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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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OUR COVER

Adequate supply of safe water is vital for the community's health as it prevents water-borne diseases. The Government's National Water Supply and Sanitation Programme aims at providing safe water in the urban and rural areas. *Our Cover* shows a family collecting water from a hand pump which provides safe water in a locality.

Health Education for Healthful Living

Dr Zakir Husain

THE most outstanding feature of this century is perhaps the concern of the world for the welfare of man. Improvement of the health of the people—the human resources on which, in the final analysis, all social and economic development depends—is essential to all development. The main reason of our much lower agricultural and industrial outputs than expected is lowered vitality and lower efficiency. In some of the developing regions of the world, it takes half a dozen men, sometimes more, to produce what one man does in more advanced regions.

All who are engaged in development planning cannot, therefore, afford to lose sight of investment in health, for it pays dividends both in the greater well-being of man, which is the ultimate aim of all development, and in greater vitality and efficiency, which are indispensable qualities of human resources in creating a reasonable standard of living for all.

Advance in Medical Science

The scope of medicine has expanded at a dizzying pace in recent times. The changes that have taken place in the last hundred years are more radical and more comprehensive than those, perhaps, in the previous hundred centuries. It has been truly observed that it was not until the 19th century, which, from the point of view of world history, is but yesterday, that it was recognized that there is such a thing as gastric juice, that oxygen is necessary for breathing, that the body is made of cells. It is only half-an-hour ago in the same context that infection and disinfection bacteriology and serology were discovered. And, finally, the existence of hormones and vitamins and the fact that psychic troubles can be treated with almost as great precision, or as little precision, as the broken bone have been known only for the last

five minutes. But the minutes that follow are even fuller and the fund of medical knowledge has grown and is growing at a tremendous pace. Medical science has put at our disposal a wealth of powerful tools to combat diseases that are hindrances to progress. Only, we should have the means to put these tools to use.

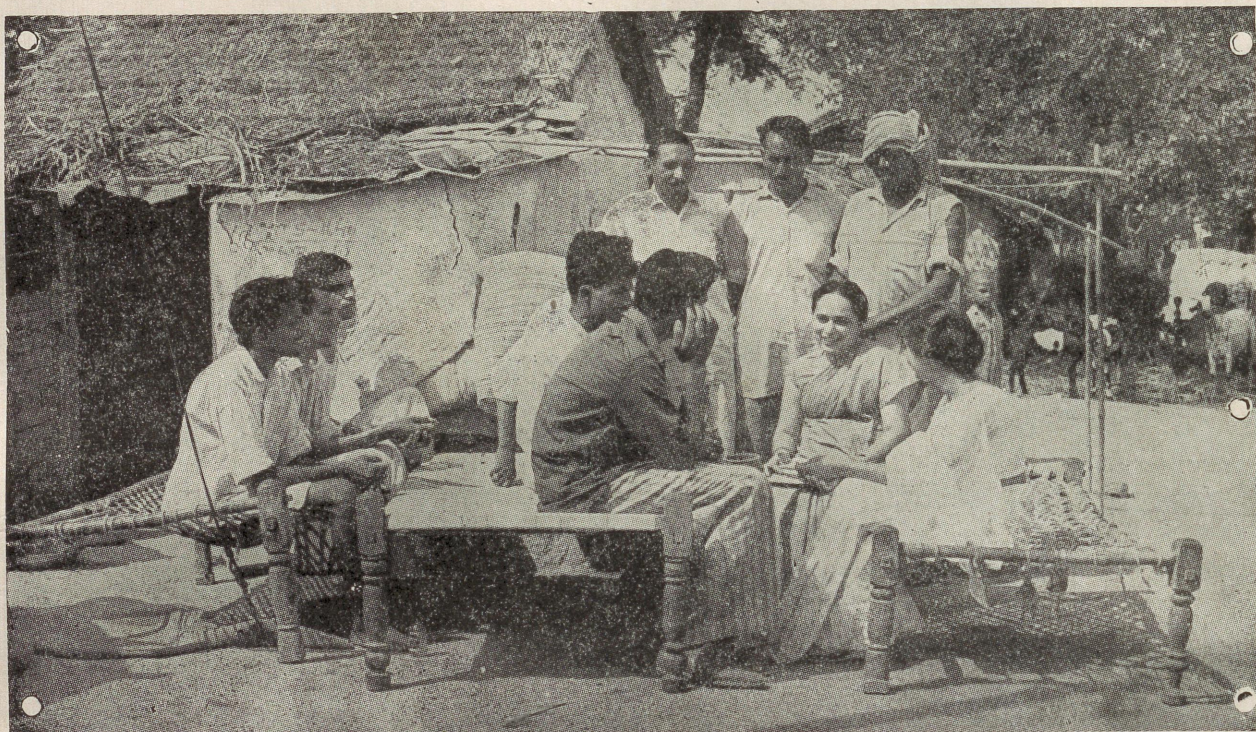
Role of WHO

In South East Asia Region, as well as in other developing regions of the world, there is lack of adequate finances to put these tools to work. However, in the field of health, the World Health Organization, although also hampered by financial stringency has done a great deal to find solutions to the problem of more equitable distribution of the resources of the world. There is, for example, at any time much more medical knowledge than is effectively put to work. One of the WHO's tasks is to find the knowledge that is wanted to deal with a health problem and to transfer it to the place where it is needed. By giving its advice and support at the right time, the World Health Organization has greatly helped in the proper utilization of our meagre resources.

Apart from the World Health Organization's direct contribution in improving the health of our people, there is an indirect aspect of its work. Through its daily work, and at its meetings, the World Health Organization has shown that good international co-operation is possible, and by this example has helped to create an atmosphere favourable to the solution of many non-technical problems which the world is facing today.

Training Health Workers

There is another shortage concerned with the scarcity of funds, which must be overcome—the



Health Education is of vital importance for inculcating a positive attitude towards health. Photo shows a group of people being interviewed by the health workers

shortage of health personnel. There is no easy way to overcome this man-power problem. Considerable human and material resources are required for training programmes, and they cannot be produced in short order. Here again, we need the assistance of the World Health Organization, which has access to the experience and knowledge of all countries and facilities for promoting their diffusion and exchange. However, while striving towards training more health workers, one must not lose sight of quality. We cannot raise our standard of health unless we are able, in every branch of medicine, to attain the highest standards of education. WHO has already assisted in medical education, and with the increasing control over communicable diseases in South East Asia, this Regional Committee foresees a gradual change in emphasis from the control of communicable diseases to education and training.

Medical Education

Emphasis on good medical education and good health education can be most fruitful. In regard

to medical education, the health needs of the people can perhaps be best met by a balanced co-operation between physicians trained in general medicine and specialists qualified for some more complicated treatment, necessary in certain cases. A good system of medical education also provides for short, advanced courses for the specialists, to enable them to keep abreast of their specialities, and another set of continuing courses for those in general practice in non-specialized fields. The rapid rate at which the medical knowledge is increasing makes both these devices essential, if you are not to be satisfied with the very distant and needy, rather dangerous, second best. And equally important, if not even more so, is the need for a thorough nation-wide health education.

Need for Family Planning

The health of the people is the nation's most valuable asset, and all is not well with this asset. Efficient programmes of health education are urgently indicated. To begin with, we are confronted with a high birth rate, accompanied by one

of nature's compensatory devices—a very high rate of maternal and infant mortality. And yet our already big population is growing at an inconveniently fast pace. Most of our programmes of material development, in fields like economic growth or educational development, present, at times, the image of dissipated effort.

We seem to have to run to stay where we are: we raise our food production; we have more mouths to feed; we hasten with educational facilities, send in five years as many more children to school as are there already, and yet the number on the streets is larger than we started. And so on and so on. The problem of planned development may in the final analysis depend for its effective solution on planned families, smaller but better-fed and better cared-for families, a reduced birth rate, a reduced death rate

and increase of population at a slower, more dignified, pace. How is this to be achieved? No legislation can effectively achieve it; no State ordinance can hope to intervene, in effect, in this intimate private sector activity. It is a matter of education in the responsibilities of parents and all that this implies.

Nutrition

Then there are the problems of nutrition. We are a poor people. Our nutrition resources are limited. We cannot with impunity add folly to poverty, and this is what we mostly do. People who can even pay for the best food are not always the best fed. The whole way of our countrymen is engaged, day by day, in the dismal occupation of digging its graves by its teeth. It is interesting to realize that people

National Malaria Eradication Programme, one of the major health programmes, has entered the surveillance phase in most of the States. Blood smear is being collected from fever cases to find out whether these were cases of malaria



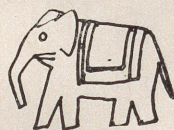
may die of starvation even though they consume enormous amounts of food. We have to eat healthfully in order to live healthfully. How is that to be accomplished? Again not by legislation and ordinance. It is a matter of knowing what we eat and knowing effectively enough to act on one's knowledge. It is a matter of arranging adequate diets at various levels of cost and making them known widely and repeatedly for changing food habits is not an easy enterprise. This again is an important educational work.

Role of Health Education

We have the sorry spectacle of the yearly visitation of all kinds of communicable diseases. We see our fellowmen die in large numbers and behave as if Pasteur and Koch had never lived. The nature of these visitations has to be brought home to the mass of the people by a sustained process of health education, to create a climate of opinion in which mass inoculations and vaccinations are not looked upon as the seasonal outbreaks of a stream of sadism in a number of busy-bodies. We cannot force people into health without their own active realization of how health may be attained. Health education—extensive and effective health education—is one of

the most urgent needs. To impart knowledge of the possibilities of healthful living, to kindle a desire to live a healthy life, to create a sense of pride in having a healthy, clean, proportionate body, an obedient and effective instrument for the accomplishment of worth-while life aims, to establish a positive attitude towards health, health not only as an escape from disease but as a fullness of healthful living: these should be the objectives that a good programme of education, health education, should keep before it.

A great crusade lies ahead of us, with hard and relentless fight. The enemy is spread all over our lands. It is surely not an easy combat, but if medical science, the medical profession and education take up the challenge in earnest, we will know how to win. The prize is great, healthy prosperous peoples who will see what freedom from avoidable disabilities, like freedom from political dependence, can bring to them, and who will, in gratitude for that great gift, strive to educate themselves to the ends of peace and welfare of all mankind. (*This article is based on Dr Zakir Husain's inaugural address delivered at the XVII meeting of S.E.A. Regional Committee of WHO held in New Delhi on 22 September, 1964. Also see Swasth Hind, Vol. VIII, No. 9, Sept. 1964.*)



FOOD ADULTERATION—A HEINOUS CRIME

The recent report shows that food adulteration is being practised on a large scale. Of all anti-social practices there is none more heinous than adulteration of foodstuffs. The practitioners of this evil, the hoarders, the profiteers, the black-marketeers and the speculators are the worst enemies of our society. They have to be dealt with sternly, however well-placed, important and influential they may be. If we acquiesce in wrong doing, people will lose faith in us.

—Dr S. Radhakrishnan

Evaluation of Smallpox Eradication Programme in Uttar Pradesh

Dr Jagdish Chandra

EVALUATION of the Smallpox Eradication Programme in 18 districts of the State, which had reported an overall coverage of more than 80 per cent was carried out in May and June 1964. The evaluation in these districts was conducted on the lines of evaluations of Mysore State carried out by the National Institute of Communicable Diseases. Certain modifications were, however, made in the procedure to suit the local conditions. The present article deals with the evaluation of first set of five districts of Dehra Dun, Naini Tal, Mathura, Rae Bareilly and Bara Banki which reported overall coverage ranging from 92.3 per cent to 100 per cent. Public Health Officers not connected with the Smallpox Eradication Programme of the district headed the certifying units.

Objectives

The objectives of the evaluation were:

- (a) Verification of the enumerations and other National Smallpox Eradication Programme records;
- (b) Verification of Primary vaccinations:
 - (i) Primary vaccination missed.
 - (ii) Success rate of Primary vaccination.
- (c) Verification of re-vaccinations, their success rate and the target achieved.
- (d) Challenge vaccination.
- (e) Assessment of level of immunity in the population at the time of evaluation.

Due to paucity of suitable staff, investigations of epidemiological aspects and registration of births and deaths, as adopted in evaluation conducted in Mysore were not undertaken.

The Sample

A random sample of each district was selected at one per cent for verification of records and 0.1 per cent for challenge vaccination. Two to five *Nyaya Panchayats* in the rural areas and one or more municipal wards in the urban sector were selected in each district. In the case of Naini Tal and Dehra Dun districts *Nyaya Panchayats* from hilly areas were also selected. This was the only element of bias used in the selection of the sample. As the population of *Nyaya Panchayat* varies from 5000 to 8000 and only a part of this population was to be taken for evaluation, the officer-in-charge of the certifying units selected the required population from these areas.

Staff Utilized

Each certifying unit was headed by a senior public health officer who was not in any way connected with the programme of the district allotted to him. Unlike the evaluation conducted in Mysore and other evaluations we had to utilize the services of sanitary inspectors for the entire evaluation, as the required number of medical men was not available. But the sanitary inspectors posted were from outside the district. Services of local vaccinators were utilized only for challenge vaccination but their results were read by the sanitary inspectors.

Method Adopted

The objectives, planning organization and targets of the Smallpox Eradication Programme were explained to the staff on the first day by the officer-in-charge of the certifying units. The methodology of evaluation and duties of the staff entrusted with it were also explained to them. Doubts, if any, were removed. Assessment teams of sanitary inspectors and vaccinators at the rate of one inspector for every 120 families (700 population) and one vaccinator for 50 challenge vaccinations were formed for each evaluation area. After the briefing session on the first day, the teams moved to the field. The verification of family registers was conducted by the sanitary inspectors on the second to seventh day of evaluation. Challenge vaccinations were given by the vaccinators on the second day under the supervision of sanitary inspectors who read the results on the seventh or eighth day of the evaluation. As we were utilizing the sanitary inspectors for verification of records, it was decided to have new family registers prepared and later on compare them with the old registers as was done in the Delhi evaluation. This procedure, however, has been found to be very time consuming and confusing. The procedure of correcting the existing register to make it up-to-date as followed in the evaluation in Mysore and other evaluations of the National Institute of Communicable Diseases is simple, but then we require the services of medical men for checking the results. It goes without saying that the reliability of data collected will depend upon the sense of duty and responsibility of the staff entrusted with this important work.

Results of Evaluation

- (i) *Enumeration:* Errors in enumerations detected varied between 3.1 per cent and 15.0 per cent. Increase in population was between 4.8 to 15.0 per cent which is to be considered in the light of continuous changes in the population due to vital and social events.
- (ii) *Primary vaccinations, re-vaccinations and overall coverage:* The salient findings of the evaluation are given in table I.

From this table it is clearly seen that percentage of primary vaccination available in the total population was high (7.4 to 22.5 per cent) indicating thereby

TABLE I

Name of District	Primary Vaccination			Re-Vaccination		Overall Coverage
	Percentage available in the population.	Percentage covered	Success rate	Percentage covered	Success rate	
Dehra Dun	8.7	81.3	91.3	86.9	60.3	86.4
Naini Tal	10.5	39.5	77.9	62.5	32.1	58.6
Mathura	9.3	97.1	98.3	98.3	21.3	98.2
Rae Bareli	22.5	86.7	99.7	82.2	22.1	83.8
Bara Banki	7.4	80.6	80.1	76.2	42.2	76.5

that the vaccination work prior to Eradication Programme was not up to the mark resulting in accumulation of large number of susceptibles. This brings out the necessity of strengthening the permanent vaccination staff of the districts which at present is at the rate of one vaccinator for 70,000 to 80,000 in the rural areas and one vaccinator for 50,000 in urban areas. It is further seen that the coverage of primary vaccination has been much below 100 per cent and their success rate has also not been quite up to the accepted level in two districts of Bara Banki and Naini Tal. The coverage of re-vaccinations has been between 62.5 to 98.3 per cent and its success rate varied between 21.3 to 60.3 per cent. The verified overall coverage in these districts ranged between 58.6 to 98.2 per cent.

- (iii) *Challenge vaccinations:* As stated earlier, 0.1 per cent of the sample population was vaccinated on second day of evaluation and the results were read by the sanitary inspectors on the seventh or eighth day. A certain number of previously unvaccinated people were also included and they served as control to check the efficacy of vaccination technique and potency of vaccine.

In this connection it may be appropriate to mention here that the usefulness of challenge vaccination in the estimation of immunity level in the population is controversial. The interpretation of the result of challenge vaccination is difficult as the proportion of re-vaccination "takes" varies with the potency of the vaccine and the skill of the vaccinator. Moreover, the relation of susceptibility of *Vaccinia Virus* to the susceptibility to smallpox is uncertain. However,

the challenge vaccination may give an approximate idea of the vaccination needs of a community.

Assessment of Immunity

In the five evaluation districts against the reported overall coverage of 92.3 to 100 per cent the verified coverage was found to range between 58.6 to 98.2 per cent. Even this verified coverage cannot be taken to be the effective coverage, conferring biological protection against the disease to that extent. For estimating the population immunized by the campaign an allowance has to be made for less than the perfect quality of vaccination which is judged by the success rate of the primary vaccinations.

Besides the population immunized by the campaign, a proportion of the uncovered population will also have some pre-existing immunity due to vaccination, re-vaccination or exposure to smallpox prior to the campaign. If it is presumed that those who failed to respond to re-vaccinations had pre-existing immunity, this percentage when applied to the uncovered population, after making an allowance for unvaccinated group in it, will give the quantum of pre-existing immunity in the uncovered population. The level of immunity in the sample population at the time of evaluation can be estimated by adding this pre-existing immunity to the population immunized by the campaign.

The following table gives the reported coverage, verified coverage, the estimated population immunized by the campaign, the pre-existing immunity and the level of immunity estimated to be present at the time of evaluation. The level of immunity as estimated by challenge vaccination is also shown in this table.

TABLE II

Name of District	Reported coverage (percentage)	Verified coverage (percentage)	Population immunized by NSEP (percentage)	Pre-existing immunity in left-over population (percentage)	Total immunity at the time of evaluation (percentage)	Immunity assessed by challenge vaccination (percentage)
Dehra Dun	94.6	86.4	78.9	4.9	83.8	86.5
Naini Tal	92.3	58.6	45.6	25.1	70.7	51.0
Mathura	98.2	98.2	96.5	1.3	97.8	78.7
Rae Bareli	100.0	83.8	81.9	9.8	91.7	73.4
Bara Banki	93.16	76.5	68.1	12.6	80.7	—

It will be observed that the reported coverage is no guide to the level of biological protection conferred

by any campaign. In a hurried mass campaign carried out by an army of newly recruited temporary staff the reported coverage may be inflated due to repeated vaccination of the same persons particularly during the mopping up operations. The factor of efficiency of vaccination technique also comes into picture and reduces the verified coverage considerably. We have tried to assess the level of immunity at the time of evaluation by considering the factor of pre-existing immunity in the uncovered population as suggested in the Delhi evaluation report. But it is to be considered whether the failure to respond to re-vaccinations given by newly recruited and inexperienced vaccinators can be taken as an indication of pre-existing immunity specially where the success rate of primary vaccinations is not above 95 per cent.

If we become complacent by this estimated level of immunity without ensuring that:

- (i) almost 100 per cent of primary vaccinations have been covered with a success rate of above 95 per cent;
- (ii) the overall coverage of 80 per cent and above is uniformly distributed in all sectors of population, *i.e.*, every village and hamlet and all age-groups;
- (iii) an interruption of transmission of disease has occurred; and
- (iv) above all there is a suitable organization for maintaining this level of immunity the programme is bound to be on soft grounds without achieving the desired goal.

Future Needs

It goes without saying that the real achievements under a programme of this size can only be assessed by scientific evaluation. Therefore, the methods and procedure adopted in such evaluation have to be correct and sound. By this it does not mean that the method followed in the above evaluation was in any way unscientific but being the first experience of its kind in this State there may be some lacunae and thus a further 'scope for improvement'. The main difficulty experienced was, as also mentioned earlier, the non-availability of suitable type of personnel to undertake this special type of work. The

(Continued on page 343)

New Approaches in Environmental Health

Dr Malcolm H. Merrill

This paper was presented by Dr Malcolm H. Merrill, Director, California State Department of Public Health, at the Walter Mangold Banquet, California Association of Sanitarians, Thirteenth Annual State-wide Educational Symposium, Sacramento, California on 16 April, 1964. The paper discusses the new approaches and techniques in environmental health in California particularly water pollution, waste disposal, pesticides and insecticides, contamination of food, radioactivity and allied problems. The study of the approach and techniques will be of interest to the Public Health Workers in India. Excerpts from this paper are published below.

SINCE his advent upon earth, man has been adjusting to his environment and adjusting the environment to himself in order to improve his security and comfort of living. Some of the present-day changes in our environment present a threat to the health and well-being of our people. These threats are not as dramatic and well-defined as were those of ancient diseases which once challenged the public health heroes of old. But they are threats indeed and urgently demand our active and serious consideration.

Man has a magnificent propensity for compounding his environmental problems. Urbanization, the development of chemicals for a myriad of uses, including the improvement of quality and yield of agricultural production, the multitude of waste products from industrialization, and even the intensified use of streams, lakes, mountains and forest areas for recreation, all contribute to the artificial contamination of man's environment.

As a result of all of these factors and others too numerous to mention, man has multiplied his traditional problem of water pollution, has initiated a new constellation of problems in protection of the

food supply, and has created an equally complex problem around his other most abundant natural resource, the atmosphere. Within our time man has also added a new dimension in the form of radioactivity.

While man has done many things to degrade the quality of the environment in which he lives, he has, albeit somewhat belatedly at times, exercised his ingenuity to counteract or neutralize these changes. Rapid strides have been made in this direction by the disciplines involved in the protection and improvement of our environment.

Some of the new approaches and techniques being applied for the protection of water, air, food and recreation resources are discussed in this article.

Use and Re-use of Water

A most significant development has been the acknowledgment that our water problems must be considered on a statewide, indeed a nationwide basis rather than merely on a local basis. The conservation of water, its distribution, its uses, and its pollution has impact throughout the nation and certainly from one end of California to the other.

This is self-evident as California undertakes the implementation of its vast State Water Plan.

The key to successful development of a water plan is water management. This includes initial collection and impoundment, controlled use and re-use of water, and disposal or reclamation of immense volumes which have become over-mineralized or otherwise so extremely degraded that further use is not feasible.

The use and re-use of water poses no insurmountable problem. The real issue arises when water is re-used to the point at which its accumulation of minerals or toxic chemicals is such that its continued use becomes untenable. The obvious and logical solution is, of course, to get rid of these waters. It must be remembered, however, that we are considering the disposal of millions of acre-feet of water. This amount cannot just be flushed down the drain. Yet even this may become possible. Some engineers think it feasible. Under consideration at this time is the San Luis drain, which proposes to pump these wastes back from Kern County to the Delta area for disposal, with the possibility of future discharge into the ocean.

It may even be practicable to demineralize or otherwise reclaim these waters. With the techniques currently available, this is probably not economically feasible for some uses, although in special cases water reclamation is already a practical solution.

With increased population and more leisure time, there have been growing demands for recreational access to domestic water supply reservoirs. The Legislature in the last few years has recognized the needs and desires of recreationists and the wishes of the water users. It has enunciated a policy that all water supply reservoirs of a public agency shall be open to recreation subject to regulations of the State Department of Public Health. The State Board of Public Health has adopted regulations permitting certain recreational activities under strict controls but specifically prohibiting water-contact sports.

With the co-operation of local agencies, public health has been able to provide adequate safeguards for permitting limited recreational activities while maintaining the integrity of the water supply.

However, a few years from now we will no longer be able to consider the multiple use of our domestic water supply in terms of small, well regulated reservoirs; an integral part of the State Water Plan is the construction of huge impoundments. Waters within these impoundments will be used for water-contact sports, domestic water supplies, conservation, irrigation, fishing, and recreation—the whole spectrum of water use. It is not too early for us to consider the development of new techniques to preserve the purity of the water supply and still enable us to reap fullest benefit in terms of multiple water uses.

Reclaiming Water from Sewage

California has taken the lead in making direct use of water reclaimed from sewage, and developments here are being closely watched throughout the nation.

Use of sewage effluent for irrigation of fodder crops has long been employed in the interior farming communities of California, and since 1932 San Francisco's famed Golden Gate Park has been irrigated with effluent.

Recent years have seen the development of several methods for reclaiming water from sewage. Such water can be put to direct uses involving close human contact or direct augmentation of domestic water supplies.

Effluent from Los Angeles City's Hyperion Sewage Treatment Plant, after filtration and chlorination, is being experimentally injected into the brackish water aquifer. If present favourable experience continues the Los Angeles County Flood Control District will inaugurate a string of injection wells in the sand dunes in the Manhattan Beach area as a means of recharging a fresh water aquifer and halting salt water intrusion. Similar plans are under way in Orange County.

The Los Angeles County Sanitation District is operating a water reclamation plant at Whittier Narrows, where waters from the San Gabriel Valley flow both above and below the surface through a narrow gap in the hills to furnish the major source of supply for the Long Beach coastal plain.

Ten million gallons a day of reclaimed water from this sewage treatment plant are now being

applied to spreading basins below the Narrows as a means of recharging the ground water aquifers in the coastal plain.

The most dramatic of the current reclamation operations is that of the Santee County Water District in San Diego County. In this case, sewage effluent which has received the normal elements of complete sewage treatment is percolated into the sands and gravels of a natural canyon, recaptured after a half-mile of underground flow and formed into a chain of recreational lakes. These lakes, located at the entrance of a new community of some 20,000 people, form the centre of an attractively land-scaped recreational area and are used for boating and fishing.

These three projects are of intense interest to the State agencies interested in water quality, including the Departments of Public Health, Water Resources, Fish and Game, and State and regional water pollution control boards.

Taken together, they give a preview of patterns of water reclamation which are expected to be widely used in California. The criteria of success of these methods are: public health safety, acceptable chemical quality, and economic feasibility.

Yet to be perfected, however, are techniques which can produce reclaimed water supplies safe for direct consumption by the consumer.

Recognizing the shortcomings of rigid adherence to limits of chemical concentration listed in the United States Public Health Service drinking water standards, the State Health Department for about a year now has been engaged in developing some more realistic chemical standards that are more compatible with California needs. The taste of water is another problem for study.

What mineral content will people tolerate? There are many areas in California in which domestic water supplies are highly mineralized. In most instances, the costs of providing an alternate supply would be prohibitive. Therefore, why not develop a realistic set of water standards for use in such areas, as long as we can be sure that the physiological effects will not constitute a problem.

Many California water supplies contain minerals in amounts of 1,000 to 2,000 ppm, while the drinking

water standard sets a limit of 500 ppm total dissolved solids in acceptable water supplies. Where the water is considered not good, and no alternative supply is available, the limit can be exceeded so long as it is wholesome and potable. In a real sense this is a double standard.

The State Board of Public Health has been confronted with the problem of granting water permits in desert areas of the State and in other water-deficient areas where practically all water supplies are highly mineralized and found to be exceeding the standard.

The Board established tentative limits, granting a full permit for systems having up to 1,000 parts per million, and granting temporary permits to systems containing 1,000-1,500 ppm, with the understanding that the purveyor would initiate an effort to improve the quality of the water. The "California Standard" of 1,000-1,500 ppm actually was within the limits established by the World Health Organization and was considered as a stop-gap until a more realistic and firm standard could be developed.

The taste study now being conducted under a Public Health Service grant will determine what the consumer will tolerate, and what his attitudes are toward the water he drinks.

Detergents constitute another of man's technological advances. While a boon to the housewife, they have caused considerable grief to the sewage treatment plant operator and have produced the phenomenon of foaming in both surface and ground waters.

Fortunately, the detergent industry has been responsive to the problems of the operator and the citizen, and with cooperation of university and public health scientists, has developed a straight chain hydrocarbon which can be broken down biochemically and biologically and is referred to as "degradable." It is known as LAS (linear alkylate sulfonate). The industry is currently planning to replace the ABS (alkyl benzyl sulfonate) detergent with LAS. Natural biologic breakdown will take place in the treatment plant receiving the waste waters.

Mosquito Problem

Another unsolved problem in the field of sanitation relates to mosquito control. Biological control

of mosquitoes and other arthropods of public health importance is not a new concept. But its possible application is receiving more attention today than at any time in the past.

The reason for this increased attention to biological control has been the recognition that repeated applications of chemical insecticides cannot provide long-term solutions of control. In fact, chemicals create new problems, such as the development of resistant populations, formation of undesirable residues, and poisoning of beneficial insects and wild life. However, chemical control provides a temporary upper hand and the time to explore more lasting solutions. Many believe the key to such long-term control will be provided by biological control and source reduction, through proper land and water management.

Biological control is the use, by man, of living organisms to control undesirable insects, animals, or plants. Certain non-organismal biological factors, such as metabolic and genetic diseases or the use of males sterilized by chemicals or gamma radiation, may be included in the biological control concept when they are used for controlling pests.

The State Health Department's Bureau of Vector Control is expending much time and energy in laboratory and field study of the ways in which biological controls can be used to reduce problem insect populations and to reduce the amounts of chemical insecticides which are used in such massive quantities in our State.

Radiological Health

Let us turn next to that new dimension in the environment mentioned earlier. California has one of the most comprehensive programmes in radiological health in the nation. The surveillance of radioactive materials in water and food blankets the State.

This surveillance programme gives us first-hand knowledge of the overall level of environmental contamination and will furnish the necessary warning to take steps to protect the health of the public should radioactivity ever reach a hazardous level, despite the fact that this is unexpected.

And in this relatively new environmental field, new approaches and techniques already are being developed. While the surveillance network can

provide information on gross radioactivity build-ups, what really is needed are refined data on the daily exposure of Californians to radioactive materials; in particular, the long-lived isotopes, such as Strontium 90.

Toward that end, the State Health Department has begun a statewide sampling of consumable foods locally purchased. Although it is recognized that dietary habits differ widely within a given population area, there are foods which are fairly common to most tables, and which can be tested in the laboratory in order to provide sound information on the exposure of Californians to radioactivity. From this data more adequate methods of protection of the public health will be developed.

Air Pollution Control

Air pollution control offers a particularly lucrative field for new developments and new techniques. Devices now being installed on thousands of motor vehicles will, to some extent, reduce the amounts of smog produced by this source. Industry and the State government have come to grips with the problem of reducing motor vehicle pollution through the development of exhaust devices and altered engineering of the motor itself which it is hoped will minimize the motor vehicle as a major source of smog. Also, new techniques are progressively being applied to the reduction of stationary sources of air pollution.

As a check on the changing atmospheric environment, a statewide network of automatic instrumental monitoring has been established to measure air pollution, particularly contaminants emitted from motor vehicles. This surveillance is of importance to agriculture as well as to health.

Science and Technology not Enough

Yet these scientific and technical approaches are not enough. They must be accompanied by some basic and far-reaching organizational and administrative adjustments.

One of the principal changes, which has taken place in the field of environmental health in the last two decades, is the marked increase in inter-departmental relationships within State Government.

Concept of Environmental Health Emerges

In the past twenty years, these basic distinctions have all but melted away, and the greatest single

factor in this change has been the emergence of the concept of environmental health. It is now apparent that if man is to have a suitable environment, there must be concern with the total management of the natural resources of air, water, food, land and space.

As already noted, concern with water encompasses its inorganic and organic chemical characteristics, its physical appearance, and its abundant availability at reasonable cost, as well as its freedom from pathogenic agents. The new dimension is that now we are as interested in these qualities in water in their natural outdoor setting as we are in the water that is furnished to homes. The events that determine the quality of the food supply are now primarily those that occur in the areas of production. Here chemicals, wisely used, make possible today's cornucopia of plenty; carelessly or thoughtlessly used, they place a toxic burden on the food chain which is capable of destroying the plant or animal life or rendering it unfit for humans. Human residence is now blending with agricultural operations so that suburban and agricultural activities must be reconciled.

The net effect of these dramatic changes is that the 36 separate departments of State Government are, in reality, embarked upon a joint venture of planning and managing the environment in the best total interest of man. This means that the different departments must be in continuous discussion

with each other and these discussions are not bilateral, but multilateral.

Consider a few examples: The current study of pesticides involves twelve departments. The newly established State Water Quality Control Board has six department directors among its fifteen members. The study of the water and waste problems at Lake Tahoe involves not only the environmentally oriented departments of two states but the top legal and scientific resources of these states as well.

Problems of water reclamation, air pollution, urban planning, refuse disposal, and the filling of San Francisco Bay, all cut across the interests and programmes of dozens of groups and agencies in both the governmental and private enterprise segments of our population.

These observations also point out in a dramatic fashion, the fact that not only must total State government organize to meet the problems of the changing environment but a whole new concept of local governmental approach must evolve. We see the harbingers of this in the formation of region-wide air pollution control, sanitation, and transportation agencies.

What of the future? The great need and problem of the next two decades is to develop organizational patterns and tools for such co-operative activity without losing the time-tested values of present separation of governmental activities and of private enterprise decision making under a free market system.

—*Courtesy California's Health*
Vol. 21, No. 22, May 15, 1964.

PRETTY—BUT DANGEROUS

Pills that are packaged to look like coloured sweets are a family menace. Commissioner of the Department of Consumer Protection for Connecticut, Attilio R. Frassinelli, strongly urges that sweets should never be packed to look like drugs. He pointed out that there is already the serious hazard of children getting into medicine cabinets and eating pills which can cause illness or death, and suggested that it was only inviting tragedy to permit the sale of sweets disguised as pills.

Health (New Zealand) Spring Issue 1964, Vol. 16, No. 2

Fourth Meeting of the National Nutritional Advisory Committee

EXTENSION of the national programme in the form of field nutrition extension programme had great importance. The teaching of nutrition started with text-books in schools but not all children went to the school and read through these books. It was, therefore, necessary that we had some mechanism of carrying the message to the people. These views were expressed by Shri V.P. Naik, Chief Minister of Maharashtra, while inaugurating the Fourth Meeting of the National Nutrition Advisory Committee at Bombay on 26 August, 1964.

He said that nutrition experts have to concentrate on giving sound advice on how to prevent the wastage of food, how to avoid unrequired food and how to get cheap and nutritious diet, taking into consideration the local conditions and needs of the people.

Shri Naik said that the subject of nutrition had been receiving attention in Maharashtra for quite some time. Nutritious food combinations were being evolved at the Haffkine Institute, Bombay by qualified nutritionists. They have had more than a decade of varied experience in this venture of cooking protein-rich foods such as pulses, ground-nut, milk powder, other protective foods such as green leafy vegetables, *ragi*, etc., into palatable preparations. Some of these low-cost recipes had been approved by groups of educated citizens, who usually find it difficult to appreciate an 'unfamiliar' food supplement however nutritious, unless it is appealing to the eyes and acceptable to the tongue.

The Minister said that the experience thus gained, was utilized in imparting orientation training to para-medical personnel working in rural areas. In the last few months, such training had been commenced effectively at two Health Units at Palgher and Sirur. At each place, the medical

nutritionist explained the techniques in educating the farmer's family in the use of locally available food for preparing palatable combinations, yet retaining the nutritional merits inherent in the selected foods.

"It is the band of socially devoted personnel who, after understanding the deep-rooted nature of the farmer's attitudes to food can effectively change them by persuasive education," he said.

Dr Sushila Nayar, Union Health Minister, said that the importance of a balanced nutritious diet for the promotion of maximum health and well being and for increasing the working capacity of the people, had been recognized throughout the world. Today, more than at any time in our history, we had to mobilize all our efforts to improve the nutrition of our people, especially the children, who were the citizens of tomorrow. This would also improve the physique and stamina of the armed forces who had to guard our frontiers.

Cause of Malnutrition

Dr Nayar said the low production of foodstuffs, the rise in population and the high prices of foodstuffs coupled with low purchasing power of the people and shortage of protective foods in the country, had contributed to a large extent towards mal- and under-nutrition among the vulnerable groups, especially the expectant mothers and growing children in the low socio-economic groups. The improvement of nutrition of the people called for co-ordinated action by many departments of the Government, such as Food and Agriculture, Education, Labour, Health, and Community Development and Co-operation.

Correcting Nutrition Deficiencies

She said that the Sub-Committee formed to recommend an adequate nutritious diet for working class families had submitted its report. The surveys

had indicated a high incidence of protein and vitamin 'A' and 'B' deficiencies among children, anaemia among mothers and under-nutrition among the low-income groups. Side by side with recommending suitable diet schedules for the working class families, nutrition education of the worker and his family was of vital importance, so that the money earmarked for the household budget was utilized to the full advantage. It was very important to effect necessary changes in the food habits of people through nutrition education.

Programmes for provision of protein and vitamin supplements to expectant mothers and toddlers could be very effectively implemented in industrial establishments which could serve as pilot centres for nationwide nutrition projects for workers. Similarly the provision of one good free or highly subsidized meal to the workers in the factory canteen might bring in rich dividends in the form of higher productivity and better health of the workers. The recent tripartite conference had recommended part payment of wages in kind. The mid-day meal for workers might perhaps be included in this category, Dr Nayar said.

Nutrition Education

The Health Minister said that a good deal of education was necessary to focus attention on food hygiene, including the laying and observing of standards for cooking and washing places and health check-up of cooks, etc., to guard against carriers of disease germs getting into this trade, endangering the health of consumers of food cooked and handled by such carriers.

Training of Personnel

"Another important subject in this connection is the proper training of cooks, bearers and food handlers working in these canteens and restaurants. Orientation training should be given to these personnel through the existing catering colleges opened by the Ministry of Food and Agriculture in Delhi, Bombay and other places," she said.

Mid-day Meals for Children

Dr Nayar said, "The importance of providing mid-day meals to children at school need hardly be stressed. The type of meal should be such as to make up the deficiencies of the home diet of children. Milk, the most perfect food for children which mother nature has provided, should be given priority for the children and every effort should be made to increase

its production in the country. It will take us a long time to produce enough milk for all our children. In the meantime, due importance should be given to vegetable protein combinations, such as sprouted grams, mixed lentils, Indian multipurpose food and also leafy vegetables in the diet of the school child. I am glad to note that the Ministry of Education have given priority to this subject and that nearly seven million were provided with meals or milk during 1963-64 in the States of Kerala, Madras, Rajasthan, Andhra Pradesh, Punjab and Mysore, with aid from CARE and UNICEF and that the scheme will cover 8.5 million children during 1964-65. I hope at least 14 million primary school children will be covered during the Third Plan, as suggested by the School Health Committee. I would like to mention here the worthy example set by the Maharashtra Government to provide liquid milk in sealed bottles to 5,000 school children in Poona, which should be followed by other States. Toned milk or even skimmed milk or butter milk will go a long way in helping the child attain normal growth and development."

Applied Nutrition Programme

She said that the Applied Nutrition Programme which was being implemented in the rural areas with the aid from international agencies—UNICEF-FAO-WHO—was an experiment in co-ordinated approach and action for increasing production and ensuring its use by the vulnerable groups and needy sections in the interests of improving the nutrition of the rural community, who comprised at least 80 per cent of the population. The programme which was being implemented by the Ministry of Community Development and Co-operation in collaboration with the Ministries of Health, Food and Agriculture, aimed at producing and distributing protective foods, such as eggs, fish vegetables and fruit grown in village gardens, to malnourished mothers and children in 222 selected blocks in the country. In this programme the health of the people had to be brought in more actively, the desired results were to be achieved. The protective foods should be distributed daily, followed up by nutrition education of the beneficiaries in order to make a real permanent impact on the community. It was of vital importance that the health aspects of this programme should be evaluated periodically to note the progress made. The Government of Uttar Pradesh had already

completed the training of various functionaries and had evaluated the programme, and the States of Orissa, Madras, Andhra Pradesh, Kerala and Himachal Pradesh would follow suit. With the help of the trained personnel, it should be possible to organize supplementary feeding of toddlers and education of mothers side by side, with the help of the foods grown in the rural areas. What is important was to teach the mothers to correctly select and prepare their meals from the foods available in the region and how to feed their children during the weaning period and thus combat protein malnutrition. Actual cooking demonstrations could be very useful.

She added that the UNICEF milk feeding programme could also be co-ordinated with the Applied Nutrition Programme through *Mahila Samities* and *Balwadies*. The schools in rural areas could also have their own gardens and supplement school meals with their own produce, which may lower the cost of this programme. A beginning had been made in this connection in the States of Madras, Uttar Pradesh and Orissa.

Research Work

Researches to combat such conditions as lathyrism and fluorosis were being conducted by the Indian Council of Medical Research and that these schemes were making progress. The Indian Council of Agricultural Research would start growing suitable alternative crops in the place of 'lathyrus sativus' in order to root out lathyrism among the poor labourers in the regions where it is prevalent, she said.

Goitre Control

Dr Nayar said that the scheme to eradicate goitre which was prevalent in the northern sub-Himalayan regions of India, had also made good progress. It was encouraging to note that the incidence of goitre in the Kangra District (Punjab) had gone down by 13.8 per cent among the school children and by 15.6 per cent among the adults, as a result of distribution of iodised salt for five years.

The Health Minister emphasized the need for tightening administrative machinery to prevent food adulteration. Rules and regulations were not enough for this purpose. Social conscience must be aroused to stop this evil. Widespread co-operation of people in all walks of life was essential.

Protein Supplements for Infants and Children

The importance of giving protein supplements to toddlers and pre-school children of the age-group 1-6 years, combined with practical nutrition education in crowded slum areas in the cities was also stressed by the Health Minister.

"Industrial establishments in cities, and *Mahila Samities*, Primary Health Centres and *Balwadies* attached to the C.D. Blocks in the rural areas can do a great deal in this field. Unless proper nutrition is ensured for the children at the critical period of their life, they will not have a chance of attaining maximum health and full mental and physical growth and development. No amount of good food in later years can undo the damage done by poor nutrition in childhood. We have, therefore, given priority to the nutrition of the pre-school child along with school children in the Fourth Five Year Plan. In order to implement this programme, apart from financial assistance, community support is also necessary." She hoped with the expansion of the Nutrition Section in the Health departments at the Centre and the States, this programme would be implemented soon.

Shri Shantilal H. Shah, Minister for Health, Maharashtra State, in his welcome address said, "We are all agreed that we are passing through a difficult period in relation to maintenance of nutrition for the population. The agricultural technology has not advanced in countries which are deficient in food. Yet, technology holds out promise for growing more food in areas which are well-developed. Thus, there is great need for collaboration between undeveloped and well-developed countries, so that the minimum requirements for the world are covered by joint effort. The country is marching towards sufficiency for food but our average consumption for many of the essential items like proteins is much below that of advanced countries. The most glaring deficiency seems to be the deficiency of quality good protein in the diet and that of vitamin A."

He said that they had a great background of nutrition surveys, dietary surveys and community nutrition. The approach was through education and efforts had been made to educate the housewife. Attention was given to the urban and rural communities and the tribal areas. Important nutritional evaluation of foodstuffs of local importance had been a fascinating study. Nearly 100 local foodstuffs have been surveyed for their proximate principles.

Exhibition on Food Adulteration

SHRI Gulzari Lal Nanda, Union Home Minister, called for maximum punishment for food and drug adulterators as they were "India's enemy No. 1."

Shri Nanda, who was inaugurating the exhibition on food adulteration in New Delhi on 2 October, 1964 said that adulterators and spurious drug manufacturers should be considered "murderers".

Shri Nanda said: "Adulteration, however, is such an all-pervasive anti-social practice that hardly any out of the ten or eleven crore families in the country can be said to be beyond the reach of its harmful effects. You pay for a quantity of a thing at the rates for the genuine stuff. But it is adulterated, and so you have not only got less than your money's worth of the thing but you have also, in the bargain, bought an adulterant which may be a serious health hazard. In other words, you spend your good money and purchase disease. And when sickness comes on account of consuming adulterated stuff, you have to spend still more money. It is not easy for the common man to know the degree of adulteration in anything he purchases. Sometimes, the thing you have purchased does not contain even a trace of the genuine stuff, all of it is simply something else. This happens particularly in regard to drugs."

People's Role

Shri Nanda wanted people to organize themselves and refuse to buy adulterated foodstuffs. He did not mind any amount of expenditure to be incurred on food laboratories, but the health of the people should be protected at any cost.

He called for a countrywide movement against the "enemies of the people", and wanted organizations to be set up in every city and *mohalla*. Shri Nanda said that every citizen could render valuable assistance

to this task in two ways: *firstly*, by making as many people as possible aware of the diverse ways in which food or drink or medicine was adulterated; and, *secondly*, by promptly bringing to the notice of the authorities any case of adulteration he comes across. There was need for opening a much larger number of laboratories for carrying out chemical tests of the stuff suspected to be adulterated.

"It is of prime importance that people should organize themselves for tackling this anti-social practice in an effective manner. I wish that the awareness about the modes of adulteration and its dangers should be spread as widely as possible," he added.

Dr Sushila Nayar, Union Health Minister, in her Presidential Address said that it had been proposed to make law stricter against food adulterators and spurious drug manufacturers.

It had been proposed, that spurious drug manufacturers should be given a sentence of up to ten years. Under the new law, the Centre would appoint inspectors who would have the power to check adulterated foodstuffs at any place. She stated that steps would be taken to establish more laboratories so that it would be possible for the people to get their food samples tested.

More Laboratories Needed

Dr Nayar said that in some cases, adulteration could be detected merely by the look of the stuff. In others, however, as for instance when tamarind is coated with lead oxide, a laboratory test alone could establish whether or not there was adulteration. It was necessary, therefore, to have a large number of laboratories for such tests. The few laboratories that were in the country were Government-sponsored.

Laws are not Enough

"Laws are good so far as they go and we have tried to make the law very stringent. But laws alone would not succeed in eradicating adulteration. The consumers have a very important role to play for achieving the objective. If the consumers make their mind not to buy adulterated stuff, and if they form themselves into organizations and boycott such stuff in a concerted and sustained manner, the traders would have no alternative but to sell pure stuff," Dr Nayar said.

Alert Consumers

"If the consumer becomes alert and determined, a lot can be done. In Delhi, specially, one can say with confidence that the campaign against adulteration can be brought to speedy fruition if the co-operation of the consumer is forthcoming. The consumers who get adulterated stuff from a shop should secretly report to the inspector concerned and get the dealer hauled up. The essential thing is that there should be greater awareness in the society about the dangerous consequences of adulteration, and greater will to put a stop to this practice," said the Health Minister.

EXHIBITION

The exhibition was organized by the National Consumer Service (Central Bharat Sewak Samaj) under the auspices of Samyukta Sadachar Samiti from 2 to 5 October, 1964. Film shows were organized at the Exhibition site. The films dealt with the subjects of food adulteration, drug adulteration, deception in weights and measures, nutritive value of subsidiary foods and public health.

The most important section of the exhibition was that of food adulterants. Other sections included: weights and measures, Indian Standards Institution, Marketing Division of the Ministry of Food and Agriculture, laboratories for testing food adulteration, subsidiary foods and enforcement of prevention of Food Adulteration Act. The miniature laboratories carried out the actual test of some of the common commodities. The exhibition informed the people about the steps taken by the Government to safeguard their interests by introducing I.S.I. specifications and A.G. marking. Numerous placards and posters warned people against adulterated foodstuffs. One poster said: "Beware of what you eat" and

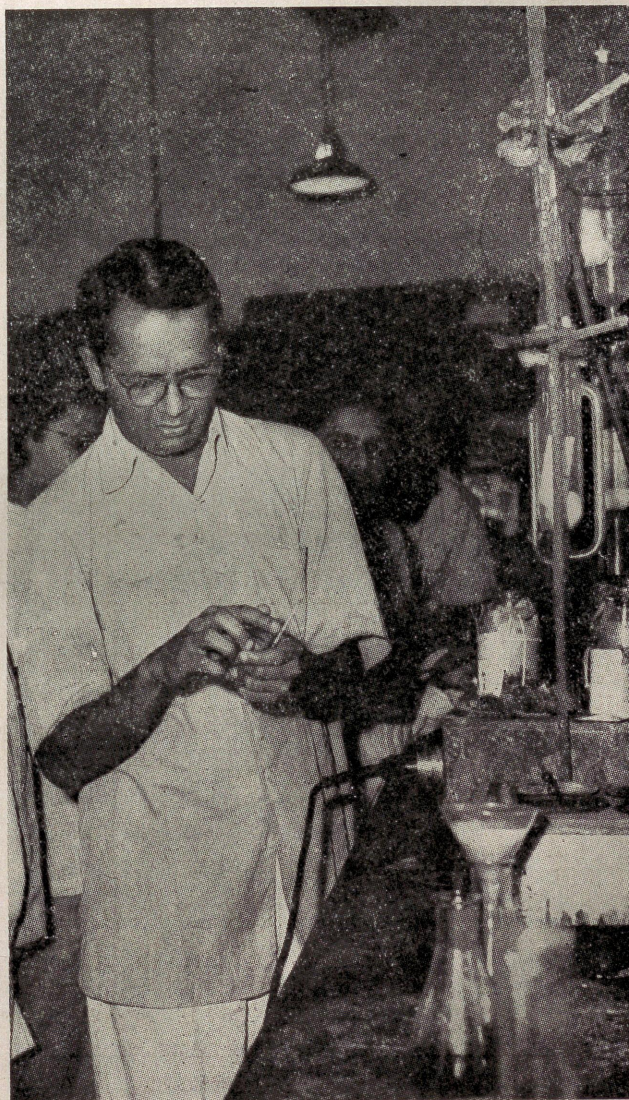
another warned the public that "adulterated food can be poisonous."

The organizers had collected hundreds of adulterated foodstuffs and adulterants usually mixed with foodstuffs, such as *ghee*, butter, mustard oil, coconut oil, spices, ice-cream and *kulfi*, sugar confectionery, *katha*, tea, saffron, pulses, eggs, honey and salt.

Some Common Adulterants

It had been shown that what was sold as pure *ghee* was mixed with vanaspati, refined groundnut oil, coconut oil, *mahuva* oil and even potato and

A view of the food testing laboratory where food samples are tested for their purity



mashed sweet potato and animal fat. Vanaspati or refined groundnut oil was mostly added to pure *ghee*, the adulteration being made while curdling the milk.

Mustard oil was made of nearly eight different varieties of cheap oil. Groundnut oil was converted into mustard oil by adding colour.

Samples showed that in powdered chillies, *geru*, powdered husk of rice and sand was mixed. Black pepper consisted of papaya seed and coloured capsules. *Atta* consisted of extraction of gluten, powdered bran, barley flour and calcium carbonate (chalk). Sugar confectionery was mixed with artificial coal-

tar dye, *atta* and *maida* in toffees, soap-stone, starch and poisonous colours.

Common salt was mixed with chalk powder, soap-stone, stone powder and salt scrap. Saffron was mixed with flower petals, artificial coloured starch, paper giving artificial colour, leaves coloured with chicken blood and hair of maize cobs. What was sold as hen's egg in many cases is tortoise egg, duck egg, spoiled egg and fertilized egg. Honey consisted of sugar and molasses.

Milk was adulterated with water, starch, and *singhara* and *khoya* is mixed with blotting paper. It was common for buffalo milk to be sold as cow's milk after mixing water.

Safe Storage Without a Refrigerator

Storing food is always a problem, particularly for those people without refrigerators. Cooked meats, gravies, and dishes containing milk and eggs all prove fertile ground for germs, points out the Central Council for Health Education in a pamphlet on "Safe Storage Without A Refrigerator". The germs grow best when food is moist and warm and one germ can produce one million between breakfast and supper.

Among points made in the pamphlet are these :

- Cooked meats should be eaten on the day they are bought.
- Tinned meats should be eaten on the day the tin is opened and kept in the tin till served.
- Soup or stock, intended for the next day, should be cooked, quickly cooled, and stored in the same saucepan. Before consuming, boil up the soup again.
- Lettuce and green vegetables for salads should be washed before storing, and packed wet into a metal saucepan or clean box with the lid on to keep them crisp. Wash them in salt water, leaf by leaf, before serving.

—Health (New Zealand), Spring Issue, 1964, Volume 16, No. 2

NEED FOR COMMUNITY WATER SUPPLY

The role of community water supply programmes on health and social progress was the subject of the technical discussions at the XVII World Health Assembly held at Geneva from 3 March to 20 March, 1964. The discussions in which 170 doctors and specialists from 87 countries participated highlighted the need for a world-wide programme of water supply on a priority basis to prevent the danger of water-borne diseases. The article published below is based on the report of the technical discussions on water supply.

IN the less developed countries according to Professor Abel Wolman of the Johns Hopkins University (USA), General Chairman of the technical discussions, typhoid and paratyphoid, bacillary and amoebic dysenteries, cholera and diarrhoeal diseases are leading causes of death and disability. In the transmission of all these, drinking water plays a part.

In the second half of the 20th century these diseases still attack some 500 million people. On a world-wide basis, they account for about five million infant deaths every year.

Lack of Drinking Water

In the less developed areas of the globe there is lack of drinking water. In these areas, probably as many as 90 per cent of the population have either inadequate piped water service or are being supplied with unsafe water.

A World Health Organization study of the urban water supply conditions in 75 selected countries in less developed regions shows that only about 30 per cent of the urban populations in these areas and less than 10 per cent of their total population are supplied with piped water in the home. It also discloses that present urban water supply conditions are relatively worse in Asia, most advanced (but still deficient) in Latin America and mediocre in Africa.

In 60 countries in Africa, Latin America and south-west and central-south Asia, some 250 million people live in urban areas, the study discloses. Only five per cent of them can be considered to have 'good' water community supply conditions. The other 95 per cent—almost 230 million people—live with 'fair, insufficient or very insufficient' water.

The conditions are growing worse. More and more people need water as world population increases. Not only must one provide for past deficiencies, but for future 'population typhoons'. Recent United Nations predictions for the world are 3,590 million to 3,860 million people in 1975, and 4,880 million to 6,900 million in 2,000. To aggravate the situation even more, migration seems to be ever growing towards the urban centres already seriously overburdened by the necessities of existing populations.

Priority for Water Supplies

Keeping in view the worsening conditions of water supplies it is paramount to convince government officials in charge of national planning of the priority that should be given to the development of community water supply programmes and to establish suitable organizations for the appropriate administration and management of the systems. No one doubted that all people want adequate and

(Continued on page 338)



A delegate addressing the members of the Bureau

SEVEN delegates to the 17th Session of WHO Regional Committee for South East Asia visited the Central Health Education Bureau on 28 September, 1964.

Dr E.A. Gillis, Area Representative of WHO, Mrs A.R. Moore, Health Education Adviser to SEARO, and Dr J.A. Montoya, Regional Adviser on Communicable Diseases, accompanied the delegates.

Dr S.S. Bharara, Deputy Assistant Director General (Training), welcomed the visitors on behalf of the Directorate General of Health Services. He referred to the progress of health education in the countries represented on the Regional Committee and hoped that their visit would stimulate

the CHEB to dedicate itself for the promotion of health education work.

Miss K. Sood, Deputy Assistant Director General (School Health Education), explained the organizational set-up and the objectives and functions of the Bureau.

The visitors raised a number of questions relating to health education development in India. Other questions pertained to future plans of health education in this country and the provision of Health Education Services to the people; the School Health Education and particularly the teachers' training programmes; the involvement of the Panchayats in Health Education and Public Health Programmes; the pro-

S.E.A.R.O. Delegates Visit C.H.E.B.



Delegates seeing a panel explaining the functions of the Bureau

duction and distribution of literature and material; the problem of the change of behavioural pattern of the people and the teaching of Health Education in the Medical Colleges during under-graduate years. The staff of the CHEB had some questions for the visitors relating to the utilization of Sociologists in the field of Public Health and Education; training programmes particularly those relating to the preparation of leaders in the communities, etc.

Shri H.S. Dhillon, Deputy Assistant Director General (Research), thanked the visitors.

The delegates were shown round the displays depicting the organizational set-up of the Bureau, the landmarks in the development of health education in the country and health education materials produced by the Bureau. They also visited the film library of the Bureau.

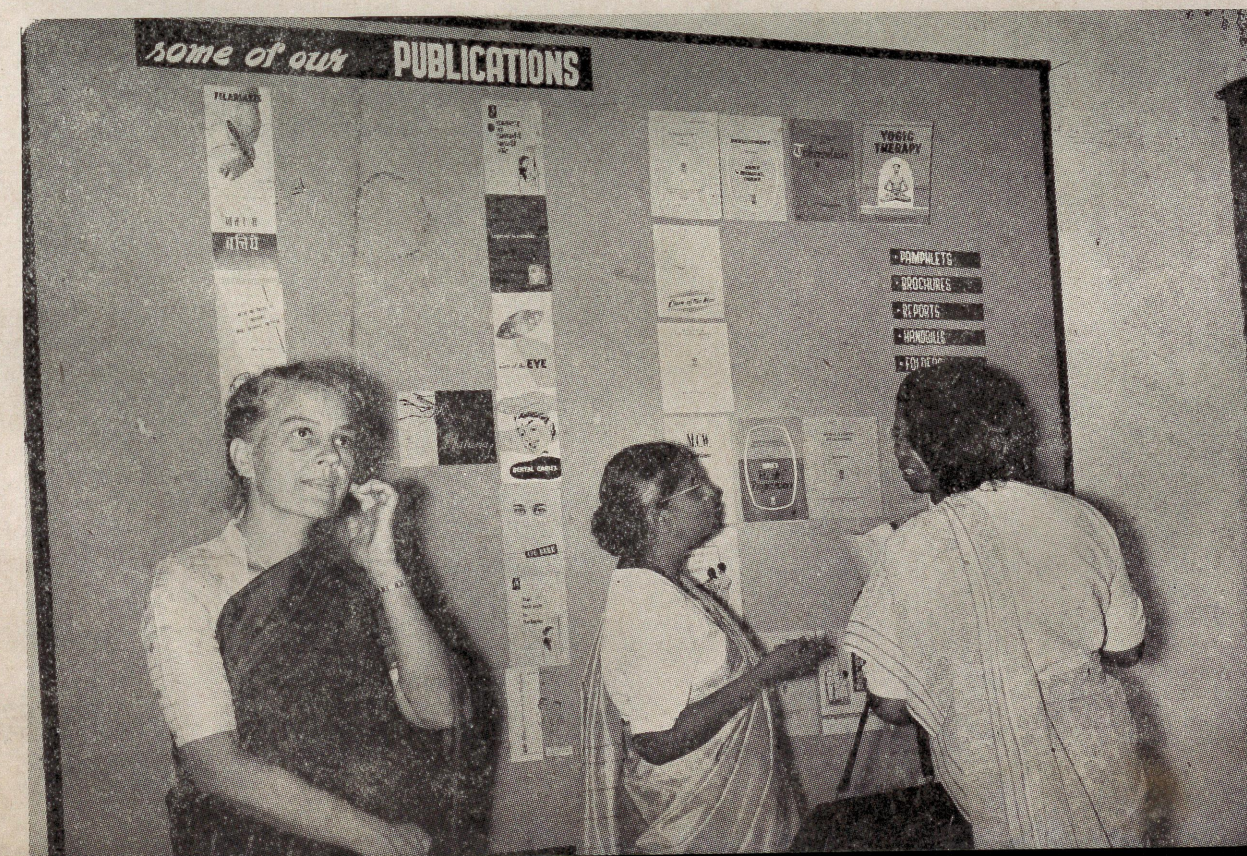
The visitors were:

Dr U. Ko Ko, Assistant Director, Directorate of Health Services, Rangoon, Burma.

Delegates of the 17th SEARO Session attending a meeting in the CHEB



Health Education materials produced by the Bureau were displayed during the visit of the delegates



Dr R. Marsaid, Deputy Director,
National Malaria Eradication Command,
Ministry of Health, Djakarta, Indonesia.

Dr P. Dolgor, Chief Surgeon,
Ministry of Public Health, Ulanbator, Mongolia.

Dr Tej Lal Shrestha, Medical Officer,
Department of Health Services,
Kathmandu, Nepal.

Dr La-ong Payanandana, Director,
Bureau of Disease Prevention and Control,
Department of Health, Bangkok.

Miss Simonne Liegeois,
President of the Catholic Nurses'
Guild of India, New Delhi
representing International Committee
of Catholic Nurses.

Miss A. Jacob, President,
Trained Nurses' Association of India,
Vellore, India, representing International Council
of Nurses.

The visitors were entertained to light refreshments.

Need for Community Water Supply (*Continued from page 335*)

safe water, whether they live in rural or in urban areas, whether poor or well-to-do.

In many of the developing countries several agencies deal with water supply planning and construction. This is conducive to waste of available resources and of extremely limited qualified technical manpower, unless there is the fullest co-ordination and co-operation between these agencies. For these reasons, a certain concentration of water supply planning, construction and operation seems desirable, either on the local, regional or national level.

Financial Means

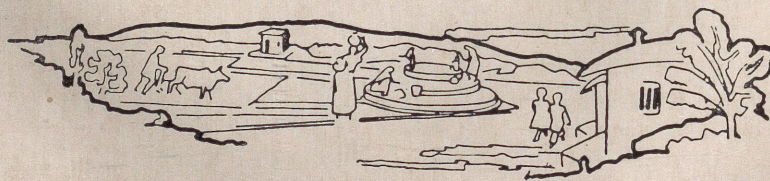
No doubt, without money water cannot be distributed. Yet the idea that, like the air and the sun, water is a gift of God is still very widespread. The capital requirements for the implementation of expanded community water supply programmes should come from the establishment of adequate water rates which should cover, wherever this is possible, the capital costs plus costs of maintenance and operation. In rural areas this goal cannot be achieved, but in such cases the maximum co-operation of the people should be obtained, and subsidies might well

be used as bases for the stimulation of local participation rather than simple evidences of governmental largesse.

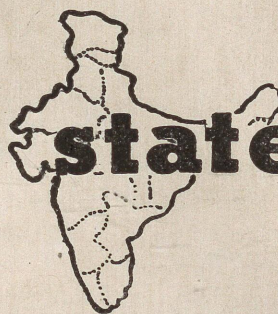
World-wide Programme

The World Health Organization can serve as the world focus for the water supply programme on lines similar to the global malaria and smallpox eradication programmes. All the member countries can contribute some fixed percentage of their national budgets to a special fund to support the world-wide community water supply programme. In the management of such a fund, WHO would co-ordinate allocations with those of other international and bilateral agencies, and might seek other sources of financial support such as the World Bank.

Some of the important observations made during the discussions were that water-borne diseases kill five million babies every year and attack 500 million people. It was said that the "population typhoons" mean rising water needs and water should no longer be considered a gift of God. The meeting urged a world-wide water supply programme on a priority basis.



Around the states



MAHARASHTRA

More Medical Colleges

THE Government of Maharashtra intended to open more medical colleges in the State in the Fourth Plan period, Shri Shantilal Shah, Minister for Health, said during the question hour in the Legislative Assembly on 24 July, 1964.

The Minister said that the number of colleges to be increased and proposed allocation for the purpose had still to be decided.

The people of Maharathwada were demanding the establishment of one at Ambejogai during the Fourth Plan, but no decision had been taken as the Fourth Plan was still to be finalized.

The Minister said that the number of seats in the Medical Colleges at Miraj and Aurangabad have been increased from June 1964.

Cancer Research Centre

PROMINENT citizens, including some medical men, decided at a meeting at Nagpur to establish a full-fledged cancer research centre and hospital in Nagpur to be named after Jawaharlal Nehru.

Shri Nizamuddin Ahmed, Commissioner of Nagpur Division, said that Rs. 60 lakhs was the estimated requirement of the project. Shri S.K. Wankhede, State Finance Minister, assured them that the State Government would not only help complete the cancer centre but also extend its help in maintaining it.

A committee has been formed to draw up a scheme for the centre. Four Sub-Committees have been formed. The constitution for the society named as "Vidarbha Cancer Relief Society" has been framed.

Shri S.K. Wankhede will act as the President for the first Governing Council and the Commissioner, Nagpur Division, as the ex-officio Vice-President.

DELHI

Feasibility Study of T.B. Prevention Trial

THE United States Government represented by the Communicable Diseases Centre, Atlanta (Georgia), and the Government of India represented by the Indian Council of Medical Research have entered into an agreement for carrying out the "Feasibility Study of Tuberculosis Prevention Trial" which will be conducted at the National Tuberculosis Institute, Bangalore, over a period of two years. Results of this feasibility study would be of considerable value for the tuberculosis control programme in India which aims at sharply reducing the prevalence of tuberculosis. The experience of the study will indicate as to whether a large scale trial over a period of 20 years or so could be feasible. Dr Carroll E. Palmer of Tuberculosis Programme, Washington Office, will act as the Project Officer and Dr N.L. Bordia, Adviser in Tuberculosis, Government of India, as the Principal Investigator. The United States Government have agreed to make payment in local currencies of an amount not exceeding Rs. 1,132,900 to the Government of India for undertaking this Study under P.L. 480.

This research programme is to be a multi-faceted tuberculosis prevention trial which would provide a scientific assessment of the principal measures available for the control of tuberculosis in India.

The trial would include control studies of BCG vaccination of the uninfected, chemoprophylaxis of the infected and treatment of the bacillary cases. For

the purposes of the project a large study population will be kept under observation by a staff of highly trained scientific workers. In order to make the results of the study available as quickly as possible for practical purposes, reports will be prepared and published as the study progresses. It is expected that the study will start early in 1965.

T.B. Seal Sale Campaign

THE Prime Minister, Shri Lal Bahadur Shastri, inaugurated the 15th TB Seal Sale Campaign, on 2 October, 1964, by purchasing 200 TB Seals of 10 paise denomination from the President and members of Delhi T.B. Association. The Union Health Minister, Dr Sushila Nayar, was also present. The function was held at the residence of the Prime Minister. Shri Shastri praised the work of Delhi T.B. Association and said, "It is a noble cause and every one should help."

In Delhi, it is estimated that there are about 42,000 active TB patients. There are seven TB clinics and two TB hospitals, which are dealing with the problem. The Delhi T.B. Association represents the voluntary effort in the fight against tuberculosis in the capital.

The Chief Commissioner, Shri Dharma Vira, has promised the Delhi T.B. Association for allotment of a piece of land near Rouse Avenue for housing its offices. He has also asked the Municipal Corporation of Delhi and New Delhi Municipal Committee to enhance their grant to the association.

Clinical Thermometers

THE Indian Standard Specification for Clinical Thermometers was finalized and approved for printing at the Fourth Meeting of the Laboratory Glassware and Related Apparatus Sectional Committee (CDC 33) of the Indian Standards Institution of 29 June, 1964. Earlier on 25 and 26 June the Thermometer Sub-committee (CDC 33:2) considered the comments on the draft standard as a result of wide circulation.

There was considerable discussion whether the Fahrenheit scale should also be provided on the stem of the thermometer. In view of the fact that the metric change-over in industries has to be completed by April 1966 (*See Metric Measures*, July 1964, pp. 19-20) it was generally agreed that the Celsius (centigrade) scale alone should be recognized. For the

interim period, *i.e.*, up to April 1966, manufacturers may, if they so desire, inscribe the Fahrenheit scale in addition to the Celsius (Centigrade) scale on the upper side of the thermometer with the bulb to the left when the thermometer is held in the horizontal position, the Fahrenheit scale being marked only in whole degrees, *i.e.*, 96°, 97°, 98°F. After April 1966 the provision relating to the Fahrenheit scale would remain withdrawn.

The stem of the thermometer would be graduated from 35°C to 43°C, the subdivisions being at every 0.1°C. In the absence of data on average normal human body temperature in India, the indication for normal temperature would be located at 37.0°C.

Besides the above important details other technical requirements and methods of test of the thermometer were also finalized. It is expected that the standard specification will be printed shortly.

For familiarizing the public with equivalents of the two scales, the conversion table given below may be used.

CONVERSION TABLE °C to °F

°C	0	.1	.2	.3	.4	.5	.6	.7	.8	.9
35	95.0	95.2	95.4	95.5	95.7	95.9	96.1	96.3	96.4	96.6
36	96.8	97.0	97.2	97.3	97.5	97.7	97.9	98.1	98.2	98.4
37	98.6	98.8	99.0	99.1	99.3	99.5	99.7	99.9	100.0	100.2
38	100.4	100.6	100.8	100.9	101.1	101.3	101.5	101.7	101.8	102.0
39	102.2	102.4	102.6	102.7	102.9	103.1	103.3	103.5	103.6	103.8
40	104.0	104.2	104.4	104.5	104.7	104.9	105.1	105.3	105.4	105.6
41	105.8	106.0	106.2	106.3	106.5	106.7	106.9	107.1	107.2	107.4
42	107.6	107.8	108.0	108.1	108.3	108.5	108.7	108.9	109.0	109.2
43	109.4									

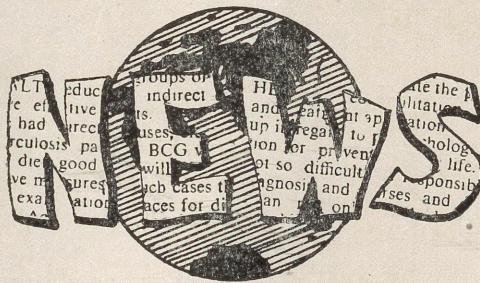
Mid-Day Meal for School Children

ABOUT 35 million primary school children are expected to be provided with mid-day meals throughout the country by the end of the Fourth Five Year Plan, according to a scheme drawn up by the Planning Commission.

The scheme is an extension of the one included in the current Plan, under which about 10 million children are likely to be given mid-day meals by the end of the Plan period.

The Fourth Plan scheme is based on the expectation that the international organization, CARE, will provide about 325 million pounds of milk during 1966-67, which would be increased to about 455 million pounds by 1970-71.

(Continued on page 343)



WATER VITAL FOR ECONOMIC GROWTH

THERE is no life without water, a truism which seems to need no emphasis. The full implications of the statement become obvious when we know how completely dependent for his progress man has been and is on water.

It is clearly seen that water not only continues to play a vital role in the economic growth of communities but the world faces a major crisis if provision is not made for adequate and safe water supply for the rapidly increasing urban populations. The July-August 1964 issue of *World Health* includes articles on water as their theme. Some of the important points made in the articles are as under:

The great civilizations of the past flourished in the river valleys, and even though 70 per cent of the earth's surface is covered with water, man's earliest known prayers are incantations for rain.

In modern times a clear relationship between the availability of safe and ample water supply and economic growth can be observed. Every year an estimated 500 million people suffer from disabling diseases associated with unsafe water. The loss of man-hours is thus stupendous.

All industry needs water. Production of one litre of petrol requires 10 litres of water; one can of vegetables 40 litres; one kilogramme of paper 100 litres; one kilogramme of woollen cloth 600 litres; one ton of dry cement 3,500 litres; one ton of steel 20,000 litres.

In response to a questionnaire issued by WHO, a Government reported that industries had been started in areas of the country where there had been none, as soon as water had become available. Another Government reported that water shortage had

forced it to place a ban on further development of industries so that the existing industries could survive.

A Government report had, among other things, this to say: "Children in some parts of the country are not allowed to play in the sun lest they perspire and drink more water. Water was and is a most precious commodity....."

The annual number of deaths from diarrhoeal diseases—associated with unsafe water—among infants under one year of age is estimated at nearly 5,000,000.

The high rate of population increase in the cities, as a result of the influx of population from rural areas, poses a serious threat to the health of the citizens particularly as a result of inadequate water supply. The urban population in 75 countries (in Asia, Africa and Latin America) recently surveyed by WHO is at present 320 million; by 1977 this figure will become 527 million.

Of the present urban population covered by the survey about 33 per cent have piped water in their homes and 20 per cent have access to public outlets. This leaves about 130 million of the people dependent for their water supply on wells, rivers and other sources which are open to contamination. By 1977 as many as 337 million people will be in the same situation if existing services are not increased.

An inquiry was made through WHO's Regional Offices to determine whether work now in progress or planned in the 75 countries was sufficient either to overcome existing shortages or to keep pace with the increasing needs of the fast growing urban populations. The answers indicated that, with the exception of five or six countries, the efforts fell far short of the objectives.

WHO has proposed an intermediate goal: the provision of minimum quantities of piped water to everybody within 15 years, partly through inexpensive systems with public outlets. The cost of the programme is estimated at \$ 6,600 million or an annual investment in urban water supply of about \$ 450 million.

This investment seems well within the economic capacity of the countries covered by the survey. It amounts to an average of about 0.25 per cent of their 1960 gross national product.

—United Nations Weekly Newsletter
Vol. 12, No. 38, 25 Sept., 1964

LIFE SPAN RISES IN JAPAN

THE average life span of the Japanese people has increased by one full year during the past twelve months. For men this means an increase of 1.0 year and for women 1.1 years. According to the latest statistics, a Japanese male may now expect to live 67.2 years and a Japanese female 72.3 years. These figures were announced as the result of a study carried out by the Ministry of Health and Welfare, Japan.

Since the war the average life span has increased drastically. In 1955, life expectancy for men and women was 63.9 and 68.4 respectively. Since that time the average life span increased by 0.3 to 0.4 year annually until last year, when an increase of a full year was recorded.

Some of the reasons for this trend are a declining death rate among new-born infants, better medical care for the aged and a decline in deaths due to diseases such as pneumonia and tuberculosis.

The study revealed that there is a growing disparity in the life spans of men and women as is the case in Europe and the United States.

In 1947, this disparity was only 3.9 years. However, this increased to 4.5 years in 1955 and rose to 5.1 years last year.

The difference in the United States was 6.1 years (life expectancy for men 64.5, for women 70.6) in 1962. The corresponding figures for England in 1961 were 68.0 and 73.8 years for men and women respectively. Thus, English women can be expected to outlive English men by an average of 5.8 years. Figures for Sweden compare favourably with these.

In Sweden, according to United Nations statistics, the average life span for men in 1962 was 71.2 years while that for women was 74.9 years.

Today, Japan ranks with the United States, Canada, England, Australia and West Germany in terms of the life expectancy of its citizens.

If the number of deaths due to cancer, apoplexy, high blood pressure, cirrhosis of the liver and other diseases, as well as those caused by auto accidents, are reduced, Japan may rank with Switzerland and Sweden as world leaders in the longevity of citizens.

—Information Bulletin, Embassy of Japan
Vol. XI, No. 15, August 1964

INSTANT TEST FOR DIABETES

AN instant test for diabetes which will be of great value to general medical practitioners throughout the world is to be introduced shortly. It will be found to be particularly useful in developing countries and in areas where modern laboratory facilities are not available.

The test—which takes only one minute—measures the amount of sugar in the blood, and will speed up and simplify the early detection of hidden diabetes.

Previously, laboratory tests were required. Now general practitioners will be able to do their own blood-sugar laboratory work, and medical men can carry out studies in the field without recourse to relatively expensive and complex methods.

The simple equipment, shortly to be manufactured in Britain and to be made available throughout the Commonwealth and in Europe, is the result of international research, particularly in Britain and the United States. It consists of an impregnated cellulose strip which will give an accurate reading of the blood-sugar in just one minute from one drop of blood.

The finger is jabbed with a sterile lancet and the reagent strip passed over the wound. After one minute, the treated strip is compared with a colour chart and an instant glucose reading is made.

It was stated that the development marked another stage in the introduction of "suitcase laboratories", enabling doctors to carry out their own clinical tests in the field.

—British Information Service.

Evaluation of Smallpox Eradication (continued from page 323)

services of sanitary inspector, though utilized for evaluation work, there was always a feeling that a superior type of worker would have been desirable. Further, whoever may be employed for this work also needed a more comprehensive training in the methods and procedure of evaluation because considerable difficulty was experienced in compilation of data and other statistical work involved in writing out the reports.

In the circumstances to have uniformity, better quality and also completely unbiased assessment

there should be a separate evaluation unit raised in each State who may be given required training in this special work by the National Institute of Communicable Diseases. As far as this State is concerned only a start has been made and there are still 36 more districts where evaluation will have to be conducted during the next two years. However, even though the quality of the evaluation so done may not be of a high order, it has definitely provided an indication of achievements, difficulties and failures, thereby permitting prompt solution and corrections.

Around the States (continued from page 340)

It is proposed that the mid-day meal should be substantial and may consist, in addition to milk, of food items in the form of cereals and vegetables, which could be contributed by the local communities. In this connection it is proposed that steps should be taken to develop cheap protective foods as speedily as possible.

The Ministry of Food and Agriculture has been experimenting with multi-purpose food which can give adequate protein, vitamin and calcium in a meal at a cost of four paise per child per day. The programme for production of multi-purpose food could be co-ordinated with that of the mid-day meals.

WORLD POPULATION TO DOUBLE BY END OF CENTURY

World population, approximately 3,000 million in 1960, will rise to the order of 5,300-6,800 million by the year 2000, according to "plausible long range" projections contained in a United Nations report on world population prospects. A figure near 6,000 million, or double the 1960 number, "seems to be the most likely expectation", according to the study.

The world total by the year 2000 could, however, rise to a level 2.5 times the 1960 figure—7410 million—if the 1960 fertility rate were to continue and if mortality were to go on decreasing at the rates which prevailed during the 1950's, an assumption, the report states "not considered likely to be borne out by future developments".

The study notes that "it is highly probable that events will occur which will bring about changes in the present population trends." "Certain tendencies of development can now be discerned which have fairly definite implications for the near future, and their possible implications for the more remote future are also calculable, though with varying degrees of uncertainty."—*U.N. Weekly Newsletter*

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SMALLPOX AND CHOLERA

MORBIDITY AND MORTALITY

DURING September 1964, 757 cases of smallpox with 234 deaths were reported throughout the country. There were 6858 cases and 2224 deaths from cholera during the month. Thirteen cases of plague with four deaths were also reported.

STATES	SMALLPOX		CHOLERA		PLAGUE	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Andhra Pradesh	39	12	3585	1194	9	4
Assam	3	2	—	—	—	—
Bihar	156	47	766	246	—	—
Gujarat	—	—	—	—	—	—
Jammu & Kashmir	—	—	—	—	—	—
Kerala	15	7	—	—	—	—
Madhya Pradesh	58	33	116	79	—	—
Madras	351	91	150	31	—	—
Maharashtra	32	6	1021	314	—	—
Mysore	—	1	97	22	4	—
Orissa	—	—	68	26	—	—
Punjab	—	—	—	—	—	—
Rajasthan	11	2	—	—	—	—
Uttar Pradesh	32	13	232	60	—	—
West Bengal	45	15	823	252	—	—
Andaman & Nicobar Islands	—	—	—	—	—	—
Delhi	1	1	—	—	—	—
Goa	—	—	—	—	—	—
Himachal Pradesh	—	—	—	—	—	—
Laccadive, Minicoy & Amindivi Islands	—	—	—	—	—	—
Manipur	—	—	—	—	—	—
Pondicherry	14	4	—	—	—	—
Tripura	—	—	—	—	—	—
TOTAL	757	234	6858	2224	13	4

INFORMATION FOR CONTRIBUTORS

Swasth Hind is the official organ of the Union Ministry of Health. Opinions expressed by the contributors are not necessarily those of the Government of India.

Articles on every aspect of public health are invited. They should be such as have not been published or accepted for publication elsewhere.

The articles should be written in simple and non-technical language so as to be understood by the lay public.

Articles should not exceed 1,500 words in length.

The name, designation and all relevant details about the author should be clearly indicated in the beginning of the article itself.

Manuscripts should be typed on one side of the paper, double-spaced and sent in duplicate.

Good illustrations enhance the value of the articles and contributors are requested to submit photographs, drawings, charts, etc.

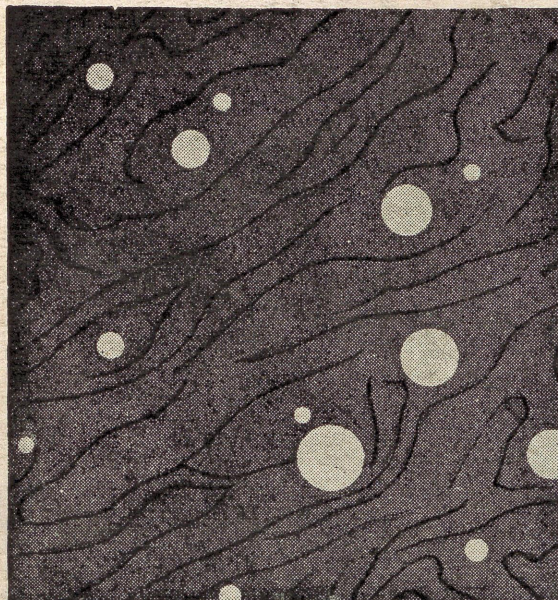
Photographs should be black and white, glossy prints and easily reproducible.

All photographs, charts, etc., should bear captions clearly on the back.

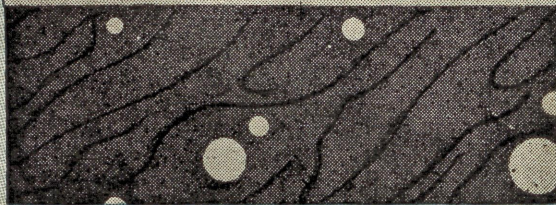
Lettering on charts, tables, etc., should be in black ink (Indian ink) and should be large enough to be read when reduced. Good quality white paper should be used.

When sending photographs, drawings, etc., contributors should take care to see that they are not damaged in transit. They should be placed between hard cardboards and never pinned to anything.

Each contributor whose article is published receives one complementary copy of the issue and 25 reprints of his article.



Measles



Ringworm

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