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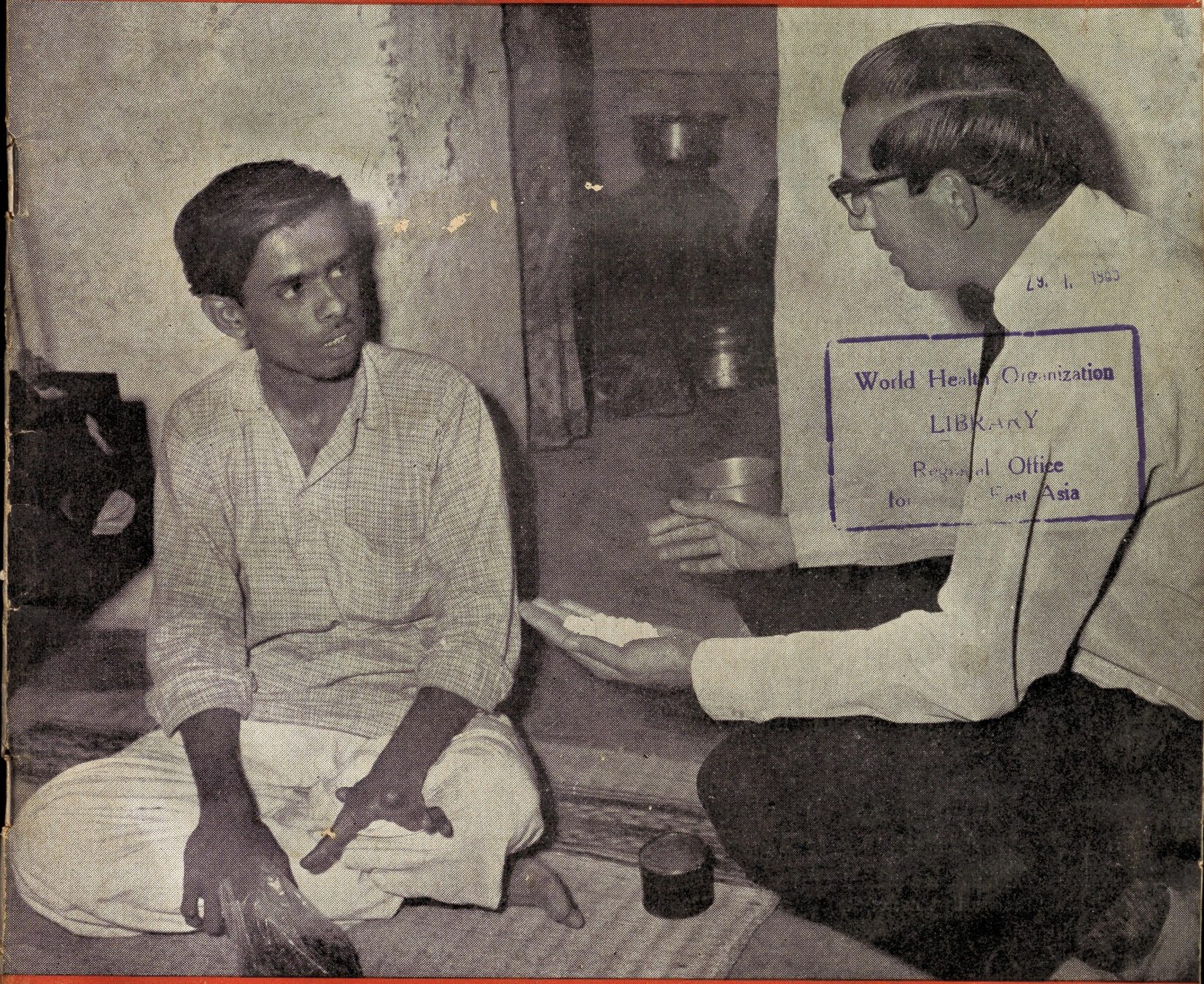
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# Swasth Hind

Volume VIII

August 1964

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*This Month*

Science and Health

Health Education in T.B. Control Programme

The Nurse in Mental Health Practice

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## SWASTH HIND

### Objectives

Swasth Hind (Healthy India) is a monthly journal in English published by the Central Health Education Bureau, Directorate-General of Health Services, Ministry of Health, Government of India, New Delhi. Some of its important objectives and aims are to :

REPORT and interpret the policies, plans, programmes and achievements of the Central Ministry of Health.

ACT as a medium of exchange of information on health activities of the Central and State Health Organizations.

FOCUS attention on the major public health problems in India and to report on the latest trends in public health.

KEEP in touch with health and welfare workers and agencies in India and abroad.

REPORT on important seminars, conferences, discussions, etc., on health topics.

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Articles on health topics are invited for publication in this journal. State Health Directorates are requested to send reports of their activities for publication.

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## CONTENTS

	Page
Science and Health ... ..	245
—Dr Sushila Nayyar	
Trial of a Mixed Vaccine ... ..	249
Health Education in Tuberculosis Control Programme ... ..	254
—Dr V. Ramakrishna and T.K. Parthasarathy	
Cancer Research and Treatment in Britain ... ..	259
—Dr C.L. Leese	
The Nurse in Mental Health Practice ... ..	263
Public Health Engineers Meet ... ..	267
Health in Parliament ... ..	271
Around the States ... ..	275
Our Contributors ... ..	278
News ... ..	279
Cholera and Smallpox—Morbidity and Mortality	280

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## OUR COVER

In the newly envisaged programme of tuberculosis control on a community basis, greater emphasis is laid on the domiciliary treatment. To make this programme successful, the community should be educated about the basic facts of tuberculosis and its prevention. *Our Cover* shows a Social Worker (treatment organizer) giving medicines to a T.B. patient at his home and providing him with the necessary information for their continued and proper use and about other measures to be taken during the course of the treatment.

# Science and Health

Dr Sushila Nayar

**I**N the last two to three decades scientific developments have made tremendous strides the world over. The various researches have contributed to the enrichment of knowledge and the results have enabled mankind to lead a fuller, richer life. There have no doubt been certain developments which have been put to destructive ends. Compared to the benefit that have accrued to mankind, the destructive uses can be considered negligible.

The concept of health and disease has undergone a tremendous change in the recent past. For quite a long period, man considered disease as a sort of divine dispensation and accepted epidemics as a divine punishment for some evil doings. In his attempt to find out the cause, man attributed the causation of the disease to evil spirits, miasma and so on and so forth. The scientists discovered disease germs and the mystery disappeared. Divine wrath gave place to the real factors in the causation of diseases. The germ theory of disease has opened up many new vistas of research and studies, for the prevention and treatment of many diseases.

Thanks to science we know today for certain that diseases like smallpox, cholera, malaria, tuberculosis, typhoid, etc., are caused by the invasion of our bodies by tiny organisms that get inside the body and multiply rapidly. The resistance mechanism in the body fights the invader but their rapid growth overcomes the resistance from body cells and ultimately the disease processes may lead to disease, disablement or even death.

## Some Discoveries

Louis Pasteur made his great discoveries in combating human disease by a series of experiments. He worked on the hypothesis that small doses of disease

producing organisms, at intervals, may enable the human resistance to progressively increase and thus enable it to develop immunity against the particular disease germs. Thanks to his consistent hard work, we today have a preventive remedy for rabies which used to be invariably fatal in the past. Rabies—a world-wide terror—as old as history, was effectively controlled in many areas within 15 years of Pasteur's research and his first vaccination in 1886. Rabies germ takes a fairly long time to grow, thus giving a long latent period for the disease to develop and rabies vaccination with weakened rabies virus, after a dog bite results in development of immunity, giving protection in most cases.

Leunhock went on grinding the lenses and discovered the microscope and Robert Koch, the German physician, discovered germs causing anthrax and tuberculosis and developed a method of making very small microbes visible by staining them with certain dyes so that they could be seen under the microscope. Then there are the epoch making discoveries of Sir Ronald Ross about the malaria-carrying mosquito and Haffkine about plague and Edward Jenner about smallpox. These and other discoveries have helped in the control and ultimate eradication of many of the diseases from many countries by systematic application of the knowledge so gained.

The development of immunology has helped save thousands of lives from diphtheria, smallpox, tetanus, typhoid, etc. At one time a considerable number of people sustaining injuries in accidents and soldiers wounded in war were exposed to great risks and most painful death as a result of tetanus. Tetanus prevention is one of the simplest immunization procedures today. The possibilities of vaccination against diseases have by no means been exhausted.

Every new year brings in new advances. We have the vaccine against polio developed by Salk and Sabin. Attempts are being made to develop effective vaccines against measles, common cold, etc., and even against pregnancy as a birth control measure.

### Drugs and Antibiotics

Scientific advances have brought to our doors effective drugs to fight disease and disease-causing germs. Starting with quinine which helped cure malaria, we have in the present day many drugs developed for specific species of germs. The German scientist, Ehrlich, managed to develop a special form of an arsenical, which could be safely injected into the blood stream in small doses. Its specific action was to kill dangerous spirochaetes, which produced yaws and syphilis. The work of Ehrlich marks an important landmark in medicine—for the first time a drug had been developed to deal with a particular species of germs. The coming in of a whole range of drugs like sulphonamides in 1930 which have effects on a number of disease-causing germs, marked another milestone of advancement. These drugs do not kill the germs but upset their internal chemistry and thus stop them from dividing and multiplying. The organism of pneumonia is one of those that succumbed to the use of sulphonamides, taking away the terror of pneumonia, so much so that story goes that when a mother was worried because the physician was examining her child suffering from common cold in front of an open window. She cried, "Take care doctor, my child might catch chill and develop pneumonia." He smiled and blandly replied, "Don't worry Madam, I know how to treat pneumonia though I may not be able to do much for a cold."

The accidental discovery of penicillin by Alexander Fleming in 1928 has revolutionized the course of therapeutics. Penicillin was found to have a wide range of action against disease germs and with the exception of rare cases has not proved harmful to the human system in itself. In the wake of the discovery of penicillin a new array of antibiotics have come to be developed. Already streptomycin, aureomycin, terramycin, chloromycetin, etc., have been discovered each with powers to destroy germs not affected by penicillin. Streptomycin is found useful against plague, tuberculosis, etc. The Hindustan Antibiotics at Pimpri, Poona have recently

developed a new antibiotics called Hamycin, which is effective as a fungicide. Perhaps the day will come when man has at his disposal a battery of quick and effective antidotes for every germ.

Development of insecticides has helped the battle for better health by providing an effective tool against disease-carrying insects. The advent of D.D.T. has played a notable and decisive part in the control of mosquitoes and lice. D.D.T. has a deadly effect on the pests like the anophelene mosquitoes and has thus made malaria eradication a feasible proposition. The global war against malaria has been made possible by D.D.T. and many countries have taken up malaria eradication programme. Other insecticides like gemmaxane, dieldrin, etc., have helped eliminate many an obnoxious pest such as flies, bed bugs, etc., which bring disease and death to the people.

Advances in physics gave us the X-ray and Radium as powerful tools for the diagnosis and treatment of disease. In recent years the discovery of atomic energy and the use of Radioisotopes in the treatment of cancer as well as in cell research, has opened up new horizons for research workers. Radioisotopes are being used in the diagnosis of leukaemia, goitre and for finding out the functional efficiency of different organs of the human body. A vast field, however, still remains unexplored and we may be able to utilize atomic energy more effectively against cancer and other diseases. Many studies are being made at present on the public health hazards of atomic energy—the protection of people who are likely to get exposed to radiation, effects of radiation on the future generations, etc.

In the recent past there have been spectacular developments in the field of electronics and consequently in the field of communication. The coming in of films, radio, television, and more recently telecommunication satellite launched by the USA have helped in quick communication. The results of such developments have made an impact on education—more so on medical education. An intricate surgical operation performed by a team of experts can be watched by hundreds of students through closed circuit television. A film on the subject can disseminate this knowledge to thousands of medical students in various countries of the world.

There have been big advances in the field of surgery. Due to continuous and perseverant research, it has now been made possible to undertake intricate brain surgery, heart surgery, replacement of certain organs which have revolutionized modern medicine. In the field of ophthalmology, it is now possible to do corneal transplantation and bring sight to the sightless. Eye banks to preserve the eyes that have been donated and to utilize them in suitable cases are becoming an important adjunct of eye hospitals and well-developed eye departments in general hospitals.

Blood transfusion is yet another advancement in medicine which has helped save many precious lives either undergoing a surgery, or wounded in accident or in war. The recent discovery that blood from dead persons can be used for transfusion opens up new vistas.

### **Population Control**

Increase in population has been a major problem the world over. Demographic studies have forecast that there is likely to be a population explosion unless effective steps are taken to limit its growth. Scientific researches in human fertility and its control have, however, opened up many avenues for conception control. Chemical and mechanical contraceptives have been developed and are still further being developed which, if made widely acceptable to the people, would help in having an effective impact on growth of population. Researches on an acceptable oral contraceptive have resulted in the discoveries of a pill which has to be taken every month for about 22 days by the women to prevent pregnancy. Further research in this field can bring a new dimension in checking the population rise.

The Chinese invasion has brought up many problems in its wake. Our brave Jawans had to fight against the Chinese in the high altitudes of the Himalayas to which they were not accustomed. The Defence Institute of Physiology and Allied Sciences, Delhi and other institutions taking the direction from the Indian Council of Medical Research, promptly started basic and applied research in physiology, bio-chemistry and allied sciences. Problems of the health of the Armed Forces at high altitudes became the priority with all research workers.

August 1964

The problems of load carriage by infantry in difficult terrains, high altitude physiology and acclimatization to low or high environmental temperatures and physiological response to heat are some of the important topics under investigation at present. We eagerly look forward to the results of these studies.

In more developed countries and in certain segments of population, there is evidence to show that habitual diet plays an important part in vascular disease and myocardial degeneration. This is a problem which the scientists are investigating in many countries. The proportion of the unsaturated and saturated fatty acids and the effect of hydrogenation and edible oils are important aspects of this question which remain to be fully investigated.

With the decreasing death-rate due to control of many diseases, the number of people in the higher age-group is increasing. And there is a greater incidence of degenerative diseases among the older age-group. The problems of geriatrics are engaging the attention of the scientists.

### **Social Sciences**

Behavioural and Social Sciences have made rapid strides in recent years. Researches in human behaviour, the effects of social and political changes of the cultural and behaviour pattern of the people, the attitude of people towards health and disease have proved useful in organizing and carrying out health education activities. Further developments in these fields will be eagerly looked forward by health workers.

### **National Programmes**

Some of the major scientific advances have been widely used in the battle against diseases waged in India.

In the smallpox eradication programme we have used the freeze-dried vaccine for mass vaccination in the country. This latest type vaccine has been found to be more potent than the liquid lymph that was hitherto used in the fight against smallpox because freeze drying prevents rapid loss of potency. So far 256 million people have been vaccinated and re-vaccinated. Thus 58.58 per cent of the whole population has been vaccinated and soon we hope to vaccinate 90 per cent so as to be able to eradicate smallpox from our country. The four main

vaccine production centres will switch over to the production of the freeze-dried vaccine as smallpox vaccination of new-borns and children will have to be continued in the maintenance phase of smallpox eradication.

As has been mentioned earlier, the advent of the insecticides has brought about a vast change in the strategy against malaria. In India as elsewhere, D.D.T. and other insecticides have been widely used in interrupting the transmission of malaria from man to man by the anophelene mosquitoes. We have also used potent chemotherapeutic drugs to reduce and wipe out the reservoir of infection in human beings. The malaria eradication campaign has covered the whole country. The 391 malaria eradication units in the country have used more than 35,000 tons of D.D.T. for spray operations every year. The progress of malaria eradication work has been quite spectacular as 288 units have by now entered the consolidation phase which means that reservoir of infection has become so low that no D.D.T. is sprayed in these areas. Out of 288 units, 80 have already entered the maintenance phase fulfilling the criteria of eradication programme. It is heartening to note that a proportional case-rate of malaria which was 10.8 per thousand in 1953-54 has come down to 0.23 per thousand in 1963-64, that is, today there has been a reduction of malaria by 97.5 per cent.

The spectacular results in the field of antibiotics and other drugs have come as a big support in our programme against tuberculosis. Isoniazid, PAS and streptomycin have been widely used in the domiciliary treatment of tuberculosis with very good

results. Domiciliary treatment using these drugs has proved to be as effective as treatment in sanatoria. This home treatment will be the sheet anchor in the fight against this dreaded disease from now on. One of the important measures in the prevention of tuberculosis has been the B.C.G. vaccination in order to increase human resistance to tuberculosis germs. So far 220 million people have been tuberculin tested and 75 million people who were found not to have contracted infection at all were B.C.G. vaccinated. As against 9000 for tuberculosis beds in 1947, there are about 35,000 beds today. In 1947, there were 70 clinics. The number has risen to 368, though all of them are not well-staffed or well-equipped. It is proposed to strengthen one or more clinics in every district and through them organize domiciliary treatment of tuberculosis with the new drugs all over the country.

These and many other research findings have been used in the country for making the life of people more healthy and happy. There is no doubt there will be many more scientific advancements and technological progress in the years to come. Healthy young men and women will devote themselves to scientific and technological progress and the results of their discoveries. India will be anxious to use to her utmost capacity to see that the goal of the welfare of every Indian is reached in the shortest possible time. Science and Health and Health and Science will lead us to our cherished goal. *(Based on the address by Dr Sushila Nayar, Union Health Minister, on the second day of the Symposium on "Science and the Nation during the Third Five Year Plan" held in New Delhi from 27 July to 30 July 1964).*

## FACTS ABOUT CANCER

Cancer, like all other diseases, is closely linked with many misconceptions and old wives' tales. Here are a few of the more common ones.

**CANCER IS NOT CONTAGIOUS.** The disease is not only species specific but also individually specific.

**CANCER IS NOT INHERITED.** There are some minor forms which show familiar tendencies but in the main cancer is not inherited.

**INJURIES DO NOT CAUSE CANCER.** What usually happens is that a blow focuses attention on a condition already existing which had not previously been observed.

**CANCER IS NOT A SOCIAL DISEASE.** It does not have any connection with morals.

**NO KNOWN WAY OF LIFE SAVES PEOPLE FROM CANCER.** There is no point in being a faddist as far as cancer is concerned.

—*Health* (New Zealand) Vol. 16, No. 1, 1964

# Trial of a Mixed Vaccine

WITH the practical aim of not overburdening the vaccination schedule, and because of the relative frequency of poliomyelitis in the troops serving in Algeria, the French Army Health Service has studied the effect of a mixed vaccine in a batch of 375 French soldiers called up together for military service. The results of this study have been published in the Bulletin of the World Health Organization.<sup>1</sup>

An *ad hoc* mixture of DTTAB vaccine (diphtheria, tetanus, TAB), which had been in regular use for a long time, and of poliomyelitis vaccine was employed. The poliomyelitis vaccine had been prepared by the Institute Pasteur in Paris from a culture of the three types of poliovirus attenuated by formol and inactivated by B-propiolactone. The vaccination was carried out in the traditional way, by three subcutaneous injections in the scapular region at intervals of 21 days, and a booster dose was given the following year. There was nothing particular to note in the reactions to the injections of these 20-year-old men, none of whom had had a clinical attack of poliomyelitis in the past and none of whom had been immunized against the disease. They constituted a representative sample of the population, 54.4 per cent being of urban origin, 12.1 per cent of semi-rural origin (towns with a population of between 5000 and 10,000), and 33.5 per cent of rural origin. It should be noted that the investigation showed that the distribution of immunity to poliomyelitis by place of birth and residence was more homogeneous than was to be expected, to the extent even that the differences were not statistically significant.

During this trial of mixed vaccines, the authors of the study evaluated the results provided by three laboratories. Serum samples obtained by intravenous

puncture and placed in ampoules kept at a temperature of 4°C were despatched to the laboratories as follows:

- Sample A: Seven days before the first injection  
*First injection*
- Sample B: 10 days after the first injection  
*Second injection* : 21 days after the first
- Sample C: 10 days after the second injection  
*Third injection* : 21 days after the second
- Sample D: 10 days after the third injection
- Sample E: 45 days after the third injection
- Sample F: Seven days before the fourth injection  
*Fourth injection* : (booster dose). One year after the third injection.
- Sample G: 45 days after the booster injection

The laboratory examination was principally intended to follow up the development of the various antibodies, to reveal any interference that might occur between the vaccines, and, finally, to provide the grounds for a judgement of the value of comprehensive vaccination combining poliomyelitis vaccination with the usual DTTAB. The data collected under each head and the conclusions that may be drawn from them are set out below.

## Development of Tetanus Antibody

The method of titration used was Ramon's, a derivative of Ehrlich's. It consists of *in vitro* neutralization of a known quantity of toxin by the subject's serum and titration of the mixture in the animal (in this case the mouse). This permits appreciable dosages and gives results that can easily be reproduced.

Granted that the minimum titre of antibody required to ensure appreciable immunity is 1/600 of an

international unit (IU) of antitoxin, only 13.8 per cent of the subjects examined belonged initially to the category of the non-immune. These subjects were most commonly of rural origin and this state of affairs is no doubt explained by less complete vaccination coverage in the rural areas. Whatever the reason, the percentage is low and indicates the extent to which children of school age are vaccinated against tetanus. In this connection, it might even be asked whether the privileged antigenic position (in terms of protection against tetanus) of the group of subjects under study may not stand in the way of the development of other immunities.

It is of interest to observe the considerable booster effect of the first injection. In 288 of the 375 subjects under consideration the titre was raised, as against 27 in whom it remained steady, in 46 per cent the titre reached its maximum level with the first injection. Fifteen days after vaccination, the subjects were 100 per cent immunized with a titre never below 1/5 IU of antitoxin.

Observation showed that repetition of the injections caused a moderate fall in antibody titre in 12.8 per cent of subjects after the third injection. The various hypotheses advanced by the authors of the study to explain this paradoxical phenomenon include the suggestion that it might correspond to saturation by the antigen of the cell mechanisms responsible for the production of antibody, rather than to inhibition of antibody formation.

Finally, study of the development of immunity in terms of the initial level of antibody suggests the existence of a correlation between the initial level and the capacity to acquire immunity. A final level above 5 IU of antitoxin is found in 90 per cent of sera where the initial immunity was strong, and in only 35 per cent of sera where the initial immunity was weak. It would seem that some persons have a greater capacity for acquiring or preserving immunity.

From the practical point of view, adequate immunity was acquired by 93.6 per cent of the subjects with the first injection. With the second injection, all subjects but two had a sufficient titre of antibody to secure immunity. It is debatable whether a third injection for all subjects is justified for the benefit of less than one per cent of the total. The authors

of the study consider it reasonable to limit the number of injections of tetanus toxoid to two when the subject has had a proper vaccination in childhood and is being re-vaccinated 10 to 15 years later. The antigenic return would probably be better if the interval between the injections was more than a month. The third injection would then be postponed to a year later and would act as a booster. After the booster injection all the subjects had sufficient protection on the average more than that conferred by primary vaccination.

The conclusion reached by the authors of the study is that immunization against tetanus is in no way hindered by the mixing of the vaccines.

#### Development of Diphtheria Antibody

Titration was done *in vivo* using the cytotoxic effect of diphtheria toxin on culture cells. Without going into technical details on equipment, methods of manipulation, determination of the test dose of the toxin, and the titration of unknown sera, it may be taken for granted that proper vaccination should give practically all subjects a minimum titre of 0.20-0.30 IU of antitoxin per ml. Only in one group representing 40.6 per cent of the total did previous vaccination confer any protection; in the others it was useless. This is a lower proportion than was expected. According to the statistics of the National Institute of Hygiene for 1955-56, 66 per cent of children below the age of 14 years are not completely vaccinated (three injections plus a booster), but it must be remembered that the parts of France from which these subjects under study came have a markedly higher proportion of vaccinated persons than the rest of the country and also that a complete course of injections is not necessary to provide good immunity.

As with tetanus vaccination, samples of sera taken 45 days after the third injection showed that the titres obtained varied with the titres before injection; the higher the latter, the higher were the final titres. In all, only two out of 45 subjects were not properly immunized, the titre falling to nil with the third injection after having reached a considerable level. If the subject had even a trace of antitoxin, a single injection produced a strong booster response. If he had none, two injections were enough to produce satisfactory immunity. As a practical

conclusion, therefore, consideration might be given to limiting to two the number of injections of diphtheria toxoid given to young soldiers on recruitment, with a booster dose a year later.

#### Development of Poliomyelitis Antibodies

The technique used for titration of antibody is that developed by Lepine, Roger & Roger in 1959.<sup>2</sup> Granted that immunity is afforded by a titre in man of 1/10, 32 per cent of the subjects could be considered as immune to all three types of poliovirus. On the other hand, 67.9 per cent were susceptible to one or other of the three types, while 6.6 per cent were totally without antibody. In contrast with the distribution of the three types of poliovirus, which varies considerably, immunity was spread over all the subjects in an extremely homogeneous way, more or less equally for each of the types. Type 2, the least commonly found in France, has the greatest antigenic and immunizing power, and this was demonstrated in the study. The study also showed that the distribution of immunity by place of birth and residence was also much more homogeneous than could have been suspected, the differences found not even being statistically significant.

After vaccination, the total proportion of subjects immunized was 87.4 per cent, as against 32.1 per cent before vaccination. In the same period the number of subjects susceptible to one or other of the three types of poliovirus fell from 67.8 per cent to 11.4 per cent, and the percentage of triple negatives from 6.6 to 0.

Antibody formation is thus high, the results obtained being better than those obtained by other investigators. It might therefore be conjectured that DTTAB vaccine administered with poliomyelitis vaccine increases the activity of the latter by functioning as an adjuvant. A similar phenomenon has been observed elsewhere, especially with whooping cough vaccine, the antigens of which stimulate the development of poliomyelitis antibody.

In sum, results were excellent, since 66.5 per cent of subjects without any antibody, 80.3 per cent of subjects with antibody against one type only, and 86.2 per cent of subjects with antibody against two types became positive for all three types. To compare with other studies: Martin *et al*<sup>3</sup> in 1959, not using a mixture of vaccine, obtained for the same

groups of subjects 12 per cent, 64 per cent and 88 per cent.

A year after vaccination, the antibody titre had fallen progressively for type 2, type 3, and type 1, in that order. The proportion of subjects, however, who had again become susceptible to all three types was negligible (3 out of 62). In some cases the antibody titre had fallen while still being sufficient to maintain immunity.

In more than 50 per cent of the subjects vaccinated the booster dose raised the antibody titre considerably. In 25 per cent it remained unchanged. Paradoxically, in 18 out of 186 titrations it fell, though not sufficiently to render susceptible anyone who had previously been immune. Those subjects who were susceptible before the booster dose became 100 per cent immune.

However, it will be necessary to study larger series of subjects before and after the giving of booster doses to reach a conclusion on the need for such doses, on when they should be given, and on their value. It should be remembered that the booster dose is regarded as indispensable by workers who have studied poliomyelitis vaccination not combined with other forms of vaccination.

#### Immune Response to the Salmonellae

Present knowledge of the factors governing the virulence of bacteria, particularly those responsible for typhoid and paratyphoid fever, is still too incomplete for an assessment of the effectiveness of vaccines by laboratory tests; and workers are therefore not always in agreement on the value of the tests hitherto proposed for the evaluation of acquired immunity. It should in particular be remembered that there is no parallelism between the serum agglutinin level and the level of immunity in a subject. Observation shows that the disease may appear in individuals who have been properly vaccinated and show a considerable serum level of O and H agglutinins; while, on the other hand, immunity may exist in individuals who apparently have no antibodies. Since the presence or absence of O and H agglutinins is not a criterion of immunity, the discovery of the Vi antigen raised in its time the hope that the basis for acquired immunity would be found in its corresponding antibody. This hope was soon to be disappointed; in comparative vaccine trials in man, the vaccine with the highest titre of Vi antigen turned

out to be the least effective protection against typhoid fever, and this finding has been confirmed by Standfast's experimental studies on the mouse.<sup>4</sup> Standfast indeed wonders whether protection in man does not depend on other factors than those in the mouse and whether the test even measures the immunizing antigens. Similar considerations had led Grabar & Le Minor<sup>5</sup> to develop a test on the chick embryo that actually measures virulence, not toxicity. This method, along with titration of agglutinating antibodies, was used by the authors of the study of combined vaccines on 265 out of the 349 subjects vaccinated.

Used alone or in combination with poliomyelitis vaccine, DTTAB vaccine causes agglutinating antibodies to form; there is no difference in this effect whether it is alone or combined.

Before vaccination, the situation was as follows in the subjects studied: 29.8 per cent had no agglutinins in their serum (this contrasts with 70 per cent in other authors); when agglutinins were present, they were active against one or two bacterial species, very rarely against the three; the H and O agglutinins of the same species were rarely found in any one subject (dissociation); and, finally, O agglutinins were much the commonest in subjects who had not been vaccinated.

After vaccination, 98 per cent of subjects had agglutinins in the serum, and in most cases (58 per cent) agglutinins for the three bacterial species used in the vaccine were found together.

A year later, the booster injection had the effect of causing the O and H agglutinins to reappear—although in low titre—in many subjects in whom they had disappeared. The O agglutinins particularly had tended to disappear.

On the other hand, the serum protection test on chick embryo brought out a marked difference between the effect of DTTAB administered alone and administered in combination with poliomyelitis vaccine. The rise in the titre of the antivirulence factor was very slow to get under way in subjects who had received the combination of the two vaccines, and the titre always remained distinctly lower than that in subjects who received DTTAB alone.

#### Interpretation of Interference

This phenomenon of interference is an extremely delicate one to interpret. As there appears to be no

technical reason for it in these studies, it is possible that the protective power of the combined vaccine is influenced by physiological factors. Certainly, the two series compared—students of the Army Health Service School on the one hand and young recruits on the other presented marked differences from the physiological point of view; the former had already become adapted to military life, with its accompanying stresses, the latter had not. On this hypothesis, more attention would need to be given to the physical state of individuals during the whole period of vaccination; it might possibly be desirable to revise the vaccination schedule so as to avoid injections at too close a time interval, as they seem to cause momentary interference.

The nature of this interference remains obscure and raises the question of whether the two vaccines are incompatible. The problem has been explored in thorough experimental research studies. Certain characteristics—particularly thermolability—allow a distinction to be drawn between the “anti-virulence factor” titrated on chick embryos and the gamma globulins of which antibodies are composed. This arouses the suspicion that non-specific immune factors are implicated. In fact, individuals vaccinated with DTTAB develop, parallel with the power of protection against *Salmonella typhi* that is measured on chick embryos, an analogous power in the serum against *Shigella flexneri*. A reaction that could be elicited *in vitro* was then employed in an attempt to determine the nature of the non-specific factors involved. Under the provisional name of *obsistin*, Colobert and Kirn<sup>6</sup> succeeded in isolating in human serum a bacteriolytic system that seems to be quite distinct from immune bacteriolysis.

The *obsistin* system consists of at least two factors, both thermolabile, which can be distinguished during dialysis. One is totally inactive in the isolated state, and precipitates with euglobulins; the other partially active, remains in solution with the other proteins. Mixing the two factors restores the initial activity. This system resembles the detoxifying factor described by Landy<sup>7</sup> and perhaps the bactericidal factor of Wedgwood.<sup>8</sup>

The Vi antigen effectively protects *S. Typhi* from lysis by *obsistin* when the bacteria are not proliferating, on the other hand, protection disappears when

the bacteria are proliferating. This observation may explain certain aspects of the pathogenesis of typhoid fever.

In the monkey, TAB or DTTAB vaccination raises the obsistin level in the serum substantially. The level reaches its maximum ten days after the third injection of vaccine and gradually, in about four months, returns to its initial value.

On the other hand, if poliomyelitis vaccine is combined with TAB vaccine, the obsistin titre in the monkey's serum develops differently. The rise is greatly slowed down and the levels reached are much less. Here there is interference between the two vaccines of an at present undetermined kind. However, further research this year has resulted in the establishment of a close connection between the obsis-

tin system and the complement system, although complete identification of the two does not appear to be a possibility. The interference seems to be related to the anti-complement properties of one of the factors in complement, the serum titre of which may increase excessively during the period of vaccination.

The interference phenomenon has been the subject of various studies showing the importance of the interval between injections of combined vaccines, an increase in the interval having the effect of reducing the amount of interference.

Given the present state of our knowledge, and whatever the hypothesis put forward to explain the mechanism of the interference effect, it would seem that the combination of TAB vaccine and poliomyelitis vaccine should be avoided.

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## BLIND PERSONS IN INDIA

In 1944, the Central Advisory Board of Health and Education put the figure of blind persons at two million. According to the survey carried out in the rural areas of 15 States by the Indian Council of Medical Research through the Trachoma Control Pilot Project, during 1958-63 it has been estimated that there are 3.5 million economically blind persons, *i.e.*, persons unable to perform any work for which vision is essential. At the same rate of prevalence there would be about 0.75 million economically blind persons in the urban areas of those fifteen States, bringing the total economic blind persons to about 4.25 million. No accurate figure can be given in the absence of a detailed survey. This information was given by the Deputy Minister of Health, Dr D.S. Raju, in the Lok Sabha on 12 March, 1964.

# Health Education in Tuberculosis Control Programme

DR V. RAMAKRISHNA

and

T. K. PARTHASARATHY

**T**UBERCULOSIS is a major public health problem in India. According to the National Tuberculosis Survey, there are about five million patients in the country, of which over a million are infectious.

The disease is prevalent both in the urban and rural areas. And none of the six lakh villages in the country can be said to be free from this scourge. The disease is no chooser of its victims, and all age-groups, economic groups, professional groups can be affected by this disease.

Considering the magnitude of the problem, any programme to control this disease must be gigantic in character. The essential requirements of such a

programme should be :

- (i) To find the largest number of cases and contacts in the shortest possible time ;
- (ii) To provide the detected cases adequate treatment especially with a view to stop the spread of infection ; and
- (iii) To protect the largest number of the susceptible population from the danger of the uncontrolled infection.

In view of the limited resources and the huge size of the problem, emphasis is laid on the district tuberculosis control programme which envisages the organization of a minimal diagnostic and treatment services through all the general health and medical institutions in a district which covers the entire district population and is expected to yield maximum results commensurate with the resources deployed.

The district programme to start with, aims at treating all or nearly all the infectious patients in the community. But its ultimate goal is to control the disease by treating all who show evidence of active disease and protect others from developing the disease. The District Tuberculosis Control Centre at the district headquarters will act as the nerve centre for the implementation of the programme.

While the epidemiological data point to the magnitude of the problem, there are certain other factors which cause no less concern in the rural areas and certain sections of the population in urban areas. Many of the problems caused by the tuberculosis are due to deep-rooted prejudice against the disease and its victims born out of ignorance of the true nature of the malady. Persons suffering from this disease and their families in a sense have been subjected to social boycott. People would not like to have any social intercourse with the family of the victims. People would not even like to marry in the family which has or had a tuberculosis case. The stigma attached to disease has been responsible for the indifferent and apathetic attitude of the general public.

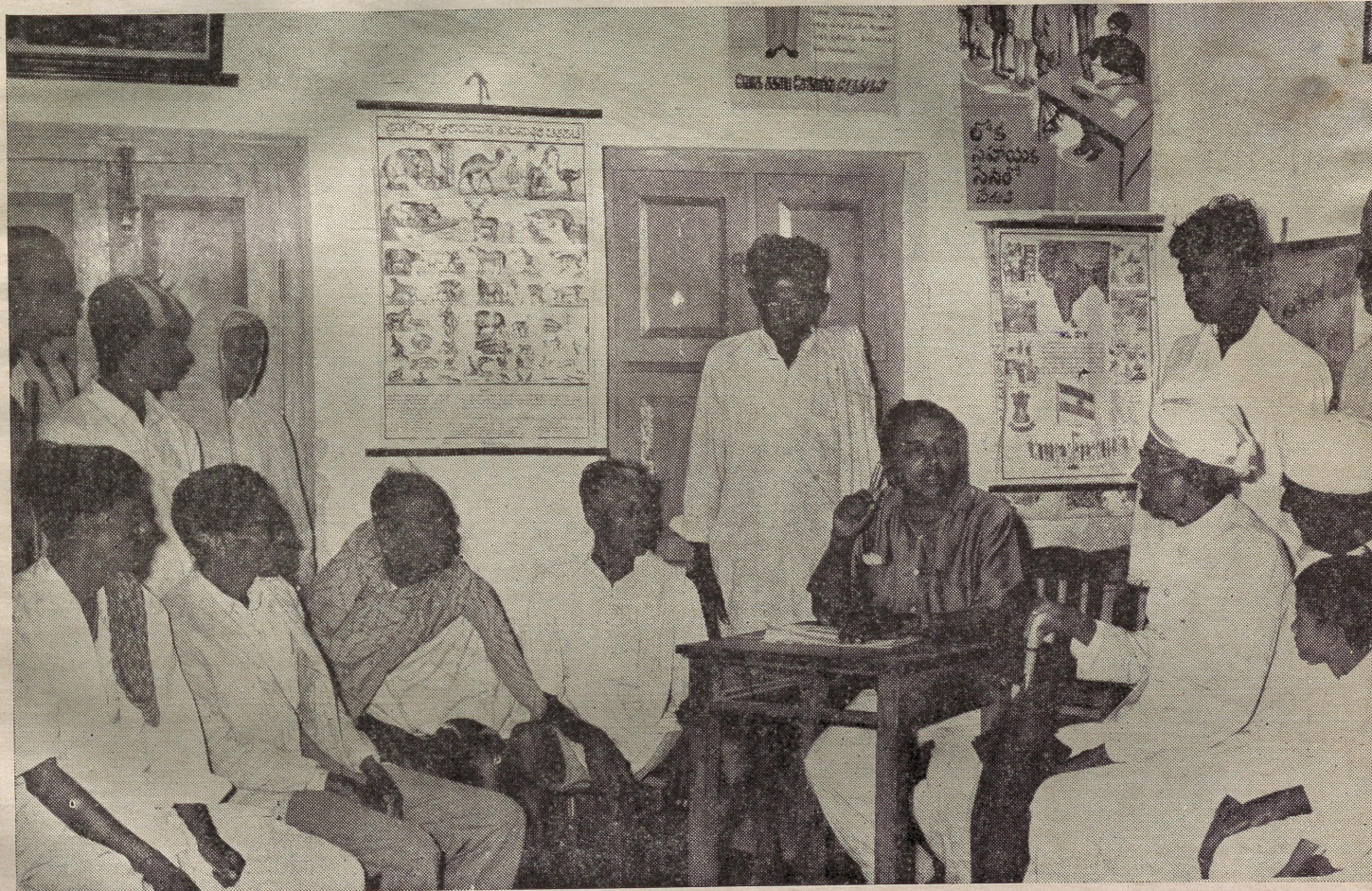
The patient is generally considered unfit for any work and is denied employment even after he is completely cured of it. This brings in an economic breakdown in the family especially if the victims happen to be the breadwinners. Also the long period of treatment—nearly for over a year and half—that had to be gone through puts a strain on the individual and the family. And this brings in a disruption in the family life during the period of treatment. The

patient and the family are subjected to lot of psychological, emotional and social stress and strain besides financial hardship.

The infectious nature of the disease creates a constant fear in the people at home of the possibility of its spread to others in the family. The patient needs reassurance all the time that his disease is curable and he can be cured and that he could get back to

environmental hygiene, lack of nutrition, overcrowding, etc., are the contributing factors to tuberculosis. Much education has to be done among the general public on the immensity of the problem, preventive measures that could be taken, and tell them of the services available for the treatment of the patients and their rehabilitation.

Thus there is wide scope for health education in



**Health Education of the people on the preventive measures against tuberculosis and on the services available for its treatment will go a long way in the control of the disease**

a normal life after treatment. The family members, relatives and neighbours need a reassurance that the patient could be cured of the malady completely and that the disease could be prevented from spreading to others provided certain precautions were taken.

While this is the position regarding the patient and his family, ignorance of the laws of personal and

the enormously complex and difficult control programme of tuberculosis. As stated earlier, the main emphasis in the district control programme is on case-detection, treatment in the very home of the patients and preventive services. The programme is proposed to be integrated with the general health services available in the district.

Can we fight the disease by merely disseminating scientific information about it, the preventive measures and the treatment facilities? The answer is in the negative because researches have repeatedly proved that people do not change their attitudes, beliefs and practices by mere receiving information. Alongside the dissemination of the scientific facts, which is also a necessary first step, it is essential to help people to understand and take action to avoid the dangerous consequences of neglect and indifference towards the dreaded white plague. One way of achieving this is to work with families, groups and sections of people so that they are mobilized to participate in the programme. To achieve this end, the health worker himself should know the nature of the problem, the disease and the effectiveness of the modern drugs, methods of prevention, etc. Also he should know the art and technique of communicating this knowledge to the people with a view to bring about a change in their attitudes towards the disease and the patients. He should have the guidance and support of the health education specialist in effectively discharging his educational responsibility.

So health education has to be done with a variety of groups—the general public, the patient and his family, etc., besides the individual patient. Also the medical people, para-medical personnel, teachers, the village panchayats, voluntary organizations and others have a vital role to play. And these groups should be enabled to know their role clearly and assisted to co-ordinate their efforts in the successful implementation of the programme.

#### **General Public**

The general public should be educated on the imminence of the problem, that the disease is curable and preventable, about the facilities available for the diagnosis and treatment, rehabilitation facilities for the patients, etc. An important aspect that should be taken up is that public should be convinced that the disease is like any other disease which can be cured and prevented and that there should not be any stigma attached to the patient or his family.

Such an educational programme will encourage people with such symptoms as cough, pain in the chest, protracted fever, spitting of blood, etc., to go to the hospital or a primary health centre for

examination. This programme will go a long way in the successful case-detection work.

In this health education programme the municipalities and village panchayats can be involved so that the elected representatives of the people in the town and at village level are actively associated with the programme. Their participation can help clear much of the false notions about the disease and the stigma attached to it. These local and other leaders, who are prestige persons, by participating in the programme will encourage the people to get the treatment. Various mass communication media and educational tools like radio, filmstrips, flash-cards, flannelgraph, film shows, demonstrations, drama, etc., may be used in a judicious way to increase the effectiveness of this educational programme.

#### **The Patient**

Next in the order for education is the patient. He should clearly understand the disease process and scientific facts. He needs reassurance all the time that his disease can be cured and that he could go back to normal life after treatment. This reassurance should be forthcoming from the time of diagnosis till he is completely cured of the disease, but it is most essential when the patient experiences complications and at the time when most patients generally become irregular in their treatment schedule. Also the patient needs to be educated of the necessity of taking the prescribed drugs regularly for the stipulated period, the proper way to take the drugs, the precautions he should take in his home so that the infection may not spread to others in the family. It will be worthwhile to have these points explained to the patients individually and in a group of patients, according to the needs of the patients and try to answer any questions they may have. A carefully planned interview with the patient or alongwith his family using simple visual aids is a good educational method. Discussion of specific problems among a group of patients (clarifying technical points if necessary with educational aid) and arriving at certain decisions of action to be taken is a very effective way of bringing about the desired change.

#### **Family of the Patient**

Like the patient, his family needs reassurance that the patient will be cured of the disease and that he could get back to work after the completion of

the treatment regimen. Also, the family has to be educated on the care and attention to be given to the patient, the need for his continued treatment as prescribed by the doctor, care that should be taken in protecting others from catching the infection, etc. Such an education can be taken up when the members of the family visit the centre or the clinic with the patients and also in the home itself when the

patient hearing to those undergoing treatment and reassure them about the possibility of treatment; the patient should be educated to continue to take the treatment for the stipulated period and the precautions he should take to prevent the infection from spreading. The doctors might consider the possibility of educating the patients in a group when they come for collecting the medicine or for examination.



A view of an exhibition organized during the XIX Conference of the Tuberculosis and Chest Diseases Workers in March 1964 in New Delhi. It highlighted the problem of tuberculosis in India and the curative services available

health visitor or other health workers make a visit to his home. Demonstration of collection and disposal of sputum, ways of making the patient comfortable, etc., can be done.

#### Role of Special Groups

Medical people at the primary health centres and the control centres have a vital role to play in the implementation of the programme and in the education of the community. They should give a

Private medical practitioners belonging to all systems of medicine should be encouraged to avail of the free facilities for diagnosis for their private patients. If such a cooperation could be secured, it will help detection of cases and arrange for their treatment. Private practitioners who have a status in the community can take part in the educational programmes like conducting discussions, giving talks, etc., organized in the community by the control centre or the primary health centre.

## Teachers

One of the main components of the programme is the protection of all susceptibles by the BCG vaccination. In this area of work the teachers can play an important role. They could organize meetings with parents and explain the need for BCG vaccination. Such an association of the parents with the programme will facilitate the willing acceptance of the vaccination. Also teachers can include

can arrange general health education programmes with special reference to tuberculosis and organize special campaigns. The educational activities of the voluntary agencies can be keyed to encourage people to get themselves examined on the first sight of the early symptoms, take proper treatment if found to be victims of the disease. These agencies can do much to remove from the minds of the public the stigma attached to the disease which in itself will help detect cases. These voluntary agencies, like the Tuberculosis Association of India, Indian Red Cross, Bharat Sevak Samaj, Indian Council of Child Welfare, etc., can join hands with the Government and can make the educational effort both intensive and extensive towards making the tuberculosis control a live subject in the country and community and help control the disease.

## Training

As has been stated, people do not change their traditional concepts of health and disease, and the pattern of living merely by receiving correct scientific information through various sources. New ideas and information will only motivate people to action if they go through a process of learning and realize that the recommended changes would help them achieve their valued aims of life. Provision should be made to have a well-trained and qualified health educator attached to the district control unit and he could work in close collaboration with the T.B. workers and primary health centre staff. The health educator can guide the organization of the health education programme for different target groups mentioned earlier. Secondly, every medical officer and other para-medical personnel should be educated in the basic knowledge and skill of social sciences and health education.



Press and other media play an important role in popularizing the health programmes

T.B. education in their science classes and arrange for visits, demonstrations, displays, drama, discussions, talks, etc., in the school for the benefit of the children.

## Voluntary Agencies

Voluntary agencies have an important part to play in the education of people. These organizations

Educational material should be made available to health educators, organizers and voluntary workers. These can be in the form of posters, flash-cards, flannel-graphs, folders, pamphlets, etc. An educational programme will help remove the wrong beliefs about the disease from the people and it is necessary that this should be a sustained programme to be effective.

# Cancer Research and Treatment in Britain

Dr C.L. Leese

**A**DVANCES in medical science during recent decades have drastically reduced the lethality of many diseases, particularly those of bacterial origin, and produced a concomitant improvement in public health, hygiene and longevity. As a consequence, cancer and other diseases predominantly manifested in older age groups assume a greater significance in mortality statistics, especially in those countries fortunate enough to possess more highly developed public health services.

A reorientation of mortality patterns in this manner necessitates improved facilities for both the medical treatment and, equally important, the social care of cancer patients and their dependents.

## "Cancer"—a Nebulous Term

At the same time there arises a greater awareness of the need for an intensified research effort into the nature and predisposing factors of the disease process and the development of more effective therapeutic treatment.

The terms "Cancer" and "Cancer research" are equally nebulous. The former embraces a wide range of tissue malformations, themselves part of a much wider range of growth phenomena, while the latter includes an equally complex variety of scientific disciplines which have made, and must in future, make, significant contributions to a better understanding of the fundamental nature of the diverse forms of cancerous proliferation. Indeed, from this aspect of diversity, cancer and cancer research are perhaps unique among problems confronting medical science in the present era.

For a concerted effort to be made on a problem of this magnitude it is obvious that a considerable

financial organization must exist to support the complex requirements of modern scientific methods. Such an organization must, at the same time, be sufficiently flexible to finance both the large specialized institutions solely devoted to cancer research and also the individual scientist working within the framework of hospital and university departments. Moreover, it must be sufficiently benevolent to permit a proper balance between bureaucratic control and academic freedom so essential as a prerequisite for advancing knowledge and the stimulation of originality.

## Sources of Finance

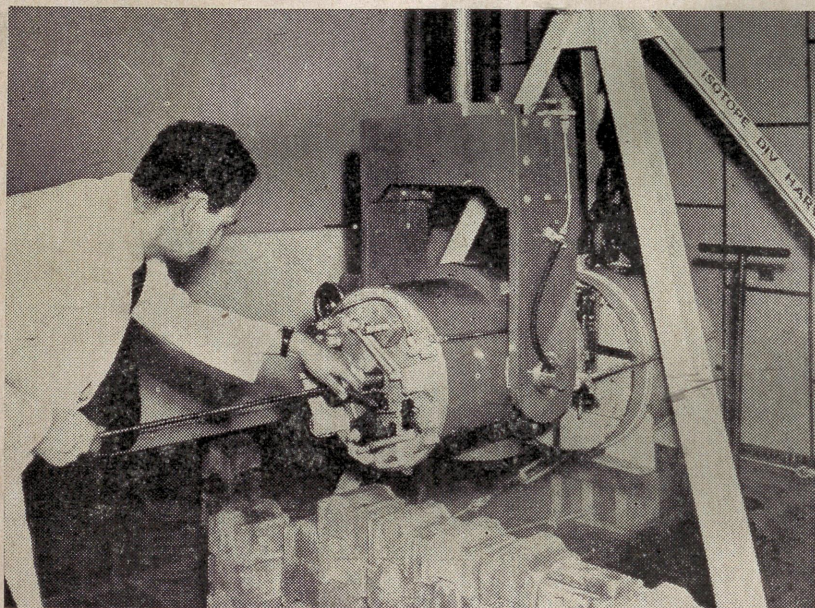
In Britain the organization of cancer research is based broadly on the foregoing pattern, with the research effort distributed between the specialized institute and individuals or small teams established in a variety of university and hospital departments. As in many other countries, financial support is derived in part from official government sources—the Treasury grants being administered by the Medical Research Council, the Ministry of Health, and the University Grants Committee—and in part by voluntary public subscription raised and distributed by charitable organizations.

It is impossible to obtain a true estimate of official expenditure on cancer research, in that many fields of research sponsored by the Government agencies while not specifically concerned with cancer yield such information more or less directly applicable to problems of abnormal growth. In the field of Voluntary Organizations expenditure on Cancer Research can be assessed more accurately.

The largest of these organizations is the British Empire Cancer Campaign, founded in 1923, which distributed approximately £ 1,000,000 in 1961

supporting both the larger institutes by means of block grants and the individual in many centres, not only in Britain but in many other parts of the world. In addition to sponsoring the production of the "British Journal of Cancer", the Scientific Report of the B.E.C.C., published annually, provides a most valuable guide to the wide and varied nature of cancer research projects supported by the Campaign and is illustrative of the work carried out in Britain as a whole.

In contrast, the Imperial Cancer Research Fund devotes the major part of its income to the support of its own research laboratories, recently rehoused in new buildings in Lincoln's Inn Fields, London. On a similar, but somewhat smaller scale the Marie



Radioactive "Waste" recovered from atomic piles will be used on a large scale in the British Hospitals for treatment of deep-seated cancer. Photo shows the radioactive caesium enclosed in a protective cylinder being put into the therapy unit

Curie Memorial Foundation, which in the devoted its resources entirely to the provision of nursing aid and other facilities for patients in special nursing homes or in their own homes, has recently established a small research unit at Caterham in Surrey, England.

In addition to these three organizations there are many others which perform an invaluable service in providing financial support for various aspects of research and the care and treatment of those afflicted with the disease.

### Interchange of Ideas

In September 1960 the British Association for Cancer Research was inaugurated "to facilitate the interchange of ideas among workers in all branches of cancer research" by enabling the all important personal contact to be established through the organization of symposia and meetings.

This important aspect of the interchange of ideas is extended to the international sphere by the close co-operation of British National Organizations with the Union Internationale Centre le Cancer under whose aegis the VIII International Cancer Congress was held in Moscow during July 1962, providing a forum for several thousand workers from more than 60 countries.

Progress in the treatment of cancer is slow and advances in recent years have been largely confined to refinement of existing methods of surgery, radiotherapy and chemotherapy rather than the development of radically new techniques.

Successful treatment in individual cases naturally depends on the site and degree of invasion and malignancy of the tumour. In this context the importance of enlightened public education concerning the facts of cancer cannot be over-emphasized if many forms of human neoplasia amenable to therapeutic control are to be diagnosed and treated in their early stages.

Moreover, public co-operation and adequate compilation of medical and social data are of inestimable value in epidemiological studies frequently capable of revealing significant aetiological factors underlying the incidence of certain geographically localized forms of the disease. Several epidemiological studies of this type are in progress in Britain at the present time, for example, those concerning the incidence of bladder carcinoma and malignant respiratory disease.

### Use of Radioisotopes

In the field of radiotherapy the trend has been towards the development of more powerful radiation sources, supervoltage X-ray equipment, linear accelerators and radioactive isotopes. Use of equipment of this advanced design raises special problems of dosimetry and methods of administration to ensure that the tumour site receives maximum treatment with the least possible radiation damage to surrounding normal tissue.

Attempts are also being made to assess the value of radiotherapy, used as an adjuvant to surgery, as a means of reducing the risk of recurrence and spread of the disease through mechanical dissemination of viable cancer cells during surgical intervention.

On the fundamental plane the effects of ionizing radiation and environmental factors, such as oxygen tension, on various macromolecules, especially the nucleoproteins, continue to attract attention in efforts to discover the chemical mechanisms underlying irradiation—induced inhibition of the proliferative ability of normal and cancerous tissues which show close similarities.

The lethal effects of radiation seem closely related to the degree of chromosomal damage and is of significance not only in the therapeutic field but also in respect of radiation carcinogenesis. Pertinent to these problems is the study of tissue distribution of radioactive isotopes which, on the one hand, offer possibilities for the radiotherapy of certain tumours capable of specifically concentrating individual elements, that is to say, iodine and phosphorus, and which, on the other hand, is of significance in relation to radiation carcinogenesis and fall-out in the ominous political situation of this atomic age.

#### Radio-sensitizing Compounds

Linking radiotherapy and chemotherapy there is the use of radio-sensitizing compounds which, it is hoped, would be incorporated into macromolecules within cancer cells, rendering them more sensitive to radiation damage. Conversely, radiation protection agents which may be capable of selectively protecting sensitive normal tissues offer a complementary means of enhancing selective attack on cancerous growth.

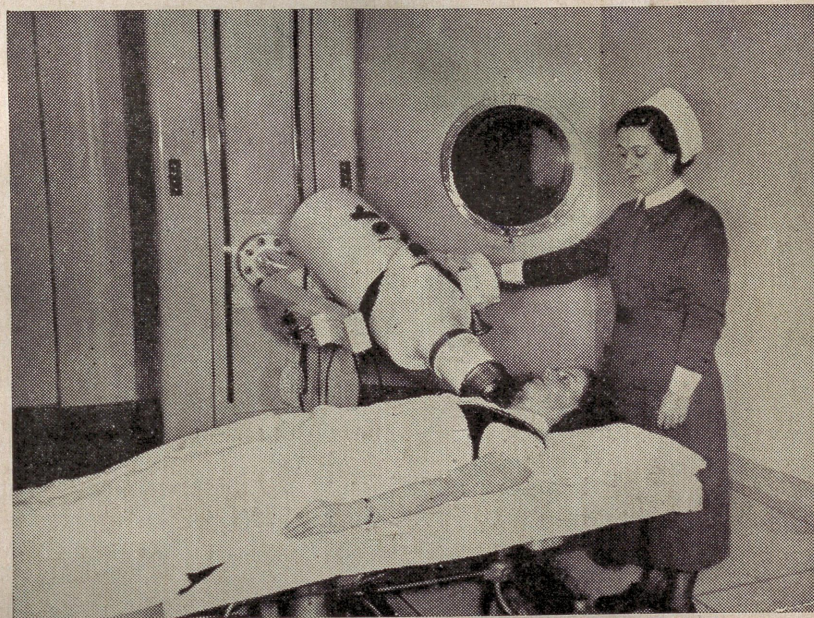
It is the close similarity of cancerous and normal tissues at a cellular biochemical level which prevents an adequate attack on cancerous tissue, either by radiation or by the systemic use of chemotherapeutic agents. Rapidly proliferating normal tissues, blood-forming elements, gastro-intestinal epithelium and germinal tissues, are equally affected by both agents and give rise to systemic toxic effects.

Despite considerable research to develop improved anti-cancer drugs, either of the alkylating agent or the antimetabolite types, little success has been obtained in producing compounds with selective action.

August 1964

To circumvent these difficulties attention has recently been centred on modified techniques of drug administration. Thus, by methods of regional perfusion and arterial infusion, combining surgery and chemotherapy, it is possible to increase the concentration of antitumour drugs reaching the tumour site and, at the same time, reducing the toxicity of the agents to sensitive normal tissues to a minimum.

In one example, that of the folic acid anti-metabolite "Methotrexate", there is the added advantage that the natural "antidote" citrovorum factor is known and can be administered systematically at the same time as the drug is infused into the tumour



Radioactive cobalt gives out rays which do the same work as a three million volt X-ray machine gives at much less cost and with less ill-effects on the patients. A patient being treated by the Tele Cobalt Unit is seen in the picture.

region, thus affording added protection to normal tissues.

#### Hormone Treatment

At a higher level of cell organization the hormones continue to prove of great interest. The use of hormones, both natural and synthetic or, alternatively, ablative suppression of the endocrine organs as a means of controlling cancer arising in hormone dependent tissues, is now an established clinical procedure. It illustrates some of the many important relationships existing between hormone imbalance and carcinogenesis in the endocrine organs or their target tissues and, conversely, the possibility of modifying

tumour growth once it is established by reorientation of hormonal levels.

The wide range of carcinogens, physical, chemical, hormonal and biological, at present known is continually being increased. Much of the present biochemical research in progress is devoted to studying the metabolism and mode of action of these agents, especially the manner in which they react with and modify the properties of normal cellular constituents.

Besides the fundamental interest there lies the more practical aspects of industrial carcinogens, atmospheric pollution, smoking and other social habits related to the incidence of particular forms of malignant disease, the study of which offers considerable possibilities of cancer prevention.

#### **"Somatic Mutation"**

Perhaps one of the most interesting aspects of carcinogenesis is that of viral transmission of cancer in fowls and marine species. While such a phenomenon has not yet been demonstrated in man, the concept of loss of organismic control by viral induced modification of the genetic apparatus of cells is an attractive hypothesis fundamentally related to the concept of "somatic mutation", frequently envisaged as a prime event in carcinogenesis.

Immunological aspects of cancer continue to provoke interest. The initial hopes that specific antigenic properties of cancer tissues might provide a basis for the development of immunological therapeutic techniques similar to those employed in certain viral and bacterial diseases have not borne fruit.

(Continued from page 266)

#### **Nursing Research**

Broadly speaking, there are two types of research worker in the nursing field : the social scientist who measures such intangibles as attitudes, opinions, and behaviour; and the nurse who has the advantage of being familiar with the field, but must acquire the objectivity and other research skills possessed by the social scientist. Both have much to contribute,

On the contrary, there is considerable evidence to suggest that in both spontaneous and carcinogen induced tumours, cells have lost part of their antigenicity, which while of considerable interest from the viewpoint of modified biological behaviour, holds little promise of useful clinical exploitation.

None of the therapeutic methods at present employed can be considered curative in the usual sense of the word although the prognosis in the treatment of many forms of cancer, in the early stages and in favourable sites is highly satisfactory. It is safe to predict that advances in the present techniques will continue to be made, producing a steady improvement in the clinical picture.

#### **New Vistas of Research**

From a fundamental aspect there is a greater need for study of human disease which, in the past, has been somewhat neglected in favour of more readily standardised experimental animal tumour systems. With this aim in view a co-operative international scheme has recently been instituted designed to characterize the various types of human cancer both biologically and biochemically.

It is considerably more difficult to predict the direction from which any radical new approach to the problem of cancer and its control will come. Discovery of any one of the mechanisms which control the growth, division, differentiation and senescence of cells, and the factors governing the coexistence of different cell types and tissues in the whole organism, may rapidly open new vistas of research and offer new methods of cancer treatment.

bute, but more could be achieved by nurses in this field than has so far been the case. The nursing services are in process of rapid development, and all major changes in nursing practice should be preceded by suitable studies.

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## *The Nurse in Mental Health Practice*

**D**IFFERENT cultures react to the existence of psychiatric illness in different ways. In some communities the mentally sick are fully accepted and easily integrated and they may even be specially revered; in others they are, to a greater or lesser degree, rejected. In all societies, however, the problem of the dependence of the sick person upon others has to be solved. In Europe, social attitudes towards the mentally sick are in the process of change hence the role of those charged with their care requires to be examined afresh.

A WHO Technical Conference on the Role of the Nurse in Mental Health Practice held in Copenhagen in 1961 discussed the nursing care of patients with psychiatric illness in relation to socio-cultural attitudes, modern psychiatric practices, the increasing responsibilities of the nurse, nursing education, and nursing research. The report of the conference has been published.\*

### **Attitudes of the Community**

The attitudes prevailing in the society where she works are likely to affect the mental nurse in various ways. If mental disease is feared, mental hospitals may be crowded and patients stay longer in them; this will increase the burden on the nursing staff, who cannot even hope for its eventual easing because recruitment will be difficult for the same reason. Furthermore, reluctance to accept the return of rehabilitated patients or to allow them to earn their own living, with the result that they are likely to return to the mental hospitals as relapsed chronic patients, will hardly encourage the nurse in her task. National policy tends to reflect the attitudes of the community

at large, and may determine whether the role of the nurse is principally custodial or principally therapeutic.

The attitudes of the nurse herself are naturally likely to reflect the prejudices of her background. She may interpret her role as being mainly that of a protector of society against the threat embodied in her patients; she may even consider it to be primarily punitive and seek to impose conformity to acceptable standards of behaviour; she may be convinced that mental disease is biologically determined and take a pessimistic and non-constructive view of all mental treatment; or she may go to the opposite extreme and attribute the patient's derangement to purely social precipitating factors, seeing herself merely as a "comforter". Although the attitude of the psychiatric nurse to the welfare of her patients, modified by training, should be expected to be somewhat in advance of that of the community in general the link between the two is nevertheless strong. Educators must take the effect of prevailing community attitudes into account, and attempt to modify them in their students.

### **Role of the Nurse**

The growing tendency in psychiatric practice towards greater awareness of the patient as an individual is closely associated with increased social acceptance of mental abnormality. Forty years ago psychosis was treated in the psychiatric hospital, psychoneurosis through outpatient psychotherapy (if treated at all), delinquency in an institution, and subnormality by special education. The methods derived from these four basic systems of management and therapy have now merged, so that there is no

\*John, A.L., Leite-Ribeiro, M.O. & Buckle, D. (1963) *The nurse in mental health practice: Report on a technical conference*, Geneva (Public Health Papers, No. 22)

longer a clear distinction in practice; treatment is adapted to the individual patient, and carried out in the setting judged most favourable. The responsibilities of the nurse have correspondingly widened: she must appreciate the reasons for the choice of treatment, and be prepared to see the patient as a member of his family and eventually as a member of the society to which he will return.

The present emphasis on preventive action in public health has repercussions for the mental nurse. It is likely to involve psychiatric hospitals, outpatient departments, and dispensaries to an increasing extent in extra-mural work, with the aims of securing earlier contact with the mentally sick, reducing the number of hospital admissions necessary, and preventing "dehabilitation."

Of late there has developed a new type of psychiatric institution—the mental health centre, predominantly outpatient in character, which deals with patients referred there by the general practitioner and those discharged after psychiatric treatment who still require supervision. Day hospitals, day centres, night hostels, "half-way houses", boarding-out facilities in the community, and patients' social clubs exemplify the same trend towards increased care of the mentally ill within the community.

The concept of continuity of care throughout the patients' illness bears obvious implications for the nurse. It is clearly desirable to train community nurses for the detection of mental disease and eventual co-operation in the resettlement of the patient.

Not only physicians and nurses, but also occupational therapists, social workers, dieticians, ministers of religion, rehabilitation officers, and others are now involved in the treatment of mental patients. The nurse must consequently cultivate her capacity for team-work and her awareness of the various facets of the multi-disciplinary approach to therapy.

One of the most obvious changes in mental hospitals over the past two decades has been the reorganization of their therapeutic policy, as epitomized in the principle of the "open door". It has now been recognized that compulsion and incarceration frequently exacerbate the symptoms of psychiatric patients. The greater liberty of the patient, the tendency towards patients' institutional "self-government", the deliberate structuring of social groups

among patients, and the diminution of legal restrictions inevitably have a profound effect upon the type of relationship desirable between the nurse and her patient. In some ways these changes facilitate her function, as through the relaxation of tension; in others they may present a considerable challenge—sometimes even a threat—in the form of additional potentially therapeutic opportunities for which she may not have been sufficiently prepared. The relaxation of physical restraint involves its replacement, as appropriate, by new types of social therapy or drugs, and drugs present a fresh therapeutic problem. For example, the manic patient on drugs may be so withdrawn as to become even less accessible than before to human relationships, and as a result his needs may easily be overlooked by the nursing staff. The nurse must be alert to this danger.

The attempts now being made to control and evaluate the efficacy of many types of treatment offer new opportunities for the nurse. Her contribution may be of prime importance in the field of psychopharmacology, since she has a unique opportunity for discreet observation of the effects on individual patients of different drugs. Work therapy, in which the task is fitted to the individual patient and given a personal significance, is also a field which can utilize nursing opportunities to the full. The nurse may also play a part in the exploration of the therapeutic possibilities of role-playing and socio-drama.

The increased effort to rehabilitate patients, both in hospital and outside, is another development in modern psychiatric practice with important implications for the nurse. Here, a good grounding in the skills associated with physical nursing care is essential. Mental rehabilitation concentrates on the emotional, spiritual, and intellectual aspects of the patient's personality; social rehabilitation, which overlaps with it, may be achieved by inducing the patient to participate in group activities such as therapeutic clubs, discussions, team games, etc. Attempts have been made to integrate the various methods of rehabilitation through the provision of special centres, sheltered workshops, day hospitals, and night hostels; in some of these the nurse will have a greater part to play than in others. In rehabilitation work a flexible attitude is essential; the nurse should be aware of the particular needs of each patient at each period of his recovery and be prepared, in conjunction with the rest of the

mental health team, to summon whatever resources may be available within the community to meet these needs.

### Special Skills

In modern mental health practice, the nurse has three main areas of activity: the psychiatric institution, the general hospital, and the extra-mural health services. She requires various types of skill, which in practice shade naturally into each other: basic and technical nursing skills, and occupational and recreational, organizational, interpersonal, observational, and communicational skills. Basic, technical, occupational, and recreational skills are more easily demonstrable and therefore more easily taught than the remainder, which are nevertheless of great importance and in differing degrees essential to each grade of nursing personnel.

In this arbitrary division of skills, "Basic nursing" refers to the general care of patients, irrespective of their type of illness. The technical skills required by the nurse in mental health practice are to some extent determined by her particular sphere of activity. If concerned primarily with the care of the physically sick, she must know how to record temperatures and pulse and respiration rates, how to give injections, how to prepare instruments for diagnostic procedures such as lumbar puncture, and even how to assist at surgical operations. Alternatively, she may be concerned with the physical aspects of psychiatric treatment, assisting, for example, with electro-convulsive therapy or insulin treatment.

The occupational skills cover non-medical procedures demanding a considerable degree of manual dexterity, such as typewriting, weaving, carpentry, etc., carried out with the patient in an atmosphere conducive to detecting, guiding and developing the patient's own skills. For recreational therapy, proficiency is needed in the use of indoor and outdoor sports, hobbies, societies, etc., as a therapeutic medium.

Organizational skills involve the type of planning ability which not only ensures the smooth running of a ward but creates an atmosphere favouring the patients' recovery. They may be applied in the most routine matters such as seating arrangements at meals, which can be used, for example, to encourage an older patient to "mother" a mentally subnormal

child. The nurse's organizational skill may also be brought into play during her contacts with other members of the health team—particularly if she is encouraged to act as "liaison officer" both between the patient and the team and within the team itself.

It is essential for the nurse to recognize that, whether or not she does so consciously, she is perpetually interacting with the patient, as well as with other members of the team. Unless her responses to the patient are controlled and therapeutically oriented, she may not only fail in her own sphere of activity, but may actually nullify the attempts made by other disciplines to improve the patient's condition. She must convey her confidence in the treatment he is receiving, be able to improve patients' relationships with each other, and avoid "non-therapeutic" attitudes exemplified by an indifferent, censorious, or emotionally uncontrolled relationship with the patient. She should be able to recognize clues to the state of his mental health provided by his attitudes, beliefs and fears, whether expressed in words or not. The usefulness of such observations finally depends upon their availability to the members of the health team, and hence upon the nurse's skill in communicating them.

Communicational skills may be of particular use to the "community nurse"—for example, in arranging by letter to visit a patient for the first time within his family after his discharge from hospital. Her written reports and case notes may be of great value to the mental health team if they are accurate and to the point.

Thus the nurse has not just one but many roles to fulfil in mental health practice, and must be sufficiently flexible to assume each role as circumstances dictate.

### Psychiatric Service

Each type of psychiatric institution, or service, presents a new type of challenge to the modern nurse. In the psychiatric hospital, increased awareness of the patient as an individual, greater permissiveness, self-government exploitation of therapeutic opportunities, and use of the multi-disciplinary team in which the nurse has a special role as "liaison officer" impose demands upon her of a type that has not so far, perhaps, been made explicit in her training. While in the past nurses may have been trained to

function in a rigid and sometimes authoritarian way, the present trend is towards a flexible and more democratic approach, in which "communication" is of vital importance. The personal responsibility of the individual nurse is inevitably greater today, when she is expected to consider each proposed course of action not merely from the standpoint of "maintaining order" but rather in the light of the whole treatment and ultimate welfare of the patient. The practice of holding ward meetings and staff meetings may assist in developing greater insight in both nurse and patient, and provide the nurse herself with an outlet for the tensions and anxieties engendered by the exacting nature of her work, and with an assurance of the support and co-operation of her colleagues.

The development of health education requires the nurse to be competent to provide instruction in both mental and physical hygiene. Her administrative functions, too, have increased in scope with the expansion of the health team. The probability that extra-mural health nursing will become more widespread is another factor affecting the nurse's duties; in addition, her participation in research work is becoming increasingly valuable.

It is in many ways difficult to define the tasks of the nurse employed in extra-mural mental health services, and even to decide who should carry them out—the nurse from the psychiatric hospital or the public health nurse. Here, team co-operation is essential, and community care services should not be attempted by public health nursing staffs unless at least part-time specialists from the fields of mental health or psychiatric nursing, psychiatric social work, psychology, and psychiatry are available, to assist with orientation and in-service training, to give advice, to facilitate collaboration with other services, and to evaluate the whole programme.

The nurse's role in this setting may be viewed from the standpoints of health promotion; of work with the individual, the family or special groups; of continuity of care; and of participation in studies of community needs. Examples of activities in this sphere of mental health practice are advising expectant mothers, acting as a link between school and parents, dealing with the aged or handicapped person in declining health. The nurse has scope for preventive

work in such family crises as unemployment, divorce, abandonment of children, or alcoholism, by forestalling the potential causes of breakdown and bringing the family into touch with sources of aid. Rehabilitation similarly may demand of the nurse particular skill in handling the social and professional reintegration of patient.

### Nursing Education

The ideal of nursing education is to enable the student to understand the physical, mental, and social needs of the individual, whether healthy or ill, and to give him adequate care. Nursing personnel in mental health practice must know how to work at various levels—basic, advanced, and auxiliary. In the interests of both efficiency and reciprocity, the curricula of education at each of these levels should be planned, organized, and supervised at a national level, should conform to a national standard, and might make use of orientation programmes, in-service training, and refresher courses for all grades of nursing personnel.

In Europe at present there are diverse concepts of what constitutes basic psychiatric nursing education. The general trend towards care of the "whole" patient and the advances in mental health practice, however, are reflected in the growing tendency towards a wider basic training providing simultaneous preparation of professional staff for both the psychiatric and the general nursing fields. More research in this connection is undoubtedly desirable.

Advanced nursing education is likewise in process of development: a great need exists for post-basic training facilities for nurses wishing to prepare for nursing administration or teaching, and even more for those wishing to engage in such highly skilled procedures as the conduct of therapeutic discussion groups or role-playing. Up-to-date psychiatric nursing text-books written by nurses themselves would be of great value in advanced teaching.

The value of auxiliary nurses as members of the health team is widely recognized. Most countries, however, have no specific training courses for auxiliary nurses in mental health practice, and courses appropriate to national needs should be planned.

(Continued on page 262)

Swasth Hind

## Public Health Engineers Meet

**D**R SUSHILA NAYAR, Union Health Minister, called for a vigorous and realistic programme of action to achieve the objective of safe water supply and sanitation facilities for both the urban and rural communities within a stipulated period.

Dr Nayar was inaugurating the Fifth Conference of Public Health Engineers held in Vigyan Bhavan in New Delhi on 22 April, 1964. It was a two-day conference to review the rural and urban water supply and sanitation programmes and discuss their re-orientation for a more effective and quicker implementation in which senior Public Health Engineers from all the States, as also the international and bilateral agencies like the WHO, USAID, UNICEF and the World Bank participated.

The Health Minister said the fact that environmental sanitation was the backbone for any tangible progress in the field of health had been well recog-

nized and "we have reached a stage when the concept has to be translated into effective practice. To do so, we may have to re-orient our ideas in regard to policy, procedure and financing."

"For this," she said "we have the experience of the three Plan periods of which we can make a critical review for the appraisal of the entire situation, identify the hurdles and drawbacks, find the correct solution to realize our objects and evolve a bold and realistic programme for the next and future plans."

Addressing the Conference earlier, Dr C. Mani, WHO Regional Director, South-East Asia, assured the participants that the WHO would be observing with great interest their deliberations and would be ready to assist them according to its resources in this essential task of providing water supply to the people.

Later, Dr C.E. Campbell of the USAID addressed the gathering.

**Dr Sushila Nayar, Union Health Minister, inaugurated the Fifth Conference of the Public Health Engineers at Vigyan Bhavan, New Delhi on 22 April, 1964. The Conference was attended by the Senior Public Health Engineers from all over India and the representatives of International and Bilateral Agencies**



Prof M.S. Thacker, Member, Planning Commission, asked the Public Health Engineers to give their serious consideration to solve this problem of providing adequate water to all the towns—a problem that does not brook any further delay—by suitably phasing it and streamlining and simplifying the existing procedures by bold and imaginative planning.

The Conference under the Chairmanship of Shri S. Rajagopalan, Deputy Director General (PHE), endorsed a proposal for a Special Rural Water Supply Programme under the Ministry of Health to fulfil the needs of the difficult and scarcity areas in the country.

For this purpose, it has been suggested that the unexpended portion of the Third Plan provision for Rural Water Projects should be pooled into a single fund in the remaining period of the Third Five Year Plan.

The Conference decided that a preliminary report giving financial estimates for each State based on representative sample surveys of the different regions should be furnished to the Ministry of Health by September 1964. On the basis of this report, the size, the scope and the content of the Special Rural Water Supply Programme during the current and succeeding plans would be determined.

#### **Financing the Projects**

An assessment of the current status and future work of providing rural water supply in all the States showed that the difficult and scarcity areas would

alone require an outlay of not less than Rs 500 crores. Areas which were without any water supply at all should be taken up first under the current and the Fourth Plan. Areas which had some provision though inadequate and unsatisfactory would be taken up in the Fifth Plan.

In the Fourth Plan, Rs 200 crores may be earmarked exclusively for the unserved scarcity areas. In addition, Rs 20 crores may be provided for rural sanitation work. The later programme envisages the provision of water-seal latrines, traps, pipes, etc., for village households as well as collection and disposal of wastes from crowded areas in isolated rural villages.

The probable magnitude of the urban phase of the programme yet to be accomplished has been estimated to be Rs 1,000 crores. The Conference resolved that the workload for the Fourth Plan for the urban schemes should be provided on the basis of Rs 200 crores for all municipal and corporation towns except the major cities of Calcutta, Bombay, Madras and Delhi. A special provision of Rs 100 crores may be made exclusively to meet a likely demand by these four corporations during the Fourth Plan period to finance their urgent schemes.

After a detailed discussion on the various measures required to be taken both at the Central and State levels for tackling the water supply programme in both the urban and rural phases in a realistic and practicable way, the Conference came to a close on 23 April.

### **Seminar on Water and Sewerage Works**

**I**MMEDIATELY after the Public Health Engineers Conference, a Seminar on Water and Sewerage works was inaugurated at Vigyan Bhavan, New Delhi on 24 April 1964, by Prof M.S. Thacker, Member, Planning Commission. After the introductory remarks by the Deputy Director General (PHE); Prof L.F. Mantilla, Regional Adviser (Environmental), WHO; Mr Charles A. Morse of the World Bank; Dr L.T. Shenefield, WHO Consultant; Mr A.H. Holloway, Regional Community Water Supply Adviser, USAID; Shri A.P. Jain, Chairman, Drinking Water Board; and Dr Sushila Nayar, Union Health Minister,

addressed the gathering consisting of distinguished members of the WHO, the World Bank, the USAID, the Consortium of Consultants for CMPO, distinguished Mayors, Municipal Chairmen, Commissioners of Local Bodies, apart from the Public Health Engineers, from all over the country on the various facets of urban water supply and sanitation and the need for developing new modes of financing these schemes for effective and quick implementation.

After a week-long session of discussions during which different Working Groups were seized of the

different aspects of the problem, the Seminar unanimously recommended that a period of 15 years be set to clear the backlog in the Urban Water Supply and Sanitation Schemes to bring them on a satisfactory footing.

According to a preliminary appraisal, a total investment of over Rs 1,000 crores will be necessary to accomplish this. Spread over 15 years, it would mean an annual expenditure of nearly 100 crores against the current plan programme of Rs 89 crores for a period of five years.

It was pointed out that the present pace of the programme under the current Five Year Plan is out of tune with the realities of the situation. Apart from the inadequate Plan provision the annual allocations are indefinite and hinder advance planning at all stages in matters of urbanization, materials and equipment.

To remedy this, it was emphasized that the Central and State Governments should announce their decision soon on the future policy relating to the magnitude, scope and content of the programme.

Discussing the question of financial and other resources necessary to implement such a programme, it was observed that the ability and willingness of the urban dweller to pay not only for water but also for sewerage has not been fully appreciated and exploited. The cost to the urban dweller in communities where there is no water supply and sewer facilities is far greater than any charges that could be reasonably made to sustain and organize water supply and sewerage system and he would be only too eager to contribute his share if properly approached.

It was felt that one of the causes for slow progress in this field was the dependence of local bodies on subsidies from the State and Central Governments where water projects received a low priority against nation building activities.

The Seminar recommended that the government should raise additional loans through a suitable agency and make them over to the local bodies to implement the accelerated programme.

#### **Self-paying Venture**

Water tax has come to be accepted by the consumer but sewerage bills have not so far been intro-

duced. The public has to be adequately educated about the unseen monetary returns due to the provision of sewer system and proper disposal of sewers in addition to the reduction, if not elimination, of annual recurring expenditure on anti-mosquito and anti-filarial measures and on night-soil conservancy, transport and disposal. Apart from this, it confers freedom from the human and social problem of maintaining a scavenging service, reduces the morbidity and mortality rate in the community, increases productivity and raises the economic structure of the community in general. If all these factors are properly assessed in terms of monetary values and considered on the credit side of the balance sheet, the cost of not providing these facilities will be seen to be greater than the cost of providing them.

It was recommended that a levy should be made for sewerage as well and the Water and Sewerage Works should be regarded as two stages of a single operation to make the entire scheme financially self-supporting.

The seminar noted that the fund raising limits imposed in the present Plan ceiling did not take into account the resources available at the local community level which would make it possible to raise additional capital secured against its resources.

#### **Water and Drainage Boards**

It recommended the constitution of a competent agency empowered and equipped to raise such capital from local resources and the open market to supplement the provisions from the Central or State Governments.

These bodies to be called Statutory Water and Drainage Boards are to be set up in each State. They will collect the taxes and revenues for the services and raise the capital needed. They will have all further corporate powers necessary to act on behalf of the constituent local bodies within their jurisdiction.

These Boards will have the advantage of (a) an increased efficiency resulting from financial autonomy, (b) improved ability to raise capital with confidence, (c) better opportunities for small municipalities grouped together to finance and operate their schemes on a business-like footing, (d) the economies implicit in a common source of water where it may be made to

serve several undertakings, (e) a better and fuller realization of water revenues when this duty is divorced from local politics, (f) the economies possible by pooling technical, and administrative staff to serve a number of municipalities and (g) opportunities for equalizing the rates in every region.

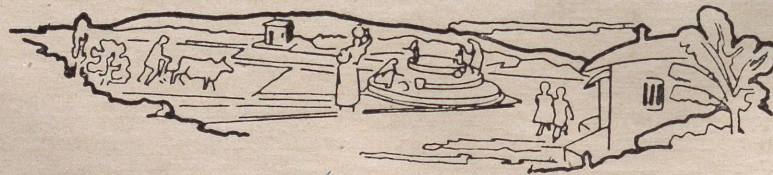
In order to secure the willing consent and participation by all local bodies in every State in this behalf, the Seminar felt that the local bodies should be given the option to decide the extent to which they would delegate their powers to such Statutory Water and Drainage Boards when they come into being. It was also decided that any major corporation or municipality which has shown its financial ability, management efficiency and popular support locally to provide such services need not come under a Statutory Water Board for this specific purpose. Though normally such Statutory Water and Drainage Boards would encompass all activities including production, conveyance and distribution of water within their statutory areas and also for the collection, treatment and disposal of the sewage from that area, it was, however, possible that some local bodies may prefer to purchase water in bulk from the Statutory Board and arrange for the internal distribution itself and may also prefer to have the Statutory Board take over sewage in bulk from the local body and arrange for its treatment and disposal. In such cases, it was suggested that the provision may be made for contractual arrangements between the Statutory Board and such individual local bodies defining their mutual obligations under the contract.

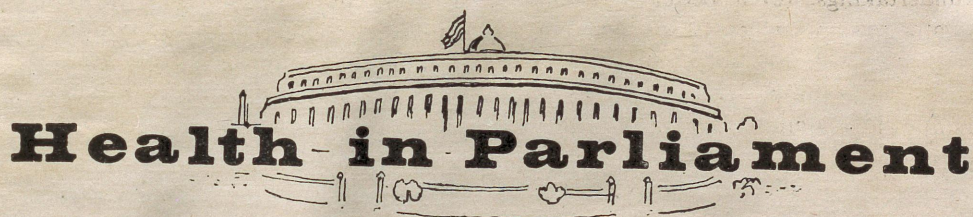
As an immediate measure it was recommended that Municipal Finance Corporation be set up to

help Statutory Boards and Municipal Corporations until such time that they themselves can raise the capital they require from the open market. Pending the establishment of a Finance Corporation, it was recommended that Central and State Governments act as the borrowing agents on behalf of the Statutory Boards and Municipal Corporations and keep these loans ear-marked separately from and in addition to the normal Plan allocations. It was also recommended that government should consider the issue of serial bonds for this purpose since it was believed that this would attract a wider class of investors on account of its varying lengths of repayment.

The Seminar recommended that the Government of India should appoint a high level committee with representatives from the Union Ministry of Health, Ministry of Finance, the Planning Commission, a Mayor and a Chairman of a Municipality, a Municipal Commissioner, a Public Health Engineer and a Lawyer assisted by Consultants as necessary to draft model enactments for setting up Statutory Water and Drainage Boards, defining their powers and duties and recommending appropriate methods of fund raising.

Apart from these, the Seminar suggested the various possibilities of obtaining loans from international and bilateral agencies, UN Special Fund and also suggested ways and means of streamlining the financial aspects of Water Supply and Sewerage undertakings, stepping up the indigenous production of all the proprietary materials required and training the necessary personnel in the various categories for implementing the programme at the required pace.





# Health in Parliament

## LOK SABHA

### Cancer

**D**R D.S. RAJU, Deputy Minister for Health, informed the Lok Sabha on 5 March, 1964, that the Indian Cancer Society, Bombay, were developing new techniques such as exfoliative cytology for the diagnosis of cancer in its initial stages. The following institutions are conducting research into the etiology and treatment of cancer.

- Indian Cancer Research Centre, Bombay.
- Chittaranjan National Cancer Research Centre, Calcutta.
- Cancer Institute, Madras.
- Radium Research Institute, Hyderabad.
- Department of Pathology, S.N. Medical College, Agra.
- Tata Memorial Hospital, Bombay.

### Anti-T.B. Drugs

Dr Raju also informed the House that there was no shortage of anti-tuberculosis drugs in India.

### Smallpox Eradication

Dr Raju informed the House that the shortage of smallpox vaccine had not impeded the implementation of the smallpox eradication programme in India and supplies were being received regularly from the USSR. Further, in response to an appeal made by the W.H.O. to its member countries, offers had already been received from the Government of U.K. for supply of four million doses of anti-smallpox vaccine and from the Governments of Switzerland and the Netherlands for 3.25 million doses. Action was also under way to expedite the production of freeze-dried vaccine

in the following institutions :

- State Vaccine Institute, Patwananagar.
- Kings Institute, Guindy.
- Vaccine Institute, Belgaum.
- Institute of Preventive Medicine, Hyderabad.

### Tewra Dal

Dr Raju told the Lok Sabha, "The Indian Council of Medical Research has reported that epidemiological studies carried out in the Field Unit at Rewa have shown that the incidence of lathyrism (spastic paralysis of the lower limbs) is about four to five per cent and the incidence of this disease is invariably associated with the excessive consumption of lathyrus sativus by large section of the agricultural labourers. Extensive diet surveys in the endemic districts have clearly shown that the incidence of the paralysis is well correlated with the quantity of the pulse consumed by the labourers. Younger sections of the population, specially males (11-30 years of age), have been found to be more susceptible to the onset of the disease. Once attacked, the disease permanently cripples the victim for life." Dr Raju was replying to a question whether investigations into the deleteriousness or otherwise of "Tewra Dal" have since been completed.

Dr Raju added, "Investigations at the Nutrition Research Laboratories at Hyderabad have clearly shown that alcoholic extract concentrates of lathyrus sativus, when injected into young chicks, produce typical neurological symptoms, within an hour of being administered. These studies have been further extended to isolate the neurotoxic substance present in the pulse. The neurotoxin has since been isolated and characterised as a combination of exalic acid and an amino acid. The neurotoxin isolated pro-

duces typical neurological symptoms when injected at a minimum dose of 5 mgs per day-old chick." He said that the results of the studies carried out at other institutions were not yet available.

#### **College of Naturopathy**

"The Government of India have given financial assistance to the Prakriti Niketan Trust, Calcutta for the establishment of a Central Institute of Nature Cure at Calcutta. The total estimated expenditure on the Institution will be Rs 3,91,000 (non-recurring) and Rs 88,000 (recurring)." This was stated by Dr Raju in Lok Sabha.

"The Central Government's financial assistance will be to the extent of 75 per cent of the non-recurring and 50 per cent of the recurring expenditure on the college. So far, an amount of Rs 2,25,000 has been given to the Trust to meet the cost of construction of the college building," he said.

#### **T.B. Control**

Dr Raju replied on 5 March in the Lok Sabha that it was proposed to set up at least one T.B. Clinic in all the districts of India by the end of the Third Plan period.

"The pattern of Central assistance for the establishment of TB Clinics is as follows :

(i) Seventy-five per cent of the non-recurring expenditure on construction of buildings estimated to cost Rs 95,000 per clinic,

(ii) X-ray and Laboratory equipment was supplied free by UNICEF if the clinic is staffed by personnel trained at the National TB Institute, Bangalore,

(iii) Fifty per cent of the recurring cost on the maintenance of the clinic which is estimated at approximately Rs 50,000 per clinic. The total number of districts in India which are at present without T.B. Clinics is 123. If clinics materialize in all these districts, the non-recurring expenditure on the part of Central Government will amount to Rs 87,63,750 in accordance with the above pattern. The recurring expenditure will depend on the period for which each clinic functions during the current Plan.

The Central assistance is released to the States through 'Ways and Means Advances' for specified group of schemes." Dr Raju said.

#### **Deafness**

Dr Raju told the House that no country-wide survey had so far been taken to determine the incidence of deafness in the country. However, random sample surveys of the handicapped persons were undertaken in Delhi, Bombay and Kanpur during 1957-58 and 1959-60. According to these surveys, the deaf constituted 11 per cent of the total handicapped persons in Bombay, 16 per cent in Delhi and 19 per cent in Kanpur.

Particulars of disabilities, viz., blind, deaf and dumb, etc., were collected in the Model Health and Ideal Registration areas in West Bengal during January to June 1961 and a total population of 16,321 was enumerated. The incidence of deafness in this enumeration was found to be 0.1 per cent and that of deafness and dumbness 0.03 per cent.

#### **Primary Health Centres in Andhra Pradesh**

Dr Raju informed the House that the number of Primary Health Centres working in Andhra Pradesh as on the 31 December, 1963 was 255.

The number proposed to be opened during 1964-65 was 22. A sum of Rs 14 lakhs had been allotted for the purpose under the Health Plan of the State in addition to the provision of Rs 50.60 lakhs in the Development Department budget.

#### **Medical Colleges**

The Deputy Minister stated that there were 79 medical colleges working up to the end of 1963 in the Indian Union. The State-wise number of medical colleges is: Andhra Pradesh (8), Assam (3), Bihar (4), Gujarat (4), Jammu & Kashmir (1), Kerala (4), Madhya Pradesh (6), Madras (6), Maharashtra (9), Mysore (8), Orissa (4), Punjab (4), Rajasthan (3), Uttar Pradesh (6), West Bengal (5), Delhi (3), Goa (1), and Pondicherry (1).

The total number of students admitted for degree courses during 1963 was 10,097.

He said that there was a shortage of about 2,000 teachers of adequate experiences in the medical colleges in India.

#### **Research in Medical Science**

The Deputy Minister stated in the House that Dr V.R. Khanolkar, in his presidential address to the Indian Academy of Medical Sciences had analysed the factors that would promote medical research in India and emphasized the need for creating a body

of workers trained in the methodology of research and also the need for providing them with adequate equipment and laboratory facilities. He had also stressed the need for creating a chain of laboratories where facilities and freedom for work would be provided to the scientists to engage themselves on investigations of their choice.

Dr Raju said that the Government of India had established a number of research institutions in specialized fields like tuberculosis, leprosy, cancer, chest diseases, mental health, communicable diseases, etc. In addition, the Indian Council of Medical Research which was financed by the Government of India, had been promoting medical research in institutions and colleges in the country. The Council had established the Nutrition Research Laboratories, Hyderabad, the Virus Research Centre, Poona, the Cholera Research Centre, Calcutta and the T.B. Chemotherapy Centre, Madras. It had decided to establish research cells in selected medical colleges and to create a cadre of research workers to enable them to take up research as a career. It was also considering the feasibility of establishing a medical research institute where active cells for research would be created to enable scientists of merit to work uninterruptedly in several fields of medicine and public health.

#### **National Malaria Eradication Programme**

Dr Raju told the House that the National Malaria Control Programme was switched on to Eradication Programme with effect from the 1st April 1958.

Under the Plan of Operation for the National Malaria Eradication Programme, the Government of India had undertaken to supply material and equipment like DDT, anti-malaria drugs, microscopes and microslides free of cost according to the prescribed scale to the State Governments and also to give grant-in-aid to cover the customs duty on imported material.

In addition to the cost of material and equipment and grant-in-aid to cover the customs duty, the Government of India had also agreed to bear 50 per cent of the expenditure on operational staff and other incidental charges which the State Governments had to meet over and above the expenditure which they were incurring on the National Malaria Control Programme. In accordance with the prescribed accounting procedure, cash subsidies on this account were not, however, being paid to the State Governments for individual schemes but were given to them for a group of schemes. Information was therefore not available in regard to the actual amounts of cash subsidies drawn by the State Governments for the National Malaria Eradication Programme upto now through the ways and means advances from the Central Government.

The over-all progress of the National Malaria Eradication Programme was satisfactory. However, the progress in certain States and Territories had been a little tardy due to various reasons. Necessary steps to remedy the defects had been or were being taken by the States or Territories concerned.

## **RAJYA SABHA**

#### **Effects of Cigarette Smoking**

Dr D.S. Raju informed the Rajya Sabha on 4 March, 1964 that the hazards of smoking were already known to the Government. The Central Council of Health passed the following resolution at its Madras meeting in November 1963.

“The Central Council of Health recognizes the harmful effects of smoking especially among juveniles and noting the action already taken in this matter by some of the State Governments recommends that State Governments should take further necessary steps laying special emphasis

on health education to discourage smoking particularly among children and young persons.”

#### **Cholera Toll**

Dr Raju informed the House on the same day that the total number of deaths in India from Cholera during the last six months of 1963 (from July to December) was 11,376.

He said the control/eradication of cholera was primarily the concern of the State Governments. So far as the Central Government were concerned, the following steps had been taken.

- (i) A Cholera Research Centre has been functioning under the auspices of the Indian Council of Medical Research at Calcutta, since 1962.
- (ii) An epidemiological unit has been provided in the Department of Epidemiology at the All-India Institute of Hygiene and Public Health, Calcutta, to help the States whenever needed for epidemiological investigation to help them in the control programme. Similar help is also rendered from the unit located at the Central Research Institute, Kasauli.

- (iii) In order to establish epidemiological units in every State, candidates sponsored by the Central and State Governments have been trained in Epidemiology at the University of Edinburgh under World Health Organization fellowships. So far 11 candidates from the States of Uttar Pradesh, Mysore, Rajasthan, Orissa, Punjab, Andhra Pradesh, West Bengal, Delhi and from the Centre have been trained. The establishment of local units is under way.

Statement showing deaths from cholera recorded between July to December 1963

State	July	August	September	October	November	December	Total
Andhra Pradesh	233	112	56	33	41	37	512
Assam	—	—	—	—	—	—	—
Bihar	258	168	238	379	492	256	1791
Gujarat	—	—	—	—	14	—	14
Jammu & Kashmir*	—	—	—	—	—	—	—
Kerala	—	—	1	1	1	3	6
Madhya Pradesh	—	5	—	—	7	—	12
Madras	206	195	452	649	909	1757	4168
Maharashtra	48	80	63	287	321	250	1049
Mysore	68	30	69	65	49	173	454
Orissa	91	59	108	274	416	45	993
Punjab	—	—	—	—	—	—	—
Rajasthan	—	—	—	—	—	—	—
Uttar Pradesh	70	81	22	8	142	21	344
West Bengal	229	137	95	357	576	600	1994
Andaman & Nicobar Islands	—	—	—	—	—	—	—
Delhi	—	—	—	—	—	—	—
Himachal Pradesh	—	—	—	—	—	—	—
Manipur	—	—	—	—	—	—	—
Pondicherry	—	—	3	12	13	11	39
Laccadive Islands	—	—	—	—	—	—	—
Tripura	—	—	—	—	—	—	—
Goa	—	—	—	—	—	—	—
TOTAL	1203	867	1107	2065	2981	3153	11376

\*Figures not available.

# Around the states



## ANDHRA PRADESH

### *World Health Day at Hyderabad*

**W**ORLD HEALTH DAY was observed throughout Andhra Pradesh on 7 April 1964. The theme for the day was "No Truce for Tuberculosis".

The Public Health Department had arranged for the publicity drive as well as Health Education enlisting the cooperation of both official and non-official agencies well in advance. Efforts were made to focus the attention of the public on the magnitude of the problem with particular emphasis to the conditions in the State.

A committee was constituted in January 1964 under the Chairmanship of the Director of Public Health for planning and organizing activities connected with the celebrations of the Day. The officers of the Public Health Department, representatives of the Central Railway, the Medical Department, All India Radio, Police, Municipal Administration Department, Army Medical Corps, Education Department, and other social organizations attended the meeting.

The State Bureau of Health Education designed and printed posters in three languages, viz., English, Telugu and Urdu on tuberculosis and its various aspects. The posters were distributed on the eve of the Day throughout the State. Besides, the literature supplied by the Directorate-General of Health Services, New Delhi, was also supplied well in advance to all the District Health Officers and Municipal Health Officers, Block Development Officers, etc. Feature articles by eminent Public Health Educationists and medical experts on T.B. were released in the local leading dailies and wide publicity was given on the importance of the Day.

August 1964

The State Bureau produced a special number of its quarterly *Health Review of Andhra Pradesh* devoted to tuberculosis and its prevention. An essay competition was organized for the school children of the twin cities. Three prizes were offered. Stanley Girls High School won the First Prize while St. Ann's High School Secunderabad and Rosary Convent High School secured second and third prizes respectively. The Health Minister of Andhra Pradesh Shri S.R.Y. Sivaram Prasad, broadcast a special message on 7 April from the All India Radio, Hyderabad.

### **Programme in Twin Cities**

An exhibition was arranged on the theme of the 'Day' at the Health Museum Public Gardens, Hyderabad. Over 5,000 people visited the exhibition. A public meeting was organized at Ravindra Bharathi, Hyderabad, which was presided by the State Health Minister.

In his presidential address, the Minister said that the efforts of the Government alone would not solve the tuberculosis problem in the country and the role of social worker was much more important. He appealed to social organizations to extend their cooperation in solving the problem.

## GUJARAT

### *Proteins from Seaweeds*

**M**ETHOD for the extraction of bulk proteins from *Mulva rigida*—a green seaweed—has been developed at the Central Salt and Marine Chemicals Research Institute, Bhavnagar. These seaweeds are found to occur in large quantities throughout the Indian coasts.

275

According to the method, seaweeds are treated with a mixture of ether, water and extracted with sodium hydroxide solution. Proteins are precipitated from the extract by treatment with trichloroacetic acid. The protein content of the isolate is 60 per cent and the overall yield on protein basis is 20 per cent.

## MAHARASHTRA

### *Cholera in Nagpur*

**T**HE incidence of gastroenteritis in the city of Nagpur rose at the end of March 1964 and since then continued till the middle of June 1964. *Cholera vibrio* was isolated from the vomits of some of the cases on 19 April. During this period, Nagpur Municipal Corporation launched anti-cholera inoculation campaign by appointing extra staff of 35 inoculators and also augmented other anti-cholera measures and completed about two lakhs of anti-cholera inoculations in the city.

During the period, there have been 64 attacks and one death, which showed a case fatality rate of 1.6 per cent. The Health Education Programme made the public conscious about the seriousness of the disease and the measures to be taken to prevent it.

### *Gastroenteritis in Bombay*

The gastroenteritis cases in Bombay City were prevalent from 19 May 1964 to 10 June 1964 and there have been 3962 cases and 159 deaths, out of 3962 cases, 53 were positive for *Cholera vibrio*. Majority of the gastroenteritis cases were from congested localities and slum areas.

The Corporation authorities launched the general anti-cholera campaign to check the spread of the disease. More than 20 lakh persons were inoculated against cholera. Special attention was paid to the supply of safe water with sufficient residual of chlorine to the public.

## DELHI

### *Anti-leprosy Day—1964*

**S**INCE 1961 the Anti-leprosy Day is being observed on 30 January—the day of Mahatma Gandhi's Martyrdom to focus the attention of the public on the problem of leprosy and its control and to acquaint

the people with the programme in action or proposed to be implemented, their participation in the programme, role of the Government and of voluntary agencies. But due to national emergency the Day could not be observed in 1963. In 1964, Anti-leprosy Day has been observed on 30 January. The Director-General of Health Services issued circular instructions to the Administrative Medical Officers of all the States and Union Territories to take proper steps to observe the Day in a befitting manner.

### **Educating the People**

The Hind Kusht Nivaran Sangh printed 50,000 copies of a brochure both in Hindi and English. These brochures were sent through the Director, Leprosy Control Work, to all the Administrative Medical Officers and State Leprosy Officers, and various Leprosy Organizations functioning in the country both under National Leprosy Control Programme and other Agencies for free distribution to the public.

This year the Day began with *prabhat pheries*. Processions were taken out in towns, cities and villages with a view to educating the people about the incidence of the disease, its early recognition, treatment and prevention. Huge placards were carried by thousands of school children and others who joined these processions included some influential people.

Sweets, fruits and clothes were distributed by many organizations to the patients. Meetings were held in which Medical Officers, Para-medical workers and other influential persons of the locality addressed the gatherings.

Cinema shows and the magic lantern shows were shown in the villages particularly in the areas of National Leprosy Control Programme. Articles on leprosy were published on that Day in some local newspapers and broadcast through some of the stations of All India Radio.

At some places exhibitions were organized, dramas were played, indoor games were arranged and prize competition debates were held.

### **Rehabilitation of the Patients**

On this occasion, new industries like mat making, spinning, carpentry, weaving, etc., were inaugurated

Swasth Hind

in some institutions so that the public may witness that the leprosy patients can be cured and rehabilitated.

In Delhi, a meeting was held in the Council Chamber of Delhi Municipal Corporation under the Chairmanship of Dr Yudhvir Singh, President, Hind Kusht Nivaran Sangh, Delhi Branch. Dr Sushila Nayar, Union Health Minister, Major Gen. C.K. Lakshamanan and some foreign visitors from Australia addressed the meeting. Also other State branches of the Hind Kusht Nivaran Sangh observed the Day and called meetings in which lectures on leprosy problem and how to rid of the same were delivered.

A public meeting was held on the Day in the compound of the Chingleput Municipal Corporation building under the Chairmanship of Shri M. Raghavan, a prominent Advocate of Chingleput. Speeches were delivered by Dr C.G.S. Iyar, Dr S.K. Noordeen, Dr H. Srinivasan and Mrs S. Paul. A film show was displayed to the public also.

On the whole the Anti-leprosy Day was observed with great enthusiasm all over the country. A wide publicity was also given to the significance of the Day to focus public attention on the magnitude of the leprosy problem.

### *Conference of T.B. and Chest Diseases Workers*

The XIX Conference of Tuberculosis and Chest Diseases workers of India organized by the Tuberculosis Association of India was held in New Delhi from 5 to 7 April, 1964. Dr Sushila Nayar, Union Minister of Health, inaugurating the Conference said: "We are now engaged in developing an edifice of tuberculosis control work in India. The main pillars of this edifice are preventive measures, home treatment of patients, building up enlightened public opinion and sound organizations at the Centre, States and in the districts. The organization need not be only official. Wherever voluntary bodies are functioning their services should be fully used. Where neither official nor voluntary agencies exist we should endeavour to establish new ones. I am convinced that our efforts can succeed only if every health agency pulls its weight as one body, specially in regard to combating contagious diseases like tuberculosis."

August 1964

Dr L.R. Dongrey presided over the Conference. He said that tuberculosis was a multi-facet problem. Medical facet was only one of the many. Improvement in tuberculosis service to make it attractive for younger doctors, training of medical and paramedical personnel, organizational and administrative set-up for mass action, co-operation of general practitioners in the control programme, health education, etc.—all these were important aspects, and their consideration needed re-orientation in the light of our newer knowledge. The Conference discussed the domiciliary drug therapy, problems connected with the home treatment of tuberculosis, B.C.G. vaccination, hospital admission policy and medical nursing services—home care and hospital care. Dr N.L. Bordia, Adviser in Tuberculosis to the Government of India reviewed the progress of anti-tuberculosis work in India during the last two years.

An exhibition on Tuberculosis was also organized at the time of the Conference. The exhibition was inaugurated by Dr D.S. Raju, Deputy Union Health Minister.

Over 450 delegates from all over India attended the Conference. The Delhi Tuberculosis Association played host to the Conference.

The sessions of the Conference concluded on 7 April, 1964 and this enabled the delegates to associate themselves with the World Health Day. The theme of the Day was 'No truce for tuberculosis'.

**The Conference of Tuberculosis and Chest Diseases Workers was inaugurated by the Union Health Minister, Dr Sushila Nayar**



### *Progress in Family Planning*

The number of Family Welfare and Planning Centres in the country now totals nearly 11,000. A report showing the progress of the Family Planning Programme up to the end of May says there are 9,246 centres in rural areas and 1,718 centres in urban areas.

Under the Programme for Family Planning Education and Publicity, nearly 40,000 persons have so far received training in family planning work at the different training institutes. Besides these, more than 175,000 persons have attended orientation camps and general meetings intended for the training of local leaders whose help is enlisted in furthering the programme.

Extensive publicity and education for family planning is being carried out through films. Some 385,000 persons have so far attended film shows on the subject. This is apart from the film publicity being carried out by 84 Field Publicity Units under the Ministry of Information and Broadcasting.

Re-organization of the programme to strengthen the administrative set-up is also making good progress. District Family Planning Bureaux have been started in 46 districts in the States of Assam, Gujarat, Kerala and Madras.

There are at present 150 sterilization teams both static and mobile, working throughout the country.

Upto the end of May, a total of 5,66,394 sterilization operations were carried out—3,56,054 male and 2,10,340 female.

### *Less Cases of Smallpox*

There is no danger of smallpox epidemic in Delhi this year because of the intensive vaccination drive which had been carried out since November 1960. As a result of this, more than 80 per cent of population in all sectors of age, sex and residence had been immunized against the disease.

The incidence of smallpox had been lowest in this year as will be clear from the following table showing the case incidence in the first quarter of 1961-64.

Month	1961	1962	1963	1964
January	247	10	74	1
February	149	16	66	3
March	106	15	81	14

In the month of April there were 25 cases, out of which 13 were imported and 12 local. The incidence had been comparatively lower than the previous year which recorded 88 cases.

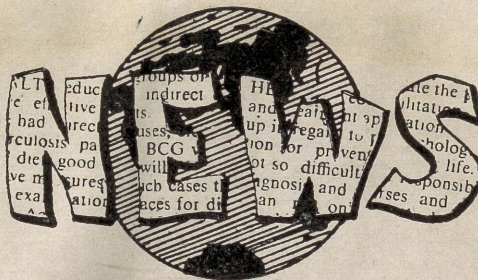
The incidence has, however, come down during May 1964. During this month till 20th, there have been 10 admissions in the Infectious Diseases Hospital out of which six frank cases came directly from Uttar Pradesh for treatment in the Infectious Diseases Hospital and three cases came to Delhi during their incubation period (imported incubation cases) and only one local case of smallpox had occurred.

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## CANCER PREVENTION IN JAPAN

**E**VER since 1953, cancer followed apoplexy as the nation's most deadly disease. According to reports submitted to the first collective Stomach Examination Symposium held in October 1963, the medical department of Tohoku University, in Northern Japan, found that of a total of 80,633 persons examined, 168 were afflicted with the stomach cancer.

During the same symposium the Kyoto Prefectural Medical College, in Central Japan, announced that of 1,606 persons examined, it found that seven had stomach cancer.

The medical department of Tottori University, in western Japan, revealed similar statistics with 15 cases of stomach cancer being discovered among 3,458 persons examined.

On the basis of these figures, it is surmised that from 0.2 per cent to 0.4 per cent of the Japanese people are afflicted with stomach cancer. These percentages should rise considerably higher if the number of persons afflicted with other types of cancer are included in the statistics.

A comprehensive nation-wide survey of cancer was made in 1957 by the Ministry of Health and Welfare. In the following year, a private body called the "Japan Anti-Cancer Association" was established, and it has been cooperating closely with the National Cancer Centre, established in 1962, in nation-wide activities to fight cancer.

### Chapters Throughout Japan

The Japan Anti-Cancer Association's headquarters is located in Tokyo but numerous chapters have been established in various prefectures throughout the country.

The objectives of the Association are to disseminate knowledge and enlighten the people on the

problem of cancer, to detect cancer symptoms as early as possible and to expand medical facilities for the treatment of the disease, as well as to take the initiative in promoting a popular movement against cancer.

### Early Detection Helpful

Thanks to the efforts of the Association as well as the cooperation accorded to it by other medical groups in the country, about 10 per cent of the patients in hospitals throughout the country, who have undergone successful operations for stomach cancer, were among those whose disease had been detected early.

### Mass Media Cooperate

The Association has also requested the cooperation of mass communication media, such as newspapers, radio and television, in its efforts to enlighten the people on the dread disease.

As a result of such publicity, even people in large cities where adequate medical facilities are available for the discovery and treatment of cancer have been in increasing numbers undergoing the collective examinations carried out by the Association.

As one measure to fight cancer, the Health and Welfare Ministry has established since 1957, cancer centres in State-run hospitals at approximately 20 places throughout the country.

The Ministry has also established a National Cancer Centre in Tokyo to further reinforce its cancer-fighting facilities. The Centre has two major departments—research and treatment.

A total of 22,000 persons have been examined at the Centre during the one-and-a-half year since its inception. The Centre is also making special efforts to train new doctors in this field by adopting a two-year dormitory system for young doctors from April 1964.

—Information Bulletin  
Embassy of Japan, Vol. X, No. 24, Dec. 15, 1963.

# SMALLPOX AND CHOLERA

## MORBIDITY AND MORTALITY

THROUGHOUT India, 2764 cases of Smallpox with 811 deaths were reported during May 1964. During the month, 3002 cases of Cholera with 656 deaths were reported. During June 2316 cases of Smallpox with 710 deaths, 2446 cases of Cholera with 566 deaths were reported throughout the country. No case of Plague was reported during May and June.

STATE	CHOLERA				SMALLPOX			
	May		June		May		June	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Andhra Pradesh	146	54	58	16	205	69	244	77
Assam	...	...	...	...	40	8	18	7
Bihar	281	54	82	35	965	319	706	243
Gujarat	698	72	315	12	4	2	3	...
Jammu & Kashmir	...	...	...	...	...	...	...	...
Kerala	...	...	...	...	4	1	1	2
Madhya Pradesh	...	...	193	50	117	11	68	16
Madras	9	7	6	3	295	74	396	104
Maharashtra	1236	240	689	125	192	43	182	28
Mysore	253	131	753	214	35	7	57	11
Orissa	28	8	11	5	37	8	44	8
Punjab	...	...	...	...	11	3	5	1
Rajasthan	...	...	...	...	109	10	33	4
Uttar Pradesh	61	16	58	19	342	99	232	92
West Bengal	290	74	281	87	398	156	314	115
Andaman & Nicobar Islands	...	...	...	...	...	...	...	...
Delhi	...	...	...	...	10	1	13	2
Himachal Pradesh	...	...	...	...	...	...	...	...
Manipur	...	...	...	...	...	...	...	...
Pondicherry	...	...	...	...	...	...	...	...
Tripura	...	...	...	...	...	...	...	...
Goa	...	...	...	...	...	...	...	...
TOTAL	3,002	656	2,446	566	2,764	811	2,316	710

## **PAMPHLETS**

**Yogic therapy**  
**School health committee report (part ii)**  
**Rural health services—primary health  
centre**  
**Handbook of first aid and elements of  
home nursing and hygiene**

# **OUR LATEST PUBLICATIONS**

## **POSTERS**

**Eat these more for better health**  
**Fly—your deadly enemy—prevent its breeding**  
**Do not eat exposed cut fruits**

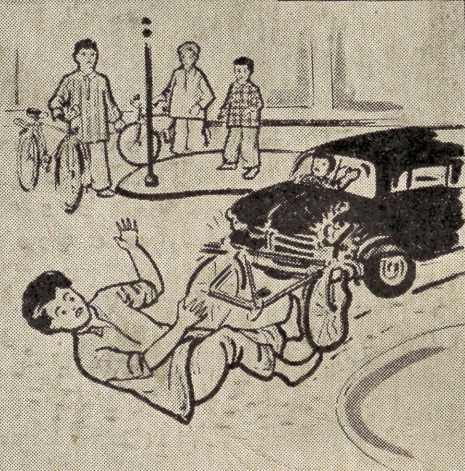
## **FOLDERS**

- **We can eradicate smallpox**
- **You can prevent kala-azar**
- **V.D. is curable**
- **Beware of lice**
- **Your food and nutrition**
- **Vaccination protects you from smallpox**
- **Blood bank**
- **When the unexpected happens**
- **You can prevent malaria**

(These folders are available in Hindi also)

विश्व स्वास्थ्य दिवस

सावधान  
सुरक्षा  
नियमों का  
पालन  
कीजिये



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