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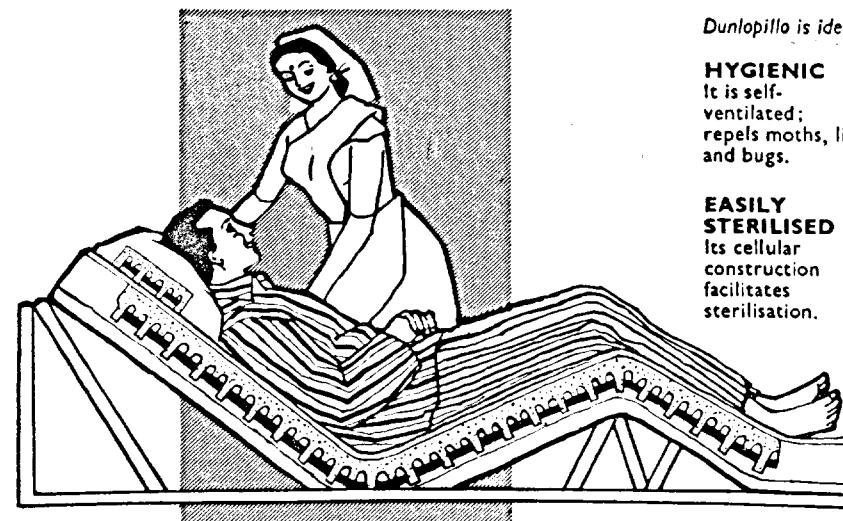
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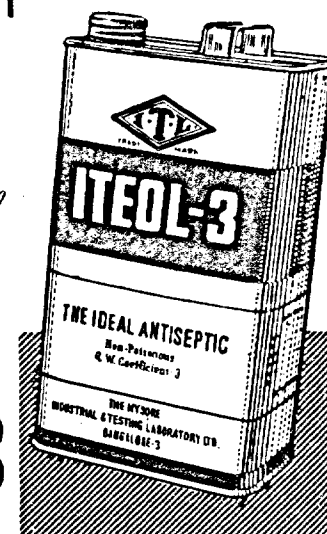
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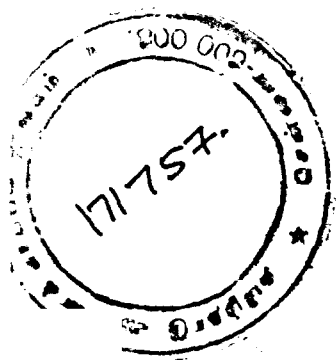
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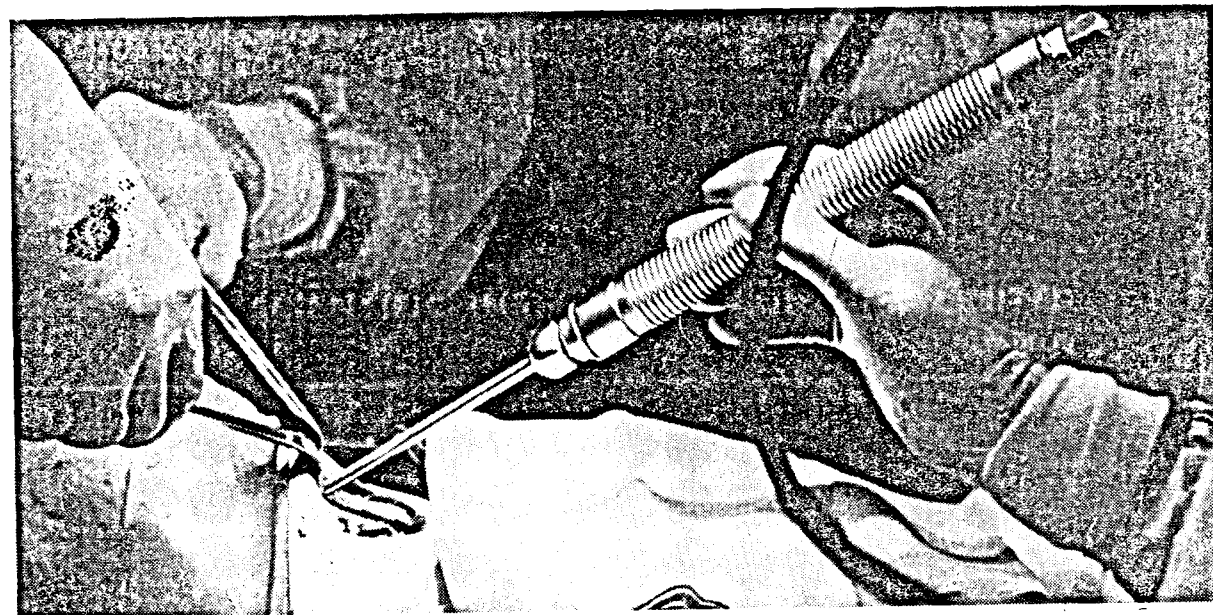
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SURGICAL & MEDICAL NEWS

APRIL 1959

HEALTH FOR ALL

"PEOPLE all over South East Asia now realize the benefits of modern public health services well enough to insist on having for themselves a bigger share of them. This is certainly true of the population of rural areas, which forms the bulk of the population of the region and has had, hitherto, the somewhat undeserved reputation of being resistant to scientific medicine.

"This so called 'resistance' has in fact been our own inability to adjust modern medicine to the needs of the villagers of South East Asia. There are, admittedly, still many maladjustments to rectify, but the road is now clear and scientific progress ensured".

So declares the Regional Director, Dr. C. Mani, presenting the Tenth Annual Report of the South East Asia World Health Organisation to the Governments of this region. The report is forthright and frank and full of interest to all who are interested in the development of this part of the world. In a world where so much is heard about destructive weapons it is heartening to note that good work is being done by organisations like the World Health Organisation.

In the year 1958 W. H. O. has given assistance to 136 health projects in the region. The Organisation has financial responsibility for the expenditure of more than seven million dollars. The main subjects on which W. H. O. helps is in preventing communicable diseases, promotion of rural health services and in helping to train health personnel. Instead of merely "controlling," the focus has shifted to complete eradication of malaria. Good progress has been made in dealing with the problem of Leprosy in Thailand. The pilot projects in Indonesia and India in dealing with trachoma have been successful. Although rural health services in India come under the Community Development Programme useful recommendations have been made by W. H. O. which cannot but influence the development of rural health services. Attention has been devoted to improve rural health services in Indonesia, Thailand and Afghanistan.

W. H. O. is endeavouring to improve maternity and child welfare services by providing medical and nursing paediatric teachers. W. H. O. is assisting hospitals to improve the standards of recording and statistics on mortality and morbidity.

Although the report deals comprehensively with various activities and the results which have been achieved it does not hesitate to draw attention to and emphasise the drawbacks. "Investment in brick and mortar still takes precedence over investment in human beings. It is a major misfortune of public health services in this region that building for hospitals, laboratories and health centres and institutions eat up such large funds that little is left for hiring adequate staff to do the job for which these buildings are intended".

"Health departments are still harassed by Ministries of Finance. Shortages of trained and even semi-trained personnel remain as acute as ever; training programmes are still neither well-planned nor well-executed; counterparts for W. H. O. field staff remain as exclusive as before and red tape is still a formidable barrier. Junior workers are still unwilling to accept responsibility and senior workers to share it. Further a number of old projects, to which W. H. O. aid has terminated, continue to show signs of deterioration — "not so much from any lack of ability or lack of desire for progress, but because of the gradual disappearance of local facilities and resources which have been made available during the period of W. H. O. assistance".

The Tenth Annual Report of S. E. Asia Region of the World Health Organisation is a forthright document. We would do well to do what we can to remedy faults while being heartened with the good results which it has achieved in the past decade.

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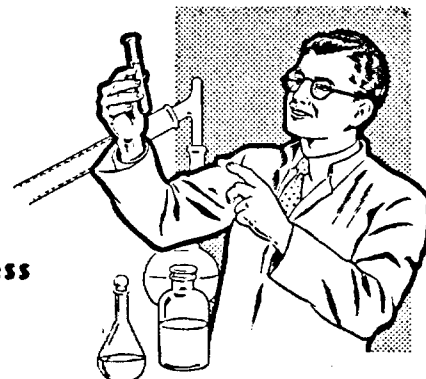
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MEDICAL SERVICES IN THE U.S.S.R.

By Y. BARANOV

(Specially contributed to the journal, "Surgical and Medical News")

FOREIGNERS who visit the Soviet Union, no matter what their occupation, age and convictions, highly praise the Soviet public health system and the medical services rendered to the Soviet population. Pandit Jawaharlal Nehru also expressed a very high opinion as regards Soviet public health measures.

The proper organization of medical service for the people is considered one of the most important state tasks in the Soviet Union.

Medical aid is free of charge for all citizens of the country, so that it is accessible to all. This is ensured by an adequate network of medical and prophylactic institutions and the training of a large number of doctors and other medical personnel.

Prophylaxis is the underlying principle of Soviet health protection, its most characteristic and most important feature, and the main line of its development. Medical theory and practice have both convincingly shown that to forestall disease is the best way of preserving and improving the health. The idea of prophylaxis to prevent disease is not a new one, but it was only after the Great October Revolution that it became possible to create all the conditions required for that.

While aware of the primary significance of preventive medicine, the Soviet public health organs by no means overlook the importance of therapeutics. On the contrary, the power of Soviet medicine lies in the fusion, the oneness of the therapeutic and prophylactic tasks, which are solved by the public health organs and medical institutions.

What means does the Soviet Union have in order to carry out these principles?

By the end of 1958 the USSR had over 25,000 hospitals with 1.5 million beds in them, about 35,000 dispensaries and polyclinics over 5,000 sanitary-epidemiological centres, children's nurseries which accommodate almost 1,100,000 children, over 3,000 sanatoriums and rest homes, over 360,000 doctors and

more than a million nurses and other medical personnel.

How is this therapeutic and prophylactic service for the adults and children, in town and countryside, organized?

The public health departments of the Executive Committees of the Soviets of Working People's Deputies bear full responsibility for the proper organization and quality of this medical service. Doctors of all specialities render free service to the city dwellers, as therapists, surgeons, pediatricists, ophthalmologists, rhinologists, obstetricians, gynaecologists, oncology specialists, phthisis specialists, neuropathologists, and psychiatrists. The people have, at their call, dispensaries, polyclinics, first aid service, hospitals, children's and women's consultation centres.

For a number of years a study was made of the best ways of organizing public medical service. Life itself showed the advantages of the district principle. Just what does that mean? The territory of towns and rural areas are divided up into medical districts in such a way that there are no more than 4,000 inhabitants in every such city district.

This principle enables the doctor and his assistants, the nurses, to make a profound study of the living conditions of every person within his district and to render effective aid whenever necessary. The district doctor not only treats the sick but, together with the sanitary workers, checks up on the sanitary conditions in his district, sees to it that anti-epidemiological inoculations are made in time and properly, and ascertains if there are any bacilli-carriers. The district doctors consider it their duty to do everything possible to improve the sanitary living conditions, to see to the timely hospitalization of the sick, and to prevent complications which may arise if the treatment is not correct and the patient not properly looked after. The district doctor devotes much attention to organizing a sanitary group from among the population. These groups of people greatly help the doctor in his prophylactic work. Thanks to the

doctor's excellent knowledge of the living conditions of the population, he becomes their "family doctor," a person to whom they readily appeal for medical advice.

The work of the medical institutions and the functions of the doctors, interns, and nurses are defined in a special statute confirmed by the USSR Ministry of Public Health, which reflects the striving to carry out prophylactic measures in the best way possible.

The dispensary is the most important means of effecting such prophylaxis. This method consists of the following: a regular check-up on the state of health of the people registered at the dispensary, diagnosis of diseases in their early stages, keeping a record of the sick, giving them timely treatment, and improving their working and living conditions. The dispensary system is one of the best means of effecting prophylaxis in medicine, and is a striking and convincing reflection of the combination of prophylaxis and therapeutics.

The question may be asked: Is the entire Soviet population included in the dispensary records? No, not all, but their number is constantly increasing. Today they cover all children, expectant mothers, workers in the most important industrial enterprises, agricultural machine mechanics and the foremost agricultural workers, students, scientists, all people who work with various harmful substances, war invalids, athletes, etc. Furthermore, all people, regardless of age, profession, occupation who are ill with tuberculosis of the lungs, who suffer from some rheumatic heart trouble, hypertension, nephritis, ulcers, chronic gastritis and dysentery, diabetes, tumours, venereal and fungous diseases, and psychiatric disorders, are registered by the dispensary which serves them.

Characteristic of the Soviet public health system is not only the wide application of the dispensary method, but also the development of an extensive network of specialized dispensary institutions. What we have in mind here is the anti-tuberculosis, oncology, skin and venereal, psychiatric, therapeutic physical culture, and other dispensaries. Soviet dispensaries, which have well-equipped hospitals and highly qualified personnel, fully ensure social and individual prophylaxis and skilled, free, dispensary and hospital care.

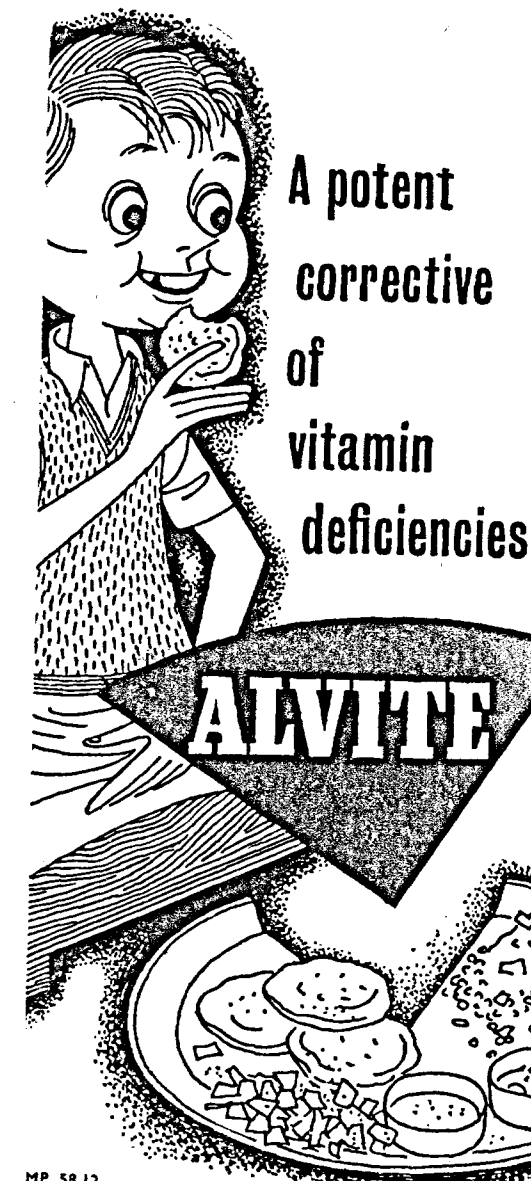
Preferential medical service for workers in industrial enterprises was established by law at the very outset of Soviet public health work. For this purpose there are special medical and sanitary centres and public health posts right at the enterprises, the preferential construction and equipment of medical institutions in industrial regions before all others, the rendering of such medical aid to workers as takes into consideration the change in shifts at enterprises, whether in the evening or early morning, on general free days, etc.

The special medical and sanitary centres at enterprises are, as a rule, all-round medical institutions consisting of a polyclinic, hospital, prophylactorium (day or night sanatorium), doctors' or assistant doctors' posts. The medical service at enterprises is based on the shop principle. The shop doctors organize and render first aid, treat the sick in the plant's polyclinic and hospital, take all the necessary therapeutic and prophylactic as well as sanitary measures to prevent disease among the workers and to improve their health. It is obvious that the shop principle in rendering medical service to the workers ensures the combination of therapeutic aid and prophylaxis, and brings skilled medical aid as close as possible to the workers.

There is one more very important factor which must be pointed out. At factories and plants, in the mines and other industries, medical service for the workers is based on an all-round plan for sanitary and hygienic measures which is drawn up by the plant administration together with the factory trade union committee, the safety technique service, and, it goes without saying, the head of the medical-sanitary department.

The following figures will enable the reader to judge more readily of the pace and scope of development of medical service at industrial enterprises: In the post-war years the number of medical and sanitary posts increased 2.3 times, the number of hospital beds at these medical and sanitary posts—5 times in the same period. During the past 7 years the number of health centres served by doctors increased by 30 per cent, and those served by assistant doctors—by 85 per cent.

Medical service for the rural population is based on the same principles as for the urban. But the living and working conditions in the village have their own



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specific features: the density of the population is less, and the inhabited settlements are scattered and further removed from large centres. All this requires special organization of the medical service there.

As in the city, the territory of a rural region is divided into districts which are headed by the doctors. The network of medical institutions in the countryside is organized as follows: in the centre of every district which has a doctor at the head of it there is a hospital and dispensary (the village hospital usually has therapeutic, surgical, maternity and infectious departments); on the territory of this district there are also assistant doctor and obstetrical centres, collective farm maternity hospitals, children's nurseries, both permanent and seasonal, and pharmacies. Every rural district centre has a district hospital and polyclinic, a women's and children's consultation centre, a dairy kitchen, specialized dispensaries, maternity hospital, nurseries, sanitary and epidemiological centre and pharmacy. The district hospitals have all the chief specialized departments, which are headed by specialists. They are in charge of the rural medical districts, control their work, help the village doctors to diagnose their cases, perform operations, determine the working ability of the patient, make prophylactic check-ups, etc.

The next higher territorial division is the region, territory, or republic. Here we find hospitals which have all the specialized departments and which are equipped with the most modern medical technique. The regional hospitals play an important role in organizing public health service in the countryside.

The qualifications of rural medical personnel are continually growing, and there is ever more opportunity for rendering all-round medical aid in the most distant parts of the country. The Soviet Union is extremely vast, but every Soviet person knows that no matter where he works, whether among inaccessible mountains or in the impassable taiga, should he fall ill a Soviet doctor will come to his aid whenever he needs it and help him recover. Every regional hospital has special aeroplanes and helicopters at its disposal, and they bring doctors and medicines, at the first call. How many lives have the people of this sanitary aviation service saved, a service which is lovingly called "winged medicine!"

Space does not permit discussing in detail the organization of measures to protect the health of

Soviet women and children. However, even a brief exposition of the principles governing the medical service for the future mother and child shows how correct was the evaluation of this important branch of Soviet public health care made by Pandit Jawaharlal Nehru and many other visitors from abroad.

The Soviet State shows its concern for the health of the child long before he is born. All expectant mothers, as soon as they become aware of their condition, come under the observation of a gynaecologist of a special institution: the women's consultation centre. As a rule, if the trend of the pregnancy is normal, every woman visits the doctor 6—8 times before giving birth. Inasmuch as the women's consultation centres and the maternity hospitals are closely united and the doctors work in both these institutions, the women are ensured obstetrical aid at all stages of their pregnancy, during child birth, and in the post-natal period.

As a result of the active sanitary and educational work of the women's consultation centres, the yeoman service rendered to expectant mothers and those who have already given birth, and, what is most important, the fact that all this aid is free and accessible, almost all expectant mothers in cities and over 90 per cent of those who live in the countryside give birth in special maternity hospitals or general hospitals.

It is therefore understandable why, in 1957, the mortality rate following childbirth amounted to only 0.05 per cent in the country. That is 14 times less than before the Revolution.

When speaking of the concern shown by the State for women who are mothers mention must be made of the maternity leaves granted to industrial and office workers, namely 56 days before and 56 days after child-birth. This post-natal leave is increased to 70 days if there have been any complications. Needless to say, the State pays for all this medical care and these maternity leaves.

Women collective farmers are given 60 day maternity leaves, 30 days before and 30 days after child-birth, which is in accordance with the collective farm charter. However, numerous farms grant their expectant mothers the same maternity leave as is given to industrial workers, in accordance with a decision of their farm members.

When the infant is born he has at his service special children's hospitals, children's consultation centres, children's polyclinics, nurseries, and Homes for the Child.

The children's consultation centres check up especially attentively on the health of all infants and the youngest children. Their sanitary and prophylactic work is diverse in nature. There are patron doctors and nurses who visit the children at home, give the mothers practical instruction in caring for their infants, and direct the hygienic upbringing of the youngsters. The consultation centres also render all kinds of medical aid. Thus both the healthy and the sick child are under the constant supervision of the doctor. Like the consultation centres, the children's polyclinics serve all children. This work is also conducted on the district system: there are 1,000 children in one pediatric district.

When a child attends school he is under the supervision of the school doctor who sees to the sanitary conditions in school, follows up the physical development of the children, and checks up on their health.

The entire system of medical service for women and children is based on all-round, detailed scientific investigations. For this purpose there are about 20

scientific research institutes for the protection of mother and infant, of obstetrics and gynaecology, and also pediatric departments at 24 medical institutes. The inseparable tie between science and practice enriches both and serves as a guarantee for effective work to protect the health of the mother and child.

It is difficult to overestimate the importance of the sanitary-epidemiological department in serving the people. The organization of this service and its functions will serve as theme for a special article. However, I should like to point out here that, together with the therapeutic and prophylactic institutions, the sanitary service vigilantly stands on guard to protect the health of the Soviet people. It is always on duty at industrial enterprises, and construction sites, in planning towns and villages, in agriculture, transportation, etc.

In conclusion I should like to quote the following figures, which are convincing evidence of the efficacy of the medical service rendered to the population. The total mortality rate among the population of the USSR in 1957 was one fourth of the 1913 figure, and among children—one-sixth. The average life-span of the Soviet population has more than doubled as compared with the period just before the Revolution, and now is 67 years.

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RHINITIS AS A VIRAL DISEASE

BY DR. E. FARKAS

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THE ætiology of rhinitis has not yet been cleared conclusively. Solution of the question is made particularly difficult because rhinitis may occur as the symptom of numerous more or less well defined diseases.

In his report Pesti (1) distinguishes three groups of rhinitis: (1) Influenzal (grippe) rhinitis, (2) genuine rhinitis (common cold), (3) symptomatic or secondary rhinitis.

Taken strictly, differentiation between the first group and the third appears to be somewhat arbitrary, since influenzal rhinitis may be regarded as a very characteristic type of symptomatic rhinitis.

In the above grouping, symptomatic rhinitis includes acute and chronic forms. Acute rhinitis may be associated with acute infectious diseases (e. g. measles, scarlet fever, diphtheria), but it may be due to chemical influence. Pesti discusses neonatal and infancy rhinitis under separate headings.

Among chronic, symptomatic rhinitis importance is attached to allergic or pseudoallergic forms, and those originating from the nasal sinuses.

It is not always easy to distinguish between symptomatic and genuine rhinitis; epidemiological and ætiological data recorded in the literature on rhinitis should therefore be approached with criticism.

We do not wish to deal now with symptomatic rhinitis, but will go into the ætiological researches that have given us some information on the infectious nature of rhinitis and the possible role of virus or viruses in its ætiology.

There is no need of proof that rhinitis (and here we do not allude to symptomatic rhinitis) spreads by infection, although the momentary condition of the organism and the various external factors by which it is influenced undoubtedly also play a part in manifestation of the disease. Not infrequently there are epidemics during which some members of a family

or of some other community living in close companionship avoid the disease, others contract ordinary rhinitis, others again—particularly infants and small children—become ill with acute bronchial catarrh or, perhaps, with abacterial pneumonia.

Thus it is difficult to draw a sharp line between common cold and, for instance, the acute bronchitis whose clinical aspects have been discussed by American authors (2, 3) owing to the frequent epidemic incidence of these affections among new recruits in the first weeks of military service.

From the epidemiological point of view the work of Paul and Freese (4) deserves attention. These authors published reports on their observations in 1930–31 on the Spitzbergas. At the end of October, when the last ship had left the settlement which they were studying, gradually rhinitis also disappeared almost completely among the inhabitants. All through the arctic winter they hardly encountered any case. However, in spring, the arrival of the first ship was followed by a pronounced outbreak of rhinitis epidemic, which began forty-eight hours after the ship had landed, slowly abated, but rhinitis occurred during the whole summer.

This observation not only supports the claim that rhinitis spreads like an epidemic, but it also provides evidence that not even the cold arctic winter will cause common cold in the absence of some specific factor. In the temperate zone, too, it is most likely closer contact among dense populations rather than the cold itself that may be held responsible for the higher incidence of rhinitis in winter, but the influence of other environmental factors on the organism should also be taken into consideration.

The connection between rhinitis and the weather or seasons is by no means simple. Study of relevant records has convinced Andrewes (5) that high incidence of rhinitis during the cold season is characteristic of the temperate zone. There are areas where the outbreak of epidemics of rhinitis may be associated with other meteorological

factors, as for instance, the coming of the monsoon.

Especially in the opening decades of the present century, numerous investigations were undertaken to compare the bacterial flora of the rhinitis patient's nasal discharge with the normal flora. However, these researches revealed no characteristic difference.

As concerns viruses that give rise to rhinitis, the common cold cannot be confused with rhinitis accompanying measles or other well defined viral diseases. The only form that may give grounds to error occurs in the case of sporadic influenza, but influenza may be identified by virological methods. These methods include isolation of the virus in embryonate hen's egg, in human or monkey tissue culture; determination of the rise in the complement fixation titre with influenza A, B, or C antigens. According to recent investigations, the role of the Sendai virus (6), also termed influenza D, should be reckoned with too.

EXPERIMENTAL RHINITIS IN MAN AND IN CHIMPANZEE

As evidenced by the literature, it was Kruse (7) who in 1914 first attempted to establish the viral ætiology of rhinitis by experiment. With the Berkefeld filtrate of diluted nasal secretion obtained from one of his assistants who was having rhinitis, he inoculated twelve members of the institute by nasal instillation. Four of the inoculated persons developed typical rhinitis within one to three days. Later he inoculated thirty-six medical students in the same manner; fifteen of these became typically ill in two or three days.

In 1916 the 10 to 20-fold diluted nasal discharge of three patients was filtered by Foster (8) through a Berkefeld N filter. With this filtrate he inoculated ten individuals of whom nine manifested rhinitis within 8 to 30 hours.

Olitsky and McCartney (9) reported on successful infection of man; they could even transfer this

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experimental rhinitis from the first subject to further volunteers, so that the virus was transferred by artificial passage through man. Branham and Hall (10) were unable to confirm Foster's findings in 1921. Robertson and Groves (11) in 1924 also failed to evoke rhinitis by inoculation of 100 volunteers with abacterial filtrate. The experiments of Kruse and Foster are scarcely, if at all, convincing, since the necessary isolation and control experiments were omitted.

Experiments performed with proper control were reported by Dochez and his associates (12-16) in the years 1929-32.

Their work was based on the observation that in captivity chimpanzee are liable to develop an affection similar to human rhinitis. Prior to the experiment (12) each chimpanzee was placed in a separate cage for six weeks and kept under observation. Spontaneous development of disease did not occur in any of the animals. Nasopharyngeal discharge was then obtained from persons with rhinitis in the first 24 hours; this material was passed through a Berkefeld V filter and the bacteriological sterility of the filtrate checked. Of the sixteen chimpanzee inoculated intranasally with the filtrate obtained from the nasal secretion of people with rhinitis, seven became ill with the typical symptoms (mucous, later running nose, red throat, anorexia). A healthy chimpanzee that had not been inoculated was placed with a sick one, and on the fourth day it became ill. No rhinitis appeared in animals inoculated with nasal washings of healthy humans. Later (14) these experiments were performed in humans; the results were similar to those obtained in chimpanzee. Rhinitis could be transferred to man by inoculation with the filtrate of nasal secretion from subjects with experimental rhinitis. Long and Doull (17) also reported on successful transfer, while the experiments of Kerr and Lagen (18) proved a complete failure.

We do not intend to give a detailed account of human experiments, we shall only go into the most thorough ones performed by Andrewes (5) and his associates in Salisbury in an institute set up for this purpose and equipped with every comfort. A great number of volunteers strictly isolated in pairs were inoculated with the filtrate of nasal washings or with control materials. The volunteers were kept in

ignorance concerning the material they received. Andrewes mostly found incubation time to last two or three days, the affection six to seven days; many of the volunteers only felt as if they were going to have rhinitis, but that was all, no rhinitis developed. Susceptibility was not influenced by age or sex. Inoculation with 100-fold diluted discharge resulted in few cases of affection, in 10,000-fold dilution the secretion was harmless. At -76°C the virus suffered no loss in potency for two years, at -10°C it remained fully potent for at least twenty-seven days, at $+4^{\circ}\text{C}$ for three days. Dochez and his associates preserved their virus for thirteen days in a refrigerator. Judged by filtration the size of the virus investigated by Andrewes may be 40 to 50 $\text{m}\mu$, possibly only 20. Andrewes attempted to infect eighteen species of animals with the virus (there was no chimpanzee among them) but without success.

In the nasal secretion of volunteers with experimental disease, the virus could not yet be demonstrated twelve hours following infection, but it was present twenty-four, thirty-six, forty-eight hours after infection even if no symptoms developed in the meantime. This shows that rhinitis is infectious already towards the end of the incubation period.

Long and his co-workers (19) drew similar conclusions, as early as 1932. Nine singly isolated chimpanzee were visited by an observer who developed rhinitis next day. After two days, two of the monkeys manifested rhinitis although the visitor had worn a mask. The authors presume that the visitor's hands must have been contaminated.

It is emphasized by every author that inoculation with infectious material does not cause rhinitis in all volunteers, but no definite explanation has been put forward to account for the difference in susceptibility.

In the experience of Andrewes, similar reaction by two persons isolated in one room was more frequent than statistical probability might have led one to expect. Andrewes moreover assumes the possibility of a certain periodical change in susceptibility; this periodicity he supposes to coincide mostly in the case of people living in constant propinquity. Unknown factors may also play a role. Since in most cases the isolated pairs were married couples or good friends, Andrewes suggests the presence of some latent virus which may have a part in the manifesta-

tion of the infection. This view would seem to be supported by reports on not quite convincing experiments, alleging to have transferred infection with viral rhinitis from healthy subjects.

From the study of numerous findings Andrewes has formed the opinion that in the spread of rhinitis drop infection is less significant than the nasal secretion that dries in handkerchiefs and, as powder, may contaminate the air or articles of use.

CULTIVATION OF RHINITIS VIRUS

Cultivation of the filtrable microorganism obtained from nasal secretion was attempted by the oldest authors, Foster (8), Olitsky and McCartney (9) on lifeless culture media, and the former author claims to have induced rhinitis in man by these cultures, even in 90,000-fold dilutions. Olitsky and Gates (20) described similar microorganisms as the pathogens of influenza. Dochez and his co-workers also grew such filtrable microorganisms, but did not attribute to them any importance in the aetiology of rhinitis (16). On this issue Branham and Hall (10) expressed their negative opinion in 1921, Microorganisms that grow on lifeless media are no longer considered as viruses, even if they can be filtered—and recent investigations have produced no evidence confirming their role in rhinitis.

More interesting are the reports referring to the maintenance of the rhinitis virus in tissue cultures, or through several passages in embryonate eggs. Evaluation of these results is all the more difficult as neither in the egg nor in the tissue cultures is there any sign of viral proliferation which can be proved only by inoculation of man or chimpanzee with material supposed to harbour the virus. Cultivation of virus hence lacks practical importance. Dochez and his associates (13) succeeded in infecting man and eliciting characteristic rhinitis with virus carried through fifteen passages in tissue cultures of Maitland type containing minced chicken embryo. Pollard and his co-workers established infection in man with material derived from the ninth passage of their strain in embryonate hen's egg (21, 22). The virus was stored at -20°C for 100 to 115 days and was still found viable (23). Topping and Atlas (24) as well as Ward and Proctor (25) also describe strains that can be grown in eggs; Ward (26) continued a stubborn search for any sign marking infection in

the egg. Finally he found the distribution of radioactive phosphorus isotopes to be different in infected eggs and among their fractions prepared with various kinds of solvents form that seen in the case of normal embryo. However, for practical purposes this procedure has no value either. All Andrewes's efforts failed to maintain his strains in embryonate hen's eggs. Although of all the researchers it was Andrewes who did the most thorough work, this does not imply any doubt of the results obtained by other authors with other strains.

There are but few and contradictory experimental findings concerning specific immunity to rhinitis (5, 10).

NEW TRENDS IN THE RESEARCH OF HUMAN VIRUSES

A side line of the research work, initiated in recent years with other objectives in view, may be hoped to produce a clear picture of the rhinitis virus. Ever since the publication of their pioneer work by Enders,



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Weller, and Robbins (27), various kinds of human viruses are being cultivated all over the world on human and monkey tissue cultures, and more recently on tumour cell cultures of human origin growing in vitro (strain HeLa; 28), with attention concentrated on detection of any microscopic cellular change which might serve to establish the presence of virus. New kinds of virus strains (RI virus group) have been isolated partly in human tissue culture, partly in HeLa culture by Hillemann and his associates (29, 30, 31) from the throats of patients suffering—clinically—from primary atypical pneumonia and acute upper respiratory diseases.

Rowe and his associates (32) isolated virus strains with like properties to those of the RI virus by an entirely different method. They tried to prepare tissue cultures from human adenoids from operations; growth began, but later the cultures showed fairly uniform spontaneous degeneration. When the medium fluid of the degenerating cultures was transferred to HeLa culture, a highly characteristic cytopathogenic effect was produced there. The cytopathogenic agent could be carried through innumerable passages. Filtration tests revealed this transferable agent to be a virus, since its size was about 30 to 40 μ .

The viruses marked RI, APC, and ARD (33) are, by agreement of the authors who described them, termed adeno-viruses. The viruses of this family have a common characteristic: viruses multiplying in tissue cultures contain the same soluble complement fixation antigen (32, 35, 36) which, however, seems to be void of protective power. While the soluble complement fixation antigen of all adeno-viruses is similar, fourteen immunological groups of viruses have so far been distinguished by neutralization tests (36). Apart from the above mentioned adenoids, the viruses were isolated from diagnosed acute respiratory diseases, exudative pharyngitis not due to streptococcus (37), primary atypical pneumonia (2), bronchitis resembling pneumonia (38), pharyngo-conjunctival fever (39), and common cold (32). Of the primary atypical pneumonias which were unattended by cold agglutination, many proved to have been caused by adenoviral infection.

Further evidence of the aetiological relationship between adeno-viruses and acute diseases of the respiratory tract has been furnished by successful immunization against acute respiratory disease with

adeno-virus grown on monkey kidney and treated with formalin (40, 41, 42). In one case the number of hospitalizations for acute respiratory diseases was five times lower among vaccinated recruits than among untreated subjects.

It is striking that while some types of the adeno-viruses have been isolated from acute respiratory affections, others are conspicuous by their remarkably frequent presence in the human tonsils and adenoids without any acute disease. It must also be added that in the latter cases no virus is present in pre-operative gargle or nose-wash fluid, nor can any be isolated from minced tonsil or adenoid tissue inoculated directly into HeLa cultures. The only way for their isolation is to cultivate the tissue containing the virus itself. Apparently, owing to some earlier infection, the living adenoid cells harbour the virus in a non-infectious form. Presumably it will become manifest not only *in vitro* but may *in situ* be rendered pathogenic under the influence of some external or internal stimulus. Hence it is not impossible for viral diseases of the upper respiratory tract to develop without the interference of extraneous infective agents; certain viruses harboured by the cells in a non-pathogenic form may, as a result of still undefined stimuli, emerge from the cells and become capable of producing disease. Such a process is assumed to take place in the case of the herpes virus, while in the development of so-called tempered bacteriophages the pathogenic prophage incorporated by the bacterial cell is known to be passed on by the latter through several generations. Transformation of the prophage into pathogenic phage is extremely rare; in such cases the bacterial cell undergoes lysogenesis and the released phage may be capable of bringing about lysis in other cultures. Frequency of the lysogenic phenomenon may be promoted by external influence (irradiation, chemicals).

SUMMARY

It is absolutely certain that in most cases of rhinitis filtrable virus is at least one aetiological factor. Most probably it is not always the same kind of virus. Apart from man, the known viruses are pathogenic only to chimpanzee; some viruses can—apparently—be maintained in chick embryo or in tissue culture, but their presence can be again demonstrated only in man or in chimpanzee. We possess no exact information as yet about the possible role played in the develop-

ment of rhinitis by the lately discovered adeno-viruses which would seem to be harboured by the tonsils and adenoids in a cellular, non-pathogenic form.

It is an important task of research to undertake more and more experiments with the successful adeno-virus vaccine for the prevention of affections associated with common cold.

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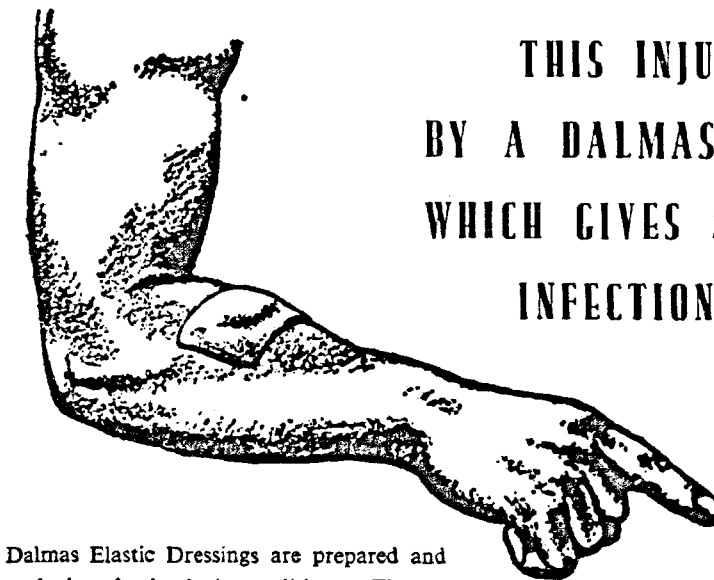
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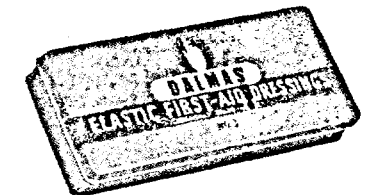
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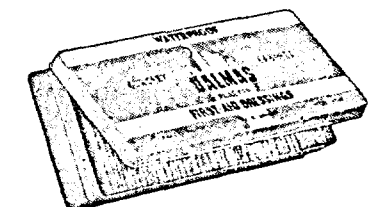
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Lederle — Cyanamid International Conference

(From A Special Correspondent)

ABOUT 40 pharmaceutical executives from many countries of the Far East, South East Asia, Middle East, Europe and Australia, engaged in the organization of the worldwide distribution of important drugs and medicines of the famous research organization, Lederle Laboratories, a division of Cyanamid International, New York, assembled in New Delhi in the second week of March this year and went through a five day conference which concluded on 14th March, 59.

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Among other important deliberations during the meeting, it was announced by a spokesman for Lederle-India that effective immediately the prices of the Lederle broad-spectrum antibiotics AUREOMYCIN and ACHROMYCIN were being reduced in India. Such reductions were made possible as a result of the recent opening of a new wing to Lederle-India's Bulsar Plant, providing additional manufacturing facilities and more space, thereby permitting increased output of these products.

This reduction, the spokesman added, is intended to make these life-saving drugs available to the population of India at more economic prices, thereby enabling MORE physicians to treat MORE patients with these valuable drugs.

Some of the countries represented at this conference were: Greece, Egypt, Iran, Iraq, Jordan, Lebanon, Syria, Turkey, Australia, Burma, Ceylon, Hong Kong, India, Indonesia, Japan, New Zealand, Pakistan, Philippines, Singapore, Thailand and Vietnam. From the United States, Messrs. R. Roland, N. G. Tamblin, N. A. d'Entremont and M. Roca, representing Cyanamid-Lederle management were participating.

Among other subjects, the conference reviewed some of the recent medical research developments in the field of drugs and pharmaceuticals in relation to their current application in the control of and treatment of diseases, particularly prevailing in the countries represented by the delegates. This conference, the first of its kind and magnitude to be organized by Lederle in India is one of a series of similar meetings being held in March in Europe and

Latin America. Products of Lederle research such as HETRAZAN and AUREOMYCIN, with the discovery of which the eminent Indian Scientist, the late Dr. Yellapragada Subba Row was connected, are already finding increasing application in the Health Programs for control of endemic diseases in India.

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MULTIPLE serious injuries and shock caused by automobile accidents, challenge the diagnostic and therapeutic ability of the surgeon with increasing frequency. Emergency measures to save life by the control of hemorrhage and shock are his first consideration. Patients often are unconscious when the surgeon sees them, and the primary examination must be supplemented later by a more thorough physical investigation when such becomes feasible.

Definition.—A simple dislocation of the hip may be readily recognized and reduced without great difficulty with the patient under the influence of general anesthesia, as soon as the general condition of the patient will permit it. When fracture-dislocations are suspected, roentgenograms are required to exclude bilateral involvement and to permit accurate determination of the position of the displaced fragments. It is well always to include the entire pelvis in any roentgenologic investigation of a dislocation or fracture-dislocation. The exact type and extent of the fractures cannot be demonstrated by physical examination; roentgenograms are required. They provide the surgeon with useful information as to the proper treatment required for good results.

Time is an important factor when the posterior rim of the acetabulum and the femoral head are displaced posteriorly, for such injuries may cause pressure irritation of the sciatic nerve and lead to paralysis. The surgeon must not disregard the patient's complaints of pain, numbness, a sensation of prickling, and inability to elevate the foot. Moreover, records of the incident should be preserved, with the roentgenograms made at the time of the first examination, and those made before and after manipulation or operation. Such records may save the surgeon much embarrassment, at a time when responsibility for disability is being fixed and questions of compensa-

tion, insurance or litigation ensue. When pain, disability and deformity have existed for months or years after fracture-dislocation of the acetabular rim and sciatic paralysis, no form of treatment can assure a cure. Operation followed by prolonged physical therapy may offer sufficient benefit to return the patient to work and economic independence.

The most common type of action causing fracture-dislocation of the hip in this era of rapid transportation is the sudden stopping of an automobile and the resulting impact of the knees of a passenger against the dashboard. The sitting position, with knees and hips flexed, allows great force to be transmitted along the long axis of the femur, driving the femoral head against the posterior-inferior rim of the acetabulum and fracturing it. The femoral head carries with it fragments of bone of varying size as it pierces the capsule and comes to rest on the dorsum of the ilium; fragments of bone may be free or may remain attached to the capsule. The ligamentum teres is torn and its blood supply is impeded, while the strong ligament in front of the hip joint, the iliofemoral or Y ligament, remains intact, to act as a fulcrum. Falls on the flexed knees, impact force on the trochanters as in lateral crushing injuries, wide abduction by great force, and weight falling on the back with the victim in the stooping position are other causes of fracture-dislocation of the rim of the acetabulum.

The trauma to the soft tissues may be considerable. The sciatic nerve may come to be displaced, and may rest on the head or neck of the femur or the sharp edges of bone fragments, and may be stretched or torn. Hemorrhage and edema in the torn capsule and surrounding tissues may seriously impair the blood supply to the femoral head, inviting late aseptic necrosis, ossification and osteoarthritis or immediate involvement of the sciatic nerve as a result of pressure or, later by incorporating the nerve within scar tissue.

The importance of early recognition of such signs as tingling, numbness, pain and loss of sensation or motor power cannot be overemphasized. When such symptoms are voiced, the surgeon should be careful not to make light of them, but rather, to watch for progression of them. Once paralysis has taken place, continued pressure on the nerve may result in permanent loss of function with disability. Temporary mild symptoms and the beginning of improvement may warrant a policy of watchful waiting. In such instances recovery usually takes place. In my opinion, nerve block or progressive paralysis, occurring after reduction by manipulation or after the accident, is best treated by surgical operation to relieve pressure, reduction and fixation of displaced bone fragments and attention to damage to the sciatic nerve, if such has been inflicted.

Although such physical signs as adduction, flexion with internal rotation and shortening, a prominent trochanter, a less pronounced gluteal fold, a hollow feeling of the acetabular area anteriorly, a palpable femoral head bulging out above the acetabulum posteriorly and possible crepitation, with inability to walk, are the signs seen clinically, the surgeon must bear in mind that many varieties of fractures are encountered in dislocation of the hip. There are always some injuries of the joint surfaces of the femoral head and of the acetabulum which are not visible in the roentgenograms and which are seen only at the time of operation or necropsy. Such damage may result in osteoarthritis in later years.

Anteroposterior, lateral and at times oblique (hip elevated to 60 degrees) roentgenograms may show the femoral head displaced posteriorly at the superior rim of the acetabulum, or a large single fragment or several fragments of the acetabular rim displaced posteriorly. Such roentgenograms may disclose fragments of the femoral head or acetabulum in the acetabulum (interfering with reduction), fracture of the acetabular rim without displacement, or fracture of the floor of the acetabulum, with or without perforation into the pelvis by the femoral head.

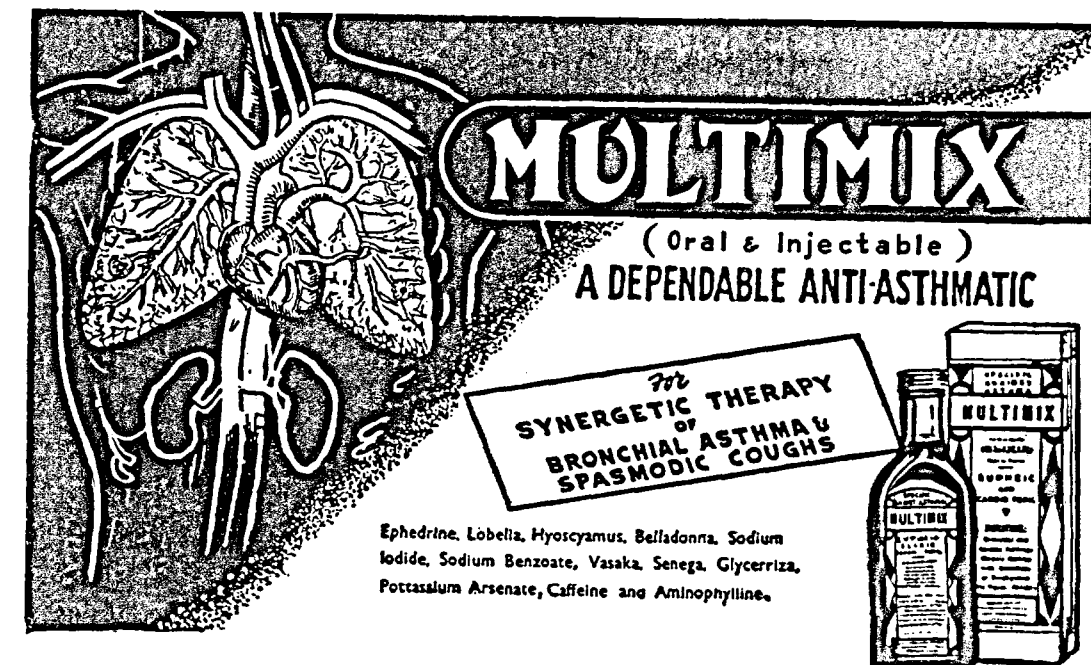
I am concerned here only with posterior dislocations of the hip complicated by fracture of the acetabular rim and paralysis of the sciatic nerve. In this respect I wish to emphasize the value of roentgenograms and of neurologic examinations both before and after treatment. The sciatic nerve may be damaged primarily at the time of the accident, during manipula-

tion or secondarily as a result of pressure from a hematoma or from scar tissue.

Treatment.—The form of treatment to be employed depends upon the physical condition of the patient at the time of examination and upon the time that has elapsed since the accident. When seen as an emergency, multiple injuries involving serious damage to vital organs often require first consideration. A thorough physical examination of the victim and the making of roentgenograms, whenever possible, are advisable so that the extent of injury and the best form of treatment to be employed can be determined. Time does not permit a thorough discussion of all phases of emergency care; hemorrhage and shock demand first attention as life-saving measures.

Emergency Treatment of Fracture-Dislocation of the Hip, With Mild Signs of Injury to the Sciatic Nerve: When the patient is seen within a few minutes or hours after the occurrence of fracture-dislocation of the hip and is in satisfactory condition manual reduction may be and usually is performed with the aid of general anesthesia. I have employed the following method. The patient is placed on the floor on a mattress and is anesthetized. The surgeon places his foot over the anterior-superior spine of the ilium on the affected side, flexes the hip and knee of the patient, internally rotates the femur and pulls the femur upward. The head of the femur slips through the rent in the capsule and into the acetabulum with a snap which can be felt and heard. Buck's extension or a spica cast is applied to the toes or skeletal extension is employed for 6 weeks.

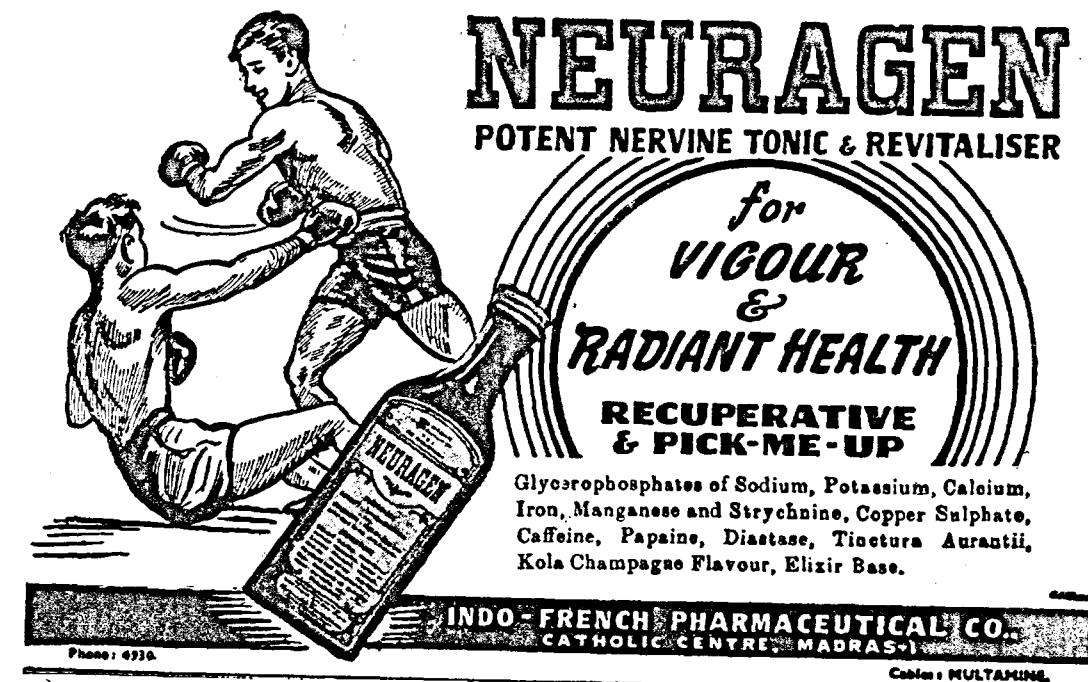
I prefer a double-spica cast applied to the toes on the affected side and to the knee on the uninjured side. When the cast has been in place for six or eight weeks it is removed. It is well to keep the patient in bed two more weeks before the use of crutches and ambulation are permitted. Roentgenograms made after reduction of the fracture may show fragments of bone which had not been recognized in roentgenograms made at the time of emergency treatment. Fragments of bone which are preventing complete reduction in the acetabulum also may be seen at this time, or a large fragment of bone may be displaced upward and backwards so that it presses on the sciatic nerve. A slit spica cast permits the patient to be turned on his back or abdomen, affords a means of avoiding pressure sores and permits an examination for sensory and motor impairment.



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Patients Unconscious and in Shock, With Fracture-Dislocation of the Hip: Shock is treated immediately, and the fracture-dislocations is treated by temporary extension with Buck's adhesive method with traction of 10 pounds (4.5 Kg.). Röntgenograms should be made and physical examination and neurologic examination to determine or exclude involvement of the sciatic nerve should be done as soon as the patient's condition permits. The surgeon must decide, after careful diagnosis, when to begin treatment.

Fracture-Dislocation of the Hip With Displaced Large Fragment of Bone From the Acetabular Rim, Without Injury to the Sciatic Nerve: Some damage to the joint surfaces always results to the hip joint when the acetabulum is fractured and the femoral head is forced over the rough edge of the acetabulum. Exact early reposition of the large fragment and removal of small pieces of bone may minimize the extent of subsequent osteoarthritis, and a vitallium or stainless screw may ensure fixation of the fragment. Preoperative and postoperative röntgenograms should be studied for evidence of proper reduction of the dislocated hip and fragment of the acetabular bone; the latter may not have been recognized in the emergency röntgenograms.

A double-spica cast is applied to the toes, with the foot at right angle on the fractured side, and a similar cast is applied to the knee on the uninjured side. It may be slit into anterior and posterior sections to facilitate postoperative care of the skin and to permit further examination. Should paralysis become evident immediately after operation, traction exerted on the sciatic nerve or trauma may have been the cause. Paralysis which takes place late usually is caused by hemorrhage, calcification and scar formation. Seldom is a well-applied cast the cause of pressure sores or paralysis.

Sciatic Paralysis Recognized Immediately After Fracture-Dislocation of the Hip With Acetabular Fragment Displaced Upward on the Ilium: Nerve tissue cannot withstand compression very long, and the surgeon is wise to seek consultation with a neurologist in making his decision as to treatment. In my practice I saw many old, long-standing injuries in which the results were poor. Disability, deformity, inability to work, and pain brought the patients for consultation. Most of the patients had conservative manipulative treatment, or operation had been delayed

so that the prognosis was not good at the time the patients came to me.

In this group of fracture-dislocations, seen immediately after injury, with sciatic nerve paralysis, and a large fragment of displaced acetabular bone lodged above the dislocated head of the femur, the surgeon has the opportunity to examine the sciatic nerve, to replace and fix the large acetabular fragment and to reduce the dislocation by open operation. I advise a posterior incision and removal of small particles of bone. Blood clots should be removed, and any bleeding points should be ligated. The sciatic nerve should be carefully examined, and given whatever treatment is indicated. The double-spica cast should hold the hip extended, and the knee should be slightly flexed to release stretching. A slit cast will offer opportunity for examination of the affected leg for extension or for recovery from the paralysis.

The period of immobilization should be several months, depending on the extent of recovery; then the patient should spend two or three weeks in bed, before ambulation is attempted. Weakness of the extensor muscles or foot drop should be treated by right-angle braces and gutter half-casts in recumbency. Physical therapy may be carried out daily. This type of surgical treatment of patients seen immediately after the accident gives the best results.

Long-Standing Fracture-Dislocations of the Hip, With Malunited Fractures, Bone Fragments of the Acetabulum and Sciatic Paralysis: These old, long-standing injuries to bones and joints, with paralysis, present a challenge in diagnosis and treatment. Irreparable damage has taken place, and the return of normal function is impossible. Conservative treatment probably has accomplished all that could be expected from it, and surgical procedures offer the only hope of returning the patient to a measure of relief of pain, disability, deformity and a return to a gainful occupation. A guarded prognosis must now be given.

Through a posterior incision the sciatic nerve is released from pressure or from stretching from over the neck of the femur, or over the head of the femur or over the malunited large fragment of bone. Perhaps the nerve will have to be dissected clear of scar tissue which is encroaching upon it; it may be found that the nerve is atrophied or torn, so that partial resection and suture will be required. The

displaced and united large and small fragments of bone from the acetabulum are best excised.

Osteoarthritis and aseptic necrosis may be present; a cup arthroplasty or a hip prosthesis may be needed to preserve a movable joint. Any loose fragments of bone in the acetabulum should be removed. Surgical fusion of the hip, in slight flexion position, ensures relief of pain and permits walking. Persistent foot drop requires the application of a right-angle brace at the ankle or surgical operation, such as a bone block or tenosuspension.

The postoperative care after such operations varies according to the type of operation employed.

Fracture of the Femoral Head With Fracture-Dislocation of the Hip, Fracture of the Posterior Rim of the Acetabulum and Sciatic Trauma: The loose fragment of the femoral head may be replaced when fractures are seen immediately after the injury, and are fixed by a bone screw. In most instances, however, and especially after some days or weeks have elapsed, it is best to remove the fragment. Large fragments prevent proper reduction of the femoral head, which in turn causes persistent pain and, later, osteoarthritis.

COMMENT

Hemorrhage.—Hemorrhage about the sciatic nerve and the hip joint occurs in varying degrees in fracture-dislocations of the hip, as a result of injury to nerves or bones, capsular tears and lacerations of muscle tissue. Extensive hemorrhage may result in myositis ossificans or ossification of the capsule of the joint, with aseptic necrosis and intrinsic or extrinsic pressure on the sciatic nerve and primary or secondary paralysis. Early operation, ligation of bleeding blood vessels and the removal of blood clots may relieve pressure and avoid some of the ossification and secondary paralysis.

Aseptic Necrosis. Aseptic necrosis may not manifest itself for two or three years after injury. Probably it is the result of interference with the blood supply of the femoral head. Circulation is interfered with when the ligamentum teres is torn; the capsule is stretched and ruptured; intrinsic pressure from swelling and formation of hematoma takes place; trauma is inflicted on the bone structure and pressure is exerted on the displaced femoral head. The resulting defor-

mity of the femoral head and acetabulum gives rise to chronic arthritis, with pain and disability. Surgical operation become necessary and the Smith-Petersen cup arthroplasty is accomplished or a femoral-head prosthesis is employed. Arthrodesis of the hip joint usually is the last operation to be elected, but when it is successful it assures a stable, weight-bearing hip and relief of pain and disability.

Trophic Ulcers.—Trophic ulcers may occur in the lower leg and analgesia and anesthesia may extend up to the area of the hip. The use of braces and splints must be carefully supervised, lest persistent ulcers form. When persistent pain, atrophy, ulceration and paralysis with foot drop result from fracture-dislocation of the hip with fracture of the acetabular rim and the patient has undergone open operation with reduction of the hip and removal or replacement of the fragment of bone from the acetabulum or neurolysis or suture of the sciatic nerve, the prognosis is unfavorable. The inability to work, loss of income, pain and discomfort may cause permanent disability, so that amputation and the use of an artificial limb may have to be considered.

Osteoarthritis.—Osteoarthritis commonly occurs after fracture-dislocation of the hip. It may manifest itself by persistent pain, aggravated by motion, and by varying degrees of stiffness with disability. As the years go on, marked restriction of motion occurs, with adduction deformity; even ankylosis may occur. Removal of the osteophytic growths (cheilotomy) is of doubtful value. Osteotomy for correction of adduction may be useful. A Smith-Petersen cup arthroplasty often gives a satisfactory result. Hip prostheses may be employed when the femoral head is defective, as it is in the presence of aseptic necrosis. Operations done to relieve pain, correct deformity and permit motion often give temporary relief, but after a time symptoms may recur. Arthrodesis of the hip gives the patient relief of pain and permits painless walking and a return to a gainful occupation. As I have said, it is usually done as a last resort.

REPORT OF AN ILLUSTRATIVE CASE

Dislocation of the Head of the Left Femur With Fracture of the Rim of the Acetabulum and Fragment of Bone Impinging on the Sciatic Nerve, With Traumatic Paralysis.—A man 39 years old came to the Mayo Clinic on Aug. 31, 1944. Ten weeks previously, while he was driving his automobile, he had fallen

asleep and run into a telephone pole. During the first week after the accident he did not recall much of what happened, and then he found that his scalp had been stitched and that he could not move his left hip. Skin traction of 15 pounds (6.8 Kg.) was applied for 15 days, and then pin traction of 16 pounds (7.3 Kg.) through the distal end of the femur was applied for six weeks. The pin wounds became infected and the pin was removed. He was permitted to be up and about on crutches. The pain, inability to bear weight, deformity and disability and foot drop had caused him to seek further consultation.

He was 5 feet, 11½ inches (182 cm.) in height and weighed 180 pounds (82 Kg.). The systolic blood pressure expressed in millimeters of mercury, was 108, and the diastolic pressure was 68. The pulse



Fig. 1.—Roentgenogram made 39 days after the accident in the reported case, showing posterior dislocation of the hip and a large fragment of the posterior-inferior rim of the acetabulum displaced upward and backward. The patient had primary sciatic paralysis. (Reproduced, with permission of the publishers, from Meyerding, H.W., and Walker, H.P.: Fracture Dislocation of the Acetabular Rim with Dislocation of the Hip and Traumatic Sciatic Paralysis, *J. Internat. Coll. Surgeons* 13: 539-548 [May] 1950.)

rate was 80 beats per minute. The temperature was normal. The left leg was shortened and internally rotated, and was causing him much pain. There were two holes in the skin above the right knee, and pus was draining from the hole on the inner aspect. Tenderness was evident along the course of the left sciatic nerve and greater trochanter. Foot drop was noted. Recent scars were seen on the face and arms. Roentgenograms disclosed upward and posterior dislocation of the left femoral head; one large fragment of the left acetabular rim had dislocated upward and backward, and several small fragments of bone were disclosed (Fig. 1).

After neurologic and orthopedic consultation, operation was advised and accepted. It was performed on September 8, 1944. A posterior oblique incision, separating the gluteus maximus fibers just above the piriformis muscle, was made, extending from the rim of the ileum to the posterior-superior angle of the greater trochanter. Retraction made possible palpation of a firm mass which represented the dislocated femoral head and a large fragment of bone broken off from the posterior-inferior rim of the acetabulum and displaced upward. The sciatic nerve was stretched over a sharp edge of this fragment (Fig. 2), and exhibited marked atrophy in the outer branch. The displaced fragment of bone, 1½ inches (3.8 cm.) wide and 1 inch (2.5 cm.) thick, was excised, which released pressure on the nerve. The femoral head was caught in dense scar tissue, and this tissue was excised. Attempts to reduce the head of the femur by manipulation and the use of bone skid were unsuccessful. It was deemed inadvisable to continue further surgical treatment, and the patient was returned to bed. It was thirty-nine days since the accident. Seven days after the operation a second attempt to reduce the hip by manipulation also was unsuccessful. Hence, a Kirschner wire was placed through the upper end of the left tibia, and 35 pounds (15.9 Kg.) of longitudinal traction and 12 pounds (5.4 Kg.) of lateral traction were applied by means of a sling on the forty-sixth day after the injury.

The patient withstood the traction well, and on the twenty-first day after it had been applied he suddenly felt a snap in the hip and found that he could rotate the hip. He also had less pain.

Examination clinically confirmed reduction of the hip and reduction also was evident in roentgenograms. The Kirschner wire was removed and a plaster of

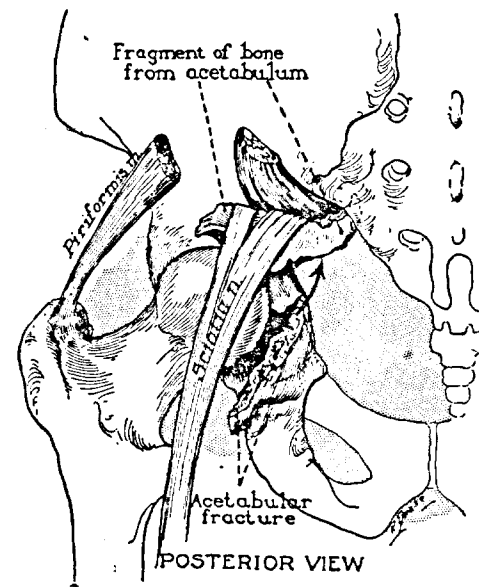


Fig. 2.—Fracture of the posterior-inferior rim of the acetabulum in the reported case, with a large fragment of bone displaced backward and upward, and posterior dislocation of the hip. The components of the sciatic nerve were stretched over the sharp edge of the displaced fragment of bone. (Modified and reproduced, with permission of the publishers, from Meyerding, H.W.: Traumatic Paralysis of the Sciatic Nerve Associated with Fracture of the Rim of the Acetabulum and Dislocation of the Hip, *S. Clin. North America*, August, 1948, pp. 973-977)

paris spica cast was applied; it extended to the toes, with the foot held at right angles. Sixty-seven days had elapsed since the fracture-dislocation had occurred.

Two and a half months later the patient was dismissed, wearing a spica cast, and he returned to his home to be under the care of his local physician. When the cast was removed five months later, roentgenograms showed the femoral head in the acetabulum; the hip had about 80 per cent normal motion, but foot drop persisted.

The patient returned for further observation 14 months after operation, wearing a right-angle brace to control foot drop. Roentgenograms showed the reduction of the hip to be satisfactory (Fig. 3). He had an ulcer of the lower left leg as a result of a burn, and he was getting about on crutches. In 1948, three and one half years after the operation, when this

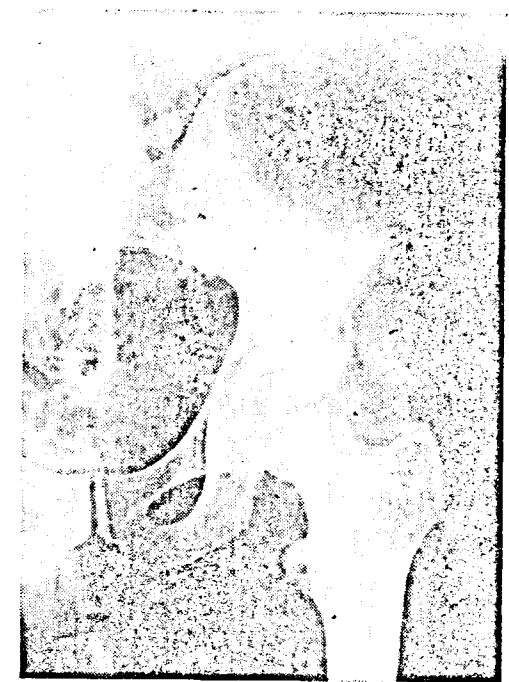


Fig. 3.—Roentgenogram made on August 2, 1945, in the reported case, showing the hip reduced. This was 14 months after the fracture-dislocation. (Reproduced, with permission of the publishers, from Meyerding, H.W., and Walker, H.P.: Fracture Dislocation of the Acetabulum Rim with Dislocation of the Hip and Traumatic Sciatic Paralysis, *J. Internat. Coll. Surgeons* 13:539-548 [May] 1950.)

patient was last heard from, he was still using crutches and had foot drop.

SUMMARY

Early and accurate diagnosis, with reduction of the dislocated hip, replacement of large fragments and removal of small fragments of bone, inspection of and replacement or repair of the stretched or torn sciatic nerve give the most favorable functional result in posterior dislocation of the hip complicated by fracture-dislocation of the acetabular rim and involvement of the sciatic nerve. When the patient's condition permits, and there is no indication of damage to the sciatic nerve, manual reduction done with the aid of general anesthesia is the usual treatment. Roentgenograms of the pelvis made before and after manipulation or operation, in the anteroposterior view and at an oblique angle, are advisable and should be repeated over a period of two or three

years to detect evidence of aseptic necrosis. Fragments of bone may not be recognized in the emergency roentgenograms, and may produce primary and secondary sciatic paralysis. Intra-acetabular fragments may prevent proper reduction of the dislocation. I believe early, open operation to reduce the hip, removal or replacement of fragments of bone and inspection and release of displacement of pressure on, or repair of, the sciatic nerve constitute the most efficient method of treatment and offer the most favorable prognosis. When weeks or months elapse after the injury and nerve involvement, the most skillful surgical treatment cannot assure the return of nerve function; early operation offers the most favorable prognosis. Osteoarthritis and aseptic necrosis may result in spite of the most expert care, and may require cup arthroplasty or a hip prosthesis.

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The Gastro-Intestinal Tract and related structures in Obstetrics and Gynaecology

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(This is the Second Part of a Series. The rest will follow—EDITOR.)

IN the plastic type of pelvic tuberculosis the gynaecologist has to be extremely cautious to avoid injury to or perforation of the bowel during attempts to separate the loops of adherent bowel. A faecal fistula may sometimes result when conservative surgery is practised in genital tuberculosis and an infected tube is cut across. Utero-intestinal fistula is a difficult condition to treat.

The intestines may sometimes enter an extension of Douglas' pouch. It may be part of the structure of a uterine procidentia. These conditions are dealt with in a little more detail under "Hernia".

From time to time rare conditions are met with such as a benign teratoma (dermoid) of the mesentery. Even lympho-sarcoma and secondary carcinomatous deposits in the mesentery have been known to occur. Volvulus of the small gut is not unknown. The intestine may get compressed or strangulated in different types of internal hernia. A suppurating Meckel's diverticulitis sometimes gives rise to confusion in diagnosis.

Although theoretically large fibroids and benign ovarian cysts may displace the small bowel they do not usually obstruct it.

When the dosage of radiation is too high in the treatment of carcinoma of the cervix or other malignant tumours the bowel may be affected. The lesion takes the form of an annular fibrous thickening and may give rise to obstruction in localized portions of the intestine.

12. COLON

Constipation is a common feature of late pregnancy. Attention to satisfactory diet is necessary. In the late weeks of pregnancy the enlarged uterus

pushes up the colon. The colon curves round the uterine fundus. The caecum becomes pushed upwards and outwards.

A theory has been current since the days of the great Master of Dublin Midwifery, Tweedy (1896) that gastro-intestinal contents which stagnate in the bowel play a part in the aetiology of pregnancy toxæmia. A more recent view is that of Sophian's who believes that distension of the bowel (or of the uterus) gives rise by a neuronal reflex to disturbances in renal secretion and hence may be a factor to be considered when dealing with pregnancy toxæmias.

A loaded colon is thought to play some part in the aetiology of different types of abnormal foetal presentations.

The view that constipation adversely affects the course of pregnancy has been held since ancient times. Hippocrates (460—370 B. C.) is credited with having written "We must purge pregnant women, if matters be turgid, from the fourth to the seventh month but less freely in the latter; in the first and last stages it should be avoided." Perhaps it was realised even during those times that during the critical weeks of early pregnancy a purge precipitated abortion and that in the later weeks it encouraged the onset of premature labour.

The colon may be distended (meteorism) in post menopausal or menopausal women with psuedocystitis and accounts for their abdominal swelling.

Enormous distension of the colon with signs of intestinal obstruction occurs in a very rare condition called 'pregnancy ileus' (Fig. 19). There is no organic cause for obstruction. Presumably it is caused by the hormonal effects of pregnancy. To make a precise diagnosis of this condition is by no



Fig. 19
(Courtesy: The Govt. Women and Children's Hospital, Egmore, Madras)

A 45-year-old patient having her eleventh child was nine months pregnant. She complained of abdominal pain. She developed signs of intestinal obstruction. The colon became greatly distended. This was confirmed by an x-ray. Bowel sounds could not be heard. She had vomiting. During distention, although it was difficult to make out the exact size of her uterus the foetal heart was audible. As there seemed to be no obvious organic cause to account for her intestinal obstruction and her condition remained unchanged she was treated conservatively by gastric suction and intravenous fluids. After three days the signs of obstruction disappeared. This was believed to be a case of paralytic ileus of pregnancy. In front is seen the contour of the uterus. Surrounding it on both sides and on the top is the outline of a distended colon.

means easy because other causes of intestinal obstruction have to be excluded. True pregnancy ileus responds to the usual medical methods of management of intestinal obstruction and a laparotomy is contra-indicated.

During active labour the atonic colon tends to become distended. In prolonged labour the ladder pattern of the distended colon is often reproduced on radiographs (Figure 20).

These changes become rapidly reversed during parturition because the uterus empties itself of its contents quite suddenly. In rare cases if the mesentery is abnormally lax a caecal volvulus may result which will require surgery.

After delivery the enlarged uterus may press on the sigmoid colon at the pelvic brim. Although it is more common after Caesarian section it may occur

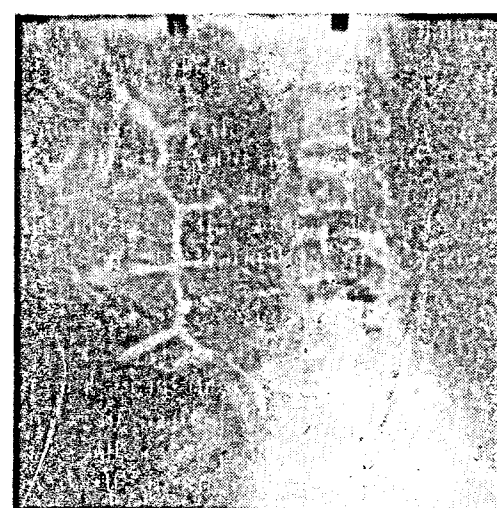


Fig. 20
(Courtesy: The Govt. Women and Children's Hospital, Egmore, Madras)

This x-ray was taken during labour. It shows the typical ladder pattern of a distended colon. The whole length of the gastro-intestinal tract may show atony.

after a vaginal delivery. In the immediate puerperium moderate distension of the abdomen is common but it generally disappears within 24—48 hours.

The sigmoid colon may be used as a receptacle for urine in the operation of transplantation of the ureters for diseases such as vesical exstrophy, inoperable vesico-vaginal fistula, or advanced pelvic cancer. Ureterosigmoidostomy is a relatively simple operation but is prone to cause electrolyte imbalance.

Acute inflammatory diseases of the colon may sometimes be mistaken for acute pelvic inflammatory conditions arising in the internal genitalia.

Rarely ulceration of the vulva may occur during typhoid fever (Buchman 1955). In severe cases there may be gangrene of the external genitalia or gangrenous ulcers in the vagina (Keen 1898) which may end up in the formation of a recto-vaginal fistula.

Diverticulitis which gives rise to a tender swelling above the pubis or in the region of the left iliac fossa may simulate an ovarian cyst which has undergone torsion. Usually the physical signs obtained in simple localized diverticulitis is a swelling felt in

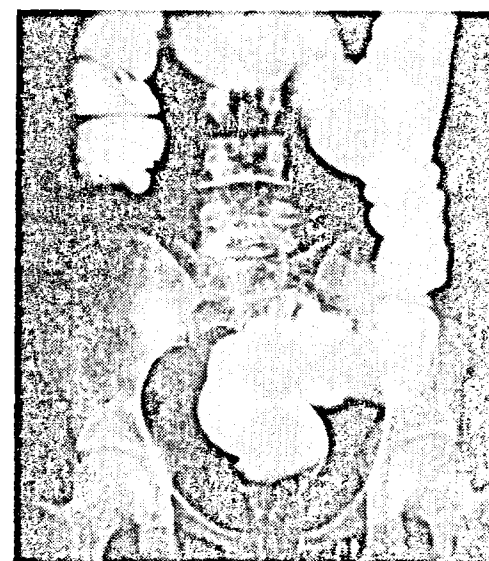


Fig. 21
(Courtesy: The Radiology Department, The Govt. Women and Children's Hospital, Egmore, Madras)

This barium enema demonstrates the natural course of the colon and rectum in the abdomen.



Fig. 22
(Courtesy: The Radiology Department, The Govt. Women and Children's Hospital, Egmore, Madras)

The gas shadows on this plain x-ray demonstrates admirably the horizontal course which the colon takes as it traverses the pelvis to become the rectum and anal canal.

Douglas' pouch on the left side. The swelling is tender, fixed, and separate from the uterus and its left appendages. When the inflammatory process is extensive the large intestine may become adherent to the other pelvic organs such as loops of small bowel, the bladder and the uterine adnexa.



Fig. 23
(Courtesy: The Govt. Women and Children's Hospital, Egmore, Madras)

This photograph of the pelvis of a cadaver shows the course which the colon takes across the pelvis as it runs just behind the uterus before curving downwards and inwards to become the rectum. The utero sacral ligaments and Douglas's pouch are clearly demonstrated.



Fig. 24
(Courtesy: The Govt. Women and Children's Hospital, Egmore, Madras)

This photograph of the pelvis taken during an operation demonstrates clearly the course which the colon takes across the pelvis from left to right before descending into the pelvis as the rectum.

When an abscess forms it may discharge itself either into the colon or through some other vicera. Fistula formation is a relatively common complication of diverticulitis. However vesico-colic fistulae are rare in women possibly because the uterus lies between the pelvic colon and the bladder (Fig. 21—24). A fistulous communication may very exceptionally develop between the colon and the uterus (Pickles

1956). Such conditions have to be borne in mind by the practising gynaecologist.

Chronic constipation may be a cause for pelvic congestion. To be able to evaluate diseases of the colon in the differential diagnosis of pelvic disease, the course of the pelvic colon should be appreciated. The greater part of the pelvic colon lies in the horizontal plane. In constipation this portion of the colon acts as the final reservoir of faeces. The rectum is usually empty and when faeces enters it a desire to defæcate is initiated. The pelvic colon may become enormously distended in the constipated subject. The pelvic colon may lie on the uterus or behind it, and is therefore in intimate relation.

The presence of the rectum on the left side of the pelvis is possibly a cause for dextro-rotation of the pregnant uterus as it rises into the abdomen, as well as for the fœtus to occupy the left occipito-anterior position. Occasionally when the fœtal head does not engage by the 38th week in a primiparous woman, a full rectum has to be excluded as a possible cause.

The value of enemas to empty the abdomen prior to abdominal and vaginal operations is so well appreciated that it hardly requires mention. If the

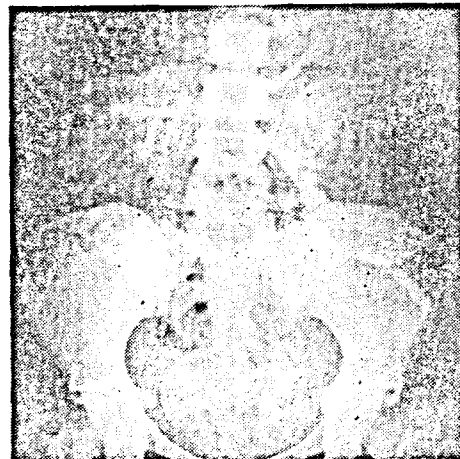


Fig. 25

(Courtesy: The Govt. Women and Children's Hospital, Egmore, Madras)

This x-ray demonstrates the mottled appearance which is the result of the bowel dilated with faecal matter. In addition the fœtus is lying in the oblique position with its back towards the pelvic inlet. It is important to have an empty bowel to get good x-ray pictures.

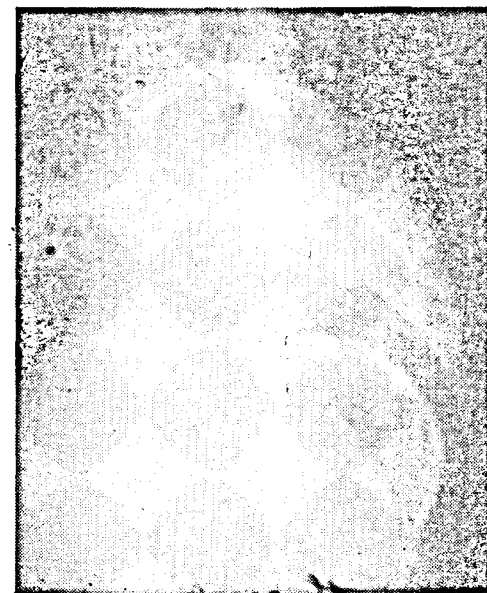


Fig. 26

(Courtesy: The Govt. Women and Children's Hospital, Egmore, Madras)

A 41 year old patient who complained of pain in the anal canal was admitted to a local hospital in the district. A barium meal was done. A pelvic mass was diagnosed and she was referred for opinion. She gave a history of difficulty in defæcation and pain in the anal region of a month's duration. There was nothing abnormal in her obstetric or gynaecological history. Vaginal examination showed the presence of a hard mass in the region of Douglas's pouch. The hard mass was thought to lie in front of the rectum. Further investigations of the intestinal tract was not done but a lateral x-ray revealed what looked like a calcified mass in the front of the sacrum. It was only during an abdominal operation while the rectovaginal space was being explored that the true nature of the mass became apparent. It could be indented with the finger and readily pushed down. The hard faecal mass was broken up and then removed per rectum. The mass turned out to be a hard scybalous mass which had been impregnated on the surface by the barium used at a previous study. Unless the alimentary canal is carefully examined such mistakes will occur. Indentation of a mass by the examining finger is characteristic sign of a faeces.

bowel is at all likely to be opened into, preoperative sterilization with drugs such as sulphaguanidine should be employed. The bowel should be emptied before radiographs are taken; otherwise the faecal mass interferes with the clarity of the pictures (Fig. 25).

Fæces impacted in the colon may sometimes mislead the unwary gynaecologist into suspecting a pelvic lesion connected with the internal genitalia. It must be appreciated that a hard scybalous mass may at times be mistaken for a pelvic tumour. This condition

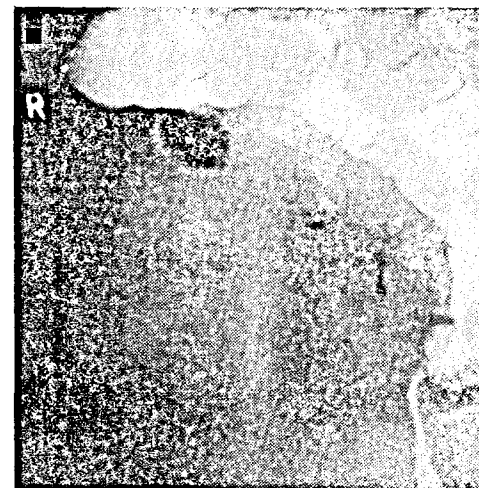


Fig. 27

(Courtesy: The Govt. Women and Children's Hospital, Egmore, Madras)

These x-rays of a 45 year old woman with a large intra-abdominal tumour demonstrates how the descending colon can become compressed and displaced backwards and to the right.

was first described by Chevalier in 1819. The lower portion of the rectum distends quite easily and is sensitive. When distended, the patient has the desire to defæcate. If the faeces are hard they are expelled with some assistance from the voluntary muscles of the abdominal wall. If a patient is irregular in her habits and allows the faecal matter to accumulate in the rectum this sensibility is lost and the muscle fibres become inefficient. Very soon the patient becomes an addict to purgatives and the effort of straining at stools predisposes to the development of conditions such as hæmorrhoids. There is difficulty in defæcation (dyschesia). When a mass of faecal matter gathers in the rectum it may form a moderately hard tumour which may bear a radiographic resemblance to pelvic new growth (Figure 26).

In the condition of faecal impaction the symptoms usually relate to the digestive tract and further during examination it is possible to indent the faecal mass. The importance of excluding lesions within the colon before rushing into the performance of a major abdominal operation, particularly when there are symptoms relating to the alimentary tract is well brought out by a case (Figure 26).

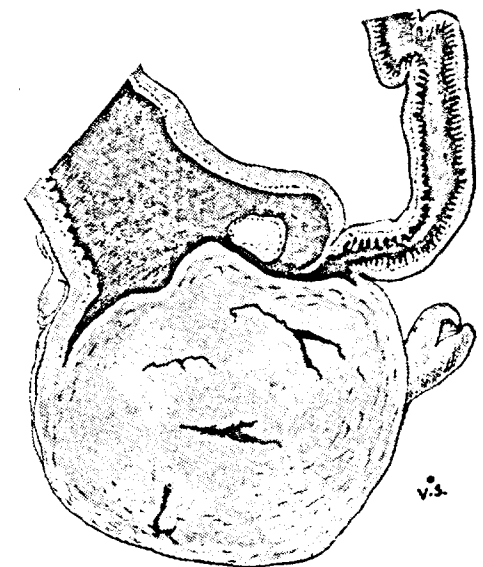


Fig. 28

(Courtesy: The Govt. General Hospital, Madras)

A rapidly growing tumour such as a lymphosarcoma may be mistaken for a pelvic tumour of gynaecological origin if investigations such as a barium follow through is not carried out. The illustration is that of a lymphosarcoma arising from the cæcum.

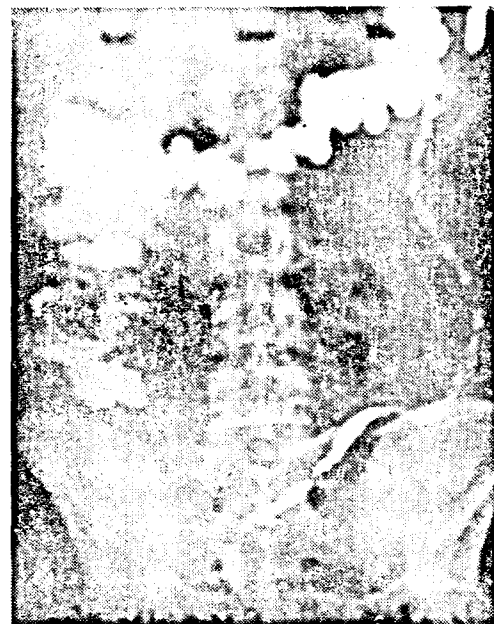


Fig. 29

(Courtesy: The Govt. Women and Children's Hospital, Egmore, Madras)

A 40 year old woman reported with abdominal pain, anorexia nausea eructations and constipation. She had no vomiting. She gave a history of having been operated previously a year ago for bilateral papillary cystadenomata. A total hysterectomy and bilateral salpingectomy was done. A barium meal series shows almost complete occlusion of the descending colon and rectum, probably the result of advanced malignant infiltration. The patient had ascites and a distended abdomen although no obvious tumour masses were palpable.

The colon may become involved in malignant conditions such as carcinoma of the ovaries (Figures 27, 29).

13. APPENDIX

The diagnosis of appendicitis during pregnancy is made difficult by the enlarging uterus which displaces the appendix from its normal position. This change in position has been shown by means of radiological studies. The appendix which normally lies in the right iliac fossa becomes lifted up by the growing uterus so that at term it lies at the level of the iliac crest. Instead of being directed downward and inwards it becomes horizontal and inwards and then finally vertical curling towards the uterine fundus. It is important that appendicitis should be diagnosed and

an acutely inflamed appendix removed by operation. Once perforation has occurred and an abscess has formed a mass may be mistaken for a twisted and infected ovarian cyst. When there is severe pain there is a danger that it might be mistaken for a tubal abortion. When an abscess has formed drainage is the correct method of treatment. On the other hand if the abdomen is opened by a para-median incision and an attempt is made to remove this abscess (tumour) severe peritonitis is almost inevitable, and may end in tragedy.



Fig. 30

(Courtesy: The Govt. Women and Children's Hospital, Egmore, Madras)

These histo-photographs of the appendix and the fallopian tube respectively show that chronic appendicitis may be associated with inflammation of the adjacent fallopian tube.

An inflamed appendix may adhere to the fundus of the uterus or the right fallopian tube (Figure 30). If the tube is infected and becomes inflamed it may subsequently become occluded. This may lead to sterility. Acute inflammation of a pelvic appendix may simulate acute tubal disorders. Chronic

Patel (1937) records a case of a 22 year old woman who gave birth to a child per rectum at her second confinement. Her relatives had been told by the village midwives that birth could not take place as there was no passage for the child to be born. The vagina was stenosed. The cervix opened into the rectum. The membranes bulged out through the

rectum and almost immediately ruptured, followed by the spontaneous birth of a living child which died immediately afterwards. There was an extensive perineal tear. Probably the first child was also born through the rectum.

(To be continued)

PHANTOM LIMB

All amputees have phantom sensation following amputation. Children before the age of six or seven do not have phantom pain following amputation. After this age, they may develop phantom pain. Because of this phenomenon in children it has been deduced that the body image of self or the "corporal schema" is not developed until age six or seven years. The usual experience of an amputee is that he has phantom sensation which may be very vivid several weeks after amputation. These sensations gradually fade over a period of one or two years. Most amputees can recall their phantom limb at will for the rest of their lives. Some patients may go for periods of 10 to 15 years and then have about of phantom sensation and pain which may last for days or weeks.

This latter type of phantom pain is generally from an irritation in the stump. If the cause of irritation is of a permanent nature, little or no relief occurs until the correct treatment is applied. If it is of

temporary nature, the phantoms will generally disappear. The most common local source of trouble is the painful neuroma. Less common is the ill-fitting prosthesis and anoxia of the stump which in turn causes chronic irritation. If the cause is found and the proper relief provided patients with severe phantoms still may experience their phantom pain for a considerable period afterward. The longer the patient has had phantom pain the longer the recovery period will be after the cause has been removed. Due to the firmly established habit pattern, even after the cause of the abnormal bombardment of stimuli to the nerve is removed, the mechanism for phantom pain through the nerve pathway remains. The only hope for a patient with severe phantom pain is to remove the causative factor and anticipate that with time the conditioned habit pattern of the pain will gradually fade—Capt. T. J. Canty, M. C., U. S. Navy, and E. E. Bleck, M. D., Amputation Stump Pain, United States Armed Forces Medical Journal.

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ATYPICAL TOXICOSES IN PREGNANCY

By PROF. S. FEKETE

Municipal Hospital of Szovetseg utca (Director : Prof. Sandor Fekete), Budapest

IN attendance on deliveries there are cases where the obstetrician is sometimes still faced with almost insoluble tasks. As to pathogenesis, one group of these cases—however widely they may differ from one another—is associated with late toxicoses of pregnancy.

The following pathological conditions are included in the group of atypical toxicoses of pregnancy :

- eclampsia without convulsions
- utero-placental apoplexy
- bleeding associated with afibrinogenia
- disposition to shock during parturition
- unexpected cases of pulmonary oedema, cardiac failure
- toxemia due to foetal death.

Ranging these cases into the group of toxicoses of pregnancy is justified partly by the patho-anatomical picture (as in the case of eclampsia without convulsions) and also by the circumstance that they are frequently associated with well-known forms of toxicoses of pregnancy (eclampsia, hypertension) and present the familiar symptoms of toxicoses. The inclusion of afibrinogenia is justified by the pathogenetic role of thromboplastin as a placental metabolite. The cases of pulmonary oedema and cardiac failure that cannot be traced to serious physical exertion may be explained on the basis of serous inflammation to which since the publication of Eppinger's work we attach decisive importance in the pathogenesis of pregnancy toxicoses.

On the other hand, we do not think it justified to discuss some grave complications of typical toxicoses of pregnancy as independent atypical forms. Cerebral haemorrhage, coma, anuria, hypopituitarism, adrenocortical haemorrhage, ocular symptoms that may accompany an attack of eclampsia are not separate pathological entities. In my belief the term separate atypical form should be applied to clinical pictures that occur also independently although in other cases they appear in conjunction with typical forms.

In the following we shall confine ourselves to data demonstrating the connection between the atypical forms and toxicoses.

ECLAMPSIA WITHOUT CONVULSIONS

Cases of eclampsia without convulsions have been seen by many workers; Biro (3) has collected sixty-two cases from the literature. In most cases the typical symptoms of toxicosis were present, in others the toxic origin was shown only by post-mortem findings of the liver and kidneys. During parturition the sensorium is disturbed, the patient is restless and loses consciousness. However, there are cases where the patient remains conscious up to the fatal end. Observers of the pathological process usually suspect cerebral lesion, bleeding in some dumb area of the nervous system, perhaps poisoning. The autopsy reveals severe hepatic and renal changes, serous inflammation of the heart and lungs. One of E. Balogh's (1) post-mortem findings is extremely interesting, recording remarkable spastic contraction of the pulmonary arterioles and bronchioles. Hence Balogh confines the term "without convulsions" only to the striated muscles, the smooth muscles—at least in certain regions—display spasms. Usually, treatment is but symptomatic, striving to uphold hepatic function by the intravenous administration of 5 per cent. dextrose. A massive dose of cortisone may prove useful in this condition.

UTERINE APOPLEXY

The clinical picture of uterine apoplexy was discussed in detail by A. and R. Couvelaire (6) and others (A. Weyermersch and Snoeck, 22), at the gynaecological congress of Paris. The symptoms are well known, the 352 cases reported in the literature have been collected by Batizfalvy (2). Formerly uterine apoplexy was termed "early separation of the placenta of regular site of adhesion". This condition is accompanied by very grave clinical symptoms: painful, very severe uterine contraction, extreme abdominal distension, inaudible foetal heart sounds, oozing of blood from the uterus; internal bleeding may also occur. Vomiting, oliguria, ocular symptoms

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and coma may complete the clinical picture which sometimes leads to the suspicion of ileus or peritonitis. Cæsarean section performed in many cases, revealed separation of a great part of the placenta and gross retroplacental hæmorrhage, extending to the uterine musculature (hence the term "utero-placental apoplexy") below the peritoneum, even in the free abdominal cavity.

The dominant features shown by patho-anatomical investigation are necrosis of the vascular wall and consequent hæmorrhage, and disintegration of the uterine muscular fibres. Couvelaire (6) qualified the process as "hæmorrhagic form of eclampsia". Among milder cases there are some where fragility of the vessels is due to earlier healed inflammation (W. D. Dieckmann). This clinical picture is regarded by Batizfalvy (2) and Williams as a separate form of toxicosis.

In K. Heim's opinion—which we share—general toxicosis of pregnancy "appears to give rise to eclampsia in one case, to utero-placental apoplexy in another, and to both in the third".

The investigations of W. H. Seegers (17) and Ch. L. Schneider (16) have greatly contributed to clearing the clinical picture. Schneider showed that in utero-placental apoplexy thromboplastin from the placenta enters the maternal circulation and may cause thrombus formation there. In the maternal blood the fibrinogen is precipitated, under the effect of lysis it becomes liquid again and does not coagulate.

The probability of relationship between utero-placental apoplexy and toxicoses is supported by the following common features:

1. Hypertension, albuminuria, œdema, the frequent incidence of eclampsia and bilateral renal cortical necrosis.
2. The high choriongonadotrophin content of the urine.
3. Pituitary changes and hæmorrhages in the adrenal gland.
4. Marked serous inflammation of the uterine musculature.

In opposition to the radical attitude in the treatment of the disease in grave cases (namely cæsarean

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section to terminate parturition, amputation or complete removal of the uterus if necessary) Weyermersch and Snoeck (22) from their 102 cases have come to the conclusion that these radical measures have not improved results.

General treatment (transfusion, combating shock) has lately been given increased scope (Browne, 4; Theobald, 2). We think that in the case of internal hæmorrhage immediate conclusion of parturition by cæsarean section is still inevitable. The best antidote to bleeding caused by afibrinogenia is the intravenous administration of fibrinogen; 4 to 6 g. may be life-saving. In grave cases hibernation, as recommended by Laborit (11), promises good results.

HAEMORRHAGE DUE TO AFIBRINOGENIA

Flooding of the organism with thromboplastin—as mentioned in the case of utero-placental apoplexy—disturbs coagulation. Thromboplastin furthers the transformation of fibrinogen into fibrin, thus promoting the coagulation of blood and the development of microthrombi all over the organism. Coagulation is, however, soon followed by fibrinolysis, the thrombi become liquid, but for a time the blood, owing to lack in fibrinogen, loses its capacity to coagulate. The clinical symptom of this condition is oozing hæmorrhage, which may be mistaken for injury or atony, perhaps for cotyledon or decidual residue. Clinical evaluation is made still more difficult by bleeding beginning only one or two hours after delivery. If by careful palpation rupture of the os uteri or other puerperal lesion can be excluded, if the patient has previously shown signs of toxicosis, exhaustion, if parturition has been protracted and the evacuated blood has been liquid and has failed to coagulate, afibrinogenic hæmorrhage must be taken into consideration. For its arrest Duhrsen's tamponade is useless, the patient's condition may become critical before removal of the uterus can be attempted. Blood transfusion is insufficient, but 4 to 6 g. fibrinogen injected intravenously brings rapid results. Final diagnosis is made possible by clarifying the conditions of coagulation.

INCREASED DISPOSITION TO SHOCK

There are cases where after normal delivery and simple normal bleeding the patient suddenly feels very ill, her pulse deteriorates, blood pressure cannot be measured, there is dispnoea and great pallor. The

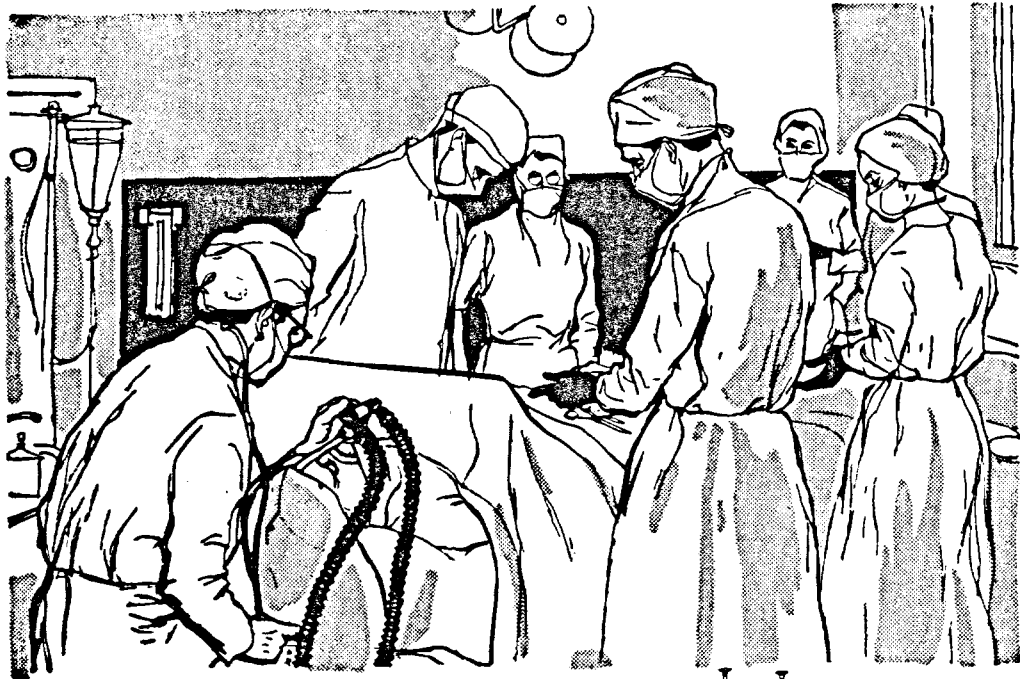
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patient remains conscious up to the end. Puerperal shock may be caused by various factors: uterine rupture (which, after spontaneous delivery, may develop latently), grave exhaustion, deterioration of the circulation (aggravated by fatigue and loss of blood), and insufficient adaptation of the organism (status thymicolymphaticus), but drug effect may also play a role. Of course we do not wish to group these cases of shock as toxicoses, but there are instances where pregnancy is accompanied by symptoms of pre-eclampsia and, after comparatively light loss of blood, delivery is followed by a state of shock. It is well known that severe disorders of hæmopoiesis during pregnancy promote the development of shock. The point of attack of both processes lies in the capacity of the organism for adaptation, which cannot prevail in the face of this bilateral burden.

The following case clearly demonstrates the totality of the factors having a hand in the development of shock.

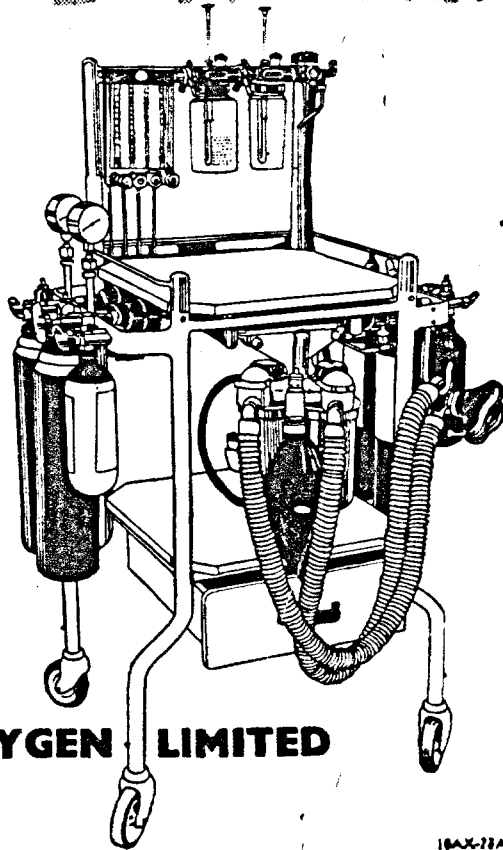
End of the second pregnancy. The first delivery was said to have been attended by eclampsia, but this was mentioned by the family only in the course of later events. The first child weighed 4000 g. and was born without surgical intervention. On admission the patient was found to have moderate albuminuria and slightly elevated blood pressure. Pains set in the same evening and after four hours' labour a living infant of 3800 g. was born. Episiotomy had been performed. After delivery there was a moderate bleeding which was found to come from a fairly extensive cervical rupture. The latter was sutured and transfusion, introduced by physiological saline, was begun and continued with preserved blood. At the start of transfusion the patient lost consciousness, her pulse deteriorated and in a few minutes she died. Autopsy showed anæmia to have been less marked than is usually seen in death from hæmorrhage. The cervical rupture extended to the lower part of the uterus. Here we are faced with a case where uterine rupture appeared in conjunction with spontaneous delivery. The patient's organism, weakened by loss of blood and preceding toxicosis, could not overcome the shock following upon these complications, and death was caused by three factors: toxicosis, loss of blood, and shock.

The first doubt concerning the concept maintaining



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that in certain cases shock is the consequence of toxicosis may be supported by fall in blood pressure being the dominant feature of shock while in toxicosis blood pressure is elevated. In his book Laborit points out the oscillations in the symptoms of shock (11) and uses the term "post-aggressive oscillating reaction" to denote the phenomena of shock. The course of this reaction is similar to that seen in toxicosis; vasoconstriction which may be of brief duration in the presence of the prolonged rise in blood pressure associated with toxicosis of pregnancy. Vasoconstriction is followed by capillary atony and increased transudation.

More recent knowledge concerning pathogenesis prevails also in therapy. Besides restoration of the blood volume (transfusion) shock therapy in the past required the administration of sympathicomimetic preparations. The greatest progress in this line was the use of nor-adrenalin. This preparation does not increase oxygen consumption by the heart as does adrenalin. Thus sedation of nervous reaction with morphine has been superseded. All over the world it made a deep impression when Huguenard and Laborit (11) published their procedure which endeavours to reduce exaggerated nervous reaction by the use of their "lytic cocktail" (Largactil + Phenergan + Dolantin intravenous drip infusion) and by lowering of body temperature (hibernation) strives to diminish the oxygen requirement of the organism.

So far we have been unable to form a conclusive opinion about the usefulness of Huguenard and Laborit's method in cases of puerperal shock. In eclampsia it has been tried and the results are not unfavourable.

It must, however, be understood that intraarterial transfusion may still succeed where intravenous transfusion has failed. The former procedure involves the danger of arterial transfusion into an extremity causing such a severe arterial contraction that the complication may result in necrosis of the limb. This can be avoided by injection into the aorta itself, there being no smooth muscle fibres in the aorta wall. In the case of intraarterial transfusion into the artery of a limb, the addition of procaine will reduce the danger of vasospasm.

AMNION-FLUID EMBOLISM

In their report of 1941 Steiner and Lusbaugh (19) suggested that the sudden death of women in childbirth may be due to amnion fluid and detritus gaining

access to the maternal circulation and giving rise to pulmonary embolism. At the time of publication there were few who attributed any serious importance to this supposition. Though microscopic pictures actually showed the presence of amnion epithelium, lanugo, detritus, still it was hardly imaginable that these should block such extensive areas in the lungs as to constitute a fatal burden on the heart.

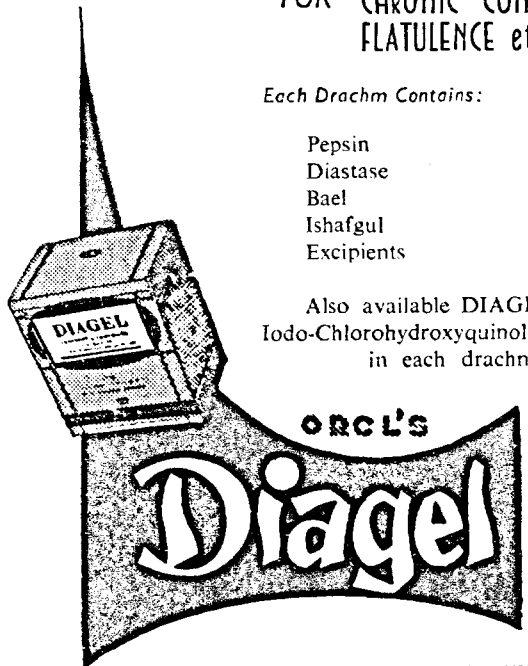
Later the recognized cases became more frequent. In the German literature it was J. Martin (14) who took up the question and collected 35 cases. Since Schneider's investigations (16) the significance of embolism caused by amnion fluid is better understood. In animal experiments Schneider proved the presence of thromboplastin in the amnion fluid at the end of pregnancy. If in the course of prolonged labour decidual detritus and amnion fluid are pressed into the maternal circulation, this will cause embolism in the pulmonary capillaries. Cor pulmonale with all its symptoms (cyanosis, dyspnoea, stasis, pulmonary oedema) ensues. Some cases of utero-placental apo-

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plexity, amnion fluid embolism, and puerperal shock show many similar features.

PULMONARY (EDEMA - CARDIAC FAILURE)

From the report of Caffier (5) we know that one cause of death from eclampsia is pulmonary oedema which is the consequence of acute cardiac failure. But here we do not wish to discuss the cases that develop after a grave attack of eclampsia, but shall go into those where pulmonary oedema appears without convulsions, as a primary affection, and causes a grave condition, perhaps death. As mentioned before, this may occur in conjunction with amnion fluid embolism, but it may also happen without embolism. Such cases have been described by H. M. Teel, D. E. Reid, A. Hertig (20).

We had a similar case in 1945 with favourable outcome.

In general, decisive importance is ascribed today to increased vascular permeability in the development of cardiac failure and pulmonary oedema (Rusznay, Foldi, Szabo, 15).

Although these investigations were not carried out on pregnant women, they may be accepted as valid for toxicoses of pregnancy where the presence of vascular permeability has been evidenced also by Landis and Hattlinger's staining method. The serous inflammation described by Eppinger (8) we also think to be highly important in the development of toxicoses of pregnancy, in which the response of the lung to shock may also play a part (Hayward, 9). Several years ago Henderson discussed this aspect in conjunction with war casualties.

Though rarely, it still occurs that after intrauterine foetal death, if delivery is long delayed, its termination is followed by grave collapse or intractable bleeding. The connection of these symptoms with toxicosis has been recognized only since we know about afibrinogenic bleeding. We are not acquainted with the materials absorbed from the placenta after foetal death, but on the basis of tissular autolysis the production of markedly vasoactive substances must be reckoned with.

In obstetric textbooks one hardly finds any grouping that ranges the here described clinical pictures under the separate heading of "atypical toxicoses". However, in the eleventh edition of Stoeckel's *Geburtshilfe*, Seitz (18) repeatedly mentions atypical toxicoses. We think it is an advantage for our

obstetric conception if we add these rare pathological forms to the group of toxicoses.

Progress in knowledge concerning the pathogenesis of toxicoses, namely recognition of the significance of serous inflammation and vascular processes, justifies our endeavours to summarize the described clinical pictures as a separate group of atypical toxicoses.

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INSECTS OF MEDICAL IMPORTANCE (IV)*

THE RAT FLEA

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INTRODUCTION

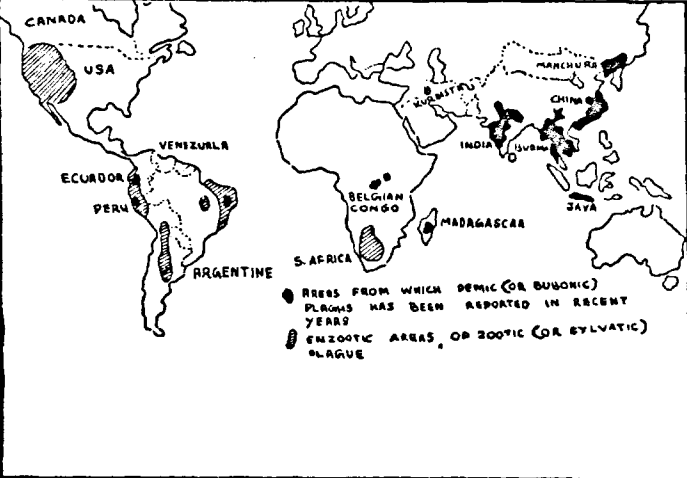
THE first clear description of bubonic plague is found in the works of Greek physician, Rufus of Ephesus who described the epidemic in Libya, in the times of Emperor Trajan about the end of first Century A. D. The black death epidemic of Britain in 1665, well-known to every student, resulted in about 70,000 deaths. The epidemic in Canton produced 100,000 deaths in 1894. Emperor Jahangir has recorded first epidemic in India in 1612. In 1896 plague broke out in Bombay, spread to Calcutta & thence to rest of India. It was in 1898 that Simond demonstrated that the disease is transmitted by the Rat Flea, but, even then, in India plague has ever been a disastrously fatal experience. It is still a matter of life or death to the millions in our country, because here still bubonic plague, transmitted by fleas from rats, flares up periodically in murderous epidemics. In Uttar Pradesh in 1947, 50,000 people died during a single outbreak.

In addition to plague, the rat fleas transmit endemic murine typhus and other diseases as rat trypanomiasis, cat and dog tapeworms. Wherever the fleas are found they, in addition to transmitting diseases, become a source of nuisance in as much as they bite causing irritation and they disturb continuously by their hopping over in front of eyes and all over the body. Children and others may have a decided "allergy", and after a series of attacks and the scratching which follows, sores which do not heal readily often develop.

GEOGRAPHICAL DISTRIBUTION

A reference to the plague map of the world and to the chart produced in this paper would show that there are very few countries in the universe which are free from fleas.

WORLD DISTRIBUTION OF PLAGUE



Different species play different role in different parts of the world and the following have been mainly incriminated in the carriage of plague:—

		Intermediate host.
Xenopsylla cheopis	India	Rat, Tatera Indica
X. astia	Asia	Rat
X. braziliensis	East & West Africa	Rat
Ceratophyllus fasciatus	Europe, Egypt	Rat
C. acutus Hoplopsyllus anomalus	USA	squirrel
Stivalius ahalae	S. E. Asia, China, Japan	Rat

*3rd article in the series was published in this journal in October 1958 pp 56-66.

		Intermediate host.
Ctenophthalmus agyrtes	Europe	Field mice
C. felis	Europe, Asia	Dog and cat
Leptopsylla segnis	Europe, Asia, Africa	Mice
Xenopsylla eridos	South Africa	Gerbilles
Dinopsyllus lypsus		multi Mam-
Chiastopsyllus rosii		mate rats
Rhopalopsyllus cavicola	Argentine Ecuador	Cavies
Xenopsylla nubicus	Tropical East & West Africa	Rat
Oropsylla silantiewi	Manchuria	Rodents
Pulex irritans	Cosmopolitan	Man

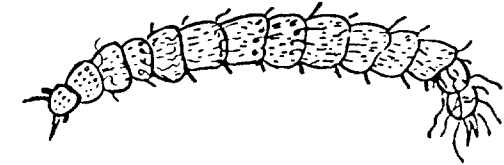
MORPHOLOGY

Fleas are small, wingless chitinous insects with body flattened from side to side. Mouth parts are fitted for piercing and sucking, but not for biting. Both males and females are active ectoparasites, found on warm blooded animals including birds and are parasitic only during the time they feed on the host. They cannot resist starvation and migrate to another host if the former is dead.

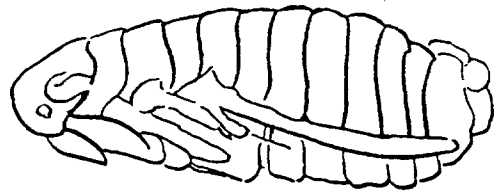
The head is roughly conical in shape, divided into anterior and posterior part by a slightly raised antennal groove. There are three rows of bristles prefrontal, frontal and ocular on the front portion. In some species these may be absent. Lateral lower portion of the front is wide and has strongly chitinised teeth or comb. The eyes may be present, rudimentary or absent, as indicated in the chart. The antenna consisting of three parts has the terminal club-shaped part and lies in the antennal groove.

The mouth parts are conspicuous structures with actually cutting organs as finely serrated mandibles and possibly the apex of the triangular maxillæ. The

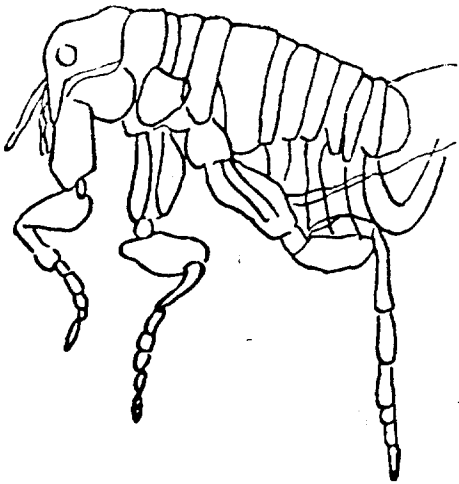
LIFE HISTORY OF RAT FLEA



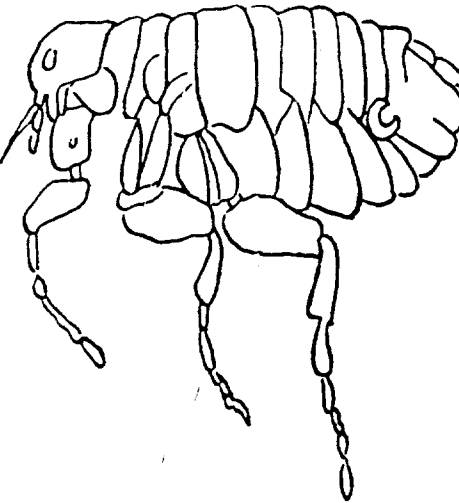
LARVA



PUPA



Xenopsylla Cheopis (MALE)



Xenopsylla Cheopis (FEMALE)

sucking is formed by the apposition of the mandibles and the labrum epipharynx'.

There is no neck. The thorax is composed of three segments and bears the three pairs of legs. The hind legs are very strong and are an aid in hopping up of the flea. The abdomen is composed of ten segments, but only nine are clearly seen. The first is overlapped by the thorax, the last three are modified for sexual purposes. Inside the abdomen, the crop or the proventriculus there is patch of spines, about 800 in number, which helps to crush up the red blood corpuscles of the host. The males are distinguished from the females by being smaller and having abruptly uptilted tales formed by the end of claspers and by the large penis lying coiled up inside the abdomen. The female contains the receptaculum seminis situated about the middle of the distal end of the abdomen. The shape of the receptaculum seminis is of considerable significance in the identification of the fleas.

LIFE HISTORY AND BIONOMICS

The metamorphosis is complete with distinct four stages i. e. egg, larva, pupa (cocoon) and the adult.

The eggs are oval, whitish, slightly sticky, about 0.6 mm. long and are visible to naked eye. Whatever the host, the females lay eggs in dark and dry places as rubbish, debris, dust in dwelling houses, under carpets, in graneries. The eggs are generally laid in the sleeping places of the animal host. The number of eggs laid by a female varies with the season e. g. in Calcutta X. cheopis laid 3.1 in summer and 2.8 in the rainy season, maximum being eight at any time. The most favourable period was October to December. The female continues to lay eggs throughout its life, provided it has access to blood meal after each egg laying, and lays about 200 eggs in its life time. The fertilisation of the eggs for X. cheopis was 25.0 (rainy season), 52.2 (autumn), 41.6 (winter) and 61.5 percent in spring, but for X. astia the corresponding figures were 45.4, 65.0 48.0 and 20.0 percent. The cold weather was more suitable for the development of eggs into larvæ then the summer or rainy season and the average time for X. cheopis was 4.3 days and for X. astia 3.9. days. Ova of X. cheopis do not hatch at temperatures below 12.7°C and the optimum is 26.6°C with saturation deficiency 0.23 inches. In favourable conditions, the eggs may even take 9 days.

THE LARVA

The development of the eggs into larvæ and the further stages is shown in the following table as worked out for X. cheopis and X. astia in Calcutta :—

Developmental efficiency of X. cheopis and X. astia at different stages of their life cycle and in different seasons as tested in the laboratory (Rep: Tech: Adv: board I. C. M. R. 1953)

Period	Species & Number of Eggs Observed	% Larvae Hatched	% Eggs into Cocoon	% Eggs into Adults	Average Time (Days)
Apr.-June 1952	Xc 144	43.8	27.2	13.1	23.9
	Xa 161	51.5	22.3	22.9	25.2
July-Sept. 1952	Xc 150	40.0	32.6	28.0	23.5
	Xa 119	43.7	35.3	33.7	21.8
Oct.-Dec. 1952	Xc 149	77.8	1.3	0.6	30.4
	Xa 61	80.4	31.1	31.1	37.8
Jan.-Mar. 1953	Xc 176	73.9	52.2	46.0	30.1
	Xa 105	90.4	27.6	20.9	27.0
Apr.-June 1953	Xc 230	17.8	4.3	4.3	29.8
	Xa 162	40.8	14.8	14.8	22.2
July-Aug. 1953	Xc 128	24.2	17.0	16.3	26.3
	Xa 271	40.2	32.1	30.2	24.2
Averages	Xc 889	41.6	26.1	21.6	28.4
	Xa 967	53.9	23.8	21.3	24.0

The larva breaks the egg shell by means of special tooth on its forehead but this peculiar structure does not persist after the first moult.

The larva is hairy, caterpillar like maggot, dirty white in colour, footless but extremely active. The body consists of head, three thoracic and ten abdominal segments. The last abdominal segment is small and possesses a pair of chitinous processes which are of use to the larva at the time of locomotion.

The food of the larva consists mainly of the excreta of the parents, varied organic matter in the host's nest. Half digested blood passed through the

CHART SHOWING IMPORTANT GENERA OF FLEAS (FAMILY PULICIDAE) FOUND ON RATS

FLEA	MORPHOLOGICAL CHARACTERISTICS			GEOGRAPHICAL DISTRIBUTION	RELATIONSHIP WITH DISEASES	REMARKS
	EYES	GENERAL COMB	PRONOTAL COMB			
1. XENOPSYLLA	+	-	-	India, Ceylon, Africa, Hongkong, South America, Iran, Burma	X cheopis principally concerned with plague transmission, also murine typhus	Essentially a rat flea. Vertical bar present
2. PULEX	+	-	-	India, Cosmopolitan		Essentially a human flea. Antennal groove forms a thickening extending to top of head
3. HOPLOPSYLLUS	+	-	-	U.S.A., CANADA, U.S.S.R.	H. anomalus carries Plague	Common on squirrels and rabbits
4. NOSOPHYLLUS	+	-	-	India, Europe	Dangerous carrier in Europe is N. fasciatus Bosc	Confined to hills in India
5. STIVALIUS	Rudimentary	-	+	India, N. Australia, New Guinea, Malaya, Archipelago, Ceylon, China, Japan	S. cognatus J & R and S. ahalac probably carry plague	
6. CTENOCEPHALIDES	+	+	+	India	Plague carrier. Also intermediate hosts for cat and dog tapeworms	Number of species found
7. LEPTOPSYLLA	Rudimentary	+	+	India, Europe, Asia, Africa	Minor role in the transmission of plague transmits rat trypanosomiasis	Mouse fleas
8. TRICHOPSYLLA	+	-	-	U.S.A. & CANADA	Probably carry plague	Found on Chip Munk, Meadow mouse and squirrel
9. PYGIOPSYLLA	+	-	+	Australia, Malayan Archipelago		Found on Marsupials and rodents in Malayan Archipelago
10. CHIASTOPSYLLA	+	+	+	South Africa		Rare flea. Found on rats and mice
11. HYSTRICHOPSYLLA	-	+	+	America, Central & North Europe		Found on Moles, shrews in Europe, on Meadow Mice, Weasel in America, rarely seen on rats
12. CTENOPHYLLUS	+	-	-	Is a genus split up from Ceratophyllus Curtis	Transmission of plague from rodent to rodent, seldom bite man	Found on: Brown rats, Mice, bank voles, paired dogs, ground squirrels
13. CTENOPHTHALMUS	-	+	+	Europe, USSR, South Africa & America		Found on small rodents
14. DINOPSYLLUS	-	+	+	Tropical Africa		Found on Mice
15. NEOPSYLLA	Rudimentary	+	+	Asiatic Russia		Rodent fleas
16. CTENOPSYLLA	-	-	-	Asia	Ceratophyllus fasciatus transmits rat trypanomiasis (T. lewisi)	Bird fleas found on fowls, also in squirrel, weasel & porcupine
17. CERATOPHYLLUS	+	+	+	Northern temperate Zone in Europe, N. America		

SURGICAL & MEDICAL NEWS

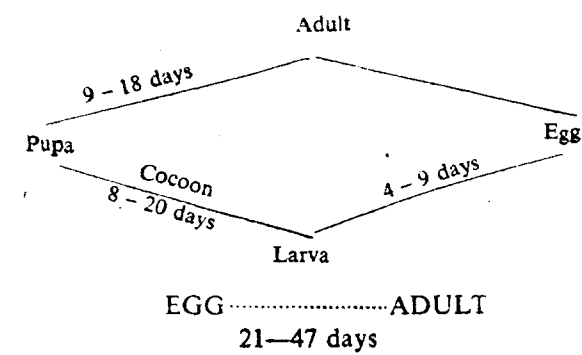
parent flea's body appears to be necessary part of the larval sustenance.

Flea larvæ are extremely active, when disturbed they move without apparent effort by means of their bristles, a row of which encircles each segment. During growth they rest coiled up like a watch spring but before moulting, they lie fully stretched. Although the larva has no eyes, yet it is very sensitive to light. It is rapidly killed when exposed to direct sunlight. Low humidity at all temperatures is fatal.

After two weeks of its hatching out of the egg, the larva attains full size, moults twice and has three larval instars in its life history. During development the larva not only requires blood, but also organic refuse which is provided by rat excrement, cowdung, warehouse and cattleshed sweepings. The larval life is approximately a fortnight. The third stage larva spins a cocoon inside which the larva rests for some-time and then changes into pupa. Rainy season is the most favourable and the average time taken for X. cheopis and astia being 8.7 and 9.6 days, as against the whole year average of 10.6 and 14.4-days. The development is slowest during the cold season, being 12.0 and 20.0 days respectively.

The pupa:—The cocoon made of silken material, covered by sand and grit, develops inside it the pupa which closely resembles the adult.

The pupal stage lasts about two weeks and hatches out into the adult. During rainy season the hatching is quicker being 10.5 days for cheopis and 9.4 days for astia, but for the whole year the average is 12.2 and 11.1 days respectively. The time taken is the longest during autumn (Oct-Dec.) i. e. 18.0 and 17.3 days respectively. Pupa hatches out often when mechanically disturbed—e. g. by a nearby human footstep. Persons entering long deserted house,



sometimes, have cause to complain hordes of fleas appearing suddenly after a short time. It is probable that in such cases fleas resting in cocoons beneath floors, in cracks etc. have come out in response to the vibrations caused by people moving in their proximity.

In some countries outside India, the life cycle from egg to adult may take from 21 days to 280 days.

The adult:—The ratio of the two sexes formed is about 1.6 females to 1 male for X. cheopis and for astia it is 2.6 females. Female population predominates in winter months and early parts of spring but during rainy season, the males predominate.

Both sexes in adult stage are parasitic on the host, on which they feed, leaving the host between feeds. Different hosts have already been mentioned above. X. astia feeds better than X. cheopis, biting rats more readily than man. "Duration of the feed is 2-5 minutes in man practically without any sensation but a small red macule generally develops at the spot of the puncture within a few hours with or without itching. One day old adults are less inclined to bite man than two days old, proportion being 25.6 and 57.5 respectively". The latest W. H. O. report shows that in India (East) not the house rat, but the wild rodent Tatera indica is the animal that harbours the infection in its underground burrows during periods between outbreaks of human plague. Tatera indica evidently passes the infection to the house rat and further to man.

X. cheopis lives longer than X. astia. Temperature and humidity influence the longevity. Longevity was highest during winter and lowest during rainy season. The optimum conditions are a temperature of 20—25° C (68—77°F) and a saturation deficiency of less than 10 millibars. Higher the temperature and greater the saturation deficiency, the shorter the life. In favourable conditions such as those existing in the rat burrow, rodent fleas can survive for as long as two years and even unfed fleas can survive for several months. In Calcutta average life has been worked out for X. cheopis as:—Wild and starved (2.1 days), newly hatched and starved (4.5 days), and newly hatched with one blood meal (6.7 days), maximum period being three weeks during cold weather. Females live longer than males.

Fleas find difficulty in walking on smooth surfaces,

where they prefer to progress by jumping. Placed on cloth, fur or feathers they bury themselves.

Fleas are sensitive to air current and to light. They shun daylight and are attracted by warmth. If disturbed they shun death and rest with their feet tucked up tightly to the body of their host. They leave the cold, dead body of their host.

COMMON INDIAN SPECIES

1. "*Xenopsylla* genus contains 30-40 species. It is essentially an african genus. It requires a high temperature to develop and exists in heated buildings in England, America, Russia". Of this genus, three species are found in India on rats and recently discovered on *Tatera indica*.

Xenopsylla cheopis is principally concerned in the transmission of plague in India, Ceylon, Africa and Hongkong. Transmission of plague by *X. cheopis*, is stated to be, not occurring at a saturation deficiency of 0.6 of an inch accompanied by a temperature of 68°F. This species is found in the plains and also in the hilly regions of India.

Xenopsylla astia is prevalent all over India (more common on the east Coast), Burma, Ceylon, Hongkong and Iran. It is a relatively inefficient carrier of plague than *X. cheopis*. *X. astia* bites man with reluctance under tropical conditions, especially when the temperature is over 80°F. At 68°F but with a saturation deficiency of 0.3 an inch, *astia* cannot carry plague infection.

Xenopsylla brasiliensis is found in Peninsular India and Madhya Pradesh, Africa (Natal, Nigeria, Belgian Congo, Kenya etc.) South America. Its distribution in India is very much restricted.

2. *Pulex* genus is essentially a human flea whereas *Xenopsylla* is rat flea.

Pulex irritans, is the human flea, which is cosmopolitan. It occurs in the hills in Eastern hemisphere but in the plains in North, South and Western Africa. In Europe and central Asia, it is a parasite of man and is not found on rats or other animals. It is smaller than *Xenopsylla* and has light colour and has a number of bristles on the head. It has no vertical bar as against *Xenopsylla*.

3. *Nosopsyllus fasciatus* is the common rodent flea of temperate and tropical climates and is the dominant ratflea of Europe. It will attack man in the absence of rats.

N. nilgiriensis is fairly common in Nilgiri hills above 3000 ft. and is found on rats.

N. simla is found in N. W. India on rats.

N. tamilanus is found in South India and Ceylon.

N. punjabensis is found in Punjab on rats.

4. *Stivalius ahalae* is the commonest species of the four species of this genus found in India. It is found on rats in South India and Ceylon specially in the hills.

5. *Ctenocephalides canis*, *C. felis* and *C. felis subsp orientis* Jordan are found in India and are the cat and Dog fleas.

C. canis is found on hilly regions in India, scarcely in the plains.

C. felis subsp orientis Jordan is the commonest flea found mainly on dog, but also on cat, goat, rat and squirrel.

6. *Leptopsylla*—Head is pointed and there are no eyes.

L. segnis is found principally in the plains of India. It is a mouseflea. It is cosmopolitan and may occasionally be found on rats. It is suspected to play a minor role in the transmission of plague.

L. himalaica occurs in the hills in India. It is also a mouseflea.

FLEAS AS DISEASE TRANSMITTERS

The fleas are the real vectors of plague and that if fleas are excluded, healthy rats will not contract the disease even if kept in close association with plague infected rat, has been proved by the Indian Plague Commission.

Martin & Bacce (1914) found that the normal mechanism for the transmission of the plague is by regurgitation of the infected blood from the stomach.

When a flea ingests plague infected blood, the organisms multiply in its gut and are excreted in the faeces. Both males and females transmit infection and a flea, once infected, may remain so for months. The plague bacilli multiply so excessively in the gizzard and the stomach as to form impassable jelly like mass. Fleas infected in this way are more thirsty and more reckless than normal individuals. When placed on a host they sucked more vigorously for a time, but the blood taken up failed to pass into the stomach. Then, when the sucking effort ceased, the blood which has been imbibed, now contaminated with plague bacilli, was forced back into the wound and infection took place.

On some occasions infection is probably transmitted mechanically to man by the bites of fleas which have recently fed on an infected individual. Transmission as a result of inoculation of infected flea faeces into breaches of skin, or following the ingestion of infected flea or their faeces, is now considered to be very doubtful.

Diseases transmitted by fleas are murine typhus, rat trypanosomiasis, cat & dog tapeworms and plague.

Murine typhus (Endemic typhus) is world-wide especially in Mexico, N. America, Palestine, Mediterranean basin, Syria, Greece, Toulon, Malaya, North and West Africa, Belgian Congo and in India. In cold climates e. g. hill stations in Northern India, the incidence is highest in spring and summer. In Western half of Northern India and in the Eastern half and Deccan peninsula, it is common in winter and spring.

The causative organism *Rickettsia mooseri* is carried from rat to rat & to man by rat fleas (*Xenopsylla*), by entry of the faeces of the parasites through abraded skin, mucous membrane or possibly by inhalation of the faeces.

Reduction of rodent population and control of fleas are the control measures.

Rat trypanosomiasis or *T. lewisi* is transmitted by fleas parasitic on rats. *Caratophyllus fasciatis*, *Xenopsylla cheopis* are the fleas in which *T. lewisi* develops. Infection takes place by licking of faeces of an infected flea by the rat.

Cat & Dog tapeworms:—The cysticercus stages occur in the body cavity of insects and fleas during their

larval stages and the rat or the man becomes parasitized by eating infected fleas or other insects.

Hymenolepis diminuta undergoes larval development in several arthropods including fleas. It is a parasite of rats found in man in Italy, S. America, the Congo and West Indies.

Dipylidium canium is a common parasite of dog, cat or jackal and has been seen in children in European countries. The cystecercoid stage is passed through dogflea (*Ctenocephalides canis*) and human flea (*Pulex irritans*). Infection of man is accidental due to swallowing of infected fleas.

Plague:—Human plague in India is essentially a disease contracted from domestic rats, *tatera indica* through rat fleas of the species of *Xenopsylla*. A flea index which is equal to number of fleas per rat is of great value in assessing the epidemiology. A *X. cheopis* index of 1 per rat can start an epidemic.

The chief endemic centres of plague are Burma, Java, China, Asiatic Russia, Madagascar, South, Central and East Africa and India (as shown in the map). The chief endemic areas in India are Bombay, Madras, Hyderabad, Mysore, Bihar, Uttar Pradesh and scattered cases occur in Northern India. Abnormal deaths amongst rats should give a warning of the approaching danger to man, as the fleas leave cold bodies of their dead hosts and attack men. The diagnosis of first human case would give evidence about the impending danger.

For the control of bubonic plague, early diagnosis, notification, quarantine, isolation, anti-rat campaign and most important of all destruction of fleas, should be enforced. Protective inoculation reduces mortality and the incidence rate. A single dose of 3 Ml of Halfkine Institute vaccine produces considerable immunity. For the control of pneumonic plague where the infection is man to man, early detection, prompt and strict isolation are of utmost importance and should be enforced with the public co-operation.

CONTROL OF FLEAS (PREVENTION)

Upto the forties of this century, little was done as a preventive measure against the fleas. All that was done as plague control was to inoculate the population and shift them to safer areas at great inconvenience. The following measures aim at

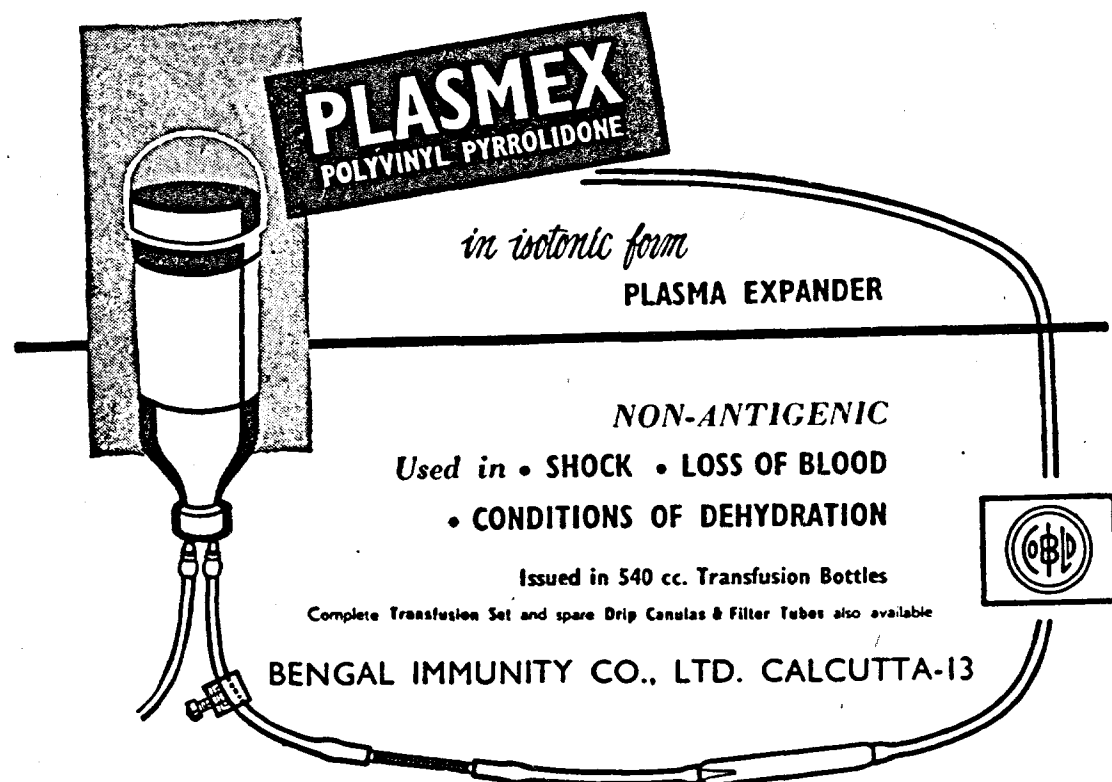
personal protection of the masses and prevention of fleas:—

1. The floors of the houses should be made pucca, tied, wooden or of the concrete. Daily sweeping and brushing away of the dust prevents the breeding of fleas. During plague epidemic, the floors should be washed with a solution of naphthalene or benzene.
2. Sandy and kucha floors should be saturated with water, beaten down hard and plastered facilitating thereby daily brushing.
3. The buildings should be well ventilated and lighted. Coaltaring of junction of floor and walls upto 1' above and below is useful.
4. No cracks and cervices should be allowed to exist in the floor.
5. Domestic pets (cats & dogs) should be washed with soap and water. Carbolic soap or a strong leather of 'Vermijelli' rides off the

insects. Cats that object to water may be powdered with naphthalene 0.5% rotenone or dusted with pyrethrum powder. Cats should not be dusted with DDT powder.

10% DDT dust can be dusted on the dogs. Sometimes a little DDT dust placed along the middle of the back of the dog will rid it of fleas. Dog kennels should be treated with DDT residual spray.

6. In infested areas, hand and lower portion of legs should be protected by the use of gloves, putties.
7. The bedding should be regularly exposed to air and sunlight. 10% DDT powder should be sprinkled on floors, bedding and bedclothes.
8. The irritation of flea bites may be allayed by the application of 1 in 20 carbolic. The best repellents for fleas are dimethyl phthalate, Rutgers 612 and Indalone.



9. The last and the most important are the measures to reduce rat and rodent population.

CONTROL OF FLEAS (DESTRUCTION)

The old method of the use of a weak emulsion of kerosine spraying as a pulicide against rat fleas, has been completely replaced by DDT. DDT is effective against larvæ as well as against adult fleas.

1. DDT as a residual spray applied to floors, furniture and lower portion of walls (upto 3 feet) is very effective. Particular attention should be paid to corners and rat runs. The dosage applied is 100 mg. per sq. ft.
2. DDT (10%) in talc or pyrophyllite has been found very useful when dusted on floors, entrance of rat burrows. A single application of 10% DDT may be effective for a year but to keep flea index below 1, three or four applications of cyanogassing will be additionally essential.
3. 5% DDT in edible dust scattered around rat holes and runways is useful. X. cheopis is susceptible to DDT, but although it is most susceptible at high temperatures (30—32°C). Netservingevich found no serious diminution of action at low temperatures (4—6°C), so DDT can be used in refrigerators, cellars etc. in winter.
4. DDT when added to food baits containing a rat poison, kills both mice and fleas (FEDOROV).
5. 5% DDT in refined white flour sprinkled in the spaces below floors, behind walls and above ceilings reduced the flea index from 4.5 to 0.83 in Peru.
6. During a plague epidemic, a mixture of 2 ounces of DDT dissolved in 4 ounces of warm cresol, added to a quart of water, when sprayed on floors, walls and furniture, acts as a disinfectant and a pulicide.
7. The old methods of chemical destruction by the use of pyrethrum, rotenone dusts,

sprays of Lethane thiocyanate have been replaced.

Pyrethrum in powder formulation, combined with a booster as piperonyl butoxide has the best knock down effect in air-conditioned rooms and the residual effect, which may last 76 days or more, is longest when tested in glass jars not exposed to sunlight.

8. Gammexane dust D .025 is also used. On mud blocks gamma BHC (Gammexane) is 36 times as toxic as DDT, the difference being due to obsorption rate differences.
9. Resistance development to DDT is the greatest fear. Resistance has developed in Pulex irritans in Greece, Peru, Syria and Jordan. It has also been noticed in Pulex irritans, Ceratophyllus londinensis, polygenispp and X. cheopis in Ecuador. Ctenocephalides felis and C. canis have also been reported resistant in USA, Colombia, British Guiana and French Guiana. So reliance on DDT as an antiflea measure is not likely to last long.
10. The use of hydrocyanic acid gas fumes is always undertaken by trained staff. By this method, not only the rats and rat fleas are killed, but also some snakes including cobras. The dust cyanogas 'A' dust or cymag is pumped into the rat holes by a special equipment known as cyanogas foot pump. The holes are sealed with mud plaster after fumigation. The method is very useful and efficacious but danger to children, pets in dwelling houses cannot be overruled. This method should only be entrusted in trained hands who should observe proper precautions.
11. For effective destruction and control of fleas, it is essential that the rat and rodents population should be kept to the minimum. The rats, rodents and their control is a vast subject in itself and does not fall within the purview of the present article. It will therefore be published as a separate article in the next issue of this journal.

SUMMARY

The life-history, bionomics and the geographical distribution of the fleas, has been reviewed. The role of the flea as a transmitter of disease, the diseases spread with a brief description of each has been described. The control measures against fleas have been narrated in details, so as to facilitate their adoption by every person concerned.

CONCLUSION

Plague and flea borne diseases have ceased to exist in many countries. Although we imported plague from nearby countries, yet we have not been able to rid ourselves off it for centuries. Lack of health education on the part of masses always hampers any nation-building activity with direct effect on national health, but this should not deter us to enforce effective measures such as against fleas. The knowledge at command of the scientists, the chemicals and equipment available in the present times, is strong enough to eradicate fleas and their diseases, the only necessity is an adequately paid, self-content trained health worker who should have the zeal and energy to arouse public enthusiasm and thereby put an end to the scourge of plague and its allies.

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WORLD HEALTH DAY SUPPLEMENT

Facts and Figures about Mental Health

(April 7th is the World Health Day and is devoted every year to publicizing some particular aspect of public health. This year's theme is "Mental Illness and Mental Health in the World of Today", and an effort has been made by the World Health Organisation to focus public attention on the importance of mental health in the life of the community.

In the pages of this supplement, articles from well-known experts in their various fields specially written for the occasion have been published for the benefit of all.—EDITOR)

HOW MANY ARE MENTALLY ILL

THE total amount of mental disorder in the world cannot at present be estimated because of the lack of reliable statistics. The following facts may, however, be assumed to give a fairly good indication of the situation in countries at different stages of economic and social development:

INSANITY RATES

As we see the field of mental illness today in the more culturally and economically developed countries, we recognize that there is an insanity rate of about 1 per cent amongst the people of these countries, and a rate of neurosis—defined at the level of partially disabling illness—of approximately 10 per cent.¹

India: "About 2 per thousand of our population is likely to be afflicted with a mental disorder which sooner or later requires hospitalization. We have also to take into account the mental defectives who average at least 8 to 10 per thousand of our population, and epileptics who perhaps number 0.5 per cent of the population. Further we must include in this category various types of physical illnesses like high blood pressure, skin disorders of various types, cardio-vascular conditions and others in which chronic emotional stresses do contribute a major share. Added to this formidable list we have problems of social pathology. In our country, about 1,750,000 crimes are committed every year; between 15,000 and 17,000 people commit suicide in a year; and, at the lowest estimate, about 15 to 20 per cent. of our teenagers are juvenile delinquents."²

United States of America: It is estimated that there are about 9 million people in the United States of America suffering from mental illness (1.5 million) and other personality disturbances (7.5 million)—all in all, about one in every 16 people. In addition, there are about 1.5 million mentally deficient people—conservatively about 1 per cent. of the population.

One out of every 12 children born in the United States of America each year will sometime during his life suffer a mental illness severe enough to require hospitalization. The number who will develop less severe mental illness is much greater.

The patients in mental hospitals make up on any day almost half of all the patients in all the hospitals in the United States of America. Taken together, the patients in mental hospitals and in institutions for the mentally deficient and epileptic make up about 55 per cent. of all the patients in all hospitals.

In addition to the people who go to mental hospitals, clinics or private psychiatrists for treatment of mental illness or other personality disturbances, it is estimated that about 30 per cent. of all the patients who go to general hospitals, and about 50 per cent. of all the patients who go to general practitioners are suffering from mental illness and other personality disturbances or physical illnesses associated with mental illness.³

Among French children: It is estimated that in France 4.3 per cent. of all children between 4 and 17 years old have some degree of mental deficiency and need special schooling and attention; but the proportion of children or adolescents who will need

W.H.O. !

some psychological care and guidance at one time during their school or post-school years is at least 5 to 10 per cent.*

In the armed forces: Other evidence of the extent of mental illness in the United States of America comes from the armed forces. During World War II, about 900,000 men between the ages of 18 and 37, or about 5 per cent. of the 18 million examined, were rejected for military service because of mental disorder.

THE "SOCIAL ILLNESSES"

Additional evidence from the United States of America is found in the statistics on the so-called "social illnesses". It is generally accepted that mental illness or other personality disturbances are usually significant factors in criminal behaviour, delinquency, suicide, alcoholism, narcotic addiction, and very often in cases of divorce.

About 1.75 million serious crimes are committed a year.

About 50,000 people are addicted to narcotics.

There are about 3.8 million problem drinkers in the United States of America, 950,000 of whom are people suffering from severe chronic alcoholism.

About 17,000 people commit suicide each year.

For every four marriages a year, there is one divorce.

About 265,000 children between the ages of 7 and 17 are brought to juvenile courts each year—1.2 per cent. of all children in that age group.*

THE COST OF MENTAL DISEASE

In terms of money, the cost of mental disease is fantastic. Maintenance and treatment in mental hospitals in the United States of America require about \$ 750,000,000 a year. The strain on the individual tax-payer is illustrated by the fact that 28 per cent of every tax dollar in the operating budget of New York State goes for the care of the mentally ill.

If the cost of veterans' compensation is included, the total amounts to about \$ 3,000,000 a day for the country as a whole. The loss to society is completely immeasurable.*

THE SIZE OF OUR HEADACHE

The size of modern man's headache can be estimated from the fact that in 1956 the production of aspirin in the United States of America alone amounted to 14,000,000 pounds. This was more than enough for every man and woman in the United States of America over 15 to have a tablet every single day of the year and two on Sunday.

In 1953, the production of barbiturates in the United States of America amounted to some 600,000 pounds. Most of this was used for general sedation or sleeping pills.*

THE ROOTS OF MENTAL HEALTH

Among the most significant developments in psychiatry during the past quarter of a century has been the steady growth of evidence that the quality of the parental care which a child receives in his earliest years is of vital importance for his future mental health.

The infant and young child should experience a warm, intimate and continuous relationship with his mother (or permanent mother-substitute) in which both find satisfaction and enjoyment. It is this relationship with the mother, varied in countless ways by relations with the father and siblings, that child psychiatrists and many others believe underlies the development of character and mental health.

It follows that broken homes are likely to produce behaviour disorders in children, and this has been confirmed by several studies.

BROKEN HOMES AND TWISTED LIVES

In the United Kingdom, for example, of 418 delinquent children no less than 45 per cent. came from broken homes. Of the remainder nearly one half (about 25 per cent. of the whole) came from homes where, although the parents were living together,

conditions were very bad, including cruelty, immorality, mental instability, neglect, harsh treatment and rejection. Only 30 per cent. came from homes which were complete and reasonably happy.

In Paris, 839 children suffering from behaviour disorders were compared with nearly 70,000 "normal" children. Of the problem children 66 per cent. came from broken homes while only 12 per cent. of the "normal" children did so.*

LONELY AND UNHAPPY OLD PEOPLE

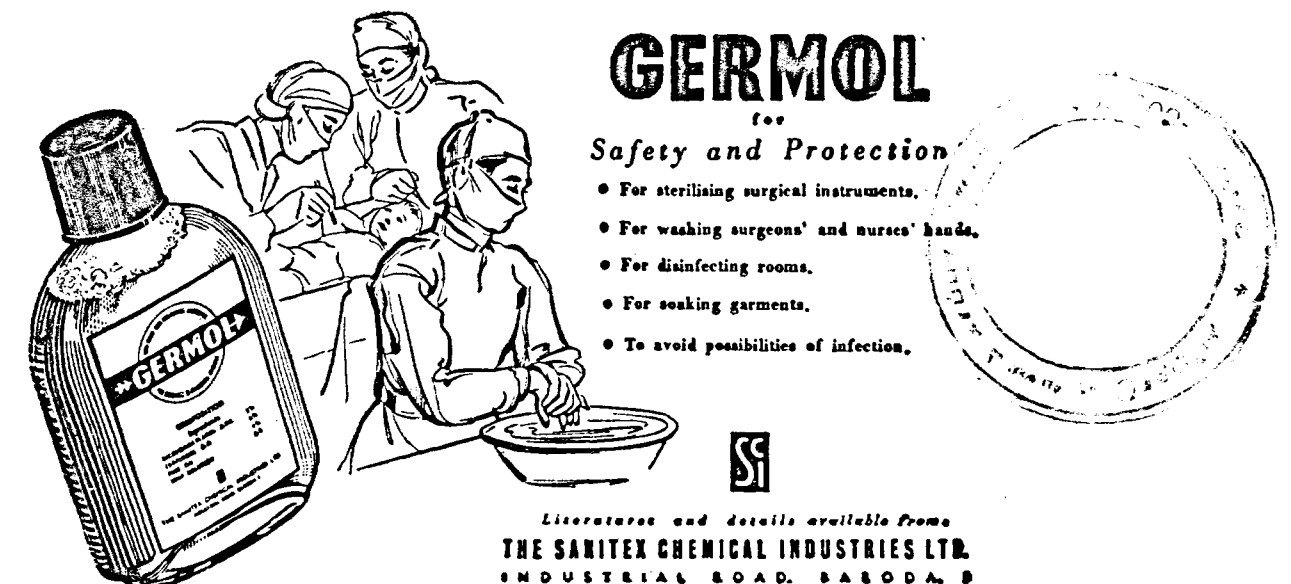
The rise in the admission rate of old people to mental hospitals in many countries is much steeper than could be expected from the increase in the number of old people. In the United States of America, for example, the number of persons over 65 years of age increased about four times between 1904 and 1950. The number of first admissions to mental hospitals of patients in the same age group, however, showed a ninefold increase.

Many surveys have referred to the frequency among

the aged of loneliness, apathy, dejection and melancholy, often associated with bereavement, isolation, and growing physical infirmity. One study found that states of depression and anxiety are present in 50 per cent. of the aged surveyed, and many of the cases of grave mental illness may be drawn from this large pool of lonely and unhappy people. Yet hardly anywhere have they, so far, received any specific attention as psychiatric cases from the health and welfare services concerned with the aged in the community.*

SUICIDE AND MENTAL HEALTH

People who commit suicide suffer from mental or physical illness or a combination of the two. The highest death rates from suicide in both sexes are found in Japan, Denmark, Austria and Switzerland. The lowest rates are reported in Ireland, Northern Ireland, Chile, Scotland and Spain. Almost everywhere in the world men are much more prone to suicide than women. The ratio is in general 3 to 1, but it varies from more than 4 to 1 in Norway to less than 2 to 1 in Japan.



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SURGICAL & MEDICAL NEWS

Highest rates for male suicide are recorded in Switzerland, Denmark, Austria and Finland. For women, they are to be found in Japan, Denmark and Austria.¹⁰

MENTALLY ABNORMAL CRIMINALS

Crime will yield only to an attack on many fronts including an attack on poor mental health in the community. Various studies of criminal populations have shown that a third to three quarters, depending on the seriousness of the offence, suffer from some degree of mental abnormality.¹¹

THE ALCOHOLIC IS MENTALLY SICK

The cause of alcoholism lies not in the whisky bottle but in the psyche of those unfortunates who swallow its contents too freely. The alcoholic is sick mentally and emotionally. He is an insecure, emotionally immature individual who seeks in alcohol a crutch to support him in his journey through life. Often he is more sensitive than his fellow men and is thus more prone to the injury life inflicts.¹²

THIS IS REAL MENTAL HEALTH

The mentally healthy person can deal constructively with reality even at its worst.... gets satisfaction from struggle, particularly as he turns adversity into achievement.... finds greater satisfaction in giving than in receiving.... is relatively free from tensions and anxieties.... relates himself consistently to others with mutual satisfaction and helpfulness.... can accept present frustration for future gain.... learns to profit from experience.... can direct hostile feelings into creative and constructive outlets.... Finally, the mentally healthy person has a capacity to love, and this is the highest and most essential quality of all.¹³

ATOMIC ENERGY GENERATES IRRATIONAL FEARS AND HOPES

In the minds of people everywhere, atomic energy remains a threatening and mysterious force, interpreted very often in magical rather than rational terms, and fraught with irrational fears and irrational hopes, the

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fears being expressed far more often than the hopes. The anxiety-producing character of atomic energy may be ascribed to the peculiar nature of radiations—unseen, unheard, unfelt and, as far as the individual is concerned, uncontrollable. The most terrifying aspect is perhaps that of a tremendous power that may get out of control.

Evidence about people's emotional reactions to atomic matters is found in their day-to-day conversations. Disagreeable weather, the failure of the harvest and other natural phenomena are frequently blamed on atom bomb tests. Fears of the fall-out, of the disposal of atomic waste, of the pollution of water, milk and food supplies, or of harmful genetic effects are direct expressions of anxiety. With the advent of the atomic age humanity is thus facing added mental health problems.¹⁴

YOUR ATTITUDE TO MENTAL DISEASE

What is your attitude toward a mental patient, or a former mental patient? Do you know that his recovery and return to normal life depends largely on what people think and feel about him? Open-door hospitals, out-patient care, domiciliary services for mental patients, which are the methods of social psychiatry today, can be successful only if community attitudes toward mental disorders do not present an obstacle to mental health work.

Fear and a sense of estrangement of the mentally disordered are often found in countries where there are vast mental hospitals, originally erected for the incarceration, rather than the treatment and rehabilitation of patients. In countries just starting to organize mental health care, these attitudes do not appear as common.¹⁵

ARE YOU MENTALLY HEALTHY?

To aid you in taking your own mental health pulse, try this list of questions drawn up by Dr. William C. Menninger, President of the Menninger Foundation, Topeka, Kansas, United States of America:

Are you *always* worrying?

Are you *unable* to concentrate because of unrecognized reasons?

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Are you *continually* unhappy without justified cause?

Do you lose your temper *easily* and *often*?

Are you troubled by *regular* isomnia?

Do you have wide fluctuations in your moods, from depression to elation, back to depression, which *incapacitate* you?

Do you *continually* dislike to be with people?

Are you *upset* if the routine of your life is disturbed?

Do your children *consistently* "get on your nerves"?

Are you "browned off" and *constantly* bitter?

Are you afraid *without real cause*?

Are you *always* right and the other person *always* wrong?

Do you have *numerous* aches and pains for which no doctor can find a physical cause?

The conditions charted in these questions are the major warning signals of poor mental health in one degree or another. According to Dr. Menninger, help is necessary if your answer to any of these questions is definitely "yes".

MENTAL HEALTH AND WORLD PEACE

"The psychiatrist knows that individuals who have emotional disabilities of their own, guilt, fears, inferiorities, are certain to project their hates on others, on groups, communities or nations, and thus jeopardize seriously the external relations of those who are associated with them, in the view of their "enemy". They are the people who must believe the worst of all foreigners and who then react emotionally and irrationally to these beliefs..."¹⁰

THE FAMILY DOCTOR'S DAILY ROUNDS

Medical students should be trained for their role as

W.H.O.6

"pillars of mental health". According to a study carried out in France, at least 50 per cent of the medical work of the general practitioner is directly concerned with mental health, yet the general practitioner is less conscious of his key role in the prevention, diagnosis and treatment of mental ills than with respect to diseases like tuberculosis or venereal disease. There are innumerable opportunities for mental health work in the physician's daily round, in work with out-patients, in school medical services, in prenatal and premarital consultations, in industrial hygiene, and whenever the doctor is in contact with social workers, nurses, employers, etc."¹⁷

"...it is obvious that the physician who refuses to engage in mental hygiene activities ceases to practise "general" medicine in the true sense of that term."¹⁸

THE JOB OF ALL PROFESSIONAL MEN

The promotion of mental health certainly is, or should be, the job of all professional men who play a prominent role in public life and who serve people in one way or another, but it must be said that public health workers who have close contact with people are in a special strategic situation.

However, the organizers, the administrators, and the bulk of the public health workers in all ranks and in all branches often completely neglect the mental health aspect. This most deplorable fact is, without doubt, one of the greatest dangers of our time."¹⁹

MODERN MAN'S MENTAL HEALTH

"Psychotropic agents!" The 'tranquillizer' in one pocket; the 'per' pill in the other. Drugs to dispel nightmares; drugs to invoke dreams; drugs to escape from reality into fantasy or from fantasy into reality. Even Alice-in-Wonderland drugs by means of which adults can shrink back into childhood."

That is the caricature of one type of modern man, harassed by head-lines; tortured by the ticker-tape; tormented by the telephone; as "manic-depressive" as his sales-charts; wakeful when he should be asleep and drowsy when he should be awake; worrying about his blood pressure and nursing his duodenal ulcer; driving himself like a highspeed car through dense

traffic, braking or accelerating in turn, running away from himself and taking himself with him. He has 2,500 million neighbours in the wider world; he is alone in that private world—himself.

There are still other types—those whose tensions become intolerable through being chained to piece-work machines, white-collar workers dogged by economic worries and "wife trouble", hungry and miserable peasants driven to take hashish for solace."²⁰

DON'T KEEP UP WITH THE JONESES

In America social climbing is a national exercise, and many athletes in this kind of competition for respect pay heavily in mental health. In a society like ours, in which money income is distributed in shares of graduated size, the demand for respect takes many forms; striving to obtain all the respect that a new wealth position makes possible; seeking to save enough respect to compensate for economic limitation; trying to discover means of scoring prestige points in order to get ahead of competitors having about the same

income... Those who keep up with the Joneses must often go all the way to the mental hospital."²¹

FROM "LUNACY" TO "MENTAL ILLNESS"

Among primitive peoples, mental disease has generally been looked upon either as a punishment by a good spirit, or, more often, as the result of malevolent action by the devil, or even as demoniacal possession. This conception, which still survives among certain African and East Indian peoples, was very prevalent throughout the middle ages and even later.

During the middle ages a few monasteries harboured lunatics, but it appears that the first asylums for their care were built by the Moslems, whose ideas on the treatment of mental patients were derived from the Eastern physicians. In Europe, the Bethlem hospital in London was first used as an asylum in 1403; the second was opened in 1408 at Valencia in Spain. During the following century further asylums were established in Europe. The insane were received into the first general hospital established in North America

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in Pennsylvania in 1756 (but were first detained in the cellars!). The first American hospital for the insane was opened in Virginia in 1773.

ASYLUMS LIKE PRISONS

The purpose of these early asylums was not the care and treatment of the mentally ill, but the incarceration and, if possible, subjugation of the violently insane. Most of these asylums resembled prisons, and the inmates were regarded as criminals. Very gradually a more humane attitude towards the mentally affected began to develop. In 1792 more than 50 insane inmates of the Bicetre hospital in Paris were liberated from their chains, which had been worn for over 30 years. Even pessimists had to agree that these patients became less rather than more violent. In Italy, Viacento Chiarugi struck off chains from the insane at about the same time.

Reform in England was initiated by the Quakers who founded the York Retreat in 1813, purposely avoiding the name "asylum" or "madhouse". The use of chains was abolished, and therapy was introduced, consisting in work and exercise and the cultivation of a moral atmosphere. The fame of the English Quaker reforms spread to America, and in 1817 the Friends Asylum was opened in Pennsylvania, where the mentally ill were treated as human beings instead of beasts.²²

TODAY THE DOORS ARE BEING OPENED

A revolution is at present taking place in the treatment of mental disease and the design of mental hospitals. Hospital bars are being removed, doors opened, and patients encouraged to come voluntarily for treatment, as they would to any other hospital. Hand in hand with recent advances in treatment, hospital staffs are adopting a much more positive attitude to mental disease. Patients who would have been regarded as incurable a few years ago are being discharged, and the average stay of patients recovering within one year is now only about two months. Other patients are receiving domiciliary treatment, and old people are being cared for in the geriatric departments of general hospitals.²³

MUCH REMAINS STILL TO BE DONE

Here is a description of a mental hospital, similar

to many that still exist in Asia. It was built 80 years ago and originally belonged to the jail. New buildings were added 20 years ago. There are about 1,125 male patients and 400 females. There are 7 doctors on the staff who have no psychiatric training. No one in the whole hospital has any idea of modern socio-therapeutic mental hospital treatment nor of psychiatric nursing. The institution, which is terribly overcrowded, does not deserve to be called a mental hospital—it is a lunatic asylum of the worst possible type. It is far from clean, there is practically no furniture and very few beds. The whole aspect is medieval and very prison-like, in fact the majority of the prisons in the region are much better. There are many cells, and, even in the wards for non-criminal patients, bars and bolts of the most remarkable dimensions everywhere. Apart from this, what is wrong is the lack of knowledge and training of everybody on the staff.²⁴

BEAUTIFUL BUT USELESS

There is no value whatsoever in constructing new and beautiful mental hospital buildings if there is not sufficient staff available—and the training of staff takes time. It is the staff and not the building that makes a modern mental hospital. No staff from old mental hospitals should be brought into new hospitals when these are ready. The first thing to start is the training of medical and nursing staff. This training cannot be done properly in mental hospitals which are no more than old-fashioned asylums where no one could ever get any idea of modern treatment and nursing of mental patients.²⁵

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"In general practice at least

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Lancet (1958) 1,525



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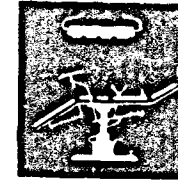
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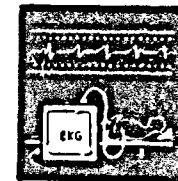


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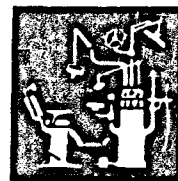
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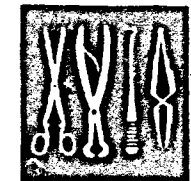
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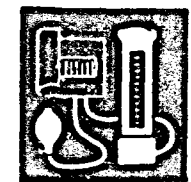
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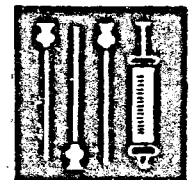
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HEALTH — THE PEOPLE LEAD THE WAY

"Bigger and better share" of services demanded throughout S. E. Asia, says W.H.O. survey

Modern public health services in South East Asia are no longer something that the public have to be induced to accept: today they insist upon them — and upon a bigger and better share of them. More important still is the fact that this demand comes especially from the rural areas, long regarded as "resistant" to scientific medicine.

This view is a major point in the annual survey of the World Health Organisation's work in the South East Asia Region, which was considered by the WHO Regional Committee when its eleventh session opened in the Regional Headquarters, Patiala House, New Delhi recently. The survey forms the introduction to the Tenth Annual Report of the Regional Director, Dr. C. Mani, which he presented to the Governments of S. E. Asia.*

There has, he states, been a slight setback during the past year in the steady expansion of public health services which has been a feature of the past ten years in S. E. Asia. This setback has been part of a general (though slight) reduction in the expansion of socio-economic development in at least five countries in the Region. However, he writes "... perhaps it is just as well to have a slight reduction in the tempo of these activities, as they were beginning to develop a little too rapidly and where not having sufficient time to take deep enough roots... Such a temporary halt is, therefore, useful if it is exploited for consolidation of existing programmes and for better planning of future activities.

"That this halt is temporary I have no doubt", declares Dr. Mani. "The farward march to material progress is too well established to be shaken by anything short of a major world tragedy.

"People all over South East Asia now realize the benefits of modern public health services well enough to insist on having for themselves a bigger share of them. This is certainly true of the population of rural areas, which forms the bulk of the population of the

Region and has had, hitherto, the somewhat undeserved reputation of being resistant to scientific medicine.

"This so-called 'resistance' has, in fact, been our own inability to adjust modern medicine to the needs of the villagers of S. E. Asia. There are, admittedly, still many maladjustments to rectify, but the road is now clear and scientific progress ensured."

During the period under review (August 1957—July 1958) WHO has given assistance to 136 health projects in the Region and had, by the end of the period, 116 professional staff members working in the field. In the current year the total financial responsibility for programmes in the Region in which the Organisation is participating amounts to more than seven million dollars, inclusive of extra-budgetary funds.

BARRIERS TO PROGRESS

The survey does not minimise the difficulties which are still being encountered along the road of health progress in S. E. Asia, and it lists "the usual headaches of public health programmes" as follows:

* Investment in brick and mortar still takes precedence over investment in human beings. It is a major misfortune of public health services in this Region that buildings for hospitals, laboratories, health centres and institutions eat up such large funds that little is left for hiring adequate staff to do the job for which these buildings are intended.

"Health departments are still harassed by Ministries of Finance"; shortages of trained and even semi-trained personnel remain as acute as ever; training programmes are still neither well-planned nor well executed; counterparts for WHO field staff "remain as elusive as before" and "red tape" is still a formidable barrier. Junior workers are still unwilling to accept responsibility and

* The Member States of WHO's S. E. Asia Region are: Afghanistan, Burma, Ceylon, India, Indonesia, Nepal, Thailand, France, Portugal and the United Kingdom.

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senior workers to share it.

* Further, says Dr. Mani, a number of old projects, to which WHO aid has terminated, continue to show signs of deterioration "not so much from any lack of ability or lack of desire for progress, but because of the gradual disappearance of local facilities and resources which had been made available during the period of WHO assistance." As illustration of this the survey quotes from a recent report by a WHO expert on laboratories in which it is stated: "In practically no instance has the original standard been maintained or improved, largely because of lack of staff and materials (to be provided by governments). Break-down and delay in the repair of equipment are a common feature of a number of laboratories. I wish to put on record my disappointment with the majority of laboratories visited to date."

The survey also calls attention to the state of environmental sanitation throughout the Region, which, it says, remains highly unsatisfactory "partly from lack of funds and partly from lack of driving force to improve existing conditions".

However, despite the above setbacks—inseparable from such a rapid progress of growth—a very considerable advance has been made in S. E. Asia's public health programmes and, when looked at in retrospect, the developments over the past ten years have been remarkable.

PROGRAMME HIGHLIGHTS

WHO's main fields of assistance to governments of the Region continue to be those of communicable disease, the portion of rural health services and the training of all categories of health personnel. Here are some of the highlights of this work during the past year:

COMMUNICABLE DISEASES

Among the programmes for the control of communicable diseases the most dramatic is that for the eradication of *malaria*. The change of strategy from the control of this disease to complete eradication has been adopted by all countries in the Region. *Tuberculosis*: No major advance, since the largest single programme, which is in India, still awaits approval by the Government and the chemotherapy research unit in Madras

has yet to put forward its report. *Leprosy*: Remarkable progress in the case of Thailand; good progress elsewhere. *Yaws* control has not yet made the expected progress towards eradication. *Trachoma*: good results in the two pilot projects in India and Indonesia. Proposed expansion of the programme, especially in India, has not yet obtained government approval. *Filariasis*: there is still no adequate answer to this problem, particularly in rural areas.

RURAL HEALTH

Recommendations of the general conference on this subject (held in New Delhi in October last) "will undoubtedly form an important milestone in the development of rural health services in the Region". Individual rural health projects have made considerable progress in India through the community development programme: ten subsidiary State plans of operations have been drawn up during the year and basic criteria completed for rural health training areas and demonstration districts.

In *Indonesia* and *Thailand* schemes for the expansion of rural health services have been under consideration. The rural health project in *Chaurassia, Afganistan* is now well staffed and equipped.

MATERNAL AND CHILD HEALTH

Emphasis continued to be placed on improving standards of child care, both by providing medical and nursing paediatric teachers and by holding a paediatric conference. Integration of MCH activities into the general public health services continues. Training activities continue to be a main feature of WHO assistance and numerous projects for assistance to medical schools and nurses' training institutions have been successfully carried out. The school for sanitarians in Kabul, *Afganistan*, and the school for health assistants in Kathmandu, *Nepal*, have both made very good progress and are now a permanent feature of the national health services.

STATISTICS

Efforts continue for the improvement of the collection of statistic on mortality and morbidity, the training of expert medical workers and the development of locally suitable statistical techniques. Preliminary work has been done to start assistance to hospitals in the improvement of their records and statistics.

NUTRITION

A number of studies have been carried out in *Ceylon, Indonesia* and *Burma*.

MENTAL HEALTH

Efforts have been concentrated on the training of essential workers, particularly through assistance to the All-India Institute of Mental Health, Bangalore.

RADIATION PROTECTION

Training in this subject has been arranged so that each country in the Region may have at least one or two persons sufficiently trained in protection

RADIO WAVES HELP EXAMINE BRAIN VESSELS

Soviet scientists have elaborated a new method for examining brain vessels with the aid of radio waves.

Electrodes from a generator are attached to both sides of a patient's head. In passing through the brain the radio waves meet with a certain resistance, the value of which is recorded graphically on a chart. The resulting curve offers a clear picture of the condi-

measures (hospital physics and health physics).

The survey pays tribute to the close and cordial working relationship with both bilateral and international organizations, and especially with the Technical assistance Representatives, UNICEF, the International Co-operation Administration of the United States, the Colombo Plan and the Rockefeller and Ford Foundations. As in past years, a very substantial part of WHO's work in the Region has been carried out in collaboration with UNICEF, to which thanks are recorded for its "strong support" of the WHO programmes of malaria eradication, the development of MCH and rural health services and a variety of training programmes.

tion of not only the larger, but small brain vessels as well. It is possible in this way to judge blood circulation in the brain.

In the past such medical data were extremely relative. They were obtained by examining the blood pressure in the temporal artery or the condition of the eye ground.

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A STATEMENT

By DR. M. G. CANDAU

Director-General, World Health Organization

IF the amount of bodily disease in the world reached the proportions of many of the existing social ills with mental and emotional causes (delinquency, alcoholism, drug addiction, suicide, etc.), not to mention classical mental disease, an epidemic state would be declared and strong measures taken to combat it.

This striking statement was made at a WHO Seminar held a few years ago, and it is equally true today. In countries with well-developed health services, about half the total number of hospital beds are occupied by psychiatric cases. Careful studies of the out-patients at large general hospitals have shown that one-third or more attend for complaints that can be traced to psychological causes. At some time in our lives indeed, most of us suffer from minor troubles that mar our happiness, disorganize our social and family relationships or affect our capacity for work. Too often such neurotic disturbances lead to over-indulgence in alcohol or to drug-taking which may in turn affect the nervous system and predispose to still more serious mental disease.

This increase in mental ill-health, involving whole populations, has fortunately been accompanied by rapid progress in the treatment and prevention of mental disease, and also by a better understanding of the psychological strains and stresses that gravely affect everyday behaviour and are not without influence on the well-being of mankind.

After centuries during which mentally sick people were regarded simply as "lunatics", creatures irrevocably cut off from their fellows who had to be locked up in institutions or even chained in prisons, society is slowly losing its horror of mental disease and is coming to regard it as curable like any other sickness. Psychiatry is now accepted by the public on a par with other major branches of medicine, and gone are the days when the mental asylum's main purpose was to "protect society" by keeping patients indiscriminately shut away where they could do no harm.

If treatment is begun early enough, between 70% and 80% of mental patients can nowadays be restored to a useful place in society. In some countries the average hospitalization time for patients who go away cured is less than six months. Large numbers of

mental hospitals have been converted into "open door" hospitals, and very often it is possible for patients to continue living at home during treatment. Also there are more and more voluntary patients in mental hospitals.

Parallel with these advances, new knowledge has been gained about those physical ailments which are to some extent caused by psychological factors, and also about certain kinds of unsocial behaviour that are now recognized as manifestations of mental ill-health.

The old, hopeless belief that mental disease is wholly predetermined by heredity and therefore inescapable has given way before the evidence that environment may also play an important part, particularly in early childhood. This permits a more optimistic view, and underlines the truth that closely-knit family ties and a stable social structure are the best safeguards against the later development of mental health troubles.

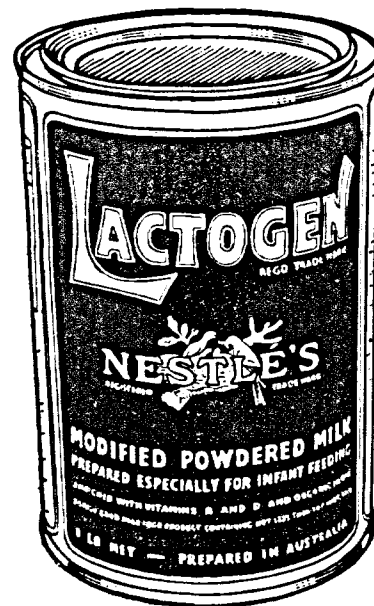
It is often claimed that psychiatric disorders are less prevalent in the economically less developed countries. More statistical evidence is needed to support this belief but it may safely be said that mental health hazards become much greater among people undergoing rapid social and economic changes, and also among the large floating populations that result from easier transport and communications.

This has already occurred in the economically developed countries and will certainly become more and more pronounced in areas where development is proceeding at a spectacularly rapid pace.

I believe it to be important that people everywhere should open their eyes to the facts of the present mental health situation and its underlying causes. This is one of the objectives of the World Mental Health Year in 1960, sponsored by the World Federation of Mental Health and its member-societies throughout the World.

It is also the purpose of World Health Day 1959, which thus offers a suitable starting point in all countries for a continuing crusade aimed at disseminating better knowledge of mental health problems, ensuring better care for the mentally unfit, and providing better chances for children to grow up in robust mental health.

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MENTAL HEALTH HAZARDS IN LATER LIFE

BY DR. GEORGE S. STEVENSON

Dr. George S. Stevenson is at present Consultant to the National Association of Mental Health (New York) after serving for many years as its Medical Director. He is also Psychiatric Consultant to the US Public Health Service and to the Veterans' Administration. He is a former President of the American Psychiatric Association.

Dr. Stevenson has contributed more than 100 articles on various aspects of mental health to scientific journals, and is part author of a book on child guidance clinics. (Editor)

THERE is no time during a person's life when he is certain to be free of hazards to his mental health. Yet these hazards, inevitable though they are, do not affect everyone alike. Most of them exist in hidden, form long before they become evident. The dangers are hidden both in the mind of the person and in the circumstances of life that surround him.

An event such as separating from his home may in one person be a hazard at the age of 20; whereas with another this is not the case, especially if he comes from a family that is used to separating easily.

Whether people can overcome their psychological difficulties or fall before them, depends on the experience they have accumulated, especially during childhood, but also in after years. The broader the experience, the better equipped they are to get safely past the hazards they are bound to meet.

Childhood is the time when we learn what is expected of us as adults and what we can expect of others. We learn more or less well how to deal with life's problems. We learn our responsibilities in the family in relation to older and younger people, toward our work and our communities. We learn what is expected of us as men or women and what to do with our ambitions and talents. We learn that certain things in life are more, and others less, important. We learn also to expect different things from different people, e. g., the rural and the urban, and the native and the foreign.

All these habits of thinking influence the importance we place on hazards, how they affect us and how well or badly we are able to deal with them.

However, one learns not only in childhood, but

all through life. What is learned as a child is modified by adult experience. If experience has been too limited, new situations may be hard to cope with. For example, some people are so regularly successful that they are seriously upset when they meet a setback and have no previous experience to guide them. Others fail so often in what they undertake that they lack the courage to attack even easy problems. Most of us learn from occasional difficulties, mixed with a fair amount of success, to deal with the common problems of life as they come along.

The danger spots

There are events in the lives of most people that are apt to be more or less critical: when the time comes to separate from one's parents and family; when one marries, especially when the partners come from different backgrounds; when a child is born calling for psychological readjustment in the father and this plus bodily upheaval in the mother; when children leave the home; and when death removes a parent or spouse or someone else who is close—such losses not only test a person's ability to depend on himself, but also his ability to keep from being crushed by the guilt of past attitudes toward the loved one.

There are hazards when one takes the responsibilities of a job or goes away to college or the army, or when work life is ended, when illness and disability force a person to give up doing things (work or play) to which he is accustomed and when old age leaves a person or even a couple alone again.

These have always been tests of a person's emotional strength.

Today these dangers are made more serious by changes that are taking place all over the world.

People who used to live their own lives in isolated places now find that easier communication brings problems to their doorsteps, or more rapid transport throws them into the midst of new customs, new foods, clothes and industry to which they must adjust or else live isolated from their fellows.

Farming is intensified and enlarged, bringing in new farm labour—often migrant. Industry is mechanized and automated thereby removing some of the satisfaction of making the product from start to finish. Household tasks are changed inside the home, or else done outside. Even though the effects of these changes are good, they mean constant upsets in ways of daily living and may cause serious mental unrest. Even advances in health demand new habits and attitudes, sometimes resentments, e. g., fluoridation and pasteurization.

Left without answers to problems

Advancing ideas of our obligations to fellow men, laudable in themselves, and not to be reduced, may yet cause emotional disturbance. Discrimination on

account of race, creed or colour and nationality may have become firmly established. To change it is disturbing for both sides.

When change in living conditions that is enough to call for new customs comes gradually over a period of two or three generations, we develop and inherit answers to many of life's problems painlessly. We earn these things from our families, and have to make only small alterations in our ideas and habits. But when such change comes within a single generation, the things we have inherited from our families or learned from even earlier experience are no longer useful and we find ourselves without answers to problems. This makes even small hazards more serious. A state of emotional instability results.

Things to do

These critical spots in life and the pressures of today are not always serious—in fact most people pass through them without great trouble. At the other extreme, however, are those who show the first signs of mental illness at these times. Some show other signs

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of strain, for instance, delinquency or troubles in their married life or difficulty with their work. These are the people who are poorly equipped to meet life's problems, who are poorly endowed or else burdened with physical disability.

In any case the beginning of emotional disturbance at these times is a warning that the margin of mental reserve is low, that the person may not stand an extra burden of anxiety, and that he should do two things:

First, he should protect himself against getting into further situations that will add to his emotional burden; and

Second, he should get help in understanding where his weak and tender spots are mentally, and how to avoid strain.

Some people can help themselves perhaps by talking things over with a sympathetic friend. Everywhere there are special people who are expected to provide help for those who are in trouble. It may be the person who provides healing service to the sick. It may be a religious leader, a public health person, the person who helps those in need of material help, the person who deals with offenders, e. g., police or lawyer. It may be a teacher, a psychologist or a psychiatrist. Both by training and experience these experts tend to acquire great skill and should be depended upon to give counsel when the hazards of life become too great for one to overcome himself.

There are certain things that everyone can do to strengthen himself to meet these hazards. All of us, of course, develop more or less fixed habits—most of which are valuable in our daily lives—but we should try to broaden them. It helps if one can meet new and different people and get new experiences. This will prevent these habits from becoming so fixed that a person cannot adjust to new conditions.

He can estimate his strengths and weaknesses from inspecting his past. If he cannot do this alone he may find an adviser who can help him.

He should plan his work and leisure occupations in keeping with his available time, and should not load himself beyond his capacity or even so close to it that he has no margin to absorb the inevitable shocks of hazardous periods. His leisure time should be protected

to provide pleasure and satisfaction to meet his hidden secondary or avocational interests and abilities.

He should keep physically fit by having medical attention at the first signs of illness, or, even better, regular health examinations.

Old people and migrants

Apart from what any individual can do to protect himself against hazards, he can do something to strengthen and protect everyone in his community.

He can encourage his community to provide education for families so that the children can grow up better prepared to meet changes in living when they occur and parents can get along better at every period of life. He can interest his community in providing schools that will also prepare children for change. He can support the health and medical services that make people better able to deal with hazards. He can try to get better vocational guidance and training and better personnel services for people who work. This includes better provision for retirement and better preparation to use leisure time.

Everywhere in the world more people are living to be older. Special health, welfare, occupational and recreational services and community centres can be provided for those who outlive their close friends and relatives. It is especially important to preserve friendship at that time.

Today more and more people are moving from place to place, some constantly on the move. Special information and services are needed to help these people get along in new and strange surroundings, especially in large and complex cities.

Again and again we have suggested that counselling and advice should be provided by many professions—doctors, nurses, priests, lawyers, teachers, welfare workers, health workers, etc. Preparation to deal with problems of mental health should be included in the professional training of all such workers.

No one person can be expected to give attention to all these ways of improving the community and its experts. Yet, if each one of us managed to achieve even a small amount of success in just one of them, it would be a good beginning and could lead to doing even more.

Mental Health and the Public Authorities

BY DR. A. QUERIDO

Dr. Querido is Director of Public Health in the City of Amsterdam and Professor of Social Medicine at Amsterdam University. He has published much original work concerning insanity and the law, social medicine, and the organization of public health services. (Editor)

THE answer to the question, "Is the state of mental health of the people a public responsibility?" may be given in the best diplomatic manner: both yes and no.

No: because if anything is your own it is your mind and, therefore, each of us bears his own responsibility, which extends also to his relations with other people. Since mental health is mainly a question of human relations, of the attitude of a person to his fellow men, mental health is something very personal and closely connected with each person's mental make-up, his attitudes in life, his beliefs, his ideals, the things he finds valuable, worthwhile and laudable.

But also yes: because mental health is not only and exclusively a matter of relations between persons, it is also a matter of the relation of the individual towards the community he lives in, towards the society of which the community is a part, and towards the social institutions which for a large part guide his life, determine his way of living, working, leisure, the way he earns and spends his money, the way he seeks happiness, stability and security.

And those social institutions—school, church, the industrial apparatus, the public health system, the army, the judicial system, the police, in short, any way in which authority in society is represented and is acting—are a public responsibility.

RESPONSIBILITY FOR PEOPLE'S HEALTH

The general health of the people is now almost universally recognized as a public responsibility. In matters of health there are a number of activities which must be organized and which need the backing of authority as well as the financial resources of the government to be carried out. Water supply, sewage disposal, control of food and drink, control of drugs, protection against epidemics—these are matters that

cannot be left to the initiative and the resources of the individual, or to the activity of private bodies, since they are the concern of society as a whole.

The responsibility of the government towards mental health is more subtle and more difficult to define than in regard to general health. As has been said above, one thing that is important for mental health is to ensure the right relations between the individual and his social institutions.

Now, each social institution has a certain specific function: it wants the member of the community to pay his taxes, to keep within the law, to send his children to school, to make him conform to certain regulations, to protect certain interests, etc. Each institution is a specialist agency carrying out its ordained function and only coming into contact with one limited aspect of the person's individuality.

The streetcar conductor just sells tickets and is not interested whether his passenger is going to a marriage or a funeral. But the individual is one and indivisible, so his way of taking the streetcar—psychologically: the meaning of the streetcar for him—will be certainly different whether he is elated by joy or bowed by grief.

This example is perhaps too simple, but what it tries to express is that from a mental health point of view it is imperative that social institutions in their way of work express the fact that they are dealing with people, with persons and not with cyphers.

THE INDIVIDUAL APPROACH

This may seem a big order but, although it certainly is not realized in any measure of completeness, there are already many examples in which the individual approach of the public body towards the members of society has become a fact.

Public assistance, the care for the destitute, has lost the cold touch of impersonal charity and is becoming casework. The Goddess of Justice has discarded her eye-bandage and scrutinizes the offenders brought before her most carefully, which results in a differentiation of penal institutes and the penal system in general. The school is changing from a vast machine which uniformly processes the children, into a differentiated system adapted to different types of development, and different levels of intelligence.

Public health on the one hand requires tremendous organization to safeguard the general health and to make its provisions available to all. On the other hand its organization must leave scope for individual needs and stresses.

One interesting example of this development can be found in the hospital. In recent years it has been more and more clearly realized that the modern hospital is indeed a very fine machine which represents the highest technical skill in solving biochemical and pathological problems but in which the recognition of the patient as a person with all his individual peculiarities is sadly lacking. The tendency to return from "the case" to "the man" is nowadays becoming stronger and stronger, and is expressed not only in a new medical approach which integrates social and psychological data with the clinical findings, but also in changes in hospital rules which, only a short time ago, seemed as immutable as the laws of the Medes and Persians.

AVOIDING FRUSTRATION

It may well be asked whether a similar shifting of rules and procedures might not be possible in the activities of other public bodies and institutions which contact or are contacted by each individual member of society, and more often than not at a critical moment in his life.

From a mental health point of view it is quite certain that much discontent and frustration could be avoided if, in general, public bodies realized not only their administrative responsibility towards the abstract government which is their master, but also their human responsibility towards the members of society whom they serve individually.

It may perhaps be a little surprising that I judge the public responsibility towards mental health to be most important in the functioning of public bodies and institutions. Usually the public responsibility is laid in a wholly different field.

When a pipe has burst and the basement is flooded, two things are necessary: the floor must be mopped up and the water-main must be closed. The mopping-up process is usually delegated to the physician who tries to remedy the individual results of the general disaster; the closing of the main is the public responsibility which tries to counteract the disaster at its source. This example may be taken to illustrate the responsibility of curative as against preventive health measures.

IMPROVING THE "MENTAL CLIMATE"

Since the causes of the major psychoses (severe mental illness) are virtually unknown, it is at present impossible to indicate any preventive health measures which might stop these occurrences at the source.

On the other hand, the incidence of neurotic disturbances is many times as large as that of all psychoses together, and the prevention of neurosis is mainly a question of the furthering of normal development and the promotion of healthy attitudes.

In other words, with probably very few exceptions, *neurosis is a result of the interaction of the individual with the mental climate in which he lives.*

The social institutions in any society are the main factors determining this climate. The smaller entities in society—the family, the group—mirror the relations existing in the larger social bodies.

Therefore I venture to think that if the social institutions in their activities expressed the respect due to the individuality of the person, this health-giving attitude would permeate the whole of society and in this way contribute more to the mental health of its members than any other public action in the mental health field.

Facing up to the Stress and Strain of Modern Life

By DR. WILLIAM C. MENNINGER

Dr. W. C. Menninger is President of the Menninger Foundation, a non-profit centre for research, training, treatment and prevention in the psychiatric field. He was in charge of psychiatry in the American Army during the last war and received the Distinguished Service Medal and the French Legion of Honour. He has been President of the American psychiatric Association and other scientific bodies, and has written a number of books on Psychiatric subjects, several of which are intended for the general reader. (Editor)

FEW people, if any, in the modern world escape psychological stress and strain of major proportions. Everyone is aware of varying degrees of tension within himself and if he is alert to the world about him, he is certainly aware of the many tensions that surround all of us. This stress and strain can seriously affect mental well-being.

We know that under enough pressure, continued over a long enough period of time, anyone can be overwhelmed, and bend. All of us have a "breaking point".

The tensions to which we are subjected certainly appear to be increasing. This may explain an evident increase in the incidence of mental ill health and frank mental illness. What can we do about this situation?

PROBLEMS TOO BIG TO HANDLE

The physician in psychological medicine or psychiatry does not have answers to political and social problems, yet he knows that they seriously affect peoples' health. This he discovers anew as he endeavours to understand the illness of each new patient; as he studies the factors that have led to breakdown under stress. On the basis of what he learns he can advise a particular individual how to remove, reduce or live with pressures to which he is subject.

Becoming mentally ill is the response many people make to problems too big for them to handle. Therefore, the psychiatrist has the responsibility, as well as the opportunity to turn a microscope on the personality of his patient. It is necessary for him to gain some understanding of the forces which are creating, or have created the tensions that have produced the illness.

There are two different types of such tensions.

First, there are those that originate within one's self and are quite specific to each one of us. These *internal tensions* are not shared with other people because they are related to problems and conflicts of our own, conflicts which often have arisen from experiences of childhood and still continue, in varying degrees, to make us feel uneasy under certain circumstances or with certain kinds of people. These are always related to unconscious factors in the personality and usually manifest themselves as "anxiety".

Internal tensions show up in different ways in different people. Some try to remain blind to them; some project the cause of them to someone else; some develop physical symptoms. These and other psychological devices are used by all of us in an effort to maintain our equilibrium. Constructive action would be to discover—sometimes requiring professional help to do so—how to modify tension by understanding the situations or factors which seem to precipitate it.

In addition to internal tensions there are the *external tensions*. These we do often share with others, at least to some extent. Usually they are the result of our environment; experiences and events affecting our family and friends as well as ourselves; even affecting our job, our communities, our country. Too often these give rise to feelings of uncertainty, apprehension, or outright fear.

We try to resolve the tensions thus created in one of three ways; we can refuse to face their causes, which is a kind of flight; we too often fight back, thereby hurting or destroying people or things, and in the process usually hurting ourselves; or we can compromise. Most of the time we find ways to

modify our attitudes and behaviour, and also to modify the environment sufficiently to make a constructive compromise with a net gain for the situation as well as ourselves.

HELPING PEOPLE UNDERSTAND THEMSELVES

In planning treatment for a patient, the psychiatrist must first figure out how to help the individual understand himself and his problems better. Secondly, he must consider the environment and its factors and how these might be changed for the benefit of the patient. Approaching from both directions, as may be indicated, his assignment is to help his patient face up to the stress and strain that has produced his symptoms.

The individual who is filled with anxiety is rarely able to look at himself objectively. It is difficult, if not impossible, for him to see the causes of his own conflicts or the various unreasonable or even irrational ways by which he is trying to resolve them. A person can often, if he will, gain some understanding about himself from his family, or from friends or from reading. However, he may need professional help.

Very many problems, whether personal or universal, revolve around the central theme of hate in its many manifestations of selfishness, jealousy, prejudice, dishonesty, yes, even mental illness—and worst of all, war. Hence, perhaps the most important thing for an individual to do is to try to understand how he handles his own hostility and to see what are the manifestations of that energy drive in his behaviour and thinking.

It can be helpful, for instance, to see "running out on responsibility" as a disguise of hostility towards one's loved ones, towards one's boss, towards one's community. Too often we are unaware of the thoughtlessness and neglect, discrimination and selfishness that we display—frequently towards those whom we claim to love.

Uncontrolled emotion contributes to the production of tension in ourselves and those around us. Therefore, it behoves us to direct energy constructively. When angry, instead of breaking a dish we can take a brisk walk; when frightened we can consider how best to meet the danger instead of running away; when we love we can either tie our loved one to us,

or preferably free him to choose whether or not to stay.

THAT "ALONE" FEELING

Good insurance against getting overwhelmed by tension is to develop ways of living with other people, and activities either alone or shared, which give satisfaction by being constructive and creative. Engaging in a sport, creating a work of art, learning a craft, playing a game, singing a song, reading a book, helping someone else working to improve the community—these and many other activities can contribute to one's sense of well-being, let one recoup from strain.

For many people a philosophy of life and a firm religious faith provides extra strength to resist the wear of tension and stress. They also can be the source of motivation towards goals to which they aspire.

Loyal friends and associates can be a bulwark against that "alone" feeling which comes when difficulties seem about to overwhelm one. But we must take the initiative to call upon those who would gladly help if they are allowed to know we need them. And of course, it is important that this relationship be a two-way one and that we are willing to go to the aid of our loved ones and co-workers when they need us.

To modify the environment, just as to modify our own selves, takes action; it means doing specific things:

1. Examine and evaluate and talk about the possible causes of tensions. In essence, this is what the psychiatrist tries to encourage his patient to do in order that both may understand just what problems are at the root of anxiety and fear. It has often been said that a clear understanding of a problem is 90 per cent of its solution. This is a proven fact in resolving conflicts within the individual personality, and this can apply also in a family. Conceivably it can apply equally in larger units such as a company, a neighbourhood, a city, state or nation.

2. Assume full responsibility as a person, as a member of a family, as a worker on the job, as a participating citizen. This means acquiring basic education, training and experience; continually working for better solutions of the problems of the groups in which we find ourselves.
3. Thoughtfully plan for the future. This has economic, social, educational and vocational aspects. Important in this is to find the job best suited to one's abilities and opportunities; then relieve its routine and responsibility with an avocation or a hobby. Often recreation can serve for recreation.

WHAT THE WORLD NEEDS MOST

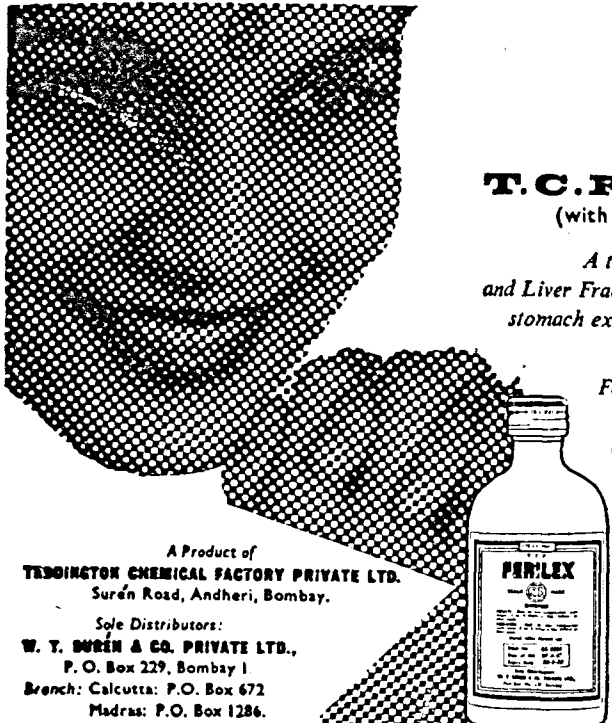
Any plan for protection against and handling of stress and strain requires action. Hopefully, by planning it can be constructive action. One can find a cause or a mission and take it seriously. What the world needs most is people who will give of themselves to the needs of the family, the community, the state, the nation and the world. What a person needs most is to be wanted and necessary.

There are so many opportunities in every country and in every culture to help our fellow men by improving education, social welfare, health; by strengthening religious faith. To do this implies that adults must grow up emotionally to the point that they find more satisfaction in giving than in receiving.

TANGANYIKA DOCTORS LINK BAD EYESIGHT TO MALNUTRITION

A relationship between malnutrition and bad eyesight has been established by a team of doctors carrying out research at the East African Institute for Medical Research at Mwanza, Tanganyika. The team classified 43 cases of blindness at the Church Army school for the blind at Bugiri and found that half the cases were related to malnutrition.

The institute's annual report, just issued, says that the birth records of nearly 2,500 babies have been studied and that malnutritional deficiencies do most damage to eyesight in the early stages of life. Studies have been made of birth weights and prematurity rates, growth of babies in relation to diet during their first two years, and changes in weight of nursing mothers.



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GETTING SICK AND GETTING WELL

By DR. P. SIVADON

Dr. Sivadon is a leading French psychiatrist and for 15 years was in charge of a psychiatric treatment and rehabilitation centre in Ville-Evrard where he pioneered the "open-hospital" movement in his country. He holds important consultative posts in the French health services.

Dr. Sivadon has published a large number of papers on psychiatric care, the treatment of mental disease, etc. (Editor)

WHEN, still a student, I told my teachers that I wanted to specialize in psychiatry, one of them, a well-known clinician with a large private practice, exclaimed: "You aren't serious? Mental cases are scarce; I have only come across three in the whole of my career, and I could not do anything for them except send them to an asylum. They are still there."

Some months later I penetrated into the strange world of the "lunatic asylum" as it was then called, and I soon realized that thousands and thousands of sick people were living in those dreary institutions, cut off from the world, very often abandoned by friends and relations, sometimes undergoing weird treatments which were needlessly drastic and painful since they were nearly always useless.

Nor are mental cases so scarce. In Western countries more than onethird of all hospital beds are occupied by them. If my former teacher had met so few during his career, it was because they were then still considered not as sick people but as "insane"—creatures apart from the normal everyday world, who must, first of all, be separated from society before any question of treating them could be considered. Only the psychiatrist, in close contact with them in the asylum, could really get to know anything about them, and then usually it was too late, when their chances of cure were practically nil.

THE VICIOUS CIRCLE

Yet when the relatives of such patients were questioned, it often appeared that several doctors had been consulted before the asylum was resorted to. They had been treated for their liver, for glands, for sympathetic nervous system disorders; no one had noticed that mental trouble was developing. Families, usually, refused to consider any such possibility and

when it became certain, they hastened to conceal it. This, then, was why mental disorders appeared to be so rare: for a long time they were not recognized and, when they became evident beyond any doubt, they were hushed up.

Because they are not recognized in time and because they are concealed, it is often impossible to cure them. Because it is impossible, in these circumstances, to cure them, they are said to be incurable—and for this reason they inspire fear. And precisely because they inspire fear people are unwilling to recognize them, and try to hide them. This is the tragic vicious circle in which psychiatry has been too long enclosed.

It is not difficult to understand the prejudice against this branch of medicine, and even against the doctors who specialized in it.

Not very long ago, the psychiatrist was still considered as a curious individual who spent his time inventing scientific names for the various types of madness, and thinking up obscure theories which he could discuss only with a select group of initiates like himself. At present, people are still often inclined to consider him as a slightly sinister person who sees signs of mental trouble everywhere, even in quite ordinary, normal people.

NO LONGER INCURABLE

Today, however, the psychiatrist has plenty of other things to do. During the past 30 years numerous accurate techniques have been developed and psychiatry has become one of the most effective of the healing arts.

Acute delirium of infectious or toxic origin which when it did not kill the patient, was often followed

by serious mental trouble, can today be cut short in a few hours.

Melancholia, which caused so many suicide deaths, and even murder, can now be cured in a few days by shock methods.

This, unfortunately, does not mean that everything is known about mental disorders. Far from it: many of them are still very mysterious indeed, and one of the most frequent, schizophrenia, still raises innumerable unsolved problems.

Early treatment is essential. Statistics show that the great majority of mental cases are curable if properly treated during the first weeks or months. After six months the chances of cure are much less, and with the years they become very small indeed. Either because of the suspicion with which the psychiatrist is regarded, or for other reasons, he is too often not called in to examine the patient until the disease has had time to get a firm hold.

WARNING SIGNS

Even if the psychiatrist is called in at the first indications of an acute phase, it is often difficult for him to discover, by questions, what earlier signs there had been that might have enabled him to detect the disease much sooner. When the family is questioned about whether the trouble started suddenly or gradually, the answers given are usually contradictory: while insisting that there was nothing to give any indication of mental trouble, they will nevertheless admit that the patient "was not himself" for some time or that he had been undergoing treatment for "being run down" or "for a liver complaint", etc.

There are always warning signs in the months, or even years, preceding the onset of mental disease, of something wrong with the functioning of the higher nervous system, but because these signs are often not of an alarming nature, they are usually underestimated by the family and attributed by the suffered himself to quite other causes such as over-work, digestive or heart trouble, etc.

Most of these early symptoms are, in fact, extremely commonplace: they become important and significant only when they appear in certain combinations and especially if they occur at times when the person

concerned has suffered a bereavement, an accident or some similar shock.

PREVENTIVE TREATMENT

A slight fever, loss of weight, loss of appetite, or a slight cough may be either without significance or the herald of some serious organic trouble. In the same way a pain in the head, inexplicable fatigue, change of character, sleep and memory difficulties, or a lowering of work output, require careful judgment on the part of the doctor in deciding whether they indicate simply a passing indisposition, or whether they may be first warnings of mental disease.

If preventive treatment is applied at this stage, there is every chance of avoiding mental trouble. And if, in spite of the preventive treatment, it does develop, the immediate application of curative treatment will make it less severe.

For treatment to be effective, it is just as important that it should be given in satisfactory technical conditions as that it be given early.

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THE RIGHT ATMOSPHERE

Mental patients lose some of their ability to adapt to their environment. In most cases they must first of all be placed in an atmosphere where they are artificially freed from the demands of normal social life. This is the primary reason for hospitalization and the hospital must, therefore, provide this atmosphere.

In other cases, particularly when the disorder has been detected in time, there may be no need for hospitalization and treatment can be effectively applied in an out-patient clinic.

The atmosphere of the psychiatric hospital must itself be therapeutic—that is to say, it must provide the artificial social environment in which those adaptive faculties which still remain to the patient will be exercised, while the others which are disturbed are first allowed to rest and then gradually re-educated.

Group activities should be organized in accordance with the capacities of the majority, if not all, of the patients. These activities, whether games, self-expression in some sort of art or craft, sports, courses and lectures, should preferably be developed on the initiative of the patients themselves so that they correspond, as far as possible, to their needs.

It is the task of the healer to encourage patients to resume their interest in the world around them and to grow gradually away from their pathological attitudes and towards useful activities. This process can often be helped on by tactful handling of opposition, hostility and even aggressiveness, on the part of the patients. It is essential, however, to have sufficient physicians, psychologists, instructors and nurses with extensive training and experience in this branch.

SHOCK TREATMENTS

Once the right atmosphere has been created, more precise techniques can usefully be applied, including the various *shock* treatments, such as:

(a) *insulin therapy*, invented by an Austrian physician, Dr. Sakel, in 1933. The method consists in injecting gradually increasing doses of insulin until the patient enters a state of coma; the coma is then dissipated

by the administration of sugar. The treatment is repeated each day for several weeks. The patient's personality, which is temporarily disintegrated under the coma, tends to return to normal on reawakening;

(b) *electric shock treatment*, introduced by two Italian physicians, Drs. Cerletti and Bini, in 1937. The aim is to provoke sudden loss of consciousness accompanied by convulsions, by passing an electric current through the brain for a fraction of a second. Here again it is a case of momentary disintegration of the personality accompanied by important humoral modifications. This is often followed by recovery of mental balance, particularly in cases of melancholia. In recent years a number of variations have been introduced which make this treatment less brutal, and effective over a wider field (electro-narcosis, etc.).

There are also the various forms of *narcotherapy*. Some, of short duration (often called "narco analysis") consist in intravenous injection of an anæsthetic for the purpose of removing the subject's inhibitions or even of plunging him into the realm of the subconscious so that he may express himself, relieve certain experiences, and thus liberate himself from painful anxieties and sometimes deeply-rooted complexes.

RECENT DRUGS

There is also the method of putting the subject to sleep by means of various narcotics for 16 to 20 hours day during 15-20 days, so that the over-worked nervous system may rest, and so that, probably through dreams, the emotional balance may be restored. This is called "long-sleep treatment".

Recent drugs such as chlorpromazine and reserpin and many others which the chemists are discovering all the time, appear to act in a similar way. They seem able to induce repose of those functional systems which are most commonly involved in mental disease. Prolonged treatment, even without any necessity to provoke artificial sleep, sometimes brings about a veritable resurrection. In nearly all cases these drugs relieve the most painful symptoms of mental disorders such as agitation, anxiety, aggressiveness, etc.

Lastly, there is a whole range of surgical techniques which are given the collective name of *psycho-surgery*. These consist in cutting those nerve fibres (leukotomy) or areas of the cerebral cortex (topectomy) which appear to be the anatomical seat of functional disorders. Such techniques sometimes bring about spectacular cures but they are unfortunately, for the present, often only transitory.

Many other therapeutic methods are effective in certain cases, but on the whole it can be seen that at present psychiatric treatment is seldom specific, that is to say, there is no specific remedy for a specific disorder. The various techniques are often complementary and must be combined.

CURED IN A FEW MONTHS

What results can we expect? These will, of course, vary according to the gravity and duration of the symptoms. On the whole, however, it may be said that properly co-ordinated treatment in satisfactory technical conditions makes it possible to restore 70 to 80 per cent. of mental patients so that they can resume their place in society.

It often takes time—sometimes months and years—but in some cases relatively short treatment will suffice. Melancholia, for example, can often be cured in a few weeks, and sometimes days.

The average hospitalization time for patients who are cured is about four months.

If we remember that only a few years ago the proportion of cures was 30 per cent. and that on an average these cures took one year, it will be seen that considerable progress has been made. There is still much to be done, but one thing is already quite certain: psychiatry works.

INDIAN DOCTOR STUDIES LATEST ANÆSTHETIC METHODS IN U.K.

The latest methods of administering anæsthetics are being studied in the United Kingdom by Dr. Murari Mohan Som, anæsthetist at the Central Hospital at Dhanbad, Bihar. Dr. Som went to Britain in September 1957 for training under the Colombo Plan. He studied first at the Faculty of Anæsthetics, Royal College of Surgeons. Then he spent several months at Whittington Hospital, London—also in the anæsthetics department. Now he is working at the

It should be emphasized again that as yet very little is known of the inside mechanism of mental disease, but we can already act on the little we do know.

In its early stages, mental sickness is no more than a functional disorder which must be treated before it has time to develop into a regular behaviour pattern. If not treated, mental disease becomes a pathological way of living: the patient "gets used to" his malady and his life is built around it. Mental diseases are therefore at once the most curable and the most hopeless of all illnesses.

NO ONE IS IMMUNE

The amount of mental disease is increasing year by year with the evergrowing pressure of rapid social change. This is already a tremendous burden on the community and an often unsuspected source of anxiety to individuals.

Nevertheless, as these diseases become more frequent, science is forging new weapons against them and every day it is becoming easier to prevent and cure them.

It is not possible today to ignore mental disease as did my former professor; we must indeed accept the fact that it represents one of the burning medical and social questions of our century.

On the other hand mental diseases need nevermore be dreaded as they were when people believed them incurable. No one is immune to them, but they no longer carry the threat of life-long banishment. In most cases the right treatment, promptly applied and actively persevered with, will soon set the patient on the road to recovery.

Southend-on-Sea General Hospital.

In an interview, Dr. Som said: "I do not know whether I shall remain at Dhanbad when I go back to India. But wherever I am, the improved safe techniques I have studied will be most valuable". Forty-three-year-old Dr. Som, who qualified in Calcutta, has been at Dhanbad since June 1952. His home is in Serampore, West Bengal.

Public Health Laboratory Services

THE demand for public health laboratories first arose in the second half of the last century after it had been demonstrated that water, milk and food were capable of spreading disease and were frequently responsible for epidemics. Indeed, it was through epidemiological studies that attention was first drawn to the potential dangers of contaminated water and food supplies. With the growth of bacteriology it became possible to devise tests of purity and also to pave the way for routine laboratory diagnosis. As new methods have been developed, the functions of the public health laboratories have been continuously enlarged, and today they form an indispensable part of any public health service.

For several years, WHO has been providing assistance to governments in developing their public health laboratory services, and in 1956 an Expert Committee on Health Laboratory Methods was called together to discuss the problems involved, particularly in countries

just starting their laboratory work and in need of expert advice.¹ In the European Region, every country has a more or less well-developed public health laboratory service, but the rapid advances of the last few years have greatly increased the need for international collaboration and co-ordination. With this in mind, the Regional Office for Europe last year convened a meeting of experts to consider the essential services that should be provided by a public health laboratory and to advise on practical measures that might be taken to improve these services within the Region. The Advisory Group met at the Soviet Academy of medical Sciences in Moscow, and the participants included experts from Denmark, the Netherlands, Poland, Portugal, Sweden, the United Kingdom and the USSR, as well as representatives of WHO.

FUNCTIONS OF A PUBLIC HEALTH LABORATORY SERVICE

In the past, public health laboratories have been concerned almost entirely with the diagnosis, prevention and control of infectious diseases, and these are likely to remain their most important functions for some years to come. But the pattern of disease is changing rapidly and the main "killers" are now cancer and cardiovascular disease. Radio-active contamination of the soil and of food and water is a dramatic example of a new threat to the health of the community, while air pollution is a danger that has been causing increasing concern for some years.² The public health laboratories must be ready to undertake research on these problems and to develop new methods of control. They also have their part to play in studies of school and occupational hygiene and in elucidating the causes of mental ill-health.

The basic activities of a public health laboratory embrace a wide range of disciplines. From the first, the microbiological and chemical control of food, drinking water, sewage and air has been one of the

main functions. Today, the microbiologist must also be able to undertake identification of bacteria, viruses and fungi, as well as the preparation of vaccines, sera and antigens for prophylactic, therapeutic and diagnostic purposes; and the chemist may be called upon to make toxicological examinations, drug assays, and various biochemical studies. The laboratory must be in a position to examine specimens for parasites and to identify vectors and insect pests. Physiological examinations may be required, particularly in connection with studies on the influence of different types of occupation, sports and noxious factors on health. In recent years, biophysics has become important for tracing radioactivity and the control of microclimates. Finally, a function that has also been growing rapidly in importance is the study of epidemiological methods and their application in communicable and other diseases. In all these fields, active research should be going on within the laboratory service.

STAFFING REQUIREMENTS

The Advisory Group devoted considerable discussion to the question of the qualifications and training of scientific staff and auxiliary personnel for public health laboratories. Whereas the director of a central laboratory should hold a medical qualification and have a good knowledge and clinical experience of the diseases connected with the work of the service, the heads of the various specialized departments working under him can be veterinarians, pharmacists or science graduates with special training in their own fields. Each regional laboratory should preferably be in the charge of a microbiologist with a medical qualification. Working under him will be medical or science graduates who have received post-graduate training in bacteriology or other specialties with which the laboratory is concerned. They need not be so highly trained as the experts at the central laboratory but will be expected to cover a wider field. Training should be conducted at a well-established public health laboratory with experienced senior staff, and during the whole period of training the junior staff should be encouraged to do research independently or as members of a team.

The Group stressed the need to arrange seminars and similar meetings for the senior technical staff of the various public health laboratories within any country. It is also important for the directors of the central laboratories in the different countries to meet together from time to time. The first such meeting was held in

August of this year in Stockholm on the occasion of the International Congress for Microbiology.

The training of laboratory technicians is one of the most important tasks of a public health laboratory service, as the reliability of the work of a laboratory depends to a great extent upon having competent technicians to do the benchwork. Some countries have had whole or part time schools for technicians for a number of years. They offer a two- to five-year course, and pupils who pass the final examination receive a certificate. The practical training may be done at the central public health laboratory or at a university department. Some countries have no schools for technicians, and in these cases training is given wholly at the public health laboratory.

The Group also discussed the ways in which the staffs of public health laboratory services could be given opportunities for study abroad. These included exchange schemes between individual laboratories, post-graduate courses in various aspects of public health laboratory work, and individual WHO fellowships. It was suggested that the European Office might study the possibility of encouraging countries to set aside at the central laboratory a sum of money for the salaries of one or two visiting workers.

INTERNATIONAL COLLABORATION

The structure of the public health laboratory service will vary with the needs of the individual country. In some countries there will be only a single, central laboratory service, in others a system of regional laboratories; and the demands made upon the service will also vary, according to the amount of work that can be undertaken in the hospital laboratories. In general, however, each country will build up a complete diagnostic service, and the Advisory Group did not foresee that there would be much need for direct collaborations between different countries in the diagnostic field, except where methods of examination not yet introduced in one country where already available in a neighbouring country. An example of another type of collaboration is the procedure adopted in venereal disease serology, whereby a number of sera were exchanged among different countries and examined by various methods. Comparison of the results enabled the methods to be standardized and provided information on practical aspects of the techniques used in different countries. Attention was also drawn to the international reference laboratories,

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¹ Wld. Hlth. Org. techn. Rep. Ser., 1957, 128

² See Chron. Wld. Hlth. Org., 1958, 12, 14.

such as the Escherichia Centre in Copenhagen and the World Influenza Centre in London, which undertake the typing and checking of uncommon bacteria or viruses, and it was recommended that all European countries should take an active part in the use of these facilities.

Another suggestion made by the Group was that a few large laboratories with special experience should be asked to undertake the centralized production of diagnostic antigens and sera and the supply of type strains. This would ensure uniformity and comparability of test results performed by laboratories in different countries and overcome the difficulty still experienced by some laboratories in obtaining diagnostic reagents or strain of infectious agents. It was thought that each manufacturer could supply a group of countries. In some cases, one laboratory might be able to produce a certain antigen or serum for the whole of Europe; in others, world-wide collaboration would be needed.

The Advisory Group suggested that the Regional Office for Europe could give valuable help by providing reagents and strains free of charge to countries unable to pay for them. Rare or dangerous reagents would be supplied only at the direct request of the central laboratory of the country requiring them, and countries would be expected to train their own staff to produce the reagents they use most frequently, if necessary with WHO assistance. The reagents would be supplied primarily for use in laboratory research and epidemiological investigations, and to a lesser extent for the diagnosis of cases in hospital.

Many countries also experience difficulties in obtaining chemicals, media, apparatus, and scientific literature from abroad, owing to a shortage of foreign currency. It was suggested that this situation might be improved by means of a European clearance system, or that WHO might give financial aid through country programmes. The exchange and distribution of publications among the European public health laboratories should be encouraged. Here the European Office could help by distributing lists of the most important journals on public health laboratory methods. The Office could also act as a clearing-house for the exchange of annual reports between countries. These reports sometimes contain minor unpublished technical information which could be of value to other laboratories.

In general, international collaboration will be

W.H.O. 32

channelled through the central laboratory or group of laboratories. In countries where no central service exists, some other body should be appointed to maintain international contacts.

FUTURE TRENDS

The WHO international reference laboratories, of which mention has already been made, at present cover only a fairly restricted number of infectious diseases. It was suggested that similar centres should be set up to follow developments in other fields of public health work, such as occupational hygiene, and to assist in the development of better methods of study and control. This suggestion is in line with the broadening activities of the public health laboratories, and particularly with the increasingly important role that they are playing in epidemiological studies. In many countries, the central public health laboratory has a special department of epidemiology, possibly with a mobile field unit at its disposal. This department arranges epidemiological surveys, assists in investigating epidemics that have spread beyond the territory of a single authority, and may also handle the notification of infectious diseases. Close co-operation with the executive health service is essential at all levels. To deal with these problems, some countries have appointed a special State medical officer, either attached to the Public Health Board or as head of the department of epidemiology in the central public health laboratory. In the words of the first report of the WHO Expert Committee on Health Laboratory Methods: "Epidemiology provided the original stimulus for the creation of public health laboratories, and it is epidemiology which in its turn is providing the laboratories with one of the chief means by which to assess the prevalence of disease and to bring it under control."³

* * * * *

As a follow-up to the Moscow meeting of the Advisory Group on Public Health Laboratory Services, a two-day meeting was held in Stockholm at the beginning of August 1958, to discuss the collaboration of public health laboratories in Europe. The members of this second Advisory Group included experts from Austria, Czechoslovakia, Denmark, Finland, France, Greece, the Netherlands, Poland, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom,

³ Wld. Hlth. Org. techn. Rep. Ser., 1957, 128, 6

and the USSR, as well as two representatives of WHO headquarters.

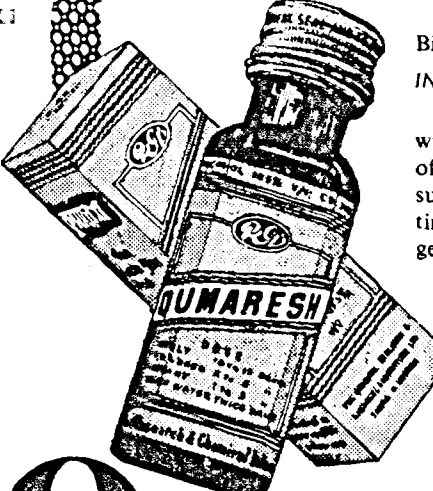
Prior to the meeting, a questionnaire had been sent to Member States by the Regional Office, and an investigation had been made into the need for an exchange scheme to provide diagnostic antigens to certain laboratories, as suggested by the first Advisory Group.

In the questionnaire, each Member State was asked to supply, *inter alia*, a list of the most prominent public health laboratories in the country. After discussing the various replies, the Advisory Group agreed that in fact two lists were required—one containing the name of laboratories nominated by the governments to make official contacts with the Regional Office, the other listing all the main public health laboratories, with information on their special activities, such as blood-grouping, serology, and reference work for other laboratories. Some countries might wish to nominate only one laboratory for the

(Continued on page W.H.O. 34)

first list, others might nominate a separate laboratory for each of the main fields of public health activity.

With reference to the exchange scheme for diagnostic reagents, it was considered that the most important antigens were those prepared from the viruses of psittacosis, Q fever, and tick-borne encephalitis, the preparation of which entails certain risks and should only be carried out by trained personnel in well-equipped laboratories. At least one laboratory had been found which was willing to supply large quantities of each of these antigens. With regard to payment, it was pointed out that only WHO Headquarters and not the Regional Office could provide grants for the preparation of antigens, and it was unanimously agreed that, in general, countries should be prepared to pay for their requirements at an economic rate and make their own arrangements for supplies. Countries, which found it impossible to obtain reagents should make specific requests to the Regional Office for assistance—for instance, the provision of fellowships for the study of production methods. Apart from the three



COMPOSITION :
 Audrographis Paniculata, Hygrophila Spinosa, Luffa Bindal, Ptychotis and other cholagogues and carminatives.

INDICATIONS :
 Infantile liver with constipation; biliary obstruction with dropsy; tropical congestion of liver; early stages of cirrhosis of liver; intestinal troubles during dentition; summer diarrhoea; postnatal anorexia with gastro intestinal irritation and diarrhoea; anasarca; jaundice, and general atonic condition of the liver and stomach.

DOSES :

Adults	10 to 15 drops
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with water twice daily, before or after meals, or as directed by physician.

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Teaching of Paediatrics in Europe

It is some 60 years since the teaching of paediatrics as a separate branch of medicine began in Europe. Since then its importance has greatly increased, though not to the same extent as in certain other parts of the world where it is now a major subject on the medical curriculum, on the same level as internal medicine. Moreover, there are wide variations in the range and quality of instruction given at the different paediatric centres. WHO accordingly invited the Executive Board of the International Paediatric Association to co-operate in a study of paediatric teaching in Europe. This joint study was recently published¹ and its main findings are summarized below.²

THE study is based on replies to a questionnaire sent out by WHO and the International Paediatric Association (IPA) and on data collected at paediatric teaching centres by a WHO consultant, Professor G. M. H. Veeneklaas, Director of the Department of Paediatrics, University Hospital, Leiden, the Netherlands. The text of the study was discussed by representatives of WHO, IPA and the countries which provided data, and was revised by a committee appointed by them.

It is estimated that there are some 160 paediatric teaching centres in Europe. As funds for the study were limited, it was decided that visits by the WHO consultant should be confined to between two and four representative centres in each of the countries covered, and that he should spend an average of one day at each centre. The visits were made during 1955 and 1956 and covered 68 paediatric teaching centres in the following 18 countries: Austria, Belgium, Denmark, Finland, France,

Germany, Greece, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and Yugoslavia. The WHO consultant discussed the contents of the WHO IPA questionnaire with the heads of the centres visited, and saw the teaching hospitals.

TYPES OF CENTRE

Paediatric teaching centres in Europe are of three main types: (a) attached to an independent children's hospital; (b) attached to a general teaching hospital; and (c) housed in a separate building belonging to a group of teaching hospitals.

In the independent children's hospital, there is an ever-present awareness of the needs of the child as such, and this creates the most favourable atmosphere for paediatric training. In the paediatric department of a general hospital, this advantage is lost, but contact

with other branches of medicine is closer. The third type of centre, which is by far the most common, tends to take after the first or the second type depending chiefly on its distance from the other teaching hospitals.

UNDERGRADUATE TRAINING IN PÆDIATRICS

Undergraduate medical courses in the countries surveyed vary in length from 6 to 8 years. Paediatric instruction is generally provided during the last 2 or 3 years, which are devoted mainly to clinical work. In the southern and central European countries, this instruction usually takes the form of lectures with patient-demonstrations; in the more northerly parts of Europe, it often consists of a few months' clerkship³ during which some lectures are given.

In general, the clerkship system appears to be more satisfactory than the lecture system. It is, however, unsuited to countries where students are many and teachers are few. A clerkship in paediatrics was found to be compulsory or customary for medical students in Finland, the Netherlands, Norway, Sweden and the United Kingdom. This type of training is taken by a minority of students in Belgium, Germany and Switzerland, and is about to be introduced in France, Spain and Portugal.

A third system, little practiced in Europe, combines features of both the others. This is the system of group discussion whereby students are taught in small groups and take an active part in discussing and dealing with the problems that arise in the course of their hospital work. An approach to this system is found in France where students are taught in groups during the period of clinical training, though instruction is mainly in the form of lectures with patient-demonstrations and the groups are quite large.

SPECIALIZED POST-GRADUATE TRAINING

The number of graduates training as paediatricians varies greatly from country to country. In northern Europe, there are only a few post-graduate students at each centre; at the average southern European centre, there are between 30 and 50. One reason for this is

³ A "clerkship" in paediatrics is a period of practical training, during which the student is usually attached to a paediatric department in a hospital.

that in, for example, the United Kingdom, there is little scope for the paediatric specialist except as a hospital consultant, and the number of such posts is limited. On the other hand, in Italy, where the undergraduate medical course is mainly theoretical, the private practitioner with in-service training in a specialized branch is at an advantage.

The duration of post-graduate paediatric training ranges from between 7 and 10 years in the United Kingdom to 2 years in Italy. The average for Europe is between 3 and 4 years. Full-time training is usual in the northern and central European countries, and part-time training in the others.

The type of basic training given to future paediatricians varies little from country to country, since it usually consists of work with both in- and out-patients at university hospitals, all of which employ the same internationally accepted methods of treatment and examination. However, in many cases, the range of instruction should be extended to include, for example, practical experience of laboratory and X-ray work. Too much stress is usually laid on clinical paediatrics and not enough on the broader aspects of child care, co-operation with child guidance and child psychiatry services being particularly undeveloped. While opportunities for paediatric research are given in a number of centres, the over-all picture in this respect is far from satisfactory. Another shortcoming is that facilities for training in paediatric surgery, in work with newborn and premature children, and in the care of communicable-disease cases are often not available in or near the teaching centres.

On qualification, the paediatrician is faced with three possibilities: a hospital position, private practice and work as a child health officer. In general, the first choice is private practice, except in the Netherlands, the Scandinavian countries and the United Kingdom, where hospital positions are the rule. In many countries paediatricians combine child health work with their other activities, but there is often a tendency—e.g., in Germany and the United Kingdom—to treat paediatrics and child health work as two distinct branches, to the disadvantage of both.

OTHER POST-GRADUATE TRAINING

Post-graduate paediatric courses for general practitioners and refresher courses for qualified paediatricians are almost unknown in Europe. One centre in the

¹ Veeneklaas, G.M.H. (1957) *Paediatric education in Europe*. In: *Helv. paediat. Acta*, 12, Suppl. VII (Fasc. 5)

² For a review of paediatric teaching in the Americas, see *Chron. Wld. Hlth. Org.*, 1958, 12, 195.

(Continued from page W.H.O. 33)

antigens mentioned above, most antigens in common use for laboratory diagnosis are prepared with comparative ease and safety. Several laboratories are probably in a position to supply small quantities of these, and it was suggested that the present free exchanges on a personal basis should continue. The Regional Office was asked to prepare a list of laboratories willing to provide laboratory reagents, with the conditions under which supplies would be made.

Other topics discussed by the Advisory Group included the training of personnel for work in public health laboratories. It was agreed that it would be useful if the Regional Office would obtain from

Member States information on the post-graduate training facilities available in each country and circulate it to all Member States. It was recommended that the WHO fellowships scheme should be extended where necessary and the direct exchange of laboratory workers between Member States encouraged. A further recommendation was that the Regional Office should collect from the national public health laboratory services lists of the most important periodicals in which their findings are published and lists of the titles of papers published by members of the services. These lists should be circulated to the various laboratories.

(Courtesy: W. H. O. Chronicle)

United Kingdom and two in Yugoslavia, however, provide regular 3-month post-graduate courses in paediatrics, comprising lectures, discussions and practical work in hospital wards and out-patient departments. In both countries, the courses are taken by general practitioners, child health officers and qualified paediatricians.

TEACHERS

While it is desirable that the teaching of paediatrics should be a full-time job, the professor of paediatrics in Europe usually has so many commitments—e.g., organization, administration, research—that it is impossible for him to concentrate on teaching. This difficulty may be overcome by providing each full-time professor of paediatrics with a sufficient number of qualified staff-members to take over the administrative side of his work. A start has already been made in this direction, notably in the United Kingdom.

Assistance with the actual teaching is also necessary, and this can be provided in various ways. In France, for example, part-time teaching assistants give bedside lectures in the mornings and do private work in the afternoons; in Germany, full-time assistants teach both undergraduates and trainee paediatricians.

PÆDIATRIC NURSES

Most European countries provide training in child nursing, and in many of them special paediatric courses are available for qualified nurses. The paediatric centres of northern and central Europe are generally well staffed, but the shortage of paediatric nurses in southern Europe is sometimes acute. It was observed that, in a number of paediatric centres, the work of the nurses does not receive due recognition and that co-operation between nurses and doctors could be improved.

CONCLUSIONS

An analysis of the data collected on the equipment, staff and facilities of the 68 centres covered by the study showed that at least half of them are inadequate for their purpose. Many of their shortcomings are due to social, economic and historical factors, and cannot be easily or quickly remedied. Others, however, are dependent on the selection and training of personnel, and these should be dealt with first of all. It is recommended that particular attention be paid to the development of paediatric research and co-operation with child health services.

(Courtesy: W. H. O. Chronicle)

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Dental Health Services for Children

Diseases of the teeth and the supporting tissues are among the most widespread causes of ill-health. While the prevention and treatment of these diseases should obviously start in childhood, few countries as yet provide adequate dental health services for children. A Study Group on Dental Health Services for Children, sponsored by the Belgian Government and the WHO Regional Office for Europe, met in Brussels from 3 to 7 February 1958 to make suggestions for the improvement of existing services in Europe and the development of new ones.¹ The article that follows is a summary of the main points in the Study Group's report.²

PREVALENCE SURVEYS AND

PERIODIC INSPECTION

As a preliminary to planning a dental health programme for children, a survey should be carried out to determine the prevalence of dental disease among children of various age-groups in the area where the programme is to operate. This will permit an estimate of the number of personnel required and the approximate cost. The Study Group recommended that the formula "DMF(T)"—number of decayed, missing and filled permanent teeth—be used in recording data. For deciduous teeth, the formula "def"—decayed, filled or indicated for extraction—can be used.

In the course of the programme, there should be an inspection at least once a year—ideally, every six months—to determine the increment of dental disease in the group originally examined. A record should be kept of the age and sex of each child, the clinical condition on the teeth and supporting tissues, the orthodontic condition, and treatment given. The Group considered that a uniform system of individual record cards along these lines should be adopted internationally.

One reason for the present lack of uniformity in data on dental disease is that there is no generally recognized definition of dental caries. The Group suggested the following: "Dental caries may be

defined as a defect in the tooth surface that can be clinically diagnosed by the use of a sharp probe and a mouth mirror, and which exists in the enamel or in the enamel and dentine."

TYPE AND SCOPE OF SERVICES

Various methods of providing dental care for children have been adopted in urban areas. In some cases, large central clinics provide special treatment as well as routine dental care. Elsewhere, central clinics may be reserved for special treatment, routine care being given at small clinics on school premises or at health centres.

The provision of dental care for children in rural areas is a much more difficult matter. The Group considered that the best solution to this problem is to have fixed or mobile clinics in or near school buildings. Both in urban and rural areas, the services of the private dental practitioner are always valuable and, in some cases, indispensable. For any new programme, however, the clinic system should be adopted.

In countries with a sufficient number of dentists and adequate financial resources, dental health services for children should aim at providing—in addition to complete normal dental care—special care for the handicapped (e.g., children with orthopaedic disabilities), the correction of malocclusion of the teeth and

¹ The participants in the meeting were: Dr. M. Th. Degard-Bodson, Belgium; Dr. Zivko Bolf, Yugoslavia; Dr. Harry W. Bruce, jr, USA (Consultant); Dr. Tihomir Burkov, Bulgaria; Dr. M. Dechaume, France; Dr. J. Feitsma, Netherlands; Dr. H. Freihofer, Switzerland; Dr. S. Hautrive, Belgium; Dr. M. Joachim, Belgium; Dr. G. H. Leatherman, United Kingdom; Dr. D. Macleod, United Kingdom; Dr. S. MacNeill, Ireland; Dr. W. Nastrucci, Italy; Professor J. J. Holst, Denmark; Dr. Olof K. Osvald, Sweden (Rapporteur); Dr. Jacob Ramm, Norway; Dr. V. Rudko, USSR; Dr. W. G. Senior, United Kingdom, (Chairman); Professor Dinko Stranski, Bulgaria; Dr. Aino Yliruokanen, Finland. WHO was represented by: Dr. E. Poulton, WHO Regional Office for Europe; Mrs. R. Repond WHO Headquarters; Dr. C. L. Sebelius, WHO Headquarters.

² A limited number of copies of this report are available from the WHO Regional Office for Europe, Copenhagen.

jaws, and treatment for cases with cleft lip and cleft palate. The programme should also cover pre-school children and expectant and nursing mothers, and should include preventive measures and dental health education.

Unfortunately few countries have sufficient resources for a programme of this type. Where there is a shortage of trained staff and finances are limited, the programme should concentrate on children cutting their first permanent molars, i. e., the 6-year-old group. Older children should come next, followed—when resources permit—by very young children and expectant or nursing mothers. Priority should be given to preventive measures, the relief of pain and the removal of gross oral sepsis.

The Group considered that, where possible, provision should be made for both general and specialized orthodontic services. The aim of orthodontic treatment in a dental service for children should be to secure a reasonably satisfactory result, rather than perfection in every case.

PREVENTIVE MEASURES

The general factors predisposing to diseases of the teeth and supporting structure are believed to be faulty diet and metabolism, as well as certain systemic conditions. Particular attention should be paid to the diet of expectant or nursing mothers; this should be supplemented or fortified if it is unbalanced or if some essential vitamin or trace element is missing.

Local measures of prevention are too numerous to list in detail. The following should, however, be taken into account in a dental health programme for children:

- (a) *Diet.* Foods which have a detergent action (e. g., apples or celery) are indicated, as well as those which increase the flow of saliva. Any excess of carbohydrates should be avoided.
- (b) *Oral hygiene.* This includes such measures as the brushing of the teeth, the use of floss silk and, where there are abnormal conditions of the gum, the use of a wooden point or gum stimulator. Periodic visits should be paid to the dentist for the

removal of dental plaques, stains and deposits.

- (c) *Topical applications of fluoride solutions.* These are of proven value in making the teeth more resistant to caries.

The report of the WHO Expert Committee on Water Fluoridation³ concluded that there was ample evidence to support the belief that this method of prevention renders the teeth more resistant to dental caries, and that its safety as a public health measure has been proved beyond doubt. In the light of these conclusions, the Group considered that, in areas where water-supplies are deficient in fluorides, water fluoridation should be an essential part of programme of preventive dentistry. Should this measure prove impracticable, fluoride tablets may be used provided they are taken regularly and strictly in the quantity prescribed.

The Group recommended further research on: killing or inhibition of oral bacteria; adjustment of the balance of micro-organisms in the mouth and reduction of the number of caries-producing organisms; neutralization of acids formed in the mouth; the value of toothpastes containing sea-water concentrates, stannous fluorides, ammonia-urea compounds and antibiotics; the value of supplementing the diet with vitamin B₁ and B₂ preparations as well as fluoride compounds; the collagen structure of tooth and bone; and the use of synthetic sugars which are non-fermentable in mouth fluids.

The Group also stressed the importance of preventive orthodontics, i. e., the early recognition and correction of conditions predisposing to malocclusion of the teeth and jaws. For example, the crowding of permanent teeth due to the premature loss of deciduous teeth could in most cases be prevented with little expenditure of time or money. Other examples of preventive orthodontics are the correction of harmful habits such as finger- or thumb-sucking, and the judicious planned extraction of teeth to correct overcrowding.

DENTAL HEALTH EDUCATION

Without a well-planned, continuing programme of

³ *Wld. Hlth. Org. techn. Rep. Ser.*, 1958, 146

(Continued on page W.H.O. 39)

The Changing Face of Poliomyelitis

THE virus disease now known as poliomyelitis was originally called "infantile paralysis"—a term that for many years was certainly no misnomer, since wherever the disease occurred an overwhelming majority of the sufferers were children under five years of age. Its epidemiological behaviour appeared to be characterized by a low annual recorded case rate (10-20 per million); no records of outbreaks of any size; and a scarcity of adults and even of adolescents among the victims. This state of affairs prevailed until the late nineteenth century, when outbreaks reaching epidemic proportions began to be observed—first in Scandinavia and France, soon afterwards in other parts of Europe and, in the early years of the present century, in North America. These outbreaks were often distinguished by suddenness of onset and a higher proportion of cases over five years of age than had previously been observed in the areas concerned. They were usually followed by a five-to tenfold rise in the five-year-average case rate. So, in some countries, what had hitherto been a sporadic affliction of infants quite soon became an epidemic scourge and a serious public health problem. Not all countries, however, were concerned at that time. While in Europe and North America poliomyelitis was increasing in epidemic severity and tending to attack older and older people; in other parts of the world—for instance, Central and South America, Africa and the Eastern Mediterranean—it continued to present the characteristic old-fashioned

picture of so-called "infantile paralysis".

What brings about the transition from endemic to epidemic poliomyelitis? Is there any means of predicting approximately when it is likely to occur? Neither of these questions can as yet be answered categorically, but a recent study made in Central and South America¹ by J. R. Paul, Professor of Preventive Medicine at the Yale University School of Medicine, New Haven, Conn., USA, has thrown some interesting light on them.

The close association between the increase in poliomyelitis incidence and modern standards of living has been emphasized repeatedly by modern authors, but so far no completely adequate explanation of this phenomenon has been advanced. As Dr. Paul points out, it is a highly complex subject and a number of factors may come into play. First, for example, there is the simple fact that hand in hand with higher standards of living goes improvement in case finding and reporting, which naturally leads to an increase in the recorded rate. Secondly, with poliomyelitis, as with several other virus diseases, infantile infections are apt to be the mildest of the clinical forms, so that a very high proportion (over

¹ Paul, J. R. (1958) Endemic and epidemic trends of poliomyelitis in Central and South America. *Bull. Wld. Hlth. Org.*, 19 (In press)

(Continued from page W.H.O. 38)

dental health education, the value of many of the measures advocated by the Group would be lost. For this purpose, all known health education techniques should be employed and an international co-ordinating group might assemble and distribute suitable educational material.

It was felt that private dental practitioners, as well as public dental officers, should play a more important and active part in dental health education. To help them in this task the following facilities might be provided:

- (a) post-graduate courses, sponsored by organized dental groups, governmental agencies, or educational bodies;

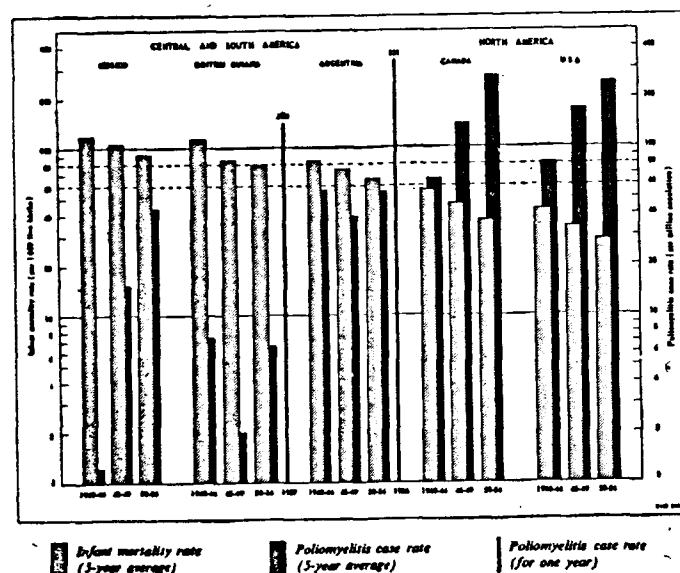
- (b) regular information bulletins or news-letters from organized dental groups, governmental agencies, or other agencies interested in the subject;
- (c) workshops, seminars and study groups on educational methods and techniques.

DENTAL TRAINING

While realizing that dental curricula in most countries tend to be overloaded, the Group thought that more attention might be paid to instruction and training in dentistry for children. No specific curriculum was suggested, but it was considered that courses should cover dental health education and preventive services.

(Courtesy: W.H.O. Chronicle)

3-YEAR-AVERAGE INFANT MORTALITY RATES (PER 1000 LIVE BIRTHS) AND POLIOMYELITIS RATES (PER MILLION) IN THREE COUNTRIES IN CENTRAL AND SOUTH AMERICA AND TWO IN NORTH AMERICA, 1940-54



The horizontal zone outlined by the dotted lines indicates what might be called a "critical infant mortality zone".

99%) of infants who become infected with polioviruses fail to develop any symptoms which would attract the attention of physicians—a fact that would account for the low case rate of the *infantile* disease. Thirdly, one of the results of better living conditions is that children who would otherwise have become infected with polioviruses in infancy may reach the age of 8-12 years before being exposed to the infection, with two consequences: (a) not having acquired immunity through a subclinical attack early in life, these older children are more likely to develop the severer, readily recognizable forms of the disease when they do eventually encounter the virus; and (b) an increasing proportion of the juvenile population will grow up

non-immune and will, so to speak, become riper each year for an epidemic.

Turning then to the second question—can the transition from endemic to epidemic poliomyelitis be predicted in a given country?—Dr. Paul explains that a fair idea of when it is likely to occur can be obtained from a study of the infant mortality rate, i. e., the number of deaths in the first year of life per 1000 live births. An earlier comparison by Dr. A. Payne, Chief of the Endemo-Epidemic Diseases Section at WHO Head-quarters, of the infant mortality rates and the poliomyelitis case rates in several European and North American countries over a number of years had revealed the interesting fact that the rates of the disease usually increased as the infant mortality rate decreased, and that the primary explosive outbreak of the disease often occurred soon after the infant mortality rate had fallen to below 75. Dr. Paul has examined the corresponding rates and epidemic incidents for certain Central and South American countries, where the transition has only comparatively recently been observed, and has found that, by and large, the inverse ratio between infant mortality rate and poliomyelitis case rates is holding there also (except in the island communities, where the polioviruses are presumably less easily introduced). The recent epidemic episodes in these countries have more often than not been—associated with an infant mortality rate of between 60 and 80, and the author therefore feels that a watchful eye should be kept on the poliomyelitis case rate in any country once the infant mortality rate has fallen within this range, since a sudden and devastating upsurge of the disease may be about to occur—an upsurge that could probably be prevented by starting a vaccination campaign at the first signs of a significant rise in the case rate.

(Courtesy: W.H.O. Chronicle)

WORLD DEMAND FOR "BRAILLE" WATCHES

Special "Braille" watches and clocks made in Britain for blind people are being exported to countries all over the world, including India. Timepieces made by a well-known British manufacturer include a kitchen "timer" for sightless housewives.

As well as the "timer", the British firm produces wrist watches and alarm clocks, all with raised dots on their dials so that they can be read by touch. They are sold by the Royal National Institute for the Blind.

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"We do this as a service", an Institute official said. "We have even adapted a standard British-made interval timer for use by many blind physiotherapists in the United Kingdom. We find that roughly three wrist watches sell to every one pocket watch. The wrist watches have special plastic covers which can be raised by a blind person. Their dials have raised dots at the hours, and the hands are specially strengthened so that they can be touched without any danger of their breaking".

HOOKWORM DISEASE IN SYRIA

IN several of the countries of the Eastern Mediterranean area, ancylostomiasis (hookworm disease) is a serious threat to public health—among the helminth diseases second in importance only to bilharziasis. Particularly heavy infestations occur in some parts of Syria, mainly in the coastal strip and along the banks of the Orontes and the Euphrates.

The disease saps the vitality and affects the health of whole communities; it also predisposes to other serious diseases, such as tuberculosis. Intestinal hæmorrhage leads to a microcytic, hypochromic anæmia, which may be very severe, with a hæmoglobin level below 30% and a red cell count of 2 million per mm³ or less. Such cases usually occur in poor, undernourished communities, and the impaired working capacity still further increases the poverty. It is therefore important to map out the areas of high endemicity and to decide what measures can be taken to combat the spread of the disease.

In October 1955, the WHO Regional Office for the Eastern Mediterranean requested Dr. H. F. Nagaty, Professor of Parasitology at the Ein Shams University, Cairo, to undertake a survey of ancylostomiasis in Syria. The following is a brief summary of his methods and findings, which have already been published in detail elsewhere.¹

METHODS

Investigations were carried out in all nine governorates of Syria, as well as at El Kayem in Iraq, a few miles from the Syrian frontier. There is frequent traffic across the frontier in this area, which adjoins Deir Ez Zor Governorate where hookworm infestation is particularly heavy, and it was thought that similar conditions might exist in the El Kayem district of Iraq. In fact, 59% of the boys and 27% of the girls at two local schools were found to have ancylostomiasis.

Altogether examinations were carried out on 4211 persons, rather less than 20% of the population of the villages surveyed and about 0.1% of the total population.

¹ Nagaty, H. F. (1957) *Bull. clin. sci. Soc. Abassia Fac. Med.* 8, 83

tion of Syria. As the men were usually scattered in the fields during the day, they could not easily be reached. Even when found, they generally refused a stool sample on some pretext or other. The women could not be asked in deference to local customs. Dr. Nagaty therefore confined his investigations almost entirely to schoolchildren, who were easily accessible and from whom, with the help of the schoolmasters, the necessary samples and data could be obtained in a short time. Children are also a very sensitive index of the presence of helminthiasis in a community, as they are careless in their habits and less resistant to the parasites.

Stools were examined by the direct smear method, two smears being made on each slide. One smear was emulsified with water and the other with iodine solution. Another smear was prepared by the Erlenmeyer floatation method using filtered, concentrated salt solution. Towards the end of the survey, which lasted altogether three months, the direct smear method was abandoned and only the floatation method used. Stoll egg counts for *Ancylostoma* were made in some cases in endemic zones to give an idea of the intensity of infestation. A search was also made for other helminths, and occasionally for protozoa. At Deir Ez Zor, some of the boys with ancylostomiasis were subjected to a more thorough investigation in hospital, including differential blood counts. The worms were collected and identified as *Ancylostoma duodenale*. Treatment was given with tetrachlorethylene.

RESULTS

The most prevalent worm disease was ascariasis, which was found in 46% of all subjects examined. Ancylostomiasis came next in importance, with an attack rate of 24%. The highest rates for this disease were found in Deir Ez Zor Governorate, where the average rate for the whole territory was 47%. In many of the schools, however, 85-100% of the children were suffering from hookworm disease. The infested villages were found along both banks of the River Euphrates. The only other area where ancylostomiasis was prevalent was Hama Governorate, with an overall rate of 43% but the disease was restricted mainly to two villages on the banks of the River Assi. The

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governorates of Hasaka, and Aloppe had attack rates of 3% and 2% respectively, while no cases at all were found in any of the remaining five governorates.

Other fairly common helminths were *Trichocephalus* (19%), *Hymenolepis nana* (11%) and *Trichostrongylus* (4%). Infestation with *Trichostrongylus* was particularly prevalent in Deir Ez Zor Governorate, where as many as 43% of the inhabitants of one village were affected. Some 45% of the subjects examined were infested with one species of parasite only, 26% with two species, 5% with three species, and 0.5% with four or more species. Only about a quarter of those examined were found to be free from worms.

DISCUSSION

Hookworm disease occurs only in areas where no proper latrine facilities are provided and where people habitually go about barefoot. This is the case in most of the rural areas of Syria—and 75% of the population live in rural districts. The villages are scattered over wide areas and the houses are without latrines of any sort. The schools, too, are very often without latrine facilities. Defecation and urination take place in open fields. Most of the villagers go about barefoot, although children usually wear some kind of footwear to school. The warm, moist conditions found in Deir Ez Zor and Hama Governorates are particularly favourable to the development of the hookworm larvæ. Although these governorates do not have much shade, and direct sunlight is inimical to the development of the larvæ, the people usually seek out a fairly shaded, secluded spot for defecation.

A simple measure that would control the spread of hookworm disease would be the compulsory wearing of

sandals or some other form of shoe out of doors. Apparently a law to this effect does exist in Deir Ez Zor Governorate, but it is not enforced. Apart from protection of the feet, attention should also be given to preventing the continuous pollution of the soil by providing all houses and schools with latrines. Where such a measure would be too expensive, public latrines might be a satisfactory alternative. Dr Nagaty considers that disinfection of faeces or soil is too difficult and expensive to be applied over large areas.

Besides these hygienic precautions, mass treatment of the entire population should be carried out in areas where an appreciable number of cases have been detected, all members of the community being treated within a short period of time. With modern drugs it is possible not only to give immediate relief to the patient, but also to reduce the number of eggs reaching the soil and thus cut down the rate of reinfestation. Nevertheless, since some reinfestation does occur and a single treatment is scarcely ever sufficient to eliminate all the worms, it is necessary to repeat the treatment at suitable intervals. Supplementing the diet with additional proteins and with iron is in itself sufficient to reduce the severity of symptoms and to enable the patient to build up a resistance by increasing the production of gamma globulin.

Wherever financial resources permit, these measures should be applied simultaneously. At the same time efforts should be made to improve the living standards of the population, particularly with regard to sanitation, and to educate the public by means of extensive health propaganda. Finally, Dr. Nagaty emphasizes the need for strengthening the health services, including the school medical services.

(Courtesy: W.H.O. Chronicle)

New Appointment for Sir George McRobert

Sir George McRobert, who was a member of the Indian Medical Service for 27 years (from 1920 to 1947), has been appointed Medical Adviser to Britain's Secretary of State for Commonwealth Relations, the Earl of Home, it was announced in London on November 27.

Sir George, who is 63, entered the Indian Medical Service in 1920. From 1925 to 1931 he was professor of physiology and pharmacology at Rangoon Univer-

sity, and from 1934 to 1945 was professor of medicine at Madras University. For the next two years he was Inspector-General of Hospitals in Bihar.

At present Sir George is senior physician at the Tropical Diseases Hospital in London. He has been a member of the Commonwealth Relations Office Medical Board since he returned from the sub-continent in 1947.

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Epidemiological and Statistical Information

Recent Data on Mortality from Alcoholism

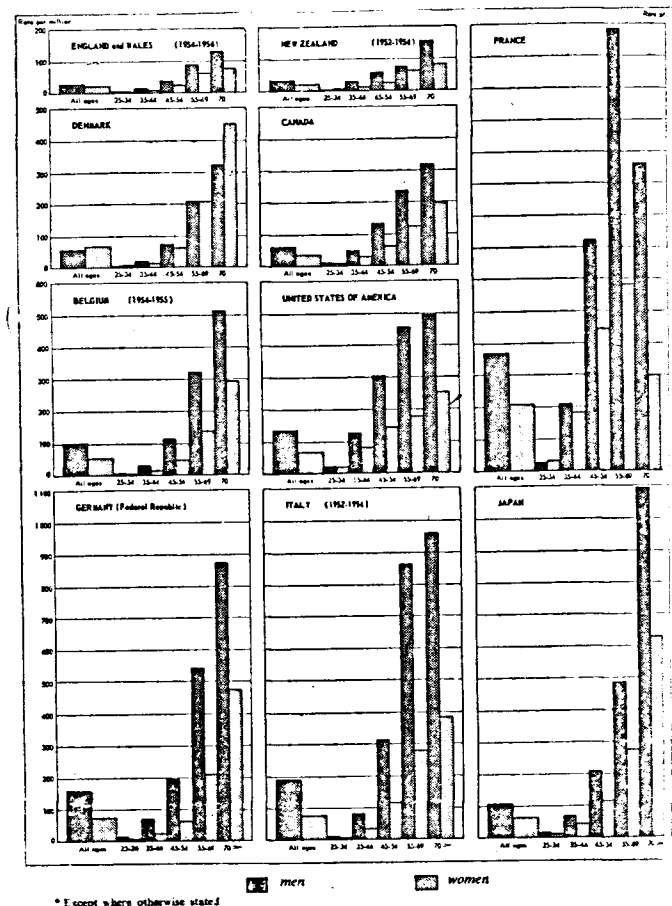
ALTHOUGH it is well known that alcoholism constitutes a serious public health problem, it is almost impossible to discover its exact magnitude by means of vital statistics. Even in the most highly developed countries, morbidity statistics on a nation-wide basis are practically non-existent, but at best they could only be of limited value when applied to alcoholism.

The only statistical data on the subject at present available relate to mortality and are far from giving an accurate picture of the situation. The number of deaths directly attributed to alcoholism cannot, in fact, reflect the true mortality, for the consumption of alcohol may be at the root of many other diseases or violent deaths (accidents, suicide, homicide, etc.). Following the rules of classification, it is generally these diseases or causes of violent death that are taken into account for the purpose of mortality statistics, alcoholism being considered only as a contributory factor. To be of real value, the statistics must include the number of deaths to which alcoholism is a contributory factor, as well as the number of deaths of which it is the primary cause.

The data on alcoholism recently published by WHO in its *Epidemiological and Vital Statistics Report*¹ must therefore be considered only as a rough guide; they do not permit comparisons to be made between one country and another but are useful in that they indicate the general trends during recent years in certain countries. The figures are supplemented by data concerning mortality from cirrhosis of the liver—a disease which is, of course, often related to alcoholism.

It may be said that during the last few years the mortality from alcoholism (i. e., alcoholism properly so-called and alcoholic psychosis) has remained more or less stationary in most countries. In France, however, a continual rise was noted (from 6.2 per 100 000 inhabitants in 1950-1952 to 10.6 in 1955), while in the United States the rate has constantly declined (from 1.7 per 100 000 inhabitants in 1950-1952 to 1.3 in 1955). On the other hand, deaths from cirrhosis of the liver (with or without mention of alcoholism) have tended to increase. In France, for example, mortality from this disease rose from 19.7 per 100 000 inhabitants in 1950-1952 to 31.9 in 1956. Austria, Belgium, Germany, Japan, Portugal and the

MORTALITY RATES (PER MILLION) FROM CIRRHOSIS OF THE LIVER IN CERTAIN COUNTRIES, BY SEX AND AGE-GROUP, 1953-1955*

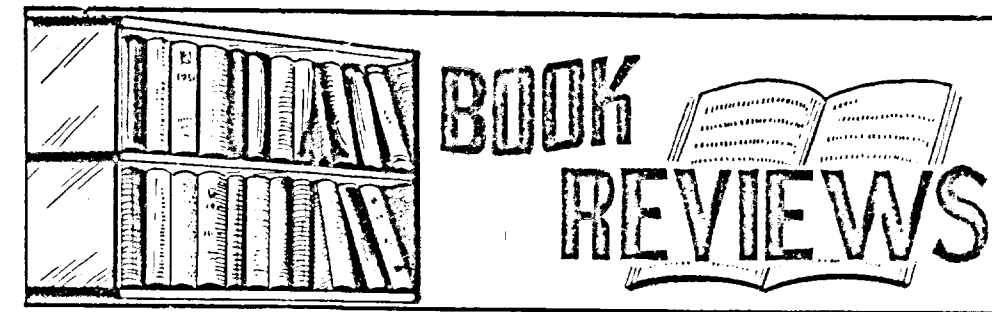


United States are among the countries in which a similar increase has been noted, although the respective rates vary widely. Mortality is considerably higher among men than among women (three to four times as high with respect to alcoholism and about twice as high for cirrhosis).

Deaths from alcoholism and cirrhosis are mainly in the older age-groups. Mortality from alcoholism is highest between the ages of 40 and 69, after which it decreases slightly; mortality from cirrhosis of the liver increases gradually with age, the highest rates being reached above 65 or 70 years.

The accompanying figure shows mortality rates from cirrhosis of the liver in various countries, by sex and age-group. It should be noted that mortality from cirrhosis generally accounts for something like 70-80% of all deaths reported for cirrhosis of the liver and alcoholism together.

(Courtesy: W.H.O. Chronicle)



LEPROSY, IN THEORY AND PRACTICE—

Edited by R. G. Cochrane with a foreword by Sir George McRobert, John Wright and Sons, Ltd. Bristol, 1959—Price 84 s.

The fact has to be accepted that Cochrane's book on Leprosy is the standard book on the subject. This is the second edition of this renowned and authoritative book. In this edition Dr. Cochrane has invited several distinguished leprologists to contribute. This book is a comprehensive account of leprosy in its modern setting. The subject itself is of special interest to medical men in India because the control and eradication of leprosy is an important public health problem. This book of reference cannot but be an invaluable one because it includes the very latest advances in the understanding and conquest of this disease.

There are 25 chapters to this book of 407 pages. There are 189 illustrations to the text. The book is got up with the customary excellence in quality which one has come to expect from John Wright and Sons Ltd, Publishers.

A foreword is followed by Chapter 1 which deals with the history of leprosy and its spread throughout the world. Chapter 2 concerns the bacteriology of leprosy. A map shows world distribution of the disease. In Chapter 3 is an account of the sub-microscopical structure of mycobacterium lepræ. This includes work done with the use of the electron microscope. Chapter 4 is about acid fast bacteria. Chapter 5 deals with certain other mycobacterial infections. The epidemiology of the disease is dealt with in Chapter 6. It is of special interest to the Indian reader to find that our own distinguished Dr. Khanolkar contributes chapter 7 on the pathology of leprosy, a subject on which he has made valuable

contributions. Chapter 8 concerns recent investigations into the sensory and neurohistological changes in leprosy. Chapter 9 and 10 are written by Dr. Cochrane himself and deals with immunology, and signs and symptoms respectively. Chapter 11 and 12 also by the author is on differential diagnosis and classification. Chapter 13 is entitled "The eyes in leprosy" and there are some good colour plates of ocular lesions. Chapter 14 deals with lesions of the nose and throat, mouth and ear. Reactions in Leprosy is discussed in Chapter 15. Both these chapters (14 and 15) are by Dr. Cochrane. Chapter 16 is devoted to Chemotherapy with the Sulphones. Chapter 17 on Therapy, and chapter 18 on Control of treatment and treatment of reactions are by Dr. Cochrane. Chapter 19 is about experimental studies and screening tests. Chapter 20 deals with Radiographic appearances and bone changes in Leprosy their cause, treatment and practical application. Chapter 21 is on the very important subject of Deformity in Leprosy: Orthopaedic principles and practical methods of relief. The contributor is Dr. Paul Brand of Vellore, renowned for his work on the Surgery of Leprosy. The chapter deals with the pathology of the deformity, functional anatomy of the hand, the assessment of the hand, treatment of deformed hands, rehabilitation, and research in deformity. The operative techniques include surgery of the hand, surgery of paralytic foot deformities, plastic surgery of the face and plastic surgery of the breast. In connection with the plastic surgery on the breast there is an interesting illustration of gynecomastia following testicular atrophy in a case of leprosy. The case is that of Dr. Kanakaraj, (who alas is prevented by circumstances from pursuing his interests in the surgical problems of leprosy. Chapter 22 is about the care of the foot. Physiotherapeutic methods in the relief of deformity is discussed in chapter 23. Chapter 24 and 25 both written by Dr. Cochrane deal with the prognosis and criteria of discharge and

¹ *Epidem. vital Statist. Rep.*, 1958, 11, No. 4. See also *Epidem. vital Statist. Rep.*, 1956, 9, No. 3.

prevention respectively. Chapter 25 is followed by Appendix 1, on Plastic surgery, Appendix 2 on Techniques of examination, Appendix 3 on Bacterial indices, Appendix 4 on method of concentration of acid fast bacilli, Appendix 5 on practical notes on technique for use in preparing sections from biopsies of the skin for histopathological examination, Appendix 6 on Silver impregnation of cutaneous nerve fibres, Appendix 7 on diagrammatic representations of lesions in leprosy, Appendix 8 on diagrammatic method of recording intradermal injections on the body, Appendix 9 on the lepromin test and lastly appendix 10 dealing with how leprosy control works in Tanganyika.

Although this book is comprehensive it might have included an account of the gynaecological aspects of leprosy but this is a very trivial point.

"If this book stimulates and encourages a greater interest in, and a better understanding of leprosy, and enables workers in remote institutions more effectively to serve those who suffer, then the time and effort of the many who have helped to produce it will be amply rewarded" concludes the author in his preface. Of this there can be little doubt.

Undoubtedly Dr. Cochrane's book is the standard work on the subject and indispensable to all interested in the field.

* * * * *

A HANDBOOK OF OBSTETRICS AND GYNAECOLOGY FOR NURSES—

by Douglas G. Wilson Clyne, John Wright and Sons Ltd, Bristol, 1958 – Price 15 s.

This small sized 204 page book is written for nurses and is based on the syllabuses of both the General Nursing Council for England and Wales and the General nursing council for Scotland. There are twenty chapters in this book as well as 53 illustrations. The chapters deal with the conventional subjects in Obstetrics and Gynecology and the author uses tables to make his points. Emphasis is laid on the practical points of nursing. The instruments required are also carefully listed. The chapter on pre-operative care although extremely concise contains

useful information. The instruments used for surgery are adequately illustrated. In the section on placenta praevia perhaps the modern classification might have been used. Altogether this is a concise account of obstetrics and gynaecology for nurses.

* * * * *

A MANUAL OF ANÆSTHETIC TECHNIQUES— Second Edition

by William J. Pryor, John Wright and Sons Ltd., Bristol, 1959 – Price 27 s. 6 d.

One of the young specialties in which rapid advances have been made in modern medicine is anaesthesia. The author of this 228 page book with 73 illustrations attempts to deal with the practical aspects of anaesthesia incorporating all modern techniques. The book is a vade mecum for house surgeons and registrars commencing the practice of anaesthetics. There are 23 chapters in this book as follows: Chapter 1 deals with the anesthetic room, and gives an account of all the equipment which is essential. The importance of having a recovery ward is stressed. Chapter 2 is devoted to an account of the equipment used in administering anaesthesia. The mechanical and physiological aspects of anaesthesia is discussed in Chapter 3. Chapter 4 which is on Agents used in anaesthesia describes the properties, actions, advantages and disadvantages of the following agents: Aether, Methyl-n-propyl aether, divinyl aether, ethyl chloride, chloroform, Trichlorethylene, cyclopropane, fluothane, nitrous oxide, oxygen, carbon dioxide, thiopentone sodium, thialbarbitone, buthalitone sodium, pethidine, relaxants (D tubocurarine chloride, gallamine triethiodide, laudexium methylsulphate), Depolarizers (suxa methonium halides), Analeptics (N-allyl normorphine, coramine), and Vasopressors (Methylamphetamine hydrochloride, 1-noradrenaline). Chapter 5 deals with preoperative conditions requiring special care in anaesthesia. Chapter 6 is on the technique of intubation. Premedication and narcosis is dealt with in Chapter 7. Chapter 8 deals with general anaesthetic techniques. This is a most useful and instructive chapter. Chapter 9 deals with machines used for controlled respiration. Special anaesthetic techniques is considered in Chapter 10. The special difficulties or problems in surgery of different regions are discussed as for instance in

Obstetric and Gynaecological operations or in the Ear nose and throat. Chapter 11 is devoted to anaesthesia in children. A very brief chapter (12) discusses geriatric anaesthesia. Chapter 13 is on Dental anaesthesia. Chapter 14 on Emergency anaesthesia and resuscitation, and chapter 15 on Anaesthetic emergencies and difficulties give valuable practical hints. Chapter 16 is on Postoperative care, complications and treatment. Spinal anaesthesia is discussed in chapter 17 and local analgesia in Chapter 18. This includes an account of regional blocks. Chapter 19 concerns intravenous therapy. It includes brief notes on plasma expanders such as Dextran and Plasmosan.

ERADICATION OF CONTAGIOUS DISEASE

When Pasteur destroyed the concept of spontaneous generation of infectious disease, the concept of eradication of the causative agents of communicable diseases became inevitable. Etymologically, the word "eradicate" comes from the Latin and means to take out by the roots—to extirpate. Prior to Pasteur, medicine used the verb "eradicate", and the noun "eradicate," in relation to disease in the individual patient. Today the term "disease eradication" means the complete elimination of all sources of infection or infestation so that, even without all preventive measures, the disease does not reappear. In 1888, Chapin, commenting on Koch's discovery of the tubercle bacillus, boldly declared, "There is no theoretical reason why a purely contagious disease like tuberculosis cannot be exterminated. If we can prevent the spread of contagion at all, we can prevent it entirely." Similar visions of liberating the human race from malaria, yellow fever, hookworm and other diseases have arisen as the mechanisms of transmission of these diseases have been found and methods of prevention devised.—F. L. Soper, M.D., International Health in the Americas, *The Journal Lancet*.

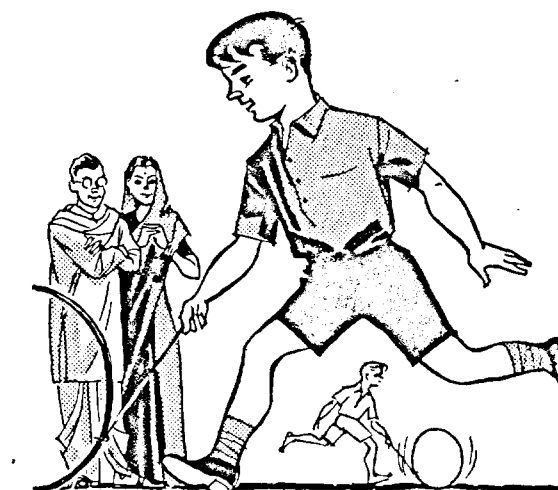
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Chapter 20 deals with hypotension and 21 with Antihistamines in anaesthesia. The dangers of "explosion risk" is dealt with in chapter 22. Chapter 23 is a note on the expanding role of the anesthetist. There is a comprehensive index at the end of the book.

The book which is lavishly got up on beautiful paper is published by John Wright and Sons will be a valuable acquisition. The important feature of the book is that it is essentially a practical book. The author and publishers deserve to be congratulated on it.



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adenoma. A few instances of such an occurrence were present in the earlier years of our experience, but incidents of this kind have practically disappeared since we have been giving smaller doses over a greater length of time. In a very small number of patients a slight hæmorrhage has at times been suspected, but by careful checking of the visual fields at weekly intervals, their vision has gradually cleared up without the necessity of operating. We feel that the tendency of hæmorrhage to occur is definitely related to the larger daily doses which were given originally. This is a possibility to be kept in mind, however, and obviously if serious and rapid visual loss should occur during treatment or subsequently, prompt operative intervention is mandatory. —Gilbert Horrax, M. D., Treatment of Pituitary Adenomas, A. M. A. Archives of Neurology & Psychiatry

* * * * *

INDIAN EAR SPECIALIST STUDIES IN U.K.

When he returns to India next month, Dr. P. Rama Raju will be in charge of a new rehabilitation centre

and audiology unit to be set up in Andhra Pradesh—the first of its kind in India. No decision had yet been taken as to the exact site of the unit, he said in an interview in London.

Fortysix-year-old Dr. Rama Raju is lecturer in ear, nose, and throat diseases at Andhra Medical College and assistant surgeon (ENT) in King George Hospital—both at Visakhapatnam. Under the Technical Co-operation Scheme of the Colombo Plan, he is now attached for six months to the Institute of Laryngology & Otology, London. Later he will visit ear hospitals in other parts of Britain.

“There are in India”, Dr. Rama Raju said, “a large number of deaf who could be rehabilitated”. He pointed out that one big problem was the need for inexpensive hearing-aids, and expressed the hope that with some technical co-operation from the West it might be possible to start manufacture in India on a large scale. Dr. Rama Raju recently visited a British factory where he was much impressed by the newest types of aids, weighing only $\frac{1}{2}$ oz.

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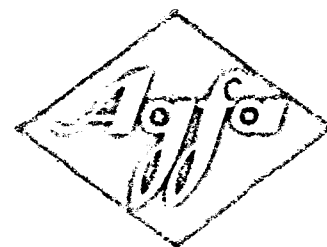
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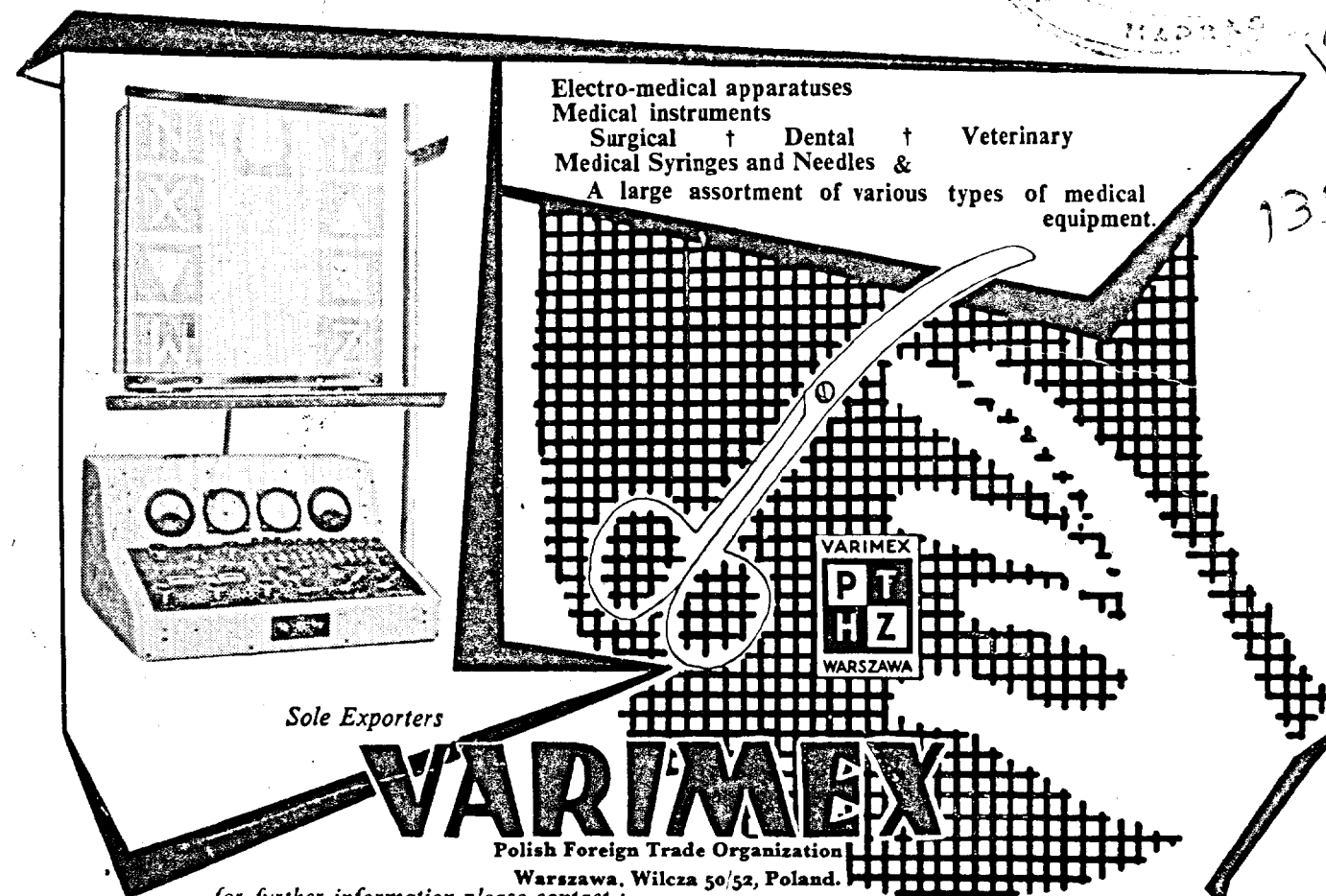
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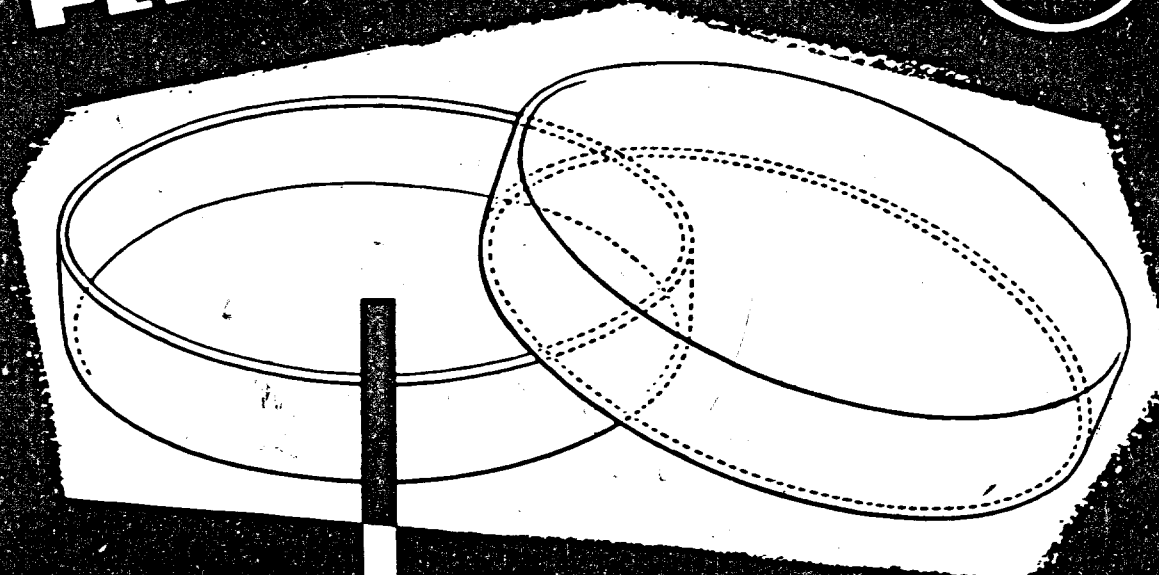
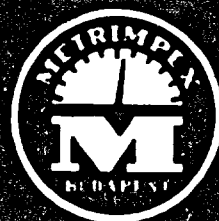
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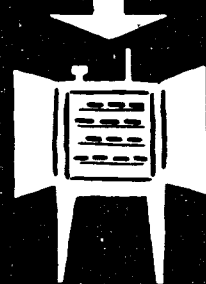
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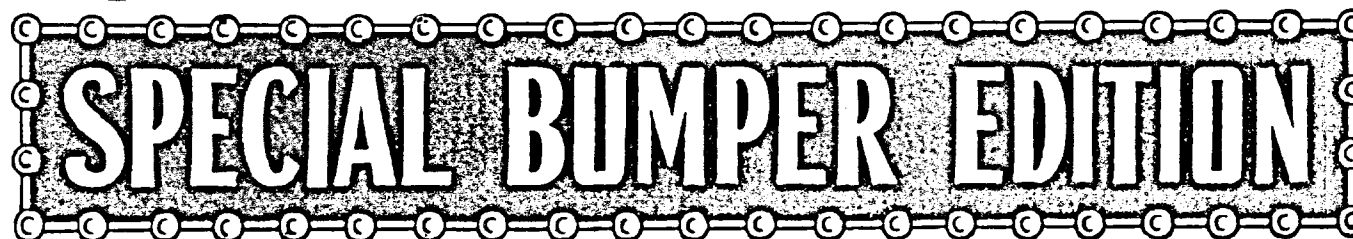
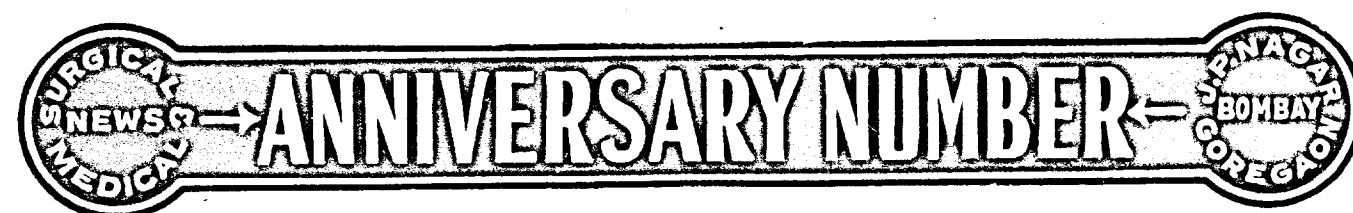
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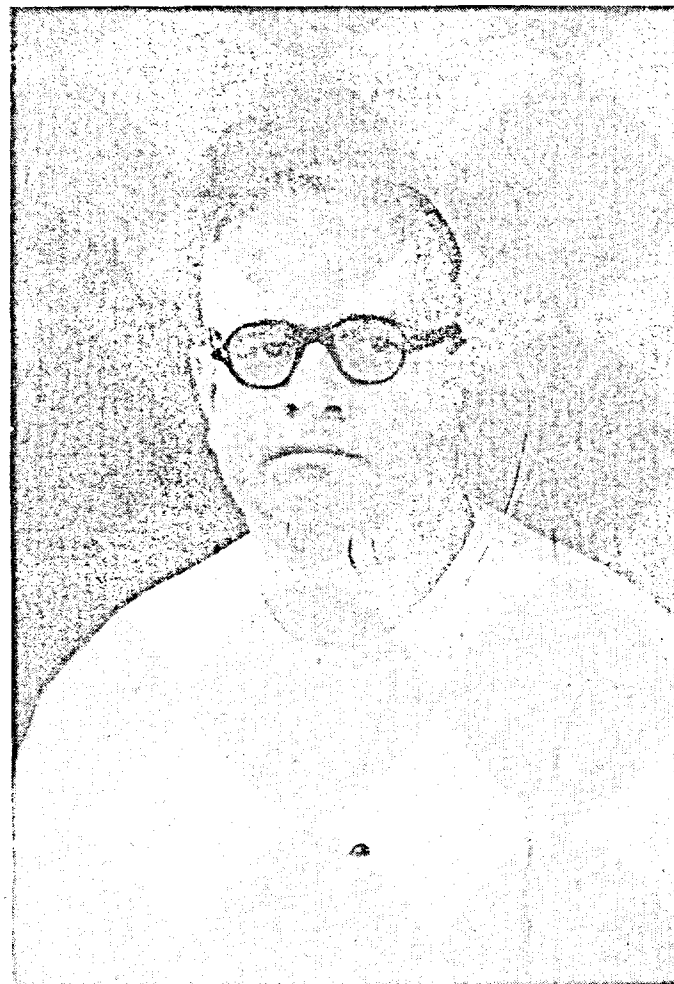
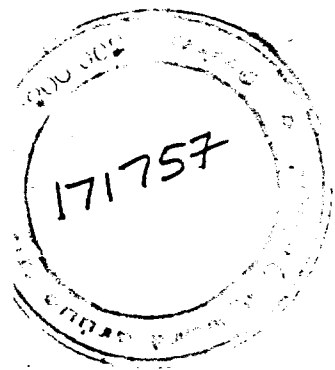
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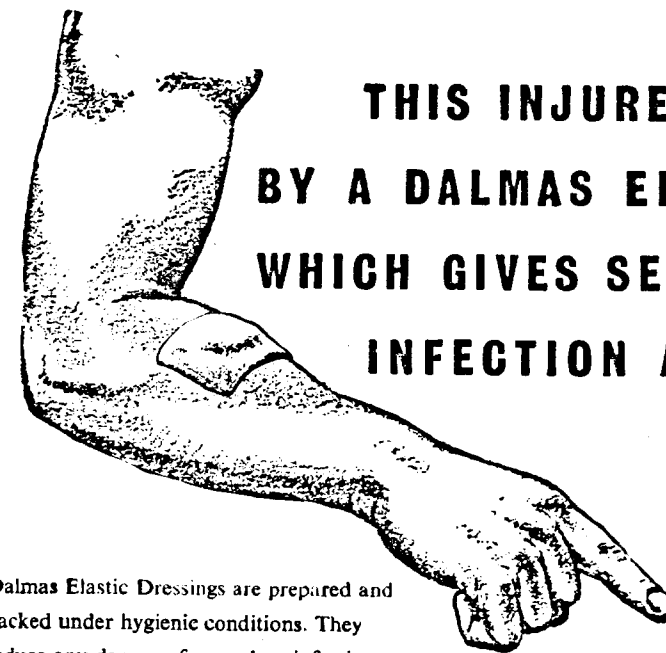
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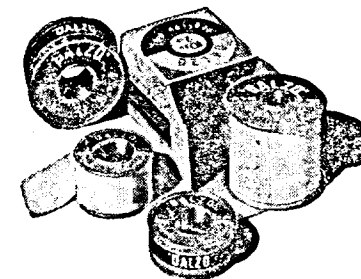


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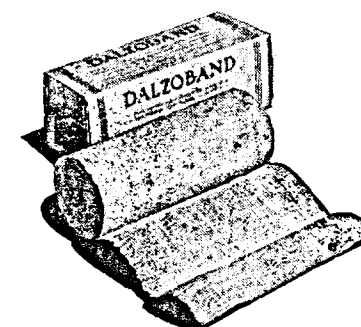
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RURAL MEDICAL RELIEF

"I am resigning from service" the young doctor said, "because I have been posted to a primary health centre". At first sight it may seem that this is an unreasonable stand to take because our people in the villages also need medical aid. Indeed it has become a popular pastime, particularly among the less knowledgeable to shout the slogan "We want more doctors for the villages". One very important person has recently declared "It makes my heart weep to find so many villages without a doctor; there are too many unmanned rural centres that I sometimes feel I should resign". So far he hasn't.

The First Plan increased the number of health centres by 16 per cent. The provision of more adequate health coverage is considered by far the most urgent programme of the Second Plan period. The object is to set up at least one primary or central health unit in as many of the rural development blocks as possible. Although one centre cannot hope to serve a block of one hundred villages efficiently or adequately it is hoped that this will be the beginning, a nucleus for further expansion. A sum of 23 crores is to be spent on 3000 new centres. All these figures may sound impressive. It is easy enough to open any number of health centres. That does not mean that it is going to be easy to find the doctors to man them. There is many a centre today which has been opened but remains deserted because no one is willing to go there.

It is easy to accuse the doctors and suggest that they like to remain in the towns and cities where they can make money. Yet it is unjust to make such an accusation without appreciating the hardships, both mental and physical, which a doctor posted to a primary centre has to endure. It is little to be wondered at, that medical men who are posted to the primary centres do not join the service at all, or quit within a month. It is high time that the difficulties which beset the medical practitioner in such an environment are appreciated.

Consider a newly qualified medical man who has just taken his degree after all the years of medical study. The study itself, unlike the arts, is most arduous, very expensive and puts a great strain on the student. When after years of study, an expensive year of internship and then a period as a house surgeon, the degree is obtained the doctor is most anxious to establish as speedily as he can some measure of financial stability. General practice in his home town or city could fetch him a good income if not a steady one. This would depend a lot on his work and qualities. On the other hand the service offers him an assured income every month whether he does anything or not, provided he can keep on the right side of his superiors. Besides there is always a pension to look forward to with the unpredictable hopes of promotion to places of power and authority. In addition he might turn in a tidy sum by private "consulting" practice. These are all great attractions. There are also a handful of academically minded souls who pursue the subject for the subject's sake devoutly hoping that some day the muses

will conspire to make it possible for them not only to take some sort of post graduate qualification but also acquire experience as teachers. Only a combination of a set of fortuitous circumstances can enable them to achieve their ambition to become lecturers or professors. Possibly they might entertain better hopes of winning a national sweepstake!

A person who joins service for the financial security it offers does not find the salary so phenomenally attractive as to make him serve under conditions which put an unreasonable strain on his physical well being. He finds that his earnings from private practice will be infinitely superior and ensure for him many of the physical comforts he wants. The academically minded man posted to a rural centre either gives up being academical and stays on because the alternative is to land up in immediate financial troubles which will take time to overcome, or seeks an employment somewhere else where his interest to pursue knowledge and disseminate learning is respected and encouraged. He might remain if he had the conviction of his belief that better times may come to him some day. Then it would be worthwhile languishing patiently in a village, forgetting what medicine he ever learnt and renouncing the life he was used to. Knowing fully well that the times are such that established conventions such as respect for seniority, ability, aptitude or accomplishments will meet with scant respect in a system in which favourites rise with the speed of rockets and those in disfavour fall like meteors, where constant friendship with those in power alone can make for a secure future, he does not remain long when sent to a village. If he feels like the prisoner condemned to the Siberian wastes, perhaps it is a pardonable feeling! Still there may be some for whom promises of a great future on their return will be held out but within a few weeks they begin to harbour the healthy doubt whether those who promised them will remain in office to honour them. An exceptional few there will always be, full of the "missionary zeal" to serve their fellow men in the villages. Their nostrils full of the spirit of adventure they proceed determined to overcome all hurdles in the way and make their mission a devastating success. Yet how long can their resolve and fortitude hold out when as the weeks roll by, the privations under which they sustain themselves, their day to day conflict with their pen pushing superiors, the realisation that what they perforce practice is not medicine but a form of first aid without the wherewithal, all become uppermost in their conscious mind. They realize that they will never be like their hero, Schweitzer famed medical missionary of the Congo. If Schweitzer wanted something he got it or made it and didn't have to account to his superiors for having used his common sense or resourcefulness but here it was quite different. A ream of papers would have to be submitted to explain why an unusual or expensive step was taken to ensure a healthy water supply!

Take the case of Dr. Ram Lal, B.Sc., M.B., B.S. He was posted to a primary centre as soon as he joined service. Listen to his story. "I would have resigned but for two reasons. For one thing my home town is only 10 miles away. The second thing is that this village enjoys an electric supply. Otherwise I wouldn't have remained here. Even as it is I stay in the fond hope that better times are coming. There is a bus service of a sort to this place. My food is sent ten miles in the custody of the conductor. If the bus does not come on any particular day I starve. The drinking water here is brackish and so

that too has to be brought by bus in big urns. The villagers maintain themselves on a staple diet of 'Cholam' which I do not find palatable. Perhaps I am not used to it. My only contact with the town is the bus. When my papers come it is usually two or three days old. My only intellectual companion here is my compounder and a village school-master. Fortunately there is electricity in my ill ventilated quarters which allows me to run a fan and a radio. Many centres do not have electricity. I run a clinic every morning and some 150 people attend. You can well imagine the strain of eliciting a history from totally uneducated patients. To each one I have to explain how the medicines are to be taken and when. There is little semblance of modern medical practice. Diagnosis is arbitrary. Treatment consists of giving them one of several stock mixtures of which we try and maintain a steady and uninterrupted supply. Facilities for even simple methods of investigation are non-existent. Even if it were available there is simply no time. I send most of the cases which require medical or operative treatment to the Tehsil hospital. I have a jeep at my disposal and visit three sub-centres every afternoon every day of the week except Sunday. The sun is usually hot and the work takes a long time. When I return I am glad to have a wash, have my food and go to sleep. In such circumstances there is no question of reading anything or keeping up to date with the news, let alone medical advances! The people immediately above me lack imagination. After a lot of correspondence on the subject I managed to get a cylinder of oxygen. It will take many months before I can get a lock spanner to open the nozzle. Then how does one administer the gas without a flowmeter and a rubber tube both of which are unlikely to be supplied for a long time? The medicines are all stock medicines and expensive drugs like penicillin cannot be obtained. The patient can buy it and bring it and I can inject it for him. In addition to my medical duties I am supposed to do the work of a health officer and inspect slums and other places. Of course there is always the inevitable correspondence to be looked to. For instance I am supplied with porcelain water-seals. I am expected to give them free to the villagers and tell them how to improve their sanitation by putting up suitable constructions. If they decline to build, I have to answer a lot of statistical questions. To provide reasonable and honest answers to them I have to do everything short of going and building the sanitary affairs myself. My compounder is my clerk, personal assistant, pharmacist, public relations officer, philosopher and guide all rolled into one. At every step I have to account to my superiors of what I am doing; otherwise I will be taken to task.

Financially I am better off than the others in the city because the cost of living is almost nothing, and there are no distractions like cinemas or other entertainment. In fact there is very little one could spend money on. I can and do make some extra money by private consulting practice. Of course I feel completely out of touch with medicine. If my home wasn't in the town ten miles away and from there I get food and water, and if it weren't for the electricity which enables me to run a fan and radio, I would never have come here let alone stayed. Also there is always the hope that I may soon be able to get out of this for better things. Nothing could be worse except perhaps for another centre with fewer facilities".

Dr. Ram Lal's story is interesting and thought provoking for in it lies the clue for

the satisfactory working of the health centres. In successfully solving some at least of the difficulties which have confronted him lies the secret of being able to staff the rural centres with medical men.

Without a minimum of physical comforts assured, it is unlikely that anyone will be ready to serve. At least arrangements can be made to secure food, a protected supply of water, transport, a reasonable standard of accommodation, and electricity. For a people who can work engineering miracles in the great river valley projects such things should be easy. The doctor may be allowed to use his ingenuity and resources without unnecessary interference from above. No doctor should be sent for this work *against* his will; certainly never as a sort of punishment. This is quite contrary to the very spirit in which it should be organized.

Ideally it should be possible to send a team fully equipped as a mobile unit. This is surely a practicable proposition and good work can be achieved. A fleet of jeeps and lorries with equipment and a complete team of medical personnel could achieve something more constructive than a lone soul sent like a condemned exile to the Siberian wastes. Such a team could organise itself in true army style and surmount difficulties such as accommodation, water supply, power and food. If the army can solve its problems and look after its soldiers in impossible terrain why can't we look after our medical and other personnel equally well? In such a team even specialists can find work which they like and have been trained for. By sending a team there will be company and a feeling of comradeship that they are on a campaign to fight disease and render medical aid to the hitherto undoctored villages. Such an approach would be infinitely better than opening more and more centres for which doctors cannot be found.

Undoubtedly the problem of providing medical care for the population of India who live in the villages is a formidable one. It has to be solved. It can never be solved by using the health centres as places of exile for those people who are not in official favour to make room for those who enjoy the patronage of the wealthy and the powerful to idle away their times in the city hospital and flourish on a lucrative practice commanding and enjoying all personal comforts. Let everyone spend a short time and take it in turns. Such an experience cannot but enrich all.

The rural medical aid problem is not a simple one that can be readily solved. To appreciate the difficulties which the doctor is confronted with and to make an honest attempt to remedy such difficulties will go a long way instead of merely blaming the doctors for not wanting to go to the villages.

FLUORIDATION ABROAD

Minneapolis—Water fluoridation programs are now under way in 15 countries, apart from the United States; it was reported here at the World Health Organization's 10th anniversary Assembly. These countries are: Australia, Belgium, Brazil, Canada, Chile, Columbia, El Salvador, Western Germany, Great Britain, Japan, Malaya, The Netherlands, New Zealand, Sweden, and Venezuela. The Panama Canal Zone also has a program, and plans have been approved for water fluoridation projects in Norway and Switzerland.

Treatment of Addison's Disease

BY DR. S. SEN

First Physician, Tata Main Hospital, Jamshedpur

THE treatment of Addison's disease has recently been profoundly revolutionised by the great advance made in the study of adrenal physio-pathology together with the unique success in biochemical discoveries of important adreno-cortical steroid hormones, which are now produced synthetically. These discoveries have very favourably influenced the prognosis of a disease hitherto considered to be invariably fatal.

The pathogenesis of Addison's disease relate essentially to the deficiency of two groups of adreno-cortical steroid hormones, viz. aldosterone and cortisone. The former is sometimes called mineralo-corticosteroid because of its mineralo-active properties, and the latter gluco-corticosteroid because of its glyco-active properties. The former is a recent discovery from the amorphous fraction of the adreno-cortical hormones and has been found to have extraordinarily strong effect on mineral metabolism. It induces in rats a 25 times stronger sodium retention and 5 times stronger potassium retention than cortexone which is one of the six recognised essential adrenocortical hormones, while in contrast to the latter it has hardly any effect on water elimination.

The first clinical test with aldosterone (Mach et al, Schweiz. med. wscr. 84, 407, 1954) showed that administration of minimal quantities 2'5 to 3'5 microgram a day of this hormone brought about the disappearance of the clinical symptoms of Addison's disease. Aldosterone also has an effect on carbohydrate metabolism, while in the small amounts administered it has no effect on nitrogen metabolism. It is still too early to assess the significance of this substance in relation to the other adreno-cortical hormones; but it is at least evident that it differs from them not only in respect of structure and therefore mode of biosynthesis, but also in its relatively high potency and low concentration in biological fluids as well as in the manner in which its secretion is controlled. There is evidence that the latter is not subject to ACTH stimulation (Simpson, S. A. and Tait, J. F.; Recent Progr.

Hormone Res. 11, 183, 1955). The synthesis of aldosterone has recently been reported by Wettstein et al; the product possessing biological activity identical with the natural hormone.

All the clinical symptoms of Addison's disease can easily be explained by the deficiency of these two hormones. This is quite evident when we know that aldosterone exerts its fundamental action on the salt water balance. Its deficiency produces that group of symptoms characteristic of Addison's disease viz. hyponatraemia, hypochloraemia with increased urinary elimination of chlorides, hyperpotassimia, hyperazotaemia, diminution in the volume of blood, dehydration and increase in the hæmatocrit value. The marked loss of sodium as well as of liquids with evident diminution of the extra-cellular fluids, largely, if not fully, explains the loss of body weight, and the decrease in arterial pressure seen in Addison's disease.

Deficiency of gluco-corticosteroids, particularly cortisone, on the other hand, causes decreased intestinal absorption of carbohydrates and lipids, diminution of the hepatic glycogen with hypoglycæmia, alteration in normal phosphorylation processes, adynamia, emaciation, asthænia and diminished resistance to infection, intoxications, physical and psychic disturbances and cold, as well as diminution of the urinary 11-oxycorticoids etc.

Adreno-cortical androgea deficiency causes sexual asthenia with loss of hair and lowering of the urinary level of 17-ketosteroids.

Armed with this knowledge we can now describe the modern and most rational treatment of Addison's disease which has given excellent results.

The general principle of treatment of Addison's disease is dietetic and therapeutic. The diet should be such as to contain a liberal amount of sodium and chloride and the smallest quantity of potassium. Food should, therefore, be well seasoned with kitchen salt. In addition sodium chloride should be

administered in dosage of 5-6 gms., daily, preferably in the form of keratinized tablets or in capsules. But when the hormone treatment is started the dose of sodium chloride must be reduced proportionately. To reduce the intake of potassium it is necessary to reduce the consumption of such articles of food which contain a large amount of potassium viz. fruits, vegetables including potatoes. These must not exceed 2 gms. in daily diet; and these should be boiled in water to wash out their salt content. Suitable tables are now available indicating the potassium content in the commonest fruits and vegetables. Even tea and coffee are restricted as they also contain potassium. Similarly wholemeal bread has also to be avoided.

Regarding therapy the treatment of Addison's disease is mainly hormonal. As the cause has been found to be total deficiency of adreno-cortical hormones the ideal therapy would be a total substitution by whole cortical extracts. It is, however, not practicable as it requires 500-1000 gms. of fresh gland to supply the daily need; and as the most active total extracts so far available in the market requires 50-75 gms. of fresh gland per ml. it can be understood that such treatment is economically prohibitive.

We have, therefore, to depend upon the combined administration of mineralo-corticosteroids and the gluco-corticosteroids; the most active of the former being aldosterone, which is much more potent than the next one viz. desoxycorticosterone. It is also better tolerated, and the dosage is also small—as the average dose of aldosterone is 150-200 microgramme.

The first clinical trial of aldosterone in Addison's disease was carried out by Mach who obtained rapid improvement of the asthenia in a few hours, of the pigmentation and hypotension in a few days, and almost immediate restoration of the electrolyte balance. He also observed diminution of hypoglycæmia and of tendency to arthralgia—effects not observed in treatment by desoxycorticosterone. (MACH et al., Schweiz. med. Wscr. 84, 407, 1954).

Ideal though it is, this treatment is not yet within the range of everyday practice as it is extremely costly and is in very limited supply. This can be understood when we know that it requires 500 kg. of ox adrenal to produce only 22 mgs. of aldosterone. This being so we have still to rely upon desoxy-

corticosterone, which is prepared synthetically in large quantities.

Desoxycorticosterone is generally administered intramuscularly, in the form of an oily solution and in dosage of 5 to 10 mg. daily. Its beneficial effects can be determined by observing the weight chart and arterial pressure, besides the clinical symptoms and laboratory findings. A rapid increase in weight follows its administration. The arterial pressure also increases although rather slowly. It is advised that the best therapeutic effect will be an increase of 500 gm. daily in the first week and 300 gm. in the second. The dose can thus be regulated in each individual. Finally the dose can be reduced and fixed at about 2-3 mg. daily as a maintenance therapy. As has already been stated, besides normally salted food, a daily supplement of salt should be given.

If the daily injection of the maintenance dose is found to be inconvenient a depot injection of 50 mg. of aqueous microcrystalline suspension may be given. Its disadvantage, however, is the uncertainty of regular absorption and rapid absorption may produce symptoms of overdose.

Nowadays the maintenance therapy can preferably be carried out by subcutaneous implantation of crystalline desoxycorticosterone acetate (DOCA) tablets. This gives a more continuous, regular and efficacious action, by the slow and gradual absorption of the hormone. It is also more economical. The dose for a single implantation is 200-400 mg. on the average and its effects last from 6 to 10 months.

The only defect in this regime is due to overdose which produces œdema and arterial hypertension, cardiac insufficiency with left ventricular failure and acute pulmonary œdema and may even be followed by death. In this eventuality the drug must be stopped at once and in the case of implantation one or two implanted tablets must be removed. On the other hand it may so happen that after a few weeks of effective therapeutic action the beneficial result may cease and the original symptoms reappear. In such case the possible cause may be encapsulation with fibrous tissue of the implanted tablets. But it does not occur commonly.

Desoxycorticosterone alone is not sufficient to stabilise a patient during adrenal crisis—such as may

occur in physical and psychic trauma, infections, intoxications, overwork etc. which call for increased demand on adrenals to produce more glucocorticosteroids; and cortisone can supply this demand. It is therefore essential to always combining cortisone with desoxycorticosterone. This combined therapy marks the greatest step forward in the modern treatment of Addison's disease. The therapeutic effect of cortisone is generally seen after some 5-10 days. The dose is anything between 5-25 mg. (average 10 mg.) a day in different individuals. This can either be given by intramuscular injection or orally in tablet form. In such combined treatment the dose of desoxycorticosterone can be reduced to one half of that required if it were used alone i. e. two weekly injections of 5-10 mg. each. In general it is not necessary to give a sodium chloride supplement with this combined treatment.

Cortisone has the defect of causing a flare-up of any old tuberculous lesion. In that case the cortisone treatment should be withdrawn. It is therefore essential to exclude any tubercular lesion before starting with cortisone treatment.

As this is only a substitution therapy the treatment should be continued for a long period if not indefinitely with, of course, suitable periods of rest. The hormone treatment, once started, should never be suddenly withdrawn for the danger of producing adrenal crisis.

ACTH has no place in the treatment of Addison's disease as it can not stimulate a dead adrenal cortex. On the other hand combination of hormones containing progesterone or testosterone may be useful in reducing the requirement of desoxycorticosterone. This may also exert an anabolic action on protein metabolism.

Other complimentary treatment in Addison's disease are liver extracts, vitamin B complex and most important of all high dosage of vitamin C—say 1000 mg. a day.

A high carbohydrate diet, proper and adequate peaceful rest and avoidance of physical and psychical disturbances are very essential to avoid the ever-present peril of acute adrenal crisis.

The treatment of adrenal crisis is mainly preventive.

But if it occurs it should be treated most promptly and vigorously. For this the warning signs should be looked for which are increase of anorexia, nausea, vomiting, epigastric pain, diarrhoea, arterial hypotension etc.—simulating an acute abdominal crisis and circulatory collapse. This must mainly be treated by rehydration and restoration of the profoundly altered electrolyte balance. This can be done by intravenous infusion of one litre of isotonic glucose solution (5%) repeated at least twice within the first twentyfour hours and then once daily together with hypertonic saline. The aim should be to administer 1500-2500 ml. of liquids daily and that preferably by intravenous drip. In the most severe cases small plasma transfusion may have additional advantage. The hormones must be given in big doses. It is an emergency of highest urgency and demands an intravenous injection of whole cortico-adrenal extract, if available, in quantities corresponding to 125-250 gms. of fresh glands daily with the glucose solution mentioned above. 1000 mg. of ascorbic acid may be advantageously added to it. Desoxycorticosterone 20-30 mg. should at the same time be given either intravenously or intramuscularly on the first day and 5-10 mg. daily on the following days together with cortisone 200-300 mg. daily in divided doses, for the first day, followed by 25-50 mg. daily on the subsequent days. Hydro-cortisone may also be given intravenously in a dose of 100 mg. which may be added to the infusion fluids.

This vigorous treatment should be controlled by determining the hæmatocrit value, alkaline reserve, arterial pressure, body weight and ionic pattern.

As this is very often due to infection Penicillin is indicated from the very beginning.

For the shock and collapse the administration of adrenalin and nor-adrenalin or some such substance like sympatel, veritol etc. may be useful. Opiates and their derivatives and barbiturates are definitely contraindicated even in painful abdominal crisis.

It is now possible with the modern treatment to keep a patient with Addison's disease not only alive but in moderate activity provided he keeps strictly to suitable dietetic regime, and avoid any form of physical and psychic disturbances.

Over-Eating and Under-Eating

BY DR. JEAN MAYER

One part of the world is still suffering from hunger and malnutrition, while another part literally 'eats itself to death'... This dilemma facing mankind is discussed here by Dr. Mayer, who is Associate Professor of Nutrition at the Harvard School of Public Health, Boston, U.S.A. The article has been especially written for World Health Day (April 7th), the theme of which this year is "Food and Health".

WE read much nowadays about inequalities in production and distribution of farm produce. Surpluses are accumulating in some of the "exporting" areas to such an extent that even storage becomes a prohibitive item of expense and outlandish solutions such as Arctic storage have to be envisaged.

A greater number of countries—and bigger populations—are faced with a chronically insufficient agricultural production and lack the means to buy the commodities necessary to maintain consumption at a desirable level.

The dilemma would be serious enough if it were purely economic. It is a much greater threat to human happiness in its effect on health itself.

As infectious diseases become better and better controlled, two things, lack of food and the eating of the wrong kinds of food, are emerging as the greatest causes of disease in economically under-developed areas, while in the richer countries over-eating contributes to the ever-increasing toll exacted by the degenerative diseases.

The two dangers, consumption of an insufficient amount of food, and consumption of a diet lacking in indispensable elements (such as vitamins), are generally found together. Both are detrimental to health almost to the same extent.

In spite of what has often been said, there is little bodily adaptation to underfeeding. What is unconsciously done by the under-nourished individual to conserve his substance is more generally behavioural, social adaptation—excessively prolonged sleep, torpor, inertia, and lack of initiative follow prolonged under-eating.

These effects in turn eliminate or at least drastically

decrease the ability of the subject to work and help himself and thus are self-perpetuating.

Lack of essential nutrients also causes weakness, chronic disabilities and mortal diseases such as kwashiorkor (due to lack of good quality protein), beri-beri (due to lack of vitamin B₁) or pellagra (due to lack of the vitamin niacin and good quality protein), and again the vicious circle is completed. It can only be broken from the outside.

In this connection the case of kwashiorkor deserves special mention. This syndrome has now been recognized to be prevalent in many, if not all, so-called "under-developed" areas.

Thus, it has been described in West, Central and South Africa, in West Asia, India, Indo-china, and other Asian areas, and in Central and South America.

The mechanism of its development is becoming better understood, and we know now that simple administration of dry skim milk is a good preventive measure and in most cases can cure the disease.

This health problem is thus, in the last analysis, a problem in education, in agricultural production and in economics.

At the other end of the scale there is growing recognition in prosperous Western countries that obesity is a threat to health and that it is becoming more prevalent.

The main causes of this increase seem to be twofold. On the one hand there is much more food available, particularly concentrated, processed food of considerable energy-giving content, and on the other hand, there is much more labour-saving mechanization which makes expenditure of energy in physical work less and less necessary.

Recent findings indicate that, as physical work decreases to low levels, appetite does not follow suit and individuals continue to consume a quantity of food in excess of their needs and as a result become fat.

It has been shown that obesity is associated with a very much increased incidence of the middle-age type of diabetes and with liver diseases.

Pronounced overweight seems to increase the number of deaths from diseases of the heart and blood vessels, which are the most frequent causes of death in Western societies.

Obesity seems also to increase directly the risks inherent in any surgical intervention, particularly in the abdominal region.

Apart from its action in promoting disease, there is very little doubt that obesity impairs physical fitness and that its adverse effects on the appearance of afflicted individuals can be the cause of considerable mental suffering, particularly in young women.

In the course of the past few years it has also

been shown that, just as the eating of too little protein foods may have as serious consequences as taking in too little of the energy-providing foods, so the eating of too much body-building fat may be of equal or greater import than over-eating of the merely energy-providing foods.

Recent work has indicated that death from heart disease is closely linked to the over-eating of fats, particularly hard fats, which have tended to represent an ever-increasing proportion of the diet of prosperous Western nations.

Thus it may appear that one part of the world is still suffering from hunger and malnutrition while another part literally "eats itself to death".

Prevention of these two extremes entails greater understanding, on the part of both individuals and of governments, of sound nutrition, of nutrition education and of nutrition planning.

It is also to be hoped that, in the economic sphere, solutions will be found which will permit the moving of food from surplus areas and overfed populations to poor areas and underfed populations.

The Why and How of Food Preservation

BY DR W. H. COOK

Director, Division of Applied Biology,
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We dry, we cure, we freeze our food and we can it so that man in his eating may be independent of place or season and store the surplus of the good harvest against the lean years. In this article, especially written for World Health Day (April 7th), Dr. Cook describes the various methods of food preservation and outlines new developments through the use of antibiotics and ionizing radiations.

THE food we eat is made up of a wide variety of chemical compounds and we get energy from our food by breaking down these compounds into simpler materials.

Very many insects and microbes also obtain the energy necessary for life in exactly the same way and from the same foods that we eat. Their activities cause spoilage and putrefaction. When their action is suppressed, some foodstuffs exposed to the air are still subject to deterioration by physical or chemical change—rancid butter is an example with which every housewife is familiar.

The perishability of different food products depends on the amount of moisture they contain and on the temperature of their surroundings.

In general, the storage life of dry cereal grains can be measured in months or years, that of the hardier fruits in weeks, and soft fruits or meats in terms of days at the temperatures of the regions where they are produced.

Long before these foods are rendered unfit to eat, however, there is a loss of quality or change in appearance which makes people refuse them. This is an important point, since it is only the food that is eaten that is nutritious!

The essential things in food preservation are:

- to get rid of microbes that cause spoilage, or to keep their numbers at a safe level;
- to prevent (by packaging, for instance) such microbes getting back into the food;
- to prevent exposure to air and absorption of moisture.

The number of microbes *must* be kept to a minimum

at the outset. The importance of cleanliness and the best possible sanitary practices in the food processing establishment cannot be overstressed.

The few microbes that inevitably remain must be destroyed, or their growth suppressed, if the food is to be successfully preserved over longer periods than those already indicated.

At present all methods of food preservation are based on four general procedures or combinations of them—drying, curing, refrigeration, and canning. The first three of these suppress the action and growth of micro-organisms, while the last, for all practical purposes, destroys them.

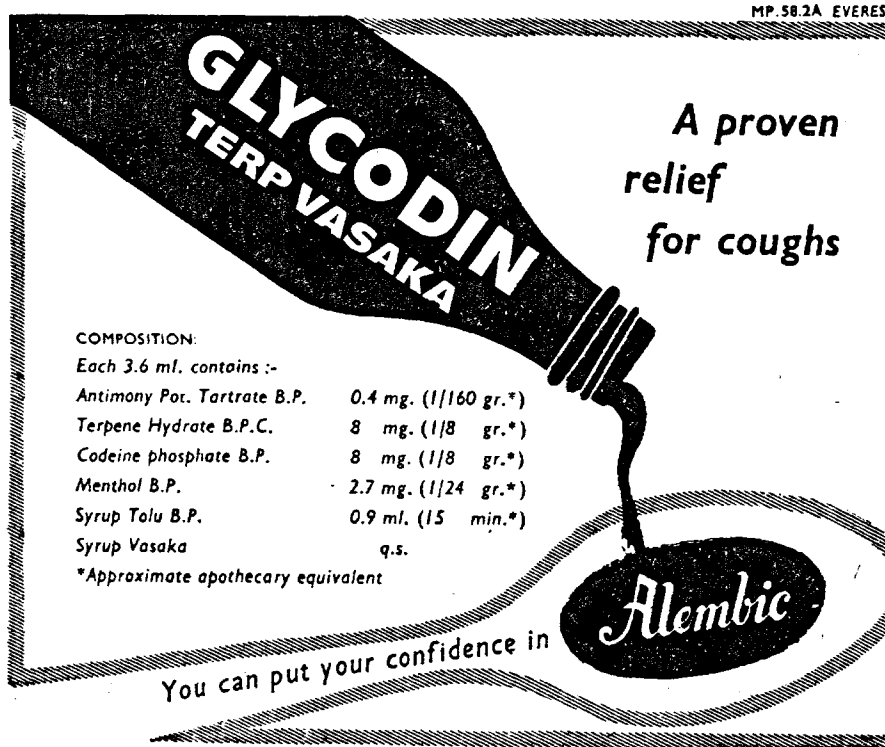
Drying and curing are procedures which have been used since antiquity. Products with moisture contents above about 15 per cent. will invariably spoil at normal air temperatures and some must be dried as low as 2 per cent. to preserve quality.

In many parts of the world the cereal grains will dry naturally to these levels but, if not, they must be dried artificially. A wide variety of normally "wet" products can also be dried, and products such as dried milk, eggs and certain fruits are well known articles of commerce. Methods have also been developed for drying meat and many vegetables.

Special packaging is necessary to prevent these artificially-dried products from absorbing moisture in humid climates and the cost, together with some loss of palatability and nutritive value during storage, has limited the commercial use of many such products.

Curing is something akin to drying in that the addition of such soluble materials as salt or sugar produces a sort of physiological dryness that

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suppresses the growth of micro-organisms. Except for specialized products, curing alone is inferior to drying as a method of preservation, and the excessive salt or sugar concentrations required make such commodities less acceptable.

Both canning and refrigeration arose from knowledge gained within the last century and technological developments have continuously extended their usefulness and cheapness. Today these are the most widely used methods for preserving foods.

Canning results in a processed, and at least partially-cooked product, but the goods can be stored and distributed without special facilities. Refrigeration provides the consumer with an essentially natural product, but requires special facilities for maintaining the low temperatures during storage, subsequent transport, and at all links of the distribution chain, particularly if the goods are frozen.

Both methods are capable of preserving the nutritive quality and attractiveness of most major food products.

Canned food materials are packaged in air-tight containers and heated under conditions that kill all or nearly all of the organisms present. Such products, properly prepared, can be carried under almost any temperature or humidity and in general do not require supplementary methods of preservation. Modern methods are quite capable of maintaining high nutritive value and an acceptable quality, although such products are necessarily cooked.

Under refrigerated storage the temperature of the product is reduced to retard or prevent microbial growth and also chemical and physical changes.

Many products, such as the harder fruits and vegetables, can be stored for six months or more when held at temperatures near their freezing point.

Meats and many other animal products cannot be stored for more than a month in the unfrozen condition at about 0°C. This storage life, however, can be extended to as much as a year by freezing the product and storing at -20° C. or lower.

Meat is commonly frozen in carcass or quarters

but it must be cut up into still smaller portions if it is to be quick-frozen. Considerable amounts of poultry, but only a small proportion of the red meats, are sold as a packaged quick-frozen product. Many fruits and vegetables are now packaged and quick-frozen in order to extend the storage life.

As a rule, such products are processed, ready-to-cook materials, and some, such as berries etc., are frozen in sugar syrups.

Refrigeration, as a means of food preservation, is expanding steadily, particularly on the North American continent. Quick-freezing provides the consumer with a packaged, ready-to-cook product in the frozen state.

This procedure has extended the number of products which can be frozen and stored successfully. The most recent innovation has been pre-cooked frozen foods which simplifies the preparation of meals in international air travel and now in many homes in the United States.

Recently, antibiotics have been used to suppress the growth of microbes and to supplement refrigeration.

At present health authorities have limited the use of antibiotics, but in some countries aureomycin may be used on poultry or fish. It is difficult to predict the future of antibiotics in food preservation but it seems unlikely that it will become a general method.

First, while antibiotics have no known effects on the nutritional properties of food, and the active residues are negligible, the effects of the non-active residual products are unknown. While no toxic effects have been detected, health authorities are naturally cautious.

Second, resistant strains of microbes may be built up over a period of time, as has been experienced in other fields, and this may limit the value of antibiotics as a preservative.

Finally, it is a *supplement* to present methods of food preservation, such as refrigeration, and not a method that will replace such facilities.

Another development of the atomic age, which is still very much in the experimental or development

stage, may make a much greater contribution to food preservation at some time in the future.

Ionizing radiations such as gamma, beta and x-rays from atomic reactors or electron generators are known to kill microbes. Such radiation can, therefore, sterilize foods but without heating or partially cooking the product. The goods, however, would still have to be in sealed containers to prevent the re-entry of bacteria.

Some of the radiations mentioned have low penetrating power, and this would limit the size of the container that could be used. Other more penetrating radiations would require longer periods of exposure.

Present work indicates that a number of foods develop unpleasant flavours when exposed to sterilizing doses of radiation. This can sometimes be overcome by irradiating at low temperatures or by adding acceptable chemicals known as "free radical" acceptors that prevent the development of off-

flavours.

At present it appears that the cost of radiation sterilization would be rather high. The process is attractive, as it could be more than a supplement to existing methods, but much research still needs to be done. The nutritional quality appears to be acceptable although high doses may destroy certain amino-acids and vitamins.

Much lower radiation dosages than that required for sterilization may prove valuable for individual products.

Such low doses are known to destroy insects in cereal products, prevent sprouting of potatoes and onions, and kill some, if not all, of the micro-organisms on meats.

With regard to meat, for instance, this method might serve as another supplement to refrigeration and be extremely useful, although it would not constitute a new and independent method of food preservation, as would radiation sterilization.

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VACCINATION IN MEDICAL PRACTICE

By DR. D. P. GUPTA, M.B., B.S.,
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PASTEUR, originally a chemist, was the first person to conceive of virulence and attenuation of microorganisms. He also demonstrated the fact that an attenuated bacterial culture will act as a vaccine i. e. will confer immunity against subsequent infection with a virulent strain of the same organism. For Pasteur, indeed, a vaccine was synonymous with an attenuated bacterial culture. Since the conception put forward by Pasteur, there has been a gradually widening field for vaccine therapy. In some infections, the goal has been reached and satisfactory and encouraging results have been obtained while in others, workers are still striving at perfection. Vaccination aims at actively stimulating the resources of the body (the reticulo-endothelial system) so that not only does it produce a sufficiently high titre of specific antibodies to combat any fresh infection but it also so conditions the antibody producing apparatus of the body that it can deal with the intruder in a much efficient manner than could be possible before vaccination. It tries to produce a replica of natural infection but in a way that will be beneficial to its recipient.

The idea of specificity was brought into bacteriology by Pasteur as early as 1850 during his experiments on fermentation of various organic fluids. And this basic feature still finds its place in the preparation and use of different vaccines. Although chemotherapeutic and antibiotic substances are finding greater and greater place in the present day therapeutics, here are still several conditions where vaccines are valuable either as prophylactics or as adjuncts to other therapeutic measures.

Vaccination at present is practised for a variety of bacterial and viral infections but before going into the individual diseases, it will be worthwhile describing in brief the preparation of vaccines.

Preparation of Vaccines: Vaccines consisting of organisms isolated from a particular patient and used for the treatment of the case are called Auto-genous vaccines.

Properly selected strains of the organisms (for

preparing stock bacterial vaccines) or organisms from the patient (for preparing autogenous vaccines) are obtained in pure culture, grown on suitable solid media and after 24-48 hours emulsified in sterile normal saline. Fragments of medium should be avoided and removed by centrifuging and decanting the supernatant portion. The bacterial suspension is made as homogenous as possible either in a bottle with glass beads or preferably in a shaking machine. The vaccines are standardised by estimating the approximate number of bacteria per ml. of the suspension. This is usually done by comparison with standard opacity tubes (Brown⁶). The suspension is sterilised at relatively low temperatures e. g. 60° C for one hour in a water bath. For administration any series of doses consisting of a certain number of organisms (computed in millions) can be prepared in volumes of 1 ml. by making appropriate dilutions in 0.5% carbol saline from the original standardised suspension.

1. *Tuberculosis:* Numerous attempts have been made in animals and man to vaccinate against tuberculosis. Tuberculin R, which was used by Koch¹⁶ in 1897, was replaced by tubercle bacilli killed in a variety of ways—heat, acids, alkalies, glycerine, lactose, formaline, sodium fluoride, sodium oleate, choline and neurine. The so-called Diaplyte vaccine introduced by Dreyer¹⁰ consisted of organisms killed with formaline and extracted with acetone. Spahlinger's²⁷ vaccine consisted of tubercle bacilli grown on media containing proteins specific to the type of animal to be vaccinated and allowed to die out naturally over a period of months. None of these vaccines proved satisfactory. Living virulent tubercle bacilli were used on a small scale by Webb and Williams³⁰ but this practice was soon given up as being too dangerous.

Believing that acquired immunity depends upon the persistence of living bacilli in the body, Calmette introduced a live vaccine of a bovine strain that had become a virulent as the result of several years' subculture on a glycerol bile potato medium. This B. C. G. (Bacille Calmette-Guerin⁶) strain can be injected into animals and man without causing more

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than a small retrogressive lesion and its presence in the tissues leads to tuberculin sensitivity. The vaccine is usually given parenterally as this leads to a higher tuberculin conversion rate than by the oral route practised earlier. The intracutaneous route of injection is most generally favoured but dermal inoculation by multiple pressure methods (Birkhaug², Rosenthal et al²⁵) or by scarification (Negre and Bretey²¹) is preferred by some workers. B. C. G. vaccination seems to protect against the clinical manifestations of primary infection. Once virulent tubercle bacilli have gained entrance to the body, it is doubtful if the attenuated, vaccinal organisms can play any further part. No protection can, therefore, be expected against the so-called post-primary or adult type of tuberculosis (Wilson & Miles³¹). To whatever extent, vaccination is used, it should never be allowed to interfere with the other measures taken to combat tuberculosis.

2. *Diphtheria*: Several forms of prophylactics are available and the choice has to be determined not only by its immunising quality but also by the degree of local or constitutional reaction to which it gives rise on injection. In older subjects, it may be advisable to carry out a preliminary Schick test. The dose varies with the nature of the prophylactic. Formol toxoid, toxoid-antitoxin mixture and toxoid antitoxin floccules are best administered in three doses—F. T. in doses of 0.2-0.5 ml., 0.5 ml., and 1.0 ml., and the other two in doses of 0.5 ml., 1.0 ml. and 1.0 ml. Alum precipitated toxoid and P. T. A. P. (Purified toxoid, Aluminium phosphate precipitated) can be safely relied upon to produce a corresponding or even a higher degree of immunity in two doses of 0.2 ml. and 0.5 ml. When a rapid production of antitoxin is required—as in persons recently exposed to infection—formol toxoid (F. T.) is the prophylactic of choice. With F. T. and T. A. F., the customary interval between the doses is 2-3 weeks, with A. P. T. and P. T. A. P., 4 weeks. Antidiphtheria immunisation is effective in raising the resistance of the patient and of controlling the incidence of the disease in closed or semi-closed communities, affords a moderate protection against an attack of the disease and a high protection against death, and if carried out on a sufficiently extensive scale is capable of leading to almost complete disappearance of diphtheria among the population at large.

3. *Cholera*: Ferran¹³ in Spain was the first to attempt vaccination against cholera. He used live

broth cultures. The results were not satisfactory and the work was abandoned. Haffkine¹⁵ in 1892 prepared two vaccines—(1) consisting of vibrios whose virulence had been attenuated by frequent cultivation in a constantly aerated atmosphere; (2) consisting of vibrios whose virulence had been exalted by 20 to 30 passages through the peritoneal cavity of the guinea-pigs. However, later Haffkine abandoned his live vaccines and recommended his second vaccine killed by heat at 50°C for a few minutes and preserved with 0.5% phenol. Kolle's¹⁷ vaccine—a 24 hours' agar culture killed by heat at 55°C for 1 hour and preserved with 0.5% phenol—is now generally used. Two doses, each of 4,000 million organisms should be given at a week's interval. The vaccine should be prepared from the Inaba and the Ogawa-Hikojima types so as to contain both O antigens of sub-group I.

4. *Enteric fever* (Typhoid-paratyphoid fevers): Antityphoid vaccination was initiated by Wright³² in 1897. The work of Felix and his colleagues¹² points to the importance of selecting for vaccine preparation strains that are rich in Vi antigen. The vaccine which is a heat killed bacterial suspension preserved with 0.5% phenol, is standardised to contain 1,000 million Salm. typhi and 750 million each of Salm. paratyphi A and B per ml. The usual dosage of this vaccine for an adult consists of two inoculations subcutaneously of 0.5 and 1.0 ml. respectively at about 10 days' interval. The use of T. A. B. vaccine prepared in this way was considered by Boyd³ to have played an important part in controlling enteric fever during the second world war. This vaccine, however, did not provoke the appearance of circulating Vi antibody when given subcutaneously. Felix¹¹ prepared a vaccine by killing the organisms with 75% alcohol and preserving them in 25% alcohol. Administration of this alcoholised vaccine produced Vi antibodies in a relatively high proportion of the subjects. The dose recommended for the alcoholised vaccine is half that of the heat killed vaccine. In South Africa, an endotoxoid T. A. B. vaccine has been largely used. The organisms are broken up by four successive heatings and freezings and the endotoxin so liberated is rendered non-toxic by incubation for a month in the presence of 0.5% formalin. The endotoxoid can be given in larger doses than vaccines of whole bacilli and is claimed to have given more satisfactory results as judged by the diminution in the case incidence and case-fatality rates.

Whatever vaccine is used it is desirable, if immunity is to be maintained at a high level, to re-inoculate subjects every 2-4 years and for this purpose, only one dose is sufficient. Antityphoid inoculation carried out by the best technique at present available would form a poor substitute for the ordinary methods of sanitary control. T. A. B. vaccination probably affords some degree of protection against slight and occasional exposure to infection but has little or no effect when exposure is severe or frequent.

5. *Plague*: In the prophylaxis of human plague, a killed vaccine has been extensively used in India but of late years, the successful use of living vaccines by Otten²² in Java and Madagascar has seriously challenged the older method. According to Meyer²⁰, living avirulent vaccines are the most satisfactory, partly because they can be given in much smaller dosage, and partly because the multiplication of the bacilli in the body leads to the production of a greater amount of protective antigen than can conveniently be included in a dead vaccine.

6. *Anthrax*: In 1870, Chauveau⁷ found that an animal which survived inoculation with anthrax was more resistant to subsequent inoculations. In 1881, Pasteur²³ found that if the anthrax bacillus was cultured in broth at 42-43° C., not only did it lose its power of forming spores but it gradually decreased in virulence till after 2-3 months it was no longer able to give rise to disease, even in the most susceptible animals. This was Pasteur's anthrax vaccine. There are now a few strains, like the Carbozoo and the Boshoff strains, that appear to have become stabilised at a fixed level of attenuation. Mazzucchi¹⁹ prepared a vaccine from the Carbozoo strain in which the spores were suspended in a 2% solution of saponin; the idea of the saponin being to bring about at the site of injection the early formation of a gelatinous œdema which acts as a barrier against rapid dissemination of the bacilli. Sterne²⁸ in South Africa introduced a vaccine prepared by suspending avirulent uncapsulated sporing bacilli in 50% glycerol saline. In Great Britain, a combination of the two methods is used—Sterne's strain being suspended in saponin. The saponin carbozoo vaccine seems to enjoy the greatest favour at the present for the routine immunisation of large animals. No satisfactory vaccine is yet available for human beings. A vaccine prepared by Gladstone's technique should be tried, its use being limited to those specially exposed to the risk of infection.

7. *Tetanus*: Since the demonstration of the antitoxinogenic value of toxoid (formaldehyde treated toxin—Descombey⁹) and toxoid precipitated with alum (Bergey¹) or aluminium phosphate (Tasman and van Ramshorst²⁹), these agents have been widely tested in man. For civilians, it is advisable to give two doses, each of 1 ml. of tetanus toxoid, at 6 weeks' interval followed by a third 6-12 months later. To maintain immunity at a useful level, a reinforcing dose should be given every 5 years.

Preparations have been put in the market containing a mixture of tetanus toxoid with enteric vaccines, pertussis (whooping cough) vaccines or diphtheria toxoids. The experience of various workers with these mixtures has been different, some recording enhancement, while others noting depression of the antigenic potency of diphtheria and tetanus toxoids. Multiple immunizing antigens clearly should not be given without consideration of the nature and proportions of the different antigens in the preparation and of the probable immune state of those to be immunised.

8. *Rickettsial infections*: Numerous attempts have been made to produce active immunity against typhus fever by vaccination. Some workers have used live vaccines but these are not without danger and most workers prefer killed vaccines. Various methods have been used:— (a) *Weigl's louse vaccine*: This is prepared by inoculating lice per rectum with classical typhus vector. After a week or so, the lice are killed, their intestines are taken out and ground up with 0.5% phenolised saline. (b) *Killed suspensions of organisms grown in animals*: Intranasal injection of murine virus in mice and rats results in about 3 days in abundant growth of rickettsiæ in the lungs which are ground up, killing the organisms with phenol or formalin and concentrating the organisms by differential centrifugation. (c) *Killed suspensions of rickettsiæ grown in tissue culture*: Rickettsiæ may be grown in a modified Maitland medium, the growth is then removed and treated with 0.3% formol for conversion into a vaccine. (d) *Chick embryo vaccine*: Cox⁸ found that the best method of growing rickettsiæ was in the yolk sac of the developing chick embryo. Once the strains of the classical typhus virus are established, they usually kill the embryo in 3 to 5 days. The pooled embryonic tissues are then ground up and treated with phenol and formaline.

The evidence available shows that vaccination does not prevent an attack of the disease, at any

rate if the exposure to infection is severe but that it somewhat diminishes the degree of bacteraemia in the infected patient.

9. *Viral infections*: (a) *Small-pox*: Jenner in 1796 discovered that inoculation with cow-pox protects against subsequent inoculation with small-pox. Vaccination against small-pox is now a well attested and established practice. For human vaccination calf or sheep lymph is generally employed but lymph taken from vaccinal lesions in other animals may be used satisfactorily. Of late years, two other types of vaccine have been introduced, partly to provide a bacteria-free product, partly to avoid the several local and constitutional reactions following use of calf lymph and partly in the hope of preparing a vaccine of constant virulence. The first is the so-called Rivers²⁴ vaccine prepared by growth of the virus in a chick embryo tissue culture medium; the second is the vaccine produced by Goodpasture and Buddingh¹⁴ who cultivated the virus on the chorio-allantoic membrane of the developing chick embryo. Neither appears to be as good as calf lymph in the degree of protection to which it gives rise. Second attacks of small-pox are rare, though they do occur. Primary vaccination is best carried out in the first year of life. In countries where small-pox is not rife, vaccination every 5-10 years should suffice, provided vaccination is performed if the disease is introduced into the locality. (b) *Poliomyelitis*: Early attempts to vaccinate children were made by Kolmer¹⁸ and his colleagues, using a 4% suspension of infected monkey cord in 1% sodium ricinoleate. Brodie⁴ recommended a vaccine in which the virus had been inactivated by exposure to 0.1% formalin at 37° C for 8-12 hours. A trial of both these vaccines gave very unsatisfactory results and led to the discontinuance of their use. Salk²⁶ prepared vaccines from the three different types of virus grown in roller-tube cultures of monkey kidney, inactivated by exposure to 0.4% formalin at 1° C over a period of several days, the action of the formalin being finally neutralised by sodium bisulphite. Some workers are of the view that living attenuated strains of virus will form a more suitable vaccine. (c) *Rabies*: Pasteur's original vaccine was made from fixed virus which has a high degree of virulence for the rabbit but a diminished virulence for other animals including man. The vaccine is prepared from rabbits' cords which have been dried for varying lengths of time and treatment involved daily injections of the vaccine over a period of three weeks. With the phenolised

vaccine, the course of the treatment is 14 days. The ideal vaccine should be non-toxic, highly antigenic and free of antigenic brain material. Two such vaccines are available. One is grown in the embryonated duck egg and inactivated with 1-1000 to 1-4000 beta-propiolactone. The other is the living attenuated HEP Flury vaccine which is grown in the embryonated chick egg and is available for dogs only. Active immunisation should be started at once when a person is bitten or scratched by (i) a dog showing clinical evidence of rabies (ii) a dog whose brain shows Negri bodies or whose brain produces Negri bodies in mice. The injections of the vaccine are given usually in the subcutaneous tissues of the abdominal wall in such a manner that no two injections are given at the same site. After the fourth or fifth injection, the patients usually begin to show some local reaction characterised by local redness and induration at the site of the injection. As the treatment is continued, the local reactions become less marked suggesting that a type of desensitisation has been accomplished. (d) *Yellow fever*: The attenuated and modified virus strain 17-D is used for active immunisation. This vaccine, although containing living virus, is entirely innocuous. The immunity conferred by this vaccine is effective for 5 years. (e) *Influenza*: The results of vaccination in this disease have been variable. Trials at one time yielded very promising results; but trials made at a subsequent period were on the whole disappointing. This was perhaps due mainly to the appearance of epidemic strains differing in their antigenic structure from those previously encountered and incorporated in the vaccine. There is, however, some evidence to suggest that the number of possible antigenic variants is limited. If this proves to be true, then the preparation of a satisfactory polyvalent vaccine may become practicable. (10) *Whooping cough*: Attempts to vaccinate against it have been made for many years. Various trials have shown that it is possible to confer substantial protection against whooping cough by vaccination and that different vaccines vary in their protective potency. The vaccine may be given alone or combined with diphtheria and sometimes with tetanus prophylactic. A combined vaccine has obvious advantages but there is some evidence to suggest that poliomyelitis is more likely to follow the use of a combined than of a single vaccine. Immunisation with *Hæmophilus pertussis* vaccine is only moderately effective in preventing the disease but is of very real value in decreasing severity and mortality.

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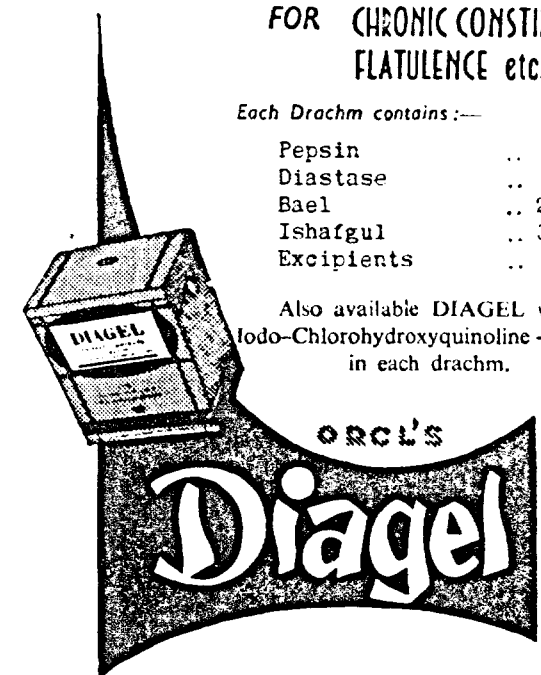
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Tomography in the Diagnosis of Brain Tumours

BY DR. Y. I. GEINISMAN
(Kiev)—U. S. S. R.

1. The principal feature of tomography is that the effects of summation, subtraction and superimposition disappear. The effects characteristic of a general röntgenogram are absent on a tomogram and make it possible to distinguish details that are not discerned on an ordinary röntgenogram of the cranium.

2. In order to get röntgenological anatomic data frozen heads of corpses were cut in the frontal and sagittal planes (the thickness of the sections was 1 cm.). Each preparation was X-rayed and compared with the tables in N. I. Pirogov's atlas. The data thus obtained served as a basis for drawing the plan of tomographic studies.

3. Because of the weakly expressed summation phenomena at the level of the bones of the cranial arch tomography is of comparatively little use in cases of tumours located on the protuberances of the brain. Sometimes in cases of parasagittal meningiomas needle hyperostosis is discerned which general and target craniograms fail to show.

4. As a rule, intracranial calcifications in cases of tumours give a less clear image of the petrifications due to the effect of blurring. In a number of cases tomography makes it possible to confirm the spreading of calcification; this is particularly important in cases of tumours of the middle fossa of the skull.

5. In cases of glioblastomas changes are rarely observed in the bones of the cranial arch which could serve as bases for topical diagnosis. Porotic changes from the side of the sella turcica and the small and great wing of the sphenoid are defined with sufficient clearness on tomograms. Astrocytomas often cause changes indicative for topical diagnosis. In cases of astrocytomas of the anterior cranial fossa a sinking and deformation of the anterior clinoid process is often observed. In cases of astrocytomas of the pons attenuation and deformation of the clivus of the sphenoid is disclosed. Tumours of the posterior cranial fossa often cause deformities of the clivus, especially in children.

6. In cases of arachnoid endotheliomas of the olfactory region the sinking of the ethmoid is observed. This symptom is seen on a lateral tomogram in the section of the median and mesiodistal planes in the form of a saucer-like deformity, its convex side turned towards the caudal end. The sinking of the ethmoid is clearly defined on frontal tomograms. The ends of the pterygoid figure (the image of the labyrinth of the ethmoid) in the section at the level of the outer edge of the orbit is deformed and the labyrinth acquires a rectangular shape as a result of the compression from the side of the labyrinth roof. Most frequently the deviation is asymmetrical and corresponds to the asymmetrical position of the arachnoid endotheliomas of the olfactory region. In cases of arachnoid endotheliomas of the olfactory region dilatations of the ethmoid grooves is observed. On frontal tomograms in the section at the level of the outer edges of the orbits the width of the ethmoid can be measured. Normally it is 8 mm. on the average while in cases of arachnoid endotheliomas of the olfactory region it reaches 18-20 mm. If the growth of the arachnoid endotheliomas is asymmetric (frontal type) the tumour exerts side pressure on the crista galli and causes the symptom of its inclination. The crista galli deviates to the side opposite to the tumour at an angle to the median plane.

Hyperostosis is the clearest röntgenological symptom in cases of arachnoid endotheliomas of the olfactory region. However, the effect of the summation of shadows of the anatomical elements at the bottom of the anterior cranial fossa (of the front and opposite sides) makes it impossible to discern even massive hyperostosis on an ordinary röntgenogram. Most frequently the hyperostosis had the appearance of a protuberance or mound. A crest-like form is not infrequent. Sometimes pneumatized sections are observed in the hyperostosis. Since the crest and pneumatized forms of hyperostosis are not observed in any other type of intracranial tumours they may be considered pathognomonic for arachnoid endotheliomas of the olfactory region.

7. In cases of arachnoid endotheliomas of the
(Continued on page 23)

The Problem of Diagnosing Tumours of the Central Nervous System under Experimental Conditions by the Isotope and the Luminescent Fluorescein Methods

BY DR. L. Y. SHARGORODSKY
(Tashkent)—U. S. S. R.

1. Despite the considerable successes already gained early diagnosis of brain tumours still remains to be one of the most difficult problems in contemporary neuropathology and neurosurgery.

2. Supplementary methods of diagnosis widely applied today, such as pneumo-encephalography, angiography and electro-encephalography have rendered tremendous service to the modern neurosurgery. However, the application of some of them (pneumo-encephalography and angiography) in some cases is dangerous to the patient and therefore counter-indicative, while other methods (electroencephalo-

graphy) are not always available. Besides that, according to the statistics pneumoencephalography correctly determines the disease in 63 per cent of the cases and electroencephalography in 45 per cent. All this makes it necessary to search for new, promising and physiologically permissible methods of early diagnosis.

3. Within recent years a new method called isotope encephalography began to be applied, very frequently in combination with the luminescent fluorescein method. Foreign scientists widely employ radioactive diiodofluorescein for this purpose. According to the data of Davis and others correct diagnosis

(Continued from page 22)

wings of the sphenoid tomography makes it possible to disclose hyperostosis in most cases from the side of the great and small wings of the sphenoid. Only in one case out of thirty was hyperostosis of the small wing observed. But even in these cases the tumour is often located near the upper internal edge of the superior optic foramen and thus takes in the great wing. When such is the location of the tumour tomography makes it possible to show the spreading of the process and, as a rule, very clearly discloses the pterional form of the arachnoid endothelioma at this site.

8. Tomography supplies much data in cases of tumours of the pituitary. In the first place, it was found that the pituitary is not calcified even after repeated intensive röntgen therapy. The parasellar dura becomes calcified. The most important thing is that tomography makes it possible to disclose the direction in which the tumour is growing. On a sagittal tomogram the tuberculum sellae bulges if the tumour is growing upward, the basilar sinus is compressed if the tumour is growing downward and the dorsum sellae is straightened or destroyed if it is growing backwards. On a frontal tomogram made through the floor of the sella turcica the destruction of the right or left sides may be disclosed showing

the growth of the tumour in the corresponding direction.

9. Very valuable data are supplied by tomography in cases of cranio-pharyngiomas. In advanced cases tomography discloses the growth of the tumour into the maxillary sinuses and the nasopharynx. In earlier cases a cyst with calcified walls may be observed.

10. In some of our cases tomography made it possible to disclose the calcification of the posterior fossa. Tomography plays an important role in the diagnosis of tumours of the pons-cerebellar angle. Sometimes in sections at the level of the external auditory canals it becomes possible to disclose changes leading to the amputation of the pyramid of the temporal bone. These changes are observed even when target röntgenograms of the pyramid fail to show them.

11. In cases of tumours of the base of the brain tomography makes it possible to disclose the extent of the lesion, especially when it includes the anterior and middle fossa of the skull. Tomograms in the median plane, especially frontal ones, disclose the details of the anatomical disturbances in the anterior and middle fossa and also in the nasal sinuses.

was made with the help of this method in 95.5 per cent of the cases of verified brain tumours and according to later data of Davis and Graigmile—in 76-80 per cent of the cases.

4. In order to check the diagnostic significance of the radiometric and fluorescein methods in cranial oncology, to determine the indications and counter-indications to their application, to work out the best methods of introducing the preparations and their rational dosing, and also to disclose the specific significance of each of these methods taken separately we conducted several series of experiments with 1) luminescent fluorescein and 2) radiometric methods. These investigations were conducted on animals in which tumours were induced with the help of the Brown-Pearce carcinoma in different sites of the brain (meningeal, extracerebral, intracerebral and mixed).

5. In respect to the first method we confirmed the well-known fact in literature that most of the colour which emits intensive luminescence caught with the help of simple apparatuses is concentrated in the tumours and to a lesser degree in sites of inflammation. The concentration increases with the degree of the undifferentiated state and the malignancy of the tumour. The method of "needle biopsy" (Moore) makes it possible to determine with sufficient accuracy the depth at which the tumour is lying before any extensive cutting of the dura is undertaken and after the dissection of the latter—the extent of the dissemination of the tumour, including the contiguous regions.

In collaboration with A. S. Srapionov and G. M. Loktionov we established: a) the indications and counter-indications to applying colours; b) the physiologically admissible and the optimal concentration of the colour, c) the optimal time of examination after the introduction of the colour, d) the most convenient and expedient method of

introducing it from the point of view of final results. The sources of possible errors have also been determined.

6. In order to study the diagnostic significance of the isotope encephalography method in the pre-operative determination of the presence of an experimentally induced brain tumour we conducted several series of investigations with radioactive iodine-131 and radioactive phosphorus-32. These studies established that both isotopes possess the property of accumulating in large quantities in the pathologically altered hemisphere of the brain and reach the highest peak in tumour tissue. In following the dynamics of the accumulation of these substances we established that isotopes are already found in the brain several minutes after their introduction and reach a maximum concentration one or one and a half hours after their uptake. We studied the different means of introducing the isotopes, the optimal time for subsequent studies, the diurnal and in some cases the two-day dynamics of their concentration, the significance of the preliminary blocking of the thyroid when radioactive iodine-131 is applied and the blocking of the "bone" factor when radioactive phosphorus-32 is used and also the optimal doses for each of these isotopes.

7. In assessing the indications and counter-indications to each of these methods and in determining exactly the limit and the aim of both the fluorescein and radiometric methods experimental data show that both means may be applied either separately or in combination with each other as very promising additional means of early diagnosis of brain tumours. In the neurological and neurosurgical hospitals they help determine with greater accuracy the locus of the tumours and the depth at which they lie. Of the two isotopes the most promising under clinical conditions is radioactive iodine which emits not only beta—but also gamma-radiation.

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Disorders of the New Born and Infant

BY

DR. S. SESHADRI DIXIT, M.O.,

Mysore Paper Mills Ltd., Bhadravati

NO infant is seen which passes the whole of its infancy without some bodily ailment even of a transient character. And particularly at this age of infancy it is very difficult or dangerous to outline and treat presuming it to be a minor or major disorder. Even a mild degree raise of temperature in children form a problem—one is constantly asked to solve and they give rise to considerable anxiety not only to parents but also to the medical attendant. So I like to deal by touching upon some of the ailments one by one, under 5 sections viz., (a) at birth (b) Digestive (c) Respiratory (d) Nervous (e) Pyrexia.

1. Prematurity

There is a popular belief among our elders in India that a seventh month born child has a better chance to survive than an eighth month one. This belief has got its support by the Bible, Astrology etc. since the foetus was under the influence of moon, which gave its activity. In the 8th month it was under the influence of saturn—hence cold and dry. But Mauricau, the French Surgeon in 1668 contradicted the popular sentiment and found the 8th month premature baby was more likely to survive than the seventh month one.

The premature infant is defined as one that is born by about the 7th month and whose weight is about 4 lbs. This counts much to the statistics of neonatal mortality. The causes are so numerous and mainly inadequate nourishment of the pregnant woman, in other words—poverty, squalor etc. The prevention of prematurity is therefore a national problem linked up with the mothers of child bearing age and their economic condition. To sum up 'Antinatal care is the sheet anchor of treatment'.

The infant should be hospitalised—cyanosis if any—should be looked into with warmth and oxygen. Care is to be taken to prevent infection. Cleanliness of utensils of feeding is observed. If there is oedema or the infant is too weak to suck—breast feeding also should be stopped at least for about 24 to 48 hours.

If the baby begins to suck, the other measures such as feeders etc. should be withheld.

Breast milk is the ideal food, failing which the one of the dried milks may be used. Premature babies sometimes require Vitamin D and these may be administered with caution regarding dosages etc.

2. Inanition Fever

Sometimes in the first week of delivery, the fever is noticed in the absence of any other sepsis etc. This may be due to dehydration i. e., lack of milk in the breast. In such cases about 4 to 8 ozs. of half normal saline may be administered.

3. Neonatal infection

This may be due to easy susceptibility in unhygienic, ill-ventilated poverty stricken families—and more so in hospitals where accommodation is less. Nursing is of special importance. Breast feeding should be encouraged. Modern facilities for the disposal of napkins, cleaning of blankets, bed-sheets wearing of masks and gowns by staff and adequate instructions to pupil nurses of the dangers of infection etc. are necessary. Infections should be combated by tri-sulphanamides and anti-biotics and primarily by isolation of the infant.

4. Epidemic diarrhoea of the new born

This condition is noticed in Institutions. At such times, the feeding should be stopped and parenteral fluid such as Plasma, fluid or 1/4 strength physiological saline administered. And after a period of initial such starvation boiled breast milk can be given and gradually the feed is to be increased. Medical treatment is not advisable except in severe cases—sulfanamides or anti-biotics may be tried.

5. Malena Neonatorum

Bleeding of this type usually begins on the 3rd or 4th day. Blood will ooze out from the mouth,

nose, urinary tract or may extravasate into the viscera. This is due to Vit. K deficiency resulting in low prothrubin content, administration of Vit 'K' to the mother and blood transfusion to the infant will bring round the condition. Collapsing conditions may be attended to by warmth injection of suprarenal cortex etc. Where there are no facilities for blood grouping and Vit 'K' is not available, whole blood 10 to 20 cc. may be injected in loose tissues and repeated if necessary.

6. *Hæmolytic disease of the New Born.*

This is a condition of active hæmolysis of the infants blood as a result of anti-body circulating in the placenta. There are various factors yet unknown the Rhesus positive and negative—phases—blood of mother and child play their part, the latter is usually born dead or die immediately after birth. In this condition, transfusion of blood will be of some help.

7. *Birth Injuries.*

These are common in village parts where yet the modern midwifery and technical aid has not peeped into.

Cephalhæmatoma is common. Treatment by aspiration or knife is condemned as there are risks of infection. Such effusion of blood will gradually disappear if left untreated in a course of about a couple of months.

And regarding fractures—Clavical femur and humerus are common. If slight or unrecognisable they will unite automatically. If they are to a noticeable extent, adhesive plastering, with rest to the local part for about a fortnight to three weeks will bring round unification.

Cerebral tramma and as a result asphyxia is also a common ailment to deal with. In this condition cyanosis, inability to suck, now and then a shrill cry, convulsions, a tense fontanalle and fever are noticed and state of shock may close the picture.—First clear the air—passages with any mucous etc. and oxygen is driven in of a very low concentration. If there is intracranial hæmmorage, cerebral trauma is perpetual and it is a problem to deal with the associated shock. Keep the baby on a cot head lowered. Make sure of the clearance of the air passages—Chloral hydrus gr. 1 to 2 once in 3 to

4 hours may be given and injection of 10% saline per rectum may be tried. *Sub-dural hæmotoma.* This can be ascertained by aspirating the brownish fluid—repeated aspirations followed by driving in the air into the cavity may clear up the condition.

DISORDERS OF THE DIGESTIVE SYSTEM

This is the commonest causes of illness in infancy or in other words few infants pass the whole of their infancy without some ailment or other of the digestive tract.

- (a) As far as possible, to overcome this, the mother should be intelligent enough to handle and nurse the Offspring. She is to know that breast feeding is infinitely superior to any artificial feeding. And to maintain this—she should herself have the will and tranquil mind and atmosphere to suckle the baby. She should maintain her health and vigour by taking good nourishing diet with plenty of liquids, viz., fruit juices, water, butter milk, conjee etc.

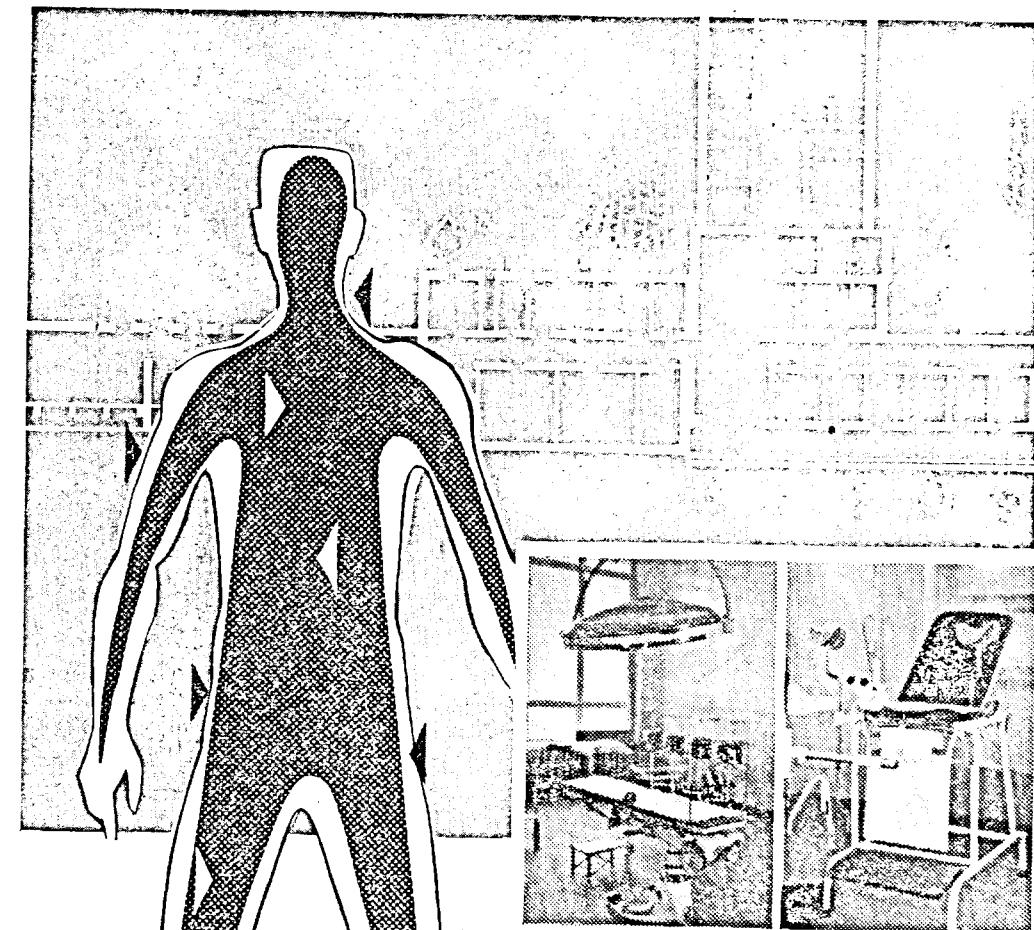
The intervals of sucking should not be less than 4 hours as the hungry baby sucks more vigorously and thus a reflex stimulus also is kept up for the secretion of the milk and if possible, it is better to clean with cold and foment with hot water and massage the breasts.

- (b) Gastro-Intestinal disturbances are more likely to cause in the summer months when the milk is highly infected and parenteral infection is the cause of Gastro enteritis and so strict vigilance towards scrupulous cleanliness is of primary importance.

STOMATITIS

This is most common in young emaciated poorly nourished infants with gastro-intestinal symptoms as a result of bad feeding with unwholesome diet. Acid fermentation of food remnants which are retained in the unclean mouth leads to cotarrhal stomatitis and then on to thrush. The disease is also observed in epidemic form, being spread by dirty feeding bottles.

This is caused by a fungus *Oridium albicans* in the superficial epithelial layer of mucuous membrane.



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This is first seen on the tongue, then on the cheeks, lips, hard palate tonsils and pharynx. In such some cases it spreads on over the whole mucous membrane and even to vocal cords, œsophagus and to stomach. Beginning with slightly raised pearl white spots, may go on to bleeding ulcerated surface.

Care is to be maintained not to injure the delicate mucous membrane of the mouths of the baby in an attempt to clean the mouth. And if the baby is artificially fed, the utensils such as rubber teats etc. are to be sterilized properly. In case if there is infection of parasitic, aphthous, or ulcerative type of stomatitis—the same should be treated in order viz., 1% aqueous solution of gentian violet, alkaline mouth washes, boric glycerine paints cleaning with H 202 swabs and application 1000 units of penicillin 4th hourly 1½ gr. of septicide in a tea-spoonful of honey application or application of equal parts liquor arsenicalis. Tinch. Ipecac and an equal amount of glycerine—in addition to cleaning the systemic disorders and dietetic deficiencies.

2. Teething

Peculiar disorders make their appearance during the times of teething such as irritability, fretfulness fever, upper respiratory catarrh, diarrhoea, convulsions etc. Chloral hydrate to lessen the nervous irritability, to cut short and regulate the diet and a tea-spoonful of castor oil to tone up the alimentary tract will benefit the condition. And dental caries should be prevented by lessening the sticky sweets and encouraging the diet with Vit. D and Milk and fruits etc.

RUMINATION

This is common in artificially fed babies. The mother should see that the baby is at rest or falls asleep, after a feed. Some amount of hard food is to be advocated. Putting the child into Prone positions after a feed will to some extent prevent the act of recurrence. The defects in the feeding regime and diet are to be corrected.

INFANTILE BERI BERI

About 4 years ago—I had an occasion to see in a village in three families. Children lost from persistent vomiting, diarrhoea, convulsions, or cardiac failure. On enquiry, I learnt that the same mother lost two or three children from the same picture. The mothers

also exhibited signs and symptoms of avitaminosis with preponderance to 'B' Complex. Many a time, we see in our out-patient children with the clinical picture of angular stomatitis, Superficial glossitis and sometimes ulcers on the tongue and buccal membranes and mothers also with the above picture—complain of peripheral neuritis and anaemia.

From the above facts, we can conclude that the infantile beriberi will have its history and background from the intra uterine life itself. Cases are more common in these industrial areas wherein women folk also toil much than men but get the remnants of food left by the men-folk for the men in these areas come from a low-grade society, addicted to drink and rule the women by the rod. The conditions improves with injections of nicotinic acid.

VOMITING

- (a) Acute (b) Chronic.

Acute vomiting is a ready response to any form of digestive disturbance as well as to any acute disease like Pneumonia, Meningitis, Pyelitis etc.—Whereas a chronic vomiting is a manifestation of congenital stricture of œsophagus hypertrophic pyloric stenosis or pyloric spasm.

If vomiting is due to digestive disturbance it is usually accompanied by diarrhoea. Even then to exclude with other serious diseases like Pneumonia, Meningitis etc. or acute specific fevers, or due to some intra-cranial disease—the vomiting will have no relation to food and will be characterised by irregular pulse, constipation etc. In digestive disturbance, the pulse though quick will be regular and the abdomen full. If the infantile vomiting is due to intestinal troubles, such as intussusception there may be passage of blood and slime associated with the pale collapsing appearance of the baby.

This sort of vomiting may be in general is of three varieties.

- (a) Possetting (b) Aerophagy (c) Dyspeptic.

In possessing the unaltered milk is vomited in very small quantities. There will be no force in vomiting and nutrition also is not impaired. This type may be due to excessive feeding and may be corrected with a little care.

In aerophagy—as a result of air swallowing Eructations will occur and the latter may accompany much of food. The habit of thumb sucking, nasal catarrh, scanty flow of milk from the breast are some of the cases. Treatment is removal of the cause.

Dyspeptic vomiting is also caused by error in diet the feed or disease of stomach or intestines. This is to be treated by frequent small feeds of glucose water, skimmed milk, orange juice etc. Constipation should be corrected by Hyd cum erecta and in intractable cases—stomach wash with soda bicarb may be tried.

Vomiting in general disease such as in Pneumonia or Pyogenic infection wherein the alimentary tract is not primarily affected. The treatment is that of the Causative disease. But care must be taken not to feed with too much of milk and fatty foods are to be decreased.

CONSTIPATION

Under feeding, lack of training, spasm of anal sphincters due to anal fissure may also be the case of constipation. By proper feeding and training by the mother, by holding the baby comfortably with the legs drawn up every morning and evening for habit formation. Increase of carbohydrates and barley water in plenty help to relieve constipation. Honey is both a nutritive as well as a laxative. Indiscriminate use of castor oil is to be deprecated. Liquid paraffin morning and evening acts as a good emollient. Vit B 1 acts as a stimulant to the peristaltic action of the intestines.

GASTRO ENTERITIS

Often infants are brought in a moribund condition, highly dehydrated and toxic. Though the predisposing cause is dietetic—infection always supervenes. It is better to view under separate entity.

History of change of diet—with no seasonal background and symptoms of slow onset and signs of much curdy faecal matter than mucous and of noisy character tends towards the type of dietetic diarrhoea whereas in infective type rare in breast fed

ones many fall ill during the onset of monsoons. With sudden onset, with a little temperature—character of motions will be—small, frequent and watery containing mucous. The infant will be toxic—dehydrated with sunken eyes and dry tongue and suppressions of urine.

Treatment—stop all food. The old method of castor oil purgatives and grey powder are to be condemned. Cane sugar or saccharine may be given.

Elimination of toxins—treatment of dehydration and complications and nourishment should be aimed.

Sulphanamides in suspension or anti-biotics will control quickly.

COLIC

Usually the mother brings the child in agony and the former too is alarmed much. The baby is seen with intermittent screamings, drawing its thighs over its abdomen which is tense. This acute pain may be due to acid fermentation occurring in the milk—the resultant lactic acid and others will irritate the bowel or the presence of undigested casein curds in the intestine may irritate or pain may be due to accumulation of gas in the bowel and lastly may be due to constipation with Sebulae in the gut.

Treatment is resorted to turpentine stipes glycerine enema or plain hot water enema. Chloral hydrate ½ to 1 grain to combat—Convulsions if any and stimulants to combat collapse are to be thought of.

RECTAL PROLAPSE

In marasmus, mal-nourished, badly treated cases of diarrhoea and dysentery we see such a condition. In chronic constipation and polypus of the rectum also the straining causes prolapse, on digital examination we see the touless splinter—Treatment is to heat the primary cause. If there is protrusion—it is to be gently pressed into—General treatment with cod liver oil, Syr ferri Iodide—Vitamin C may be resorted to.

(To be Continued)

BABIES EAT BEFORE THEY ARE BORN

By
DRS. R. BURGESS AND J. BIERMAN

The mother-to-be must choose her food wisely so that her child may have a healthy start in life. Later on, wrong food habits, which are hard to change, can endanger the health of the growing child. The vital relationship between "Food and Health"—this year's theme for World Health Day (April 7th)—is brought out in this article by Dr. Burgess, Chief of the Nutrition Section, and Dr. Bierman, Chief of the Maternal and Child Health Section, of the World Health Organization.

ALL young things, plants, animals and children need special care in their early days. Just as the young plant needs a soil containing a mixture of different substances in certain proportions, and protection from various hazards, so the child depends for its survival and growth on the quality and quantity of food it receives from the first moment of life, and on its protection from harm during its tender years.

Nutritionally a child is at least nine months old when it is born, and we have to begin thinking about its nourishment and the prevention of malnutrition long before its birth.

The unborn child draws its nourishment from the mother's body, which has the ability to convert the food the mother eats into food suitable for the baby. Moreover, during the last months of its life inside the mother's body, the child builds up a store of specially valuable substances in its own body to see it through the first few months of infancy.

In many parts of the world the infant continues to depend almost entirely on the mother's body for its nourishment for several months after birth. Its survival and healthy growth depend on the quantity and quality of the breast milk which the mother can provide, and this in turn depends largely on the quantity and quality of the food the mother eats.

If the mother does not get enough of certain kinds of food—the protein foods—her breast milk tends to diminish in quantity, though the quality may remain good.

Where it is easy to buy or to get animal milk such as cow's milk, and easy to prepare and give it safely to the baby, the inability of the mother to provide entirely for the baby's needs presents no great problem.

But in many countries animal milk is difficult to get, too expensive to buy, or not traditionally used. Often there is no suitable way to store it, and the lack of cooking utensils and clean water makes it difficult to prepare milk which can safely be given to the young baby. In these conditions an insufficient quantity of breast milk can be a tragedy.

In some parts of the world, the tragedy may spring from changes in the quality of the breast milk, due to the kind of food the mother eats during her pregnancy and lactation.

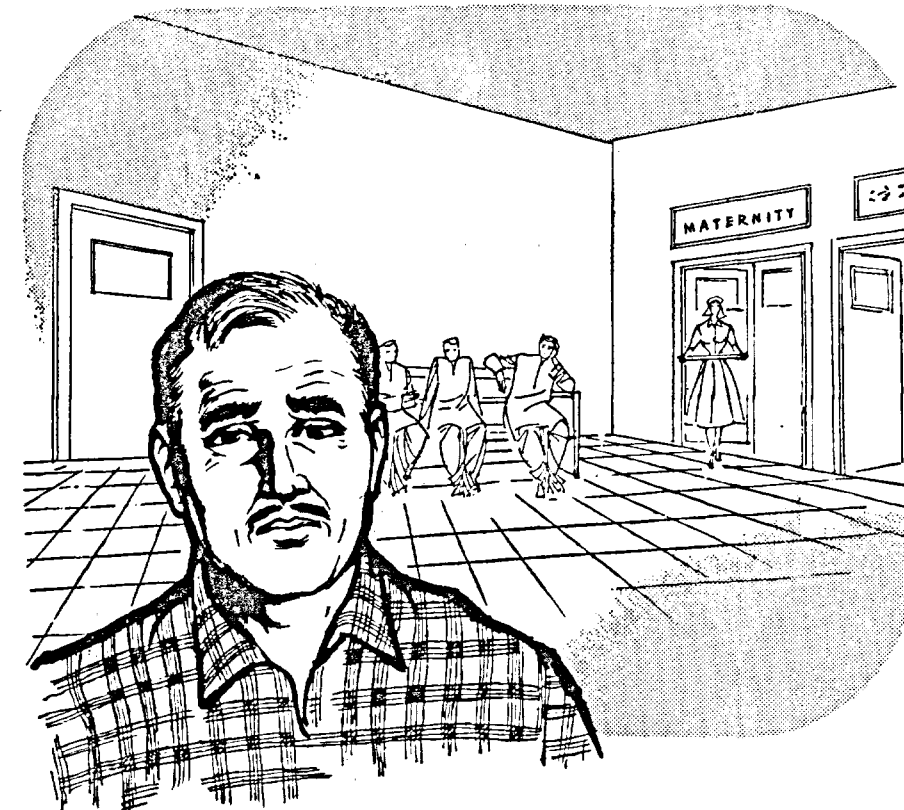
In rice-eating countries there is frequently a preference for highly milled rice. This rice keeps better than the undermilled variety, but during the milling process it loses a valuable food factor—vitamin B₁.

Where the people eat large quantities of highly-polished rice, and little else except perhaps a little dried fish and vegetables, the deficiency disease, beri-beri, occurs frequently.

The disease sometimes shows itself only in vague feelings of ill-health which give no hint of the real danger. But then, suddenly, an apparently healthy infant being nursed by an apparently healthy mother may become gravely ill with infantile beri-beri, due to changes in the breast milk caused by the mother's vitamin-deficient diet.

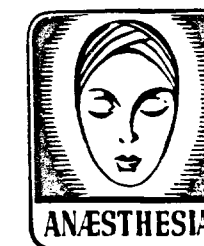
Similarly, when the diet of the pregnant or nursing mother does not contain enough of the foods which provide, either directly or indirectly, another vitamin (vitamin A) for the body's use, the baby may be born with an insufficient store and then be fed on breast milk deficient in this necessary vitamin.

This deprivation affects the child's eyes and, if



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severe and prolonged, may result in blindness. It is thought that about six cases in ten of the blindness found in Ceylon and South India are due to this cause.

The prevention of a certain kind of anæmia ("suckling anæmia") also depends largely on the quality of the mother's diet.

Breast milk normally contains little of the iron which is necessary to prevent this type of anæmia, so it is particularly important that the child should be able to build up an adequate store before birth, and this it cannot do if the mother is poorly nourished.

It seems obvious then that any effort to ensure that the infant and young child will be well fed, and therefore capable of healthy growth must be directed first to establishing and maintaining the nutritional health of the mother.

There are two main reasons why mothers, and people in general, suffer from malnutrition.

In several regions there is an absolute lack of the necessary foodstuffs—due to climatic, or economic and social conditions. In some parts of the world, however, valuable foods are at hand but are not eaten for various reasons.

These foods may be avoided because of beliefs handed down from generation to generation that they are harmful in certain circumstances or responsible for causing disease. (Many, for example, are rejected because it is believed that they affect sexual potency.)

It may be considered that certain foods are suitable only for certain groups of people—old men, children, priests, soldiers, or pregnant women—or for certain occasions; that they cannot be combined, or taken in sequence, with other foods. They may have a special significance in relation to the prevailing religion, or they may be considered, for no explicit reason, as merely disgusting.

Whatever the reason for this avoidance it is always part and parcel of the whole fabric of beliefs and everyday life of the people concerned, and gives rise to habits which will therefore not be lightly relinquished or changed in isolation from other aspects of living.

Unfortunately, a great many of these beliefs affect the pregnant or nursing mother, to whom many especially valuable foods are expressly forbidden.

The task of improving the nutritional health of the mother by encouraging her to make more use of the foods at her door is, therefore, not an easy one. Success will depend not only on the mother's willingness to try out unaccustomed foods and new ways, but also on the willingness of the neighbours and friends whose approval she values to replace traditional by scientific knowledge.

One striking example of the difficulties to be overcome is the resistance found in western countries against the use of the knowledge available about the control of the most prevalent disease of childhood there—dental decay.

It is well known that a decrease in the consumption of the sweet and starchy foods is always accompanied by a decrease in the incidence of decay.

But to improve their children's health in this way the people of these western regions would have to change many of their cultural customs: their habits of child feeding, their tokens of affection, reward and prestige, their feast and anniversary foods.

The economy of these countries, for instance, would be gravely disturbed if sweets, cakes, white bread and refined sugar were no longer in demand, while this change might also have repercussions on the economic situation in some remote areas where sugar-growing provides a livelihood for many.

Here also where a high standard of public health is valued and maintained, improvements involving changes in traditional tastes and habits that are part of the whole way of life of the people, are not easily achieved.

In spite of the tenacity with which most people cling to their beliefs and habits regarding food, changes for the better are being made. Already, for example, cow's milk is becoming a valued food for children in countries where twenty years ago it was never used.

In all parts of the world, practical measures are being taken to encourage people to make more use of the foods available locally or easily grown in their

own fields or gardens. Better quality seeds, better agricultural methods to improve the familiar crops, plans for drainage or irrigation of the land and better husbandry of animals are slowly being introduced, and dairy farming expanded wherever possible.

Research is also going on into the various ways and means of developing from local resources, such as plants or fish, protein foods suitable for the young child.

The fact that it is possible to feed the child by feeding the mother is a tremendous asset in the attempt to solve one of the most wide-spread nutritional problems affecting child health today.

In many parts of the world and particularly in tropical countries, breast-fed children grow well for the first six months of life and then begin to show signs of a slowing down of growth and a failure to gain weight. This tendency increases with weaning and may result in various degrees of ill-health and finally in the severe illness known as kwashiorkor.

The graduated weaning process from breast milk to cow's milk and then to adult foods has become so firmly established in Europe and America that many people find it difficult to remember that in other parts of the world quite a different pattern has long been accepted as normal.

There, when the child is weaned from the breast, the only foods available to it are certain of the adult foods.

In many cultures, indeed, tradition decrees that the males or the elders are the privileged people who have first claim on the scarce protein delicacies, and the child has to be content with the everyday starchy foods.

These are often too bulky and indigestible for the child's digestive system, and the resultant diarrhoeas, together with prevalent intestinal infections, deprive the child still further of the nutrients he so badly needs for his growth and activity.

But although the child's body cannot cope with a sufficient quantity of the coarse cereal foods, or with the vegetable foods which might be used as

substitutes for the animal protein which it lacks and needs, the mother's body can, and can convert these foods into protein in the form of breast milk for the child.

One way, therefore, of dealing with this world-wide problem—the lack of suitable protein foods for the weaned child—is to try to improve the diet of the mother so that she will be able to breast-feed her child adequately and long enough to allow its digestive system to become sufficiently mature to cope with the usual adult-foods.

Unfortunately the problem of the nutritional health of the child will not be solved by ensuring an adequate supply of a variety of foods for the mother and her child—difficult though that may be in itself. Other aspects of the child's life and environment menace the maintenance of a good nutritional state.

Probably three fourths of the world's population, it has been said, drink unsafe water, dispose of human excreta carelessly, prepare milk and food dangerously, are constantly exposed to insect and rodent enemies and live in unfit dwellings.

Under such circumstances the child is constantly exposed to the danger of various kinds of food poisoning, causing diarrhoea and vomiting and a further loss of precious nutrients.

In addition, nearly every child carries its load of intestinal parasites, which grow and multiply at the expense of the child's nutrition. Some parasites (for instance, the round worm) set up a vicious circle whereby the worms thrive more actively when the child is severely malnourished, and decrease in numbers and strength when the child's nutrition improves.

Others, namely the hookworm, create a constant drain on the child's scarce reserves of protein and iron by attaching themselves to the intestinal wall and feeding on the child's blood.

It is evident then, that safe water to drink and use, the disposal of excreta so that the ground on which the child plays or the river in which he bathes are free from the danger of parasites, and clean habits in the preparation and eating of food are also urgently necessary to protect and improve the nutrition of most of the world's children.

It seems, in fact, that there are very few aspects of living which do not have some influence on the nutritional health of the child.

In many countries children suffer from rickets, due partly to the lack of foods which contain the necessary vitamin but mainly to the fact that the other source, the action of the sun on the skin, is limited in several ways.

Babies and young children, even in tropical countries, may sometimes be deprived of sunshine because of the seclusion of women in crowded urban conditions, sometimes because the houses are built on high stilts and the child cannot crawl in and out of the sunshine at will, sometimes because a fair skin is valued as a sign of beauty, sometimes because the child is carried about all day on the mother's back, completely covered with the carrying cloth, and occasionally because of the constant shade of the forest in which they live.

These hazards to child health are closely bound up with the whole way of life of a people. On the other hand, there are some conditions which are beyond the control of the individual.

In some areas, the lack of an essential substance in the soil or water can produce disease or disability in a

whole population, including the children.

Here the solution of the problem lies not so much in individual change or action, but in measures introduced at state or national level to replace the missing nutrient.

This is being done to prevent endemic goitre (due to lack of iodine in the soil) in some regions and to control dental decay by the fluoridation of the domestic water supply in others.

There is no easy road to better health for the children through better nutrition. Parents throughout the world need help to break the vicious circle of malnutrition-disease-poverty and still more severe malnutrition.

Research workers can pursue the scientific facts on which sound action can be based. Government and authorities can do their part to facilitate the development and better use of local resources.

But unless each individual in the community is prepared to accept the adventure of new ideas and new ways little can be accomplished. All over the world, however, people are setting out on that adventure, and progress is being made more rapidly than ever before in man's history.

JAW SURGERY LASTS 40 YEARS

DALLAS, TEX.—Almost 40 years after the surgery was performed, the bones taken from the hip and shin of two World War I soldiers and one civilian victim of a facial tumor are still functioning as part of the lower jaws of these three individuals.

This feat, the result of the combined work of a dentist and a plastic surgeon, was reported here to the American Association of Plastic Surgeons in mid-May.

The report was made by Dr. Robert H. Ivy, Professor Emeritus of Plastic Surgery at the University of Pennsylvania Medical School, and Dr. Joseph Eby, a New York orthodontist.

In one case, bone from a soldier's tibia was used to repair the lower jaw defect. In the other case, the transplant was taken from the crest of the hip bone.

One of the soldiers is today a successful business executive, and the other a leading orthodontist. Recent X-rays have confirmed that the 39-year-old bone grafts are still functioning well.

The third patient, a mechanical engineer, had been referred to Dr. Ivy in 1920 for repair of a facial defect and for malfunctioning of the lower jaw, resulting from a childhood tumor operation. Two and a half inches of the mandible were missing. This was replaced by a bone graft from the crest of the patient's own hip bone.

Dr. Ivy told the meeting that he had met his former patient a year ago, and persuaded him to have new X-ray pictures made. These showed complete consolidation of the bone graft at each end, with the original silver wires still intact.

INSECTS OF MEDICAL IMPORTANCE (II)*

THE LOUSE

By
P. N. GUPTA

Introductory

THERE are biting lice, (MALLOPHAGA) which live on the skin of birds and bite them but they are not parasitic on human beings.

The sucking lice (ANOPLURA) are characterised by the presence of eyes. Of this group, family Pediculidae infests man & monkeys. Out of the three genera of family pediculidae, genera pedicinus is found on monkeys, the other two pediculus and pthiris infest only man and higher apes.

Of the genera pediculus, the species, pediculus humanus corporis (Body louse) and pediculus humanus capitis (Head louse) are of Medical importance. The species pthiris pubis (Crab louse) is found in the pubic and perianal hair, but as it transmits no known disease except irritation & scratching, it will not be discussed here after.

The louse, though present every where, where personal sanitation is lacking, yet it is of no medical importance except in places with colder climate, so Kashmir in India is the home of all louse borne diseases, although sporadic cases occur in rest of India except Eastern India.

DISEASES TRANSMITTED

The lice transmit (i) Louse borne Typhus (ii) Louse borne relapsing fever and (iii) Trench fever. Lice also play a part in the spread of taeniasis.

War, famine, and aggregation of labour leading to insanitary conditions result in the spread of louse borne diseases :

FAMINE
OVERCROWDING
DISORGANISATION
MIGRATION } Predisposing factors for louse borne diseases

LOUSE BORNE TYPHUS is one of the diseases to which international measures under sanitary conventions apply.

Egypt provides a typical example of the louse borne Typhus :—

Annual mortality per 100,000 during 1911—43 being as follows :—

1911—14—15	Two Western deltaic provinces
1915—16—45	Behar & Ghorla most heavily infected
1919—20—34	owing to the yearly immigration of
1927—32—1	labour forces to the large agricultural
1933—35—7	estates where the workers live in
1936—38—2	crowded and insanitary conditions.
1939—	—5
1940—	—5
1941—	—10
1942—	—19
1943—	—38 (app.)

Chief features of the louse borne diseases are given in the following table :—

	RELAPSING FEVER	LOUSE BORNE TYPHUS	FRENCH FEVER
1. Causal organism	Spirochoeta, recurrentis,	Rickettsia, Prowazeki	R. Quintana
‘ RICKETTSI ’	S. duttoni &		
‘ SPIROCHOETA ’	S. venezuelensis		

*1st article in the series ‘ THE HOUSE FLY ’ was published in this Journal in January '58 PP.

	RELAPSING FEVER	LOUSE BORNE TYPHUS	FRENCH FEVER
2. Geographical distribution	Ireland, Norway, Denmark, Russia, Turkey, Bulgaria, Rumania, Yugoslavia, Egypt, N. Africa, N. Es. Africa, Gold Coast, Sudan, Kenya, Highlands, China, Abadan, (S. Persia) Kashmir, Madhya Pradesh (India) N.W.F.P. (Pakistan) Sporadic cases except in Bengal. Assam, & Orissa	Europe, N. America, Abyssynia, N. S. W. & E. Africa, Belgium, Congo, Asia, Minor, Persia, N. China, Mexico, Kashmir, N. W. F. P. (Pakistan)	N. Africa, Tunis, France, Iraq.
3. Type	Epidemic	Epidemic	Group distribution Consistent with the migrating habits of the louse
4. Reservoir	Man (Body & Clothes)	Man	Man
5. Clinical Symptoms	Incubation period 2-10 days. Chilliness, Rigor, Giddiness, Epistaxis, Vomiting, Photophobia, Intense headache, Pain in calves. Temp. 104° 105°F Pulse 110-130 enlarged & tender spleen rash round the neck, extends to shoulder, down the chest, abdomen inner thighs & to the fore arms.	Incubation period 5-23 days. Rash begins in axilla, 5th day then abdomen, avoids face. subcuticular mottling, Tendency to petechiæ.	Initial febrile period, tendency to relapse. Periodic pyrexia & Tenderness & pain in the Shins.
6. Vector	Pediculus humanus	Pediculus humanus	Pediculus humanus
7. Transmission	Crushed lice not hereditary	Louse fæces inoculated by scratching	Fæces of the Louse, crushed lice & feeding of lice on patients.

MORPHOLOGICAL FEATURES

The lice are small wingless insects with a conical head, with a proboscis, a pair of jointed antennæ, and a compound internal eye. The head is constricted to join the thorax, which is indistinctly segmented bearing three pairs of jointed legs. The integument is tough to resist pressure. The abdomen has six to nine segments, the last bilobed. The segments have prominent spiracles on sides.

The male is smaller and the abdomen in this ends

blunt by bearing a spine like penis.

The female is larger in size (2 MM in length) and is recognised by a deep notch at the apex of last abdominal segment.

Head louse and body louse are difficult to be differentiated. Morphological differences are slight but biological differences (habitat) are of more importance. The colour of the head louse is generally that of the colour of the hair and are more deeply pigmented whereas the body louse is paler, larger

with slender antennæ and the notch of the abdomen merely undulated. The third antennal segment of a body louse is definitely longer than it is broad where as in the head louse, breadth and length are almost the same. In the head lice the indentations of the abdominal segments are deeper and more clearly marked. The legs in head lice are comparatively shorter.

LIFE-HISTORY & HABITAT

The head lice are found in the hair of the head, particularly seen at the back of the head and over the ears. The eggs (NITS) are found sticking to the hair, nearest to the warnith of the skin i. e. 1-2 inches from the root of the hair. The eggs are so firmly cemented to the hair that they cannot be detached unless dissolved. A female lays 9-10 eggs in a day and lays them for 31 days out of their total life of 34 days. The females do not lay eggs on 1st, 2nd & 34th day of their life. Thus about 300 eggs are laid in the life time. Egg laying is most active at 30°C and ceases at 20°C. The eggs are small, pin sized, yellowish white and Globet shaped. In case of bodylouse, the eggs are seen in the seams of the clothing, specially the undergarments or on the body hair.

If kept at body temperature (37° C) the eggs hatch out into larvæ in 7-9 days. Above 37°C the eggs do not develop and at 40°C they are killed. At-17° C the eggs die in two hours or at 5° C the eggs die in seven days. The development of the eggs may also be retarded if the infested clothing are not worn for many days (25 days). 30% of the eggs fail to hatch into larvæ.

The larvæ generally resembles the adult except that it is smaller. It moults three times. It feeds on blood twice a day like the adult. The larval stage mortality is about 40 percent. The larvæ become adults in 9-14 days, when males & females are formed. Normally the ratio is 1 : 1 but if feeding during larval stage has been frequent, then the ratio of males to females may even be 2 : 1.

ADULTS are obligatory parasites and spend the whole of their life on the body of the host. They can live without the host for a week at temperate climate 16° C but if the temperature is 30° C they can only survive for two days. Lice die at 45° C. They leave their host when hot with high fever or when

cold with death. They also leave a body undergoing hard physical exercise.

Lice prefer light coloured clothes and avoid dark ones. They avoid light.

They disseminate by contact, person to person, person to infested clothing or through hair brushes, combs, hats. In children they either come from dirty servants but mostly from school boys & girls. Lice may be blown about by wind and may spread by clinging to benches, floors etc. Dogs can also spread human lice.

PREVENTION

1. 'Extermination of lice, is not, and never has been, a question of finding a remedy; because personal cleanliness, the desire for cleanliness and resentment of uncleanness, or in other words, determination to keep the head free from lice can always succeed in doing, so when soap, water and combs are available.'
2. The hair should be kept as short as possible and should be washed with soap & water at least weekly.
3. If there is a high risk of infection, shave off the scalp as the Russians and Poles do it.
4. The body should be frequently washed. A daily bath with soap and water keeps the lice away. A hot bath, a rub down with a coarse towel, shaving the hairy parts of the body, thorough and deep combing of the hair of the head get rid of the lice.
5. Clean, frequently changed underclothing and bed linen will prevent lice to thrive even if casual infestation occurs.
6. As the infestation is mostly from person to person by contact, one must always avoid verminous persons. Those on medical duties on infested persons should use overalls and undergarments should be impregnated with DDT.
7. Next to personal cleanliness and change of garments, the most important measure is

health Education. It is no use teaching the girls in the teens about lice or how to get rid of them. Their hair are already full and they have been harbouring these parasites for a number of years. Their brains at this stage are too blunt to think of this small insect. The education must start from girls in the primary classes. They must begin to hate these natural evils. As they are afraid of evil spirits, I do not know from where they learn about them, at the same time they should also be afraid off these insects and thus develop a spirit to kill them and get rid of them. If lousiness is given a social stigma, much improvement can be expected. Demonstrate lice in the head of one girl to the whole school to-day and tomorrow you will see at least fifty percent improvement. There is hardly any justification to say it is natural. Time has advanced. We have learnt much more now and even then if we remain in lethargy and drudgery we simply pull the nation back and thereby retard national progress, at the same time suffering ourselves and causing distress to our brethren. The teachers, especially the teacheresses have a great duty in this field and if they play their role, lousiness is no problem for India.

CONTROL

Whenever louse borne disease requires a control, it is to control an epidemic. So whatever our provisioning for control of these diseases should be, it should be adequate for dealing with an emergency in epidemic.

1. The patient should be immediately admitted. Before being sent to ward, he should be stripped off all clothing, should be deloused and then sent to ward. His clothing should be sent for disinfection.
2. 10% DDT mixture in kaolin, talcum or such other inert substance, when dusted inside hair and all parts of the body with the clothing in situ kills the head and bodylice. Even the crab lice are killed if the mixture is dusted in hairy parts of the pubic region and in the armpits. A second application is necessary after a week. A third application

is seldom required. 1½—2 ozs. mixture per man per application is required.

3. For treatment of infested clothing special delousing chambers are ear marked. One described by Ryzov (1941) can be built rapidly and at low cost under rural conditions. 'A hut made of wattle and daub or other suitable material and measuring 7 × 2.75 metres with a height of 2 metres, is constructed inside a rectangular pit excavated in the ground. The space between the walls of the hut and those of the pit is filled up with sawdust, dry leaves or other material. The roof of the hut (13.5 cm. thick) is covered first with a 10 cm. layer of clay, then with 60—80 cm. of straw, rushes or branches, this is covered with 50 cm. of earth with a layer of turf on the top. The floor is made of beaten clay. The hut is divided by two partitions into three compartments. It has a small window in the roof and two others in the doors leading into and out of the central compartment which represents the delousing chamber.

Contaminated clothing is brought through an outside door into a compartment at one end of the hut, thence into the central chamber, where the various articles are suspended from hooks in the ceiling. The central chamber is heated by two iron stoves placed at opposite ends and provided with exit pipes running through the roof. 80° C—100° C is enough to kill lice and nits. The clothing is then removed into third compartment which has an independent exit.'

Alternatively where facilities exit, the clothing may be disinfested in a thresh disinfector. Field portable disinfector or if nothing is available then by hot ironing of clothing. An improvisation as a serbian barrel disinfector also serves the purpose.

4. The clothing may be sprayed with different solutions. The Russians used a 'Malinin' solution consisting of turpentine, oil extract of persian powder, Phenol and cinamon oil. A mixture of petrol, Xylol and oil with a few drops of turpentine is considered the best.

Clothing impregnated with a persistant insecticide as DDT. gives almost complete protection. 1 percent

DDT weight for weight of garment is sufficient. If unwashed such clothing are effective for 8 weeks.

In Guatamela during three campaigns of vaccinating 137,000 to 225000 persons and by dusting 40000 with 10 percent DDT anti louse powder, the cases of typhus (and deaths) declined as follows :—

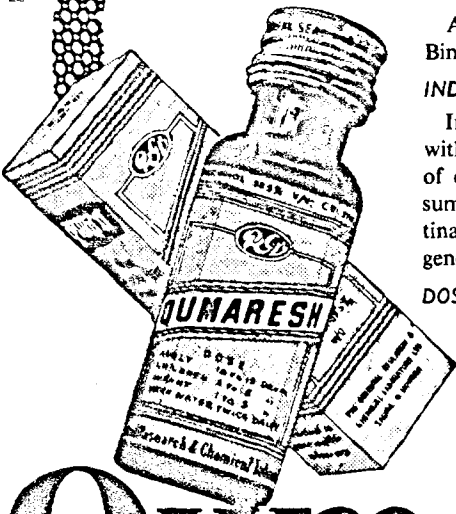
1945—2834 (323)	1949—26 (2)
1946—1043 (135)	1950—10 (2)
1947— 251 (37)	1951— 8 (0)
1948— 69 (9)	

5. Leather and rubber articles immersed for one hour in an emulsion of 2 percent cresol and 5 percent soap will kill lice.

Kerosene or petrol mixture with sassafron oil, Eucalyptus oil, Cedar wood oil, or tar oil will kill all nits.

6. During louse borne typhus epidemic, typhus vaccine may be used. It is at present restricted to medical personnel only. Its efficacy is of a subsidiary nature.

7. Headlouse may be effectively controlled by :—
- (a) 5 percent lethane in kerosene oil or lethane special oil (thiocyanæthyl laurate and butyl carbitol thiocyanate mixture)
 - (b) Carbolic acid in water 1 in 40.
 - (c) Olive oil and kerosene-equal parts.
 - (d) Methylated spirit in water 1 in 7.
 - (e) Derris cream- $\frac{1}{2}$ -2 drs. per head should be applied between parted hair by dropper and well massaged. No comb should be used and the head should not be washed for ten days.
 - (f) 10% DDT mixture may be rubbed in the hair and washed with soap and water after 24 hours. A second application after a week be given.
 - (g) Application of mixture of DDT—4 parts
Heavy solvent naptha —30 parts.
Amoa A S X —10 parts.
Water —56 parts.
 - (h) Rubbing cocoanut oil containing Gammexane liquid concentrate 1 part in 50 of oil.



COMPOSITION :
Audrographis Paniculata, Hygrophila Spinosa, Luffa Bindal, Ptychotis and other cholagogues and carminatives.

INDICATIONS :
Infantile liver with constipation; biliary obstruction with dropsy; tropical congestion of liver; early stages of cirrhosis of liver; intestinal troubles during dentition; summer diarrhoea; postnatal anorexia with gastro intestinal irritation and diarrhoea; anasarca; jaundice, and general atonic condition of the liver and stomach.

DOSES:

Adults	10 to 15 drops
Children	2 to 5 ..
Infants	1 to 3 ..

with water twice daily, before or after meals, or as directed by physician.

Quimaresh

THE ORIENTAL RESEARCH & CHEMICAL LABORATORY LTD

- (i) Buxton recommends a small volume of thiocyanate 25% spread through hair.
- (j) Americans add dinitroanisole to their pyrethrum antilouse powder.
- (k) The latest is NBIN consisting of 1 percent DDT, 11 percent benzyl-benzoate (or ethyl alcohol) and 2 percent benzocaine. This is also useful against scabies.

8. Body lice can be killed by :—

- (a) 10% DDT mixture described above.
- (b) An alcoholic solution containing 10% benzoate, 2% benzocaine and 1% DDT kills even eggs when clothing are immersed in it for 10 minutes. This is known as EEAY. This is better than NBIN (Emulsion) which failed to kill 8—9 days old eggs.

9. Crab louse can be killed by :—

- (a) 10% DDT mixture.
- (b) Application of mercurial ointment.
- (c) For eyebrows and eyelashes infection, vaseline & Yellow precipitate (1 in 50) are recommended.

10. DDT resistance in body lice has been noticed. One strain in Tunis showed evidence of abnormal resistance. An Egyptian strain is resistant to DANP. A London reared colony is normally susceptible to other insecticides as BHC, dieldrin etc. but DDT, the resistance in body lice is wide-spread in Japan, Hongkong, South Africa. The head lice are susceptible to DDT still—

11. Amongst the organo phosphorus insecticides Diazinon has a quicker action than DDT against body lice.

12. 0.2—0.5% phenol solution is toxic for lice when injected intrarectally.

CONCLUSION

Lice are an obliastory parasite on the human body, and spend their life on it. Their presence is symbolic of uncleanness. Lousiness deserves to be considered as a social stigma on the infested and should be treated as

such. Health Education on the subject needs to be given from the beginning of primary Education. A little sincere effort can pay high dividends and can increase national health.

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Ganglio-Blocking Preparations is Prophylaxis and Treatment of Complications during and after Neurosurgical Operations

1. During the past few decades there are great achievements in technique and methods of surgical operations in diseases of the central nervous system. However, the problem of prophylaxis and control of hæmorrhage during these operations is still one of the most important in the modern neurosurgery. The problem of prophylaxis and treatment of the other grave neurosurgical complications, such as œdema of the brain, acute circulatory disturbances, œdema of the lungs is, likewise, essential.

2. Great achievement of the modern pharmacology is the discovery and recent study of the ganglio-blocking substances. At the present time these substances are successfully used in different branches of medicine in treatment of certain diseases. Administration of ganglio-blockers in neurosurgery gives better perspectives in prophylaxis and treatment of neurosurgical complications.

3. The method of arterial hypotonia, achieved with the aid of ganglio-blocking substances was applied by us for the first time in March, 1955. Since then, 78 major neurosurgical operations were performed. This method was particularly used in removal of tumours of the brain with different localization. In numerous cases these preparations were administered during the first 24 hours after the operation.

4. Certain clinico-physiological examinations were carried out during these operations. The measurement of arterial blood pressure (in both arms) and of the venous and cerebrospinal fluid pressure was performed. Likewise, the skin and axillary temperature were recorded, finger plethysmography and electrocardiography were carried out and biocurrents of the brain cortex were registered. In view of the evidence obtained, a more accurate conception of the mechanism of action of ganglio-blockers on the body was obtained.

5. The Soviet ganglio-blockers—pentamine and

hexonium were tested in comparison with pendiomide, a Swiss preparation. The conclusion that pentamine and hexonium are not less effective or more toxic than pendiomide was drawn from the data obtained.

6. Ganglio-blockers were used in conjunction with local anæsthesia, as well as, with intravenous barbiturate anæsthesia.

7. The indication for these operations was arachnoidoendothelioma of different portions of the brain. As a rule, there was no hæmorrhage in excision of these tumours, or it was insignificant.

8. The positive effect was noted from the use of ganglio-blockers in majority of operations of excision of tumours of the large hemispheres and of the posterior cranial fossa. As a rule, there was no hæmorrhage or œdema of the brain in these operations.

9. The pronounced anti-shock effect of ganglio-blocking preparations should be emphasized. Even in decrease of arterial blood pressure to 60—65 mm. Hg., no clinical picture of surgical shock was observed.

10. The use of the method of arterial hypotonia produced by ganglio-blockers greatly reduces the duration of neurosurgical operations.

11. Prophylactic administration of ganglio-blockers during post-operative period decreases the intensity of post-operative œdema. However, in those cases, in which the clinical picture of acute œdema of the brain has already developed, the effect of ganglio-blockers is less pronounced.

12. The use of ganglio-blocking preparations in neurosurgical clinic requires experience, caution and scientifically founded indications.

Glucose Tolerance Test in Peptic Ulcer

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THE hypoglycaemia is often associated with peptic ulcer; specially with duodenal ulcer. Friendenwald & Grove gave much importance to the alimentary glycaemia in the aid of diagnosis of carcinoma of stomach; but no such evidence can be given to the incidence of the duodenal ulcer with abnormal glucose tolerance test though Barry (1957) advocated hypoglycaemia as one of the causes of peptic ulcer. Prior study showed a blood sugar level 70 mgm. p. c. or below is associated in an average with 35 p. c. cases of duodenal ulcer but Barry has obtained the incidence as high as 70 p. c. This investigation is also meant to see any abnormal behaviour of glucose tolerance test in peptic ulcer.

Materials and Methods: 16 cases of peptic ulcer are chosen at random. The cases are diagnosed clinically and confirmed by radiological evidence of ulceration. The glucose tolerance test is performed on the very first or second day of admission before

any standard treatment for peptic ulcer starts. The fasting blood is collected from the antecubital vein and then 50 Cgm. of glucose is given orally to take and blood is collected at ½ hr. interval from the antecubital vein for 2½ hrs. 0' 1 c. c. of 5 p. c. potassium oxalate is used as preservative to prevent coagulation. Immediately after the collection of each sample of blood it is kept in the refrigerator and blood is analysed for sugar within 2 Hrs. after collection of the blood. The blood sugar is estimated with the Folin & Wu method. The results are tabulated in Table No. 1.

Results:—From the Table No. 1 it has been seen that in 5 cases (Nos. 2, 3, 4, 5, & 16) the fasting blood sugar level remains below 70 mgm. p. c. The lowest fasting blood sugar level in this study is found to be 64' 44 mgm. p. c. (case No. 2); and the highest fasting blood sugar level is 112' 66 mgm. p. c. (Case No. 11). The maximum level has reached between ½ to 1 hour period after the ingestion

TABLE I

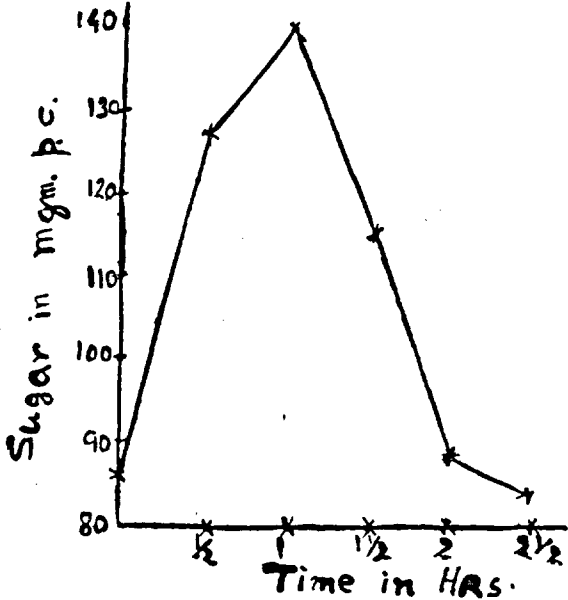
S. No.	Initial of Patients' name.	Age & Sex.	Sugar in mgm p. c.						Glycosuria
			Fasting	½ Hr.	1 Hr.	1½ Hrs.	2 Hrs.	2½ Hrs.	
1	N. K.	22 m	80	122.5	165.0	146.66	126.66	100.0	nil.
2	C. K.	35 m	64.44	93.33	150.0	95.55	80.44	60.0	nil.
3	M. R.	32 m	65.5	136.0	130.0	74.0	66.0	76.66	nil.
4	D.	40 m	68.0	116.66	140.0	90.0	70.0	70.0	nil.
5	A. R.	26 m	66.8	110.0	145.0	116.0	70.4	69.0	nil.
6	S. R.	29 m	94.0	132.5	—	126.5	114.0	88.6	nil.
7	P. M.	30 m	80.0	126.5	135.5	129.4	108.6	76.4	nil.
8	M. G.	40 m	111.0	156.0	168.4	148.0	120.5	96.0	+ in 3rd sample
9	S. C.	36 m	88.0	141.0	111.0	137.0	122.5	100.0	nil. [(1Hr.)
10	S. D.	43 m	79.41	105.5	127.6	88.26	68.6	74.0	nil.
11	O.	20 m	112.66	166.25	160.5	140.5	105.84	103.33	nil.
12	D. D.	17 m	88.42	162.0	61.1	79.14	66.7	80.0	nil.
13	S. R. N.	23 m	99.5	155.5	167.4	114.3	102.0	104.0	nil.
14	J.	22 m	104.07	177.0	124.28	115.5	73.1	90.0	trace in 2nd sample
15	L. K. D.	25 m	90.0	126.5	146.5	106.3	109.8	97.5	[(½ Hr. interval)
16	D. B.	28 m	68.0	118.0	168.6	158.3	125.7	72.4	

glucose and the level has reached the near-about fasting level within 2 hours except in cases 1, 6, 8, 9, & 16. In two cases only (Case No. 8 & 14) there is glycosuria though the maximum blood sugar level has not exceeded the renal threshold value.

Discussion:—Banerjee and Laskar (1957) have observed the fasting blood sugar level to be 104' 4 ± 8 with a range varying between 90—124 mgm. p. c. in winter and 90' 25 ± 10 with a range between 70—109 mgm. p. c. in summer. The present study was carried out in the winter season and hence from the Table No.1 it is definite that the peptic ulcer cases are associated with a low blood sugar level. In the animal experiment study it has also been seen that the animal with a low blood sugar level is easily sensitized to the ulcerative agents.

The blood sugar level depends mainly upon the power of absorption from the intestine which is again interconnected with two factors, viz. :—

- (1) the healthy continuity of the mucous membrane of the G. I. tract.
- (2) the period of contact.



Graph showing the average Glucose tolerance test curve in peptic ulcer.

In peptic ulcer the healthy continuity of the mucous membrane of the G. I. tract is disturbed in the upper

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EVEREST

part of the tract i. e. in the stomach and the first part of the duodenum and from this part of the intestine the absorption of the sugar is not marked. In that case the normal blood sugar level in the peptic ulcer is not expected to be disturbed very much. If the absorption of sugar from that part of the intestine would have been much even then the hypoglycaemic state associated with peptic ulcer is to be regarded as a sequel of the disease and not as an ætiological factor though Barry (1957) claimed that spontaneous hypoglycæmia as one of the prime unknown factors in the recurrence of duodenal ulcer.

Though the ætiology of the peptic ulcer is not known but it is a well known fact that peptic ulcer is associated with hyperacidity and peptic ulcer develops in that part of the G. I. tract which is bathed by the gastric juice. The digestion of the carbohydrate in the stomach takes a very short time till the salivary amylase is destroyed by the pepsin and that requires about $\frac{1}{2}$ hour time; the main digestion of the carbohydrate occurs in the intestine by the intestinal enzymes like maltase, lactase and sucrase and these enzymes are in active form in the alkaline medium. In peptic ulcer due to hyperacidity the optimum action of these enzymes are most probably impaired leading to impaired carbohydrate metabolism.

In future study the activities of the intestinal amylase in peptic ulcer are to be investigated to ascertain if the hypoglycæmia is an ætiological factor of the disease or it is simply a sequel.

TAX RULE ALLOWS EXPENSES

Washington, D. C. —It is now official. Dentists' expenses for attending professional meetings and for post-graduate studies may be deducted from their income tax as business expenses. As regards "refresher course" costs, the ruling is retroactive for three years.

A Treasury Department statement covering this regulation, as published in the **Federal Register**, declares:

"The allowance for such expenses will depend upon whether there is a sufficient relationship between the taxpayer's trade or business and his attendance at the convention or other meeting so that he is benefiting or advancing his trade or business by such attendance."

The wife's presence will be pleasurable, but her expenses not deductible. That is, unless her presence is demonstrably related to the taxpayer's requirements

Summary:—

- (1) Glucose tolerance test was carried in 16 patients before any treatment. Out of these 16 cases 5 cases definitely shows hypoglycæmia and the rest also a low blood sugar level.
- (2) The study of the activity of the intestinal amylase is advocated to know the mechanism of the low blood sugar level in peptic ulcer.

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for transacting business at the meeting.

Expenses for courses taken by the dentist to maintain and improve his skills are also deductible. This does not apply, however, to educational courses taken to qualify for a specialty, or to obtain a higher degree.

The criterion for deductibility is whether the educational work is directly related to "maintaining or improving skills required by the taxpayer in his employment or other trade or business."

The regulations also state that professional men may deduct the cost of supplies used in practice, dues to professional societies, and costs of books and subscriptions to professional journals.

Also deductible are office rent and utilities, hire of office help, and the costs of furniture, instruments, and equipment.

BANTIS SYNDROME

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BANTIS syndrome was first described in detail by Guido Banti in 1897. Guido Banti was professor of Surgical pathology in the university of Florence in Italy.

It was described as a chronic disease with an insidious onset characterised by splenomegaly, hypochromic anæmia distinguished by leucopenia, a tendency to severe hæmatemesis, and terminating in a few cases after some years as cirrhosis of the liver. The progress is slow and disease may last about ten years.

Pathology: This article can neither describe fully nor attempt to dispel the confusion prevalent, and controversy present in the pathology of the so called Bantis syndrome among pathologists as well as clinicians. We hope this will not betray the vagueness and variedness in our knowledge of the pathology, and clinical picture of Bantis syndrome. Banti divided it into three stages. First stage consists of enlargement of the spleen with gradually developing anæmia lasting for 3 to 8 years. Second stage lasts for 12 to 18 months, liver becomes enlarged, and jaundice appears. Third stage there is atrophy liver, ascites and cæhexia appear, and death comes in 12 months time. The salient features of splenic pathology are (1) a fine wide spread fibrosis which does not prevent the spleen from enlarging or result in subsequent contraction; and (2) proliferation of the endothelial cells of the venous sinuses of the pulp. Some times Bantis syndrome may be due to portal obstruction, and splenic enlargement may be due to obstruction.

Blood to the liver goes through the hepatic artery (25%) at systemic pressure, and through the portal vein (75%) at 100 mm. of water pressure. The pressures are equalised in the liver sinusoids. From a minor rise in portal tension it may go up to 500 mm. of water pressure.

There is anæmia, leucopenia and thrombocytes may be reduced but not grossly affected. Plasma proteins are reduced and albumin globulin ratio is reversed. Albumin may be less than 2.8 G%. The bleeding and coagulation times are not usually affected.

There may be in some cases some abnormality acquired or congenital of the splenic vein. Either it may be cavernomatous malformation or thrombosis of the splenic vein.

Liver may show hypertrophic or atrophic stages of cirrhosis. The peritoneal cavity may or may not show fluid. The collaterals are usually present. Lower end of œsophagus will show varices. There are usually hemorrhoids as disease progresses beyond splenomegaly. The vena medusa if present are towards the end stage of disease.

Because of hypoproteinæmia there may be anasarca. There may be varicosity of the vein in the falciform ligament presenting an audible murmur (cruveleur Baumgarten syndrome).

Signs and symptoms: There is progressive splenomegaly and secondary type of anæmia.

Anæmia responding to hæmatinic treatment temporarily, and relapsing in between treatments. There is low fever not responding to antimalarial, and antikalaazar treatments. In these parts in every case of splenomegaly, malaria must be excluded by repeated blood film examination, and therapeutic test. Even in these days where antimalarial drugs are distributed through postoffices there are still some splenomegalies from chronic malaria. Kalaazar though not usually present here must also be excluded.

There may be constipation or diarrhœa in the early stages. It may be hæmatemesis that compels the patient to approach the medical man. Bleeding from hæmorrhoids appears two or more years after the onset of the disease.

There are some people who come for piles operation, where they insist, inadvertently surgery was done on them without thorough examination.

Vena medusæ may appear, and vein in the falciform ligament may become audible. The ascites may appear some years after the onset of the disease. Oedema ankles may appear from hypoproteinæmia. Very late in the disease may appear Jaundice. Cholæmia may be the terminal phase of the disease in fair number of cases.

INVESTIGATIONS

- (1) Rbc count, Wbc count, and thrombocytic count are done. Blood film for differential count and to exclude malaria and kala azar is seen. Plasma proteins and their ratio are estimated.
- (2) Hæpatogram can be done immediately on giving intravenous Biligraffin; Levulose tolerance test, and thymol turbidity tests will show the function of the liver.
- (3) Splenoportal Phlebography:— will show the course of and obstruction if any in the splenic or portal vein.
- (4) Barium swallow, screening, and X-ray may show œsophageal varices. This can be confirmed by œsophagoscopy.
- (5) Proctoscopy may demonstrate the presence of internal piles.

- (6) Aspirated abdominal fluid in cases of ascites may show its nature as transudate.
- (7) Infrared clinical photography may clearly demonstrate doubtful collaterals in the abdominal wall.
- (8) On laporotomy portal tension can be noted with canula in the portal vein and connecting it to a water monometer.
- (9) Laporoscope: will show the surface of the liver and confirm the diagnosis.

DIFFERENTIAL DIAGNOSIS

- (1) Malarial spleen: malaria is very common in this part of the country. It has got to be excluded by repeated blood film examinations, and therapeutic tests.
- (2) Spleen in Kalaazar: though not common can easily be excluded by blood examination and therapeutic tests.
- (3) Leukemic spleen: by looking for glands, total Wbc count, and blood film examination can be excluded.
- (4) Hodgkins disease: by looking for glands can be excluded.
- (5) Hæmatemesis from gastroduodenal ulcerations.
- (6) Hæmorrhoids: idiopathic and symptomatic from growths intraabdominal are to be excluded.
- (7) Jaundice of other origin has to be eliminated; like from the pancreas and pyloric carcinoma has to be eliminated.
- (8) Ascites from other origin has to be excluded like intraabdominal malignancy, and tuberculous abdomen.

The diagnosis from other varieties of splenomegaly by progressive anæmia, and low fever with negative findings for other diseases can be made. Splenoportal phlebography and noting the portal tension may help in deciding the plan of surgical procedure. If there is obstruction, Splenectomy may not do any good. If

the obstruction is extrahepatic portacaval shunt is dangerous, and Leinorenal anastomosis is the operation of choice. If the obstruction is intrahepatic portacaval anastomosis is the best.

THE CHOICE OF OPERATIONS

The surgery is needed to prevent death from hæmatemesis, to reduce discomfort, to prevent recurrence of anæmia, and temporarily arrest the progress of the disease.

- (1) For œsophageal varices: (a) Diathermy coagulation of varices through œsophagoscope can be tried. During the stage of ulceration produces dangerous hæmorrhage. Even when uncomplicated it is at best a very temporary palliative procedure. (b) Injecting sclerosing fluids through an œsophagoscope gives very indefinite and unsatisfactory results even for hæmatemesis. (c) Some form of œsophagogastrrectomy and œsophagogastrstomy on the same principle as whitehead's operation for prolapsing hæmorrhoidal masses has been done with indefinite results.
- (2) Ascites if in the early stages Thalmamorisons operation can be given a trial.
- (3) Splenectomy: The need for this is (a) to prevent death from hæmatemesis, (b) to reduce portal tension, (c) to prevent recurrence of anæmia, (d) to arrest temporarily the progress of the disease, and (e) to prevent potential rupture of the spleen. Splenectomy is one of the methods of surgery for early stages in the disease.
- (4) Shunt operations:
 - (a) Portacaval anastomosis is good for intrahepatic types.
 - (b) Leinorenal shunt for extrahepatic type of cases.
 - (c) Superior mesenteric and inferior vena cava anastomosis is also under trial.
 - (d) Ligature of the hepatic artery below the gastroduodenal has been tried in Bombay by Dr. Phadke with encouraging results.

Our facilities are meagre either for the localisation

of obstruction if any or for anastomosis if indicated. Not out of experience that we have chosen splenectomy but as an expedient measure within our humble facilities. We saw two cases dying before we ventured on splenectomy. If the disease is progressive and the end is inevitable, we felt why then deny a surgery within the range of our limitations, whether it has or not the influence to modify either the course of the disease or the inevitability of ultimate end.

We felt at least splenectomy removes the pathological spleen, arrests the progress of anæmia, makes the patients feel well for a time free from abdominal distress, reduces certain amount of portal tension, and much more than this prevents accidental or potential rupture of the spleen. For clear view and sure dissection we have chosen left thoracalaporotomy.

The curative value of splenectomy in diseases of spleen associated with changes in the composition of blood, and the character of its components has been assessed by the crude but dependable method of trial and error. Our arrival at the diagnosis was neither wholly intuitional nor thoroughly institutional. It was some thing more than a mere clinical diagnosis.

We saw six cases in the last five years. Two died without operation. One died few months after an unsuccessful laporotomy. Three operated cases are living in almost normal health without even the maintenance by or assistance of medicines. The splenic veins did not show any pathology on the table.

We saw Prof. P. Valdoni of Rome using right thoracalaporotomy removing 8th or 9th rib for splenectomy and Leinorenal shunt. We were told Dr. C. S. Sadasivan of Madras feels equally at ease with right upper laporotomy for portacaval anastomosis. We used thoracalaporotomy for our last three cases of splenectomy. We felt during exposure the field was wide, easy, and clear.

CASE 1

K. R. 28 came in 1953 with massive splenomegaly and moderate hepatomegaly, low fever, and progressive anæmia. Anæmia responding to treatment temporarily. Rbc 2.6 million, Wbc 4200, neither malarial parasite nor Leisman Donovan bodies were present in blood smear on repeated examinations.



Fig. 1. Showing patient with spleen and liver enlargement.

There was infrequent bleeding per rectum. Proctoscopy showed internal hæmorrhoids. It was taken as Bantis syndrome, and without further examination and consideration she was suggested splenectomy, and advised preoperative medical treatment.

She did not turn up for operation. We were told she developed ascites, anasarca, hæmatemesis, and died in eleven months after our examination and advice.

CASE 2

K. V. S. 29, came in 1954 with enlarged spleen, progressive anæmia and slight rises of temperature of three years duration. Treated long for malaria and



Fig. 2. Showing Photo of case 2 with splenic enlargement.

many times for anæmia, every time relapsing after the conclusion or the discontinuance of treatment. She had on and off bleeding per rectum.

Rbc 3.2 million, Wbc 5200, and repeated blood film did not show malarial parasite. Proctoscope showed a suggestion of internal hæmorrhoids.

She was advised splenectomy, suggested preoperative medical treatment, and she was asked to return for operation, which she did not.

She was getting hæmatinic treatment between 1954 and 56 on and off. It grew worse with her towards the end of 1956 and died in February 1957 from ascites and anasarca.

CASE 3

S. A. R. 37 a married male and a cultivator came in September 1954 with distension abdomen from massive splenomegaly and progressive anæmia. There were low fever, and anæmia responding every



Fig. 3. Showing Photo of case 3 before operation.

time temporarily to medical treatment. He was treated for Chronic Malaria for long. He was having dyspnœa and discomfort abdomen on taking food. Rbc 3.4 million, Wbc 5400, and no malarial parasite or Leisman bodies were seen in the film. Proctoscopy revealed internal piles, and had repeated bleeding per rectum on straining.

He too was advised splenectomy which he readily accepted. Left upper paramedian laportomy was done under open gas, oxygen and æther. The adhesions between the spleen, liver, diaphragm, and parieties were so dense and vascular we felt that any further procedure at operation without endotracheal tube, controlled respiration, and adequate quantity of blood would amount to indifference to life, and

injudiciousness in decision. Towards the end of 1956 when we had facilities for controlled respiration, and we could attempt at thoracalaporotomy we tried to get at him. We were informed that he died in April 1956. He developed ascites, anasarca and marked anæmia before death.

CASE 4

K. P. 30 Married man from business community in September 1956 with massive splenomegaly of 3 years duration, progressive anæmia, low fever, and bleeding per rectum occasionally.

112 lbs., 110/70, Hæmoglobin 45%, 2.8 million Rbc, 4800 Wbc, smear no malarial parasite or Leisman bodies. The spleen was felt upto the umbilicus. Liver not palpable and no visible veins. Proctoscopy did not reveal internal piles. He was treated for malaria for long and with hæmatinics many times for anæmia.

Preoperative treatment brought hæmoglobin to 72%, Red cells to 4.8 million, 10800 white cells and Blood was of 'o' group.

30—12—'56. Anæsthesia gas and oxygen with controlled respiration. Through left thoracalaporotomy incision from left midaxillary line to over and to the right of the umbilicus, removing 9th rib, opening both abdomen and chest, incising the diaphragm in the line of fibres towards œsophageal opening. Gastrosplenic ligament was cut between clamps. Adhesions between spleen and left lobe of the liver, spleen and diaphragm, spleen and parieties released with great care. With fingers of the left hand ready on leinorenal ligament spleen was slightly dislocated. The hilum was seen, the position of vessels and the tail of the pancreas were located. The spleen dislocated to have attachment at only pedicle. Splenic artery, vein and tail of the pancreas were located, separated and vessels tied three times with thick chromic catgut. After perfect hæmostasis diaphragm closed with interrupted 0/1 silk, costal arch stitched with thick silk, abdomen closed in layers and chest closed while lung was being inflated. No drain was kept into the pleural cavity.

The strapping with elastoplast was applied over the dressing in such away that during coughing there is

minimum tension on the wound and least discomfort to the patient. He was encouraged to breathe well from the time he recovered from anæsthesia. He was given 1500 c. c. glucose saline.

Post operative period was uneventful. X-ray chest and upper abdomen does not show atelectasis, infection, effusion or inactivity of the left side of the diaphragm.

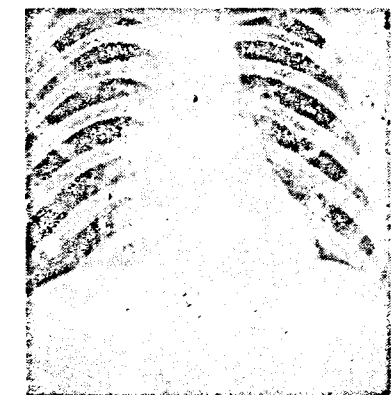


Fig. 4. X-ray chest taken after operation to show pleural cavities and lungs.

The stitches were removed on the 15th day, and wound healed by first intention. For some time he was complaining of neuralgic pain for which no long acting local anæsthetic was injected.

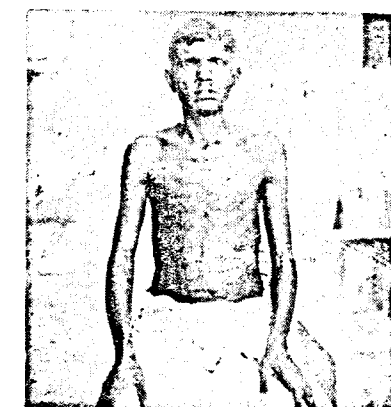


Fig. 5. Photo showing the patient after operation.

His health improved, he is carrying on his usual trade, does not go out of breath on even strenuous exercise, and does not need medicines to maintain his health.

CASE 5

D. V. 32 came in July 57 for anæmia, recurring low fever, general debility, and massive swelling abdomen of 3 years duration.

100 lbs., 100/74, Hb 38%, Red cells 2.12, White cells 4400, P₈₈, L₃₄, E₂, M₁, B₂, Blood group 'A', he was treated preoperatively with liver extract, B complex, Iron, and blood transfusion. Blood smear was negative for malaria and Kalaazar. It was taken as a case of Bantis syndrome. Proctoscopy did not reveal prominent hæmorrhoids.



Fig. 6. Photo of patient before operation.

31—8—'57. Seconal, Pethidine and atropine, Induction with pentothal and flexadil, cuffed endotracheal introduced, and anæsthesia maintained with gas and oxygen under positive pressure controlled respiration.

Left thoracalportomy excising 9th rib cutting across the costal arch and incising the diaphragm radially. The abdomen and chest wounds retracted well, adhesions between spleen and left lobe liver, spleen and diaphragm, and spleen and parietes released judiciously. Gastrosplenic ligament cut between ligatures, position of hilum, tail of the pancreas and splenic pedicle ascertained, Leinorenal ligament opened from below, splenic vessels isolated, ties applied to them on rotating the spleen forwards and to the right. The vessels cut and spleen removed. All other bleeding vessels stopped with ties and raw area covered with spongostan. Diaphragm wound closed. Blood in the pleural and peritoneal cavities sucked out. Costal arch stitched, abdomen, and chest closed while the lung was kept under

expansion. Later integrity of pleural cavity and capacity of lung to expand were ascertained by auscultation of the chest by the anæsthetist. There was no drainage kept into the pleural cavity.

Postoperative period he was given pethidine 50 mgm. twice daily for 3 days, penicillin G sodium 5 laks twice daily for 2 days and later only once, and Streptomycin half a gram daily.

He was encouraged to breathe well and cough out. From the second day he started bringing out mucus plugs. The limbs he started moving the same day as a preventive for thrombophlebotosis and subsequent pulmonary embolism.

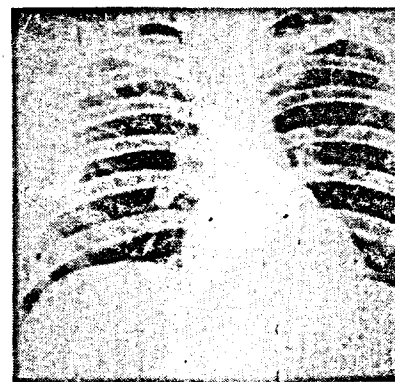


Fig. 7. Reduced X-ray 10th day after operation showing clear pleural cavity, and fan shaped consolidation right mid zone.

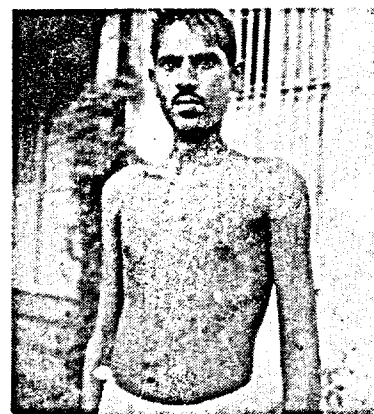


Fig. 8. Showing patient on discharge.

There was slight rise of temperature from the second to seventh postoperative day. There was distension abdomen from the 2nd to the 3rd day.

health where she went to express her gratitude to Lord Venkateswara. I am told she is able to carry her share of family work.

Death seems to be sure to occur in about three years after diagnosis if not operated. From the meagre facilities that we have, we could not think of portal phlebography, and recording portal tension as aids to diagnosis, and vascular anastomosis as procedure of treatment for the present. But within our limited experience death in few years is certain without operation, operative mortality can be less, splenectomy has a place in the threatment, and thoracoabdominal route is good for exploration and easy for clear dissection of vessels. Complications are less and easily manageable. Neuralgia can be prevented by cutting the nerve or postoperatively by injecting proctocaine or effocaine.

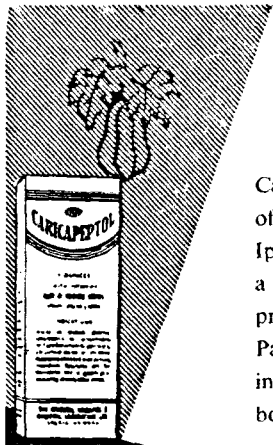
We thank Sri P. Venkateswara Rao, M. S., Private Surgeon, Vijayawada if not for whose constant encouragement, and continuous scientific and academic guidance, we could not have ventured even to entertain the idea of such surgery in private practice. We thank Sri C. S. Sadasivan, M. S., Professor of Surgery, Madras Medical College, and thoracic surgeon, Government General Hospital, Madras for his unassumed readiness in communicating his experiences on portacaval anastomosis, in which field he has continuous and commendable success. We thank Rev. Mother Superior of St. Joseph Hospital for readily placing at our disposal all available facilities in the hospital. Lastly we thank M/S. Neptune Studios, who are equally efficient in medical photograph for their jubilant readiness even at odd hours to be of help to us.

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BY DRS. V. SHAMOV, B. SAMOTOKIN, I. GOLIKOV

(Leningrad)—U. S. S. R.

1. Among the methods developed lately for combating operative shock the method of artificial hypotension and hypothermia deserves special attention. This attention is justified in view of theoretical grounds and practical results of this method.

2. The essence of this method consists in prophylaxis of the chaotic reaction, which appears in the sympathicoadrenal system of the body in response to over-irritation which comes from the focus of tissue injury.

3. In order to achieve this aim the use of a special system of pharmacological preparations was suggested. A physical agent—cold was likewise employed.

Pharmacological substances are used for stabilization of the vegetative nervous system. This prevents the impulses which come from the focus of injury from provoking chaotic condition in the sympathico-adrenal system. For that purpose a complex therapy is applied. Sympathicolytic, ganglio-blocking, anti-histaminic, as well as, substances with curare-like action are administered. All these medicines are repeatedly introduced to the patient in small doses before, during and after the operation. Administration of these substances brings about anaesthesia, decreases metabolism, reduces the blood pressure, slows down the rhythm of cardiac contractions and respiratory movements, decreases the body temperature and renders the organism less susceptible to all painful irritants.

The use of a physical agent—cold has the same aim, i.e. of decreasing the body metabolism and of creating an activity of the organism. A decrease of the body temperature is achieved by placing ice around the patient or by immersing him into a cold water bath.

The combined effect of administration of pharmacological agents in conjunction with the cooling of the body is successfully employed for rendering the patient's organism active to traumatic impulses.

4. This method of artificial hypotension and hyperthermia was widely investigated during the past 3 1/2 years at the surgical clinic of the Military Medical Academy. The method was usually employed in the most difficult operations in the thorax and abdominal cavities and justifies the well deserved praise found in literature.

5. The practical experience received gave all grounds for the use of this method in neurosurgery. Besides, according to the published experimental data, artificial hypothermia greatly increases the resistance of the central nervous system to such unfavourable factors, as anemia and oxygen deficiency.

6. They began to employ the method of artificial hypotension and hyperthermia at the neurosurgical department of the Clinic since 1954. 39 patients were operated and these were the first neurosurgical patients in the Soviet Union to be operated by this method. Out of this number 5 patients, in whom pathological changes were not so extensive were treated only with ganglio-blocking, anti-histaminic agents and those with curare-like effect. The other 34 patients received treatment by pharmacological substances in conjunction with the cooling effect.

7. The use of this method gave the opportunity to broaden the field of surgical intervention in the central nervous system. In numerous cases it allowed to operate in advanced cases or in those which were formerly considered to be inoperable.

8. Out of 39 neurosurgical patients in a grave condition, who were operated by this method, 27 tolerated the traumatic surgical intervention successfully. 12 died. However, autopsy revealed that the cause of death in majority of cases was associated with the presence of inoperable extensive or deeply located tumours of the brain.

9. In operations of the brain which were carried out by this method, the loss of blood during the operation was much less in comparison with that lost during surgical interventions under local anaesthesia. Due to this fact, it became possible to remove tumours intimately connected with venous sinuses and arteries or located in the ventricles. The loss of blood during these operations was greatly reduced. Oedema of the brain was less pronounced and not as frequent in operations performed by this method, as in those carried out under local anaesthesia. Oedema of the brain was limited and did

not spread to the brain stem, even in operations with extensive trauma.

10. In connection with that, the general condition of the patients on the operating table, as well as, during the postoperative period was much more favourable, than in operations performed under local anaesthesia.

11. Practical experience of the use of this method reveals that it is valuable in serious neurosurgical cases and, therefore, a recommendation for its wider application is justified.

12. The drawback of this method consists in its comparative complexity. Much time is required for such operations and, likewise, it is necessary to have competent specialists in the clinic, acquainted with the specific features of this method.

POLYCYSTIC-MULTILOBULAR LIVER

A Case Report by

DR. K. S. SHADAKSHARAPPA, B. Sc., M. B., B. S., M. Sc. (Med.) (Ill-Chicago) F. C. C. P. (U.S.A.)
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DR. A. K. ANNAMALAY, B. Sc., M. B., B. S.

A fourteen year old boy was admitted in the Victoria Hospital on 30—1—1958 for study. He complained of pain in the right chest, cough with expectoration and an increasing swelling in the upper abdomen. The mass according to him was only of 1½ month's duration and he developed cough and pain 15 days before admission. He also mentioned that during the past six months time he had lost some 12 lbs. of weight and tired more easily than before. He had suffered from Malaria 5 years ago but was treated promptly. He said the swelling in the abdomen had increased and became painful only during the previous two weeks. Cough was severe during the evening or morning hours. He complained that the chest pain and cough got aggravated if he lied on the right side or recumbent. Thus he spent most of the time sitting up. No history of hemoptysis or fever was obtained.

EXAMINATION

The boy was anæmic, malnourished and was in acute respiratory distress. He did not show any signs of jaundice and Cynosis nor clubbing of the fingers. The neck veins did not show distension. But the trachea appeared deviated to the right. He breathed rapidly and shallow. The right lower chest showed dullness and diminished breath and spoken sounds with faintly heard rales. His temperature was 99.8° by mouth and a pulse rate of 100 per minute and a respiratory rate of 28 per minute were made out. The readings remained unchanged throughout his stay. Blood Pressure of 100 systolic, 70 diastolic was recorded in both the arms. A visible swelling measuring 10" occupying the epigastrium, and two hypochondriac regions could be seen. It moved with respiration, was detectable. The right lobe of the liver was enlarged three fingers below the costal margin but was not tender. The spleen was not palpable. The abdomen was otherwise normal with no other palpable mass or Cystic nodes.

A tentative diagnosis of cyst connected with the liver was contemplated.

INVESTIGATIONS

Urianalysis revealed no abnormality. Hematological results give a Hb percentage of 60 and an RBC count of 3 millions, a white cell count of 6800, with a differential count of 75% polys, 22% lymphosy and 3% Eosinophiles. The sputum was negative for A. F. B. Liver function tests were all within the normal limits. Tuberculin and cassino tests were also negative. X-ray plates of the chest revealed an opacity of the right lower lung zone—abdominal pictures showed a dense shadow in the upper abdomen below the diaphragm. Bronchogram revealed no communication between the thorax and abdomen. The Bronchial tree of the right basal segment appeared crowded. The expectoration was yellow frothy and copious. So a bronchoscopy was done.

BRONCHOSCOPY

A No. 7 X 40 Jackson Bronscope was passed into trachea with difficulty under local 10% cocaine Anaesthesia of the larynx. The patient was having severe cough and dyspnoea, while lying down and so the scope had to be passed almost the patient in the sitting position.

The trachea upto the carina was normal but there was profuse secretion filling the trachea which had to be constantly suctioned. The scope was then passed to the right tracheo-bronchial tree and it was noticed that the secretations were coming mostly from the right lower lobe. The left side of the tracheo-bronchial tree seemed to be normal.

The scope was kept for nearly ten minutes on the right side and as much of the secretions were suctioned. The secretions were mixed with some yellow eggalbumin like material.

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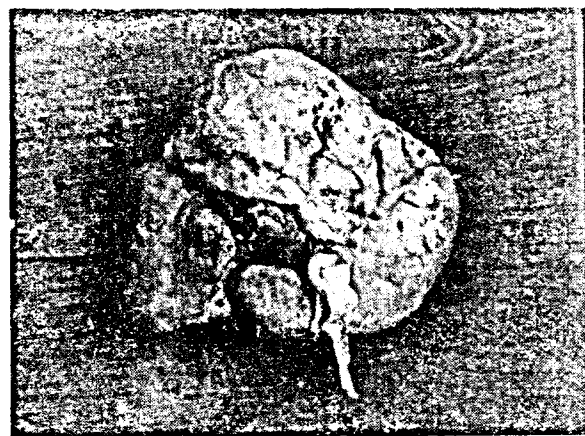
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II & III

On two subsequent occasions, at weekly intervals bronchoscopies were performed. It was noticed that with each procedure the secretions had decreased and the patient improved as regards cough and dyspnoea. Still it was felt that it was the right Tracheo-bronchial tree that was the seat of Pathology.

Despite supportive therapy, drainage, transfusion and antibiotic exhibition, the body continued to go downhill. He developed a severe parysm of cough and died 21 days after admission. With great difficulty permission was obtained to remove the liver from the body but a full post-mortem was not allowed.



* A *
Anterior view showing a large cyst in one of the lobules on the right lobule of Liver.



* B *
Posterior view showing the multilobular appearance, with cystic changes in some of the Lobules.

REPORT OF THE POST-MORTEM

The liver was multi-lobular having two lobes on the left and four on the right side. The mid lobe had formed into a cyst with an yellow fluid in some place and yellow gelatinous solid substances in between suggesting a polycystic condition. The fluid from the cyst gave a faint reaction to tests for bile salts and pigments. No scolices were found. The lungs did not show any abnormality except the collapse of the right basal segment. There was no communication between the liver and thorax on the right side.

OPINION

The condition suggests multi-lobular liver with cystic changes of one of the lobes as a result most probably of change in the aberrant bile ducts. It was a polycystic Liver.

DISCUSSION

Here we found a boy with multi-lobular liver with cystic changes in a part of it with no change in the liver parenchyma or the liver functions. He came for dyspnoea, cough and a copious yellowish expectoration. There was no apparent communication between the liver and the right side of the thorax. We could not account for the copious yellowish fluid exuding from the right tracheo-bronchial passages. Perhaps a detailed post-mortem could have thrown more light on the condition. However we are inclined to believe that this was a rare condition of congenital anomaly of the liver with extra lobules and a polycystic degeneration of the viscus with multiple cysts. The solid masses in between could be masses of inspissated bile.

Photos.— Two views Anterior and Posterior of the liver are appended.

I thank Dr. M. Authikesavalu, M.B., B.S., M.S. (Surg.) M. S. (Exp. Surg.), F. R. C. S., F. I. C. S., F. A. Sc., Superintendent of Victoria Hospital for having given permission to publish this article and also Dr. M. C. Devaniah, B. Sc., M. B., B. S., for the pathological report and Dr. Felix Misquith, M. B., B. S., M. Sc. (E. N. T.) N. Y. for the Bronchoscopy examination.

Postnatal Care including Complications of the Puerperium

By DR. VISHNU SARMA,

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POSTNATAL care is not and probably will never be as popular as antenatal care although it is equally important as a part of preventive obstetric medicine. Childbirth is often a dramatic event which parents look forward to full of anxiety and a desire that all should go well. On the other hand once the child is safely in the mother's arms, enthusiasm for the welfare of the offspring overshadows any desire or care about her own health. This is unfortunate because skilled care and timely attention during the postnatal period may prevent many of the chronic ailments and disabilities which are too often a legacy of childbirth.

Much gynæcology, it is said, may be prevented by the skilled practice of obstetrics. Some degree of injury to the maternal birth canal is inevitable. The injuries may not take the form of visible lacerations which can readily be repaired. The stretching of the soft tissues which line the birth canal often disturb normal anatomical inter-relationships and weaken the pelvic floor predisposing to perineal proptosis, cystocele, rectocele or prolapse of the cervix. At other times more serious injuries result. It is important that these should be recognized. The important complications of childbirth are hæmorrhage, injury and sepsis. The internal genital organs which have undergone great changes in the process of pregnancy have to return to normal. They never return to the original state completely. This process of involution takes time and it is accomplished during the puerperium which is usually taken as a period of 21 days.

A postnatal examination is ideally performed on the 10th day after childbirth and again at the end of the sixth week. The object of these examinations is to determine what effect pregnancy and parturition have had both on the body and mind of the mother, the measures to be taken to effect a speedy recovery,

and the care of the offspring. In order to make the study of postnatal events as comprehensive as possible, I have devised for my personal use a printed form. This is reproduced as it may be of general interest.

RECORD OF POST-NATAL CARE INCLUDING COMPLICATIONS OF THE PUERPERIUM

Days	Temperature (°C)						Pulse	Respiration	Blood Pressure	Cervix	Vagina	Uterus
	4°	5°	6°	7°	8°	9°						
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												

Involution of the uterus.
Record begin of uterine pain (in inches) in red.
Symptoms:
1. When uterine pain begins:
2. Temperature: conditions occurring within 21 days after delivery:
3. When uterine pain subsides:
4. When uterine pain begins:
5. When uterine pain subsides:
6. When uterine pain begins:
7. When uterine pain subsides:
8. When uterine pain begins:
9. When uterine pain subsides:
10. When uterine pain begins:
11. When uterine pain subsides:
12. When uterine pain begins:
13. When uterine pain subsides:
14. When uterine pain begins:
15. When uterine pain subsides:
16. When uterine pain begins:
17. When uterine pain subsides:
18. When uterine pain begins:
19. When uterine pain subsides:
20. When uterine pain begins:
21. When uterine pain subsides:

RECORD OF POST-NATAL CARE INCLUDING COMPLICATIONS OF THE PUERPERIUM

- A** Body as a whole : Puerperal morbidity/pyrexia/sepsis/septicæmia/pyæmia/other
- B** Mental disorders : Puerperal psychosis/insanity/other
- C** Skin
- D** Mucous membranes
- E** Hair
- F** Nails
- G** Breast : Engorgement/hyperlactation/disease of nipple/mastitis/galactocoe/abscess/other
 Infant feeding : Breast milk/artificial/complementary/supplementary
- H** Muscular system : Loss of tone/weakness/myalgia/cramps/backache/other
- I** Bone (including spine and thoracic wall) :
- J** Joint : Coccidynia/injury/other
- K** Respiratory system :
- | | | |
|----------------------|----------------------------|----------------|
| 1. Nose | 4. Trachea | 7. Pleura |
| 2. Accessory sinuses | 5. Bronchi and Bronchioles | 8. Diaphragm |
| 3. Larynx | 6. Lung | 9. Mediastinum |
- Acute respiratory infection (Post-anæsthetic chest)
 Chronic respiratory infection (Tuberculosis/Bronchiectasis)/other
 Pulmonary embolism (specify)/other
- L** Cardiac system :
- | | |
|----------|----------------|
| 1. Heart | 2. Pericardium |
|----------|----------------|
- Subacute bacterial endocarditis/heart failure/other
- M** Arteries
- N** Veins : Thrombosis/thrombophlebitis (phlegmasia alba dolens)/varicose veins/other
- O** Capillaries
- P** Blood : Secondary post-partum hæmorrhage/other
- Q** Hæmopoietic system : Anæmia/leucopenia/leucocytosis/leukæmia/thrombocytopenia/purpura/other
- R** Lymphatic system :
- | | | |
|-----------|----------------|-----------------------|
| 1. Spleen | 2. Lymph nodes | 3. Lymphatic channels |
|-----------|----------------|-----------------------|
- S** Digestive system :
- | | | |
|------------------------------|-------------------------|--|
| 1. Mouth | 8. Adenoids and tonsils | 15. Anus |
| 2. Lips | 9. Oesophagus | 16. Liver |
| 3. Tongue | 10. Stomach | 17. Gall bladder and bile passages |
| 4. Teeth and gums | 11. Intestine | 18. Pancreas |
| 5. Palate and uvula | 12. Colon | 19. Abdomen |
| 6. Salivary glands and ducts | 13. Appendix | 20. Peritoneum |
| 7. Pharynx | 14. Rectum | 21. Portal, hepatic and mesenteric vessels |
- Distension/Peritonitis/Pelvic abscess/Laxity of abdominal musculature/Visceroptosis
- T** Urinary system :
- | | | | |
|-----------|-----------|------------|------------|
| 1. Kidney | 2. Ureter | 3. Bladder | 4. Urethra |
|-----------|-----------|------------|------------|
- Renal cortical necrosis/lower nephron nephrosis/nephritis/pyelonephritis/albuminuria/lactesuria/hæmaturia/
 polyuria/oliguria/anuria/cystitis/fistula—vesico-vaginal/other/urethritis/stress incontinence/other
- U** Endocrine system :
- | | | |
|--------------|----------------|------------------------------------|
| 1. Pituitary | 3. Parathyroid | 5. Thymus |
| 2. Thyroid | 4. Adrenal | 6. Pancreatic islets of Langerhans |
- Post-partum pituitary necrosis/Thyrotoxicosis/Adrenal hæmorrhage/Diabetes mellitus/other
- V** Nervous system :
- | | | |
|------------------------|--------------------------------|---|
| 1. General | 4. Brain | 7. Vessels of the spinal cord |
| 2. Vessels of the N.S. | 5. Vessels of the brain | 8. Peripheral nerves including cranial nerves |
| 3. Meninges | 6. Spinal cord and nerve roots | 9. Autonomic nervous system |
- Convulsions/thrombosis/embolism/hæmorrhage/nerve or muscle paresis/other
- W** Eye
- X** Ear
- Y** Disease not associated with a single anatomical system (specify)
- Z** Genital tract :
- Vulvitis/vaginitis/lochia/perineal proptosis/urethrocele/cystocele/prolapse/rectocele/cervical erosion/laceration/
 ectropion/pelvic cellulitis (parametritis)/pelvic thrombo-phlebitis/pelvic peritonitis/pelvic abscess/acute puer-
 peral endometritis / acute puerperal metritis / retention of fragments of placenta or membranes/superinvolu-
 tion/subinvolution/salpingitis/oophoritis/other
- | | | |
|------------------------|---------------------------------|-------------------|
| 1. Vulva (and urethra) | 3. Cervix uteri | 5. Uterus |
| 2. Vagina | 4. Pelvic supporting structures | 6. Fallopian tube |
| | | 7. Ovary |

Special comments

develop suddenly. Infection can be a serious complication of heart disease and takes the form of sub-acute bacterial endocarditis. Once recognized, adequate therapy with massive doses of antibiotics is called for. In cases with heart failure check x-rays may have to be taken in reviewing the state of the heart (Figure 9b).

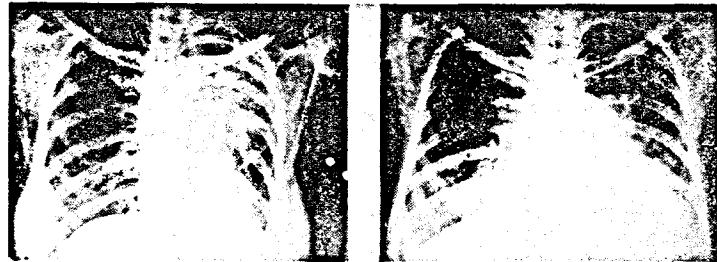


Fig. 9a and b

(Courtesy: The Govt. Women and Children's Hospital, Egmore, Madras)
In conditions such as tuberculosis (a) and heart disease (b) which complicate pregnancy, special care is necessary during the postnatal period. Review X-rays of the chest to determine the state of the heart and lungs may be taken. Such information guides further management.

The blood pressure should be recorded regularly in cases of eclampsia, pre-eclamptic toxæmia, hypertension, nephritis and other toxæmias. If the blood pressure remains persistently at a high level or rises again this should be noted. Otherwise a patient with toxæmia may suddenly develop post-partum eclampsia. Although a rise in blood pressure is not an essential pre-requisite for this complication it helps to put the obstetrician on his guard.

Vascular accidents such as hæmorrhage, thrombosis or embolism are rare and they are usually associated with toxæmia. Cerebral hæmorrhage may be fatal in eclampsia. A sudden fall in blood pressure due to shock, anæsthesia or hypotensive drugs may predispose to cerebral thrombosis. Vascular thrombosis and embolism often occur in those who are not ambulant and remain confined to bed for long periods. Deep femoral thrombosis is painful and causes shock. Thrombophlebitis is a complication following in the wake of septic abortion and puerperal sepsis. Varicose veins although aggravated by pregnancy usually improve in the puerperium.

DELAYED HÆMORRHAGE

Delayed bleeding may occur four or five days after childbirth but it is not common. Retained

placental or decidual tissue or sub-involution of the placental site is usually the cause.

HÆMOPOIETIC SYSTEM

In pregnancy hæmodilution causes a physiological anæmia. This process corrects itself soon after childbirth. However there is always a tendency for a slight degree of anæmia. This can be treated by iron and other hæmatinics. In severe anæmias complicating pregnancy the treatment has to be continued during the postnatal period until the iron deficit is corrected and the blood picture has been restored to health as evidenced by hæmoglobin estimation, red cell count and a study of blood smears. A slight degree of leucocytosis is to be expected in the puerperium but a raised count often indicates sepsis.

Rarely blood dyscrasias manifest themselves for the first time in the postnatal period.

LYMPHATIC SYSTEM

Splenomegaly sometimes complicates pregnancy. An enlarged spleen is usually caused by malaria. Sometimes an enlarged spleen may be diagnosed for the first time only after delivery. A careful examination of the abdomen is important in evaluating the cause of fever in the postnatal period.

Obstruction of the lymph channels in the extremities may cause elephantiasis. Often filariasis is a cause. Filariasis may complicate pregnancy and the puerperium causing painful lymphadenitis and fever.

DIGESTIVE SYSTEM

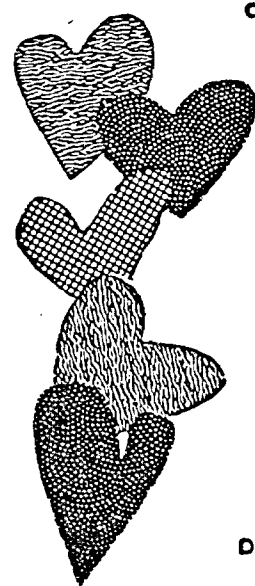
Angular stomatitis and other lesions of the lips and mouth indicate the presence of a deficient diet. This should be corrected. Flatulence and distension are commonly experienced by patients during the puerperium. Constipation is common and responds to simple methods of treatment. Occasionally diarrhœa or dysentery may complicate the puerperium. Infective hepatitis is not an uncommon complaint. Gall stone colic is sometimes encountered.

The tone of the muscles of the abdominal wall tend to be poor and exercises to strengthen them are well advised. (Figure 10). Puerperal ascites is a curious complication not uncommonly met with in tropical

The Govt. Women and Children's Hospital, Egmore, Madras, not only for her unfailing encouragement, but to her generosity in permitting me to make use of clinical material from the hospital. (Except for figures 2 and 17 all the photographs were taken by me—V. S.).

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PELLAGRA

By DR. R. K. PAL, D. SC. (Edin.), M. SC., M. B. (Cal.), M. R. C. P., F. R. S. E., F. N. I.
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ACCORDING to text book descriptions this condition occurs with frequent relapses especially in maize-eaters due to some food deficiency and it occurs endemically in the Balkan states, Spain and Northern Italy in Europe, Turkey and Egypt in the Middle East and southern states of U. S. A., Mexico and Brazil in the New Hemisphere where maize is a staple. But by no means it is rare although it occurs sporadically in some parts of Africa, China, Japan and India where rice or some other cereal is the principal constituent of the diet. So the deficiency the P-p factor (Niacin) in maize, which is generally held responsible for the disease is probably not the sole cause. So far as it occurs in West Bengal, the sufferers are mainly poor rice-eating people with deficiency of proteins and vitamins in their diet and based on my experience of 47 cases, I am of opinion that deficiency of other food factors or imbalance also plays no inconspicuous part in the causation of the disease. This receives ample support from Best & Taylor (1953), Spies & Aring (1938) and Mathews (1938), who contend that pellagra is a disease in which other factors (than deficiency of Niacin) may coexist to a variable degree. Lewis and Musselman (1946) reported the occurrence of pellagra in large numbers of the inhabitants of a Japanese prison camp who subsisted on a diet markedly low in calories, B-complex vitamins and protein and particularly protein of animal origin. In my cases besides the most important food deficiency factor there were noticed some predisposing causes such as alcoholism, chronic amebiasis and lamblasis and some other debilitating diseases like malaria, and even intestinal tuberculosis in one of the cases. Houssay (1951) believes that secondary pellagra may occur in conditions in which there is deficient diet or disturbances in absorption, which is frequently observed in alcoholism and sometimes in malaria and tuberculosis. Wiggers (1949) too is of the same opinion that sporadic cases may occur as a result of alcoholism, food faddism, neurasthenia and chronic disorders of the alimentary tract.

In most of these cases the classical triad, that is dermatitis, diarrhoea and dementia as observed by Spies and But (1947) amongst the people of the south

eastern United States of America was not present in toto and the gastro-intestinal symptoms such as glossitis, cheilosis, angular stomatitis, ulceration of the tongue, indigestion, dyspepsia and diarrhoea were the prominent symptoms initially and some of these cases in an advanced stage developed either the typical pellagrous skin conditions or dementic behaviour and only in a few cases the three classical symptoms together. So the diagnosis was rather difficult in many cases and especially in the early ones the niacin content of the urine had to be sought recourse too as a basis for diagnosis. According to Aykroid and Swaminathan (1940) little or no pellagra was found in India among people eating a rice diet which would give 5 to 11 mg. of niacin per day as against an average of 15 mg. a day consumed by the maize-eating peasants of Rumania but perhaps as pure and simple laboratory workers, in the absence of all the typical symptoms, they did not take these early or advanced irregular cases as pellagra. Roberts and Najjar (1944) and Ellinger *et al* (1945) reported a decreased N'-methyl nicotinamide excretion in pellagra. Taking 4-5 mg. as normal excretion in the urine anything from 0 to 2 mg. therein is taken as diagnostic tentatively and treated as pellagra. In more than half of the cases the urinary content of Niacin was practically nil.

Treatment: As soon as diagnosis was arrived at, the usual dietetic menu was carefully scrutinised and a liberal diet rich in animal proteins and vitamins of the B-Complex group as Brewer's Yeast and Vitamin C was prescribed with a view to Supplement the deficient P-p factor with other water soluble vitamins and fish, meat, and milk products like curd, butter-milk, whey and caseinoge (Chhana) which contain not only a good supply of riboflavine and niacin but also the important essential aminoacid tryptophan as according to Osler (1948) nicotinic acid can be synthesized by bacteria in the intestines from tryptophan, which is also supported by the observation of Rosen *et al* (1946) that an addition of 50 mg. of L-tryptophan when given to rats either orally or parenterally caused an increase in the nianinamide excretion. Moreover at least for one meal rice was replaced by wheat product

as according to Fulton (1949) whole wheat is fairly rich in this vitamin (niacin). So also Sarett and Goldsmith (1947) in a study with adult human subjects found that *N*'-methylnicotinamide excretion was lower in persons on a "corn diet" than those on a whole wheat diet although approximately equal amounts of niacin were contained in the two diets. Although some of the early cases did very well on such a liberal and adequate dietetic treatment, many of the cases and particularly those with previous chronic gastrointestinal troubles, alcoholism or treated with some such antibiotic as any form of sulphonamide, terramycin, aureomycin etc. administered orally for any length of time for any reason whatsoever, did not respond favourably to such a simple mode of oral treatment. The reasons are not far to seek. In all those conditions such as alcoholism or chronic gastro-intestinal conditions where the power of the tract for absorption has been hampered with, the missing factors so liberally added to the food cannot be absorbed and utilised properly so that the niacin content of the blood remains almost the same—a 'starvation in the midst of plenty' so to say. And in such damaged condition of the gastro-intestinal tract there cannot be proper digestion of the animal proteins with the formation of enough essential aminoacid 1—tryptophan, so that although there are enough of bacterial flora, the basic material for niacin formation is lacking and even the very small amount that is thus formed cannot be absorbed into the blood stream. The antibiotics, as a rule have such a deterrent action upon the bacterial flora of the intestines, good or bad, that even though enough of tryptophan is available, there is no chance for its conversion into niacin in sufficient quantity to effect a cure. So, along with the liberal dietetic regime, the vitamins have to be administered as such parenterally and as intramuscular injections are rather painful the intravenous route is the one of choice. According to Spies *et al* (1938) nicotinic amide is formed in the body from nicotinic acid, and either is capable of curing pellagra in man and experimental "black tongue" in dogs and some of the symptoms such as glossitis, cheilosis, angular stomatitis etc. are due to the associated deficiency of riboflavine, Riboflavine and Nicotinamide (Lilly) ampoules containing 5 mg. of Riboflavine and 200 mg. of Nicotinamide, were as a rule injected once daily for two weeks and then twice a week for another two months during which Riboflavine tablets of 10 mg. each together with two of Nicotinamide 50 mg., each were given twice daily by

mouth. For sometime past unfortunately Riboflavine and Nicotinamide ampoules (Lilly) could not be had in the market and so as a substitute two preparations, Riboflavine 5 mg. (Ciba) mixed with Pelonin (Glaxo) 50 mg. ampoules two at a time had to be injected intravenously in some cases. All the cases except two were cured, one of which resisted the treatment and died due to profuse diarrhoea and dehydration and another refused to be treated by injections but nevertheless got cured by taking sufficient quantity of fermented toddy daily along with a liberal diet that was prescribed for him as a last recourse. The time required for a complete cure lasted from a few weeks to a few months according to the severity of the condition.

The following *interesting case notes* may not be out of place.

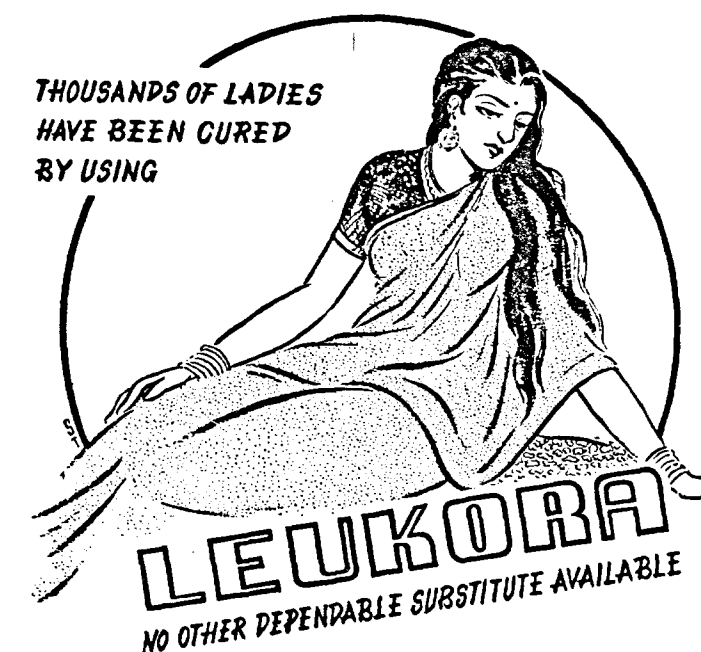
Case No. 1. Mr. Iyer, aged 50 was suffering from pellagra with all its severe manifestations, gastro-intestinal, dermal and mental. He was previously treated with the B-complex vitamins administered orally for about three months but without any improvement. The tongue was 'raw beef' like, he could not digest any food and the stool was bulky and frothy. He was extremely emaciated and anæmic. The skin on the dorsum of the hands and wrist and over both the shins had typical patchy dermatitis with incrustations. His wife and sons complained that lately he had become rather dull and forgetful. After 18 daily intravenous injections of Riboflavine and Nicotinamide with liberal diet of 3000 calories with only animal protein in the form of milk products with Brewer's yeast and plenty of citrous fruits, almost all his symptoms disappeared more or less and within another two weeks time he gained about a quarter of a stone of weight and could walk without any help. But unfortunately although the ulceration on the surface of the tongue disappeared totally it became just like a piece of parchment paper and he was complaining of tastelessness and here are quoted his own words 'Doctor, please help me to get back my sensation of taste, as I cannot differentiate whether I am taking sugar, salt or capsicum'. It was thought that in course of time the taste sensation would come back but unfortunately it did not. The patient in spite of his otherwise favourable progress was not feeling happy. I was too feeling rather helpless as all the available literature in the subject was rather absolutely mum over it. Suddenly it occurred to me that perhaps strychnine as a sharpener of

special sensibilities by stimulating the respective centres might help and without telling the patient anything about it, as I was not sure about the result, I asked my assistant to give an injection of strychnine subcutaneously about one hour before his meals. Immediately after lunch Mr. Iyer came running to my house and insisted on seeing me immediately. As soon as I entered my room to see him he took my hands in a cordial clasp with his and said 'Thank you doctor, your injection is marvellous, I have got back my taste'. An archimedes could not have been more thrilled and run through streets, crying 'Eureka' as my patient did to declare that he has got back his lost taste sensation.

Case No. 2. Mrs. R. a lady aged 52, was suffering from all the cardinal symptoms of pellagra and even 200 mg. of Pelonin daily for about 15 days was of no avail when I was consulted by the attending physician. Burning sensation over the stomach with occasional vomiting was complained and on a thorough examination the lower border of the liver was palpable below the right costal margin. Alcoholic habit was suspected and on enquiry, was confessed rather

reluctantly, which very clearly accounted for the failure of the drugs by mouth due to the failure of their absorption. An eventual recovery from pellagra followed after intravenous injections of Riboflavine and Nicotinamide for about two months first daily and then on alternate days. The symptoms of gastritis and hepatitis remained for some time more, when due to regular and strict dieting and a change of climate to a hill station the patient ultimately recovered.

Case No. 3. G. S.—an oriya plumber, aged about 33 had gastrointestinal and skin lesions typical of pellagra which did not respond to the oral administration of the P-p factor. Stool examination revealed cysts of *E. Hystolytica*, which explained the failure of the drug by mouth. So when very necessarily intravenous injections were prescribed, he declared his emphatic refusal and said he would rather die than be pricked with a needle. He was unfit for hard manual labour and liked to go home in his native province with a prescription for any oral medicine other than an injection. I was rather annoyed by his obstinacy and when I refused to do anything for him, he fell at my feet and wanted some advice so that he



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might come back to join his job with a better health. In a disgust just to get rid of him I told him to go home and take some freshly fermented toddy juice every day along with some milk products. After three months the man came back with regained health so much so that I could not recognise if this was the other emaciated and incapacitated man that came to me as a patient of pellagra before. Making a thousand and one respectful obeisance he expressed his lifelong gratefulness for restoring his health by prescribing for him such a wonderful medicine as country *toddy*. Probably 'there are more things in Heaven and earth' than a text book of Medicine very often teaches us!

CONCLUSION

1. Pellagra occurs sporadically amongst the poor rice-eating people of Eastern and South India, due to deficiency of Niacin & Riboflavine together with deficiency of good proteins. Alcoholism, chronic gastro-intestinal disorders and some other debilitating conditions like tuberculosis, malaria etc., as also destruction of the entire bacterial flora in the intestines by the antibiotic drugs rather predispose to this condition.
2. There are good deal of variations in the symptoms in early and late cases as also due to associated deficiency of many other factors.
3. The causes of ineffectiveness of the missing factors administered by mouth have been discussed and advisability of administering drugs by intravenous injection very slowly has been stressed.
4. Although nicotinic acid and nicotinamide can both cure pellagra in man and experimental 'black tongue' in dogs, nicotinamide is more suitable for I. V. injections for cure of pellagra in man and when riboflavine is combined with it the results are definitely better and quicker.
5. A liberal diet with enough calories, vitamins and animal proteins is a very very helpful adjunct.

6. In cases of doubtful diagnosis the niacin content of the urine should be taken into account along with the signs and symptoms.

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Causes and Treatment of Peptic Ulcers

Operation necessary if Diet and Medicines fail to Cure.

BY DR. JOHN R. THEOBALDS

ALTHOUGH there are a number of important differences between gastric and duodenal ulcers, it is convenient to consider them both under the single heading of peptic ulcer. These ulcers, which are pathologically similar, occur in situations where there is acid gastric juice.

The enzyme pepsin which is secreted by the stomach takes part in the production of both gastric and duodenal ulcers, and it is for this reason that the term peptic ulcer is used.

The main differences between gastric and duodenal ulcers are found in the study of the causative factors, and a considerable amount of statistical evidence has accumulated. The ratio of gastric ulcer has been

found to be approximately equal between the sexes, but duodenal ulcer is four times as common in men as in women.

DUODENAL ULCERS MORE COMMON

The incidence of gastric ulcer is not showing any increase, but duodenal ulcers are becoming more common. These statistical findings indicate that there are different factors influencing the formation of ulcers in the two main sites, namely the stomach and duodenum despite their pathological similarity.

What these causative factors are has not yet been fully elucidated, but many interesting observations have been made from studies of statistics of gastric

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and duodenal ulcers. Evidence suggesting an inherited tendency to ulcer formation has been forthcoming from two lines of study.

First, a family incidence has been demonstrated, the incidence being about three times as high in near relatives as in the general population. The age of onset of symptoms also tends to be earlier in those with a marked ulcer history in the family.

RELATION WITH BLOOD GROUP

Second, a constitutional factor is suggested by the results of studying the relationship between these conditions and the patient's blood group. Compared with the known incidence of blood group O, a significantly increased incidence of this blood group has been found in large surveys of patients with peptic ulcer.

This higher frequency in the relationship between blood group and peptic ulcer is greater in duodenal ulcer, in contrast to gastric ulcer, which also supports the view that these are two different conditions.

It is interesting to note that a significant relationship between another of the blood groups and pernicious anæmia, in which there is an abnormally low level of gastric acidity, has also been demonstrated. It may be that the amount of hydrochloric acid secretion by the stomach is influenced by genetic factors.

Factors of environment may also influence the formation of peptic ulcers, for marked differences occur in their incidence in different parts of the world. Differences may also occur within the same community when their frequency in rural and urban populations is compared.

ONSET IS INSIDIOUS

The majority of surveys has shown that duodenal ulcer is more common in the professional classes and in those whose life or occupation involves a good deal of mental strain, although this difference is probably less marked nowadays than it used to be.

Predisposing factors, such as fatigue and nervous strain, irregular meals and shift work, with long hours of duty and little mental relaxation, are frequently

found to be of importance in the development of duodenal ulcers; but the mechanism by which these factors exert their influence and result in the typical pathological changes of ulcer formation is as yet imperfectly understood.

Whatever the differences in the cause of these two types of ulcer, they present a very similar clinical problem to the physician.

They both give rise to indigestion which may vary from vague discomfort to acute pain, occurring at some time after meals. The onset is usually insidious, and the symptoms may not be of sufficient severity for the patient to consult his doctor for several years, as remissions occur quite frequently for months at a time.

DISTINCTIVE SYMPTOMS

The time of onset of the discomfort, or pain, after a meal varies with the site of the ulcer. When it is situated at the upper, or cardiac, end of the stomach the pain occurs almost immediately after taking food. Those in the lower, or pyloric, region cause pain two or three hours afterwards.

The pain from duodenal ulcers tends to arise even later, so that it often precedes the next meal and gives rise to so-called "hunger" pain.

Some relief of gastric ulcer pain may be obtained by taking food, but this relief is far more apparent in duodenal ulceration. Vomiting may be a prominent symptom of both conditions, and usually relieves the pain.

Appetite tends to remain good in duodenal ulcer, but fear of producing the pain from a gastric ulcer leads to impairment of appetite with resulting loss of weight and some deterioration in general health.

These symptoms arise from chronic ulceration but acute gastric and duodenal ulcers do occur and give rise to no symptoms unless erosion of a blood vessel causes hæmorrhage.

RADIOGRAPHIC CONFIRMATION

A presumptive diagnosis of peptic ulcer can usually be made on the patient's description of his indigestion, although differentiation between a gastric ulcer in the

pyloric region and an ulcer a few inches away in the duodenum can often be made only by X-rays.

In other cases the symptomatology is less typical. Dyspepsia is a symptom common to anxiety and states of emotion, and the nervous individual, whose temperament predisposes to duodenal ulceration, may give quite a typical history of indigestion.

Diagnosis is confirmed by radiography. A barium meal examination, in which the passage of the radio-opaque barium is studied through the X-ray screen, outlines the wall of the œsophagus, stomach and duodenum and delineates the ulcer crater in nearly all cases.

If the ulcer crater is very small and shallow, it may not be visible to even the most experienced radiologist, and recourse may then be necessary to endoscopic examination with a gastroscope.

With this instrument, which can be passed directly into the stomach, a view of the mucous membrane lining the stomach can be obtained, but interpretation

is difficult to all but the expert in the detection of these small ulcers which escape radiographic examination.

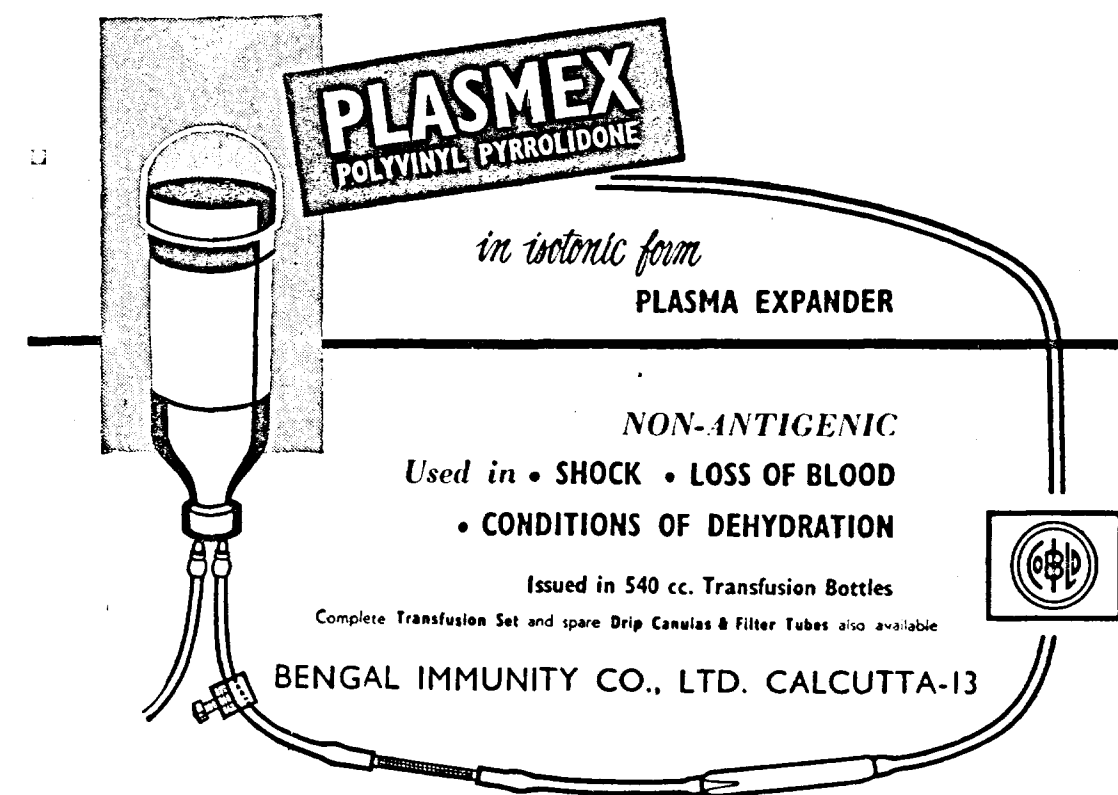
COMPLICATIONS OF PEPTIC ULCER

Certain complications of peptic ulcer can arise. Those in the region of the pylorus, whether gastric or duodenal, may cause sufficient constriction of the alimentary canal to produce obstruction.

This may be due either to the swelling of the mucous membrane in the vicinity of the ulcer during its active phase or to the formation of scar tissue when the ulcer heals.

Deepening of the ulcer crater may cause penetration into adjoining organs, such as the pancreas, but the two commonest, and most serious, complications are perforation and hæmorrhage.

If the ulcer perforates through the wall of the stomach or duodenum the gastric contents can pass into the peritoneal cavity and peritonitis results. An



emergency operation in order to seal this leak becomes necessary.

Hæmorrhage results from the ulcer eroding a blood vessel and if bleeding is profuse blood transfusion may be required with the other emergency measures for the treatment of shock.

PRINCIPLES OF TREATMENT

The principles of treatment in uncomplicated cases of peptic ulcer are similar, whether the ulcer is gastric or duodenal. Medical treatment combines diet and drug-therapy, and aims at reducing gastric acidity and diminishing the activity of the stomach.

Whatever other factors are involved in the production of peptic ulcers, it is generally agreed that the hydrochloric acid in the gastric juice delays their healing.

For this reason an estimation of the hydrochloric acid content is often made after aspirating the stomach contents before treatment.

Antacids such as magnesium trisilicate and aluminium hydroxide are, therefore, used to neutralise this acidity and constitute the basis of drug-therapy.

Antispasmodics, such as atropine and belladonna, or other synthetic drugs having a similar action, are often prescribed to reduce gastric motility. Sedatives are sometimes a useful adjunct.

DIET IN THE EARLY STAGES

Dietetic treatment consists of advising bland, non-irritating, yet nourishing, foods. In the early stages of treatment milk provides the most useful foundation to dietetic therapy.

Subsequent progress to a more normal diet that still excludes indigestible foodstuffs, which would act

as an irritant, depends mainly on the individual response to this preliminary stage.

Treatment by a continuous intra-gastric milk-drip for two or three weeks is effective in some cases, where the more usual dietetic measures fail. Some degree of dietetic restriction is necessary for several months after clinical and radiological healing, in order to prevent a recurrence.

Surgical treatment of peptic ulcer becomes necessary in the presence of complications, or when the ulcer recurs or fails to heal as a result of medical treatment.

A number of operative techniques has been devised, as localised removal of the ulcer led to a recurrence elsewhere.

BASIS OF MOST OPERATIONS

The basis of most operations is now partial gastrectomy, in which between one-half and two-thirds of the stomach are removed, and the remainder anastomosed to the upper parts of the small intestine.

Some surgeons combine this with the division of the vagus nerve in order to reduce gastric motility and secretion, in an attempt to lessen the incidence of a recurrence of ulceration at the site of the anastomosis.

Certain complications of partial gastrectomy can occur, as the rapid emptying of the stomach remnant may lead to deficient absorption and nutritional effects with resulting anæmia, loss of weight or vitamin deficiency.

Many individual considerations have to be given in deciding on medical or surgical treatment for both have their percentage of failures however small. It may be that further advances in treatment await the results of current research into the causative factors of peptic ulceration.

BACK FLUORIDATION

Buffalo—The Dental Society of the State of New York meeting here reaffirmed its previous endorsement of the fluoridation of community water supplies where practicable "as a safe, sound, effective means of reducing the incidence of dental decay."

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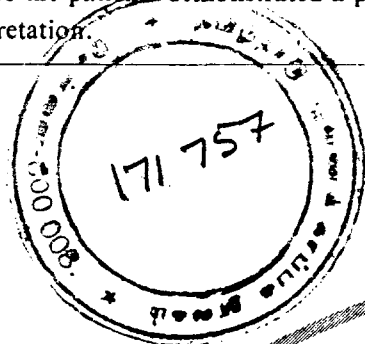
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**Occupational allergic reactions among workers in penicillin-manufacturing plant:
simple and inexpensive method of diagnosis and treatment**

Roberts, A.E., *A.M.A. Archives of Industrial Hygiene & Occupational Medicine, U.S.A.* 8: 340-347, October, 1953;
through: *Journal of the American Medical Association*, 154: 170-171, January 9, 1954.

Roberts presents three cases of occupational allergy to penicillin, two of which were of the respiratory and one of the cutaneous type. The symptoms and signs were so severe that the workers would not have been able to continue their work had they not obtained relief. The customary manner of disposition of employees in whom symptoms and signs of allergy to penicillin developed has been active treatment of cutaneous lesions and respiratory episodes. If recurrent attacks precluded regular employment, the worker was then permanently discharged. It occurred to Roberts that if hyposensitization could be achieved economically and with relative certainty, employees would benefit by being able to continue working and the employer would benefit by diminished absenteeism and labor turnover. Roberts used the same preparations of allergenic suspensions for cutaneous testing and for hyposensitization in the three cases presented. The workers exhibited some degree of sensitivity to penicillin, according to the results of the scratch tests, before hyposensitization. As little as 24 units of penicillin injected subcutaneously was sufficient to cause both local and systemic reactions in one highly sensitive person. The three patients became asymptomatic during the courses of hyposensitization and have remained free from symptoms in the working environment during a follow-up period of several months. After hyposensitization, none of the patients demonstrated a positive reaction to scratch tests at either the 20 minute or the 24 hour interpretation.



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