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NO 9



PEOPLE'S HEALTH

JUNE-1949

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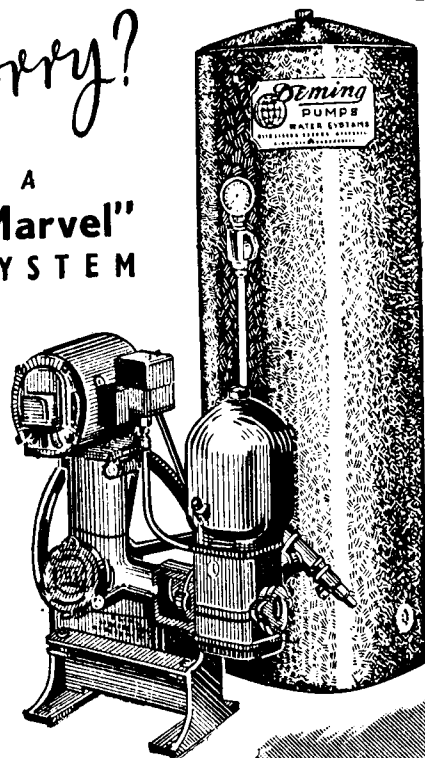
EDITOR
A. V. RAMAN
VOL. III - NO. 9



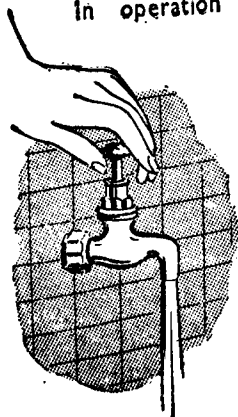
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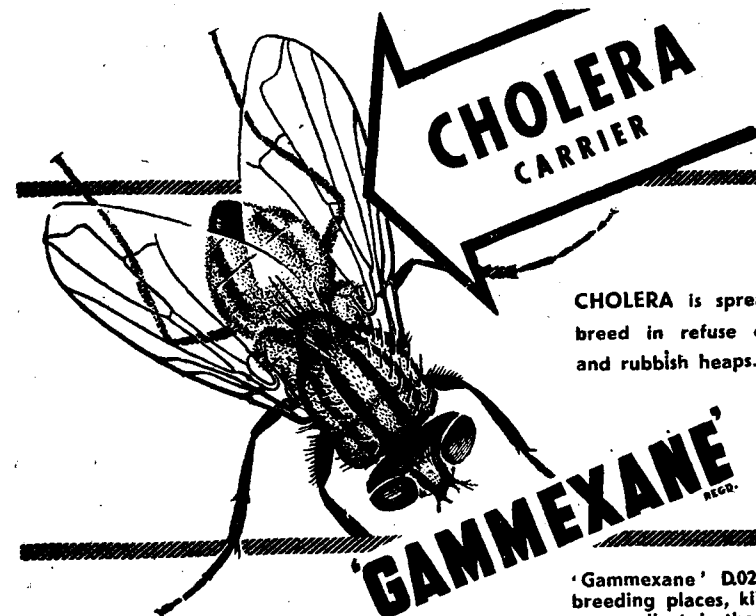
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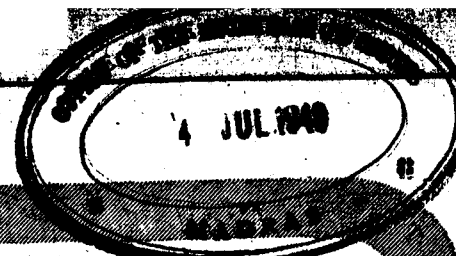
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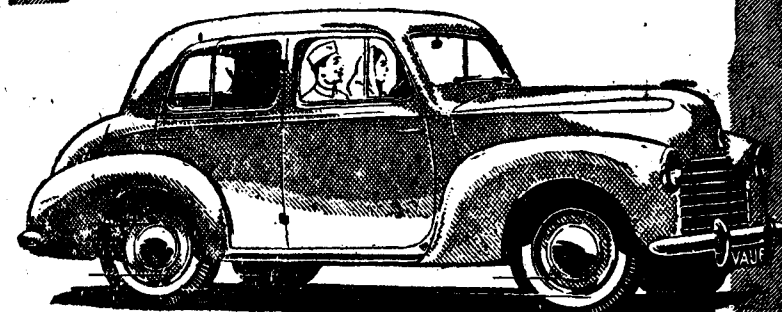
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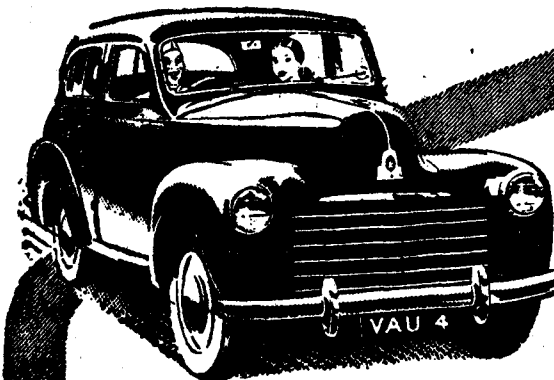
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TO OUR READERS.

Our readers are, doubtless, aware of the fact that *People's Health* is being published at considerable sacrifice of time and labour and above all money. It is primarily a propaganda magazine to educate the lay public and the experts alike on all matters pertaining to the health of the people. As C. R. put it in his message to *People's Health* it is an endeavour on the part of a crusader-spirited ex-permanent servant to help democracy in one of its important functions. *People's Health* is not a commercial venture.

The Publishers appeal for assistance and co-operation of one and all. We invite suggestions from our renders to make the magazine more useful.

The annual subscription is only Rs. 12, commencing from October 1948 to September 1949.

ROYAPETTA,
Madras, 14.

MANAGER,
People's Health.

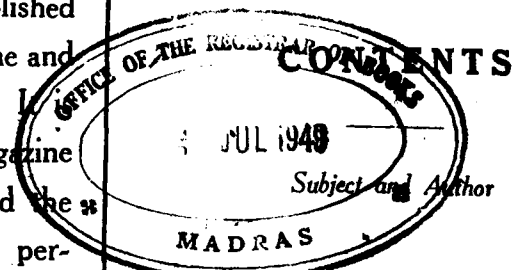
PEOPLE'S HEALTH

A Pioneer in the Field of Public Health

Vol. III

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Look ! How sand is washed for slow sand filters ! Why then blame them for yielding poor results ?



VOL. III No. 9

JUNE, 1949

ISSUED MONTHLY

EDITORIAL . . .

*Good critics, who have stamped out poet's hope,
Good statesmen, who pulled ruin on the state,
Good patriots, who for a theory risked a cause,*

Now may the good God pardon all good men !

—ELIZABETH BARRETT BROWNING.

MADRAS PUBLIC HEALTH

Notwithstanding the excellent intentions of the Hon. Sri A. B. Shetty, our former Minister of Health, the administration has been unsatisfactory alround. The Minister's goodness had been exploited by self-seekers. As one in high authority referred to him, he is 'one of God's good men'. Goodness, as Cruden puts it, is that sort of happiness, which all men desire as being pleasant and agreeable to them. Goodness in the case of the Hon. Sri A. B. Shetty was a handicap to efficient administration of the departments entrusted to his care. A God's good man is more suited to be a minister in the original sense of the word, rather than a Minister of State. We mean no disrespect to the Hon. Sri A. B. Shetty even remotely. For, he had been uniformly good in the widest sense of the term. But what we do deplore is that the departments entrusted to him

had degenerated into the proverbial Augean stables. It is only a Hercules who can clean them.

HERCULEAN TASK

The Hon. Dr. T. S. S. Rajan has such a Herculean task before him. He enjoys the reputation of being firm and strong ; he can enforce and demand discipline in the departments ; he can restore the morale of the administration. He is an old and tried revolutionary. Naturally, the public expect from him revolutionary changes in the medical and public health departments. In his efforts, we have no doubt, he will have the whole-hearted co-operation of one and all.

The Augean stables cannot possibly be cleaned with a magic wand. It requires effort, nay, firm and determined effort. There are, however, certain aspects of the administration which can be immediately attended to.

IMMEDIATE PROBLEMS

On matters of large policy, the new Minister of Health has two definite problems before him. One is the amalgamation of the curative and preventive branches of the Medical Department. At the All-India Health Ministers' Conference, it was decided by a majority that the recommendations of the Bhole Committee in this behalf should be implemented in all the Provinces. Bombay and Madras alone dissented from this view; but Bombay has since seen its way to veer round to the view of the majority. Madras would be a solitary exception if it does not fall in a line with the rest of the country. It is therefore essential that immediate steps should be taken to amalgamate the two branches of the service. We do not however suggest that the amalgamation from the top to bottom should be effected all at once. There may be some practical difficulties to be considered. These may be solved at leisure. But immediately, the amalgamation could be effected by making the Surgeon-General, the head of the amalgamated service and designated as the Director, Health Services. The post of the Director of Public Health as such may be abolished and a post of a Deputy Director, Health Services, created under the Director. He will be in charge of the health branch and assist the Director who will be held responsible to the Ministry for the efficient administration of the amalgamated service. The present Assistant Directors of Public Health may work under the Deputy Director, Health Services. How best the amalgamation could be effected at District levels and at the periphery may be considered at a conference at which free expression of views may be

permitted and a workable programme hammered out.

The second problem of major policy is the consideration of the recommendations of the Water-supply and Drainage Committee. As we have pointed out in these columns already, orders are being passed in 'homeopathic doses' and even that, without the full realization of the implications of the recommendations of the committee. The Ministry has not appreciated how the recommendations of the committee are closely interconnected. They cannot be dealt with in water-tight compartments. The committee has made it abundantly clear that the organization of the public health engineering department is the pivot of its plans. Any administrator worth the name would have understood that ninety per cent of efficiency is ensured by the proper organisation of a department. We would therefore appeal to the Minister of Health to apply his mind immediately to the proper organisation of the department.

A DEMORALISED DEPARTMENT

Now, coming to matters of detail which demand equally immediate attention:

(i) *Secretariat Level*: The morale of the Secretariat in the Public Health Department in particular is rather low. Firm action has not been taken even when instances were brought to the notice of the Secretary of the Department. We have known an instance where a Superintendent had been dogging a file in which he was engaged to interest himself, from table to table conveying information to the concerned officer then and there so that wire-pulling could be effectively done at appropriate levels. The new Minister would be well advised to root out such men without compunction from the Secretariat altogether.

(ii) *D.P.H.'s Office Level*.—We have often drawn attention in these columns to the poor performance of the Public Health Department both professionally and administratively. We have also drawn attention to the fact that the Director of Public Health had successfully sabotaged the express policy of the Minister. His administration of the office is even more heart-rending. For reasons known only to the Director himself, he persists in keeping a particular person as superintendent of the ministerial staff in exercise of the emergency powers vested in him under section 9 (a) of the Rules, having failed in his attempt to secure from Government an exemption for him from the required qualification. And he is renewing the appointment every three months. Having been himself involved in it, the Director should know this individual's antecedents.

BONDAS AND CHOLERA

We have also drawn pointed attention in these columns to the extraordinary explanation offered by the Director of Public Health for an epidemic of cholera in Salem town last year. As we then pointed out, had any public health expert given expression to such a preposterous opinion anywhere west of Aden, he would have been cashiered on the spot. We stand by the facts which we then brought to light.

IS IT TRUE?

Let us give another example. The Hon. Sri A. B. Shetty has always been a keen student of the subject. In his anxiety to see that the health officers stationed in the mofussil had a good reference library, he enquired of the Director of Public Health many months back during the health officers' conference whether a list of useful and up-to-date reference books had been

furnished to them. The answer was in the affirmative; whereupon the Minister wanted a copy of the list for his own information. He is still getting it! The truth of the matter however seems to be that no such list was furnished to the health officers!

PROPOSED HEALTH BULLETIN

At an enormous cost of public funds, a number of magazines are subscribed to in the office of the Director of Public Health. What further proof positive is required to show the scandalous waste of public funds than the fact that even pages of certain magazines had not been cut open long after their receipt!

The Director of Public Health has a flair for publicity and propaganda. Under orders of Government, certain contributions from the officers of the department had appeared in the *Madras Information*, though not as regularly as the Ministry had ordered. From the contributions so far published, it is clear that they are not only sub-standard in quality but also scientifically unsound. Yet, the Director was able to persuade the Ministry of Health to secure sanction for the publication of a fortnightly health bulletin for circulation among the officers and subordinates of his department. Is it not clear waste of money to permit the publication of a bulletin by a department, which has not even been able to contribute reasonably accurate articles pertaining to the work of the department? If the intention is genuine by to educate the officers of the department in the modern concept of public health theory and practice, the correct method would be to issue professional circulars from time to time, revising them as and when latest developments come to light. Such a procedure would cost but a fraction of the amount involved in the publication of a fortnightly bulletin. This is exactly what the head of a department would have proposed to Government if he is swayed by *bona fide* intentions to educate the members of the department. There is also the danger of the bulletin educating the members of the department with obsolete and unscientific information. There is no chance of the hollowness of the articles being exposed, inasmuch as the bulletin is intended solely for the consumption of departmental officers and is not made available to the public. The net result will be the bulletin would be of the nature of an organ for propaganda which the Nazis of Germany adopted.

(Continued on page 424)

INDUSTRIAL HYGIENE AND SANITATION

by

Dr. M. N. Gupta,

M.B., B.S. (Pb.), D.P.H. (Lond.), D.I.H. (Eng.),
Deputy Chief Adviser, Factories (Medl.), Govt. of India.



This is the fourth of a series of articles by Dr. M. N. Gupta. The previous articles appeared in March, April and May 1949 issues of *People's Health*. The author has clearly and comprehensively dealt with the several aspects of Industrial Hygiene and Sanitation. These articles deserve to be closely studied by all those who have anything to do with factory management. They are sure to be profited by reading them.

—Ed., P.H.

The purpose of Industrial Hygiene is to preserve and improve the health of the industrial worker. Industrial hygiene goes far beyond Occupational Disease prevention. Industrial Hygiene, practised by experienced specialists, is a tool of economy; it is not a fancy frill. It is an economy because it helps to maintain a healthy working force at maximum physical and mental efficiency.

A reduction in labour productivity has been alleged since the war. If that is true how much of it may be traceable to working conditions? That introduces the human phase of the subject and the benefits to the factory owners from this

source are wholly beyond the economies resulting from intelligent industrial hygiene.

People produce—not machines. Therefore attention to the people is the key. We have yet to find the formula for dealing successfully with its human resources, with the worker who is the mainspring of production. Industrial health, the well-being of people at work, affords one of the keys to unlock the potentialities of production.

In a previous article while outlining the history of occupational diseases it was mentioned that the knowledge that the work environment affects the well-being of the workers has been known since ancient times and also that as early as the

14th Century, industry had possessed the knowledge that environmental factors can be controlled and that the 18th and the 19th Century writers produced illuminating literature on Industrial Hygiene.

The 19th Century which is rightly described as the age of "Industrial Revolution", however, gave the major stimulus and impetus to the adoption of measures for the protection of the health of the workers. The 19th Century has also been described as the age of "environmental hygiene" and indeed many of the earlier sanitary reformers felt that the creation of a healthy environment would introduce a golden age of health. Still it was not till the beginning of this century that industry, labour and government made any organised effort to evolve the administrative details for an Industrial Hygiene Service. An industrial hygiene conscience is steadily growing throughout the civilized world and its relations, obligations and duties towards its craftsmen are being generally accepted.

Ramazzini, about three hundred years back, said, "We, physicians, are bound in duty to preserve the lives of those workmen (miner) by investigating their diseases and proposing cautions and remedies for the removal of them." Catholic in his humanity and humble in his wisdom, Ramazzini confessed that he was "not ashamed of an acquaintance with the States and the conditions of the meanest of the tradesmen, having nothing more at heart than the discovery of truth." Much depends on us, doctors, legislators, industrialists, trade unionists, labour welfare officers or social workers to discover that truth for our own self and for the benefit of the workers whose good-will and good wishes we are anxious to earn.

It is common knowledge that progress in any country has been made most when a state of national emergency has been created due to social and individual hardships and sacrifices of people. We in our own country are witnessing the same. This is especially true of industrial hygiene

which had its genesis in world war I. India stands today on the verge of an industrial revolution. Industrialisation and the war brought out hundreds of social problems and laid emphasis on the role that illness played in the causation of disability, dependency and insecurity. The social workers started laying emphasis on the socio-economic implications of illness amongst workers, the inter-dependence of industry and its surrounding community. There was search for solving many problems of public health and social security. Industrial Hygiene showed the way.

Further progress of industrial health programmes occurred in connection with war-time need to utilize all types of workers. World-war II brought on new problems in the form of "Mass production" and the necessity for keeping every worker on the job. It brought realisation of the fact that healthy, efficient workers are essential for the job and industrial health is the primary means to that end. The large number of gainfully employed persons, gives some indication of the magnitude of the industrial health problems in terms of numbers alone.

EMPLOYMENT		REGULATED
(1) Factory Industries Group	..	2,230,568
(2) Mines (covered by the Indian Mines Act)	..	207,263
(3) Plantations	..	1,172,828
(4) Communications:		
Railways (1946-47)	..	1,046,855
Post and Telegraph	..	85,207
Ports	..	71,000
Tramways	..	15,000
Bus Services	..	90,000
(5) Municipalities	..	57,000
(6) C.P.W.D.	..	124,000
(7) Rickshaw pullers	..	41,000
Total		5,340,721
Accidental injuries (1947) accounted for		
Total disabilities	..	58,512
Killed	..	211
Serious	..	8,657
Minor	..	49,614
Compensation paid in 1946	Rs.	36,25,808

Of even greater significance is the enormous waste of life and efficiency resulting from illness

incurred on account of the job. Although the total number of factory workers in this country is less than 1 per cent of the total population but excessive congestion in our industrial towns is proving ruinous to the health of our workers. In 1939 as much as 52 per cent. of our total number of workers were found in only two Provinces, namely Bengal and Bombay. To reach a conclusion as to the precise effect of unhealthiness on the well-being of employees through the half century ending 1948 is difficult. We can, of course, compare the death rates in big industrial

areas and towns, the inhabitants of which are known to have been mostly employed in factory industry, for instance, in textile towns. The following is the data obtained from the annual reports of the Public Health Commissioner and the annual reports of the Directors of Public Health in the various Provinces.

The primary stimulus to the introduction of more adequate industrial health service is the passage of Workmen's Compensation Laws for accidents and occupational diseases. In the evolution of any such industrial hygiene

TABLE II

PROVINCE	TOWN	INFANT MORTALITY PER 1000 LIVE BIRTHS					
		Average for the Town					
		Average for the urban areas of the Province					
		1940	1941	1942	1943	1944	1945
Bengal	Howrah	267.3	267.2	274.0	355.8	496.5	347.8
		168.2	163.7	148.2	266.5	291.9	205.4
	Calcutta	212.5	208.0	166.8	427.7	429.9	288.6
		168.2	163.7	148.2	266.5	291.9	205.4
Bombay	Bombay	201.5	211.4	95.1	197.4	203.0	190.4
		202.5	192.2	193.5	191.7	192.5	183.9
	Ahmedabad	310.2	247.5	293.1	263.5	277.5	186.5
		202.5	192.2	193.5	191.7	192.5	183.9
C.P.	Nagpur	294.6	226.7	275.5	201.9	228.0	275.1
		237.2	208.3	227.7	196.8	203.0	232.8
	Jubbulpore	254.0	243.1	233.1	215.3	179.4	264.9
		237.2	208.3	227.7	196.8	203.0	232.8
U.P.	Kanpur	297.7	320.7	309.2	351.7	287.4	266.4
		190.6	199.8	208.1	209.1	192.6	185.6
Madras	Madras	205.7	208.9	196.8	247.3	284.3	213.8
		265.2	273.7	255.1	270.6	195.8	170.9

TABLE III

PROVINCE	TOWN	Period	Mortality Rates (ratio of deaths per 1000 of population).	
			Average for the Town	Average for the urban areas of the Province
Bengal	Calcutta	1935-37	31	22
	Howrah	"	39	"
Bombay	Bombay	1937-39	28	"
	Ahmedabad	"	47	30
	Sholapur	"	40	"
Madras	Madras	1935-37	39	24
U.P.	Kanpur	1938-39	37	29
C.P.	Nagpur	1937-39	46	33
	Jubbulpore	"	46	"

service the adoption of Workmen's Compensation Act was considered to help the promotion of industrial hygiene, but as the main concept of the Workmen's Compensation Act was accident prevention and compensation, the Act failed in a large measure to remove the environmental factors which are the causes of ill-health. In the history of the working of the Workmen's Compensation Act during the last 25 years, since its adoption in 1923, the control of occupational disease has gone unrecognised. In fact, those diseases recognised in most Workmen's Compensation Acts as compensable were regarded as "accidents" just as much as the loss of a finger in a punch press. Unfortunately, there have not been possibly more than a dozen cases of occupational disease which have received compensation. (The Workmen's Compensation Act has scheduled about 12 diseases as compensable.)

The modern trend of legislation is towards greater protection for the worker as one can see when one compares the Factories Act of 1934 with the 1948 Act. The new Act lays emphasis on

voluntary control of conditions known to be injurious to health. Responsibility for safeguarding the health of the workers rests with Central and Provincial Governments.

THE PHILOSOPHY OF INDUSTRIAL HYGIENE

The philosophy employed in developing industrial health services in this country was based on the fact that corrective measures in industry for protecting the health of the workers are accomplished by private effort and by private funds.

There is a growing understanding that our future prosperity depends more than any thing else upon closer co-operation, some real partnership and fostering of common interests between all who are engaged in a productive and distributive enterprise.

There is a great change in the attitude of the employers and a shedding of old suspicions on the part of Trade Unionists.

In speaking of employers and workers, we ought to guard against a common error that

industry is conducted in the main by vast organisations such as Tatas, Dalmias and Birlas and so on. Our small units form a very essential part of Indian industry and they are worthy of every help and encouragement that can be given to them from above.

There is room for free voluntary action, running side by side with the more rigid, necessarily more cautious State activities. India is proud of her tradition of social service. There have been great social reformers born in this land like Ram Mohan Rai, Maharshi Dayanand, Devendra Nath Tagore, Mahatma Gandhi. If we ever happen to forget these, then the India we have known in the past will have ceased to be.

There are in our factories to-day hundreds of thousands of lonely, perplexed, anxious workers. Ordinary simple people who seek within the place of work friendly congenial relationship a sense of justice, some purpose in toil, a share in shaping their own destiny and an assurance that some measure of security awaits them when working days are past.

No employer should forget the part that voluntary action plays in guiding and forestalling legislation and educating public opinion.

In this country, legislation has always taken the lead and there was little room for voluntary action.

An official agency serves mainly in aiding industry to evaluate its own problems, suggesting ways and means for control, developing standards of good practice, furnishing technical guidance and conducting educational programmes.

From the point of view of preventive or public health service definitions matter little. The occurrence of an industrial illness and for the matter of fact occurrence of any illness calls for preventive action. What is necessary is to know the cause and place of illness and the necessary remedial measures can be applied to prevent it. This holds good either for an attack of cold or a case of lead poisoning. Hence the aim of public health service is the promotion of good

health not only to save life but health. At this point it is probably fair to say that there is hardly any phase of the modern programme of public health services that is without its application to industrial health. It will, however, be seen that in the field of prevention the control of diseases attributable to the environment constitute the great contributions of public health to human welfare.

PUBLIC HEALTH AND INDUSTRIAL ENVIRONMENT

As was explained in the last article, occupational diseases affect certain classes of workers. They are created by a given occupation or by the conditions under which such occupation is affected. The words "trade", or "occupation" merely sum up or define the environment as well as the worker's activities. These are means at our disposal which permit us to evaluate precisely the contribution of the working environment to the illness under observation.

ENVIRONMENT IN RELATION TO DISEASE

In the field of prevention, therefore, what is necessary for us is to know the environment. The spread of any disease has always been associated with an insanitary environment. Therefore the first appeal of any industrial hygienist was for sanitation and three necessities for a healthful factory were always stressed—cleanliness of work-place, adequate ventilation and good lighting. But these procedures were not entirely successful when extended to industry. Though it must be emphasised that sanitary measures in industry have been and will always remain a bullwork against most communicable diseases. But application of sanitary procedures requires that a certain limit of cleanliness be achieved. An absolute degree of cleanliness cannot be attained economically. Public Health methods have always aimed at certain standards as minimum requirements consistent with the preservation of good health. Thus we arrive at what is called the "quantitative" phase of industrial

hygiene. Rules were laid down prescribing these "quantities" for sanitary appliances in the factory. Still further developments and surveys assessed the degree of hazards associated with an occupation and quantities were instituted for control where necessary to prevent the disease (Example—maximum allowable concentration, defined as the maximum concentration that man can inhale for a long time without injury to health, of dusts were laid down as follows:—

Asbestos ..	..	* 5 MPPCF
Silica ..	..	
Sand ..	..	
Quartz ..	..	20 MPPCF
Medium Silica ..	..	
Carbon ..	..	50 MPPCF
Cement ..	..	
Charcoal ..	..	
Lime ..	..	
Soapstone ..	..	
Arsenic ..	1.5 mg/10 m ³ †	
Chronic Acid ..	1.0 ..	
Lead ..	1.5 ..	
Mercury ..	1.0 ..	
Magnesium oxide	150.0 ..	

* Million particles per cubic foot of air.

† Milligrammes per cubic meter of air.

Industrial hygiene owes its remarkable achievements to its quantitative aspects. No other field of public health has as much precise knowledge available pertaining to the relation between environment and health.

TREND OF INDUSTRIAL HYGIENE

Industrial hygiene has become an important part of public health activity. The institution of any broad public health programmes requires that emphasis must be laid on:

(1) The influence of mental and physical characteristics of workers upon the incidence of disability other than occupational.

(2) The opportunity for extending medical care to millions of workers and their families. The practice of industrial hygiene opens a vast field for the practice of preventive medicine on a here-

to-fore unrealised scale. Since industrial hygiene has direct contact with all industrial workers and their families, a department of industrial hygiene is an important administrative department of any provincial public health department.

Importance of Industrial Hygiene to a public health administrator.

(1) The institution of an Industrial Hygiene Department provides him with a powerful method of attacking many health problems.

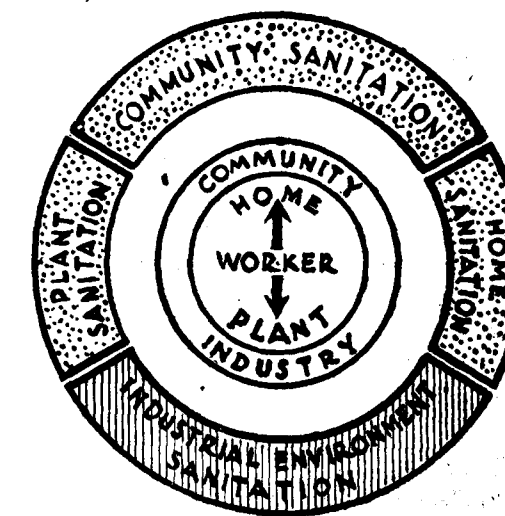
(2) Concentration of large populations, under close observation permits of effective practice of preventive medicine at very low cost, for example typhoid, cholera, plague immunisation, suppressive malaria treatment, small-pox vaccination, health education.

(3) It is easy to determine the incidence of various general ailments as malnutrition, tuberculosis.

(4) It is likewise easy to carry out social surveys and study home and community environment (economic status, diet, contagious diseases, physical and mental handicaps).

MINIMUM REQUIREMENTS OF SANITATION AND HEALTH

In considering such requirements we should try to have a knowledge of the various problems of the environment of the worker (See diagram below)



The environment of a worker may be classified as :—

- (1) Community environment which requires
 - (a) Plant sanitation facilities and
 - (b) Home sanitation facilities
- (2) Industrial environment which requires industrial environment sanitation.

(1) *Community Sanitation.*—The provision of community sanitation services aims largely at the prevention of non-occupational communicable diseases. It includes the provision of proper cleanliness in all of the community components including industrial plant and private homes. Although community sanitation is usually the direct responsibility of the official sanitary engineering or public health services, but the employer and the physician have their responsibility in the communities in which their employees reside. The effects of community environment are manifested through the medium of air, food and water. For example, the control of milk and other foods in the community, as well as the supervision of food-handlers is directly reflected in industry (The opening up of canteens under the Factories Act will bring out many such problems). The management has a moral obligation to provide clean food, milk and water.

On the other hand industry itself contributes to many problems of community sanitation. There is atmospheric pollution and water pollution from the ill-planned methods of industrial waste disposal. Other problems which industry makes a contribution to are :—

- (1) The problem of *transportation and industrial fatigue*. The sudden overloading of housing and sanitation facilities consequent on the Refugee problem are known to all of us.
- (2) *Housing.*
- (3) *Water supply.*
- (4) *Milk and Food control.*
- (5) *Food sanitation in canteens.*
- (6) *Sewage disposal.*
- (7) *Garbage and refuse disposal.*

- (8) Control of insects and rodents. Insect borne diseases as Malaria and Plague, Typhoid, Typhus.

Since nine-tenth of the time lost from work on account of disability is due to non-industrial causes, the importance of community sanitation must not be overlooked.

(2) *Plant sanitation.*—Such a service has three important steps which are required to be taken to obtain satisfactory sanitation in the factory :—

- (a) Provide good facilities and equipment (use personal sanitary sense).
- (b) Maintain these facilities in clean and good working condition.
- (c) Educate the worker in the proper use of the facilities and in the need for good personnel cleanliness.

Such a service has to deal essentially with problems of :

	(Factories Act, 1948)
Cleanliness ..	Sec. 11
Waste disposal ..	„ 12 & 20
Water supply ..	„ 18
Toilet facilities ..	„ 19
Washing facilities ..	„ 42 & 43
Personal services ..	„ 46, 47 & 48

(3) *Industrial Environment Sanitation.*—Other conditions in the working environment which require attention are :—

Lighting	{ Natural } Sec. 17
	{ Artificial }
Temperature ..	„ 13
Ventilation ..	„ 13
Artificial humidification ..	„ 14

(Our sensation of comfort depends on temperature, humidity and air motion).

Personal protection—provision for protective equipment.

First Aid.

Warning Notices and Posters (their use in accident prevention) Bulletin boards for posting.

Noise—(Threshold of Painful noise 130 decibels).

Radiant energy (Luminising Regulations)
Control of Air contamination
(Contaminants as dusts, fumes, gases, mists, vapours).

Following control methods may be employed—

- (a) Control at point of generation
 - (1) Local exhaust ventilation.
 - (2) Wet methods.
 - (3) Good housekeeping.
 - (b) Dilution with uncontaminated air—
 - (1) Use of structural methods, doors, windows, chimneys, roof ventilators.
 - (2) Use of mechanical methods as fans and ejectors.
 - (c) Isolation of those processes which produce contamination.
 - (d) Substitution of less toxic material as use of steel shot in silica sand in abrasive blasting.
- Use of petroleum naphthas or toulol for benzene.

(e) Reduction of the concentration of contaminant in the inspired air by means of respiratory protective devices.

(f) Maintenance, house-keeping and the education of the worker.

INDUSTRIAL HYGIENE SERVICE IN INDIA

- (1) Organisation in the Ministry of Labour : Office of the Chief Adviser of Factories.
- (2) Provincial Factory Inspectorates.
- (3) Industrial Health Advisory Committee of the Indian Research Fund Association.
- (4) Industrial Health Research Unit at the All India Institute of Hygiene and Public Health, Calcutta.

FUTURE PLAN

The development of healthy working conditions should be the one common meeting ground of agreement between management and labour in the difficult days that lie before us.

A doctor who had a custom of cultivating the lawn and driveway in front of his home every spring, engaged O'Brien to do the job. He went away for three days and when he returned he found O'Brien waiting for his money. The doctor looked the work over, and finally, with a dissatisfied shake of his head, commented :—

"O'Brien, you have left that front walk covered with gravel and dirt, and in my estimation it's a bad job".

O'Brien looked at the doctor in surprise for a moment and replied :

"Shure, Doc, there's many a bad job of yours covered with gravel and dirt".



FOOD AND NUTRITIONAL VALUE OF GREENS

by

Dr. V. N. Patwardhan,
Director, Nutrition Research Laboratories, COONOR.

The author is a world recognised authority on Nutrition. He is not new to the readers of *People's Health*. The author puts the case in so simple a manner as to grip attention. His suggestion for a partial solution of the food and nutrition problem is simple and everyone is in a position to help. Grow more green leafy vegetables. It goes a long way in improving the quality of our diet.

—Ed., P.H.

Good nutrition is necessary to ensure a high degree of general health and vitality and is essential for the building of a strong and vigorous people. In any scheme, therefore, that aims to improve the health, vitality and expectation of life of a people it becomes essential to improve their diets. It is my intention to examine, in this talk, the role of green leafy vegetables in the design of healthy and adequate dietaries.

A good diet should provide the energy requirements of the body needed by the latter to discharge its daily functions and in addition it should provide materials for building up of new tissues during the period of active growth and

to enable the replacement of wear and tear when growth ceases.

DIET : METHOD OF ASSESSMENT

When thinking of diets and their adequacy, people often make the mistake of paying too much attention to calories, a word which seems to exert on their minds some indefinable charm. The finer, but the more important points in a diet are usually missed. It should be emphasized that the evaluation of diets based on their energy content is an one-sided and therefore very much incomplete method of assessment. What is not realised is that a diet sufficient in

calories can yet be one which would fail to sustain life. It is the proper balance between the different nutrients contained in the diets which make the latter nutritious and adequate. The attempts of man, from times immemorial, have been to select for eating foodstuffs which would ensure such a balance. These attempts, however, were made empirically, till the advances in sciences of biology, physics and chemistry made it possible to find a rational basis for the dietary practices found associated with a healthy, vigorous and long life. An examination of such diets shows that they are made up from a wide variety of foodstuffs of animal and plant origin differing in their chemical composition and hence in their nutritive value. Each article of the diet, viz., rice, bread, meat, fish, milk, vegetables, fruit, etc., may be highly nutritious from a particular view-point, and yet no diet based on a single foodstuff can ever be considered complete. The deficiencies of one foodstuff can be made up by the components of another and hence it is a judicious choice of foodstuffs that will ensure a sound diet. The place held by green vegetables in the scheme of healthy dietaries is indeed a high one for reasons which will soon become apparent.

DIET : ITS CONSTITUENTS

The chemical constituents of a diet are usually classified into carbohydrates, fats, proteins, minerals and vitamins. Out of these, carbohydrates and fats mainly provide energy. Proteins on the other hand are valued because they subserve the function of building up of new tissue and the replacement of wear and tear in the body. Their potentiality as producers of energy is of secondary importance. Minerals like calcium and phosphorus are needed to build up the skeleton and iron to form the blood pigment hæmoglobin, and other minerals for other essential functions which it will be too complicated to describe in this talk. The functions

of vitamins in the body are compared to those of a lubricant in a machine and although this analogy is crude, it best expresses in common parlance the role of vitamins in the machinery of the body.

Foodstuffs contain the above dietary essentials in different proportions and based on this consideration foods are divided into two main types—(1) energy giving foodstuffs and (2) protective foodstuffs. Cereals, pulses, oils and fats, sugar, jaggery, meat and fish are considered energy yielding foods, whereas eggs, milk, vegetables and fruits are included in the category of protective foodstuffs.

POOR MAN'S DIET

It is the characteristic of a poor man's diet all over the world that it is deficient in protective foodstuffs and a poor Indian's diet is no exception. On the contrary it is very much more deficient in this particular respect than that of his opposite number in the west. It is not difficult to find the reason for it. Most of the energy yielding foodstuffs are cheaper than most of the protective foodstuffs. As has already been said, the latter include such costly articles as eggs, milk and milk products, fruits and vegetables.

The last mentioned is the cheapest, and yet not as cheap as one would wish it to be. The vegetables could be further divided into two classes—(a) green leafy vegetables and (b) non-leafy vegetables. Between the two the green leafy vegetables are incomparably more nutritious. Besides they are cheaper than the other variety and as such have an important role to perform in improving the Indian dietary if only people would make up their minds about it.

GREEN LEAFY VEGETABLES

Green leafy vegetables contain between 80 to 90% water. The solid matter contained in them is made up of proteins, a minute amount of fat, carbohydrates, minerals and vitamins. They

are prized on account of their high mineral and vitamin content. It is true that all of them are not equally good; on the whole, however, green leafy vegetables as a class, should be considered highly nutritive. They provide materials in the diet which are deficient in other classes of food-stuffs and by their inclusion, the diet is made qualitatively complete.

In India numerous varieties of green leafy vegetables are grown for human consumption in one part of the country or the other. The chemical composition of about 30 of them has been listed in the *Heath Bulletin* No. 23, published by the Government of India, and I am quite sure that there still exist several which have not yet been examined from the nutritional standpoint. Most of them, however, are good sources of supply of some vitamins and of minerals like calcium, phosphorus, iron, etc.

Green leafy vegetables contain an unusually large amount of P-carotene which is a precursor of Vitamin A. In the diets of the pure vegetarians these form the only source of this vitamin. On ingestion much of the carotene is absorbed from the digestive tract and converted by the body into Vitamin A. Comparatively speaking, they are not good sources of the major B vitamins, but no better source of Vitamin C can ordinarily be found among all the other articles likely to be included in the average Indian dietary. In this respect they are incomparably superior to the ordinary fruits. When one considers therefore that in addition they are also relatively much cheaper than fruits, it will become clear that their importance in diets particularly the Indian diets, can hardly be overestimated.

Green leafy vegetables should be easily available. They can be cultivated in any house having some space surrounding it. So far as this facility is concerned the question does not arise in the rural areas, but with a little forethought such cultivable space could be provided in most urban areas as well. If even a part of

this space is utilised for cultivation of green leafy vegetables for home consumption, it will afford partial help in the solution of "food problem" which is worrying all of us at the moment. I must make it clear that in my reference to "food problem" I do not consider it enough to think only of cereals and other food grains or their substitutes. The problem has much wider range and encompasses the provision in adequate quantities of all those foodstuffs on which the foundations of a healthy life can be securely laid. Green vegetables should be considered from the economic and nutritional points of view as the most important constituent of national dietaries. What I feel, however, is that not sufficient emphasis is being laid on their increased cultivation and use.

Apart from such vegetables as brussels, sprouts, cabbage, celery, lettuce, etc., with which Indian people are not familiar, there are several others which one can find being cultivated all over the country on a much smaller scale than one would wish. Different varieties of amaranth, coriander, fenugreek, hibiscus, mint, rape leaves, spinach, colocasia are only a few which are common throughout India and all of them rich sources of carotene, Vitamin C and minerals. It must be mentioned also that the proteins contained in the leafy vegetables belong to, what are popularly known, high class proteins. Although the quantity of proteins supplied by green leafy vegetables is not much, the contribution they make by virtue of their quality is certainly not to be despised.

AVERAGE INDIAN DIET

The average Indian diets are known to be mainly based on cereals and hence there is in them a preponderance of carbohydrates. It has been the opinion of scientists that in a good dietary the proportion of carbohydrate to proteins should be 5 to 1 or less. In Indian diets this ratio is much higher. The inclusion of ample

quantities of green leafy vegetables will add relatively more protein, thus partially correcting the unfavourable balance between carbohydrates and proteins. It should therefore be clear that from whatever angle one views the problem of the inclusion of green leafy vegetables in Indian diets, their greater consumption must improve the diets and consequently the health of the people consuming them.

EFFECT OF COOKING

Some observations on the effect of cooking on the nutritive value of the green leafy vegetables must be made here. Generally the vegetables are boiled or steamed and on being cooked, the Indian practice is to add spices and condiments. The final preparation may be liquid or solid depending upon the method of preparation, local practice and individual taste. There are some vegetables in the cooking of which, the water in which they are boiled is discarded owing to the fact that the vegetable contains some irritating substance which is thus got rid of. It must be borne in mind that in discarding the cooking water a large proportion of some valuable constituents may be lost. The best cooking practice would be that in which the losses in the nutritive value are reduced to a minimum. If one merely boils or steams the vegetables, most of the carotene is retained. Vitamin B₁ loss may be in the neighbourhood of 10 to 15% and that of Vitamin C within the same range. In discarding the cooking water losses of Vitamin C and minerals may increase to 50% or much over that figure. In some homes the practice of adding soda bicarb has been introduced in order to retain the green colour. The addition

of this chemical enhances the losses in nutritive value, its effect in this direction however is considerably exaggerated. It has been observed that the addition of soda bicarb reduces the time required for cooking and it seems possible that what is lost in adding soda may be gained by reduction in the time required for cooking. The two effects may then cancel each other and give a product more presentable for consumption.

EXPERTS' VIEW

A committee of experts in India, called the Nutrition Advisory Committee, has recommended that Indian diets should contain 10 ounces of vegetables per adult per day, of which 4 ounces should be green leafy vegetables. This quantity should provide more than adequately one day's requirements of Vitamins A and C and contribute substantially to the requirements of minerals. There would be no harm done, on the contrary it may do more good, if the quantity of green leafy vegetables included in the diet exceeds 4 ounces. With the variety of these which can be made usually available, and the variety in modes of preparation, there should be no danger of introducing monotony in the diet by so doing.

Finally I wish to add one more remark. While we talk ourselves hoarse over the acuteness of the food problem most of us do precious little to help the Government efforts. From what I have said above we can do something definite so far as the problem of green leafy vegetables is concerned. A little of the above commodity can go a long way in improving our nutrition and consequently our health.

(Courtesy-A.I.R., Madras)

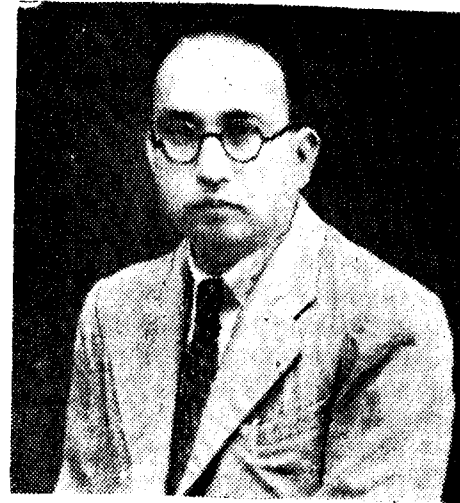
Food specialists are now recommending *spaghetti* as containing all of the health-giving elements, including, of course, exercise!

PUBLIC HEALTH THEN AND NOW

by

Dr. T. B. Patel

M.B., B.S. (Bom), B.Sc., B.Hy. (Bom), D.P.H. (Lond.),
Assistant Director of Public Health, S.R.D., Belgaum.



Despite the length of this article, we publish it with pleasure, as we feel that the author has taken extraordinary pains to cull out information from various sources. The article would be of particular interest to students who desire to have an idea of the historical background of the present day conception of public health.

—Ed., P.H.

Public Health like other branches of medicines has made considerable advances during the present century, war with all its evil consequences has also been an instrument in giving a tremendous impetus to scientific researches and Public Health is no exception to it.

During the latter half of the last century, Public Health was primarily concerned with environmental hygiene and preventive medicine. It concentrated then on the removal of environmental evils and with its attacks on insanitation.

In those earlier days, Public Health research was often concerned with minimum conditions

necessary to ward off disease and preserve health. For example, much labour was expended to discover the irreducible minimum of dietary constituents necessary to maintain life.

The application of state medicine in those early days of century found their inspirations in England in two sources and their expression in legislation. The two-fold inspiration came from the recurrent outbreaks of cholera and consequential commissions of enquiry and from popular demand for reform. Attention was drawn to the prevalence of epidemic diseases and its relations to poverty.

HOUSING AND SLUM CONDITIONS

In 1833 Chadwick the pioneer in Health Movement wrote :—

"Physically the effects of excessive hours of labour were aggravated by bad sanitary conditions of ill-ventilated and ill-drained workshops, and ill-drained and ill-ventilated dwellings, while the economic results, waste of working force were such as would be the case if the farmer to obtain one working horse had to raise two colts."

Symmonds, another Government Commissioner, wrote :—

"I have seen wretchedness in some of its worst phases both here and upon the Continent, but until I visited the Wynds of Glasgow I did not believe that so much crime, misery and disease could exist in any civilized country. In lower lodging houses, ten, twelve, sometimes twenty persons of both sexes, all ages of various degree of nakedness sleep indiscriminately huddled together upon the floor. These dwellings are usually, so damp, filthy and ruinous that no one could wish to keep horse in one of them. No one can know the full meaning of social medicine without seeing the conditions of life in Glasgow."

Chadwick the Pioneer of Health Movement wrote in 1833 :—

"I invite your consideration of man as an investment of capital, as pecuniary transaction, in relation to whom we have to consider the means of rearing him with a view to the return of the highest percentage of profit and above the cost of his nurture as a return for that investment."

Thus, profit motive and economic advantage had to be stressed in improving the conditions of houses. Again for better recreation facilities for workers he quotes an example that during Her Majesty's marriage celebrations in Manchester a demonstration was to be staged by working class people. Police and Guardians of Law were alarmed. The Chief Commissioner of Police induced the Mayor to get the Botanical Gardens, Zoological Gardens and Museums of the town and other institutions thrown open to the working classes at the hours they were urgently invited to attend to Charteris Meetings. The effect was that not more than 200 to 300 attended the political meetings. A further effect was

that the charges before the police of drunkenness and vice were on that day less than the average.

The real reason that has operated to hinder the demolition of the Wynds of Glasgow and similar slums which are there even now appears to be that property has had priority over life. No such priority was accorded to the insanitary conditions that fostered cholera in the last centuries. Piped water supplies to the towns, sewerage systems and the paving urban streets were initiated and carried out on gigantic scale. This was due largely to the fact that cholera was not so selective of social class in dealing death as are slums—only one class lives in slums, but the sewage polluted water was drunk by influential people and the slum dwellers alike.

Whenever vested interests appear to be mobilising to hold up municipal sanitary reforms a further outbreak of cholera reminded these citizens that their lives were of more value than a saving in taxes on their property. Slums could go just as open drain and unpaved streets went.

The Royal commission of 1871 drew up a national sanitary minimum of "what is necessary for civilized social life" as follows :—

- (i) The supply of wholesome and sufficient water for drinking and washing.
- (ii) The prevention of pollution of water.
- (iii) The provision of sewerage and utilisation of sewage.
- (iv) The regulation of streets, highways and new buildings.
- (v) The healthiness of dwelling.
- (vi) The removal of nuisance of refuse and consumption of smoke.
- (vii) The inspection of food.
- (viii) The suppression of causes of diseases and regulation in case of epidemics.
- (ix) The provision for the burial of the dead without injury to the living.
- (x) The regulations of markets and public lighting of towns.
- (xi) The registration of deaths and sicknesses.

A century ago these represented the most enlightened thought regarding the sphere and scope of preventive medicine. The Public Health Act, 1875, emerged from the labours of the above commissions, as an important landmark in the development of sanitary administration.

At the same time a spirit of social reform and altruism sprung out of the despair and aspirations of the Industrial Revolution. The growth of towns and over-employment of women and children were factors in demonstrating the need for reform and a new outlook on the meaning of social justice. This found expression to some extent in Factory Acts.

In the last decade of 19th century came the legislation on housing and industrial—betterment, on the cleansing of persons as distinct from properties and on the education of blind, deaf and defective children.

Then with the beginning of the present century came a significant series of acts dealing with midwives, the employment of children, the provision of school meals, the protection of food, notification of births, medical inspection and treatment of children, the children's act itself, old-age pensions, the health insurance of adolescent and adult and a group of acts concerned directly—with some of the prevalent diseases, tuberculosis, mental deficiency, ophthalmia, neonstorum and venereal diseases.

Thus, preventive medicine became more personal, social, and apposite than formerly, based more upon child, concerned more with the individual than the environment, dealing more with the true causes of disease and finding its scope in the ever increasing affinity between preventive and curative medicine.

As a result of this in conjunction with social betterment vast sections of populations came to live healthy and fully occupied lives. The expectation of life was extended and many gross forms of diseases almost disappeared. Leprosy,

typhus, goal fever, scurvy, plague and cholera more or less vanished from Britain and others such as smallpox, typhoid, etc., were coming under control.

In describing the effect of sanitary measures in reducing typhoid mortality, Prof. Greenwood thus observed:—

Roughly from 1875 over the next ten years there was rapid fall then rather more than decennium showing little change. At the beginning of 20th century another rapid fall began which slackened into gentle descent which has continued almost regularly since about 1910.

"From the fifties, Simon waged a vigorous campaign against filth in general and filthy water in particular and gradually means of coercion were given to the 'bureaucrats.' After 1875, something had to be done sooner or later even by the most thick-skinned local authorities in areas where sewage was used for drinking purposes. There was a vigorous overhaul of drains and water. Hence the first rapid decline of the typho-enteric group.

Then came a period when the number of utterly detestable water supplies was so small that not much impression upon the national rates could be made by impeaching water and drains; there was an epoch of stagnation.

Then a new gospel was vouchsafed that of the 'carriers' and the consequent importance of personal cleanliness as distinct from communal cleanliness.

The spread of the new gospel did coincide with a new downward plunge of the secular rate.

The countries which were backward to campaign against filth were behind-hand in experiencing decline of mortality from typhoid.

In an urbanised state, unsleeping vigilance with respect to the communal food supplies, before all the water supplies, and an unwearied inculcation of personal cleanliness are the best means of protection.

In this matter of enteric diseases, central and local health authorities can never afford to relax their vigilance."

As a further stage in the public health advance, Sir George Newman, C. M. O. to the Ministry of Health, G. B. (1919 to 1935) postulated the following public health programme in 1926:—

- (1) Heredity and race.
- (2) Maternity and care, protection and encouragement of the function of the motherhood,
- (3) Infant welfare and reduction of infant mortality.
- (4) The health and physique of school children and adolescent.
- (5) Sanitation of the environment, the control of the food supply, and improved personal and domestic life in the home.
- (6) Industrial hygiene, the health of the worker in the workshop.
- (7) The prevention and treatment of infectious diseases.
- (8) The prevention and treatment of non-infectious diseases.
- (9) The education of the people in hygiene.
- (10) Research, inquiry and investigation and the extension of the boundaries of knowledge.

One of the most striking features of the changes of the last fifty years has been the public opinion in favour of better health. Public are more receptive and willing to take advantage of health measures. For example, it is common in urban ante-natal clinics to have attendance during pregnancy of over 95% and the average of England, and Wales is over 70%. Public opinion has also come to appreciate that it is not so much a question that we cannot afford public health progress but that we cannot afford to do without it; so great is the cost of ill-health. It is increasingly recognised that some, if not all, of the conditions of public health are purchaseable. The cost has not been regarded so much as an expense,

but as an investment which will reap rich dividends of health for the future.

There is now a heavier attack on the causes of morbidity as well as those of mortality.

Many disorders as from air-borne infections may be accompanied by a low mortality that may cause severe damage to the health of the individual and to the work and the life of the nation. The purpose is not only to save life but health.

Efforts to make life worth living which is the definition for "welfare work" must include measures directed against infections often regarded as minor but responsible for much misery and loss. Now the emphasis is on the optimum nutrition, not on nicely calculated more—or—lessness of minima but on the liberal view of optima for the preservation and enhancement of health.

In the past people drank others' intestinal flora in untreated drinking water; today owing to urbanisation with its accompanying crowding we breathe in each others' nose, pharyngeal flora as the common cold, for example, bears witness. The number of people treated in hospitals has grown to larger proportion despite existing health services and those measures some of which have been taken and others advocated such as slum clearance, health education in schools, adult health education, home helps, factory hygiene and abatement of noise at night and smoke by day. Besides these multitudes who suffer from intermittent minor illnesses, there are those who in lesser degree do not feel well or bursting with that vitality of life which health should connote.

An increasing number of people are drowning their sorrows in drink, soothing their nerves with cigarettes, escaping from realities by frequent visits to smoke-laden cinemas and as an antidote against boredom, betting on football and dog racing. No one loves to kill joys or no one should discourage harmless pleasures but if pleasures are potentially, morally or physically harmful and

indulged in immoderately or a regular habit they may be symptoms of underlying disharmony.

In old days difference in water supply was a material factor in the incidence of epidemic disease like cholera. No longer are now cholera outbreaks to investigate. But there are other factors in the water supply having a bearing on the health of the people, for example, a water supply rich in fluorine had a significant effect on the teeth of the children.

Many legal powers which required to be enforced are now observed as duties and emphasis has changed from punitive and prosecutory aspects of public health to that of the preventive and co-operative work of health personnel in their relations with the public.

The British Minister of Health in 1943 publicly urged that certain regulations (about treatment allowances for T.B.) should be interpreted with "loving kindness."

Again now in the case of disease one looks beyond the individual to the family in which he is, to his work and play and to the home and social background. It has become evident that one must treat the family, not merely the one member who first appears at the clinic.

It is believed that the proper ascertainment, prevention and treatment of many diseases from tuberculosis to infestation must be studied from the standpoint of the family as the unit that to build better health of the individual there should be better family life and that palatial institutional provision is a poor substitute even for a second-rate home.

DOCTRINE OF POSITIVE HEALTH

Health is more than just the state of not being ill or of having no complaints or disabilities. In fact, so called ordinary health can be improved. The idea of positive health indeed points the way to constant improvement. The main occupation of hygiene is the prevention of disease. New health education concerns with promotion

of health. One a negative point and the other a positive point.

Although we know how to prevent or cure most of the parasitic and nutritional diseases of the tropic, the state of the general population of too many countries is poor—indeed in some places desperate.

PROSPECTS IN PUBLIC HEALTH

In the causation of disease no other single factor is so important or so universally potent as environment—the cradle in which public health was reared and the field in which it has scored its greatest triumphs. Though great advances are made in this field, large tracts still have hardly been touched. Atmospheric pollution, the milk supply, factory hygiene and housing are only a few of those pressing problems that cry aloud for solution. Constant and unrelenting vigilance over environment (including nutrition) is necessary if disease is to be avoided as proved by the war.

It is probably true to say that public health evils are more keenly appreciated to-day; that there is a sharper social consciousness of defect and disease.

To quote an instance from the 19th century England.

"A horrible traffic had sprung up, child jobbers scoured the country for the purpose of purchasing children to sell them again into bondage of factory slaves. The waste of human life in manufacturing to which the children were consigned was simply frightful. Day and night machinery was kept going. One gang of children working it by day and another set by night while in time of pressure, the same children were kept working day and night by merciless task-masters."

Now-a-days there is greater care of the individual child and he has to be considered "as an individual with his own rights and possessions, his own life to live and his own contribution to offer."

There is also a better and more comprehensive care for the handicapped child.

There is also increasing recognition of the need to keep well babies well, to care for the normal child and for the ordinary folk before they become ill and join the army of defectives. Parental care is supplemented by provision of nursery schools, diet in the home by school lunches and meals, sound health by furnishing periodic medical inspection and treatment, etc.

It is also realised that the preservation and promotion of health is fundamentally more important than either prevention or treatment.

Here is a programme drawn up by the Oxford Institute of Social Medicine in 1942 indicating the modern trend in public health:

(1) To investigate the influence of social, genetic, environmental and domestic factors on the incidence of human disease and disability.

(2) To speak and to promote measures, other than those usually employed in the practice of remedial medicine, for the protection of the individual and of the community against such forces as interfere with the full development and maintenance of man's mental and physical capacity.

WAR AND PUBLIC HEALTH

Reviewing the public health in England during the last 6 years of war the Chief Medical Officer reports that main enemies of public health were epidemic diseases, malnutrition and mental stress.

In the field of epidemic diseases a major triumph was immunization campaign against diphtheria which reduced the death rate to less than one-third of the pre-war average though this preventable disease still caused more deaths than enemy bombs.

Infant and child mortality which are particularly sensitive indicators of social well being recorded a decline.

In fact the infant mortality in 1944 was the lowest ever recorded.

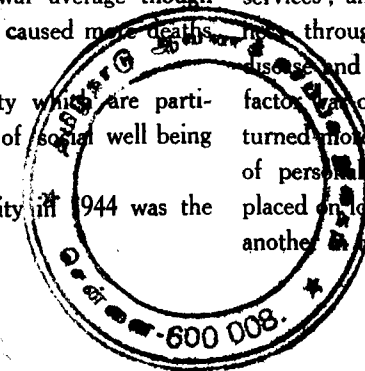
Another index to National health is the tuberculosis death rate. Insufficient diet particularly when combined with over work and over crowding bring in its train the risk of an increasing incidence of T.B. There was also a rise in venereal diseases which was fought by vigorous publicity. There was increase in scabies, food poisoning and dysentery due to difficulty of personal and culinary hygiene.

War has however also shown how levelling up the dietetic standards of the poor may more than counterbalance the environmental deficiencies.

Anxiety and fear were combated by psychological selection tests, welfare work in industry and psychiatric treatment in special clinics. Thus the advantage of a nation-wide organisation in preventive medicines have been fully demonstrated.

In India war resulted in a tremendous rise in all epidemic diseases like cholera, smallpox and plague and also caused malnutrition, starvation and deaths on a mass scale. There was a rise in infant mortality and tuberculosis death rate as well as venereal diseases. In fact the deteriorating influences of war on the public health are constantly present in this country even during the peace time.

In the latter half of nineteenth century the work of M.O.H. was entirely environmental and he was expected to be a Jack-of-all-trades-Sanitarian, epidemiologist, bacteriologist and even public analyst. The first quarter of 20th century brought the M.O.H. into touch with an increasing number of problems relating to personal health through maternity, infant welfare, school health services; and into immediate contact with sick-through schemes for T.B. and venereal disease and other conditions in which the social factor was of notable concern. His own interest turned more and more to the pressing questions of personal health as successive Governments placed on local authorities one responsibility after another in the range of social medicine.



Instructions in the social aspects of disease and in the administration of the personal health services was gradually added to the curriculum.

The application of medicine to man in his environment called social medicine which was long practised by M.O.H. was rediscovered and brought to the foreground by the medical profession.

Epidemiology and statistics are still crying out to be yoked together in a nation-wide investigations; the story of the causes of sickness needs the co-operation of a whole army of health officers and the early ascertainment of sickness deserve immediate and intensive study.

One of the jobs of M.O.H. is to promote health. He has hitherto been far too much concerned with sickness. It is not his fault. The task of health education is colossal.

For the undiscerning multitude are biased in favour of sickness and spend their time in swallowing daily advertised or threatening medicines while local bodies pride in hospitals.

SOCIAL PATHOLOGY AND SOCIAL MEDICINE

In the words of Professor Ryle, social pathology is the study of the relation between social conditions and individual disease. Its methods are observational and latterly in some degree experimental. In observations it uses statistics and planned socio-medical surveys. In experiment it can sometimes study comparable groups of people in partially controlled conditions, as when half a slum population is re-housed on an estate and its health deteriorates because the food it can afford is less. Individual pathology deals with quality and effect of disease and aids in diagnosis while social pathology deals with quantity and causes of diseases and in practice assists in prevention. Social pathology has heretofore been followed by the Public Health Departments (Individual pathology is restricted to

schools and hospitals). Its interest is expanding beyond its old concern with infectious diseases and mechanical environment of man. It now considers all the effects of community life on the health of the individual—nutrition in its various effects, economic circumstances, educational influences, and the whole psychological pattern of human relationship. These show much less uniformity of effect than do contaminated water supplies or epidemics of small-pox. It gives a broader and more humanistic outlook.

Public Health techniques such as field studies and application of statistics are utilized in its appraisal.

The object of exploring social factors of disease is to formulate a scheme for removing them or otherwise mitigating them.

Without a knowledge of home and working environments it is difficult to form a true picture of disease whether we are thinking of prevalent chronic maladies of industrial England or of the acute endemic and epidemic diseases of India.

This study of man in its environments is described as social medicine.

Small-pox, cholera, typhus, typhoid fever which were prevalent 100 years ago in England have now virtually vanished. Nutritional disease is relatively a minor problem in England which it is an abiding and a major problem here.

Hence need for recruiting ancillary services is far greater here in India. The unhappy lag between new knowledge and its application to human needs should be reduced steadily, wisely and surely as possible.

There must be growing sense of responsibility towards the children whom Russians style "the flowers of life."

"The health of the people is really the foundation upon which their happiness and all their powers as a state depends," wrote Disraeli, a century ago.

POPULATION AND PUBLIC HEALTH

The distances of the world are steadily shrinking and at the same time the number of people in it are increasing.

The aeroplane has reduced the perilous adventures of Marcopolo to an afternoon jaunt during which one may take a nap and relax. Though England is worrying about the declining birth rate the world is experiencing a tremendous expansion in its population, viewed on the time-scale of man's existence on the earth. Raymond Pearl was wont to describe it as "An epidemic of population growth."

By the middle of the 16th century the world population was 445 million people. In the last three hundred years world has increased in size between 4 and 5 fold from 445 million persons to well over 2 billion persons. Because of the shrinking distances of the world and the increasing density of the world population, the future health Agency of the world, now being created, must be a more powerful and effective organisation than anything ever known in the past.

Until there is a substantive rise in the standard of living, people will continue to die of starvation and disease attendant on malnutrition.

For India at present food appears to be one of the important medicines. The principle of Malthus oft quoted by many is this that in man as in other animals there is a universal tendency for population to out-run food supply, so that the checks imposed by famine, war, pestilence, misery and vice continue to maintain the balance unless preventive checks in the form of delayed marriage, celibacy and sexual restraint are applied.

The census figures of India show an increase in the population growth of 10.6% for 1921 to 1931 and a further increase of 15% (i.e., 50 millions) in next 10 years, and large proportion of this is under-nourished or semi-starved. The only solution to mitigate the evil effects of this

would lie in maintaining a satisfactory balance between food supply and population by increasing food production.

In fact some have criticised the infant welfare activities in this land and have called the Baby Health Week as a luxury. Critics question whether it is worth preventing the infant mortality in the land.

Answer to this would be that there is certainly no need to take such a pessimistic view of the conditions. Population growth in England and other Western Countries was also of a similar kind in previous centuries. The vast scale of industrialization leading to higher standard of living gradually brought about a change in the fertility rate leading to decline in the birth rate. Professor Fisher thinks that reduced infant mortality has psychologically effected a check on the will to procreate. It has been observed that it is quite possible that a decline in fertility rate is likely to occur in this country also with the increase in standard of living. In fact this has been observed in this country in certain professional classes of people in the higher income groups in a survey carried out in one province.

Our worthy Prime Minister, Pandit Jawharlalji, in his recent broadcast on the subject "Crisis of Production" said, "No country could be over-populated if there was work for every one" which indeed seems to be the correct view of the position.

It has been a common experience everywhere that there is a decline in birth rate with the rise in standard of living and that higher birth rate is usually more associated with poverty and backwardness.

A ten-year programme carried out with the same skill, self-sacrifice and energy as has gone in the production of aircraft and tanks in the last five years and having the same priority of materials and labour, would go far towards accomplishing the task.

WORLD HEALTH ORGANIZATION

The Economic and Social Council of the United Nations by a resolution of 15th February, 1946, convened an International Health Conference to establish an International Health Organization. More than 50 countries met in New York City from 19th June to 2nd July, 1946. The Conference drew up and signed the Constitution of the World Health Organization.

Dr. Thomas Farren of the United States Health Services summing up thus declared at the Health Conference:—"We are convinced that health is not merely the absence of disease or infirmity, but a state of complete physical, mental and social well being—the enjoyment of which we declare to be a fundamental right of every human being without distinction of race, religion, political belief or economic or social condition.

Improved health enhances standards of living, promotes economic prosperity, contributes to our total objective, which is peace. The fundamental freedoms can be realised only when people are healthy. In the field of health, nations are inter-dependent. Epidemics anywhere in the world are dangerous to other nations. Low standard of health lay a burden on the prosperity and trade, imposing an economic handicap on every nation and on the world as a whole. The world health centre we are creating should be the directing and co-ordinating agency to provide information, leadership and assistance in every phase of health work. Recently we have seen the miracles which can be accomplished by sulpha drugs and penicillin; yet only a small proportion of the world population has access to these remedies. For a large part of the world's people doctors and hospitals in the modern sense are unknown. Even such an elementary requirement of health as an uncontaminated water supply is lacking over large areas of the earth. During past forty years, our nations have acquired some experience in international health action through efforts to prevent through quarantine

and through exchange of epidemic intelligence, pestilential diseases from spreading between nations.

The world health organisation will be prepared to use all our most modern knowledge our best tools wherever needed to eliminate the ancient human plagues, such as malaria, cholera, T.B. and syphilis. Prevention of disease is a first objective. But this is only a first step. Hunger and malnutrition stunt the bodies and warp the minds of a large part of world's population. To attain freedom from want of food is another goal which we may hope to reach pooling our nutritional knowledge with food and agricultural efforts of united nations.

A next step towards world's health is the positive improvement of health—of physical and mental fitness. Higher levels of physical development, a longer, more productive, more vigorous life span will be sought and attained.

We have to conduct intensive research in the laboratory, at the bedside and in the field to push back the frontiers of the unknown in the health services.

In our Magna Charta for health we have ventured to declare that we have a contribution to make to the central world problem of our day, which is to help man learn to live together harmoniously with fellow-man.

The world health organisation is therefore a collective instrument which will promote physical and mental vigour, prevent and control disease, expand scientific health knowledge and contribute to the harmony of human relations. In short, it is a powerful instrument forged for peace."

As regards the public health problems and existing conditions in India these have been vividly described in details in the Bhole Committee report. However financial considerations have forced both the Central and most of the Provincial Governments to postpone its implementing in the manner desired by the Committee,

I shall here try to describe briefly the historical outline of the development of public health in India and its present position.

In the first half of 19th century Jennerian Vaccination was introduced (1803) and Indian Quarantine Act of 1825 was passed. British Rulers were more concerned with the health of the army and Europeans in India.

During the very active period of fundamental advances in sciences in Europe in the second half of 19th century and the simultaneous socio-economical and political progress which helped to establish hygiene and preventive medicine on a firm practical basis there had rather poor repercussions in India.

It seems that real history of sanitary organisation in India began in 1857 when a Royal Commission was appointed to report on the sanitary state of the army in India.

The Commission made important recommendations including these as:—

- (1) Sanitary improvements of towns.
- (2) The prevention and mitigation of epidemic diseases.
- (3) Constant observations of the sanitary improvements of the population and the reports of the prevalence of sickness.
- (4) The construction of works of drainage and water supply.
- (5) Proper carrying out of rules and regulations.
- (6) The preparation of codes and rules adopted to the special sanitary requirements of the army and of the civil population.
- (7) The submission to the Government of India, plans for consideration and supervising the whole sanitary administration of the Presidency.

However it seems that the Government of India at that time did not favour a general sanitary system owing to the financial and administrative difficulties.

The passing of the first Local Self-government Act in 1885 relegated the task of the promotion of sanitation to local bodies and village units.

Similar recommendations on a more comprehensive scale by the Commission of 1869—71 in England were implemented to great extent. Last 47 years of 20th century have seen enormous advances in medical and public health knowledge and its application by the state in England and other western countries along with simultaneous social evolution and political progress.

In India in 1913 the Sanitary Commission wrote:—

"During the last century Government had to deal with a population which was unwilling and unready to receive sanitation, which either frankly disbelieved in its efficacy and resented any change in established customs or was too ignorant and apathetic to understand the goal at which it aimed. Sanitary measures were received not by indifference only but by active opposition. When plague appeared it was not a new disease to India, but it was new to the present generation of Indians and it has exacted a very heavy toll of deaths all over the country. The strangeness of the disease, the unpopularity of the measures taken to control it and impotence of these measures, have served to rouse the people from apathy and concentrate the attention of all, but especially of the educated classes, on sanitation in a way that nothing else could have done, the more enlightened have begun to grasp the fact that much of the present sickness is preventable and much of the mortality unnecessary to realise in short the importance of sanitation, the economic value of water and the wastefulness of sickness or premature death. This is shown by their demand for better water, better food, better housing, better drainage.

At the same time plague has not been without its effects on Government. Previous to the advent of this disease it had been the generally accepted opinion that sanitation was the work of

any medical officer and required no special training. A special sanitary staff had therefore, not been considered of any very great importance. When plague appeared the staff was inadequate and unprepared. Sanitary measures taken were unsuitable and could do little to check the spread of the disease. The waste of life, time and money and effort that resulted has impressed the Government the necessity of being prepared in future and large changes have been effected with that object."

Thus Research Department and sanitary commissioners and their deputies were appointed. Control of epidemics and communicable diseases was the function of commissioners and deputy commissioners. Local Bodies were subsidised to appoint Health Officers and Sanitary Inspectors.

The Government of India formulated a forward sanitary policy in 1914 when some useful principles of sanitary organisations including research sanitary surveys, urban sanitation (conservancy, water supply, drainage) and town planning, rural sanitation, health education and controlling of epidemic were laid down.

Government of India Act of 1919 transferred the medical and public health administration to ministers.

By this time informed public opinion began to demand more expenditure on public health. In spite of this nothing more than a skeleton staff could be employed—being too inadequate for dealing with large populations and areas entrusted to them. Thus a health officer was put in charge of a district with population of 1 to 3 millions.

Measures for the improvement of Hygiene in industrial area began to be taken since 1911. Indian Factory Act (1911), Mining Act (1914), Workmen's Compensation Act (1923), Women's Maternity Benefit Act (1929), Employment of Children Act (1933), etc. In spite of these occupational hygiene is still a neglected subject

in the health departments of the Provinces. Royal Commission of Labour (1931) made valuable recommendations which stimulated some progress. Various municipal acts were framed during the period but their administration and working is far from satisfactory. Legislation against food adulteration came in 1918—19. Attempts to stimulate maternity and child welfare work have been made since the beginning of this century but the results in maternity and infant mortality are still appalling.

It would be seen from the above that India at present stands not very far from where Great Britain stood 100 years ago or Russia before the revolution. In fact one English doctor on Bhole Committee report stated that it would at least stir the public opinion in India as Chadwick's writings did in Victorian England and that it may at least act as a catalyst to start the new movement of renaissance in India.

The grant of Provincial Autonomy in 1935 created a demand for social welfare in the modern sense and various provincial governments were considering the planning of public health and social welfare. However Madras Government is the only one that has passed a consolidated Public Health Act (1939). Result of all this is that people in India have the briefest span of life (23), have a very high infant mortality (160) and crude mortality of 22.4 as compared to (60 years) and 55 and 12.4 respectively in England and Wales. Even now for last 3 decades the mortality from smallpox, plague, cholera, enteric and malaria is remaining steadily high without any appreciable change for the better.

Without apportioning blame we might consider the important problems that require immediate attention.

CONTROL OF EPIDEMICS

The three major epidemic diseases of plague, cholera and smallpox which have become a perennial visitation requires to be tackled with greater

concentration of efforts. Now with the availability of new insecticide DDT it is possible to eliminate plague infection provided there is an adequate staff and equipment and requisite co-operation from the people available. Similarly with constant intensification of vaccination campaign under proper supervision there is no reason why smallpox should prevail at all. It would be necessary in this connection to augment the staff of vaccinators to have legal powers and to create public co-operation. It is rather a sad commentary that though vaccination was introduced more than a hundred years back in this country ravages of smallpox still continue taking a heavy toll of life and also contributing to blindness.

As regards cholera the prime need is the safe drinking water supply for the villages and until the schemes for implementing this are completed efforts will have to be concentrated to minimise the infection by timely action. Schemes regarding safe water drinking supply if given first priority in the epidemic districts might be of greater help in the control measures. Recently Public Health Commissioner remarking on the cholera mortality said: "Figures for 1900-1944" for cholera deaths in India reveal that no adequate attempt has been made to eradicate a preventable disease that every five years scourges away approximately a million people."

Because one person in a village goes down there is no reason why half the village should be decimated. In actual fact given hygiene conditions as they are in rural India and most small municipal towns and couple this with ignorance and prejudices in the community and lack of health conscience in the administrators this heavy mortality bill is inevitable.

The economic loss occasioned by cholera is out of all proportion to the expense of eradicating it, yet adequate provision for this is absent in every budget in India. The fundamental necessities are the provision of pure water in adequate

quantities and in protection of food supplies in bazaars. One must also add the constant education and propaganda directed to explain people.

Speaking about the expenditure on this he wrote no community which is suffering from sickness and mortality at the rate recorded by these figures can possibly profit by any schemes for "Social uplift" and economic advances. What is being done and what has been done to stop this? The answer is "nothing really effective because nothing on a large scale." It is no use or very little use trying to shut the stable door when the horse has bolted and anti-epidemic efforts that are of necessity made only when an epidemic is under way fall into this category. Even these are handicapped at every stage by inelastic machinery. There is greater need for more efficient intelligence service for reporting epidemic attacks, outbreaks promptly as also for improved vital statistics collections.

(2) It is desirable to give a top priority consideration to the health of children. This might take the form of a comprehensive school health service which will include periodic school medical inspection, school hygiene, provision for treatment where defects are detected during the inspection, free school meals or lunches, distribution of free Vit. tablets, recreation and physical development facilities, etc.

(3) *Nutrition*.—In view of chronic shortage of food in this country it is desirable to observe the effects of malnutrition and deficiency diets by periodic surveys in the districts and towns and consideration to fortification of foods with a view to balance it may be considered. There is also a need for extending and tightening the food adulteration legislation.

(4) There is a great need for aggressive public health publicity to educate the public opinion in the proper methods of personal and communal hygiene, nutrition, maintenance of health and knowledge on prevention of common communicable diseases, by all modern methods.

(5) Training facilities for training midwives, health visitors, women health assistants and other ancillary personnel should be extended rapidly with a view to man the welfare and maternity centres and provide home visits in rural areas.

(6) Some village colonies with clinics attached to them should be organised in certain selected districts for the prevention and treatment of T.B. and leprosy.

Similarly there is need for developing V.D. centres of treatment on a very large scale in big and small towns and at taluk head quarter places and Subsidised medical practitioners' centres in rural areas with a free supply of sulpha drugs and arsenicals.

(7) District Health Organisation under District Health Officers should be expanded to undertake preventive work in the rural areas in all its aspects including prevention of endemic disease like T.B., leprosy, malaria, etc.

(8) Programme regarding water supply and drainage schemes for all municipal areas and even large panchayats should be extended as early as possible, there should be greater and close co-ordination between laboratory and field service organisations with a view to facilitate productive research.

(9) For improving environmental conditions in the villages Public Health Department and the

Engineering Department should jointly formulate programmes for providing cheap type designs for village houses, septic tank latrines, communal latrines, dustbins, provision for bore hole augers and window frames, water pumps, pulleys, etc.

(10) Arrangement should be made to supply certain standard drugs for minor ailments in all villages and school teachers and secretaries of panchayat committees should be given training in the use of these drugs while the present combined medical and public Health centres schemes should be extended as quickly as possible.

ACKNOWLEDGEMENTS

In preparing this paper I have freely extracted from various Annual Public Health Reports of the Provincial and All India Government; from the Annual Reports of the Chief Medical Officer of the Ministry of Health, England; from the various issues of the British Medical Journals; *Lancet*; *Medical Officer*; and also from books particularly '*Epidemics and Crowd Diseases*' by Greenwood and '*Recent Advances in Public Health*' by Dr. Burns and also from Professor Ryle's lectures on Social Medicine, to all of whom my grateful acknowledgements are due.

As a country physician was driving through a village, he saw a man amusing a crowd with the antics of his trick dog. The doctor pulled up and said, "My dear man, how do you manage to train your dog that way? I can't teach mine a single trick". The man looked up with a simple rustic look and replied, "Well, you see it's this way; you have to know more'n the dog, or you can't learn him nothin'."

TYPHOID FEVER

We may recall that sometime back we solicited the co-operation of the Madras Public Health Department for combating effectively an epidemic of cholera which was then expected by the department to sweep the Province. An official of the department was deputed to give us an article on the subject setting out how the people could co-operate with the authorities in checking the threatened epidemic. With considerable hesitation, we published an official article, as we found that it could not help to achieve the object in view. When a clarification on a certain specific point arising from the article was called for, for the benefit of the people, the Head of the Department fought shy of it on the plea that he was not for entering into a public controversy on the subject!

We publish this article by the courtesy of the *United States Public Health Service* just to indicate to our public health experts in this country how tellingly the public in our country also *could* be educated and how their willing co-operation *could* be secured.

In keeping with the avowed policy of *People's Health*, we have thrown open our columns for publications of contributions from official sources for educating public opinion. If the articles from such official sources come upto the standard of this article, our joy will be unbounded. So far as Madras Presidency is concerned, we are afraid this standard cannot be easily achieved, though the department prides itself as the best organised public health department in the country. This complacency is dangerous, indeed.

—Ed., P.H.

Typhoid fever is a communicable disease. It is caused by the typhoid bacillus, a minute germ, which is present in all persons who have the disease and in a few persons who have recovered from it but who continue to harbour the germ, thus becoming "carriers." Germs leave the bodies of infected persons in the stools, urine, and by secretions from the nose and mouth. They are transmitted to healthy individuals directly through contact or indirectly by contamination of water or foods, particularly milk, pastries and oysters, the bacillus thus gaining

access to the body through the nose or mouth. How they get into water and milk will be told later in this leaflet.

From 1941 to 1945, the reported cases of typhoid fever in the United States declined from 13,000 to 6,000 a year. Most of these cases could have been prevented. Cities with effective health organizations have very few cases of typhoid fever. They are very careful to detect infected persons and prevent the spread of the germs. They provide a pure water supply and permit only pasteurized milk to be sold. Typhoid has become almost entirely a disease of rural regions and of unprogressive towns and cities that are backward or indifferent about modern methods of health protection.

A typhoid fever patient is seriously ill for at least 3 or 4 weeks. Ten per cent of the cases are fatal. A person of any age or condition of health can have the disease and it can occur at any season of the year. Most cases, however, occur in the summer and fall. This is the time that so many people are vacationing in communities not protected by adequate health organizations.

Symptoms.—Typhoid fever usually starts gradually and early symptoms vary greatly in different people. They may be one or more of the following: a listless, run-down feeling; severe headache; loss of appetite; nose bleed; bronchitis; diarrhoea; constipation that appears suddenly; chills. Any person with these symptoms, should see a doctor. He can determine whether typhoid fever is present by symptoms and by laboratory tests.

The germs which cause typhoid fever enter the body through the mouth and then lodge in the intestines. They increase in numbers and cause intestinal ulcers to form. The germs continue to multiply in the body during the illness. Many of them are discharged with each bowel movement. Others get into the blood stream through the ulcers and are carried to different parts of the body; it is not unusual for them to get into

the urine. The patient's stools and urine become highly infectious.

Care in a hospital gives the patient his best chance for recovery, and at the same time helps to prevent a spread of the disease to others. Home care is difficult for the patient and dangerous to those around him. It should not be attempted if hospitalization can possibly be arranged. To date there are no known specific drugs which will cure the disease. Good medical care and skilful nursing are very necessary all through the illness. Diet is extremely important; it must be scientifically planned and prepared. *The patient must be kept under medical care until his doctor says that his excretions are entirely free of typhoid germs.* After recovery from typhoid, persons are generally protected and are not likely to have this disease a second time.

PREVENTION

The first line of defence against typhoid fever is the prompt recognition and report of all infected persons, both cases and carriers, to the Health Department. This will ensure that all precautions are taken to prevent the spread of germs. The second line of defence is the sanitary disposition of sewage, sanitary treatment of water and milk supplies, and sanitary handling of food. The third line of defence is the proper vaccination against the disease. For the individual, a knowledge as to how the disease is spread will help him avoid unnecessary exposure to infection.

Contaminated water.—Typhoid fever germs from the stools and urine of patients and carriers can get into water supplies in several ways. When excrement, containing disease germs, is deposited on the ground or thrown out in slops, rains wash the germs into lakes, streams, wells and springs. Surface or underground drainage from privies can contaminate water in wells. Sewage that empties into a body of water makes nearby swimming dangerous. Too, if this

polluted water is used for sprinkling gardens, it can leave harmful germs on lettuce and other vegetables that are eaten raw. Ice that has been cut from water, polluted with typhoid germs can cause typhoid—although typhoid fever germs are killed by boiling for 15 minutes, it is doubtful whether freezing for many months is effective in killing them.

Pure water.—Pure water is necessary for health. Unfortunately, the purity of water cannot be judged by its appearance. Even water from a clear, sparkling mountain brook may contain disease germs if it has been polluted upstream. When picnicking, take bottled water along, or boil water from a brook or spring before drinking it. Some States protect their citizens and tourists by testing springs for purity, and posting signs nearby. If you and your household use well water, have your well inspected. This service can be obtained by a request to your local or State Health Officer or the County Agricultural Agent. In many States, it is free.

Contaminated milk.—Contaminated milk and products made from it—butter, cottage cheese and ice cream—have been the source of many typhoid fever epidemics. Germs multiply very rapidly in these foods. They get into milk when a milker or someone who handles milk or milk cans has germs on his hands. That person might be a carrier, a former patient who goes back to work before he is free of germs, or someone who is taking care of a typhoid fever patient. Germs can get into milk if milk cans are washed with polluted water. Milk—even milk containing typhoid germs—can be made safe for use by pasteurization.

Safe milk.—The one way that you can be sure of safe milk is by using only *pasteurized milk*. Canned milk is safe as it comes from the can because it has been pasteurized. Certified milk should also be pasteurized. Labels on bottles are plainly marked. Look for "PASTEURIZED" on the label. Don't accept any other in your

home or in a restaurant. The laws of many cities forbid the sale of unpasteurized milk. Village restaurants often buy raw milk from farmers. Feel free to ask about this in any restaurant. It shows your intelligence and costs you nothing extra to make sure of safe milk and pure water.

How to pasteurize milk at home.—Raw milk can be pasteurized very easily at home. If you have only two or three quarts to pasteurize, scald it in a double boiler for half an hour—that is, keep the water boiling in the lower pan a full half hour *after the milk gets hot*. Next, place the pan of scalding hot milk in a large pan of cold water to cool rapidly. Stir occasionally until it is cold enough for storage. For a larger amount, use a big kettle. Place it over low heat so that the milk won't scorch. If you have a suitable cooking thermometer, keep the milk at 150 degrees for half an hour. Without a thermometer, make sure that the milk is scalding hot by the little bubbles all around the edge of the pan. Pasteurization kills typhoid as well as other harmful germs that cause such diseases as tuberculosis, diphtheria, scarlet fever, and septic sore throat and undulant fever. It does not lessen the food value of the milk.

Contaminated food.—Protect all food against flies. They carry filth and germs on their feet and bodies as they travel between the privy and the pantry. If you buy shellfish, buy from a responsible dealer only; he will not patronize "shellfish bootleggers" who may have gathered oysters or mussels in polluted waters. Make sure that you do not employ a typhoid fever carrier to handle food in your home or place of business. Insist that each employee handling food has a health certificate and a medical examination before starting work and see that he does not work when ill with questionable symptoms. Your local health officer will advise you about matters like this if you ask him.

Typhoid fever Carriers.—Because the germs from "carriers" can infect others, the problem of completely stamping out typhoid fever is very difficult. It is not the fault of the carrier that he continues to harbour dangerous germs in his body after he recovers from typhoid. It is his fault, however, if he transmits these germs to other people in foods that he handles. Unless a carrier scrubs his hands thoroughly after every trip to the toilet, his hands can and probably will leave typhoid fever germs in foods that he handles. The only safe plan for an employer is to make sure that he does not hire a carrier to work with milk or other foods. Some States require carriers to be registered, and try, through their health departments, to control the kind of work they do. This is very difficult—it is really up to each carrier to be a good citizen and never work as a food handler.

Typhoid carriers working in dairies have been responsible for many typhoid outbreaks. Carriers working as cooks have caused even more. After one carrier prepared spaghetti for a large public dinner, 93 of the people who ate it came down with typhoid. The most famous typhoid carrier of all time is now remembered as "Typhoid Mary." Typhoid Mary was not a good citizen. She worked as cook in one household after another, and spread typhoid wherever she worked. It is believed that she once started a typhoid epidemic involving 1,300 cases.

The "carrier" is often difficult to cure. He should consult his doctor and local health department for methods of treatment. In some places, the latter will often pay the expenses incurred.

Vaccination.—The third line of defence against typhoid fever is vaccination. When precautions cannot be observed and if the danger of typhoid infection is present, standard injections of typhoid vaccine will give substantial protection for about

18 months. After that a booster injection (shot) can be given every 18 months. But typhoid vaccine does not give as good protection against typhoid as vaccination does against smallpox. So, even though you are vaccinated against typhoid, be sure to use all other precautions possible: Keep away from patients ill with the disease; avoid drinking uncertified water from wells and streams; avoid drinking unpasteurized milk; and avoid restaurants and bakeries not approved by the Health Department.

Public health experts do not recommend typhoid vaccination for the entire population as they have in the case of smallpox and diphtheria. The reasons are as follows: (1) People can protect themselves against typhoid by other means (safe water, milk and foods). (2) Booster shots are necessary about every 18 months. (3) The vaccination will not protect against a heavy intake of typhoid germs.

Who should be vaccinated against typhoid fever? All persons who are, or may be, exposed to typhoid fever germs, e.g., doctors, nurses, hospital attendants; members of a household where there is a typhoid patient or a carrier; and residents in an area where there is typhoid fever. Also, people who travel in foreign countries or through our own rural districts, and everyone who cannot be sure of a daily supply of pure water, food and pasteurized milk.

Remember that everyone who gets typhoid fever has been drinking or eating material contaminated by an infected person, or has been in contact with such a person. Insist upon safe water, milk and other foods. Your insistence will protect you not only against typhoid, but against para-typhoid fever, dysentery, and other serious diseases. Pure water and pasteurized milk are good investments for every citizen and community.

'PROBLEMS BEFORE INDIA'S MINISTER OF HEALTH

by

Rajkumari Amrit Kaur,

Minister of Health, Government of India.



India's Health Minister, the Hon'ble Rajkumari Amrit Kaur, apart from being a woman with natural feelings of sympathy, and deep concern for the welfare of the teeming millions of our rural people, has also imbibed the highest ideals of service as a devoted disciple of Mahatma Gandhi. If she has not so far improved the living conditions of the masses, it is not because she does not realise its importance or priority, but because the environment in which she has to serve the country does not permit her to have her way. For one thing, the tyranny of the medical experts, curative and preventive, would not permit her to improve environmental sanitation on which Mahatmaji had laid the greatest stress even at his prayer meetings, apart from emphasising its importance on other occasions too. We have no doubt, that ere long India's Health Minister would be able to shake off the pernicious influence of her environment and put sanitation as the first item in her programme to serve the people.

—Ed., P.H.

I am going to try to convey to listeners abroad something about the life of a woman Minister and something about the problems that confront the Ministry of Health in the Government of India which I have the honour to serve.

I have been a social worker for many years and having had the rare privilege of living in long and close contact with Gandhiji, it has been borne in on me with greater realisation than ever that India is a vast field waiting as the parched earth

waits for rain, for the refreshing waters of devoted service from her sons and daughters.

The fields of Education and Health, in particular, offer immense possibilities for the framing and carrying out of plans of nation building, both long and short term. We have almost to begin from scratch everywhere because until rural India is refashioned, we cannot be said to have achieved anything since more than 85% of our people live in villages. These simple village folk are mostly agriculturists; they are poor and very ignorant. A very great deal, however, depends on them for, they are our food producers and yet we have not so far been able to give them that education and those facilities for proper housing, sanitation and medical care which are their right.

About ten years ago our Prime Minister, when he was President of the Indian National Congress, formed a Planning Committee which was to work out schemes in every sphere of life which a National Government, as soon as India became independent, would take up. All these plans are ready but we bought our independence at the heavy price of a division of our country and that division brought in its wake such a mass upheaval that we have not so far been able to turn our energies and attention to much more than giving relief to and rehabilitating millions of uprooted human beings.

As far as health is concerned, I have no doubt in my mind that we should work for the ideal of an adequate and efficient health service which will cater to the needs of every man, woman and child whether they live in big cities or in tiny out of way hamlets and whether they can afford to pay for such service or not. Prevention is at all times better than cure and *I believe that 80% of our diseases could be eliminated if we had proper housing and therefore no overcrowding, proper drainage and sewerage and therefore no insanitation, proper health education which would teach the people the art of living cleanly and eating*

what is good for them and, above all, enough food and milk and a pure water supply everywhere. None of these things can be done overnight. Like most other countries we suffer from lack of food and milk, lack of a proper water supply, lack of building materials, lack of hospitals, lack of doctors and other medical personnel, lack of teachers, lack of communication and, above all, lack of money. But we are not daunted by all these lacks nor frustrated by the slowness with which, naturally, our plans mature. Every little step forward means a good deal and there is this always to hearten and inspire that the people are impatient and I believe that if anyone wants anything badly enough he generally works for it and is therefore able in the end to get it. In any event I am fascinated with the task and it is a pleasure to try to work out problems and at any rate start on the right way to their solution.

Minister's lot is a hard one. Apart from the problems of health which beset one perpetually, there are endless interviews, some very interesting, some extremely boring, endless good deeds to be done like the distribution of prizes at a function, the inauguration of something or the other, the laying of a foundation stone somewhere or other, the visiting of institutions and so on *ad lib*. Then there is the work of the Cabinet, a certain amount of touring, social functions and also one's life long interests of education and social work for women and children. When I look at my programme at the beginning of each day I wonder how I am ever going to get through it. And yet the days fly by and so much is there to do and think and discuss and write that one has no time even to feel tired!

Women in India have got their political rights without any difficulty—partly because it is not possible for India to remain behind in fields where others have gone ahead but largely because Indian women played their full part in the freedom struggle. The educated handful have also worked devotedly in the field of social reform and

social service. Mahatma Gandhi's programme of action, based as it was on non-violence, gave to women an equal if not almost a higher place than man because he demanded moral strength and sacrifice which have been the rich heritage of women in every country. Indian women can never forget the debt they owe this incomparable man who literally brought them out from the darkness of ignorance and weakness into the light of knowledge and their inner strength. Hence I have found no difficulty whatsoever in working with men as my colleagues. In fact I have found nothing but help and co-operation and an abundant enthusiasm for getting on with the job. The red tape from which no government can escape, the unnecessary delays in getting decisions, all these annoy a woman, perhaps more than they do a man. I believe women are not constitutional by nature and I am not at all sure that it isn't a good thing very often!! Certainly direct methods have often got for me a job done quicker than if I had proceeded along the circuitous route of constitutional procedure! All the same it is extremely educative to work with trained and seasoned civil and medical servants. I have a feeling that the flowers and photographs in my office room are a source of job to my colleagues even though they may not yet have got them in their own rooms! There are many ways in which I feel a woman can by her different outlook and the human

touch bring light and life into the dreary and drab surroundings of a secretariat. Anyhow I am ever so happy to have been given this rare privilege to serve and to try to serve in the way that Gandhiji would have had us serve.

His whole life was dedicated to service of the human race. As soon as he realised the inner truth of the words "man cannot live by bread alone", he threw himself heart and soul into the service of his fellow beings. And inasmuch as he believed that there could be no life without society being built on the foundations of truth and non-violence, the entire aim of his own life became to fight against violence in whatsoever shape or form it existed and to rid his environment of the darkness of untruth. To those of us who belong to the generation that had the God-given opportunity of learning at his feet status or position or the power which high office brings in its wake only connote added responsibility and demand an ever greater devotion to duty. I hope this realisation will never desert me. It is a tremendous thing to have attained our political independence. It is even a bigger thing to be alive and working one's hardest in the first years of that independence so that we may make of India a country which, by being true to the ideals held aloft by Gandhiji, will help to lead this troubled world into the paths of peace.

(Courtesy—External Services, A.I.R., New Delhi)

"You are charged with selling adulterated milk", said the Judge.

"Your Honor, I plead not guilt".

"But the testimony shows that it is 25% water".

"Then it must be a high-grade milk", returned the Plaintiff.

"If your Honor will look up the word 'milk' in your dictionary you will find that it contains from 80 to 90% water. I should have sold it for cream!"

CITIZEN'S ROLE IN THE PREVENTION OF SMALLPOX

by

Major N. K. Roy

M.B., D.P.H., Ex-I.M.S.,
Director, C. P. Vaccine & Public Health Institute, Nagpur.



The author's article under this caption appeared in April 1949, issue of *People's Health* (Vol. III, No. 7, pp. 301—305).

With reference to our comments on the subject, the author has sent to us the following communication for publication in our columns.

He explains why the incidence of smallpox in India is the highest in the world, despite the fact that vaccination against smallpox here has been practised for over 75 years. He also contends that "smallpox unfortunately stands rather differently to other communicable diseases in relation to improvement of environmental conditions".

Sanitary Measures in India is an official blue book. We extract hereunder from page 168, Vol. XIX, to give an idea of the official view on the subject.

"Ten years' statistics afford no evidence that vaccination affects the usual epidemic course of the disease, and hence this fact, in face of the extensive vaccination work of the present and past years, appears to lead to the conclusion that, in its epidemic form, smallpox must be met by improving the sanitary condition of the people."

We also give another extract from the petition of twenty-four independent British medical men presented to the President and Members of the Assam Legislative Assembly:

"India itself furnishes evidence of the uselessness of compulsory vaccination. Madras has a compulsory re-vaccination law dating from 1922, but this has not saved the city nor the Presidency from severe smallpox outbreaks. Bengal has a compulsory re-vaccination law that can be put into operation when the Authorities see fit, but the primary vaccination and re-vaccination of millions of people in Bengal has not prevented disastrous smallpox outbreaks, those of 1943 and 1944 being the worst for many years. The report of the Bengal

Famine Commission revealed that a far larger number of people died from smallpox in Bengal in 1945 than was given in health reports that reached the Secretary of State for India.

The common factor which affects all these countries is the poverty of a great mass of the people, and the filthy conditions in which a considerable section of them live."

The eminent Medical Officer of Health, Dr. C. Killick Millard, although a believer in "recent vaccination," said when commenting on India's smallpox mortality: "It is lack of sanitation not of vaccination, which is the true cause of the appalling mortality from smallpox, which still persists in India."

We adhere to the view that vaccination against smallpox without an improvement in environmental sanitation cannot yield results.

Plausible excuses for India occupying the pride of place in the world as a country where the rate of incidence of smallpox, can be presented to meet criticism. It should however be remembered that after all "excuse is a bad coin" and as such it cannot have any currency value.

We stand by the challenge we have thrown to our public health medical authorities to show whether vaccination alone has tended to liquidate smallpox without improving the living conditions of the people anywhere in the world.

—Ed., P.H.

1. I am thankful to the Editor "*People's Health*" for his welcome comments on the article mentioned above, as, such comments further the cause of spread of health education which was the main object of the article.

2. His contentions are:—

(i) that inspite of vaccination against smallpox having been practised in this country for over seventy-five years, the incidence of smallpox in India is still the highest in all countries for which statistics are available.

(ii) that vaccination against smallpox without an improvement in environmental sanitation cannot yield results.

3. With regard to the first contention, I would like to say that this apparent defeat of vaccination in India can be accounted for by the presence of a large population of children below ten years of age which is not protected by successful primary vaccination.¹ Further, large excess of births and rapid accumulation of sus-

ceptible persons afford ample material for an epidemic to feed upon. The liability of a population to a smallpox epidemic, may actually be measured by its density at susceptible ages. The enforcement of primary vaccination on a much wider scale so as to reduce the size of the susceptible population would be impracticable without the willing co-operation of the people.

About the second contention: Improvement of the living conditions of the people, undoubtedly, is a most potent factor militating against the development of infection in general. But the specific disease smallpox unfortunately stands rather differently to the other communicable diseases in its relation to improved environmental conditions. In the opinion of Professor Rosenau "The epidemiology of smallpox bears no relation to improved sanitation, which has diminished the prevalence of plague, typhoid and cholera and has practically subdued typhus and relapsing fever. It is evident that general

sanitation could not affect contagious diseases like smallpox and measles. Smallpox spares neither the high nor the low, the rich nor the poor, the clean nor the dirty, the wise nor the foolish, the good nor the bad; before the days of vaccination, it counted many kings and queens and princes among its victims, George Washington contracted small-pox in the West Indies.

As regards its occurrence, Professor Rosenau further says "Few of the acute infectious diseases show such complete independence of conditions such as race, climate, soil, age, sex and occupation, sanitary surroundings, etc., as does smallpox. It thrives whenever the contagion is carried and wherever it finds susceptible people". And he concludes by saying that "There is only one way to prevent smallpox and that is through vaccination. The method is logical, specific, sensible and satisfactory. Isolation and disinfection are only secondary".²

(Continued from page 389)

COOLING HEELS!

It is a notorious fact that full and useful work is not extracted from the Assistant Directors of Public Health. Let us take for example the work of the Assistant Director of Public Health (Epidemics). What original contribution has he made to the epidemiology of any of the outbreaks of epidemics which still sweep the Province? Even taking his routine work, what is the quantum of work turned out by him? Similarly, what work is being turned out by his colleague, the Assistant Director of Public Health (Hygiene)? If one examines the work turned out by the holders of these apparently sinecure posts, one would be shocked at the colossal and criminal waste of public funds! There is a *prima facie* case for the abolition of the posts of Assistant Directors of Public Health and vesting in the district and municipal health officers more powers to run the administration within their respective jurisdictions.

WET BLANKET ON ENTHUSIASM!

The enthusiasm of the officers stationed in the mofussil is chilled by the inspecting officers. Instead of fostering original ideas and encouraging men in fields of work in which they have got a flair, wet blankets are put on them by lack of imagination of those at the top. We know that we have an excellent set of men with genuine love

4. It should be realised that it is not the intention of the present writer to minimise in any way the importance of environmental sanitation as a powerful factor in limiting the spread of infection in general; what is meant to be conveyed is that so far as the specific infection smallpox is concerned, sanitation plays a comparatively minor part, as a factor in the restraint of this infection. The discussion of the subject of improved living conditions as a preventive measure against smallpox was therefore purposely left out by the writer in the original article under discussion.

REFERENCE

(1) The Public Health Commissioner to the Government of India—Annual Report for 1945—Page 11.

(2) Rosenau, M. J.—*Preventive Medicines and Hygiene* (1935). Pages 24-25. Appleton Century Co.—New York—London.

for health work; but they are not given the scope to put forth their best.

DISCONTENT AT PERIPHERY

Let us take again the poor subordinates who toil in the remotest parts of our rural areas. They are not given that measure of encouragement and professional direction one would desire. Their jurisdiction is far too large for them to do intensive work. Something like throwing crumbs at the barking dogs, the Director of Public Health put forward proposals to promote a handful of them on selection basis as sanitary superintendents to be in charge of the execution of sanitary works. We clearly pointed out the absurdity of the proposal. This would show that the head of the department has not an eye to efficiency of service. Had the Director of Public Health kept a vigilant eye over the work of the officers and subordinates, he would not have failed to recommend the abolition of the posts of Assistant Directors of Public Health and with the money so saved would have recommended the reduction of the jurisdiction of the health inspectors. On the whole, the administration of the department is rotten to the core. Firm and drastic measures have to be taken at once to restore it to its normal level of useful activity. This is no easy job, though, we trust, not an impossible one for the present Minister of Health.

GROW MORE VEGETABLES CAMPAIGN IN SCHOOLS

The suggestion is eminently practical and it should be practised by every school which has open space around it. The school children would love to do it. It would prove a pleasant hobby and useful recreation.

The authorities in charge of education have been paying very little attention to the provision of adequate open spaces around educational institutions. They recognise the importance of physical culture and they talk a lot about it; but nothing practical is being done. Schools are being opened in wretched hovels rented for the purpose. Health education of children is also recognised to be of great importance, but without the provision of a satisfactory school environment, health education is made impossible.

This is an age of anxiety. The anxiety and tension created in our children are apparent in every face. Our children are fast developing anxiety-neurosis for reasons which those who have undertaken the responsibility of educating Young-India would do well to look into. Recreation and physical culture would be an effective antidote for this growing disease. Further, recreation should be considered a form of therapy and an effective therapy too.

In Bombay, they have laid down a standard for open spaces and play fields around educational institutions. In Great Britain, they have laid down standards as under:

"Playgrounds for primary schools (children 5 to 11 years):

School of 200 children, 16,000 sq. ft.
School of 400 children, 32,000 sq. ft.

Playgrounds for secondary schools (children 11 to 18 years):

School of 150 children, 16,000 sq. ft.
School of 300 children, 22,600 sq. ft.
School of 450 children, 32,000 sq. ft.

Playing fields for primary schools:

One acre for every hundred on the roll.

Playing fields for secondary schools:

School of 150 children, 5 acres.
School of 300 children, 9 acres.
School of 450 children, 14 acres, etc."

Well, our educational authorities should make it a point to upgrade our educational institutions by providing adequate open space around them and by improving school environment. Upgrading of medical institutions may easily lie over; but upgrading of our educational institutions cannot wait any longer.

—Ed., P.H.

To begin with it would be a good plan to start an intensive course of simple lectures on practical nutrition in the school classes for the benefit of pupils and teachers. These lectures may also be kept open to parents of the pupils or any other public who are interested in nutrition. The first three or four lectures should be devoted to explaining the relation between food and health and the importance of protective foods such as green leafy vegetables in the Indian dietary. During the course of these lectures the importance of growing their own vegetables in their own spare plot of land or in school gardens should be stressed.

Some of the green leafy vegetables like the ordinary *Keerai*, coriander leaves, spinach and mint are rich in various nutritive elements such as Iron and Calcium. As the cultivation of these vegetables does not ordinarily require a lot of expense, time and energy, each pupil as well as the parents should be persuaded to grow these vegetables in the backyard or in any other spare land that is available near the place of residence. If every pupil in the high school classes gives a helping hand in this "grow more vegetable" campaign, it will partly meet the present food shortage as well as relieve the pressure on the markets. It is a good idea for those responsible for the "GROW MORE FOOD CAMPAIGN" in different areas to institute suitable prizes for some of the best pupil-growers and thereby stimulate a creative interest in our youth. This will undoubtedly serve as an incentive and encouragement to the young vegetable growers. Every pupil who attempts to grow a vegetable garden near his house should be given some encouragement in the form of prizes or certificates or more marks in elementary science in their classes, so that no one who takes part in such activities goes without encouragement. Probably, the last suggestion of giving marks in science subjects may be very appealing to the students, and the teachers can legitimately

award some credit in the form of marks for such work.

As already indicated, this may be tried in a few areas to start with and if it is found successful or likely to contribute to success in the long run, similar attempts may be made in other schools also. The success of the whole plan depends on the enthusiasm and practical encouragement created in the pupils and their parents in matters relating to nutrition. At no time in our food history in the recent past would such a step be considered more necessary or profitable than at present, when we are face-to-face with an acute crisis in our resources of food products. Any uncultivated areas which could be utilised for the purpose of growing vegetables by pupils would be an addition to our resources of vegetables, however small such additions may be. In the long run, the interest of pupils is bound to increase as they realise the advantages of growing vegetables in their gardens and as they begin to feel the beneficial effects of consuming more of such foods. Sceptics may consider that such schemes may not be quite practical. Let us try them and try them sincerely and continuously for some time. The scheme will have to encounter some obstacles in the beginning and may not be smooth in its working. But which new adventure can be expected to have an easy passage? While the scheme may or may not have immediate results, its progress must be fruitful, if carried on for some time.

If such a GROW MORE VEGETABLE CAMPAIGN could be made successful even in one high school area to start with, it will go a long way towards creating a spirit of friendly rivalry among different high schools in due course. This suggestion may be considered in all its aspects. Funds set apart for the Grow More Food Campaign may be allotted for this purpose also.

(Courtesy—Food and Nutrition.)

THE STORY OF SYPHILIS

by

Paul Le Van

In the May issue of *People's Health*, pages 369—372 we published an article on The Conquest of Venereal Disease by Charles Walter Clarke. We publish hereunder, by the courtesy of *Hygeia*—the health magazine—a second article in the same series. These articles indicate the way in which the public ought to be educated on the subject. Normally this duty should devolve upon the Public Health Departments in the country. But, as we have pointed out repeatedly in these columns, the departments are unfortunately busy with matters for which they are notoriously ill-equipped. Will they wake up at all and realize their responsibility to the people?

—Ed. P.H.

Syphilis is the most treacherous of all venereal diseases. It leaves in its path wrecked bodies and minds, broken homes and family tragedies. Syphilis, the "great imitator," can resemble almost any disease and can attack any organ of the body. Blindness, deafness, insanity, paralysis and heart disease may follow. In 1947 more than 6 per cent of all the admissions to mental hospitals were due to this disease. In the same year untreated mothers passed their syphilis on to 14,000 innocent babies. In World War II, 45 out of every 1,000 men examined for military service had positive blood tests for syphilis. Estimates claim there are about 3,000,000 cases in the United States.

The first definite records of this disease date from an epidemic which swept across the whole of Europe about 1495, in a violent form such as is seldom seen today. At first the disease was called by various names, based on the supposed place of origin. The Italians called it the "French" or

"Spanish Disease," the French called it the "Neapolitan Disease" and the English called it the "French Pox" or "Morbus Gallicus." The Spanish called it the "Serpentine Disease" or "Disease of Espanola (Haiti)." In 1530 an Italian physician, Fracastorius, wrote a poem, "Syphilis Sive Morbus Gallicus," in which the chief character, a shepherd named Syphilus, was afflicted with the disease, and soon "syphilis" was widely accepted as the name of the disease.

The origin of syphilis is still uncertain. Some believe it existed in Haiti at the time Columbus discovered the island, and that members of his crew were infected and carried it back to the Old World in 1493. Others say that it already existed in the Old World and only increased suddenly because of the sexual debauchery and filthy living conditions of the times.

The widespread plague gave doctors an opportunity to study syphilis in great detail and within 100 years an astonishing amount of accurate detail

was recorded. Early in the eighteenth century gonorrhea and chancroid were differentiated from syphilis. However, in 1767, the famous physician, John Hunter, once more confused the issue. He inoculated himself with infectious material from a patient with a syphilitic chancre and from another with gonorrhea. Syphilitic chancres developed at both sites, which to Hunter proved the two diseases were identical. As was later learned, the patient with gonorrhea also had syphilis so that Hunter had inoculated syphilis germs into both areas. It was 70 years later that Philip Ricord finally put an end to the confusion by proving definitely that gonorrhea and syphilis are two quite different diseases.

The beginning of the twentieth century inaugurated the "golden era" of syphilis study. In 1905 Schaudinn and Hoffman for the first time saw through a microscope the organism which causes the disease, and called it the *spirocheta pallida*. In 1906 and 1907 Wasserman developed a blood test which shows syphilis antibodies in the blood. In 1909 and 1910 Erlich and Hata finally discovered their "magic bullet," or "606," an arsenic compound, salvarsan that is a true specific for syphilis. Salvarsan was actually the 606th chemical preparation they had tested for the purpose. Erlich at first thought one injection was sufficient for cure, but experience soon showed that a longer treatment of from 20 to 40 injections was necessary to rid the body of the germs.

In 1917 Von Jauregg of Vienna introduced malaria fever therapy for paresis, a form of syphilis affecting the brain. In 1922 two Frenchmen, Sazarec and Levaditti, recommended bismuth as an aid in treatment. Because it is less toxic it soon replaced the older drug, mercury. In 1942 the 26 week's treatment with arsenic and bismuth was introduced by the Army, and in 1943 three American physicians, Mahoney, Arnold and Harris startled the medical world with their discovery that the syphilis germ was attacked by

penicillin. The use of penicillin for the treatment of syphilis will be discussed later.

Syphilis is caused by a parasite, the *Treponema pallidum*, a spiral-shaped organism known as a spirochete. It usually enters the body through skin or mucous membrane, and is almost always spread from person to person through sexual intercourse. Within a few hours after entry it may be carried by the blood stream to every structure of the body. Such an infection is called acquired syphilis in contrast to congenital or heredity syphilis.

In nine to 60 days—the average is 21 days—a red, nodular sore appears at the point where infection entered. This sore enlarges and breaks down in the center to form what is called the primary lesion or sore of syphilis—the chancre. About 95 per cent of all chancres develop about the genitalia which indicates the disease is acquired by direct sexual contact. About 5 per cent, however, are found in other locations, especially the lips, tonsils, fingers or breasts. The chancre persists for a variable time; some heal spontaneously without treatment, others may remain until the second phase of the disease appears, between 6 to 12 weeks after the first appearance of the chancre. This secondary phase is characterized by involvement of the whole system. Frequently there is a skin rash, often accompanied by chills, fever, sore throat and swollen lymph glands. Hair may fall out in a moth-eaten pattern. Severe headaches and persistent sore throat may be additional evidence. Without treatment this phase lasts four to six weeks or longer and then subsides, although later there may be a relapse with white areas, "mucous patches," on the mucous membranes of the mouth and genitals.

Next comes a period with no signs whatever, the so-called latent period, but during this time the germs may continue quietly to wreak havoc within. Years later syphilis may show up in a serious disease of the heart and blood vessels or central

nervous system. Injury to brain and spinal cord may result in insanity, paralysis, blindness or deafness. Damage to the heart and blood vessels may lead to heart failure or sudden death from ruptured blood vessels. Once heart or nerves have been injured the damage cannot be repaired. Unfortunately, treatment, as a rule, stops destruction but does not restore the injured tissues. Late sores called gummas which destroy large areas of skin sometimes develop or there may be an infection of the bones and joints.

Syphilis may also occur in a congenital or hereditary form. The mother may pass the disease to the infant in the fourth or fifth month of pregnancy. There may be a miscarriage at this time, or the baby may be carried to full term only to be still-born. Or it may be born with signs of congenital syphilis, such as skin eruptions, flat or "saddle" nose, fissures at the corners of the mouth and around the anus, a running nose, prominent forehead with eyes set wider apart than normally or other deformities of various kinds. If the child lives, such signs as peg-shaped front teeth, deafness and inflammation of the clear portion of the eye which often leads to blindness, may appear later in life.

The diagnosis of syphilis is primarily a laboratory procedure. The clinical appearance of primary, secondary or late signs of syphilis are not enough alone to establish the diagnosis. In early acquired syphilis, material from the chancre or from lesions of the secondary phase may be examined by the "dark-field" microscope, a microscope which uses reflected light. The spirochetes characteristic of syphilis can be seen—silvery, moving and cork-screw-shaped—against a dark background. There are other similar spiral organisms which must be carefully differentiated from the spirochetes of syphilis.

Another important laboratory procedure used in diagnosis is the Wassermann test, commonly called the blood test. This test shows the presence of a substance called "reagin" which

the body builds up to fight syphilitic infection; it usually becomes positive four to five days after the chancre appears. Unfortunately, there are other causes for a positive result. Malaria, smallpox vaccination, for example, or almost any acute infection, including the common cold, may produce a temporarily positive Wassermann test. If there is no definite history or physical evidence, a diagnosis of syphilis should never be made only on the basis of a single positive Wassermann test. Repeated tests at frequent intervals for a period of three months will show in almost all cases whether the test is a "true" positive one or not. If the positive test is due to syphilis it will remain positive whereas if it is due to any of the other reasons, it will usually become negative during this time.

The spinal fluid may also be tested by laboratory methods. This test makes it possible to diagnose syphilis of the central nervous system, to measure the seriousness of the infection and to study the effects of treatment.

The treatment of syphilis, whether early or late, has been strikingly changed since the discovery of penicillin. The older 26 weeks to two years arsenic and bismuth treatments have been largely replaced by the six to 15-day treatment with penicillin. For the first time a treatment is being used which is extremely effective against the spirochetes but is practically harmless to the patient. Results to date indicate that penicillin is at least as effective as any of the earlier forms of treatment. Primary chancres become non-infectious within one day and disappear rapidly. Secondary and late skin sores heal in a short time. Positive blood tests become negative in most early cases within six to nine months. A certain percentage, however, may remain positive for life even though the infection has been arrested.

In the late stages of syphilis the results are less satisfactory. In infections of the central nervous system the disease is halted, but damage already

done remains. We know less about the effectiveness of penicillin in syphilis of the heart and blood vessels; as in other types of syphilis, years of observation and follow-up will be necessary before the true value of the treatment is known.

The earlier a patient with syphilis is treated, the greater his chances of cure. The best results are obtained in the first stage before the blood test becomes positive; after one course of treatment about 90 to 95 per cent of such patients remain free of the disease. The rest will relapse; this relapse may take the form of a positive blood test or of skin and mucous membrane sores, or both. A second course of treatment will frequently cure them. Eighty-five to 90 per cent

of patients in the first stage whose blood tests have become positive before penicillin treatment can be started can expect a cure after one course of treatment.

In spite of the dramatic effects of penicillin treatment, results are no better than with the old bismuth-arsenic treatment. But penicillin treatment is much easier for both doctor and patient. Unfortunately, some cases still are not affected, some continue to relapse and others who seem to be cured develop late signs of syphilis. Many more years of observation are needed before the true value of penicillin is known. In the meantime, as Dr. Thomas Parran has said, syphilis remains a "Shadow on the land."

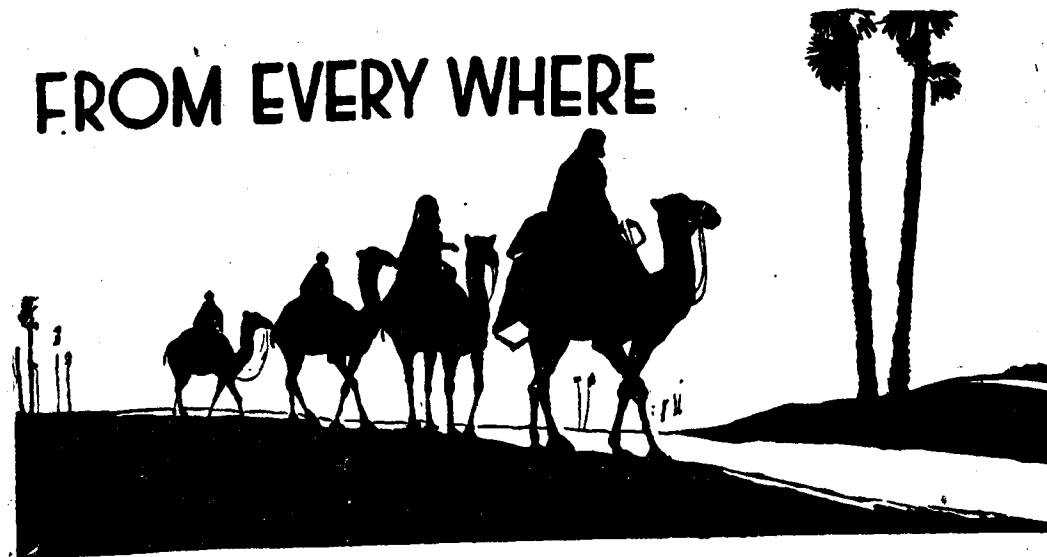
ARE DISEASES, DISORDERS, AND MALFORMATIONS INHERITED?

Scientists generally are agreed that diseases cannot be inherited. Some diseases may seem to run in families, but investigations show that in such cases individuals in successive generations merely inherit tendencies which make them susceptible to the diseases. Individuals in successive generations of a family may inherit body structures, for example, which make them more susceptible to cancer than other persons are, but they do not inherit the disease. The same is true both with respect to diseases caused by germs and diseases which originate otherwise. Investigations show further that in many cases the diseases which are supposed to run in families arise through unfavourable conditions of living. Persons tend to pattern their ways of living after their parents, limiting their diet to the same foods, or otherwise violating good health practices. Thus persons through successive generations often become susceptible to the same diseases.

Only a few disorders in the functioning of the body and a few malformations of parts of the body are inherited. In some families a condition known as hemophilia, in which the blood fails to clot normally is transmitted from one generation to another. This inheritance is peculiar in that the condition affects only males in a family, and yet it is transmitted by females. In other families some forms of feeble-mindedness are transmitted. Among malformations which are sometimes inherited are webbed fingers and toes, extra fingers and toes, and albinism or a deficiency of colouring pigment in the skin, hair and eyes. Fortunately in the pattern of heredity normality seems to be a dominant characteristic. The genes which bring about normal development tend to prevail over those which bring about abnormal development.

From "Life and Health" by Wilson-Bracken-Almack.

FROM EVERY WHERE



WHAT DO THEY SAY ABOUT IT?

Readers can contribute to this section. They are requested to send extracts of current literature which, in their view, would interest the people. —Ed., P.H.

SKELETON'S CALLING CARD

One of the first X-ray pictures ever made had nothing to do with pure science. In 1895, German Physicist Wilhelm Konrad Roentgen made an X-ray photograph of his wife's hand, to make her appreciate the work he was doing and forgive him for having slighted her cooking.

In San Francisco last week, X-rays of the hand were getting more expert attention. Before a meeting of the Radiological Society of North America, Britain's Dr. James F. Brailsford reported that such pictures can help in the diagnosis of important body ailments.

The hand, explained Dr. Brailsford, is "the skeleton's calling card." It can be held perfectly steady for X-ray purposes; there is little tissue between the bones and the camera, hence details photograph more sharply than with deep organic photography. Among the diseases that can

sometimes be spotted by radiological palm reading: too much or little activity of the thyroid; nutritional disorders like scurvy and rickets; gout; cancer of the chest (which, like some other chest diseases, shows up as new bone laid down around normal bone); arthritis.

—(Courtesy, TIME, December, 1948.)

THE INFLUENCE OF ENVIRONMENT

Your debt to your home.—You came into this world entirely dependent upon others for your needs. Slowly you learned to do certain things for yourself, but all through the years you have been a dependent, relying upon others for food, shelter, clothing, protection, guidance, inspiration, and sympathy. You have needed your parents and your home because it has taken years for you to reach your present development. The human offspring needs a home more than the young of most animals because he is more helpless.

in infancy and takes longer to mature. In general it is considered that a period of about twenty years is required for a human being to reach maturity. Most states set the twenty-first birthday as the time when an individual may assume the full rights of citizenship.

In your home you have acquired a pattern of living and formed many habits. You have learned to make adjustments to other members of your family and to make your ways of living fit into theirs. In your relations with your parents you have learned to get along agreeably with persons older than yourself; in those with brothers and sisters, to associate with persons more nearly your own age. Certain things with respect to these persons you have found that you can do and other things that you cannot do. You have found through these relationships that you obtain the greatest enjoyment when you keep in tune with others and refrain from doing things that cause physical and mental discomfort.

Through contact with your parents and, possibly, older brothers and sisters, you have gathered much information and acquired many abilities and skills which will be helpful throughout life. Among other things you have gathered information about health and the steps that must be taken to keep well and strong. You have acquired abilities and skills by helping to carry on a variety of activities around the home. Last but not least, you have learned the meaning of love and have acquired a willingness to make sacrifices for those whom you hold dear.

(Extract from "Life and Health". By Wilson-Bracken-Almack)

MOTHERCRAFT AND VILLAGE WOMEN

The Associated Press of India, in giving publicity to Mahatma Gandhi's visit to Khadakvasa Village Maternity Centre organised by Poona Rotary Club, has emphasised a valuable suggestion that came from Mahatma Gandhi as to

how village women can be instructed in mothercraft. Mahatma Gandhi advised the centre not to stop its work by simply opening a maternity home, but also to see that the women coming there were educated in bringing up their children "We must not, however, copy western methods and spend a lot of money, for our country is poor and we have to develop seven lakhs of villages."

("Speakers' Digest"—Vol. 1, No. 24)

GRASS AND CATTLE WEALTH

The live-stock of the farmer is his wealth. It is a notorious fact that it is maintained in a state of semi-starvation. The cattle is housed in or near the farmer's dwelling. The conditions of the cattle shed contributes to the insanitation of the surroundings. In the same way in which the farmer's house should be brought to a proper standard of health and sanitation, so also the cattle shed should satisfy certain minimum requirements. Mr. Robert Pepperall, the Chief Regional Marketing Officer to Britain's Milk Marketing Board, refers to 13 evils of milk supply in India. Amongst others, he complains the total ignorance of sanitation and complete indifference to hygienic standards. The environments in which the farmer lives and the conditions in which the cattle is housed call for immediate attention. The standard of health of a nation can be judged by the quantity of milk consumed by it.

The feeding of the live-stock should be improved. Pasture lands as such should be developed in or near each village. It is not an over-statement to say that grass should be considered our life. Grass would tend to put up our milk-yield, it will improve the quality and quantity of milk produced. Cattle flourish on cut grass. Bullocks would then be better fitted to the hard ploughing of our fields and to drag loads to and from the villages,

Professor T. B. Wood of Cambridge investigated all about grass. One of the first things he found was that grass reaches its maximum feeding value *before* it is fully ripe. In this country harvesting grass for hay is almost unknown. By harvesting grass *before* it is fully ripe there may be a little loss in bulk, but it is more than compensated by the higher feeding value.

We have not developed the necessary technique for artificial drying of grass and preserving it. Dr. H. E. Woodman, Cambridge, has found out that grass preserved by artificial drying can keep almost all its wonderful feeding qualities which tend to increase the milk-yield.

War has encouraged England to preserve young grass in another form called "Silage." In this method the grass cut is young and tender. It is stored in air-tight containers which may be of wood or concrete. They may be even made with sisalkraft paper and wire netting or a hole in the ground, preferably proofed with concrete.

"In these containers, the young grass is forked, trodden down tight and sprinkled, layer by layer, with molasses from a watering-can. When the container is full, it is topped off and made weather-proof." The feeding value of the grass so preserved is not quite so high as that with dried grass, but it is that it is far superior to hay. While Professor Wood and Dr. Woodman were busy at Cambridge on the problems of preserving grass, Professor Sir George Stapledon was at work on quite a different problem. He was trying out new strains of grasses which would thrive on the bare, high ground of Welsh hills and also using modern cultivating machinery to grow grass.

It would appear there are at least twenty varieties of grass, which are important in farming. Some are coarse, some are fine, some are juicy, some come early, some stay late, and one variety will do better under one set of soil or climatic conditions than another.

The aim is to get an assemblage of varieties that will give balanced grazing and as much nourishment per acre and for as many months per year.

Important here is the art of the grazier as well as of the plant breeder. Too light grazing will do as much harm to a pasture as too severe grazing. Grazing will also regulate the proportion of grasses in the pasture mixture. If the longer-stalked grasses such as rye-grass are heavily grazed as they spring up, then the shorter varieties, such as the clovers, will spread and flourish because there is less competition from the longer grasses for light and air.

Similarly, if grazing is arranged so that the clovers are heavily punished when they appear, the longer grasses will become more predominant. So grazing must be regulated to maintain the required balance.

Sir George Stapledon's work was crowned with success. He developed new strains of grasses and a new technique of pasture-making that revolutionised Britain's grass. Formerly it used to be said that it took eight years to make a first-class pasture. He showed how it could be done in as many months. One of the strangest things emerging from this was the realisation that, over the greater part of Britain, the way to the best grass lay by way of the plough. A Roxburghshire land-owner, Robert Elliot, had obtained some remarkable results at the end of the nineteenth century by putting his land into temporary pasture, ploughing it up every few years, growing a corn crop or two or a crop of roots, then re-seeding it to grass once more.

By this means he found he was getting better pasture, more fertile soil, and healthier live-stock. This is known as "ley" farming, "ley" or "lea" meaning temporary meadow.

What Sir George Stapledon did was to unite ley farming with his new strains of grasses and also with modern cultivating machinery. The new mixtures required to be sown, like any other

crop, and on his Welsh hills and other steep places the gradients had been too severe for horse teams, or even wheeled tractors to do the preliminary cultivation.

Caterpillar tractors were another matter. They could tackle places that had never seen a plough.

We are far from knowing yet all there is to know about grass. Some people have observed that, if you give cattle a perfect, weedless pasture and at the same time give them access to a really rough bit of grazing, they will always go off to the rough bit several times a day. Grazers of beef cattle say that cattle finished off on the leys do not get the "bloom" that cattle get when finished on first-class permanent pasture.

So now we are beginning to think that weeds may have a quite important function in an animal's diet.

We don't know. We are experimenting.

In Wiltshire at this moment they are ploughing out central blocks of old pasture and replacing it with new, but all round the edge of the field they are leaving the old, weedy grazing. They are testing cattle grazed under these conditions against those kept entirely on new leys.

But this we do know: Stapledon and the engineers between them, working on the discoveries of Robert Elliot, have already made it possible for the capacity of poor grazing to carry

live-stock to be raised five and ten-fold, and Britain as a whole will be able to double the pre-war capacity of our meadows to carry stock.

That means more milk, more beef, more mutton, more bacon and more eggs. By making it possible to keep so many more stock to the acre, Stapledon has lowered the production cost of these commodities.

Now we "plough for milk." It sounds paradoxical. But by putting the plough into the old, permanent grass we let air, health and light into the soil; and by substituting new pastures for old at regular intervals, we get a grazing season lengthened by four weeks or so at each end and pastures that will carry twice as much stock.

The question of how long we leave them down will have various answers in various parts of the country, according to local conditions, such as soil and rainfall. Sometimes, pastures will be left down for two or three years and this is the most common period.

Elsewhere a five or six-year rotations and even a fifteen-year rotation, may be the most suitable. The beauty of this system is its flexibility.

The progress we have made in grass-land management really extends over the whole field of agriculture and will lead to better farming and more intensive output all round.

And we have our climate to thank for it.

(From Strand Magazine—May 1945.)

ARE FAT PEOPLE ALWAYS CAREFREE AND JOLLY?

Many persons who are overweight are quite the opposite. Some small minority of fat people are victims of disorders of endocrine glands. The great majority, however, are fat because they consume more calories than can be used in the body—that is, they simply eat too much. The excess of calories is stored as fat. Eating is the only pleasure many of these people know and they use food as an antidote for hurt feelings, worry and life's other troubles. While they are eating, they can forget their troubles, and so they eat more than they should.—"Hygeia"

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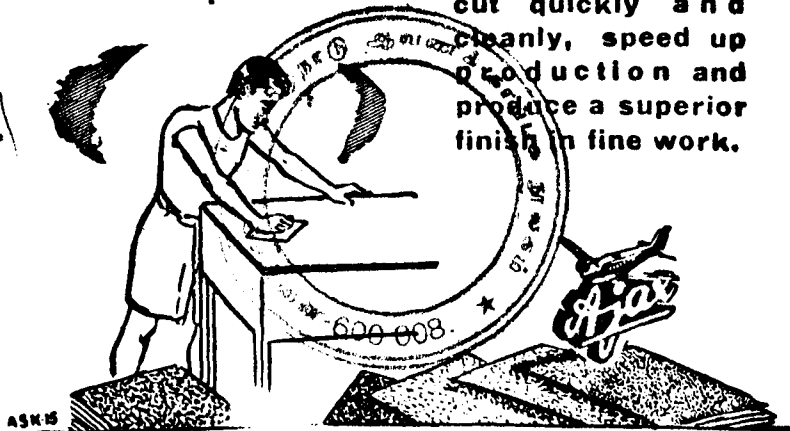
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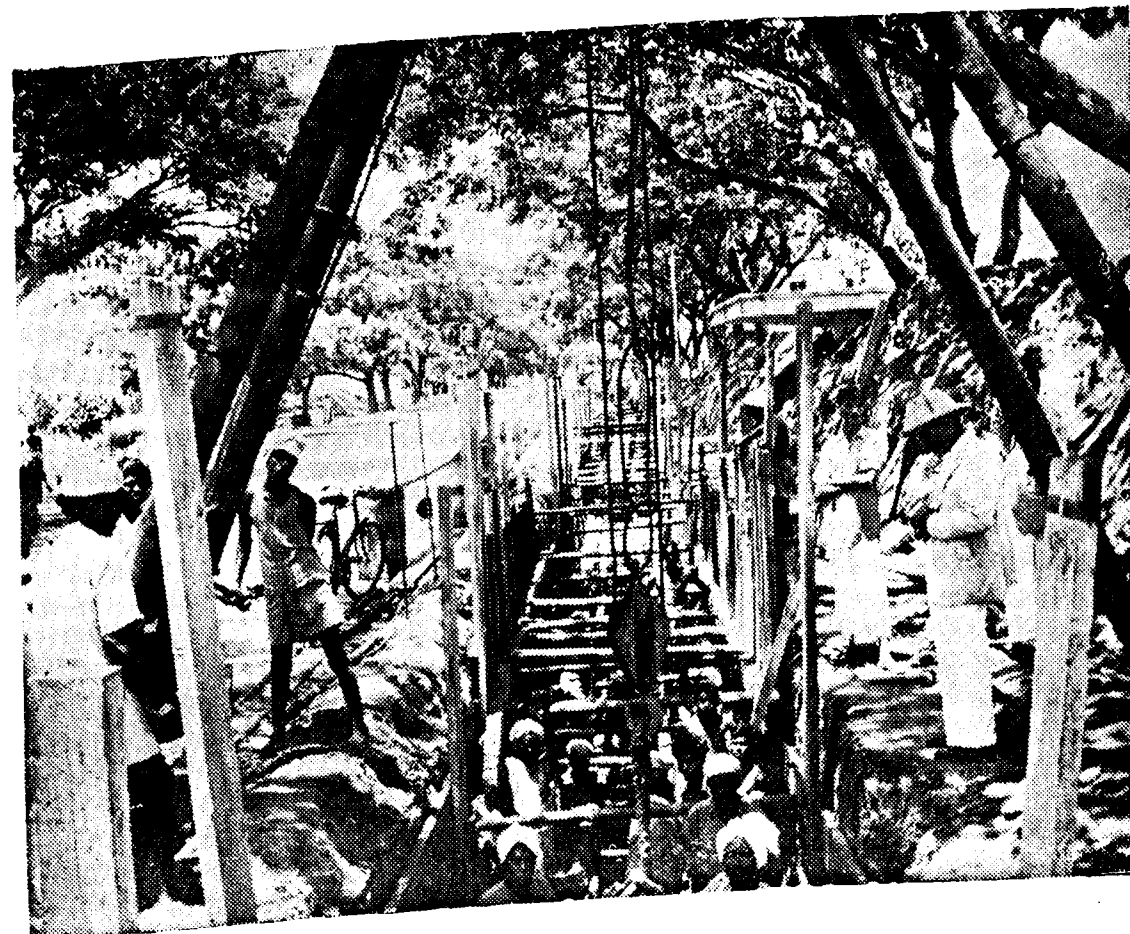
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