery and disease were due to causes which might be obviated. In conclusion, the Lord Mayor expressed the hope that the members would have a pleasant time in Norwich.

The Sheriff endorsed the welcome of the Lord Mayor, and mentioned that the death-rate in Norwich for the previous week was the lowest

they had had for a very long time. As chairman of the Physical Care Committee he was proud to be closely in contact with the president, Dr. Cooper Pattin, and he could say that nobody could better carry out the duties in connection with the children than he did.

Dr. Cooper Pattin thanked the Lord Mayor and Sheriff for the kind welcome they had extended to the delegates. The Lord Mayor and Sheriff then withdrew, and Dr. Cooper Pattin took the chair.

The minutes of the last Provincial Meeting, held on July 24th, 1909 (see PUBLIC HEALTH, September, 1909), were taken as read, were approved, and duly signed by the President.

ELECTIONS.—The following candidates, who had been duly nominated, were balloted for, and the President declared them duly elected, viz.:—

FELLOWS.

George A. Auden, M.A., M.D., M.R.C.P., Education Department, Birmingham; D. A. Bellios, M.R.C.S., L.R.C.P., D.P.H., 109 Queen's Road, Wimbledon; E. H. Rhys Harries, M.D., D.P.H.; City Hospital, Fazakerley, Liverpool; A. G. MacDonald, M.B., C.M., D.P.H., Municipal Offices, Crewe; Rory E. McLaren, M.B., Ch.B., D.P.H., City Hospital, Fazakerley, Liverpool; James Mair, M.B., D.P.H., 33, Swan Road, Harrogate; A. H. Roberts, M.R.C.S., L.R.C.P., West Malling, Kent; F. S. Toogood, M.D., D.P.H., The Infirmary, Lewisham; H. De Carle Woodcock, M.R.C.S., D.P.H., Moorville, Beeston Hill, Leeds.

NOMINATIONS.—A list of nominations to the Fellowship was read by the Hon. Secretary.

Dr. Herbert Jones moved that the meeting convey to Sir Walter Foster their appreciation of the great honour done him by the King in creating him a baron. Sir Walter Foster, he said, had taken a prominent part in public health matters, and had worked hard to obtain security of tenure for medical officers of health.

Dr. Willoughby seconded the motion, and it was carried.

On the conclusion of the proceedings at the Guildhall, Mrs. Stuart and the Misses Colman were at home to the members of the Society. The guests were received at Carrow House, where they took tea in the conservatory, and spent a pleasant hour in seeing the pictures and other things of interest, of which a printed guide had been thoughtfully provided; and afterwards they passed on to the Abbey, where again there were further opportunities for intercourse and observation.

On Saturday, July 2nd, a meeting was held at the Guildhall at 11.30 a.m. The President presided, and at the outset the following resolution was heartily carried:—"That thanks be given to the Lord Mayor for the use of these rooms, and to Mrs. Stuart of Carrow Abbey, and the Misses Colman of Carrow House, for kindly entertaining the members on Friday."

Mr. Lincoln Sutton, Public Analyst to the City of Norwich, read a paper on "Norfolk Waters."*

* This paper will appear in a subsequent number of PUBLIC HEALTH.

At the close of the meeting the members were driven to the Heigham Works Pumping Station, whither they had been invited by the chairman and directors of the Waterworks Company. In the absence, through indisposition, of the chairman of the Company (Mr. A. R. Chamberlin), the visitors were heartily welcomed by the vice-chairman (Mr. S. Brown), the other directors present being Mr. W. H. Back, Mr. Henry Hotblack, and Mr. E. Cadge, while full information as to the work carried on was given by the consulting engineer to the Company (Mr. C. Hawkesley), the manager (Mr. W. H. Parr), and the foreman of the engineering department (Mr. R. A. Rushmore.) In an itinerary of the works, the members of the Society were joined by among others the Sheriff (Mr. A. J. Young), Mr. A. W. F. Bagge, the City Engineer (Mr. A. E. Collins), the Town Clerk (Mr. Arnold Miller), and other chief officers of the Corporation. In the course of their tour of the works the company were shown the four pumping engines, each of which is capable of pumping two million gallons per day, and the two centrifugal pumping engines used for rapidly filling the depositing tank and the filtering beds. All the engines derive their steam from Lancashire boilers, of which the works possess six. The depositing tank holds one million and a half gallons, and there are four filter-beds covering a total area of about 12,000 square yards. The water supply to the whole city approximates to three million gallons per day. Before leaving the works, the visitors were most hospitably entertained at lunch by the chairman and directors of the Waterworks Company. After lunch Mr. S. Brown submitted the health of the King, and cordial thanks were returned to the company by Dr. H. Cooper Pattin for their kindness. The healths of Mr. Parr and Mr. Hawkesley were both drunk with much heartiness.

Home Counties Branch.—The annual general meeting was held at Reigate on July 7th, by invitation of the President, Dr. A. E. Porter, medical officer of health of Reigate Borough and Rural District, who entertained the members at luncheon. Dr. and Mrs. Meredith Richards subsequently welcomed them at Walton-on-the-Hill.

Dr. Gerard Taylor, medical officer of health of Berkshire, was unanimously elected president of the Branch for the session 1910-11, and the following re-elections for another year took place:—Dr. Ashby as treasurer; Dr. Chas. Sanders and Dr. Meredith Richards as representatives on the Branch of the Council; and Dr. Sidney C. Lawrence as hon. secretary.

Midland Branch.—The annual meeting of this Branch was held on Thursday, July 7th, by the kind invitation of Dr. John Robertson, at the Salterley Grange Sanatorium, Cheltenham.

The members present were: Drs. Reginald

Green, Dryburgh Gold, Henry Handford, J. A. Codd, Henry Malet, Lawrence W. Pole, H. Gordon Smith, Joseph Cates, J. H. Garrett, John Robertson, J. W. Miller, Mabyon Read, W. Spencer Badger, T. Ridley Bailey, and E. H. Snell. Visitors: Drs. Traill, E. Dent and Mr. Kelley.

The chair was occupied by Dr. Reginald Green. Apologies for absence were received from Drs. Henry May, Barwise, Manley, Bostock Hill, and J. Orton.

The following officers and council were elected for the year 1910-11:—President: Dr. J. H. Garrett. President-elect: Dr. Henry Handford. Vice-Presidents: Drs. Alfred Hill, Henry May, Herbert Manley, and Reginald Green. Council: Drs. Barwise, George Reid, Boobyer, Henry Malet, J. Robertson, Ridley Bailey, and J. W. Miller. Representatives on the Council of the Society: Drs. Bostock Hill and John Robertson. Treasurer: Dr. Bostock Hill. Secretary: Dr. E. H. Snell.

A hearty vote of thanks was passed to the Corporation of Birmingham for their kindness in allowing the use of a committee-room for the meeting of the Branch.

Matters referred to the Branch: The method of electing the president of the Society:—It was resolved to recommend that every year each Branch should have the right to put forward the name of one of its members as a suitable occupant of the president's chair, and that from the names put forward the Council of the Society should select one name for nomination to the Society.

Dr. Robertson explained the process of selection of applicants for beds in the Sanatorium, and the after-treatment of patients. The members visited the various parts of the Sanatorium, and then partook of tea, kindly provided by Dr. Robertson. A vote of thanks to Dr. Robertson and to the Health Committee of Birmingham terminated a very pleasant afternoon.

Yorkshire Branch.—The annual outing of the Yorkshire Branch took place at Brighouse on Thursday, July 14th, when the following were present:—Dr. Martin of Brighouse (the President), and Drs. Adam (Wakefield), Forsyth (Birstall), Fry (Sowerby Bridge), Hoyle (Ripponden), Jackson (Denholme), Lawson (Hebden Bridge), Macdonald (Huddersfield), Milne (Mirfield), Moore (Huddersfield), Richmond (Wakefield), Stedman (Selby), Sutherland (Cleckheaton), Sutherland (Wakefield), Trotter (Holmfirth), Wellburn (Sowerby Bridge), and the hon. sec., J. R. Kaye (Wakefield). There was also present a number of ladies.

The following new members were elected:—Drs. Eleanor R. Sproull, J. A. Evans, N. C. Beaumont, and P. L. Sutherland.

Dr. S. G. Moore of Huddersfield was elected president for the ensuing session, and Dr. Well-

burn of Sowerby Bridge was made a vice-president. Dr. Trotter of Holmfirth was placed on the Council.

The Mayor of Brighouse (Mr. Alderman Thornton) and the Mayoress (Mrs. Atkinson) received the members, and showed their hospitality by providing an excellent luncheon. A vote of thanks was proposed by Dr. Forsyth of Birstall, seconded by Dr. Moore of Huddersfield, and supported by the Hon. Secretary (Dr. Kaye), to which the Mayor responded in a very fitting manner, and dwelt upon the expenditure of sanitary authorities in relation to life saving and the preservation of health—two factors which were, he said, beyond money calculations.

The party then proceeded to Kirkless Hall, where, fortunately, they had the honour of being conducted round the grounds by the owner, Sir George Armytage, who spared no pains in making the visit an enjoyable one. He pointed out the site of the Roman encampment, the graves of the abbesses and nuns of the ancient abbey, and also the reputed burial-place of Robin Hood, the tombstone of which bears the date 1247.

The gentlemen afterwards proceeded to inspect the new sewage works of the Huddersfield Corporation, where there are nineteen acres of land covered by elevated cinder filters on which sprinklers distribute the sewage by aid of electric power. Mr. Campbell, the borough engineer, kindly accompanied the party and described the methods of working. The ladies were taken to the public park and art gallery.

Southern Branch.—A meeting was held at the Municipal Offices, Southampton, on July 8th, 1910. Present: Drs. Willoughby (president), Cameron, Griffith, Hamilton, Harris, Hemsted, Lauder, Livingston, Lyster, Stephens, Stott, Watts, and S. Colyer (visitor).

The minutes were taken as read.

The following officers were elected for next year:—President, Dr. R. A. Lyster, Winchester; hon. sec., Dr. Fraser, Portsmouth; hon. treasurer, Dr. H. Stott, Lewes; representative to Council of Society, Dr. Lauder.

The balance-sheet for the year was examined, received, and adopted.

Some discussion took place on the financial difficulty in which the Branch was placed owing to the reduction of the allowance to 2s. 6d. per member.

It was proposed and carried: "That the attention of the Society be called to the impossibility of the Branch maintaining a satisfactory financial position unless the allowance of 2s. 6d. per member from the funds of the Society is increased to at least 4s."

• It was decided to hold meetings during next year on the first Friday of each month, except January, August, and September; the October

meeting being late, in September if more convenient.

Dr. Stott then read a paper on "An Outbreak of Enteric Fever Due to Milk," which presented numerous points of interests, the chief being that repeated outbreaks occurred after varying intervals, apparently due to a milkman, being a carrier case of long standing. This gave rise to a wide discussion, an interesting problem being stated by Dr. Stephens as to why B. Coli in oysters were more harmful than in deep-well waters.

A vote of thanks to Dr. Stott concluded the meeting.

Eastern Counties Branch.—Minutes of meeting held at the Guildhall, Norwich, on July 1st, 1910, at 2 p.m., immediately preceding the Annual Provincial Meeting of the Society. Present: Drs. Pringle (President), Cooper Pattin, Richardson, Nash, Morley Mathieson, Linton, Harding, and Stevens; also Jones and Willoughby.

The minutes of the previous meeting were taken as read.

The following resolutions were passed unanimously:—

A. "That Dr. A. M. N. Pringle be President of the Branch for another year, as it is not desirable to change yearly, and also during the past year circumstances have arisen to prevent the usual presidential address from being given."

B. "That Dr. H. Cooper Pattin be representative of the Branch for another year, as there are matters in an undecided condition which still require his attention. (Dr. Cooper Pattin notified his intention of retiring at end of year, as he will then, as ex-vice-president, be permanently a member of the Council.)"

C. "That Dr. A. N. Stevens be hon. secretary and treasurer of the Branch, in succession to Dr. H. W. Beach, who has resigned."

D. "That Dr. Beach be accorded a vote of thanks and expression of appreciation for his past services."

E. "That the next meeting of the Branch be held at Cambridge, when the presidential address will be given, the date to be arranged later by the president and hon. secretary."

F. "On the matters referred to Branches by the Council:—

"1. That the Branch recommend that the method of nominating the president of the Society be as follows:—That the nomination of the president be the privilege of the Branches in rotation, provided that it fall to the Council every fourth or fifth year, so that the Council may, if it like, nominate fellows who are not medical officers of health.

"2. *Poor Law Reform.*—That the Branch disagree with (a) and recommend (c).

"3. *Disinfectants.*—That the question be adjourned till the next meeting of the Branch.

"4. *Diphtheria*.—That the Branch agree with the principles of the Northern Branch, but leave practical application in the hands of the Council, (3) taking the place of (e)."

G. "That a vote of thanks be accorded the Lord Mayor of Norwich for the use of the committee room."

North-Western Branch.—Minutes of the North-Western Branch, held in the Memorial Hall, Chesterfield, on Friday, June 24th. Present: Dr. Herbert Peck (in the chair), Drs. Brindley, Chronnell, Greenwood, Hope, Daley, A. J. Young, Talent, Sergeant, Hamilton, Dearden, Fraser, Buchan, Marsden, Barlow (hon. secretary), Thomas (Finsbury), Waldmeier (assistant medical officer of health, Chesterfield R.D.), Alexander (assistant school inspector, Borough of Chesterfield—visitor), and James Markham, Esq., Mayor of Chesterfield—visitor. Apologies for absence were received from Dr. Meredith Young, Dr. Wheatley, Dr. Garstang, Dr. J. R. Currie, Dr. Moffatt, etc.

A letter was read from Dr. Edlin, Levenshulme, resigning his membership of the Branch on the absorption of his district by Manchester. The Secretary was asked to write Dr. Edlin requesting him to reconsider his decision, and to still remain a member of the Branch.

The further consideration of the matters referred from the Council was deferred until the next meeting.

The Treasurer submitted his accounts for the year, which showed a balance in the bank of £1 7s. 4d. The accounts having been audited, the treasurer's report was received and adopted.

The following officers were elected for the Session 1910-11:—President: Dr. W. F. Dearden. Hon. Secretary: Dr. W. N. Barlow. Treasurer: Dr. H. H. I. Hitchon. Librarian: Dr. Miles B. Arnold. Council Representatives: Dr. A. Greenwood, Dr. J. J. Buchan, and Dr. Meredith Young.

A paper was read by Dr. A. E. Thomas, medical officer for Finsbury, entitled "Housing in Practice." Owing to lack of time discussion thereon was postponed.

Dr. Peck gave a short account of the Sewage Works in Chesterfield.

Votes of thanks to the Mayor for the use of the Town Hall and to the President for his services during the past session were heartily accorded.

After the conclusion of the business of the meeting the members were shown over the Sewage Works, and then motored to Hardwick Hall. On the return journey they were entertained by the President and Mrs. Peck at their home.

DR. J. WRIGHT MASON, medical officer of health of Hull, has been appointed Examiner in Forensic Medicine and Public Health to the University of Aberdeen.

UNDERGROUND BAKEHOUSE.

QUESTION OF THE VALIDITY OF A CERTIFICATE.

On July 1st the Middlesbrough Corporation took proceedings before the Stipendiary Magistrate against Mr. Amberley, on the ground that he did not possess a certificate for the use of an underground bakehouse in Nicholas Street now occupied by him and owned by Mr. W. R. Meggeson.

Mr. Thompson, who appeared for the Corporation, explained that the proceedings were taken under the 101st section of the Factory and Workshops Act, 1901, which stated that an underground bakehouse should not be used as a bakehouse unless it was so used at the time of the passing of that Act, and the second sub-section provided that, subject to the foregoing provision, from January, 1904, an underground bakehouse should not be used unless certified by the District Council for that purpose.

The facts of the case were somewhat peculiar, because in 1904 the premises had been used as an underground bakehouse; therefore, they came under the second subsection. An application was made by Mr. Meggeson to the Corporation, of which he was then a member, and the application was placed before the Sanitary Committee.

This committee appointed a sub-committee to inspect the premises, and Mr. Meggeson was a member of the sub-committee.

The sub-committee eventually made a recommendation to the Sanitary Committee to the effect that certain alterations should be carried out in the bakehouse before a certificate was granted.

The alterations were made as required, and a certificate for the period of twelve months was given.

Mr. Thompson now submitted that, in the first place, such a certificate was not a certificate which came under the Act, and that it was void. Therefore, he contended, the premises should never have been used as an underground bakehouse. He could only assume that a certificate was granted in order that Mr. Meggeson might be helped out of a difficulty.

He asked the Stipendiary to say that no valid certificate was ever granted, and if he thought a valid certificate had been, that it was limited to a period of twelve months.

Mr. Monk, for the defence, said he was surprised to hear that the certificate the Corporation granted was invalid, and that they now wished to prosecute a man, although they had acted wrongly. He thought they did not know their own mind in the matter, and wished to have it settled in court. He argued that a certificate once given could not be withdrawn.

The Stipendiary, in dismissing the summons, said the Corporation at the time the certificate was granted had no doubt the building was in a suitable condition, and, having granted it, they had no powers to tack on anything as to suitability twelve months hence. He would, however, be pleased to state a case.

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H. COOPER PATTIN, M.A., M.D., D.P.H.,

Medical Officer of Health of the City of Norwich,

President of the Society of Medical Officers of Health, Session 1909—1910

THE WASTAGE OF CHILD-LIFE.

DR. NEWSHOLME'S report to the Local Government Board on infant and child mortality is undoubtedly the most authoritative contribution that has yet been made to the literature of this highly important subject. In the report the vast amount of information at the disposal of a great Government department is utilized with consummate skill and judgment; and in place of the nebulous and hesitating utterances that too frequently result from the consideration of a large mass of material, Dr. Newsholme reaches certain clear and definite conclusions, which form a sound basis for administrative action. The report contains the first attempt at an adequate analysis of the local incidence of infant mortality in England and Wales. Infant mortality varies greatly in different parts of the country; and the variations are so striking and instructive, and offer so promising a field for investigation, that it is difficult to understand why hitherto more attention has not been given to this branch of the subject. Although the present report is limited in the main to the administrative counties, and to certain groups of districts within them, the author hopes next year to extend his analysis into the statistics of the chief urban centres of population, especially those having the highest relative mortality. The publication of this further report will be awaited with much interest, but it is unlikely that it will materially affect the chief conclusions of the present document.

Results of high practical value emerge from Dr. Newsholme's illuminating study. It is shown, for instance, that infant mortality is not, as is frequently asserted, a "weeding out" process of eugenic value; although this part of the subject might well receive still more detailed consideration in the subsequent report we are promised next year. It is interesting to note the importance that is attached to defective

sanitation as an etiological factor. At the present time there is a tendency to underestimate the importance of dealing with the external environment, and to concentrate preventive energy on measures of personal hygiene. The report certainly does not minimize the latter measures, but it clearly shows that no amount of health-visiting, infant-clinics and kindred agencies can compensate for the neglect of elementary measures of civic cleanliness. One of the main conclusions of the report is that infant mortality is the most sensitive index we possess of the efficiency of sanitary administration, especially under urban conditions; and sanitary authorities that neglect such matters as water-supply, drainage, scavenging, and the paving of streets and yards cannot hope for a satisfactory reduction in their infant mortality merely by encouraging some local philanthropic society to establish a school for mothers or to organize a body of voluntary health visitors.

The report leaves on the reader's mind a sense of the complexity of the question, and of the need for further investigation and for more accurate data than is afforded by our present system of death registration. The lack of any provision for the registration of still-births is a serious defect, which vitiates the statistics relating to such causes of death as premature birth, atrophy, debility, and marasmus. The figures as they stand show an enormous increase in the mortality from premature birth, but Dr. Newsholme gives reasons for the opinion that the increase is apparent, not real, and is to be explained by improved certification of the causes of death, and by the inclusion in the death returns of infants who, having lived only for a few minutes, would formerly have been regarded as still-born. This, however, is a point on which much remains to be said, and further inquiry on a considerable scale is necessary before a conclusive statement can be made one way or the other.

THE ARTIFICIAL GREENING OF PRESERVED VEGETABLES.*

By W. F. DEARDEN, M.R.C.S., L.R.C.P., D.P.H.,
Medical Officer of Health, Port of Manchester.

I HAVE selected this subject as the basis of my paper for two reasons. In the first place, as authorities are divided in opinion as to whether injury is inflicted to the consumer or not by treating certain vegetables in this manner, I am hoping to provide material for a good discussion; and in the second place, as I have had some dealings with this class of goods, I have some views of my own which I am pleased to have the opportunity of expounding.

Preserved vegetables which come on to the market artificially coloured are peas, spinach, and French beans, and the only agent which can accomplish this at all satisfactorily is sulphate of copper. I have seen samples of peas which the canners claim to be efficiently coloured by a "chlorophyl" process, but I must admit that the contents of the tin had not the natural appearance produced by the more commonly used salt. It may therefore be taken that sulphate of copper is, for all practical purposes, the sole colouring matter utilized for the artificial greening of preserved vegetables.

The countries where vegetables are so prepared are France and Belgium, both carrying on a large export trade with us in these commodities. The canning is carried on in up-to-date factories, and a large number of people are employed in the industry. Peas are gathered by a reaping machine and conveyed to the factory, where they are placed in an apparatus which shells them and grades them into different sizes. The shelling is accomplished in a large perforated cylinder fitted with a number of longitudinal paddles which, in revolving, press the pods against the circumference just sufficiently to open them without crushing the contents. The peas drop through the perforations on to a wet rubber sheet which is inclined at a slight angle, and is kept moving in the opposite direction to its inclination. By this means the peas run down into baskets, any little bits of pods, etc., being separated by clinging to the wet rubber and being taken in the opposite direction. The peas are then graded by emptying them into the "cribbling" machine, which is a cylinder divided into several divisions each perforated with holes of a different size. On revolving the cylinder the peas which are too large to

pass through the holes of the first division are carried on to the next, and so on. Each size is dropped into a particular perforated receptacle, which is then immersed in a solution of sulphate of copper for five or ten minutes. On being taken out the peas are thoroughly washed in several changes of water, and are then placed in cans in which either pure, slightly saline, or sweetened water is added. After being sealed up they are sterilized, at a temperature of 105° to 112° C, for a period varying from 10 to 45 minutes according to the size of the tin and degree of temperature. The colouring, washing, and sterilization of beans and spinach is carried out in a similar way.

The action of copper on these different vegetables in producing the colour is the same all through. It is not a direct dye, the actual greening being produced by the formation of two organic compounds. A portion of the copper enters into combination with the chlorophyl present, forming copper phyllocyanate, this being the body of prime importance in the production of the characteristic colour. Any excess of copper over and above what is required to form the phyllocyanate combines with the legumin to form copper leguminate, but this, not possessing the brilliance and tint of the former compound, is of no practical use for colouring. These two compounds can be separated and estimated individually when it is desired to ascertain the excess of copper over and above the actual colouring requirement. The chemical is said to harden the outer coating of the pea and to thus render it less easy of disintegration; this being most likely to occur, in my opinion, with older peas, which I am told require a longer immersion in the copper solution to produce the right tint. Professor Tunncliffe is of opinion that two grains of the sulphate per pound of peas is required to produce a satisfactory effect, a lesser quantity not being sufficient to prevent the colour fading after about six months. Though I could not guarantee the age, I have inspected peas imported into Manchester which have contained less than this limit, and been perfectly coloured. As is well known, peas that have not been treated at all with this agent quickly assume a yellowish tint.

In my own investigations I have made a practice of having the copper estimated as the crystallized sulphate, and the amounts found have varied from 1½ grains to 6 grains per pound. It is stated in the well-known Departmental Report that as much as 26½ grains have

been discovered. In these estimations I have discarded the liquor in which they are packed, and used only the washed vegetable, my reason being that they are only consumed after being so treated. I have had the liquor analyzed separately, and always found it to contain copper, though in lesser amounts than in the peas; and, as this is not an original content, it is important to notice that some of the copper absorbed by the vegetable is abstracted by the liquid. The following table gives the amounts found in the series of samples which I have had analyzed at the Manchester Public Health Laboratory:—

No.	Article.	Crystallized Copper Sulphate. Grains per lb.
1	 Peas ...	1.652
2	 Beans ...	2.023
3	 Spinach ...	3.164
4	 Peas ...	2.975
5	 Peas ...	3.297
6	 Peas ...	2.910
7	 Peas ...	2.821
8	 Peas ...	2.765
9	 Spinach ...	6.050
10	 Peas ...	6.050
11	 Peas ...	4.180
12	 Peas ...	5.511
13	 Peas ...	2.094
	(liquid from 13)	.50
14	 Peas ...	2.668
15	 Peas ...	2.658
16	 Peas ...	5.732
17	 Peas ...	5.511
18	 Peas ...	4.409
	(liquid from 18)	1.074
19	 Peas ...	2.658
20	 Peas ...	2.658
21	 Peas ...	3.934
	(liquid from 21)	.770
22	 Peas ...	3.08
23	 Peas ...	4.07
	(liquid from 23)	.55

This variation in amounts within such wide limits shows very conclusively, in my opinion, the want of any scientific regulation during the process of preparation, and this is further supported by the fact that I have found this variation to occur in different consignments of the same brand. I am aware that it may be said one can get different results from analyses of several samples taken from the same tin; but my experience in this direction has only been when the old colorimetric method, which cannot be considered as reliable, has been utilized. I cannot, however, depend on the method in use at the public health laboratory. During the course of my investigations I took the precaution of having as many as three analyses made of each of a series of brands,

and as the results showed practically no variation, I have come to the conclusion that the solution of sulphate of copper is prepared by rule of thumb, and that probably no proper account is taken of the time the peas are immersed in the liquid. This, to my mind, is a matter which could easily be rectified by experiments devoted to the finding out of the most suitable standard for a solution, as well as the proper time for immersion of the different sizes of peas.

As regards the action of ingested copper sulphate upon the human organism, it must be admitted that there is a great deal of uncertainty. Much conflicting evidence has been given in Court, and it has not been uncommon for the same authority to be quoted by both sides. For my purpose it will be quite sufficient to summarize. The ordinary medicinal dose is ½ grain to 2 grains, and as an emetic 5 to 10 grains; small quantities act as an astringent and large doses as an irritant. It is not thought to be cumulative in its effect, and is excreted *via* the intestines, bile, sweat, and kidneys. External experiments have shown that it inhibits the digestive ferments. The report of the Departmental Committee gives the following proportions affecting the enzymes: Pepsin, 1 in 7,500; pepsin, 1 in 110; pancreatin, 1 in 6,500. It is also known to be very fatal to water algae and protozoa, and to certain pathogenic bacteria. It has been used in America very successfully to sterilize water supplies, and without detriment, as it very quickly becomes precipitated and settles. There is some dispute as to the solubility of the copper taken up by vegetables. It is stated not to be removed by plain water, acids, or alkalis; but the fact that the washed peas give up a considerable amount to the liquor in which they are canned appears to me to be a direct contradiction. Experiments made with digestive juices have shown that they are capable of dissolving out the greater quantity, if not all. Although copper is a scheduled poison, it does not appear that there are any authentic cases of fatal poisoning on record, and the normal presence of this metal in animal organs, and such articles as wheat, barley, peas and cocoa, as well as in oysters, are difficult points to get over. To my mind, the value of scientific evidence is excellently gauged in the course of the judgment in the case of *Summers v. Grist* (60 J. P., p. 346, 1896). Reference is made to Raermacher, who took the drug for eight months with no other effect than a ravenous appetite and pain-

* Read at a meeting of the North-Western Branch of the Society of Medical Officers of Health on May 13th, 1910.

less diarrhœa, and to Touissant, who took 3 to 7½ grains for fourteen days with no result other than a metallic taste; the view being taken that an unnatural craving for food, diarrhœa (though painless), and a metallic taste were incompatible with a normal state of health. The Court also thought that the effects of the drug on a pre-existing derangement of the system must be taken into consideration. Emphasis appears to be placed upon the opinions of Tschirch that salts of copper can cause poisoning and even death to man, though experiments showing such results are seldom found; that mostly on ceasing to take the drug the parts quickly return to the normal; and, though approving of colouring, which the copper phyllocyanate can alone give, that the copper leguminate formed from an excess of the salt should be avoided. Stress was also laid on this expert's view that copper salts undoubtedly affected the health, though slightly, if taken in sufficient quantity, and that it is thus desirable to fix the quantity to be added for colouring purposes at an amount known to be harmless. The final paragraph is as follows:—

"After carefully perusing and considering the whole of the evidence oral and written, the Court are forced to the conclusion that, where the opinions of eminent authorities are still in a state of uncertainty, it would be mischievous to countenance an addition of this foreign substance to articles of food in a larger proportion than that which they suggest. The quantity in this case is considerably in excess of that quantity."

This judgment practically fixes the limit which should be allowed at 2 grains of copper sulphate per pound.

The Report of the Royal Commission so far as concerns the final recommendation is much more stringent than this judgment. Paragraph 127 reads as follows:—

"The employment of copper sulphate to colour peas and other vegetables has been carefully considered by us. It is highly undesirable that what is admittedly a poisonous substance should be used, even to the smallest extent, in connection with such food as may be consumed in considerable quantity. The public have got into their heads that vegetables ought to be green, and green they insist upon having them. Direct proof that vegetables containing copper are injurious to the consumer

is from the very nature of the case difficult to obtain, and we must admit that we have not succeeded in obtaining it. There is evidence pointing to the conclusion that the copper, when added to the vegetables, forms a compound which is not easily soluble in the human economy. There is, however, evidence of a contrary character, and it is not clear to us that the copper added becomes, or remains, insoluble under all conditions. Be this as it may, recent events (*i.e.*, the epidemic caused by arsenic in beer) have so incontestably demonstrated the serious and widespread mischief which may result from the consumption of food and drink, other than sweetmeats, containing even minimal quantities of poisonous metallic substances, that we are strongly of opinion that such poisonous substances should be rigorously excluded."

Professor Tunnicliffe took exception to this paragraph, being of opinion that small amounts of the copper salt are harmless, though at the same time he was against the addition of unnecessarily large amounts, recommending that the presence in all cases should be declared, and the amount restricted to half a grain of metallic copper per pound.

So far as my personal opinion is concerned, I regard the use of this particular substance for the artificial greening of vegetables as somewhat on a par with the use of boron preservatives for various articles of diet. In both cases there is a lack of pronounced evidence of injurious effect on actual consumers, and I think it may be stated that interference with digestion is the most that can be placed at the door of either practice with any certainty. I have, however, come to the conclusion that vegetables dosed with sulphate of copper may be classed as unwholesome, and thus brought within the operation of the Public Health Acts. As Port Sanitary Authorities do not administer the Food and Drugs Act, if this addition is to be dealt with at the port of entry it must be brought within the scope of such powers as are allotted to them. I have seized five lots since I assumed control over the destinies of unfit food coming into Manchester. Two consignments were brought before a Justice and orders obtained for their destruction, the other three lots being dealt with by arrangement. In none of the cases was any question raised as to jurisdiction. To my mind it should not make the slightest difference to the unwholesomeness of the food whether the

deleterious agent present is a purposeful addition, or is the result of some accidental condition of things being brought about. Although I believe I am quite correct in dealing with the matter on these grounds, I am naturally forced to admit that it would be very unwise to take action in any case in which the amount of sulphate of copper estimated does not exceed the 2 grains limit of Professor Tunnicliffe. I know it is difficult and generally unwise for a Public Health Authority to fix a limit, and personally I have avoided doing so, but I think it is now pretty generally understood among importers into Manchester that there is no risk of detention if the amount of sulphate of copper is kept within reasonable bounds. I have got the assurance of several big importers that in making their contracts they themselves will specify an amount which must not be exceeded, and should the exporter break faith he will have to bear the loss of any consignments condemned in Manchester.

The ordinary method of dealing with green vegetables in this country is very unsatisfactory, as the action, or want of action, is entirely dependent on the views taken of the question by particular authorities, the result being that those who prosecute free their districts from copper contamination, whilst others who do not harass the shopkeepers in this manner provide dumping grounds for anything the packers like to send out. The prosecution of an important class of ratepayers by the local authority would scarcely appeal to any reasonable mind as an ideal way of dealing with this matter, and there is no doubt that most bodies fight shy of taking on this obligation. The few fines that are inflicted on this account are refunded to the shopkeeper by the importer, and the debit balance does not appear to be a very serious item. The retailer is quite ignorant of the extent to which his peas are treated, and if the consumer knew that he would be required to swallow several grains of a copper compound, the chances are that he would choose another vegetable.

I think it is much better to go on safe lines with respect to food, and insist on it being provided pure. Times without number I have been assured by importers that their particular goods were quite fit to eat and would do no harm, and many have been quite willing to prove that they had the courage of their convictions by giving a practical demonstration of confidence.

The admixture of food with bacteria, moulds,

lead, tin, preservatives and copper have all come within the scope of these assurances. It must be realized, however, that anyone is quite open to take on such a mixed diet as would include all of these, and this is a very powerful argument against allowing such contamination at all. The absorption of toxins from the digestive system receives a prominent place in modern medicine, and certainly points the moral that we should be careful what we eat. Other countries—viz., Germany, Austria and Hungary—have taken time by the forelock and prohibited the use of copper for the purpose of greening vegetables. In Switzerland and Italy one part in 10,000 of metallic copper is allowed; in the Colony of Victoria and in the United States the addition and amount of such must be stated on the label, but we have the authority of Dr. Wiley that this particular agent is never used in the latter country. In France the use was formerly forbidden, but the restriction was withdrawn because of the large export trade in this class of goods. It is a curious circumstance, however, to note that the withdrawal of this regulation has not caused a re-demand for green tinned vegetables among the French people; this colour being to the French mind synonymous with added copper, is now sufficient to condemn the article.

On viewing the subject from these various aspects, I cannot help but think that this adulteration should be dealt with in a firm and uniform manner. Under the Public Health (Regulations as to Food) Act, 1907, the Local Government Board have full powers to either fix a standard or to prohibit altogether the use of this particular ingredient, and to instruct Port Sanitary Authorities to exercise the requisite supervision. Prohibition would undoubtedly be the easiest to work, and there does not appear to be any reason why the English people should not follow the example of the French, and be educated to do without the bright green colour. Every consignment could be very rapidly tested qualitatively by boiling a sample with dilute hydrochloric acid, and looking for a deposit of the metal on a clean piece of steel. If the presence of copper be assured, the goods could be treated in the same manner as objectionable foreign meat, and sent back to the exporting country. If a standard were adopted, a quantitative analysis would be necessary, and as this is a question of time, delay would often arise in freeing the goods from the quay. It is also conceivable that two analysts might not get the same

results, and that as a consequence a consignment refused at one port might be passed through at another. I certainly think the question of administration should be taken into consideration in any attempt to regulate this particular trade, the two points of speed and efficiency being very important factors in port food inspection. Although a regulation fixing a standard would be awkward to work, it is on the other hand conceivable that as better methods of preparation would necessarily be adopted, manufacturers would not have much difficulty in keeping within the limit decided upon.

INFECTION IN SCARLET FEVER.—There is no evidence that the prevalence of scarlet fever has any relation whatever to the sanitary condition of a district. It is a contact-spread disease kept alive by missed or unrecognised cases. The part which infected clothing and infected premises play in the spread of the disease has been, in my experience, very much exaggerated. My experience leads me to believe that infected clothing is but rarely the means of conveying infection. By infected clothing I would include only the clothing worn by one actually suffering. The amount of infection capable of being carried on clothes by reason of entering infected rooms is, I think, negligible. I judge of this from the experience of medical men. They are constantly in and out of infected rooms, and if the disease were at all commonly spread in the manner just indicated there must be evidence of it nearly every day. I have made special inquiries in over 500 consecutive cases of scarlet fever with a view to finding out whether it was possible that the doctor had conveyed infection to the house, and in only four instances had the doctor been in attendance at the house before the outbreak of the disease, and in each of these four it was *extremely unlikely*, to put it mildly, that the doctor had been the means of conveying the infection, much more probable sources being discovered in each case. There is a distinct tendency in these days for parents to shelve their responsibilities whenever possible. This is seen in regard to the isolation of scarlet fever patients in hospital. This isolation is not needed for the children of persons in good circumstances. The sufferers do as well, or better, at home, especially cases of a mild type. Indeed, I will go farther and say that in my opinion it is a mistake to send mild uncomplicated cases of scarlet fever to hospital where reasonable isolation can be provided at home. Mild cases in hospital are prone to get exacerbation of throat symptoms and to develop rhinitis; some develop a second attack of the disease of greater intensity even than the first.—*Annual Report of Dr. Barlow, Medical Officer of Health, Wallasey.*

NOTES ON A SMALL-POX OUTBREAK.

By WALTER F. CORFIELD, M.B., B.S., D.P.H.,
Medical Officer of Health, Colchester.

CASES of small-pox are now themselves of interest, as there must be an increasing number of medical men who have never seen a patient suffering from this disease; but there are very many and excellent text-books dealing exhaustively with the nature and symptoms of small-pox, and, were not the following cases of interest from a further point of view, I should not consider them worth recording.

On January 12th, 1910, my attention was drawn to two persons, a man and his wife, suffering from undoubted small-pox. They had lived in Colchester for many years past, had had no friends or visitors staying with them for the past month, had not been away from home, nor had they bought any second-hand furniture, clothing, bedding or thing of any sort for many months past. There were no other cases of small-pox in Colchester at the time, nor had there been any notified since 1904. The man was a carter by trade, and worked in the Iron-works; his wife did no more than her own household work. The man had not for a month previously had to do any work among the barges on the river. On January 6th the man (Mr. T.) had felt unwell, and took to his bed on January 7th. His wife felt ill on the 7th, but did not take to her bed until the following day. Thus both must have been infected at the same time. Both were steady, quiet persons, and yet they were the only people infected in Colchester, excepting their own daughter-in-law (Mrs. A. T.), who caught the disease from them.

Mrs. A. T., on January 8th, hearing that her father-in-law and his wife were ill, though herself very shortly expecting the birth of a child, went to look after them and their house. I saw Mr. and Mrs. T. on January 12th, and they were at once removed to the small-pox hospital, and early the next morning the whole household was revaccinated. Mrs. A. T.'s vaccination took well.

The house was visited frequently and all appeared well, though the vaccination had been done six days after Mr. T. was first taken ill.

On Saturday, January 22nd, exactly fourteen days after Mrs. A. T. went to attend Mr. and Mrs. T., her baby was born. At the time the midwife noticed an abdominal rash, but thought nothing of it, though she had been warned to be particularly careful. At this

time Mrs. A. T.'s vaccination marks showed well-formed scabs, and the vaccination appeared to have taken very satisfactorily. Mrs. A. T. had been seen on Friday, when she expressed herself as feeling perfectly well, except that she expected her baby to be born very soon. On Monday she was visited and found to have a well-marked small-pox rash. The baby was at once vaccinated, and both mother and child safely taken to the small-pox hospital.

Meantime Mr. and Mrs. T. had both developed confluent small-pox, which in the case of Mr. T. was accompanied by many small hæmorrhages into the skin of the limbs, particularly at the end of the fingers and toes.

Mrs. A. T. bore the journey to the hospital well, but unfortunately she developed a severe form of the disease, the pocks first becoming confluent and then many of them hæmorrhagic.

On January 29th the baby, then eight days old, developed several small-pox spots about its face and body, though its vaccination, done within thirty-six hours after birth, had taken well.

The chief interest of these cases centres upon Mrs. A. T. and her baby. From the above short summary of the chief points connected with the cases it will be seen that she first came into contact with cases of small-pox six days before she was revaccinated; she had been vaccinated once in infancy, but this appeared to have no effect either upon the revaccination or the course of the disease, and one would not have expected it to, considering that it took place some thirty-seven years previously. Her revaccination took in the usual way, four well-marked scabs forming; but eight days after this, and fourteen days after she had first come into contact with the disease, she showed what must be considered to have been a prodromal small-pox rash. Up to the day of this rash she had felt quite well, and upon the day before it appeared she was seen and carefully questioned, and her only complaint was that she felt that her child would be born very shortly. The day after the prodromal rash her skin, particularly that of the face, was faintly scarlet, and this increased for the next two days, the face at the same time becoming very swollen. This condition has been described by French authors as "le rash astacoïde," i.e., the lobster rash. Unfortunately, I did not see the first rash, but from its description it appears to have been of the "bathing-drawers" variety. Thus she showed two prodromal rashes, the second being present

with the true rash. Her condition rapidly went from bad to worse, and hæmorrhages appeared over the face and limbs. Also the lower part of the abdomen and Scarpa's triangles became almost black from extravasated blood. This, I think, must have been caused from the straining at the time of the birth of the child. Also large bullæ formed in this region and over the upper parts of the thighs, due undoubtedly to the rubbing of a tight binder (the binder was discontinued upon the second day in hospital). The condition of her vaccination marks at this time was unusual and of interest. At the commencement of the attack the scabs were drying up nicely and appeared quite normal. Upon the second day in hospital and fourth day of the disease a ring of blisters had formed round each: the scabs themselves were black, and the blisters of a brilliant purple-blue colour, much bluer than I have ever seen in any bruise or extravasation of blood before. The uterus was soft and tender and the lochia offensive: a hot antiseptic douche was given, and within two days the lochia became sweet and the uterus contracted and no longer tender. She appeared to grow neither better nor worse, but the face lost the bright scarlet flush as the true rash developed, and though now almost completely white it remained very swollen, particularly round the eyes and lower part of the face. Her mind remained quite clear, but she gradually sank and died upon the ninth day after the prodromal rash had appeared.

The baby was born on January 22nd in the evening and vaccinated upon the morning of the 24th, and showed a definite small-pox eruption upon the 29th. Upon considering these dates one finds that the child had a definite small-pox rash seven days after its birth. Though cases with such a short incubation period have been described they appear to be very rare, and further, if the infection had occurred after birth, the vaccination should have prevented the disease, all four places having taken well. It seems simpler to conclude that the infection occurred *in utero*, and to find the approximate date of infection one must count back twelve days, the usual incubation period, from January 29th. This brings one to January 17th, four days after the child's mother had been vaccinated, and so one arrives at the fact that the vaccination of the mother in no way prevented her from infecting her child *in utero* four days later, though it may have somewhat modified the

disease, as only very few spots, about twenty in all, appeared upon the child. Though everything was done to try and save it, it died three days after the rash appeared. Mr. and Mrs. T. both recovered and were discharged cured on March 17th.

CLEANSING OF SCHOOLS—DUSTLESS OILS AS A FLOOR DRESSING.—Bacteriological experiments were carried out in four departments; a comparative estimate of the number of bacteria in the air of the class-rooms in which the preparation was laid and class-rooms in which it was not laid was made. One group of these experiments were made in class-rooms under ordinary circumstances, *i.e.*, during an ordinary lesson, no one being allowed, however, to move from his seat; special bacteria plates were exposed for periods of five and thirty minutes in each class-room; the plates were removed, incubated, and the number of bacteria falling upon the plate was estimated. The second set of experiments were made in the rooms in which the air was set vigorously in motion by the stamping on the floor of the whole class for a few minutes. This had the effect of distributing in the air the dust which had previously settled upon the floor. From the results of these experiments, which were corroborative in the four instances, we deduce the following conclusions:—

1. That the relative number of bacteria is approximately the same in the air of the class-room whether the floor be treated or not, provided the scholars do not move about.
2. That the relative number of bacteria in the air of a room where drill is being carried on, and where the floor has not been treated, is three times as high as in a room the floor of which has been treated.

Objection has been made to the use of these preparations on the following grounds:—

1. That they are unsightly and darken the room. [Regular brushing of the floor prevents to some extent both of these objections. The darkness depends on the nature and quality of the floor surface; with hard blocks it is practically negligible.]
2. That it is unhealthy and damp. [This is uncorroborated by any scientific evidence.]
3. That the skirts of teachers in rooms treated tend to become stained, through coming into contact with the floor. [The remedy for this is obvious.]

The advantages are as follows:—

1. Economy of labour in cleaning the room.
2. Prevention of the rising of dust once deposited; hence a healthier atmosphere for breathing.

—*Annual Report of Dr. Forbes, Medical Officer of Health, Brighton.*

HOUSING IN PRACTICE AND APPLICATION.*

By A. E. THOMAS, M.A., M.D., D.P.H.,
Medical Officer of Health, Finsbury.

THE question of housing is one which presses acutely upon medical officers of health. The columns of the daily press vibrate in shrill strident harmonics with its insistent and lancinating urgencies. The Fleet Street experts and Leather Lane democrats discuss it with raucous and sonorous clamour. It is common to find a municipal council divided into two hostile acrimonious factions upon the merits and demerits of some pending scheme. Like the poor, it is now always with us.

The problem is often spoken of as if it were an entity, independent of all others, as if the mere provision of a suitable number of houses at reasonable rents would solve it and herald a new era, as if the abolition of the sepulchral warrens and noisome dug-outs in which the rabble of our cities are asserted to live would found a new Utopia and declare the millennium advanced. Of its actions and reactions some appear to be helplessly, nay, profoundly, ignorant; self-sufficient and assertive, they have never stayed to consider the part played by educational progress, economic conditions, thrift, the labour market, temperance, the presence or absence of these and other social factors, and in each case their elevating or debasing influences making for the betterment on the one hand and degradation on the other.

Small wonder, then, that the medical officer may be harassed and distracted beyond measure.

The present paper illustrates some of the difficulties associated with a housing or rehousing scheme, the issue of a closing order, and the considerations pertinent to any inquiry.

And first as to the inhabitants. It is most essential to know their character and their occupations and their inclinations before entering upon any rehousing project in connection with a closing or demolition order, whether this order be obtained under the old Acts or the new Act.

To take an actual example, from a small group of nearly thirty houses reported upon in a recent year. Some of the adults were illiterate and could not read or write. One woman, aged 28 years, did not know how to spell her own name and had to refer to the rent book

Read before the North-Western Branch of the Society of Medical Officers of Health on June 24th, 1910.

for the information. Several families had lost children from wasting disease and tuberculosis.

Their occupations were as follows:—Labourers, carmen, coalmen, hawkers, dustmen, coal-heavers, rag-gatherers, messengers, laundresses, and charwomen. Very few were in constant employment—in most cases it was, or had recently been, casual and precarious. The wages ranged from 10s. to 18s. per week, though in some cases they were said to be less. The houses had one or at most two rooms downstairs and one or two up; the rents were from 2s. 3d. to 3s. per week. Some of the tenants were in receipt of parish relief. Others chopped firewood on the hearth-stones and sold it as a means of livelihood.

This is a matter that must be remembered when erecting houses for these occupiers either by providing an iron-sheeted hearth, or, as in the buildings erected by the Guinness Trust, by fixing iron-bound blocks outside, near the entrance to each house.

One family had lost four children, ranging from a few days to two and a half years, in their present house, and the father had eventually come to consider this unhappy sequence of events as associated with an unlucky cradle: consequently, his wife, at the death of the last child, took an axe and smashed the cradle up. This man asserted that he and his family were all churchgoers, but everything seemed to go against them—"they never got a sack of coals—others who didn't go to church got it."

The superstition and ignorance manifested in these cases shows that the problem is not merely one of housing alone but of education also.

In one house containing one bedroom this was divided into two by a sheet to accommodate a man, his wife, one boy aged seventeen years, and two girls aged fourteen and eleven years.

In another, the bedroom was occupied by a man and his daughter aged twelve years.

A few of the inhabitants were distinctly slatternly, others alcoholic. In one house occupied by a man and his child, the man was getting up from bed at 3 p.m. The bedroom contained very stale urine.

After careful inquiry it was found that only one-eighth of the whole number of occupiers were desirable tenants, 50 per cent. of the rest were considered to be tenants to be tolerated under very close supervision, and the others were undesirable on account of extreme poverty, damage to property, misuse of house, nomadic instinct, alcoholism, thriftlessness, lack of

cleanliness, and lack of occupation, or its precarious and uncertain character.

In a few cases the furniture was ample and clean; in many, slight and dirty.

Thus in one house there was no drinking glass. In another the bedroom contained a bedstead and a mattress, but no bedclothes. In another a palliasse, whose contents were being gradually squeezed out over the floor, offered the only means of rest to the occupants.

In one bedroom the bed-clothes were made of bits of blanket pieced together with leather and oilcloth. The contents of another bedroom were one large bed and one very dirty and frowsy counterpane, two blue tick pillows, no pillow-slip, one sheet fairly clean but soiled at one side with urine. The pillows were very dirty, and almost caked with a veneer of a waxy, grimy material, and also in a lesser degree the subjacent bolster. In the last bedroom there were two mattresses extremely dirty, urine soiled and coming to pieces, distributing their black contents widespread over the floor.

One family possessed a very large mangle which almost filled the kitchen. The knowledge of housecraft and house care, as a rule, was very elementary. In most cases the floor consisted of broken brick tiles—broken presumably by wood chopping. In some cases the doors had been quite disfigured and broken up by nails driven into them from the inside of the house, baring their points, cracking the wood, and raising large pieces on the outside of the door.

Some of the houses were verminous, some clean. The ground near and outside the water-closets was, at some visits, found exceedingly fouled and soiled with excrement, wilfully scattered broadcast by tenants who were too lazy to approach the seat of the closet and empty the pail contents carefully. Many of the seats and floors were soiled with urine and excrement, which had been left there for some days.

It would appear to be difficult, if not impossible, for any private speculator to build new houses at anything like a low rental to accommodate these people and make the slightest profit out of the enterprise. Their thriftlessness, their intemperance, their wilful and malicious damage to property would in all probability render the undertaking a precarious one.

And if the municipality essayed to build for them, their poverty, their filthy habits, and the arrears of rent which specially and speedily

tend to accrue in tenants of municipal houses would doubtless entail a cost upon the rates. Their filthy habits certainly necessitate the presence of a caretaker, paid by the owner, in every court or in every tenement, and he must be a man of substantial muscle and pugilistic repute to enforce, with the alternative of a severe drubbing, the slightest regard for the elementary and cardinal virtues of house care and house cleanliness amongst the inhabitants of a court. This has actually been found in practice to be the only solution in some of the slums of our great cities.

When a caretaker is installed in a tenement house he should live in the top rooms, so that he may have to pass all the other tenements daily in coming and going.

In connection with systems of tenement houses it is a curious thing that when free common baths (with hot and cold water) are provided they are used to a very slight extent indeed by the tenants. This has been found to be the case, for example, in the buildings erected by a very large Metropolitan Trust: the tenants apparently suspect one another—to my mind quite unnecessarily—of being unusually dirty, or of being affected by contagious diseases or infectious disorders. They prefer to use the public or municipal baths.

While free and common baths, then, in tenement systems are used very slightly—so slightly, indeed, as to suggest that they might well have not been erected—the provision of sheds for storage and for perambulators, of open or covered spaces for play and for washing clothes and drying them, of cupboards for food, and of bunkers or cellars for coal storage is most important and much appreciated.

In the case of new buildings built for slum dwellers there is one fallacious line of reasoning that is often adopted. When buildings are demolished, the slum dwellers move elsewhere. Thus in a demolition scheme in Liverpool, they may, for example, move to Seaforth; when an area is cleared in Manchester they may move to Salford. When the new buildings are erected they are occupied, not by the old tenants, the original slum dwellers, but by young married couples generally, for whom new buildings for some obscure reason have a special attraction. The consequence is that now, in the area, the old slum area, the birth-rate increases and the death-rate decreases. This improvement is accredited to the direct influence of the rehousing on the old slum dwellers, whereas in reality it may be nothing

of the kind. The improvement is often due to the fact that the original slum dwellers have been cleared out, and have gone probably to make a change for the worse in the vital statistics of some other district and they have been replaced by people whose birth-rate is naturally high and death-rate low. Thus Liverpool's gain may be Bootle's bane; Manchester's rehousing may be Salford's curse.

In inspecting an area for the closure or demolition of property upon it, or reporting upon a housing scheme, several circumstances and difficulties in detail arise, some of which are considered in the observations which follow.

ORDERS FOR CLOSING OR DEMOLITION.

For the purpose of this procedure it may be advisable to lay special stress upon defects which can only be remedied by reconstruction of the house, as, for example, the height of the rooms, the absence of through light and ventilation, the absence of damp-proof courses, insufficient window surface, buildings obstructive or obstructed, bulging masonry, settlements and other gross sanitary defects. In these houses it may be found that when the owner endeavours to remedy the defect or reconstruct, the structure is so friable that demolition follows naturally, as a result of the attempt to make good the deficient part.

It is interesting to note that a closing order can only be obtained for a dwelling-house, and not for a part of a dwelling-house, though it may be obtained whether the dwelling-house is occupied or not. This raises some doubt as to whether there is any statutory power to enable a council to close a tenement or a set of rooms in a tenement house. The cases which have been decided have been in the police courts and do not appear to have been taken to the higher tribunals. There is one exception to this statement—in the case of an underground sleeping-room. By Section 7 of the Housing and Town Planning Act, such a room is for the purposes of this Section considered to be a dwelling-house, and may be made the subject of a closing order.

INSPECTION OF THE PREMISES.

The inspection of the rooms and internal walls is best done after many hours continuous rain—it is at this time that leaking roofs, defective skylights, and crumbling masonry discover themselves.

The inspection of external surfaces should be done completely on one occasion—on any subsequent day it may be found that the owner, by a liberal coating of whitewash or lime, has

completely hidden and filled up large cracks in the masonry, crumbling and weathered bricks, open joints and depressed relieving arches above doors and windows. So that when the Public Health Committee come to make their official view, the owner may have covered up and obliterated all external defects and left the committee nothing to see. Such cases have occurred in actual practice.

STANDARDS.

1. *Height of Rooms.*—The London Building Act, 1894, part 5, section 70, requires that every habitable room in a new building, except rooms wholly or partly in the roof, shall be in every part at least 8 feet 6 inches from floor to ceiling. Rooms wholly or partly in the roof must be at least 8 feet in height throughout not less than one half their area. It must be noted that the above measurements are sanctioned by Act of Parliament, and refer to new buildings. Other measurements, sometimes greater than the above, have been adopted in their local acts by other authorities.

In the case of by-laws, the Local Government Board is said to stipulate that for new buildings a room not in the roof shall have a height of 8 feet at least in every part, and that a room in the roof shall have a height of at least 8 feet over half the area and a height of not less than 5 feet in any part. These are the minimum standards which it is believed the Local Government Board have sanctioned in recent years, and they may well be accepted as the minimum requirements when inspecting an area from the housing standpoint.

The committee of the Berlin Sick Insurance Fund, for merchants, tradesmen and pharmacists, publish a yearly report on the housing conditions of their sick members, and on the authority of German sanitary experts have adopted the following minimum requirements in any room for human habitation:—Floor area, 108 square feet, and height of room 8 feet 3 inches.

Under Section 23 of the Public Health Amendment Act, 1890, by-laws may be made by a local authority regulating the height of rooms.

2. *Floor Area in Rooms.*—The Local Government Board in their "Memorandum with respect to the provision and arrangement of dwellings" under the Housing of the Working Classes Acts have recommended that the parents' bedroom should have a superficial area of not less than 120 square feet, and the children's bedroom of not less than 80 square

feet. This must be considered at fuller length. Nothing is commoner in our great cities than to find that a room which was originally built for or let as a living room is eventually being used as a room for living and sleeping, that a room which was originally meant for a children's sleeping room has now become a living and sleeping room for adults, and that a room initially constructed as a lumber-room, is now a sleeping-room for children.

It would appear, then, that by far the best plan in large towns is to have one minimum floor area for habitable rooms, seeing that any room, whether originally devised for habitation or not, for adults or for children, or for neither, may eventually be used for living and sleeping by adults. Again, although a room may be used by one family as a sleeping room for children, the same room may be used by the next occupant as a sleeping room for adults. The problem is therefore resolved into finding the reasonable minimum floor dimensions for a room for adults.

The measurements of an ordinary double bed are 6 feet 6 inches by 4 feet 6 inches. The addition of 3 feet 6 inches to each of these will allow the housewife sufficient space to open the bedroom door, to sweep under the bed and around it, to make the bed, and possibly to allow a washstand being placed in the corner of the room without obtruding aggressively upon the space allocated to the bed.

This means, then, that in each room there should be a space of minimum length (10 feet) and of minimum breadth (8 feet), free from all projections and from anything such as a raised hearth, a fender, or any fixture which would prevent the free movement of the bed over this portion of the floor. With these two minimum measurements, the minimum area recognized by the Local Government Board would allow sufficient latitude to introduce a few chairs and a little furniture.

Although these requirements are reasonable enough and well founded, it is curious how often they are overlooked in plans submitted to borough councils. In 1909 house plans were made in one borough in which it was obviously impossible, on measurements alone, to get a double bed into the proposed bedroom without placing it diagonally across the room, with one leg in the fireplace and another in the doorway. In another borough, in connection with the reconstruction of a small slum area a house was actually built in such a way that the occupier could not set up his bed, an ordinary iron

double bedstead, in the sleeping-room provided, and had to sell it and buy a new one.

The model by-laws of the Local Government Board stipulate that the window area of any room shall be at least one-tenth of the floor area. It must be observed, however, that this reference to window area is really no criterion of the value of the direct sunlight or efficient light entering any room. For example, a room may face directly north or it may look out on to a lofty wall near by: in these cases the window area may be much more than one-tenth of the floor space and yet the light entering the room may be grossly insufficient.

A rough-and-ready method of estimating the lighting of a room is by exposing photographic plates for a definite interval of time—one placed on the back wall of the room and others used as controls on the external wall of the house inspected, and also on the internal and external walls of a well-lighted house. These plates should then be developed and fixed in the ordinary way, and may be kept for permanent reference.

Another method is using photographic plates as before, to estimate the time required to develop in the chosen situations and in the control sites, up to fixed standard tones.

OVERCROWDING.

The problem of overcrowding is a most difficult one, and is intimately bound up with the questions of poverty, unemployment, drink and thriftlessness. The cases are difficult of discovery, and the conditions very often difficult to amend or abate effectively, save by recourse to the Poor Law. The people are in a dilemma. On the one hand, they are being urged by State officials, learned divines, the President of a friendly Republic, and eminent men to increase and multiply—for the birth-rate has fallen and is falling. On the other hand, the poor know, and know only too well, that the possession of three or four children in the family may render it difficult, nay, almost impossible, for them to secure sufficient and suitable accommodation.

Many landlords in poor districts insist on having a written statement as to the number of children in the family of a prospective tenant before letting their rooms, and cases often occur where the tenants have wilfully understated these numbers. So that the responsibility—the moral responsibility—for the overcrowding may be with the tenants as well as with the landlords. But even when the overcrowding has been discovered the difficulty has not been solved. It is impossible from con-

siderations of humanity alone to eject these tenants into the open street at a minute's notice. The investigation of the cases in Finsbury proves, if it proves anything, that the mere provision of up-to-date dwellings at moderate or even low rentals will not abolish overcrowding—indeed, this provision may even increase it. The causes are complex and lie deeply.

SPECIAL DIFFICULTIES.

In the development of any scheme for reconstruction or rehousing it is quite common to find objections lodged by owners of adjacent property and by local ratepayers' associations.

There are other difficulties and objections, however, which have a special interest for medical officers. It may happen that a former health officer has previously inspected the houses or site under review and given either an opinion, an honest opinion, that they are fit and suitable for human habitation, or a guarded and conditional opinion.

Other evidence that may be adduced will be: The freedom of the property from infectious disease. The low death-rate, both generally and from special diseases—phthisis and the infections. The expressed desire of the present occupants to remain just as they are. The ripe old age of the present occupants who, with their families, have lived in the houses for many years. The absence of building by-laws, or their inadequacy; this will be used as a means to deferring the whole scheme until these defects have been remedied.

There is every reason to believe that even in the year 1910 there are still places, some, indeed, places of repute, which have no building by-laws whatever, while others have by-laws quite insufficient in scope and detail. For such places housing and town-planning Acts are a snare and a delusion: the very elements which make for good housing are absent. Housing Acts of Parliament, passed on the assumption that these towns already possess adequate by-laws, are worthless and useless.

An Act is wanted by which the Local Government Board shall be empowered to impose by-laws for buildings and housing upon such local authorities, by way of extension of section 44 of the Housing and Town Planning Act. These towns are generally places where the Council, the Works Committee or Improvement Committee are in great measure dominated by landowners, builders, architects, owners of house property or land agents. It is well for the medical

officer in his report to be prepared to meet these objections—as a rule there is not much difficulty in doing so.

BACK TO BACK HOUSES.

For the purposes of reference one series of houses is designated by large letters, the other series by small letters. The disposition is annexed:—

A	B	C	D	E
a	b	c	d	e

So that A and a are back to back, B and b are back to back, and so on for the rest. In a scheme for reconstruction, short of demolition of the whole series, the following methods are available:—

1. The demolition of the entire series A B C D, or of the series a b c d. When this has been done it will become necessary to put windows in the backs of the houses thus exposed. This raises the matter of easement of the view over adjoining land. Such an easement, if obtained, should be a legal document, stamped and duly executed. Short of an easement, it may be arranged that the new windows shall be frosted throughout and shall be made to open in such a manner that persons using them shall not be able to overlook their neighbours' property.

2. The conversion of each pair of back-to-back houses into one house, by knocking down the obstructing partition; thus A and a will become one house, and so will B and b. As a rule this method is not to be commended.

3. Part-demolition methods. The demolition of (a) alternate back-to-back sets A a, C c, E e; (b) single houses back and front alternately, a B c D; (c) every third set C c F f I i. Other varieties of these methods easily suggest themselves. They all assume the subsequent adoption of through ventilation in each component of the series.

4. The advancement, by building, of the line of frontage of the series A B C D for seven or eight feet, and a like advancement in the frontage of the series a b c d, followed by the demolition of the partition and parts of the building between the series over a space equal to or greater than the advancement in each case. By this means both the series A B C D a b c d now become separate rows of houses with a passage fourteen or fifteen feet wide between them.

RECONSTRUCTION OF SMALL AREAS.

This is best done by friendly negotiation, without recourse to courts of law; but it is well in any case to have the agreement embodied in

a legal document, stamped and duly executed. Many cases are on record where an agreement, founded on and attested by correspondence and memoranda only, has later been repudiated by one or both of the persons concerned. The general principles of reconstruction are more or less the same in all cases, though there may be differences in detail. For the sake of clearness the following requirements and suggestions are drawn up with reference to the reconstruction of a court:—

1. A specification of the repairs necessary to make the court habitable is sent to the owner, only if he makes the request, and without prejudice.

2. The house at the street end of the court is removed and not reconstructed: the same course is taken with any other building or outhouse inside the court which prevents the policeman on duty having a clear survey of every part of the court from the road as he passes on his beat.

3. The end house of the court farthest from the road is demolished to make room for the erection of washhouses and water-closets.

4. Barrack closets and trough closets are abolished and replaced by pedestal closets.

5. Facilities of access are made for dust-carts and coal-carts.

6. Unpaved courts are paved; cobble-paving may be replaced by asphalt.

7. Houses obstructive in regard to light or ventilation are removed, and compensation paid under Section 38 of the Housing of the Working Classes Act, 1890.

8. Rows of trees may be placed on each side of the court, or a small shrubbery in the centre.

9. With respect to the houses, the external face may be taken off to the depth of one brick. The internal walls are stripped of all the wallpaper. The floor boards and ceiling plaster may be removed, leaving the joists and laths bare, and the exposed filth is removed. Damp-proof courses of slate or of blue fire-bricks are inserted. Damp, offensive cellars may be filled in. All exposed woodwork is made weather-proof. The floor may be relaid on 4-inch concrete. Eaves gutters and down-spouts are provided in sufficient number. Roofs are thoroughly repaired. A water supply, water fittings and a sink waste are supplied in each house. The staircases are made secure and provided with hand-rails. Cupboards or pantries for food are provided and ventilated. Separate provision is made for coal storage. Windows are made to open and are provided

with reveals. To sum up, the houses are given a good scouring out and then thoroughly repaired, and adequate provision is made for lighting and ventilation.

When all this has been done, when the reconstruction is complete, shall the tenants be contented, cleanly and desirable? This can only be determined by actual trial, for as Victor Hugo has wisely said, "Houses are like the human beings that inhabit them" ("Toilers of the Sea," Part I, Book 1).

Enough has been written to show that the factors concerned in housing are very complex, and that our present method of dealing with the situation is a mere makeshift. Perhaps as education advances, when housecraft has become a compulsory subject in every elementary school and has developed a sturdy and elevating housepride, when labour problems are better understood and labour difficulties better adjusted, when the causes of economic and social disruptions are better defined and their evolution prevented, then perhaps shall the problem be satisfactorily settled on broad, generous, far-reaching and vitalizing principles. And there is no doubt that at last the nation is waking up and moving in the right way. The recent beneficent legislation, the public acts of the President of the Local Government Board, and the institution of labour exchanges are a first instalment of that large measure which is to secure to the country contentment within its borders, happy and healthy homes and peace and quietness within them.

AN ANNUAL REPORT OF UNUSUAL BREVITY.—The Editor of PUBLIC HEALTH has received the following annual report, from which, doubtless through an oversight, the name of the district has been omitted. The Editor will be glad to receive any information that may lead to the identification of the medical officer of health concerned in the production of this report:—

REPORT ON HEALTH OF BOROUGH
(UNOFFICIAL).

Mr. Chairman and gentlemen, here please to see A report which is brief, as reports ought to be. The death-rate is nine, the birth-rate is double; Infectious disease has given no trouble; While the poor little infants (whose credit is high)

Have, luckily, shown small intention to die. Six waters were brought from wells in the borough

Which, after analysis searching and thorough, Were shown to be bad, and undoubtedly risky, Even when mixed with the Mayoral whisky.

THE ACTION OF BORON PRESERVATIVES ON BACILLUS COLI AND ALLIED MICROBES.

By E. KLEIN, M.D., F.R.S.,

Lecturer on Advanced Bacteriology at the Medical School of St. Bartholomew's Hospital, London.

THE inhibitory action of boron preservatives on the growth of bacteria in various food-stuffs (cream, butter, milk, sausage) has on several occasions within recent years been the subject of controversy. A few years ago a departmental committee appointed by the Local Government Board practically sanctioned the use of 0.5 per cent. boracic acid as a preservative for cream and butter. As to sausage and sausage-meat the addition of boracic acid has in several recent instances been made the subject of lawsuits. On all sides it is agreed that the addition of from 0.3 to 0.5 per cent. prevents putrefactive changes—i.e., inhibits the growth of those bacteria which, strictly speaking, cause putrid decomposition of proteids, recognizable at once by the putrid smell. Some medical officers maintain that under ordinary practice the addition of boron preservatives, by inhibiting and therefore preventing recognition of putrefactive changes, does not prevent the growth of pathogenic bacteria. Under this view the absence of recognizable decomposition does not eliminate the danger from specifically pathogenic microbes; moreover, they say the masking of the putrefactive change by the preservative makes the article appear sound and wholesome. Were it not for the inhibition by the boron preservative of the growth of putrefactive bacteria the articles would by the smell alone be judged unfit for consumption, and would be unsaleable, and they consequently deprecate boron preservatives on this ground alone.

The whole question, therefore, resolves itself into this: Does the addition of boracic acid in definite proportion—say, 0.5 per cent.—interfere in any way with the growth and multiplication of bacteria, which possess specific pathogenicity? That such addition does prevent and inhibit fermentative (formation of lactic acid, curdling of milk, and souring of cream) and putrefactive changes (decomposition of proteid with the evolution of malodorous gases) is agreed, and is an experience sanctioned by universal practice.

Now, the specific pathogenic bacteria, which in articles of food such as come here in question—milk, cream, butter, sausages—are

those belonging to the Coli Gaertner group—i.e., bacteria which are capable of setting up digestive troubles, including acute gastro-enteritis.

In an article in the *British Medical Journal* of April 16th, 1910, page 929, Dr. Bernstein sums up the results of his experiments on boric acid as a food preservative thus:—

"Boric acid to the extent of 0.3 per cent. (20 grains to the pound) prevents objective decomposition, such as is detected by smell. If objective putrefaction has commenced it inhibits further changes of this kind, possibly leading to diminution in the smell. It has a marked selective activity on the various organisms, inhibiting the growth of yeasts and organisms of the *proteus* group, and possibly other harmless saprophytes, though not the organisms of the *coli* group. Hence it seems obvious that with the aid of boric acid stale meat can be used for the making of sausages, and even meat that has already started decomposing. If, then, to such meats Gaertner's bacillus has obtained access it will have had several days at least in which to grow, and, what is important, unhindered by the prolific saprophytes."

These statements as to the organisms of the coli group are therefore those which, if true, affect the question of boron preservatives in a marked degree, and while in the paper published no experiments are given either in a general or in a detailed way as to the coli group, he refers to and relies at the beginning of the paper on some such preliminary experiments (l.c., p. 928). He says:—

"Some months ago, whilst attacking the problem of boric acid as a preservative, at the request and suggestion of Dr. Allan, medical officer of health, Westminster, an entirely new aspect presented itself, which, if confirmed by subsequent research, must have an important bearing on the subject of food preservatives.

"The question centred itself around sausages adulterated with 20 grains of boric acid to the pound. Preliminary experiments showed that this amount of boric acid had a peculiar and unequal effect on the varying processes of putrefaction; it appeared that the saprophytic organisms, including those producing the odours of putrefaction, were inhibited, whilst the coliform group of organism, including Gaertner's bacillus, were affected to a much lesser degree."

In order that there may be no misunderstanding on this point, Dr. Bernstein says on p. 929:—

"To determine the action of boric acid on the various organisms, experiments have been carried out in nutrient media to which has been added boric acid in amounts of 0.2 to 0.6 per cent. The result of the preliminary experiments tends to show that whilst boric acid does inhibit to some extent all the organisms used, there is a marked inhibition of the organisms of the *proteus* group, but a much less effect on the organisms of the *coli* group. With the *Proteus vulgaris* and *Proteus zenkeri* very slight growths were obtained after some days in 0.3 per cent., and practically none in 0.4 per cent., whilst *B. typhosus* grew in diminishing amount up to 0.5 per cent.; but several strains of *B. gaertneri* grew readily in all percentages, though with diminishing prolixity as the percentage increased."

As this subject undoubtedly possesses, from a public health point of view, far-reaching, practical importance, it is not sufficient to rely merely on some general tests, but it is necessary to arrange experiments bearing on this subject in a scientific, i.e., accurate manner, by which the problem could be definitely settled.

In order to show the importance of accurate tests I will here give an illustration. We wish, for instance, to ascertain whether or not the addition to a nutritive medium, e.g., broth, of a definite amount of boracic acid (or any other substance, for the matter of that) does or does not inhibit the growth and multiplication of a definite microbe, say *B. Coli*; broth being otherwise, i.e., without the boracic addition, a suitable soil for the growth and multiplication of the microbe.

The experiment should be carried out in this manner: We add to the boracic broth (say to 10 c.c.) a definite number (say 1,000) of *B. Coli* per 1 c.c.—the number being ascertained by plate cultivation—and at the same time add to non-medicated broth (10 c.c.) the same number of *B. Coli* (1,000 per 1 c.c.) for control. Both—viz., the medicated and non-medicated broth—are then exposed to the same conditions of incubation, say 70 deg. F.

From time to time the number of *B. Coli* are ascertained in both sets; thereby we can judge whether and to what precise extent an increase or a decrease of the *B. Coli* had taken place.

Supposing that in the non-medicated broth in two days at 70 deg. F. the *B. Coli* had increased from the original 1,000 per 1 c.c. to several millions per 1 c.c., while in the medicated broth there was at the same time a

decrease from 1,000 to 500, we should be justified in concluding that the boracic acid had a strong inhibitory effect—i.e., was capable of preventing multiplication—and, moreover, had actually caused the death of a good many of the B. Coli originally present. But, on the other hand, if from this medicated broth (without having ascertained that it now contained only 500 B. Coli per 1 c.c.) we inoculated, say with one drop, one fresh normal broth tube, and incubated this, we should, of course, get in it a copious growth of B. Coli. If from this we concluded that the medicated broth contained living B. Coli we would be right. But we would be entirely wrong if from this positive subculture we concluded that the medication (boracic acid) left the B. Coli, originally added, unharmed, and therefrom concluded that the boracic acid did not interfere with the growth of the B. Coli. This is somewhat the manner in which Dr. Bernstein, judging from his experiments described on page 929 (l. c.), would draw his conclusion. While he would be right in saying that under the medication some B. Coli were still present after two days, he would be wrong in saying that the boracic acid had no inhibitory or inimical action on the B. Coli.

I have made experiments in this direction on B. Coli and on B. Gaertner, and by determining the action of a definite amount of boracic acid—0.5 per cent., as sanctioned by the Report of the Departmental Committee of the Local Government Board—on definite numbers of either of these microbes added to definite substances, a precise knowledge of this subject has been gained. I propose here to give the details and the results of these experiments.

Series I.—Sterile faintly alkaline "nutrient broth" (beef broth, peptone, salt), such as is used in bacteriological laboratories for the growth of bacteria of all kinds, was prepared. One lot was contained in test tubes, each charged with 10 c.c. This will be designated "ordinary broth." The other lot was in bulk first charged with Douglas's boron preservative—equal to 100 per cent. boracic acid—to the amount of 0.5 per cent., then decanted into test tubes, each receiving 10 c.c.: this will be designated "boron broth."

One tube of sterile ordinary broth was infected with a trace of B. Coli Communis from an active agar surface of laboratory stock culture. This stock culture was some months previously derived from a plate culture of

normal human sewage, and had, of course, shown all the tests positive for B. Coli Communis.

Similarly one tube of sterile ordinary broth was infected with a trace of B. Gaertner (typical) from an active agar culture. This stock was given to me some months previously by my colleague, Dr. Horder, who isolated it from the blood and the spleen of a fatal case. This case was one of a group of twenty-five girls that had all been attacked by acute gastroenteritis after eating a particular broth.

Both broth cultures were incubated at 37 deg. C. for two days (forty-eight hours), then numerical determination by the ordinary methods of dilution was made—for B. Coli Communis by surface plates of neutral red, bile salt, lactose, peptone, agar; for B. Gaertner by surface plates of Conradi-Drigalski medium. It was found that the broth cultures—very turbid—were pure cultures of these microbes, and contained them in the following numbers: The B. Coli broth culture contained 568 millions* B. Coli Communis per 1 c.c.; the B. Gaertner broth culture contained 1,082 millions B. Gaertner per 1 c.c.

At the same time (48 hours) that the above determination by plate cultures was made, one ordinary broth tube (10 c.c.) and one boron broth tube (10 c.c.) were charged with an amount of dilution of the above B. Coli broth culture and the above B. Gaertner broth culture, which was equal to 800,000 B. Coli per 1 c.c. in one set (ordinary broth and boron broth), and to one and a half millions B. Gaertner per 1 c.c. in the other set (ordinary broth and boron broth).

In other words, one tube containing 10 c.c. of ordinary broth and one tube containing 10 c.c. boron broth each received 8 millions B. Coli Communis, while on the other hand one tube containing 10 c.c. ordinary broth and one tube containing 10 c.c. boron broth each received 15 millions B. Gaertner.

These four tubes were placed in the incubator and kept at 70-71 deg. Fahrenheit. This temperature was chosen as representing the average summer temperature—that is, a temperature in which the inhibitory action of the boron preservatives, if any, will fully be able to declare itself, since it is in the summer temperature that not only are these microbes capable of rapidly multiplying, but also this is the temperature against which the preservative has its most useful practical application.

* It is not necessary to describe in detail the methods of dilution and calculation here, because every bacteriologist experienced in the determination of numbers in different materials knows that they are as simple as they are exact.

Two further points have to be mentioned before detailing the results. In selecting sterile broth as the medium—that is to say, the medium free of all other than the test microbes—the conditions of experiment are not only simplified, but in addition they offer the best chances for the growth and multiplication of the test microbes, these being unhampered, unsuppressed, and not interfered with by other microbes. It is a well-known experience in bacteriology that highly specialized and particularly pathogenic microbes like those we experimented with, other conditions being equal, grow, multiply and survive best if they have, as it were, the field all to themselves.

The second point to be mentioned is this: It was considered advisable to extend the period of the test to ten days—that is to say, to watch the cultures as to increase or decrease of the test microbes in the medicated broth for a period somewhat beyond that in actual practice; such articles as sausages, or milk preserved by boron preservatives, would rarely, if at all, be kept unsold for such a long period.

A. Experiments with *B. Coli Communis* in ordinary broth and in boron broth, inoculated with 800,000 B. Coli per 1 c.c., then incubated at 70-71 deg. F.

In Ordinary Broth.

At starting, 800,000 per 1 c.c.
After 48 hours,* 440 millions per 1 c.c.
After 7 days, 12,800 millions per 1 c.c.

In Boron Broth.

At starting, 800,000 per 1 c.c.
After 48 hours, less than 600,000 per 1 c.c.
After 3 days, less than 80,000 per 1 c.c.
After 4 days,† 3,000 per 1 c.c.
After 7 days, 1,000 per 1 c.c.
After 10 days, 200 per 1 c.c.

B. Experiments with *B. Gaertner* in ordinary broth and in boron broth, inoculated with 1.5 millions B. Gaertner per 1 c.c., and then incubated at 70-71 deg. F.

* Five cubic millimetres (1/200 of a cubic centimetre) of the culture were added to 10 c.c. of sterile salt solution—that is to say, each cubic centimetre of this salt solution contained 1/2,000 part of 1 c.c. of the broth culture; of the salt solution 1 cubic millimetre was rubbed over the surface of the "neutral red, lactose, bile salt, agar" set in the plate; in other words, the plate received a two-millionth part of the original broth culture. In this plate 220 colonies (red) of B. Coli (no others) made their appearance on incubation at 37 deg. C. after 24-48 hours. Consequently the original broth culture must have contained 440 millions B. Coli per 1 c.c.

† Of the boron broth culture five cubic millimetres (1/200 c.c.) were rubbed over the surface of the Drigalski medium set in a plate. Fifteen colonies (blue, no other) came up in the plate; therefore the boron broth culture contained 3,000 B. Gaertner per 1 c.c. I give these two tests in order to illustrate the mode of procedure.

In Ordinary Broth.

At starting, 1,500,000 per 1 c.c.
After 48 hours, 130 millions per 1 c.c.
After 7 days, 2,400 millions per 1 c.c.

In Boron Broth.

At starting, 1,500,000 per 1 c.c.
After 48 hours, less than 1 million per 1 c.c.
After 3 days, 640,000 per 1 c.c.
After 5 days, over 400,000, but less than 500,000 per 1 c.c.
After 7 days, less than 1/2 million per 1 c.c.
After 8 days, 400,000 per 1 c.c.
After 10 days, over 2 millions.

From this series it appears, then, that 0.5 boracic added to broth possesses a marked and powerful inhibitory action on the life of B. Coli. Although the broth contained at starting the enormous number of 800,000 B. Coli per 1 c.c., not only was there on incubation at 70-71 deg. F. no increase in their number, but a rapid diminution—i.e., death of crowds of them; thus in three days their number had decreased tenfold, after seven days eight hundredfold, and after ten days four thousandfold. The conclusion, therefore, arrived at by Dr. Bernstein from his preliminary experiments with B. Coli were not confirmed by our experiments with boron beef broth.

As regards B. Gaertner the results were less striking than those concerning B. Coli. As to the former (B. Gaertner), no increase but a decided decrease took place during the first eight days. From one and a half millions per 1 c.c. at starting, a decrease during the first forty-eight hours to less than a million per 1 c.c., after five days to less than half a million per 1 c.c., and about the same number was found after eight days; only after ten days was there a slight increase noticed.

In these experiments the boron broth cultures both of the B. Coli and of the B. Gaertner, although charged with enormous numbers of the microbes, showed no apparent alteration in their limpidity. Bacteriologists will understand that the presence of such minute microbes as the two test microbes, even when present to the amount of 800,000 or a million and a half per 1 c.c., does not reveal itself to the unaided eye, and that such presence does not appreciably affect the limpidity of the broth; the boron broth B. Gaertner culture, when inspected after ten days' incubation and compared with a normal broth tube, showed a very slight diminution of its limpid condition, so slight that it could hardly be called turbidity.

Now, it will be admitted that under natural

conditions it will hardly occur that any food material—in a fairly fresh condition—would contain, *i.e.*, have been infected with, as many as 800,000 *B. Coli Communis* per 1 c.c. or one and a half millions *B. Gaertner* per 1 c.c. The experiments just recorded would, therefore, represent an extreme case such as is not likely to occur under actual conditions. A second series of experiments was, however, instituted, which would more approximate to what might occur under natural conditions, and which would at the same time confirm, or otherwise, the above first series.

Series II.—In this series boron broth was infected with *B. Coli Communis* and *B. Gaertner* in much smaller amounts: namely, *B. Coli* 6,400 per 1 c.c., *B. Gaertner* 1,200 per 1 c.c. The tubes were then incubated at 70-71 deg. F.

A. Experiments with *B. Coli Communis*.

In Boron Broth.

At starting, 6,400 per 1 c.c.
After 48 hours, less than 500 per 1 c.c.
After 3 days, less than 200 per 1 c.c.
After 5 days, less than 20 per 1 c.c.
After 7 days, less than 10 per 1 c.c.
After 9 days, less than 2 per 1 c.c.
After 10 days, none per 1 c.c.

Here again the decrease and final disappearance of *B. Coli* in broth containing 0.5 per cent. boracic was decisive and rapid; in 48 hours at 70-71 deg. F. a more than tenfold decrease took place, and this decrease continued till after 10 days 1.5 c.c. contained none of the 6,400 per 1 c.c. originally introduced. Here also Dr. Bernstein's assumption was not correct: not only did the life and growth of *B. Coli* not remain unaffected by the addition of boracic, but on the contrary this substance had a marked deleterious effect on the life of this microbe.

B. Experiments with *B. Gaertner*.

In Boron Broth.

At starting, 1,200 per 1 c.c.
After 48 hours, less than 500 per 1 c.c.
After 3 days, less than 200 per 1 c.c.
After 5 days, 140 per 1 c.c.
After 7 days, 240 per 1 c.c.
After 9 days, 400 per 1 c.c.
After 10 days, 500 per 1 c.c.

From this it will be seen that also in this series *B. Gaertner* was markedly affected by the boracic, although to a less degree than *B. Coli*. The former (*B. Gaertner*) showed nothing of an increase during the first five days; on the contrary, its decrease was marked and steady, although not so great as in the case of *B. Coli*. The *B. Gaertner* during

the first five days decreased about ninefold, whereas the *B. Coli* under the same conditions decreased more than three hundredfold. In seven days *B. Gaertner* showed an increase on that of five days, and this was more pronounced in ten days, but even at this period their number was less than half the initial number.

Half per cent. boracic possesses, then, in beef broth a decided inhibitory, restraining and disinfecting action on the life and growth of *B. Coli* and of *B. Gaertner*.

Series III.—In this series the experiments were conducted on the same principle as in the former series, but the medium to which the microbes *B. Coli* and *B. Gaertner* were added was sausage-meat. Mr. E. A. Fuller, of the firm of Messrs. W. Fuller & Son, preserved provision manufacturers, of Homerton, was kind enough to allow me to be present when sausage-meat was prepared—pork, veal, spices and bread. After the material had been thoroughly minced, and before any preservative had been added, I was allowed to take away in my sterile bottles a quantity of this minced substance. In the laboratory I separated it into two portions—(a) one which received 0.5 boron preservative (Douglas's), and (b) one control which remained without any addition of preservative. In order to mix the meat well and uniformly with the boracic it was necessary to place the meat in a sterile mortar, and to thoroughly stir it with a sterile pestle while gradually adding the boracic powder. This mixing and stirring was kept up for more than ten minutes, as it was intended to thoroughly impregnate the material with the preservative. Owing to the extremely cohesive and viscid nature of the material (due to the bread), and in order to deal with it in such a manner that it could be poured into test tubes in definite amounts and that quantitative accurate analysis could be made, it was necessary to further thoroughly mix and stir it with sterile water in the proportion of 1 volume of the sausage-meat and 2 volumes of sterile water.

Both lots—the control lot and the boron lot—were placed in test tubes, each tube receiving about 10 cubic centimetres of the material.

The tubes were then kept at a temperature of 70 deg. Centigrade for half to one hour in order to destroy all non-sporing bacteria which might, and no doubt would, interfere with the growth and multiplication of the special test microbes—*B. Coli* and *B. Gaertner*—which had to be added. I have already stated that the

object of these our experiments was to give to the added test microbes the best chances of growing and multiplying, and therefore it was necessary as a preliminary to the experiments to remove from the culture medium as much as possible other saprophytic microbes which could interfere and prevent the growth of the test microbes. When the tubes had been again cooled, infection of the sausage material was proceeded with:—1. One set of non-medicated sausage-meat—to be designated “ordinary” sausage-meat—and one set of “boron” sausage-meat were each (10 c.c.) infected with a definite number of *B. Coli Communis*. 2. Similarly 10 c.c. of “ordinary” and 10 c.c. of “boron” sausage-meat were infected with a definite number of *B. Gaertner*.

The stock beef broth cultures from which the infections were made contained—one about 400 millions *B. Coli* per 1 c.c., the other 31 millions *B. Gaertner* per 1 c.c. By plate cultivation (see Series I) it was ascertained that the number of *B. Coli* added to each of 10 c.c. of “ordinary” sausage-meat and of “boron” sausage-meat was 10,000, or 1,000 *B. Coli* per 1 c.c. of the meats, and the number of *B. Gaertner* added to each of the 10 c.c. of “ordinary” and of “boron” sausage-meats was 780, or 78 *B. Gaertner* per 1 c.c. of the meats.

The so-infected tubes were then placed in the incubator at 70-71 deg. F., and kept therein for forty-eight hours and four days respectively; determination of the test microbes was made with the following results:—

A. Experiments with *B. Coli Communis* in “ordinary” and “boron” sausage-meat, inoculated with 1,000 *B. Coli* per 1 c.c.

In Ordinary Sausage-Meat.

At starting, 1,000 per 1 c.c.
After 48 hours, 22 millions per 1 c.c.
After 4 days, over 150 millions per 1 c.c.

In Boron Sausage-Meat.

At starting, 1,000 per 1 c.c.
After 48 hours, less than 20 per 1 c.c.
After 4 days, none per 1 c.c.

It appears, then, from these tests that, while in the “ordinary” sausage-meat the multiplication of the added 1,000 *B. Coli* per 1 c.c. was very great and proceeded unimpeded, amounting to 22 millions per 1 c.c. in two days, and rising to over 150 millions per 1 c.c. in four days, there was at once a considerable inhibition and destruction of the microbe in the medicated sausage-meat, so much so that of the added 1,000 *B. Coli* per 1 c.c. less than twenty were

present per 1 c.c. after two days, and none could be discovered in 1 c.c. after four days.

B. Experiments with *B. Gaertner* in “ordinary” and “boron” sausage-meat inoculated with 78 *B. Gaertner* per 1 c.c.

In Ordinary Sausage-Meat.

At starting, 78 per 1 c.c.
After 48 hours, 36 millions per 1 c.c.
After 4 days, over 200 millions per 1 c.c.

In Boron Sausage-Meat.

At starting, 78 per 1 c.c.
After 48 hours, less than 20 per 1 c.c.
After 4 days, none per 1 c.c.

It appears, then, from this that while *B. Gaertner* in the “ordinary” sausage-meat multiplied to an extraordinary degree—from 78 per 1 c.c. to 36 millions per 1 c.c. in two days, and to over 200 millions per 1 c.c. in four days—in the medicated sausage-meat the *B. Gaertner* dwindled down to none per 1 c.c. in four days.

Series IV.—Owing to the difficulties due to the viscosity (bread) of the sausage-meat, I simplified the matter by preparing a broth from the chief ingredients generally used for the sausage-meat, leaving out the bread and the spices, and using only veal and pork. This not only simplified the experiment, but enabled me to conduct the experiments with great accuracy and in favour of the solution of the problem whether any inhibition—and, if so, to what extent—of the growth of *B. Coli* and *B. Gaertner* occurs in the medicated material. The growth of *B. Coli* and of *B. Gaertner* obviously depending on the meat portions of the sausage-meat, and not on the added spices or bread, these latter two materials could be left out as immaterial for the solution of the problem.

Equal amounts of fresh veal and fresh pork were minced and then mixed with water and boiled so as to form a nutrient broth (1 lb. of meat to a litre of water). This, after filtration, was sterilized and ready for use as stock veal-pork broth. The stock material was now divided in two lots: Lot a, “ordinary” veal-pork broth, was decanted in test tubes, 10 c.c. in each tube. Lot b was mixed with boracic powder (Douglas's) to the amount of 0.5 per cent. and decanted in test tubes, 10 c.c. in each tube—“boron” veal-pork broth. The tubes were then heated for twenty minutes to 70 deg. C. in order to sterilize them. Of the “ordinary” veal-pork broth tubes and of the “boron” veal-pork broth tubes, one of each was infected with 4,080 *B. Coli* per 1 c.c. and with 860 *B. Gaertner*

per 1 c.c. respectively. They were then placed in the incubator and kept there at 70-71 deg. F.

A. Experiments with *B. Coli Communis* in "ordinary" and in "boron" veal-pork broth, each inoculated with 4,080 *B. Coli* per 1 c.c.

In "Ordinary" Veal-Pork Broth.

At starting, 4,080 per 1 c.c.

After 48 hours, 190 millions per 1 c.c.

After 7 days, 960 millions per 1 c.c.

In "Boron" Veal-Pork Broth.

At starting, 4,080 per 1 c.c.

After 48 hours, 600 per 1 c.c.

After 4 days, 100 not 200 per 1 c.c.

After 7 days, 60 not 100 per 1 c.c.

After 10 days, less than 10 per 1 c.c.

From this it follows, then, that also in the veal-pork broth the addition of 0.5 per cent. boracic preservative has a marked inhibitory and disinfecting action on the *B. Coli*. Whereas in the veal-pork broth without preservative the multiplication of the *B. Coli*—originally 4,080 per 1 c.c.—reached in seven days at 70-71 deg. F. the enormous number of 960 millions per 1 c.c., i.e., about 240,000-fold the original number, in the veal-pork broth with the preservative the original number of 4,080 *B. Coli* per 1 c.c. not only did not increase, but on the contrary dwindled down to 60 per 1 c.c., and in ten days to less than 10 per 1 c.c.

B. Experiments with *B. Gaertner* in "ordinary" and in "boron" veal-pork broth, inoculated each with 860 *B. Gaertner* per 1 c.c.

In "Ordinary" Veal-Pork Broth.

At starting, 860 per 1 c.c.

After 2 days, 210 millions per 1 c.c.

After 7 days, over 800 millions per 1 c.c.

In "Boron" Veal-Pork Broth.

At starting, 860 per 1 c.c.

After 2 days, 1,500 per 1 c.c.

After 3 days, 6,200 per 1 c.c.

After 4 days, 8,400 per 1 c.c.

After 7 days, 7,800 per 1 c.c.

In this experiment the inhibition in the growth and multiplication of the *B. Gaertner* by the addition of 0.5 per cent. boracic preservative, as compared with the enormous multiplication of the microbe in the "ordinary" or non-medicated veal-pork broth, was distinct, although, it must be added, considerably less so than was the case with the *B. Coli*. Whereas in the ordinary or non-medicated veal-pork broth *B. Gaertner* multiplied from 860 per 1 c.c. to over 800 millions per 1 c.c.—i.e., nearly a million times—in seven days, in the medicated broth the multiplication was

only about ninefold, or about 100,000 times less than in the ordinary broth.

C. In order to confirm this result, and also to see whether, as indicated in this experiment, the inhibition of the *B. Gaertner* in the medicated veal-pork is markedly less than in the medicated beef broth (see experiments in Series I), a second test was made, using the same boron veal-pork broth as in the above Experiment B.

Boron veal-pork broth inoculated with 8,000 *B. Gaertner* per 1 c.c., and kept in the incubator at 70-71 deg. F.: the non-medicated veal-pork broth from which this subinoculation was made was the same as used in the preceding Experiment B; it had been kept at 70-71 deg. F. for eight days, and contained over 1,200 millions *B. Gaertner* per 1 c.c.

Boron Veal-Pork Broth.

At starting, 8,000 per 1 c.c.

After 2 days, 8,400 per 1 c.c.

After 4 days, 8,000-10,000 per 1 c.c.

After 6 days, 13,000 per 1 c.c.

After 8 days, 28,000 per 1 c.c.

From this experiment it will be seen that in our boron veal-pork broth there did occur a slight increase of the *B. Gaertner*, very slight indeed, as compared with what occurred in the control or non-medicated veal-pork broth. The question is, How is it that in beef broth medicated with 0.5 per cent. boron, not only no increase but a very marked decrease occurs (see Experiment B in Series I and II) during the first seven or eight days, whereas in our boron veal-pork broth *B. Gaertner* does undoubtedly show a slow, gradual increase? The reason for this difference is probably due to the following: The addition of 0.5 per cent. boracic to our nutrient beef broth causes no turbidity, whereas such addition to the veal-pork broth causes marked turbidity, which turbidity increases markedly when the broth was heated (see above) for the sake of sterilization; on cooling, a whitish powdery precipitate was deposited, the supernatant broth remaining fairly clear. The non-medicated veal-pork broth tubes on heating did not show this marked turbidity and precipitated hardly any sediment. The explanation for this seems to be that part of the added boracic combines with some substance present in the veal-pork broth into an insoluble material, and thereby the amount of the available, i.e., dissolved and active, boracic acid in the broth becomes reduced; the broth contains now, not 0.5 per cent., but considerably less than 0.5 per cent. available boracic acid. This not occurring in

the beef broth the available amount of added boracic acid remains unchanged, i.e., 0.5 per cent., and therefore the inhibitory action is much more marked.

ADDENDUM.

While this paper was passing through the Press I had the opportunity of testing the effect of boracic acid on the *B. Typhosus*.

Ordinary beef broth and boracic (0.5 per cent.) beef broth, each received 50,000 *B. Typhosus* per 1 c.c.—the *B. Typhosus* had recently been isolated from the urine of a typhoid convalescent in this hospital. The result of incubation at 72 deg. F. was as follows:—

Ordinary Beef Broth.

At starting, 50,000 per 1 c.c.

After 1 day, 284 millions per 1 c.c.

After 2 days, over 1,200 millions per 1 c.c.

Boron Beef Broth.

At starting, 50,000 per 1 c.c.

After 1 day, 100 but not 1,000 per 1 c.c.

After 2 days, 10 but not 100 per 1 c.c.

After 3 days, 1 but not 10 per 1 c.c.

After 4 days, none per 1 c.c.

From this it follows that the addition of 0.5 per cent. boracic acid to broth has a very marked restraining and disinfection action on the *B. Typhosus*.

THE RESIGNATION OF DR. SEATON.

DR. SEATON has resigned his post as County Medical Officer of Health of Surrey—a post he has filled with distinction for the past twenty years. His resignation, however, will not entail his retirement from active public health work, for the County Council have appointed him Consulting Medical Officer of Health at a salary of £300 a year, and he hopes to find time for private consultative work, for which from his long and varied experience he is well fitted.

Dr. Seaton has been a member of the public health service for nearly forty years. He was appointed the first medical officer of health of Nottingham as long ago as 1872, and resigned in 1884 on being appointed medical officer of health of Chelsea. In 1890 he became County Medical Officer of Health of Surrey. The Surrey County Council was the first county council to appoint a medical officer of health, and Dr. Seaton had, therefore, the distinction of becoming the first county medical officer of health. Dr. Seaton's public health work is well known. He was

one of the pioneer workers for the compulsory notification of infectious disease and for hospital isolation, and it is largely due to his influence that the county of Surrey is so well equipped with isolation hospitals. He has given much attention to the subject of water supply—a subject which the geological conditions of Surrey render of special importance in that county, and his reports have been greatly esteemed by his colleagues. Dr. Seaton was one of the early workers in the housing movement, and in 1890 was appointed by the Home Office to report on an insanitary area in the East End of London.

Dr. Seaton has for many years been an active member of the Society of Medical Officers of Health, and was President of the Society in the session of 1897-98. His many friends in the public health service will wish him a long period of continued success in his new sphere of work.

CHEAPER HOUSES WANTED.—It seems somewhat anomalous that good as the original intention was of compelling three bedrooms, it should have re-acted so as to really cause worse housing than formerly, and I think a revision of the by-laws allowing houses with only two or even one bedroom to be built would be distinct advantages if proper safeguards were enforced. There is a great demand within this district for good workmen's cottages at a rental which the average labourer, with from 18s. to 24s. per week can pay say 2s. 6d. to 3s., and as our by-laws require three bedrooms it is clear that none can be built to pay any interest for that rental. The result is that all the old cottages are eagerly sought after, and as they are becoming derelict and scarce the shortage is more acute. Many couples have no family, many widows are left with one or two small children. These and all newly married couples could very well do with a house which had only one bedroom, and it is evident that numbers of families could be amply served with two. If houses were allowed to be built with one living room and one bedroom of a definite size and structure, to be laid down in by-laws, and each house to have a plot of ground enclosed and entirely devoted to itself with a lean-to or even a wooden washhouse, pantry, and coalhouse, and thoroughly efficient sanitary conveniences and drainage, with also a plentiful water supply, it could unquestionably meet a very acute want, and if similar safeguards were extended to two bedroomed cottages there is no doubt that a thoroughly good class of tenants would be secured, with very great advantage to all dwellers in the district.—*Annual Report of Dr. Gough, Medical Officer of Health, Northwich.*

SOME POINTS IN CONNECTION WITH THE MILK SUPPLY.*

By J. H. GARRETT, M.D., D.P.H.,
Medical Officer of Health, Cheltenham.

THIS subject continues with us, as with others, to be of great interest and importance, for the possibility of obtaining a supply of milk free from any danger to the consumer is still more of a hope than a realization. The sources of contamination still remain not greatly diminished by any efforts yet made, and no local effort that can be made, nor any general law that can be passed, will render the public at all times secure against the possibility of the milk as delivered to them containing the germs of disease.

Much of the milk supplied to Cheltenham comes in from numerous outside districts, some of them situated rather far away, whilst every one of the half-dozen districts that immediately surround us supplies us with its quota. It is evident, therefore, that no isolated local action can have the effect desired. But even if we limit ourselves to our own district and the milk produced within its borders, no guarantee can be given of the purity and safety of the milk. Time and again we have had pretty plain evidence of an outbreak of one disease or another being caused by milk, and considering that any one lot of milk, whether the quantity be great or small, is subject to receive and convey the germs of disease, it is by no means unlikely that many more cases of such diseases as scarlet fever and diphtheria are brought about by the consumption of milk than those attributed to this cause. The extraordinary facility with which certain disease-producing microbes grow in milk, and the rapidity with which they render it productive of the particular disease to which they stand respectively in the relation of cause, must always render milk in the uncooked or untreated condition a source of peril, which can only be certainly obviated by heating the milk to such a degree as to ensure the death of the living microbes above referred to.

Milk passes through so many hands—and an almost equally great danger lies in the utensils used to hold and convey the milk, the pail, the churn, the bottle or can, which have to be washed and brushed and rinsed and scalded and filled—and some of the hands that handle all these vessels may be peeling from scarlet fever, and some of the throats of the handlers may contain a virulent strain of the diphtheria bacillus, and some of the water used for the washing and rinsing may contain the typhoid bacillus. Often the water of a farmstead is derived from a very doubtful source. And a very short time after the infection of the milk suffices to swarm the milk with the

microbes, which find themselves in such a nourishing and congenial fluid.

As regards cowsheds, we have had no difficulty in getting done what we have asked in the way of alterations, and our lead in this connection is being successfully followed in several of the surrounding districts. I strongly advocate cowsheds with open fronts; we now have several here, and they are answering very well. The prejudice that requires cows to be shut up in closed sheds is absurd, though somewhat firmly fixed. That we should be building sanatoriums all over the country in which to treat delicate men and women in the open air, and doing this successfully, and at the same time and near the same places we should be boxing cows up in sheds so overcrowded that no human being could live in such an atmosphere, is a matter fit for nothing but ridicule.

The cows in our open cowsheds are doing very well indeed, but one milk purveyor here has kept five small yellow Guernsey cows, that are not of a particularly hardy breed, in the open field by both day and night during the whole of the past winter, feeding and milking them without bringing them in, and they have been perfectly well and healthy all the time. Another milk producer here, Mr. Wood, of Arle Farm, kept forty cows in the open field by day and night all last winter, only bringing them into the sheds to milk them, and turning them out again immediately every night without exception, and without any reference to weather; and these cows have never ailed in any way, have given no less milk, and have been much cleaner than any cows I have ever seen in the winter time when kept in sheds. But it is well known that cows will live and do very well with a very small amount of shelter through the winter if well fed, just as well, in fact, as cow-stock not in milk that it is everywhere customary to keep in the open. The idea that cows give more milk when kept in closed sheds is a myth, as I am informed by those who are keeping their cows in the open. In an open-fronted shed the question of light and ventilation are settled, for at the most nothing further is required for these purposes than some louvred ventilators on the roof ridge. The only thing else really required is a proper floor with a good 2-ft. channel at the heel of the stalls leading to an appropriate drain, and water supply. For the rest, it is a matter of keeping. Consequently, in the main, old cowsheds can be made sanitary and sufficient by taking out their fronts and by having their floors and the ground in front of the shed well and properly paved and drained, any other necessary items of amendment being comparatively small and inexpensive. There is often a question of water supply that has to be solved, but the whole expense is not great—nothing of such moment, for instance, as to require Govern-

ment loans, as has been suggested in certain quarters. Even if the landlord or owner of the farm has to spend a couple of hundred pounds, the interest on that sum is not vast in comparison with the rent, as a rule, and the tenant will probably be agreeable to share the annual addition to the farm rent, if indeed members of our landed proprietary are so impecunious as sometimes represented, and cannot themselves bear the cost of providing for the tenants the necessary conveniences for the keeping of their cows and for the carrying on in a proper hygienic manner the trade of a dairyman.

Here in Cheltenham no difficulty has been met with. Duplicate notices, with detailed specifications of the work required to be done, were served on landlord and tenant, and they were left to make their own agreement, but the landlord always ordered the work.

It is very essential to serve specifications of exact requirements, and have the carrying out of the work supervised. I cannot conceive how it is to be expected that such work will be properly done as the result of a general request to comply with the Regulations of the Dairies, Cowsheds and Milkshops Order, 1879, and the Public Health Act, 1875. Such a vague notice must lead to work being done in various styles, and generally badly.

Yet although it is possible to cause cowsheds to be made suitable for keeping cows, that, after all, is only a small part towards the production of clean milk; the mode of keeping the cows and the cowsheds is a most important factor, and here there is a great failing on the part of many cowkeepers. It is to a considerable extent a matter of clean litter; but litter is very often scarce, and the cows have next to none to lie upon, and the easy removal of excremental matter as soiled litter cannot be practised. The dung that falls on a naked floor is not so easy to remove, and if you attempt to wash the floors of cowsheds they never get dry in the winter time. Very commonly there is too great an economising of litter, with resulting dirty cows.

As to the condition of the cow's body in regard to freedom from tuberculosis and other diseases, that is a matter for the veterinary surgeon, but not for the veterinary surgeon appointed separately by every little rural district whose farmer councillors are his masters and whose private clients are amongst those whose cows he has to inspect. That would never do! Nor is it possible for one district to appoint a veterinary surgeon to successfully examine cows and to cause the removal of those that are diseased, whilst none of the other districts around make any such appointment. This business cannot be worked except as the result of a general arrangement, and it will be imperative to have some system of compensation for compulsory slaughter of cow-stock.

THE WESTMINSTER DISINFECTING STATION.

WE are indebted to Dr. F. J. Allan, Medical Officer of Health, Westminster, for the following description, with plan, of the new Disinfecting Station recently opened by the Westminster City Council:—

The site is in an open position, by the side of the Grosvenor Canal, and has separate approaches from two roads.

Externally the plinth of the building is faced with red pressed bricks—the upper part with Crowborough and red-brick facings, red gauged arches and Portland stone dressings.

The interior is faced to a height of 4 feet with white glazed bricks—the walls above of all the rooms, and the ceilings of the infected and disinfected chambers, being lined with white tiles.

The following accommodation is provided in the building: An "infected" van shed, for unloading infected articles. An "infected chamber," 36 ft. by 20 ft., for the reception of infected articles which will be placed directly into the disinfecting apparatus. A "disinfected chamber," 36 ft. by 20 ft., into which the goods which have been disinfected are discharged from the disinfecting apparatus. A loading store and "disinfected" van shed, from which the disinfected articles are despatched. A formalin chamber, accessible from the "infected" and "disinfected" chambers, 12 ft. by 6 ft. 3 in., for the disinfecting of furniture and such articles as cannot be submitted to the action of steam; it is provided with a Ligner's apparatus for the generation of formaldehyde gas. A drying-room, 23 ft. 6 in. by 16 ft. 6 in., containing drying-horses and a mangle. A bottle-washing room, fitted with sinks, washing-machine and special shelving. Separate bath-room, lavatory and mess-room accommodation for the staff. Store-rooms in basement.

A special and separate department is provided for the reception and cleansing of verminous persons. The verminous clothing is placed in air-tight receptacles between the two bath-rooms and the "infected" chamber, thence placed in the disinfectors, and returned from the "disinfected" side to the bath-rooms, the departments being connected by a basement passage.

APPARATUS AND MACHINERY.

The steam-disinfecting apparatus is that known as the "Alliot and Paton," made by Manlove, Alliot & Co. Two are provided, both having been removed from the Council's other stations.

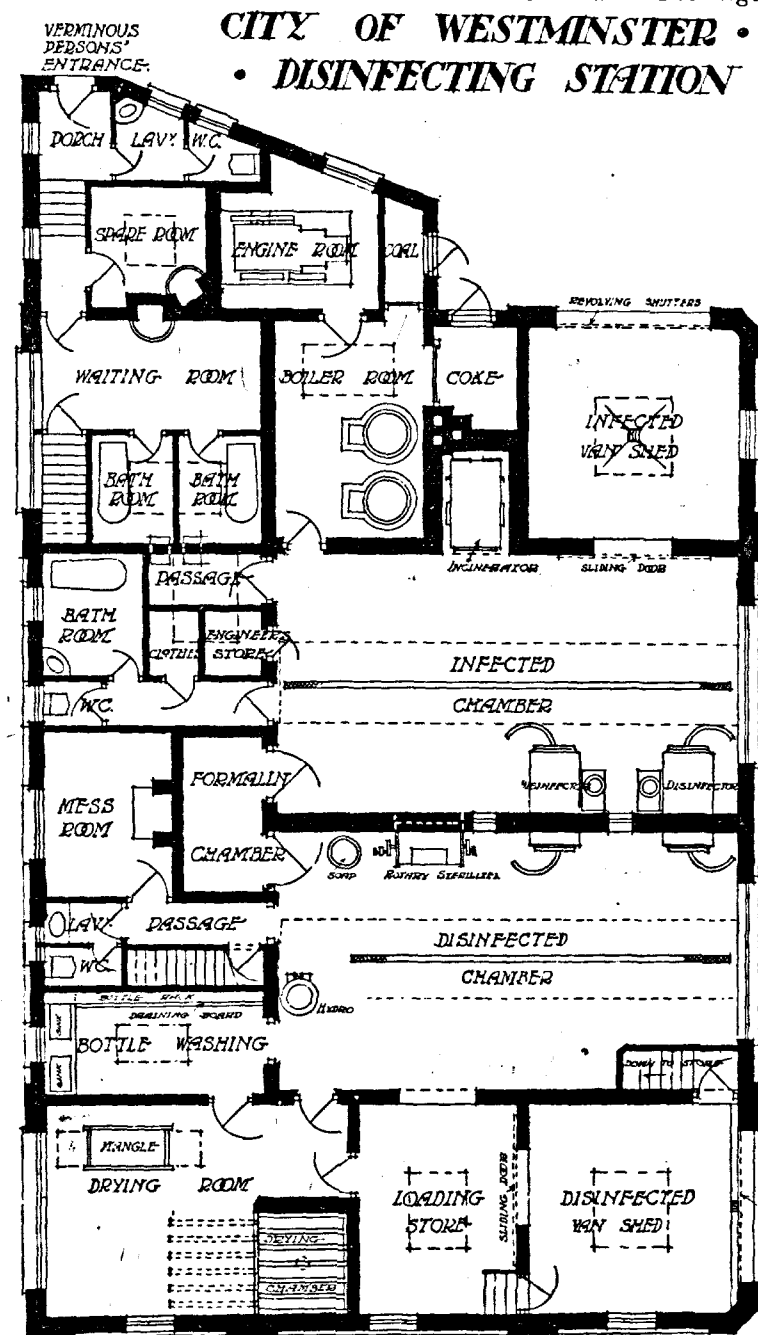
Articles which are partially or wholly made with leather and furs, silks, letters, etc., cannot be subjected to steam without damage. These may be treated in the same machine, either with dry

* Annual Report, 1909.

heat alone or with formaldehyde gas. A special appliance is provided for the introduction of this gas, which may also be used in conjunction with steam.

a means of ascertaining the treatment to which the articles have been subjected.

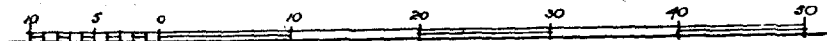
Articles of clothing or bed linen which have been soiled with discharges require to be soaked



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SCALE OF FEET



To each apparatus is attached a recording pressure gauge, fitted with a chart on which a diagram of every operation is automatically registered. These charts are preserved, and afford

in cold water and washed before exposure to steam, which would fix any stain. A washing machine has therefore been added. In many cases treatment therein will be sufficient disinfection, and on

removal the washed articles will be placed in a hydro-extractor and afterwards in a drying closet.

For furniture and large articles a special room has been provided in which formaldehyde, sulphurous acid gas or other disinfectant may be applied.

The infected van shed is so constructed that it may be converted into a closed room for the disinfection of carriages.

The incinerator furnace is new, and was provided by Messrs. Goddard, Massey & Co. It is for the destruction of mattresses, clothing, etc., which are worn out or too filthy to clean. It is constructed of steel plates covering side and top, the interior being built up of fire-brick lining. It consists of a fire-grate, ash-pit, baffle-wall and flue. The smoke and fumes from articles burned are destroyed by being passed through the fire-grate.

Power for driving the various machinery and plant is obtained by means of a horizontal steam engine, driving by belt on to a main shaft extending the length of the building. Any machine may be started or stopped independently.

The buildings have been constructed by Mr. C. F. Kearley, under the supervision of Mr. John Murray, F.R.I.B.A. Messrs. Goddard, Massey and Warner obtained the contract for the erection of the disinfecting and other apparatus.

THE BACTERIOLOGICAL DIAGNOSIS OF DIPHTHERIA.—I took a few experimental swabbings from the throats of children up for medical inspection, choosing any by chance that showed a superfluency of adenoid tissue or chronic enlargement of the tonsils or unhealthy looking throats, but in which there was no suspicion whatever of diphtheria. The result showed that if the experiment were extended to all school children the percentage yielding evidence of the presence of the diphtheria microbe would be large, so large that if such cases were notified as diphtheria a considerable percentage of the scholars could say they had had this disease; in fact, the statement might be brought into the present tense. Yet out of 1,332 children who could say, by themselves or by their parents, that they had suffered from any infectious disease, only 40 could say they had had diphtheria, during any part of their lives, of such consequence as to have been known by that name. These facts seem to me to indicate that a too high value is placed upon the bacteriological diagnosis of diphtheria. As an indication of the necessity of closing a school such evidence of the presence of the disease requires to be heavily discounted by the fact that the microbe appears, at least sometimes, to exist in many of the throats of school children, and this quite apart from the occurrence of any case of diphtheria that could be diagnosed by clinical signs.—*Annual Report of Dr. Garrett, School Medical Officer, Cheltenham.*

THE CRÈCHE AS A FACTOR IN THE PREVENTION OF INFANT MORTALITY.*

By D. L. THOMAS, M.R.C.S., L.R.C.P., D.P.H.,
Medical Officer of Health, Stepney.

THERE are in the Borough of Stepney factories of various descriptions where married women are employed. This industrial occupation compels the mother to leave her home for a considerable part of the day. The women who have young families are compelled to have their children cared for during the day, and the alternative is either to leave the baby in charge of a very young child, in a "baby-minder's" house, or a crèche. As far as sanitary conditions are concerned, there is no doubt that a crèche is superior to the other two. The mother does not select the house where the baby is cared for, on sanitary grounds, and the standard of cleanliness in the "baby-minder's" house is usually below that of the average of the neighbourhood.

In a report of the London County Council, the advantages connected with crèches were shortly summarised as follows:—

The crèche is usually healthier and cleaner than the child's home, the treatment is more enlightened, and the method of feeding better adapted to the child's tender years.

Every crèche can show children who have come there miserably anæmic, and suffering from rickets, whose health has visibly improved after some weeks of the crèche's treatment. Where no crèche exists, the mother who is obliged to go out to work for her living is compelled either to leave the child during the day where it cannot be properly cared for or to place it out to nurse—in either case at a cost in excess of her means.

At the crèche the child is taught cleanliness and good habits, becomes stronger and healthier, and is given a better chance in life.

Crèches are under medical supervision, and the promptitude with which a case of sickness is treated often prevents more serious consequences.

The mother is required to bring the child clean; better methods of feeding are learnt; and the cleanliness and discipline of the crèche insensibly react to the advantage of the home.

Fortunately in the borough five crèches have been established, viz.:—Dr. Barnardo's Home; Nursery for Jewish Infants, New Road; St. Paul's Crèche, Wellclose Square; George Yard Crèche; and 154, St. George Street.

At the crèche attached to Dr. Barnardo's Home children are looked after and fed for twopence a day, and in the case of widows for one penny per day. The number of infants that can be accommodated is limited to 50, the average number

* Annual Report, 1909.

being 40 per day. The distance whence the babies are brought is also limited to the radius of one mile from the crèche. During the school holidays the crèche is closed, as it is found that the babies are looked after by the other children. When the babies cannot be thus accommodated at the crèche, the mothers state that they usually pay about 3s. a week to women for looking after the babies for them.

There are no means of isolation at Dr. Barnardo's Crèche, but each child is washed on its arrival and put into clean clothes, which are supplied to it. If there are any signs of a rash the child is taken home at once. There is no open playground.

Nursery for Jewish Infants, New Road.—Fifty infants can be accommodated at this crèche, but the average number is 35 per day. The amount paid for each is twopence per day, and no child is allowed if its home is more than $1\frac{1}{2}$ miles from the crèche. Each child has a bath on admission, and is dressed in special clothing provided for it during the time it is in the crèche. There is an open playground attached to the crèche, and each room is adequately ventilated. An isolation room is provided.

St. Paul's Crèche, Wellclose Square.—The average number of infants accommodated is 24 to 34, although there is room for 40. There is a large open playground, which is utilized during the warm weather. The mothers pay threepence per day for each child. Most of the mothers reside in St. George's or Whitechapel, but no child is refused. The long tube bottle is, unfortunately, in use at this crèche. The children are given a bath if it is thought necessary, but not as a routine on their arrival. They are kept in their own clothes all day, and no special clothing is provided. There is no isolation room, but if a child is suspected to have an infectious disease it is taken into the kitchen for the rest of the day.

George Yard Crèche.—The average number of infants is 18, but 20 can be accommodated. The long tube bottle is sometimes used. The children do not have baths, and no special clothes are provided, but they are kept in their own clothes all day. The mothers pay threepence a day, and the infants are brought from any distance. I have seen a child which had been brought five miles from its home to this crèche.

154, St. George Street.—This is a crèche in connection with a soup kitchen at the above address. Children from the immediate vicinity only are taken in. No fixed charge is made, but the mothers pay what they can. The children do not have a bath, and are kept in their own clothing all day. The average number of children at the crèche is 10, but 18 can be accommodated.

One of the objections raised against crèches is their liability to encourage premature weaning,

and in some crèches it must be admitted that this danger is not sufficiently appreciated. The establishment of a crèche need not tend to discourage breast feeding, and in one of the above-mentioned crèches the mother is asked to return twice a day to give the breast to the baby. As an encouragement to the mothers to suckle their children, a glass of milk or a cup of cocoa is given to the mother in some crèches whenever they come to suckle their children.

In addition, the Notification of Births Act enables the Sanitary Authorities to advise mothers against premature weaning.

Another objection urged against the establishment of crèches is based upon their liability to act as foci in the spread of infectious disease. This objection refers almost entirely to measles. Everyone admits that wherever young children congregate measles is liable to spread among the children. This danger is met to a very great extent by the care exercised by the matron in charge of the crèche in examining each child on its admission.

The objections to crèches can be fairly met, and the difficulties arising in their management can to a certain extent be obviated. Two or three small crèches are better than one large one. The French, who are the pioneers in this movement, consider that the ideal crèche should be conducted by a private body and partly supported by the Municipality. This plan ensures personal interest with proper public supervision and control.

The crèche can also be made a centre of educational work and interest. The Inter-Departmental Committee on Physical Deterioration recommended the establishment of Municipal crèches wherever it was thought desirable, owing to the employment of married women in factories, or for other reasons. Girls over 14 years of age might be made to attend occasionally, and the teaching of infant management to such girls should be eligible for aid from the grant for public education.

TUBERCULOUS PIGS.—During Christmas week the carcasses of three large fat pigs were confiscated and destroyed on account of exhibiting tuberculous lesions. One of these carcasses was particularly notable from the fact that during life it had taken, in conjunction with its fellow (which was not tuberculous), a prize of £10 and a £10 silver cup for the best exhibit in its class at the Islington Cattle Show. I felt very sorry for the butcher in this case, as he sent for me and asked me to inspect the carcass. It certainly seems hard that he should have to bear the whole loss (about £12). If a breeder had to give a guarantee with every animal he sold to a butcher, there would, in my opinion, be a speedy revolution in the methods of keeping and feeding pigs.—*Annual Report of Dr. Taylor, Medical Officer of Health, Leyton.*

THE DISADVANTAGE OF SUBURBAN LIFE.*

By A. E. HARRIS, L.R.C.P., L.R.C.S.,
Medical Officer of Health, Islington.

AT the present time the tendency seems to be, not only in Islington but in all the other metropolitan boroughs, for people to move to suburban districts, rushing from London as if it were some plague-stricken spot. I am strongly of opinion that in doing so the heads of families, particularly the men, are doing neither themselves nor their families any great good. For what occurs? The husband duly comes into London to business, and every morning and every night has to rush to catch trains which start at certain fixed intervals, and nearly always puts off to the last moment the start from the house or from his place of business. Indeed, only a day or two since a gentleman living some thirty miles out of London informed me that daily after three o'clock he works under the greatest pressure in order to catch a fast train to his home, and that such a mental and bodily strain was beginning to tell on him. And so it is with others who undergo this daily rush, hurry and excitement of train travelling, which, apart from the noise and bustle incidental to this mode of travelling, causes a wear and tear of the circulatory and nervous systems, which must, and do in the long run, prove most detrimental to health; and thus the good which is sought in the country environment is entirely lost.

And as to this country environment! In many instances men who have purchased their own houses, mayhap only a few years ago, in a rural district now find themselves even more shut in than they would be in the large and wide streets and roads of such a London borough as Islington, which in addition possesses the advantage of four parks, namely, Finsbury Park, Clissold Park, Waterloo Park, and Highbury Fields, and provides means of amusement and recreation for old and young.

I venture to say that people desirous of nice homes can with difficulty find better surroundings than are to be obtained in this district, where so many of the houses have beautiful gardens surrounded by trees, which are as quiet and restful as if they were far from the madding crowd. And what is true of Islington is equally true of many of the other London boroughs.

If, then, people were wise they would not rush away from these London districts, which are so healthy, to suburban districts, the health conditions of which can be little, if at all, better, where facilities for shopping are fewer and the cost of food and clothing greater, and educational and other advantages for children not so good.

• Sometimes I hear complaints made by business

* From a Special Report.

people of the slackness of trade, some of which they attribute to the fact that so many people have left Islington and gone to live in the suburbs, and yet some of these men themselves have done the very same thing. If this is their opinion, and no doubt it is, they should be the first to set an example by returning to the borough where they trade.

With these facts before me, my advice to those who are thinking of moving to the country is the same as *Punch's* advice to those about to marry—"Don't!" for by remaining in London they will escape the everlasting rush for trains, the climbing of innumerable bridges at railway stations, and the certain strain on their vital organs, especially the heart, for there can be no doubt that much of the hurry and rush to London and out of it has caused many premature deaths from heart disease, apoplexy, and paralysis.

PUBLIC HEALTH AND THE RATES.—Public health officials suffer more or less from the prejudice that they are lavish in their expenditure, that their staffs are unduly large and costly, and that they can show no monetary profits. Judged by that standard we are mere encumbrances. If we could manufacture elixirs of life, and corporations were able to sell these, profits would correspond with the enterprise of the officials. I often wish the question could be viewed from that standpoint. As matters presently stand, the reasoning is reversed, and the man who persistently urges public health reforms is dreaded because he is expensive. Improved conditions of the community are not viewed with special favour because they yield no pecuniary returns. They rather raise rates. They do not, as a rule, reduce them. I wonder what the cities of Great Britain and Ireland would be like if only those officials were appointed who could demonstrate before their appointment that they would keep down the rates? If a calm and dispassionate view of the situation were taken, it would be realized that the decline in the death-rate meant a far greater than pecuniary asset. It would indicate that a healthy population was being reared to maintain the trade and prosperity of the community. If we still had slums, unhealthy houses, imperfect vigilance of new-born infants, contaminated milk supply, and general laxity all round, we should have white-faced men and women of feeble muscle and weak intellect. Recurring outbreaks of infectious disease would plant the seeds of future mischief in their economies, and a decrepit set of people would be universal. We must therefore give the public health service more credit than it usually receives. If cisterns, drains, houses, or other premises are condemned as nuisances, it is not for amusement that notices demanding abatement are issued by the public health staff.—*Annual Report of Dr. Robertson, Medical Officer of Health, Leith.*

PLAGUE PREVENTION IN SHANGHAI.*

By ARTHUR STANLEY, M.D., B.S., D.P.H.,
Health Officer, Shanghai.

PLAGUE-INFECTED rats having been found in December, 1908, a complete plague survey of the settlement was maintained throughout the year: 17,364 rats were found dead and brought to the laboratory for examination, and of these 187 were plague-infected. The following number of plague-infected rats was found during each month: 27, 30, 40, 21, 10, 1, 2, 2, 1, 5, 20 and 28. The increase in the number of those found plague-infected towards the end of the year may be due to (1) a seasonal incidence, (2) the cessation of rat-poisoning operations during the hot weather, or (3) the re-introduction of infection from outside Shanghai. A system of rat-destruction was put into operation which was at first concentrated on areas within a hundred yards of where infected rats had been found dead, and, when these had been thoroughly worked, was made general throughout the settlement. For this purpose some 5,000 break-back traps were used. During the year nearly 92,000 rats were trapped and burnt: these, with the rats found dead and examined for plague, brought the total number visibly accounted for to nearly 110,000. In addition to the trapping, close on seven million phosphorus baits were laid, about three tons of poison being used, which proved a powerful method in dealing rapidly with infected foci. Poisoning on so large a scale carried with it certain risks. For instance, there were four cases of poisoning, fortunately not fatal, among children, and a few deaths among domestic animals. Since using poisoned cakes coloured bright blue, instead of the usual method of spreading the poison on bread, no cases of adventitious poisoning have, however, been reported. In the absence of any serious attempt at rat-proofing houses on the part of property owners, over 20,000 houses, not keeping cats, were temporarily rat-proofed and pulicidally disinfected, bedding, etc., being passed through the steam disinfectant. This temporary rat-proofing consisted in the plastering up of rat-holes, bricking up and wire-netting places permitting ingress of rats into houses, the furniture of the house being removed to permit of thorough examination for rat holes and runs. Four hundred and nine persons, mostly members of the Health Office staff, were vaccinated against plague by Haffkine's method.

The most dangerous places as regards plague preventive measures were Li Hongkew and Chapei, on the borders of the settlement, where plague-infected rats had been found. After considerable trouble the sanitary staff was permitted to extend rat-destruction operations outside the settlement into these insanitary neighbourhoods. No preven-

tive measures whatever were undertaken by the Chinese municipal authorities, although the methods used within the settlement boundary were fully explained and co-operation urgently requested. This circumstance clearly demonstrates the need of an extension of the settlement for purposes of sanitary safety, for were it possible to keep plague out of the settlement by energetic sanitary measures, there would under present conditions be constant danger of re-infection from the insanitary and populous places immediately outside the boundary, which are now unfortunately beyond sanitary control.

A noteworthy feature has been the absence of any marked degree of opposition from the native community, co-operation being given to a greater extent than would naturally be expected—a circumstance which is considered to be due to the use of tact and forbearance, and especially to the use of the Chinese language by the foreign staff, who thus get into much closer touch with the native community. In cases where exemption from temporary rat-proofing operations was claimed on account of the work having been done by the occupiers, more especially where it was found that cats were kept, the sanitary staff have invariably where possible carefully respected the wishes and feelings of native residents.

As the adoption of the above preventive measures was followed by a marked improvement in the general condition regarding plague-infected rats, as cases of plague in man are held to be almost entirely dependent upon its prevalence among rats, and as no cases of plague occurred among the human population, the community had every reason to congratulate itself on having escaped a danger the magnitude of which had never before been experienced in Shanghai so long as sanitary records have been kept. Having practically freed the settlement of plague-infected rats, it became necessary to see whether further steps could be taken to ensure that plague-infected rats would not again be introduced by ships from plague-infected ports. If nothing further could be done by the Port Health Authority—the Imperial Maritime Customs—it was considered advisable to make the plague prevention staff a permanent organization. It would, however, appear desirable that ships coming from plague-infected ports should be required to present a certificate of freedom from rats; that precautions be taken in the harbour in unloading such ships; and that a health officer, acquainted with modern port health work, be appointed to organize such preventive work in the harbour, in addition to the work at present being done at the Woosung Sanitary Station.

Of the rats examined in the laboratory, about 70 per cent. were *Mus rattus* and the remainder *Mus decumanus*—the *rattus* being the black or ship rat,

which usually lives in houses, and the *decumanus* the brown or sewer rat. There was a large proportion of the *rattus* among those plague-infected. Of the fleas, *Pulex cheopis* and *Ceratophyllus fasciatus* have been identified, the former being the flea usually associated with the spread of plague from rat to man.

In formulating anti-plague measures the rat has been the chief objective, as it is held that the rat is the essential cause of epidemics, the flea being the carrier of infection from rat to rat and from rat to man, infection from human cases, which is practically limited to the few pneumonic cases that arise, being comparatively rare. The dictum "No rats, no plague," has been taken as a working basis, and a house that is rat-proof has been considered for all practical purposes plague-proof.

The following is a summary of measures put into operation:—

PUBLIC MEASURES.

1. Plague survey by collection of rats, found dead throughout the settlement, for examination in the laboratory in order to locate plague among rats.
2. Rat-destruction in infected areas, beginning at the periphery and working towards the centre.
3. Plague-proofing of houses—
 - (a) Temporary, by service of notice on occupiers asking for co-operation in cleansing, pulicidal disinfection, demurization and rat-proofing by minor repairs, etc.
 - (b) Permanent, by service of notice on owners requiring solid basements, removal of stair linings, hollow ceilings and hollow partitions, so as to deprive rats of accommodation.
4. Preventive inoculation with plague vaccine, beginning with the sanitary staff.

INDIVIDUAL MEASURES.

No rats, no plague.

A house that is rat-proof is plague-proof.

1. Keep cats.
2. Rid your house from rats also by trapping and poisoning.
3. Make your house as rat-proof as possible.
4. Provide no food for rats. Keep all food in places inaccessible to rats. Grain and such-like food for ponies, fowls, etc., should be kept in covered galvanized-iron receptacles. See that your servants keep their rice-bags where rats cannot get. Keep house refuse in properly covered galvanized-iron receptacles, and see that they are covered, especially at night. Keep the kitchen and its surroundings very clean; let no refuse lie about.
5. See that the gratings into the space below the ground floor keep out rats, and that the brick-work of the basement is impervious to rats.
6. See that all openings into covered drains are

kept in good repair to prevent egress of sewer rats. Carefully inspect all corners of the house from top to bottom once weekly, moving furniture where necessary. Do the same in the stable, fowl-house and other outhouses. Arrange for the plastering up of rat-holes or any place that may afford ingress to rats and mice.

7. All rats trapped or poisoned should be burnt. Other rats found dead in or about the house should not be touched with the hands, but should be picked up with tongs, put into Jeyes' fluid and water (1 in 20), and sent to the health officer for examination for plague.

8. Get vaccinated against plague in September in each year that plague threatens.

9. If you have any difficulty in carrying out the above measures communicate with the health officer in writing.

CERTIFIED FARMS.—The sanitary authority continue to grant certificates to farmers who comply with certain conditions as to air-space and general cleanliness of byres, and who keep only cows which have been tested with tuberculin and found satisfactory. One of these farmers has adopted the practice of clipping the hind quarters and tail of his cows, and of grooming them daily, so as to lessen the amount of undesirable pollution in the milk. It is interesting to note that before this practice was adopted, samples of milk from this farm showed *Bacillus Coli* to the extent of 10,000 in 1 c.c. (about 17 drops). In a sample taken after clipping and grooming there were only 10 bacilli belonging to the *Coli* group in the same quantity of milk. There is no doubt that very much may be accomplished by the energetic up-to-date dairyman towards securing comparatively clean milk.—*Annual Report of Dr. Renney, Medical Officer of Health, Sunderland.*

OBJECTIONS TO MEDICAL INSPECTION.—The objectors consist practically of three classes: First, those whose objection is due to ignorance or misconception of the reason or necessity for examination. The number of these varies in different schools, due very largely to the influence of the head teacher, a few words of explanation to the parents generally at once removing the objection. The second class object because they know the condition of their children is open to criticism. The third consists of those peculiarly constituted people who object to anything and everything; they might be termed professional objectors, and apparently the gratification of their peculiar prejudice is more important to them, than the condition of their children. Why any sane parent should object to the free examination of his child, properly conducted in the parent's presence, it is difficult to conceive.—*Annual Report of Dr. Sowden, Medical Officer of Health, East Ham.*

* Annual Report, 1909.

WHOLE-TIME AND PART-TIME MEDICAL INSPECTORS.*

By WILLIAM J. HOWARTH, M.D., D.P.H.,
County Medical Officer of Health, Kent.

IN deciding upon the class of medical inspector to be appointed to carry out the practical work, consideration was given to the claims of both whole-time and part-time officials. As regards the former, I reported that they would probably be cheaper and that the results would be characterized by greater uniformity, and from the fact that as a whole-time official would probably have in his district a diversity of schools and people he would be of great value in creating standard records which could be used for comparative purposes. The objections appeared to be the risks which might result from apparent dual jurisdiction, and that the monotony of the work, combined with no considerable prospect of promotion, might result in frequent change which would tend to minimise uniformity. As regards local practitioners, it was pointed out that in sparsely populated districts they would be able to make more frequent visits to schools for the purpose of examining such abnormal children as had been discovered at the routine inspection, and that they would be personally acquainted with the family history of many of the parents and children.

The objection to such appointments included the possibility of friction resulting from the advantage which the appointment would confer on the selected practitioner, less uniformity owing to the more considerable splitting up of a district, and the danger that the interests of private practice might clash with pre-arranged school visits. It was difficult, without previous experience, to place an exact value on either the advantages or disadvantages of either class of inspector, but it was clear that in the case of the local practitioner, other things being equal, the district medical officer of health ought to be the first choice, and that in the whole-time officials the combination of school and public health work represented the ideal appointment. It was ultimately decided that both classes of inspectors should be appointed. There were therefore appointed two whole-time officers, and one non-practising man who devoted three days a week to the work.

The remainder of the county was divided among part-time practitioners, district medical officers of health being appointed where they were willing to accept the post. I am satisfied from my experience that local practitioners can carry out the work in a perfectly satisfactory manner, but they increase the difficulties of organization owing to the personal factor playing

such an important part in the recording of observations. This is, however, an objection which diminishes with larger experience, and the elimination of this variability is assisted by the circular letters which are periodically issued. On many occasions their knowledge of local conditions and circumstances has been found a real advantage, and a local practitioner is frequently more readily available for a special visit than is a whole-time official whose time is greatly taken up with pre-arranged inspections. The best area for the local practitioner would appear to be one containing from two to three thousand children; this is large enough to enable him to gain experience, and not so large as to leave a man no time for matters outside routine inspection. As regards whole-time officials, they certainly facilitate organization, inasmuch as they are frequently at the office, difficulties can be discussed and arranged as they arise, and, of course, the fewness of numbers reduces the risk of instructions being misunderstood. They are also helpful in clerical work during the time the schools are closed, and they certainly are of advantage in carrying out investigation work or in testing new methods.

The general conclusion at which I have arrived is that either class of inspector is able to do the work satisfactorily with an efficient system of organization, but some consideration should be given to the possibility of financial prospects in country districts being so diminished that the attractiveness of such areas will not be sufficient to induce the best type of men to settle in them if work which can effectively and efficiently be undertaken by local practitioners is absorbed by whole-time officials. At the same time a local authority cannot be regarded as a philanthropic agency, and due consideration must be given to the cost of the various schemes. If the different schemes reasonably approximate, local conditions would almost constitute the determining consideration.

The salary paid to part-time inspectors is one shilling per child inspected, to which is added an annual grant of £1 per school and £1 per 1,000 acres of area. The object of the latter two payments was to adequately remunerate the country practitioner for the additional time and trouble in which he would be involved, compared with the town inspectors, in the inspection of a similar number of children. It does not entirely work out satisfactorily. I would recommend that as soon as the full extent of the requirements of the Board of Education respecting the frequency of routine inspection can be determined that a salary be arranged for each area. The cost of urban and whole-time inspectors is practically the same, but the rural inspectors are considerably more expensive than either.

ASSOCIATION OF MEDICAL OFFICERS OF HEALTH.

A GENERAL MEETING of the above Association was held in the Council Chamber of the British Medical Association Offices on July 29th, with Dr. F. G. Crookshank in the chair.

The Chairman outlined the position that had arisen in consequence of the recent action taken by the representative meeting of the British Medical Association, and pointed out that the Council of the Association would probably draft a new resolution relating to part-time medical officers of health, to be submitted to the next annual representative meeting. It was proposed by Mr. Fremantle and seconded by Dr. Wilkinson that the following resolutions be sent to the Central Council of the British Medical Association and also the Divisions:—

"This meeting expresses its extreme regret that the representative meeting has not rescinded Minute 234, but welcomes its reference to the Council for consideration, and trusts that the whole question will now be considered in the light of the general interests of the medical practitioner and his varied appointments in the public service."

It was also resolved—

"That in the opinion of this meeting no evidence has yet been adduced to show that the interests of the public health suffer when, as is usually the case, a medical officer of health engages in work other than the restricted duties of his office, and no reason exists for differentiation, in respect of conditions of tenure or superannuation, between part and whole-time medical officers."

A vote of thanks was unanimously passed to Drs. Langdon-Down, Taylor, and Mr. Fremantle, and also to those who had voiced the cause of the part-time medical officers of health at the various meetings of the British Medical Association.

Dr. Parkinson, of Wimborne, suggested the feasibility of a federation of all the various societies of part-time medical officers, such as the poor law, police surgeons, public vaccinators, etc. He urged that one large society would be much more likely to effect good than many smaller ones. General approval was expressed, and it was agreed to refer the matter to the Council for consideration at their next meeting in October.

In the evening a dinner was held at the Holborn Restaurant, and among those present were Mr. Arnold Ward, M.P.; Mr. Fremantle, County Medical Officer for Herts; Dr. Foulerton, County Medical Officer for Sussex; Dr. Hogarth, County Medical Officer for Buckingham; Drs. Drury, Gibbs-Smith, Sells, Meredith, Sharman, King, May, Wilkinson, and others. Dr. Crookshank was in the chair.

Dr. Foulerton, in proposing the toast of "The Association," said that he was opposed to the municipalization of medicine, which would result if part-time appointments were abolished. In some appointments whole-timers are necessary, but in small districts part-time appointments were better for the public. He had never had any complaints of unfair conduct on the part of part-time men towards the other practitioners of the district.

Dr. Crookshank replied, and emphasized the change in professional opinion that had taken place during the year, and the importance of the present part-time system to the public as well as the profession.

Mr. Arnold Ward, M.P., replied, and said he was in favour of the general principles of the Association and individualistic efforts as against Socialistic efforts. He advised the Association to obtain the support of their profession in Parliament.

Mr. Fremantle proposed "The Kindred Societies," and Dr. Drury, President of the Public Vaccination Association, replied in sympathetic and cordial terms.

The Honorary Secretary (Mr. D. A. Belilios) briefly responded to the toast of "The Officers."

THE UTILITY OF HOSPITAL ISOLATION IN SCARLET FEVER.—Anyone who approaches the subject in an impartial spirit cannot but be impressed by the fact that fever hospitals are not such useful agents in controlling the infection of scarlet fever as they were once believed to be. It is certain that with respect to this disease the isolation hospital must always exercise a useful part in the administrative machinery of public health; but it is equally certain that where the isolation of scarlet fever cases is made to prejudice the isolation of diphtheria and enteric fever a false step in the direction of preventive medicine is taken, for scarlet fever has for many years furnished a death-rate of only about 0.1, as compared with rates of over 0.3 from measles and whooping cough. Indeed, scarlet fever is, for the most part, of such a very mild type that there is a good case for exercising greater selection with reference to the patients admitted, and confining the admissions from this disease to those suffering from severe attacks and those who cannot be nursed at home without danger to others. If this selection were exercised in the Metropolis of London, the community would be saved a very considerable expenditure of money for which there is very little return. It is, moreover, to be hoped that as the experiment of treating cases of infectious disease in the open air promises to produce such satisfactory results, the cost of construction of fever hospitals will be somewhat reduced in the future.—*Annual Report of Dr. Kenwood, Medical Officer of Health, St. Kennington.*

* Annual Report, 1909.

REVIEWS.

NATIONAL HEALTH MANUAL No. 1.—INFANCY.

Edited by T. N. Kelynack, M.D. 1s. net. Published by Robt. Culley, London, 1910. 184 pp.

This little volume for the instruction of social workers and others is the joint production of no less than twelve writers. Among the subjects dealt with are the anatomy and physiology of the infant, the hygiene of infancy, the feeding of infants, common disorders of infancy, schools for mothers, crèches, milk depôts, and the legal, national, municipal and moral aspects of infant life. As each chapter is the work of a writer who is specially interested in his subject, it need hardly be said that the volume is eminently readable and thoroughly reliable. We would suggest, however, that the preparation of a small manual of this sort hardly requires the collaboration of so many experts, and the result would have been equally satisfactory if the work had been the product of a single pen. However, as there cannot be too wide a diffusion of the information contained in the volume, we cordially recommend it to social workers, health visitors, and the public generally.

INFECTIOUS DISEASES. A Practical Text-Book.

By Claude Buchanan Ker, M.D., F.R.C.P. Edin., Medical Superintendent, City Hospital, Edinburgh, Lecturer on Infectious Diseases to the University of Edinburgh. Illustrated with ten coloured and fourteen uncoloured plates and sixty-six charts. Published by Henry Frowde, and Hodder and Stoughton, London, 1910. 555 pp. Price 20s. nett.

No one who is familiar with the practice of the medical superintendent of the Edinburgh City Hospital will need to be told that this is a thoroughly practical text-book. The author, being primarily a clinician, has almost entirely confined his attention to questions of diagnosis, prognosis and treatment, bacteriology and epidemiology being discussed only in so far as they have any direct clinical application. The work is therefore of special value to those who have charge of fever hospitals, and to all other medical men to whom the problems of diagnosis and treatment make special appeal. With one exception (relapsing fever) the diseases described are those which the author has had under his care at the City hospital, and hence it is not surprising that on almost every page it is patent that the reader is not perusing a compilation, but reaping the fruit of knowledge acquired at first hand. In every chapter, too, one finds useful information and suggestions on matters that are usually inadequately treated in text-books, such as relapses in scarlet fever, the clinical variety of the same disease that presents such a striking resemblance to enteric fever and the diagnosis of post-diphtherial scarlatina.

Concerning milk-borne scarlet fever and diphtheria, the author remarks that in his experience adults formed a large proportion of those attacked. This is contrary to generally received opinion on the subject, but doubtless the incidence varies with the milk-drinking propensities of the community attacked.

In the final chapter (on fever-hospital problems), the author discusses many matters of public health interest such as difficulties of fever hospitals, cross infection, hospitalism and return cases. This section deserves the careful study of general practitioners and of medical officers of health who are not in charge of hospitals.

In conclusion we would congratulate both author and publishers on the form in which this work is presented, and especially on the admirable plates which illustrate what we believe to be the most useful modern text-books on infectious diseases.

NOTES ON INFECTIOUS DISEASES. For the Use of Teachers in Public Elementary Schools. By A. Mearns Fraser, M.D., Medical Officer of Health.

This little booklet of some thirty pages has been prepared by Dr. Mearns Fraser for the use of the teachers in the Portsmouth elementary schools, and is designed to give that instruction in the symptoms of the chief infectious diseases which the memorandum of the medical officers of the Local Government Board and Board of Education declares so essential. The symptoms of the common communicable diseases are clearly set forth, and to these is added a lucid explanation of the chief administrative measures adopted for their control. The pamphlet is admirably adapted for the purpose for which it has been written, but we would suggest that when it is reprinted it might with advantage be enlarged to include notes on other diseases concerning which school teachers require instruction. We refer more particularly to rheumatic fever, chorea and parasitic affections. In the meantime the present edition is well calculated to ensure that intelligent co-operation of teachers which is so essential in the administrative control of infectious diseases.

SANITARY SCHOOL FLOORING.—An enormous improvement would be made in our schools if the floors, instead of being of wood, were made of one of the compositions now so largely used in hospitals. The amount of dust would be infinitely less, while the labour of cleaning would be materially reduced. The spread of infection would also be lessened; children are frequently sick in school; this material falls into the crevices between the boards, and cannot be removed; later, when dry, in the form of dust, it is distributed about the room. With a jointless composition floor this risk would be entirely obviated.—*Annual Report of Dr. Sowden, Medical Officer of Health, East Ham.*

OBITUARY.

GEORGE DANFORD THOMAS, M.D., M.R.C.S., Coroner for the Central District of the County of London.

We regret to record the death of Dr. Danford Thomas, which took place at St. Leonards on August 5th. Dr. Danford Thomas was born in 1846, and received his professional training at St. Mary's Hospital, where he qualified in 1871, and afterwards entered as a law student at the Inner Temple, where he was called to the Bar. In 1876 he proceeded to the M.D. of Brussels, taking honours in medical jurisprudence. During the Franco-Prussian War he served as an officer in the British Ambulance and received the French Order of Merit for his services. Returning to England he began private practice in Paddington, and in 1875 he became the first medical officer of health of Willesden. About the same time Dr. Hardwicke, then Coroner for Central Middlesex, invited Dr. Thomas to act as his deputy, and on Dr. Hardwicke's death in 1881 Dr. Thomas became his successor. During his tenure of office Dr. Thomas held over 40,000 inquiries, many of which attracted much public attention, and his great ability was very widely recognized.

Dr. Thomas was a man of wide interests. He was well known as an expert in criminology, and exercised considerable influence in modifying methods of criminal investigation. He was keenly interested in the Volunteer movement, and served in the Volunteer Force for twenty-five years, reaching the rank of Brigade Surgeon Lieutenant-Colonel of the North London Volunteer Rifle Brigade. He was a strong advocate of cremation and funeral reform, and in accordance with his wishes the Haden system of interment was adopted at his funeral. Dr. Thomas was for years a Fellow of the Society of Medical Officers of Health, and had many friends in the public health service, to whom his death will be felt as a severe loss.

WILLIAM BERRY, F.R.C.S.I., D.P.H., J.P., Medical Officer of Health, Wigan.

By the death of Dr. Berry, which took place suddenly on July 29th, the public health service has lost a highly valued member. Dr. Berry, who was a native of Wigan, received his professional training at Glasgow, and started private practice in Wigan thirty-five years ago. He soon made a considerable reputation, especially in abdominal surgery, and in 1880 he was appointed Surgeon to the Wigan Infirmary. He took an interest from the first in public affairs, and became a Town Councillor, a Guardian, and a Justice of the Peace. In 1895 Dr. Berry was appointed Medical Officer of

Health of Wigan, and during his fifteen years of office he built up a highly efficient department and did much to improve the health of his native town. He was keenly interested in public health questions, and his work as a sanitarian was marked with ripe judgment and acumen. He was a Fellow of the Society of Medical Officers of Health, and in the session 1903-4 was elected President of the North-Western Branch, having served as Vice-President in the previous session. He was also an active member of the British Medical Association, becoming in 1898 President of the Lancashire and Cheshire Branch. Dr. Berry was highly respected in his district both by his professional brethren and the public, and his death is greatly regretted.

FOOD ADULTERATION.—Nowadays there is little adulteration of food in the sense of cheaper materials being substituted for more expensive, but there is an extensive and extending use of preservatives. When such are found present in small quantity in any particular sample of food it is difficult to obtain a conviction, the amount being so small that a magistrate cannot be held to blame for considering it harmless and having to confine his consideration to the particular sample brought before his Court. But when such preservatives are powdered over meat and fish, added to milk and butter, all sorts of tinned and preserved foods, jam, cream, etc., it is clear that, although there may be very little in one sample, a person may consume a good deal in a day; and especially in the case of infants or the delicate the consumption of quantities of boracic acid, formalin and such chemicals cannot fail to be harmful. The retail trader buys such preservatives as powders, guaranteed as harmless—so they are in very small quantity and for occasional use—and in most cases is not aware that he is doing an injury to anyone. Apart from assisting to initiate fresh legislation and the prosecution of offenders when particularly flagrant cases are found, the authorities might do much by the issue of handbills or otherwise to warn the public: when possibly it might be in the interest of traders to advertise food stuffs as free from all preservatives, with the exception of salt, sugar, saltpetre, vinegar and such substances as have been in common use from time immemorial.—*Annual Report of Dr. M. J. Oliver, Medical Officer of Health, Melrose.*

HONOUR FOR A MEDICAL OFFICER OF HEALTH.—The King has granted to Dr. Hugh Campbell Highet, Medical Officer of Health of Bangkok, His Majesty's authority to wear the Order of the White Elephant of the Third Class, which has been conferred upon Dr. Highet by the King of Siam.

LAW REPORTS.

HIGH COURT OF JUSTICE.

CHANCERY DIVISION.

June 29th, 1910.

BEFORE WARRINGTON, J.

RICKABY AND OTHERS v. NEW FOREST RURAL DISTRICT COUNCIL.

Highway Drain or Sewer—Vesting in Highway or Sanitary Authority—Flooding from Obstruction.

A sanitary authority is not liable for a nuisance from flooding caused by the blocking of a highway drain. Such a drain was held to remain vested in the highway authority, notwithstanding that the drains of a house had been connected therewith, but without the knowledge of the sanitary authority.

This was an action for damages for loss due to certain houses being flooded by reason of a drain or sewer being obstructed, and it was alleged that the District Council ought to have cleansed and maintained it. The Council alleged that the drain was not vested in them, but in the highway authority, and contended that they were not liable.

The drain had been constructed in 1864 and 1868 for the purpose of draining a road, and at the time of the passing of the Public Health Act, 1875, it was under the control of the highway authorities. An old brick drain also used for the same purpose ran into it, and with this drain a privy had at some time been connected, but without the knowledge of the authorities. The cellars of the plaintiff had been flooded by reason of part of these drains being obstructed. The County Council had since remedied the evil, the road being a main road.

WARRINGTON, J., in giving judgment for the defendants, said that the drain or sewer was not vested in 1875 in the sanitary authority by the Public Health Act, 1875. The road being a main road, the drain passed to the County Council as a drain belonging to such road by virtue of Sec. 11 of the Local Government Act, 1888. He did not think it could be divested save by statutory authority, and that there was no statutory provision that the unknown connection of a house with a drain would divest it from the road authority, and vest it in the sanitary authority.

July 30th, 1910.

BEFORE EVE, J.

MERRICK v. CORPORATION OF LIVERPOOL.

Housing of the Working Classes Act, 1890, Sec. 32—Injunction—Closing and Demolition Orders—Improvement Scheme.

An injunction will not be granted to restrain a corporation from taking proceedings before a magistrate to obtain closing and demolition orders on the ground that

the demolition is part of a larger improvement, unless it can be shown that the corporation are not acting bona fide and with a view to evade payment of compensation which would be properly payable.

This was an action to obtain a *mandamus* and also an injunction. The former was to compel the defendant Corporation to pull down the plaintiff's houses and to take steps to have the compensation assessed in respect thereof. This was claimed under the terms of a local Act, and on the construction of that Act it was held that the plaintiff had no claim.

The injunction was to restrain the defendant Corporation from making any application for closing orders in respect of six houses to a Court of Summary Jurisdiction under Sec. 32 of the Housing of the Working Classes Act, 1890, on the ground that such proceedings were not *bona fide*, but were an attempt to carry out an improvement or reconstruction scheme without paying compensation to the plaintiff. The defence was that the proceedings were taken *bona fide* with the view of abating a nuisance.

EVE, J., gave judgment for the defendant Corporation. He said that the Court will not grant an injunction to restrain a magistrate acting under a Statute unless in very special circumstances, and these circumstances did not exist in this case. The plaintiff's claim was based on the allegation that the action of the Corporation, although ostensibly and in form directed to the demolition under Secs. 30 to 34 of the Housing of the Working Classes Act, 1890, of the six houses as unfit for human habitation, was really and in substance one step in a scheme of reconstruction which ought to be dealt with, not under those Sections, but either under Part (i) of the Act or under Secs. 38 or 39 of Part (ii) thereof, the importance of the distinction lying in this: that demolition under the pending procedure involves the Corporation in no liability to pay compensation to the plaintiff, whereas proceedings by any of the alternative methods would give rise to a claim by the plaintiff for compensation. The Corporation did not deny that they desire and intend, if it be practicable, to improve the sanitary condition of this and other parts of the city without having to meet the heavy claims for compensation to which experience has shown the proceedings under their Act of 1864 gives rise. They assert that the plaintiff's six houses are in a state so dangerous or injurious to health as to be unfit for human habitation within the meaning of Sec. 30 of the Act of 1890, and they contend that if on this issue of fact the tribunal to which it has been referred for determination by the Legislature comes to a conclusion in their favour, they will be completely justified in having adopted a procedure whereby a necessary sanitary

improvement has been effected without undue expense to the community at large.

If the plaintiff had established that the Corporation were acting in bad faith or were endeavouring under colour of the exercise of statutory powers to evade a liability which they would otherwise be under, a state of things would have been proved sufficient to justify the intervention of the Court; but no such case had been made out, and when the whole of the documents and evidence are examined, the result came to this: That the Corporation allege that strictly they are entitled to insist upon the demolition of all the six houses, but at the same time they are prepared to mitigate the loss thereby occasioned to the owner if she will consent to the demolition of two of the houses and the preservation unbuilt upon of their site, the medical officer of health being of opinion that the removal of these two particular houses and the creation thereby of the open spaces will render the remaining four houses reasonably fit for habitation. To this proposal is superadded an offer by the Corporation to pay a nominal sum of £15 as compensation in respect of each of the demolished houses. There was nothing illegal in this, and no special circumstances which warranted the withdrawal of the case from the consideration of the magistrate.

[The case is reported at length in *The Times* of August 1st, 1910.]

KING'S BENCH DIVISION.

April 12th and 13th, May 10th, 1910.

BEFORE LORD ALVERSTONE, L.C.J., BRAY AND PICKFORD, JJ.

WALTHAM HOLY CROSS URBAN DISTRICT COUNCIL v. LEA CONSERVANCY BOARD.

River Pollution—Sewage Works Provided by Owner—Liability of Local Authority.

A local authority is not responsible for the discharge of sewage into a stream from the sewage works of an owner of houses who has made sewers and erected sewage works on his own land for the drainage of such houses, although the sewer from the works is by law vested in the authority.

This was an appeal by the Urban District Council of Waltham Holy Cross from three convictions by the Justices of Essex for disobeying notices served upon them by the Lea Conservancy Board. By these notices the Board required the Council to discontinue the flow of sewage from a certain sewer into a tributary of the river Lea. The sewer was in the hamlet of Upshire, within the district of the Council. At the trial the following facts were admitted or proved:—

In or about the year 1905 a landowner provided at his own expense a scheme of

drainage and sewage disposal works for a number of houses and premises at Upshire. The greater part of the said houses and premises were on lands of the said owner or belonging to members of his family. The said scheme provided for the drainage of about 46 houses and premises with a population of about 200 persons.

The said scheme consisted of pipes discharging into a common pipe, which conveyed the drainage of the said houses and premises to the sewage disposal works. These works comprised a septic automatic tank and a series of three filters adequate for dealing with the drainage from the said houses and premises. The effluent from the said works was conveyed by means of a 6-inch pipe, 600 feet in length, and was discharged into a ditch. The flow of effluent into the said ditch was intermittent, the discharge from the tank flowing when the tank was full, and so emptying the tank, and the discharge then ceasing until the tank was again full.

All these works and pipes and the ditch were on private land, and the Council had taken no part whatever in their construction or provision. They had provided sewage works for other parts of their district. Samples of the water in the ditch showed that the effluent was not a pure one.

For the defendant Council it was contended that the said effluent had not passed into the ditch or any tributary of the Lea, by reason of any act, default or sufferance on their part, and that therefore they were not liable.

The Justices convicted, as they held that the effluent was vested in the Council as a sewer within the meaning of the Public Health Act, 1875.

The appeal was allowed, and the convictions quashed.

PICKFORD, J., prepared the judgment of the Court, which was read by BRAY, J., in the course of which he said: It is to be observed that the Council have themselves done nothing; the sewer has vested in them without their having the power to prevent it or to impose any conditions, and the occupants of the houses and lands near the sewer had power under Section 21 of the Public Health Act, 1875, to send their sewage into it. If the appellants are liable it must therefore be because they have omitted to do something, and it was argued that they had suffered the sewage to flow into the brook because they had not stopped the sewage from passing into the sewer, or provided an efficient sewerage and purification scheme, or taken proceedings against the landowner or those sending the sewage into the sewer and so into the brook. The case seems to be covered by the authority of *Thames Conservators v. Gravesend Corporation* (1910), 1 K.B. 442, following *R. v. Staines Local Board* (1888), 53 J.P. 358. The

ground of those decisions was that where any person or corporation has acquired a right to send sewage into the sewers of a public authority, and that sewage passes into a river, the public authority cannot be convicted of causing or suffering the sewage to pass into the river. It is true that in *R. v. Staines Local Board*, *supra*, the right was acquired by prescription, but there seems no difference in principle between a right acquired by prescription and a right conferred by statute. He also pointed out that the result of upholding these convictions might be to compel the appellants to construct a most expensive sewage system, and in that case it would be in the power of any land-owner by constructing a defective sewage system—and the more defective the more efficacious it would be for the purpose—indirectly to force a local authority to do that which he cannot force upon them directly.

COUNTY OF LONDON SESSIONS.

July 8th, 1910.

BEFORE MR. WALLACE, K.C., CHAIRMAN, AND OTHER JUSTICES.

GREAT WESTERN AND METROPOLITAN DAIRIES, LTD., *v.* FORDHAM AND OTHERS.

Sale of Food and Drugs Acts—Milk—Alleged False Warranty—Locking of Churns.

This was an appeal by the Great Western and Metropolitan Dairies, Ltd., against a conviction by Mr. Fordham, police magistrate, for giving a false warranty to one David Davies in respect of milk sold to him by them.

This was a test case taken at the instance of the Fulham Borough Council, and no fraud on the part of the appellant Company was alleged. They had, however, given Davies a warranty that certain milk was pure milk with all its cream, and it was found to be deficient in fat to the extent of 16 per cent. The milk was sent from a farmer through the Company with a warranty. It was suggested that the milk had been tampered with on the journey. The magistrate had convicted because he thought the Company had not taken every reasonable precaution to see that the milk was in the same condition when delivered to Davies as when it was despatched, and that the Company should have seen that the churns were locked.

Proceedings had been taken under Section 20 (6) of the Sale of Food and Drugs Act, 1899, which provides that every person who, in respect of an article of food or drug sold by him as principal or agent, gives to the purchaser a false warranty in writing shall be liable to certain penalties, unless he proves to the satisfaction of the Court that when he gave the warranty he had reason to believe that the statements or descriptions contained therein were true.

Evidence was called for the appellants to show that the milk was delivered as received, that a foreman awaited its arrival at the station, that frequent samples were taken for analysis, and that nothing had been found to call for complaint. One witness said that it was the universal custom to send churns fastened only with a wire attachment. He had never heard of a churn being padlocked, and a seal was no real protection, as it could be tampered with.

The Court allowed the appeal, with costs against the Fulham Borough Council. They decided that the appellant Company believed the warranty to be true, and that the law as it at present stood did not require the churns to be locked.

GOLDEN SYRUP AND GLUCOSE.—On July 8th, 25th and 28th, a summons was heard before Mr. Fordham, at the West London Police Court, against Mrs. Helen Padley for selling golden syrup not of the nature substance and quality demanded, by reason of the fact that it contained thirty-seven per cent. of glucose syrup. The case was a test one in order to settle the question as to what golden syrup was.

Mr. C. H. Cribb, public analyst for Westminster and Fulham, said that golden syrup was the uncrystallizable fluid which was separated from the crystallized sugar in the process of refining the sugar from the sugar-cane. The dark-coloured varieties of the product were known as treacle, and the lighter-coloured varieties, which were obtained either by the removal of a certain amount of natural colour or by greater care in process, as golden syrup. Glucose syrup, on the other hand, was made from starch by the action of sulphuric acid and sometimes of other acids. There was no cane-sugar in it. Golden syrup consisted of water, cane-sugar, and a mixture of two sugars known as invert sugar; glucose syrup consisted of water, two sugars called maltose and dextrose or grape sugar, and a gum-like substance called dextrine. If the sulphuric acid used in the process contained arsenic it might get into the glucose. He believed some kinds of golden syrup were made from beet sugar.

Evidence was given for the defence that there was no chemical standard for golden syrup. A member of the firm of E. & T. Pink, jam manufacturers, stated that glucose had been used in the manufacture of syrup for twenty years. Medical and other evidence was also given to the effect that glucose syrup was in no way injurious to health, but was valuable as a food.

Mr. Fordham convicted, and imposed a penalty of 20s. with ten guineas costs. He stated that he regarded the offence as a technical one, that there was no intention of committing any fraud, and that the mixture was not likely to cause harm to the purchaser. He had, however, come to the

conclusion that golden syrup was a definite article, and that it was understood by the public as refined treacle. Treacle was understood to be the drainings from crystallized sugar. Originally it was cane and maple sugar only, but afterwards beet sugar was used. Glucose was not made from sugar at all, therefore it was not treacle; and an article which contained glucose syrup could not be sold as golden syrup, which was merely an elegant synonym for refined treacle. The article sold was sold to the prejudice of the purchaser, because it was not the article demanded.

WHAT IS COCOA?—At the West London Police Court on June 9th William Davies, a grocer, was summoned for selling cocoa not of the nature, substance and quality demanded. It was alleged to contain 60 per cent. of powdered cocoa shells. The proceedings were taken on behalf of the Metropolitan Borough of Fulham.

Mr. C. Cribb, public analyst for Fulham, stated that the cocoa of commerce was made of the bean deprived of its shell. There was a certain amount of nourishment in the shell, but the fibrous nature of the shell rendered the article very unpleasant. He did not suggest that there was anything deleterious in the sample before the Court. The shell was used for cattle food and in the cheaper forms of chocolates. There was no standard in this country for cocoa.

The case was adjourned for the sample to be analyzed by the Government analyst, who certified that the sample contained 65 per cent. of cocoa husk and had been coloured by the addition of aniline dye.

The contention on the part of the defendant was that the article was cocoa and that there was no standard for cocoa, and evidence was given that in the trade the article would be regarded as cocoa, and was largely used by the manufacturers of cheap chocolates. Mr. A. J. Cannon, an analyst, gave it as his opinion that the sample contained 30 to 35 per cent. of the husk. The amount of husk in a bean varied from 15 to 28 per cent. of the whole. There could not be so much as 60 per cent. in any bean.

A buyer for Messrs. Cadbury gave evidence against the above contention. He considered that cocoa ought to be made from the cocoa nib alone without any husk, and that was the standard of all first-class firms. The average percentage of shell in the lower grade cocoas was from 10 to 15 per cent.

The case was concluded on July 21st, when the magistrate convicted and fined the defendant 40s. with five guineas costs. He said he did not lay down any standard, but on the evidence he concluded that the cocoa of commerce should not contain more than 7 per cent. of shell. This was

a mixture of cocoa and shell; but he did not impute any fraud in this case.

A MIXED SAMPLE OF BUTTER.—At West London Police Court on July 18th Llewellyn Powell, grocer, was summoned at the instance of the Hammersmith Borough Council for selling butter which contained 40 per cent. of foreign fat. The case was unusual, inasmuch as the third part of the sample, which had been sent to the Government analyst, was certified by him to be pure butter. It was contended that the butter had been so made up that the sample was not homogeneous, but that one end was margarine, the other end butter, the middle a mixture. The magistrate convicted and fined the defendant £2 with 30s. costs.

SMOKE NUISANCE.—In *Macaulay v. Moss Steamship Company, Ltd.*, it was decided by the Court of Criminal Appeal that vessels in the Port of Liverpool trading directly between that port and foreign ports were not within the provisions as to smoke abatement contained in the local Acts of the Liverpool Corporation. The question turned solely upon the construction of these Acts.

PLANT GROWING COMPETITION FOR SCHOOL CHILDREN.—At the end of May, 1909, 2,030 young plants, consisting of fuchsias, geraniums, ferns, etc., were distributed to school children by the Parks Committee of the Blackburn Corporation. Soil for re-potting was supplied to each competitor at the Corporation Park, and at the Queen's Park. The seventh annual exhibition of plants grown by school children was held on September 17th and 18th, 1909, in the Corporation Park, and was largely attended by school children and others. 1,685 plants were exhibited in three classes, namely:—(a) Plants grown in windows; (b) plants grown in greenhouses; (c) two-year plants. After competent judging, 350 prizes in the form of books were awarded to successful competitors.—*Annual Report of Dr. Greenwood, School Medical Officer, Blackburn.*

AIR-BLOCK IN A SEWER.—During the course of drainage work an interesting condition of an air-blocked sewer was met. The front rain-water drains of a block of houses in a street in the centre of the town were blocked. This block of houses contained occupied basements, and slop water, etc., was poured down the front rain-water drains. On removal of the rodding eye from the manhole chamber, the sewage in the blocked drains immediately flowed away freely, pointing to the fact that the pressure of air in the sewer had held back the sewage. Had the sewer been more efficiently ventilated the condition of affairs would not have arisen.—*Annual Report of Dr. Rees Jones, Medical Officer of Health, Blackpool.*

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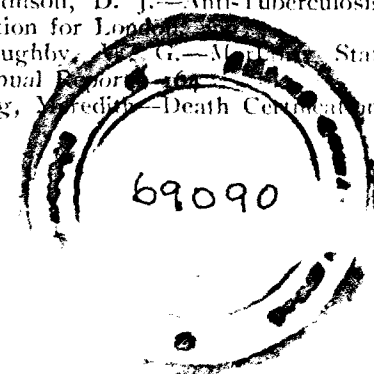
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