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# Swasth Hind

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## WORLD HEALTH DAY NUMBER



SPRAYING



REPORTING  
FEVER CASES



BLOOD TEST



TREATMENT

DDI  
60

# SWASTH HIND

MARCH 1960

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OUR COVER—"Malaria eradication—A World Challenge" is the theme of the World Health Day this year. Our cover depicts various phases of the Programme viz., Spraying of houses, reporting of fever cases, blood examination, and treatment.

# WORLD HEALTH DAY—1960

## MESSAGE

Of all the diseases that afflict man, malaria has presented the greatest challenge to the world. Throughout history, it has driven man out of vast areas of fertile land. It has depopulated whole regions. The disease is held responsible for 10 to 15 per cent. of infant mortality. As the world's greatest single cause of disablement, we have seen its effect in stunting physical and mental development, reducing agricultural production and in impairing industry and commerce.

Since the epochal discovery of Ross that the anopheles mosquito transmits malaria, several countries, including India, have been engaged in specific measures for the control and prevention of malaria. The advent of the W.H.O. which gave malaria priority No. 1 in public health schemes, led to close collaboration between it and the Governments of many countries including India in the establishment of projects for malaria control, beginning from 1949.

With the use of D.D.T., much progress was achieved, but it was also hampered in some countries by the development of resistance of the mosquito to this new weapon. The W.H.O., therefore, brought about a reorientation in the global policy on malaria and focused the attention of Governments on the acceptance of eradication of malaria as their ultimate objective. The National Malaria Eradication Programme was launched in India on 1st April, 1958 with the assistance of the T.C.M. of U.S.A. and the W.H.O. In the first year of the programme, out of 230 endemic units, 225.2 were established and were functioning, covering a population of 214.15 million. During 1959-60 all the 230 endemic units are functioning and in addition, 156.25 hypo-endemic units have been established, making a total of 386.25 units against the target of 390. This establishment of units in itself is a significant achievement. The estimated population to be covered in 1959-60 under this programme is 390 million. Up to October, 1959, the estimated population protected is 340.2 million and the child spleen rate is 2.6. The total estimate of expenditure during 1959-60 is Rs. 140.4 lakhs.

Today, the eradication programme is in its most critical and intensive stage. The success of this important undertaking must be ensured by enlisting the willing cooperation of the public in the various phases of the eradication programme. It calls for swift action. For, the essential difference in the strategy of malaria control and malaria eradication is that in the case of the latter, the performance has to be total, speedy and efficient.

It is, therefore, in the fitness of things that the W.H.O. has chosen the theme, "Malaria Eradication—A World Challenge", for the World Health Day this year. Any individual or group (whether a large National Committee or a small committee of village workers) which is responsible for organising the observance of the World Health Day will have three main objectives :

- (1) to reach a maximum number of people in all strata of society,
- (2) to stimulate their interest as effectively as possible, and
- (3) to ensure the continuation of their active support throughout the year. In this programme of national importance, the greater the voluntary help the greater the possibility of reaching large number of people effectively.

In associating myself with the Day, I appeal to all educational institutions, social welfare bodies, youth organisations, philanthropic societies and even commercial enterprises with a sense of civic responsibility to contribute their energies and resources to the success of the World Health Day—1960.

*D.P. Karmarkar*

(D.P. Karmarkar)

Union Minister for Health

# MALARIA ERADICATION—WHAT & WHY

Dr S.P. Ramakrishnan

*Director, Malaria Institute of India, Delhi*

OF the 148 countries and territories of the world faced with malaria problem, 92 have decided to eradicate the disease in the course of six to ten years, and have launched national programmes in the past few years. India commenced its eradication programme on April 1, 1958, and the Programme is in its third year of operation. According to plan, eradication of malaria from most parts of India should be complete in 1966. Eradication of malaria is indeed a challenge not only to every nation that has undertaken to eradicate it, but to the entire world. In this attempt of man to deliver himself, his family, his community and his nation from the age-long victimisation by a tiny one-celled monster, the malaria parasite, he has the unstinted cooperation of one and all. Indeed, no nation in mutual interest can have its neighbour lagging behind.

The implementation of the Programme and the hard work involved in its organisation and administration have all to be a national responsibility; all the nations of the world have to work together simultaneously to rid themselves of malaria for ever. The financial investment in many cases is beyond the resources available currently for many nations. However, the nations fortunately placed are helping many nations of the world with liberal finance and material which require help in their eradication programmes. In South-East Asia, it is heartening to note that the current year heralds the launching of malaria eradication programmes in two more countries—Pakistan and Malaya.

The national eradication programme of any country is for the people of the country. Every member has a role to play in it. In this article an attempt has been made to provide answers to the several questions that are generally asked by different people in different walks of life.

## **What is malaria eradication ?**

Malaria eradication is a situation where no human being harbours the malaria parasite and, therefore, irrespective of the numbers of malaria-carrying

mosquitoes present in the community or country, no malaria transmission or new infections can occur.

The above point should be elaborated. Malaria is caused in the human being by a tiny microscopic organism which is a highly evolved parasite. Therefore, it has no free existence ; it depends for its life and growth on the human being. In nature, the only method by which the disease can pass from one human being to another is through the agency of certain types of mosquitoes which feed on human blood. In the act of feeding, the mosquito ingests the malaria parasites circulating in the blood of the affected man. Some of the parasites which are sexual (males and females) undergo a sexual reproduction in the stomach of the mosquito. The progeny may number by thousands in a single fertilised female. The tiny parasites so produced gather in the salivary glands of the mosquito and are injected into the blood of the man whom the mosquito bites next. The cycle continues. The completion of the sexual reproduction of the parasites in the mosquito requires approximately 10 days. Therefore, a mosquito which has ingested parasites from an infected man must live at least 10 days after the first bite ; only then will it be able to transmit the disease by biting others. The prevention of new cases of malaria can be achieved if it can be ensured that none of the malaria-carrying mosquitoes can live for 10 days from birth. And if new cases can be prevented from occurring for a continuous period of three to four years, the malaria parasites in older cases automatically die out and the infection comes to an end. When this situation is reached, it is of no matter how many mosquitoes are there in the community, how much longer than 10 days they live and how many times they bite a man. There will be no malaria parasites for them to transmit. It is then that malaria is eradicated. Thus, it should be clear that it is malaria that is being eradicated and not the mosquitoes.

## **Why do mosquitoes require a blood meal ?**

The ovaries of mosquitoes do not develop in the

absence of a blood meal. It is not essential that the blood should be human. In general, mosquitoes which carry malaria live close to man and have opportunities to feed on his blood. It is only the female mosquito that can bite and suck blood. The male is vegetarian.

### Why Malaria Eradication ?

The annual cost of malaria control under India's National Malaria Control Programme between 1953-58 was about Rs 25 crores. This Programme catered only to about 200-230 million people living in highly malarious areas. Areas inaccessible due to lack of communications were left out of operation. The objective of the Programme was to reduce the transmission to a low level and to maintain it year after year for ever.

In the course of the Control Programme in India as well as in other countries, it was noticed that in areas where new infections were totally prevented by the control measures over a period of five to six years, no persons were to be found with malaria parasites any more. The question naturally arose if the DDT spraying operations could be suspended after a certain number of years without fear of recurrence of malaria transmission. This would mean a great economy.

Some of the countries began to report resistance among malaria-carrying mosquitoes to DDT. This was a warning signal that it may appear in India also. In view of this, after due deliberations, malariologists all over the world subscribed to the concept of eradication. The virtues of a malaria eradication campaign are :

- (i) The disease is eradicated in a fixed time in the foreseeable future and spraying is withdrawn before mosquitoes have a chance to develop resistance to DDT.
- (ii) Eradication helps to end the disease once and for all and the maintenance measures can be incorporated with the routine duties of public health departments.
- (iii) It costs several times less than the expenditure for malaria control incurred indefinitely. Although initially its costs are high for a fixed time, the cost afterwards is negligible and is well within normal budgets.
- (iv) Control measures using DDT will completely fail if the malaria-carrying mosquitoes become resistant to DDT at which time control will be impossible ; the malaria would come back and all the money spent at the rate of about Rs 25 crores a year over a period of years would be a complete waste.

In view of the above facts, it is obvious that malaria eradication is the obvious goal.

### How can malaria eradication be achieved ?

In view of the progress of the National Malaria Control Programme from 1953-58 and the experience gained from it, the National Malaria Eradication Programme has two phases, namely, attack phase extending to four years and consolidation phase extending to three years.

#### ATTACK PHASE

The attack phase consists of spraying with DDT all structures of human dwelling in every part of the country. Some of these parts are designated as moderate or hyper-endemic to malaria and are sprayed twice a year at specific pre-determined periods. The population living in such areas in India is 230 million.

The remaining 130 million live in areas designated as hypo-endemic, and the people here are only exposed to a low malaria risk. All structures where man lives in these areas are to be sprayed only once a year during the two years, 1959-61.

It is, of course, obvious that all houses cannot be sprayed in towns and cities, particularly the very large ones. Besides, the density of human population in cities is much higher than the extent of water surface that can breed mosquitoes. In the urban areas, it is more efficient and economical to depend on anti-larval measures (to reduce mosquito-breeding) and confine the spraying operations to the peripheral

**SPRAYING all roofed structures with D.D.T. throughout the country is an important component of the Malaria Eradication Programme**



areas to fortify the measures undertaken against mosquito-breeding.

The continued prevention of new infection through four years everywhere in the country should result in no one harbouring the malaria parasites, or in reducing the number of such people to negligible proportions. It has to be precisely determined as to how many such cases are there and they have to be treated in such a way as to cure them and render them non-infective to mosquitoes. If such stock-taking is not made and a few persons left with parasites, in the absence of spraying, the mosquitoes will live long enough to transmit malaria.

#### CONSOLIDATION PHASE

The consolidation phase consists of such activities as finding out the few people still with parasites, curing their infection by drugs and determining the source of the infection, in order to take adequate steps to prevent their spread. The measures to be carried out in the consolidation phase are, therefore, rightly called surveillance. India's programme provides for concurrent surveillance and spraying for at least one year.

The surveillance programme consists of a fortnightly or monthly enquiry from house to house to find out the presence of anyone with fever or a history of fever. From each one of them, a blood smear is to be obtained and examined. Those fever cases found to be due to malaria will be treated with drugs to sterilise the infection. For every positive malaria case found, there will be detailed investigations to determine the source of infection and, depending on their results, necessary steps will be taken to prevent any further infections. This phase of the work is difficult and in some cases may be compared to searching for a needle in a haystack, but it is rewarding when the cases are found.

Like the spraying operations, surveillance operations will have to be modified for large urban areas. It will be necessary to enlist the cooperation of medical practitioners. The efforts to find cases must be made in hospitals and dispensaries. The cooperation of social and voluntary organisations are necessary. In general, the continued cooperation of every individual in the community is essential for the quick success of the Programme.

#### What is the role of people in the Programme ?

In the attack phase everyone should ensure that his house is sprayed at the right time and regularly. The spraymen can reach the village. But it is the householder that has to allow them into the house for spraying. Similarly, in the consolidation phase, every householder should ensure that the blood

of every member with fever or a history of fever is collected and examined. The ones that have a positive smear must take complete treatment that is provided. Every mother has an important role to play in the Programme. It is she who knows about fever or history of fever of her children.

#### Are there technical difficulties in the Programme ?

Yes, there are a few. There are people who either postpone or refuse to have their houses sprayed. In some cases, the objection is religious ; in others, it is due to inconvenience ; sometimes, the householder has forgotten all about malaria of the past due to its absence in the last few years and is only conscious of other household pests like flies, bed bugs, etc. which continue to bother him.

There can be no better religious principle than to make all efforts to render the community safe from a disease like malaria and to ensure that everyone will play his part to make himself harmless to his neighbour and community.

#### OVERCOMING PERSONAL INCONVENIENCE

Overcoming of a certain amount of personal inconvenience is essential in the interests of the community. It must be remembered that the spraymen have their work charted out for every single day of a whole period of 2½ months for the entire round of spraying operations. They cannot afford to revisit a house or village without seriously endangering the people in other villages which are also to be sprayed in time. It must be remembered that all the houses in the community or country *must* be sprayed and *in time*. In any case, it does not take more than about eight minutes to spray an average rural house. The inconvenience of as short a duration as eight minutes (twice a year) surely can be put up in the interests of the neighbours and the community.

The Malaria Eradication Programme specifically caters to the eradication of that disease. It cannot obviously be a multi-purpose scheme to ensure freedom from other diseases and pests. It is limited in *time* and *money*. "One thing at a time and that done well....." is a good thing to remember in this context. We have a lot of health problems in this country and they have all to be tackled. To do so altogether at the same time requires resources beyond our means at present. When malaria eradication is achieved, other insect-borne diseases can be tackled.

This article has made an attempt to answer some of the questions that are generally asked about the Malaria Eradication Programme. There must be more such.

# MALARIA ERADICATION IN INDIA

Lt.-Col. Jaswant Singh

*Former Director General of Health Services, New Delhi*

INDIA in the years since Independence, has been engaged in a mighty adventure of economic and social development. Working with democratic institutions and through democratic processes the nation has been trying to improve the living conditions of her people.

Set against many health problems is the will and determination of the people and the Government to surmount all difficulties that may come in the way. It is this will and determination that have found adequate expression in the form of our Five Year Plan programmes. Today, as we look back over the 12 years, we can say with pride that progress in health achieved so far has not been mean, limited as it was through lack of funds, trained personnel and availability of materials.

## Hundred million affected by Malaria

Malaria, a chronic malady of mankind, striking silently and in devastating numbers, has been the foremost public health problem in the tropical and sub-tropical countries for centuries. In India alone, prior to 1947 it was estimated that nearly 100 million people fell prey to the disease, and over a million of them succumbed to it annually. The consequences were not only in terms of human lives lost but colossal suffering in those that survived, and the tremendous impact the disease had from economic and social viewpoints. As the greatest single cause of disablement, it not only retarded physical and mental growth, but hampered the exploitation of natural resources, and proved a tremendous drag on agricultural production and industrial development.

Now, encouraged by the results of large-scale malaria control operations in other countries, coupled with our own in many of the states, and those achieved by the World Health Organization Demonstration Teams, India took up the task of controlling malaria through the launching of a nation-wide

Malaria Control Programme in 1953. This was with the generous assistance of the U.S. Technical Co-operation Mission, WHO/UNICEF and the Rockefeller Foundation. The Programme aimed at protecting 200 million people residing in endemic malarious areas, and bringing down the malaria transmission to a level where it should cease to be a major public health problem.

## From control to eradication

In 1948, at the Fourth International Congress of Tropical Medicine and Malaria held at Washington and later during the Second Asian Conference of the World Health Organization held in Baguio in the Philippines, the change in the concept from malaria control to that of eradication was first discussed.

In 1955, the Eighth World Health Assembly passed a resolution which *inter alia* requested "the member-Governments to intensify plans of nationwide malaria control so that malaria eradication may be achieved and the regular insecticide spraying campaigns safely terminated before the potential danger of development of resistance to insecticides in anopheline vector species materialises."

Recognising the success achieved through large-scale malaria eradication operations in different parts of the world, the Government of India took a bold decision to switch over to a programme of malaria eradication from April 1958. Under this Programme, 390 million people living in malarious areas, irrespective of the degree of risk, will be covered through a phased programme of intensive insecticide spraying to be followed by surveillance and vigilant maintenance. The results achieved so far are indeed stupendous.

## Swift action

Today, when man's endless struggle to free the

*(Continued on page 67)*

# NATIONAL MALARIA ERADICATION PROGRAMME—A REVIEW

Dr A. P. Ray

*Director, National Malaria Eradication Programme*

A REVIEW of any programme is not aimed at finding fault for what could not be attained but at a critical appraisal of what has been achieved against a target. This is the only way to ensure proper guidance during future operations.

As far back as 1953 when the National Malaria Control Programme was launched in India as a part of the health development project of the First Five Year Plan, people accepted it with certain reservations and at times even looked at its success with skepticism. However, the first three years of operations heralded a new era for the Programme, which was crowned with admirable success. The spectacular results achieved enthused the people not only to welcome the Government's decision to continue the malaria control operations as a part of the Second Five Year Plan, but wanted them to be extended to cover wider areas.

But large-scale malaria control operations in different parts of the world were already necessitating some reorientation in planning and, consequently of the policies. The first factor responsible for this reorientation was the phenomenon of resistance among malaria-carrying mosquitoes against the insecticides in use. The second was the disappearance of malaria parasites in human population which had been effectively protected against any new infections for a period of at least three years. While the first factor introduced a sense of emergency, the second demonstrated the possibilities of conquering the disease while it was still possible. Under these circumstances, the malaria workers in India and abroad decided in favour of a malaria eradication programme in India.

## The Plan

The National Malaria Eradication Programme which was launched on 1 April, 1958, originally envisaged the establishment of 230 endemic units in 1958-59 with a view to providing coverage to the entire populations in hyper-meso-endemic and epide-

mic tracts of the country. In 1959-60, 160 additional units to cover about 160 million people were to operate and by 1960-61 all units except 25 were to begin surveillance operations besides spraying. As to the quality of spraying, the objective was total coverage, that is, inclusion of every roofed structure within the ambit of operations according to a schedule depending on the local transmission season.

## Implementation

In the first year of the Eradication Programme (1958-59), out of the 230 endemic units envisaged, 225.25 were established and were functioning, covering a population of 214.15 million. In the current year, all the 230 endemic units are functioning and in addition, 156.25 hypo-endemic units have been established taking the total to 386.25 units against the target of 390. The remaining 3.75 units, comprising two units in Kerala, one in Jammu & Kashmir, 0.5 in N.E.F.A. and 0.25 in the Andamans, have not started functioning. Establishment of these units is a significant achievement.

## Spraying Operations

An analysis of the data on spraying operations has revealed that against total coverage, as required under the Eradication Programme, the coverage during 1958-59 and during the first round in 1959-60 in the endemic units were :—

Year	1st Round	2nd Round
1958-59	69-97%	15-92%
1959-60	87.7-100%	—

Therefore, it can hardly be claimed that the entire population in the areas where the units are functioning has been adequately protected.

Some of the reasons for this shortfall in coverage can be attributed to the lack of adequate field and supervisory staff, lack of provision for mopping up operations, incomplete information regarding the

area to be covered and an insufficient appreciation of the rigid demands under an eradication programme. To the above may be added the problem of people refusing to have their houses sprayed by DDT on account of special considerations like religious feelings, continuance of bed bug nuisance, absence of collateral benefits of insecticide spraying, etc. The problem of refusal on the part of the public poses a formidable obstacle to the proper implementation of the Programme in that it leaves out malaria pockets.

### Evaluation

Experience gained under the Malaria Control Programme indicates that although information on malarionometric indices received from the units showed a general reduction in the intensity of malaria, in the context of eradication, full reliance could hardly be placed on such data in view of the paucity of adequate samples. In general, the samples for child spleen census were mostly inadequate—unsatisfactory in respect of child parasite-rate, and poor for the infant parasite-rate. However, detailed analysis of the data received from 50 units located in different States showed that the infant parasite-rate touched zero-level in almost all instances. In all cases, the spleen-rate had been brought down to five per cent. or less, and parasite-rate had been lowered to about 0.5 per cent. or less. Those areas, where evidence of high spleen-rates had been noticed even after several years of spraying, have been asked to take suitable measures since such a situation would be very dangerous in the context of an eradication programme.

### Entomological Assessment

As regards entomological assessment, it was envisaged that evaluation should be carried out at unit, zonal, state, regional and national levels. Unfortunately, much of the activities have been of a sporadic nature meeting emergency demands in isolated instances. During recent months, however, somewhat systematic studies have been taken up both at the Centre and in some States. From available reports it is clear that the fear of the carrier-mosquitoes becoming resistant to DDT can be allayed for the time being. But there are some indications of increased tolerance to this insecticide among *A. culicifacies* experimental.

### Surveillance

In Mysore, the surveillance programme has been operating for 2½ years, involving a population of 1.5 million. The average monthly fever-rate per thousand has been observed to be 2.47 during 1957 and 2.43 in 1959. Since 1959-60 some other States have also started passive surveillance.

### Training

The programme of training the requisite personnel



India has about 390 malaria eradication units. Picture shows a part of a unit

to man the eradication operations has been implemented successfully. Up to date the following categories of persons have been trained at the Malaria Institute of India and the State Training Centres.

#### Personnel Trained up to date

Malaria Medical Officers	469
Malaria Inspectors	1848
Laboratory Technicians trained under NMEP.	596

#### Financial aspects

The cost of malaria eradication operations during Second Plan period has been estimated at Rs 5572.60 lakhs, in addition to Rs 1215.59 lakhs during the two years 1956-57 and 1957-58 of malaria control operations. Out of this amount, the United States Technical Cooperation Mission will make available Rs 3005.61 lakhs (Rs 647.04 lakhs during control programme for two years 1956-58 and Rs 2358.57 lakhs for eradication programme during three years *i.e.* 1958-59 to 1960-61). The WHO will make available Rs 105.39 lakhs during three years of the Eradication Programme. Computed in terms of the total expenses per head of population in this country the amount does not exceed 25 *naye paise* per head per year.

#### Third Plan

No review of work can be complete without projections of the future. As envisaged now, the

(Contd. on page 77)

# NATIONAL MALARIA ERADICATION PROGRAMME

## SOME FACTS AT A GLANCE

	1958-59			1959-60		
1. Number of units functioning	225.25			386.25		
2. Estimated population protected	214.15 million			340.20 million (up to October 1959)		
3. Estimated population to be covered	224.00 million			390.00 million		
4. Spraying of houses (percentage of houses reached).	<i>First Round</i>	<i>Second Round</i>		—		
	89.00	70.30				
5. Quantity of insecticides used (in lb.)	<i>DDT 75%</i>	<i>BHC</i>	<i>Dieldrin</i>	<i>DDT</i>	<i>BHC</i>	<i>Dieldrin</i>
	308.94	17.47	2.48	417.78	6.35	1.84
	lakhs	lakhs	lakhs	lakhs	lakhs	lakhs
6. Child spleen-rate	3.22			2.60 (up to October, 1959)		
7. Child parasite-rate	0.50			0.90 (up to October, 1959)		
8. Infant parasite-rate	0.20			0.10 (up to October, 1959)		
9. Dispensary statistics :						
All diseases	4,74,02,759			3,98,29,670 (up to October, 1959)		
Malaria cases	19,15,976 (4%)			11,58,803 (up to October, 1959)		
10. Expenditure: (In lakhs of Rs)						
Total estimate	102.90			140.40		
T.C.M. share	48.20			72.20		
State's share	39.50			45.40		
Govt. of India share	15.20			22.60		
11. No. of persons trained						
	Malaria Medical Officers...141 (from Jan. to Dec. 1958)			Malaria Medical Officers...148 (From Jan. to Dec. 1959)		
	Malaria Inspectors.....149 (31 at Malaria Institute of India and 118 at State Centres)			Malaria Inspectors...1132 (160 at Malaria Institute of India and 972 in State Training Centres).		
	Laboratory Technicians —			Laboratory Technicians...515 (184 at Malaria Institute of India and 391 in various centres).		
12. Indigenous production of DDT (in tons)						
DDT 50%	1647.00			4,000 tons		
DDT 100%	478.60			300 tons		
13. Equipment (indigenous) in use						
Hand compression sprayers	14,855	} From inception to 1958-59		3,290		
Stirrup Pumps	33,296			3,160		
14. Total outlay for the Second Plan period	Rs. 5572.60 lakhs (excluding Rs. 1,215.52 lakhs for Control Programme for two years, 1956-57 and 1957-58).					
15. Assistance from international agencies during Second Plan period.	<i>T.C.M.:</i> Rs. 3005.61 lakhs (Rs. 647.04 lakhs for Control Programme for two years 1956-57 and 1957-58 and Rs. 2358.58 lakhs for Eradication Programme for three years, 1958-59 to 1960-61.)					
	<i>W.H.O.</i> Rs. 105.39 lakhs					
16. Proposed outlay for the Third Plan period.	Rs. 5837.58 lakhs (Rs. 4357.08 lakhs for Eradication Programme for three years 1958-59 to 1960-61.)					

March 1960

# Regional Co-ordinating Organisations in NMEP

Dr J. Rahman

*Regional Deputy Director, Regional Co-ordinating Organisation,  
National Malaria Eradication Programme*

THE National Malaria Eradication Programme that was launched in India is based on the background of a thorough understanding of the malaria chain, the experience of the standard techniques and procedures adopted and the knowledge of the working of eradication programmes in different parts of the world. The Programme has the collaboration of state malariologists and the international agencies like U.S.T.C.M., W.H.O., U.N.I.C.E.F. and the Rockefeller Foundation.

A uniform programme was evolved for the whole of the sub-continent covering an area of 12,66,900 sq. miles with different logistics for each state on account of variations in physio-geographical and malariogenic conditions. Barring a population of 4.05 million living in high altitudes, the entire population of 390 millions was required to be protected irrespective of the degree of malariousness in their area. The Eradication Programme could not afford to leave any pockets of infection for recrudescence of the disease. The working plan was formulated on the basis of one malaria unit for every one million people; 390 units were, therefore, formed. These were classified into 230 hyper-meso-endemic and 160 hypo-endemic units, depending upon the endemicity of the area and the population size. The plan of operation of a hyper-meso-endemic and hypo-endemic unit is different in the attack phase. The former will be required to give 2-3 rounds of residual insecticide spraying to every house and cattleshed in every village and town, whereas the latter will be required to give only one round of spraying.

The programme was made on a war footing as the battle was to be fought and won before the anopheline mosquitoes become resistant to insecticides. The Programme is phased into three stages of (1) attack phase (2) consolidation phase and (3) maintenance phase. All preliminary arrangements for insecticides, equipments and transport were made through U.S.T.C.M. and the recruitment and employment of the right type of the personnel through the respective States which were to run the units. The

training of the supervisory staff was arranged at the Malaria Institute of India, and of the field staff by the respective States themselves.

The Programme, as approved by the Government of India came into force on April, 1 1958. It consists of three years of attack phase and three years of consolidation (surveillance) phase to be followed by maintenance phase. The last year of the attack phase and the first year of the consolidation phase are to run concurrently. However, some slight variations because of unforeseen circumstances may be necessary. The direction and supervision of the Programme is to be in the hands of the Central Organisation and its execution in the hands of the States. The system of centralised direction and decentralised execution, which has worked admirably during the National Malaria Control Programme period, is to continue during the period of National Malaria Eradication Programme also.

## Central Organisation

The Central Organisation of the Eradication Programme is under the Union Ministry of Health/Directorate General of Health Services and is located at the Malari Institute of India, Delhi. Its chief functions are direction, supervision and co-ordination of the campaign all over the country. The Institute has different sections dealing with epidemiology, chemotherapy, insecticides, chemistry and entomology. It has separate sections for training, research, evaluation and assessment.

The State organisation varies from State to State. The general pattern consists of (i) Director of Medical and Health Services/Director of Public Health (Malaria) for every 20 units, (ii) One Assistant Director of Public Health (Malaria) for headquarters and (iii) One Assistant Director for every 5-10 peripheral units.

As the direction, supervision and coordination of the State organisations by the Central Organisation alone is not feasible, six Regional Organisations have

been created to function as liaison units between the Central Organisation and the State Organisations. They are :

Bombay and Rajasthan region with headquarters at Baroda ; Madras, Mysore and Kerala region with headquarters at Coonoor ; Andhra Pradesh and Madhya Pradesh region with headquarters at Hyderabad ; Bihar and Orissa region with headquarters at Cuttack ; Assam, Manipur, N.E.F.A., Tripura, and West Bengal region with headquarters at Shillong ; and Delhi, Uttar Pradesh, Himachal Pradesh, Punjab and Jammu & Kashmir region with headquarters at Delhi.

The functions of the Regional Coordinating Organisations are as follows :

- (i) To assist the States in the successful implementation of the Programme according to prescribed pattern and within the scheduled period of time.
- (ii) To supervise and coordinate the operation and epidemiological activities from unit to unit within the States as well as from State to State in the region and also between the States and the Central Organisation.
- (iii) To ensure that there is regular flow of equipments and insecticides from the Centre to the States as well as the timely submission of reports and returns from the States to the Centre for immediate rectification of shortcomings.
- (iv) To assist the States in the training of personnel of different categories and to reorientate them with the latest techniques and procedures.

- (v) To assist the States in the techniques of spraying procedures and in the appraisal of results.
- (vi) To evaluate and assess the results.
- (vii) To investigate any special problems which may arise, like development of resistance in the mosquitoes or outbreak of epidemics of malaria and the persistence of low grade of malaria in spite of repeated sprayings.
- (viii) To find out the reasons for large number of houses missed in spraying and to tackle the problem.
- (ix) To educate the public in general and the medical profession in particular about the Eradication Programme and seek their active cooperation and participation in the Programme.
- (x) To assist the States in classifying the units which are ready to pass on from the attack phase to the surveillance phase.
- (xi) To investigate and solve the border problems arising between two or three States or between two different regions.
- (xii) To create team spirit amongst the malaria workers and to stimulate them for better performance of their duty.

It will, thus, be seen that the role of the Regional Co-ordinating Organisations is very important in the National Malaria Eradication Programme of our country. They deserve all cooperation and assistance from the States at all levels.



(Continued from page 62)

world from this ancient scourge of malaria has become a reality well within our reach, we cannot let the tide turn. However, if we can act swiftly and work the way malaria eradication has already been achieved in many parts of the world, our task should not be too difficult to accomplish. It is ever more essential because some mosquito vectors are already developing resistance to the insecticides in use. Perhaps nature is trying to resist any changes and is hitting back in its own way.

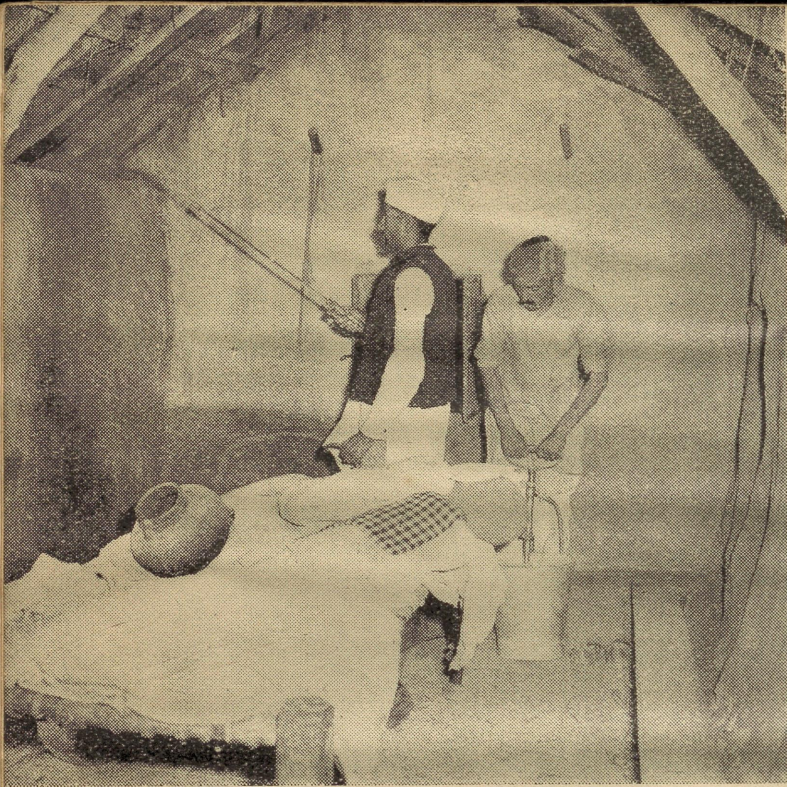
While one can visualise with reasonable optimism that malaria would cease to be a continuing problem in the foreseeable future, one has to be fully conscious of the fact that since different countries of the world will reach the malaria eradication stage at different times, there is an urgent need for closer understanding towards mutual collaboration between neighbouring countries. In the ultimate analysis of things, a lot depends on how and when the world as a whole accepts the challenge of malaria eradication

and simultaneously acts with determination and spirit of co-operation.

### Future outlook

Under the aegis of the World Health Organization, on whose shoulders has fallen the onerous task of rendering the much-needed advice, guidance and assistance to the many countries with economic potential, it is hoped that the goal of this movement of malaria eradication would soon be achieved.

For us, born and brought up at a time when malaria was a familiar feature of everyday life, it is almost a dream to think that the disease that had been undermining nations for centuries will no longer exist. It is, however, left to posterity to record its judgement. Today, the battle is ours and we have no doubt that in the near future this scourge of malaria would be a thing of the past. (Text of a talk recorded by W.H.O. in connection with the World Health Day).



All roofed structures should be thoroughly sprayed with DDT

## MALARIA

Malaria eradication aims at preventing the harbouring of malaria parasites in any human being. This involves the prevention of both malaria transmission and new infections.

The malaria eradication programme consists of two phases : attack phase and surveillance phase.

The attack phase consists of spraying with DDT all roofed structures in every part of the country, once or twice a year depending upon the intensity of malaria. This spraying from year to year prevents further malaria transmission. When this stage has been reached, it becomes necessary to find the number of malaria cases to be treated with anti-malarial drugs so that they are completely cured and

Full treatment stops further transmission of malaria



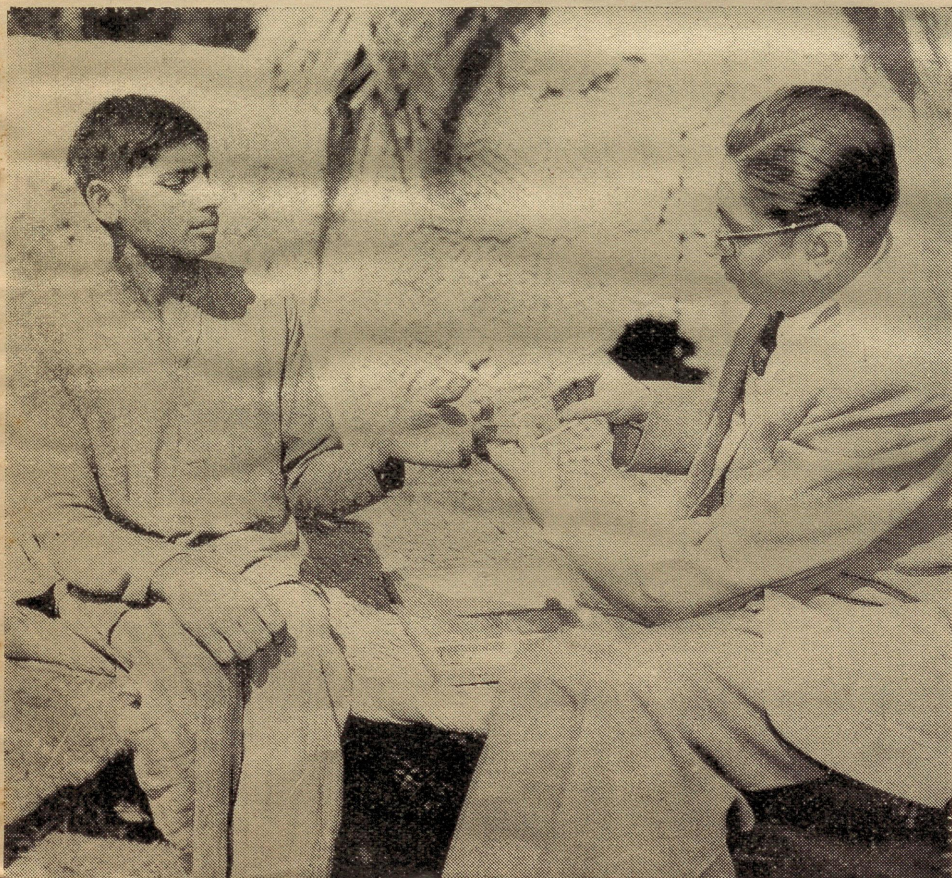
# ERADICATION

are not in a position to pass any infection to the mosquitoes.

In the surveillance phase, malaria workers will make fortnightly or monthly visits from house to house to find out cases of fever, if any. Blood smears will be taken from each fever case for microscopic examination. In all cases positive for malaria, anti-malarial drugs will be administered to cure the infection; the source of infection will be determined by detailed investigations and steps taken to eliminate infection at the source. During this phase of the programme, cooperation of medical practitioners, social and voluntary organisations as well as other agencies will be necessary.



Reporting of fever cases helps the detection of malaria cases



Blood examination establishes the diagnosis of malaria



# PUBLIC CO-OPERATION FOR MALARIA ERADICATION

Shri S.K. Jain

*Publicity Officer, National Malaria Eradication Programme,*

*Malaria Institute of India, Delhi*

FOR India the next few years are crucial as various countries of the world are eagerly watching her efforts towards the liberation of her 390 million people from the ancient scourge of malaria. Considering the magnitude of the task, the variety of problems involved and the area to be covered, the malaria eradication project in India is the biggest public health measure undertaken by any administration in the world.

## Why Public Cooperation

The success of a project of this vastness which aims at improving the health and welfare of millions must necessarily depend on the unstinted cooperation of the public, and indeed necessitates the establishment of effective public liaison between malaria workers and the public at all levels. The need for establishment of this public liaison is all the more imperative in a country like India where people have a variety of religious, cultural, social or other beliefs. Often, one or more of these beliefs militate against the activities to be performed under the eradication programme.

The National Malaria Eradication Programme aims at eradication of the disease by intensive and total spraying of all areas in the country during 1958-59 to 1960-61 and by detection and radical treatment of all malaria cases from 1960-61 onwards. So, the three objectives of malaria eradication, *viz.*, total coverage, case-finding and their complete treatment, can only be achieved if willing and understanding cooperation of the people is enlisted to the maximum. To this end, it is important that people be educated about the objectives and the salient features of this gigantic programme, and how the expected measures would benefit the individuals, communities and the entire nation, socially and economically. The public must also be told about their particular role in the various phases of the programme.

## Refusals to Spraying

In some areas people object to spraying on religious grounds ; for them killing of any insects is a violation of their religious practices. Since DDT spraying kills mosquitoes they object to their houses being sprayed.

In certain places people are objecting to DDT spraying on account of a misconception that in a way spraying is responsible for an increase in the number of bed bugs etc.

In certain areas the *parda* system is responsible for refusals. During the day time, when the spraying squad arrives, the men are busy in their fields and their women do not allow strangers to come into their houses.

In certain areas, difference of caste between the householder and the spraymen, results in a large number of refusals.

## Role of Malaria Workers

Discussions with people who are directly opposed to the Programme or who do not extend willing cooperation, with a view to explaining the advantages of spraying would help tide over the objections in some cases. It is also desirable that every malaria worker, irrespective of rank should educate the public on every possible occasion. This education of the public has to be directed both towards the adults and children.

To secure this cooperation, every field worker should be extremely courteous and polite to the members of the public. Small gestures like greeting a householder in an appropriate manner before entering his house and to thanking him after the completion of spraying can pave the way for better understanding and cooperation.

### Advance Information about Spraying

Besides giving advance information to the village headman through executive authorities about the dates of the visit of the spraying squads, the headman and other responsible persons in the village should also be contacted personally by the unit staff. Such personal contact will greatly assist in reducing the number of houses missed in each village. The date of spraying should be fixed in consultation with them.

If any one refuses to get his house sprayed, the Inspector should try to ascertain the reasons and use gentle persuasion. No force should be used at any time to get the house sprayed.

### Help from other Agencies

In this venture of mobilising public opinion it is also necessary to seek the assistance and cooperation of organisations like the health department, education department, village panchayats, community development centres, etc. Organisations like voluntary health agencies, and medical associations, Red Cross, nursing associations, etc., should also be involved in the education campaign.

In the rural areas the role of school teacher, local medical practitioner, religious priest and local leaders is extremely important. The school teacher can make the children understand some facts about malaria and its consequences, how the disease can be prevented, the importance of spraying, reporting of fever cases and getting their blood tested.

In every small town or village the local medical practitioners can exert considerable influence with the public. These people can help the cause of malaria eradication by reporting all fever cases attending

their clinics to the malaria surveillance workers for blood examination. Personal contacts between the malaria workers and the medical practitioners can considerably promote the cause of malaria eradication.

### People's Cooperation

There are some ways in which people can lend cooperation. They should get their houses sprayed with DDT when the spraying parties visit the area. They should not smear the sprayed surface with lime, mud or cowdung. By refusing to have the houses sprayed or by removing the residual insecticides by plastering the walls, people will be giving shelter to the malaria-carrying mosquitoes thus endangering the health of the entire community.

It is well-known that the malaria eradication programme has to run on a strict time-schedule. Since the malaria workers have to cover large areas, any delay in their work will only spell disaster because not only the work will have to be postponed but the unsprayed dwellings will afford protection to the infected mosquitoes. It is, therefore, extremely important that the householders should get their houses sprayed when the team arrives.

It is important for people to realize that the success of malaria eradication programme hinges on the elimination of the last infectious case of human malaria in the community. Hence all cases of fever should be reported so that blood examination of these could be arranged.

To-day our struggle against malaria has entered a new and decisive phase. We must act swiftly and work the way malaria eradication has been achieved in different parts of the world.



### ANNOUNCEMENT

It has been decided to fix an annual subscription of Rs. 3.00 for **Swasth Hind** effective from April, 1960 issue for 12 issues, each copy being priced at 0.25 nP. Intending subscribers are, therefore, requested to intimate their intention for annual subscribership at the earliest.

For the purpose of enrolment as subscriber, the amount of subscription (Rs. 3.00) should first be deposited into the Government Treasury in favour of the Government of India, Ministry of Health, Director General of Health Services under the Head of Account—"XXVIII-Public Health-Miscellaneous Receipts—Central—Adjustable by the A.G.C.R." through a Treasury Chalan and a receipted copy of the Treasury Chalan forwarded to the Director General of Health Services, Central Health Education Bureau, Combined Councils' Building, Temple Lane, New Delhi, along with the request for enrolment.

If, however, in any case it is not possible to pay the subscription in the above manner, the amount may be remitted by Money Order or by Crossed Postal Order in favour of Director General of Health Services, New Delhi-1 to the above address, it being clearly indicated in the M.O. Coupon or in the latter case, in a separate communication, that the remittance is in respect of subscription for **Swasth Hind**. Enrolment for annual subscription can be made at any time during the year.

Other health education material like pamphlets, folders, posters produced by the Bureau has also been priced. Requests for such material may follow the same procedure as for **Swasth Hind** in remitting the cost.

# MALARIA ERADICATION IN S.-E. ASIA

Dr D. K. Viswanathan

*Senior Regional Malaria Adviser, WHO Regional Office for S.-E. Asia, New Delhi*

OF all the Regions of WHO, the South-East Asia Region has the smallest number of countries, but its total population (550 million) as well as the population living with a malaria risk (503 million) make it the largest of all the Regions, *vis-a-vis* the fight against malaria.

Ross made the epochal discovery, at the end of the last century, that the anopheles mosquito transmits malaria from man to man. Since then, several countries of the Region have been engaged in specific anti-mosquito measures for the prevention of malaria in certain urban areas and in certain specialised communities where there were aggregations of labour either permanently or temporarily.

The discovery of the use of DDT during the Second World War encouraged some of the countries of the Region, notably Ceylon and India, to undertake large-scale rural malaria control measures. The advent of the World Health Organization, which gave malaria first priority in public health schemes, led to close collaboration between it and governments in the establishment of demonstration and training projects for malaria control, beginning from 1949. The great interest evinced by the Government of the United States of America, through its Operation Missions in various countries, led to bilateral agreements, through which some of the countries established malaria control activities.

## Development of Resistance

Scientific accomplishment with the use of this new weapon in the fight against man's greatest enemy was somewhat hampered by the development of resistance on the part of some insects of public health importance. This brought about a reorientation in the global policy on malaria, and attention was focussed by WHO on the need for governments to accept eradication of the disease as their ultimate objective, to be accomplished well before the local malaria-carrying mosquitoes could develop any degree of tolerance to the insecticide.

Today, with the exception of Bhutan and the

Maldive Islands, whose total population is hardly 170,000, all the other countries of this Region, in which more than 500 million people live with a risk of malaria, have accepted malaria eradication as the objective and have actually embarked upon approved malaria eradication programmes.

## Different Strategy

An essential difference in the strategy of malaria control and malaria eradication is that in the case of the latter the performance has to be total, speedy and efficient, and rather than taking credit for what may have been achieved, one should take discredit for what yet remains to be done.

Eradication procedures have a limited duration of operation. Before the end of that period one of the links in the chain of malaria transmission, namely, the reservoir of human infections, should be reduced to very low proportions, if not actually to the zero-point.

If this is accomplished, even if the malaria-carrying mosquitoes reappear in their pre-spraying densities when DDT spraying is withdrawn, there would be no danger of secondary cases of malaria being produced. Otherwise these secondary cases, in their turn, lead to an acute epidemic of malaria in the community, or to a progressively stable endemic malaria prevalence.

## Three Phases

In eradication, the greatest emphasis is on efficient spraying so as to prevent the mosquitoes from living long enough or in sufficient numbers to transmit the disease.

The absence of fresh infections in man thus secured is further reinforced and fortified by a vigorous search for any residual cases of malaria, old or new, acquired locally or elsewhere, and their radical treatment with modern anti-malarial drugs with a view to rendering them harmless. This procedure is technically called 'surveillance.'

The first phase of intensive spraying is called the attack phase and lasts generally for four years or more. The next phase is called the consolidation phase, when spraying is withdrawn, but surveillance continues for a minimum of three years.

Still later, after the interruption of the local transmission of the disease is accomplished and substantiated, further watch against any possible reappearance of the disease will be the concern of the general rural health services, in the same manner as other communicable diseases which are dealt with by them.

### No Delays

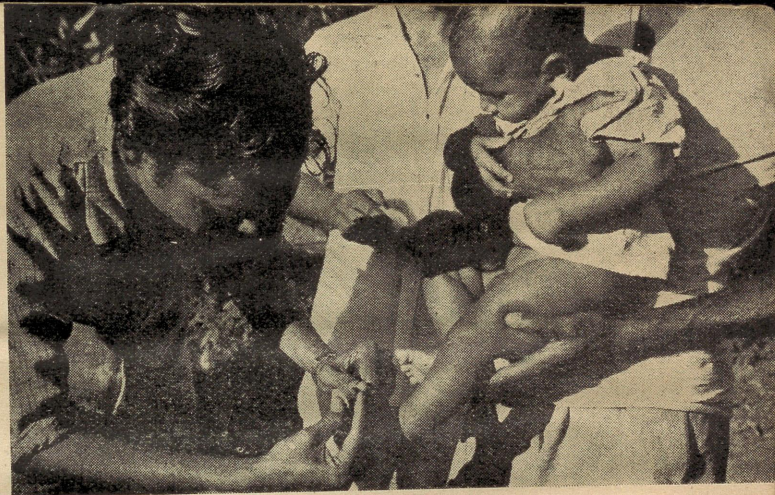
In all these tasks, which are greatly helped by the potent modern residual insecticides, there is a profound need for the utmost efficiency in organization and administration. The whole campaign is to be looked upon as military in its scope and result and the strategy should be shaped likewise. Delays, however inevitable and perhaps even fruitful in some other fields, would prove fatal in malaria eradication.

The programme must well be drawn out in all its details. The preliminary surveys must be carried out thoroughly. The attack phase should proceed as planned. The consolidation phase should be carried out with meticulous attention.

In all these matters, the administrative wing of the governments has a profound duty to perform. Indeed, it is increasingly recognized that administration and organization are far more important than the technical aspects of the programme.

### Health Education

By far the most important guarantee of success of a programme of this magnitude is the unfailing and intelligent cooperation of the people. While health education and public information form an integral part of the malaria eradication programmes, there is a tendency, in those countries where malaria control activities have been in progress for some time and malaria has been reduced to a very great extent, to look upon the continuance of insecticidal



**BLOOD testing of all fever cases is an important part of the surveillance phase of the Eradication Programme**

spraying as an unnecessary nuisance.

This attitude should be met by a good public information activity coupled with suitable health education at appropriate levels, especially among the higher administrative elements of each country.

The total economic loss due to malaria in the South-East Asian countries is difficult to compute in terms of cash, but roughly speaking, about 200 million people may be deemed to have had an attack of malaria every year in the past, which involved roughly a loss of wages of about \$ 125 million every year—assuming 25 per cent. of the victims to be wage earners and an attack of malaria rendering them completely unfit for work for six days. During the rest of the year their output may be deemed to be decreased by 25 per cent. due to loss of vitality, and if an average worker gets 200 days of employment in a year, the loss of efficiency may be computed as \$ 1,000 million per annum.

Against this background, the estimated total cost of malaria eradication in the S-E. Asia Region, which is about \$ 352 million for its entire duration over the next ten years or so is an extremely profitable business investment, yielding 30 per cent. dividend every year on the successful conclusion of the programme.

A nation's health is a nation's asset—but dividends need investments.



# Health Education Bureau in Bombay State

Dr D.A. Pundlik

*Assistant Director of Public Health,  
Bureau of Health Education and Health Museum, Nagpur*

**R**EALISING the importance of health education in the field of public health and appreciating its specialised nature, the Government of Bombay have started a Health Education Bureau for organising health education activities in the whole State in a scientific and planned way. This Bureau is under the administrative and technical control of the Director of Public Health and is located at Nagpur. It has started functioning since March, 1958, and is under the charge of an Assistant Director of Public Health who has had special training in the subject in USA. The Government of Bombay and the World Health Organization have jointly agreed upon a health education project for organising the work on the right lines, and W.H.O. has deputed one of its officers as Adviser for a period of two years. One of the staff members of this Bureau has been deputed by the State Government for the 10-month training in health education at the All-India Institute of Hygiene and Public Health, Calcutta.

Some of the main objectives of the Bureau include, to obtain people's active participation and support for public health programmes and policies and to encourage people to fully utilize the health services provided by Government and voluntary agencies.

## **Training Programme**

The most important activity is the training programme. With a view to orientate the concerned personnel in health education, training programmes stand very high as regards priority. The training includes both pre-service and in-service types. This training is not to remain confined to health personnel only but is extended to gram sevaks, gram sahayaks, social education organisers, members of gram panchayats, teachers, especially of primary schools, etc.

The Bureau since its inception has conducted orientation and training courses for 1271 candidates. They include both pre-service and in-service candidates. Since August 1959, an in-service training course for two weeks is being conducted for the field staff. Thirty-two candidates were trained. They include 19 health educators, nine sanitary inspectors and four non-medical assistants.

Such courses are planned to be conducted every month and all the field staff is expected to receive this training at the Public Health Institute, Nagpur.

The candidates trained through various programmes include medical students—post- and undergraduate, sanitary inspectors, health visitors, midwives, nurses, gram sevaks, social education organisers and vaccinators.

## **Village Projects**

With a view to bring out the fact that health education techniques do succeed, the Bureau started a health education programme in one village. The programme undertaken here was the construction of a well through the initiative of the people. Group discussion was the method used.

## **Survey**

A survey to find out health knowledge was carried out in Saoner Health Unit area and very interesting results were obtained. They are :

- (i) Out of a total of 68 persons, 47 knew where mosquitoes breed.
- (ii) Thirty-nine out of 65 persons knew where from flies come, and that they cause disease.
- (iii) As regards epidemic control, the majority believed that epidemics can be controlled by offering prayers to God.

## **School Health Education**

As a preliminary to full-scale programme, film shows to school children of the schools near the Bureau are being conducted. It is hoped to extend this activity and continue it for some more time and then meet the school teachers.

At present, a method of teaching the subject of health with the help of a flannelgraph is being revised.

*(Continued on page 82)*

# SOME HEALTH SCHEMES—PROGRESS

## *Committee on School Health*

A COMMITTEE has been set up by the Union Ministry of Health with Shrimati Renuka Ray, M.P., as Chairman, to assess the present standards of health and nutrition of school children and to suggest ways and means of improving them. The terms of reference of the Committee are :

- (i) To examine the present position of school health programme in the country in all its aspects (excluding physical education, games and sports), *e.g.*, prevention of disease, medical care and follow-up service, nutrition, health education, healthy environment, etc. of the students at all stages of education and to suggest (a) further survey or studies, if required, and (b) how the work of various agencies such as medical, social and welfare associations can be co-ordinated to assist in the promotion of health of school children.
- (ii) To examine studies and surveys so far made to assess the nutritional standard of school children and to indicate : (a) further surveys or studies needed in any specific areas, and (b) to give concrete suggestions to institute appropriate measures to improve standards of nutrition among school children, recommending, *inter alia*, ways and means for financing and organizing such a programme.
- (iii) To examine and recommend the possibility of entrusting primary health centres and other organizations for conducting a comprehensive and realistic school health programme in association with the local education administration. The recommendations should include measures to develop an effective school medical service suitable to the country.
- (iv) To examine the present facilities available for promoting nutritional standards of pre-school children and to suggest practical measures to improve the present position.

## *Trachoma Control Pilot Project*

The Trachoma Control Pilot Project which was started in October 1956 under the joint auspices of the Government of India and the World Health Organization has completed general systematic surveys and repeated monthly surveys. Studies on geographical distribution of trachoma in the country

were still in progress, except in Madhya Pradesh and Jammu & Kashmir. The Pilot project is under the administrative control of the Indian Council of Medical Research.

Pilot treatment programmes and pilot mass campaigns undertaken in Uttar Pradesh, Punjab and Rajasthan were completed in the first two States. The programmes include, pilot school programmes and pilot mass campaigns in villages, in Uttar Pradesh ; pre-school children treatment programmes and school children (primary) treatment programmes, in Rajasthan ; and pre-school children treatment programmes and school children (primary) treatment programmes, in Punjab.

Studies on the effect of intermittent treatment by antibiotics on seasonal peaks of bacterial conjunctivitis are also complete. A film on trachoma has also been produced.

## **Extended Activities**

Preparations have also been made to initiate extended activities of the Project to carry out survey to assess the geographical distribution of trachoma in Uttar Pradesh, Rajasthan and Punjab, which were excluded initially ; and also to conduct field trials for mass campaign methodology in trachoma control in Uttar Pradesh, Rajasthan, Punjab, Bihar and Madhya Pradesh. The Government of India sanctioned these extended activities in December 1959. The programmes could not be initiated so far as the Governments of Uttar Pradesh and Rajasthan have not yet accorded their sanction. The Punjab Government has taken up necessary steps and the programme will be initiated shortly.

Field trials in Bihar and Madhya Pradesh will be initiated in June 1960.

## *UNICEF Supplies*

The total value of UNICEF supplies, equipment and transport authorised for release to the primary health units during January last was \$ 43, 302 or Rs 2,05,700 approximate.

The total value of supplies, inclusive of freight released so far, by the Organization for the Commu-

nity Development Programme is of the values of \$ 2,442,321 or Rs 1,15,91,000 approximate. The total value of UNICEF allocations for this programme is \$ 7,210,000 or Rs 3.42 crores approximate.

### *Five Million suffering from T.B.*

The National Tuberculosis Survey has revealed that about five million of India's population or 1.3 per cent. is suffering from pulmonary tuberculosis. The total number of cases is thus much larger than was presumed. The number of infectious cases will be at least 1.5 million *i.e.* 0.4 per cent. of the population.

The fact that there is such a large number of infectious cases in urban and rural areas, the survey report says, is a matter of serious concern and demands the highest priority for the anti-tuberculosis campaign in the country's five-year plans.

The survey has also belied the earlier assumption that population in urban areas was more affected by T.B. than in rural areas. For this reason, programmes for control of tuberculosis have to be extended to rural areas also in the third and subsequent five year plans.

The survey was conducted by the T.B. Sub-Committee of the Indian Council of Medical Research with Dr P.V. Benjamin, T.B. Adviser to the Government of India, as its chairman. The other members were : Dr B.K. Sikand, Director, New Delhi Tuberculosis Centre ; Dr J. Frimodt-Moller ; Dr P.K. Sen, Professor of Medicine (Tuberculosis), Government Medical College, Calcutta ; Dr K.S. Sanjivi ; Col. P.N. Bardhan ; Dr. K.L. Wig, Principal, Government Medical College, Amritsar ; Dr C. Chandrasekharan, Statistical Adviser ; Dr K.N. Rao, Director of Health Services, Andhra Pradesh ; Dr R. Vishwanathan and Dr R.H. Betts.

### **Health Minister Commends Effort**

Shri D.P. Karmarkar, Union Minister for Health, in a foreword to the report says that the investigation has been carried out at an opportune moment and that "an effort of such a magnitude is not known to have been attempted earlier." He has commended it to all those who are interested in tuberculosis. The survey was limited to investigations on pulmonary T.B., one of the most important forms from the epidemiological and public health points of view. It was started towards the end of 1955 and completed early in 1958. Various types of population in selected cities, towns and villages in the States of West Bengal, Bihar, U.P., New Delhi Punjab, Andhra Pradesh, Mysore, Madras, Bombay and Kerala were covered by the survey. About 3,00,000 persons were examined in six cities, 30 towns and 151 villages.

The groups included in the survey were chosen in accordance with statistical principles so that the findings might be of general application. Six institutions were entrusted with the survey work. These were the T.B. Centres in New Delhi, Patna, Hyderabad and Trivandrum, the All-India Institute of Hygiene and Public Health, Calcutta, and the U.M.T. Sanatorium, Madanapalle, Andhra Pradesh. The entire population, excluding children under five years, in the areas selected for survey was subjected to mass miniature X-ray examination and those suspected of any abnormality to further bacteriological tests.

### **Rate of Prevalence**

It has been found as a result of the survey that the difference in the prevalence-rates of T.B. in cities, towns and villages is not so marked as was expected. T.B. can no longer be regarded merely as an urban problem. Since the mobile X-ray equipment is heavy and extremely delicate and cannot be transported from place to place, the observations had to be confined to villages within half a mile of metalled roads. However, a later survey in some zones with lighter X-ray equipment was made in inaccessible villages and it was noted that in these villages the incidence of T.B. was not markedly different from that in other areas.

The statistics also indicate that the prevalence of T.B. is higher among higher age-groups than among younger ones. The number of women affected by T.B. is in general less than of men. This difference is specially marked in the higher age-groups. The importance of socio-economic conditions and environmental factors has been emphasised by the finding that people living in unhygienic environments are more prone to the disease than those living in better quarters. "When we think of tuberculosis being high in cities there is a chance of taking for granted that the majority of the population lives under such conditions", says the report, and adds : "Since sections of the community living in healthier surroundings have got lesser prevalence they make the average prevalence in the city less than what we expect."

### **Rural Areas**

Big fairs and festivals and consequent movement of population results in the spread of tuberculosis and this can be expected to be higher in areas near channels of communication. As the survey has covered only accessible villages so far, the prevalence-rates obtained are applicable to only rural areas where the spread of disease is likely to be more. Further investigation is recommended to ascertain whether conditions will be different in inaccessible rural areas.

The report notes that the majority of cases

suffering from tuberculosis are moderately advanced and that minimal cases are few. Cavity cases are less in cities than in small towns. The report says that it is not easy to explain these differences but it is believed that in cities there are more facilities for treatment and this may be one of the factors.

Since the sample survey covered only 40 per cent. of the total population spread over six zones and could not cover the whole country because of transportation difficulties and financial limitations, the estimates cannot be strictly used for the country as a whole, says the report. However, the survey provides evidence that the total number of pulmonary tuberculosis cases in the country is much larger than what was estimated previously. Not all these cases may be in need of treatment, but a

certain proportion *i.e.* 0.4 (or 1.5 million) are infectious and need special attention.

Dealing with priorities to be given to control measures, the report observes: "Till now the main emphasis was being given to the control of tuberculosis in urban and crowded areas, as these were considered to be the important centres where tuberculosis was concentrated. There is undoubtedly much tuberculosis in cities. But the cases are usually concentrated in certain areas of the cities where the economic condition of the people is comparatively poor. When priorities are to be given because of paucity of funds and personnel, it would naturally be necessary to concentrate tuberculosis control measures in these areas, *e.g.* if only a few clinics can be started in a city it is well to have them located in such areas."



(Continued from page 64)

salient features of the Programme during the proposed Third Plan period will be :

(1) Withdrawal of spraying will have to be staggered considerably in view of past experiences and unsatisfactory spraying operations in 1958-59.

(2) Provisions have been made for continued spraying in 20 units bordering adjoining countries. No surveillance work can be taken up in these units till the last year of the Third Plan period.

(3) All hypo-endemic units will be finally replaced by 20 mobile surveillance units. Besides, there are

various other adjustments that will have to be made during the coming year.

### Conclusions

However, before we enter into that new phase much would depend on our activities during this year and the next. The task ahead is indeed arduous but with joint endeavour of the workers and the people the aim will be fulfilled. No doubt, even today there are critics who believe that eradication is a seemingly impossible task. But one may say that we must try to achieve the impossible immediately and leave the miracles that would inevitably take much longer.



## PEOPLE'S PARTICIPATION IN HEALTH EDUCATION

Dr S. Nagaraj

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*This is the second article in this series, presenting accounts of experience of six Indian health educators who were recently trained abroad in health education.*

HEALTH Education programmes in the advanced countries of the world today are to help the people to help themselves for better health. To do so, effective communications with the public are very essential. Research is increasing to find out better communication methods. Involvement of the people in the activities and face-to-face discussion at the opportune moment are found to be partial but yet satisfactory answers. These are seen widely applied in all health education programmes in the United States of America.



Dr S. Nagaraj

In India, there are many health education opportunities unexplored, where public could participate. Some possibilities are discussed in the following paragraphs in the light of the programmes seen in action in the United States.

People are different from machines. The old idea of "do this or else" is going out of existence in the

world. People need to understand a message before they can give it their best efforts. They have to know the why as well as the what. It is also true of health message. Hence, one of the basic problems facing public health workers is how to effectively convey the message to the public. The problem is more acute in less advanced countries,

like India, where the majority of the people is illiterate.

### People's participation

Communication is an important factor. The American business and industry spent an estimated 112 million dollars in the past year to learn of effective and efficient communication. In all, they found 27 methods of exchanging information. Most of these are limited substitutes for face-to-face discussion for being efficient and involvement of people for being effective.

Since Independence, India has made rapid strides in improving the lot of the people, specially through the Community Development Programme. Face-to-face discussion and people's participation have proved practicable and acceptable to the people. The country's progress (including the health field) today is dependent on the capacity of the people for self-help.

### Role of Community Leaders

Rural Development Programme, like the Community Development Programme in India, is in action in the United States of America for over 40 years. The chief objective is community education (extension work). Each county (like our Taluk) has an agricultural extension worker and a home economic agent. They work with a multitude of voluntary agencies like 4 H. clubs, women's clubs, etc. A few technical personnel carry on educational programmes on a large-scale. One set of community leaders, who are also members of the voluntary agencies, is trained in health. They conduct group meetings in local areas and hold discussions. This system of community leaders participating in health education of the public has stood the test of time.

In India, quite a good progress has been made in this direction. Village leaders have been trained in the fields of agriculture, animal husbandry, etc. There are possibilities of developing local leadership in health and use them for community education.

### **Volunteers in Hospitals**

In several hospitals in the United States, the participation of the local community, by organising volunteer groups, is an interesting feature. Volunteers work not only in general hospitals but also in special institutions, like crippled children's hospitals, hospitals for the aged, etc. Volunteers do a variety of job assistance, starting from public information to care of the sick, bedside attendance, bath to patients, supply of food, etc. This has helped to bring medical institutions close to the community, reduce the recurring cost on staff, and provide education to future leaders of the community.

Similarly, enthusiastic youngsters, may be students, during long holidays can be enrolled as volunteers in suitable hospitals. In cities and big towns with a large number of educational and medical institutions, a modest beginning could be made and the system given a fair trial.

### **Fairs for Health Education**

County fairs in USA, like cattle and pilgrim fairs in India, are characteristic of some of the States. Fairs are organised and conducted by the local communities. Such occasions are extensively used for community education, incidental to recreation. Community leaders, trained in health, work with the guidance of technical personnel in arranging health education programmes by exhibitions, mass chest X-ray programmes, vision and hearing tests, free medical check-up, etc. A large number of other volunteers of the area participate in these. The volunteers learn much of health and get the community interested in individual and community health.

In India, fairs are common community events with huge congregation of people. With mobile exhibition units, cooperation of the local medical associations and people's participation, such events could be effectively used for public health education.

### **Hospitals for Community Education**

Hospitals provide opportunities for patient and community education. These are being increasingly used in the United States of America. The hospital staff—doctors, nurses, etc.—are oriented in health education techniques. In some hospitals, exhibitions are set up, where even operations like appendectomy, tonsillectomy, dental extraction, etc., could be explained with audio-visual aids. Appraisal of the public of human anatomy and physiology, certain diseases and their prevention by exhibits, is a normal programme.

There is ample scope to organise such educational programmes in big hospitals in India. By selecting the teaching hospitals, the students in medical colleges can be provided with practical training in health education techniques.

### **School Health**

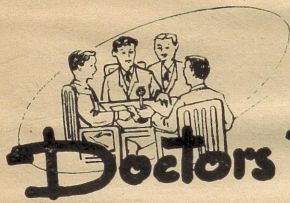
Childhood is the best part of life for education in health. The child of today is the citizen of tomorrow. Recognising this, much of the health education activities in the United States of America are directed to pupil education.

Services like periodical medical examinations, dental care, school lunch and toilet facilities, are all designed to serve as means of education.

Health instruction in schools is one of the three major sections of a school health programme, the other two being, school health service and environmental sanitation. In most of the States, a minimum of 10-15 per cent. of the time in primary, intermediate, and upper grades is devoted to health and physical education. In addition, another five per cent. of the time can be used for health instruction at the discretion of the supervisor. Health instruction is both integrated and incidental in lower grades. In addition, health is also a separate subject in higher grades. Visits to natural history and health museums are a regular feature of the curricula.

The parent, the teacher and the nurse all share the responsibility and contribute to pupil-learning.

School health is yet another field, where public participation is well-organised in the United States. In India, it has still a good scope.



## Doctors talk it over

### LEPROSY

The following talk on Leprosy was broadcast by All India Radio, Bombay, on 16th December, 1959. The participants in the discussion were : Dr Y.K. Subrahmanyam, Asstt. Director General of Health Services, New Delhi ; Dr Dharmendra, Director, Central Leprosy Teaching and Research Institute, Tirumani, Madras ; Dr Wardekar, Secretary, Gandhi Memorial Leprosy Foundation, Wardha ; and Dr T.S. Patel, Director of Public Health, Bombay, State, Poona. This is the fifth in the series 'Doctors Talk it Over' to be published in Swasth Hind.

Dr Subrahmanyam : This evening we have a panel of experts on leprosy in this studio, and I would like to take the opportunity to ask them a few questions. Leprosy has created a big problem in our country and the society is so much ignorant about the disease that it is worth taking up this subject for discussion. Dr Dharmendra, could you tell us something about the cause and infectivity of leprosy ?

Dr Dharmendra : Leprosy is caused by a minute germ known as the leprosy bacillus, and the disease is transmitted by an infectious patient to healthy persons. Leprosy is, therefore, an infectious disease, but it is not so highly infectious as many people believe it to be. I think it is necessary to know a few important points about the infectivity of leprosy. First, every case of leprosy is not infectious ; in India, only about 30 per cent. of the cases are infectious. Second, to get the infection one has to be exposed to the infectious case for a long time and the contact has to be a close one. Third, after contact, children are more susceptible than adults. This does not, however, mean that every adult is resistant or that an adult will never be infected.

Dr Subrahmanyam : Dr Dharmendra, you say that some people are susceptible and some are not. Is it possible to find out who will get the disease and who will not ?

Dr Dharmendra : So far there are no means available to get information on this point and that is why we advise that everybody should be protected from exposure to an infectious case.

Dr Subrahmanyam : Dr Dharmendra, how do you know that a case is infectious ?

Dr Dharmendra : The appearance of the disease is

often suggestive, but the surest method of knowing this is to take material from the patches in the skin and examine it under the microscope. If the leprosy germs are seen in such material, the patient is considered infectious, and if not seen, he is considered non-infectious. In practice, an experienced leprosy worker can in most cases say by examining the patient whether a particular patient is likely to be infectious or not ; but this opinion should always be confirmed by microscopic examination whenever possible.

Dr Subrahmanyam : Dr Dharmendra, you have just now said that it is possible to know from the appearance of a patient as to whether he is infectious or not. Do you mean to suggest that a patient with deformities is more infectious ? I am asking you this question, specially because the public believe that the more the deformities, the greater the infectivity.

Dr Dharmendra : No. Infectivity of a case does not depend in any way on the degree of deformity but, it depends primarily on the type of case. Leprosy cases can be divided into two main types—lepromatous and non-lepromatous. Cases of the lepromatous type are mainly responsible for spreading the infection to healthy persons. An early lepromatous case shows very few changes in the skin and it does not show any deformity also ; in fact, such a case may not be recognised as a case of leprosy by the society, but all the same it is infectious. On the other hand an ugly looking leprosy patient with mutilated fingers and toes and ulcers may not be infectious.

Dr Subrahmanyam : How can the society then know whether a patient is infectious or not ?

Dr Dharmendra : Definite opinion in this matter can

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be given only by a doctor. However, in general it may be said that infective cases are characterised by thickening of face, ears and other parts of the body, and by the presence of thick patches and nodules, which may ulcerate.

Dr Subrahmanyam : Dr Dharmendra, is leprosy hereditary ?

Dr Dharmendra : No. Leprosy is not hereditary. It is known that if children are separated soon after birth from their infectious parents, these children do not develop leprosy.

Dr Subrahmanyam : Dr Wardekar, please tell us something about the early signs of leprosy ?

Dr Wardekar : The earliest sign of the disease is usually a patch on the skin. This patch is sometimes paler in colour than the normal skin—but it is not as pale as the patch of leucoderma. Sometimes, it is slightly reddish in colour. These patches may show slight loss of sensation to pain and heat. Many times these patches appear on the back or buttocks and the patients may not be aware of the existence of these patches. Even if they are aware, many times they ignore these patches because they do not itch, pain or burn. Sometimes the patches are very hazy and not easily noticeable; such patches appear particularly in the infectious type of leprosy and even though the patches are so hazy, these cases may be infectious. On the contrary, many of these who show distinct patches may not be infectious. In some rare cases there is no patch in the skin, but there is only loss of sensation in some part of the body, say the little finger or some other small area somewhere else.

Dr Subrahmanyam : Is leprosy curable ?

Dr Wardekar : Certainly, yes. We have now patent medicines for the treatment of leprosy and if the patients are put on treatment in the early stage the patches disappear and the patients are cured completely. These patients do not then develop the deformities of leprosy, which ultimately lead to the socio-economic suffering of the patient. These medicines are effective in the treatment of advanced cases also.

Dr Subrahmanyam : How are these medicines given ?

Dr Wardekar : The modern drug is available in the form of a tablet and can be taken by mouth. The advantage of the modern medicine is therefore that it does away with the need of the painful injections.

Dr Subrahmanyam : Dr Wardekar, please tell us how the disease progresses in those who do not take treatment in the early stage.

Dr Wardekar : The disease progresses slowly, new patches appear on other parts of the body, the disease process spreads to nerves, they become

painful, deformities start in hands and feet. Gradually, the fingers and feet lose sensation of touch, pain and heat. This removes the protective mechanism by which normally our hands and feet are protected from danger. With loss of protective mechanism, the patients damage or burn their hands and feet and develop ulcers; it is worth noting that these ulcers are not primarily due to leprosy but due to damage to the nerves. It generally takes a few years for the patient to develop deformities.

Dr Subrahmanyam : What is the effect of modern drugs on the infectivity of a case ?

Dr Wardekar : The modern drugs such as sulphones reduce the infectivity and the patient finally becomes non-infectious if he takes the treatment regularly for a sufficiently long time.

Dr Subrahmanyam : Dr Patel, please tell us something about the leprosy problem in our country and the modern method of leprosy control.

Dr Patel : We have about 20 lakh leprosy patients. Of these about four lakhs are infectious. The modern approach to the problem is to carry out case-detection campaigns and put every case on treatment. By this method we can ultimately control leprosy.

Dr Subrahmanyam : Dr Patel, please tell us something about the spread of leprosy and its prevention.

Dr Patel : Leprosy spreads by contact between the infectious patients and healthy people. As Dr Wardekar has said, leprosy starts very insidiously and it takes many years to develop deformities. Till then these unrecognised patients move about freely in the society and transmit the disease by coming in close and repeated contact with the people. Every effort should therefore be made for early detection and treatment of all cases. Whenever anybody gets any suspicion he should at once consult his doctor.

Dr Subrahmanyam : But unfortunately patients do not generally take the treatment at the initial stage. Could you tell me why it is so ?

Dr Patel : Just ignorance and prejudice. People do not know that the disease is curable. Another is the attitude of the society towards persons suffering from this disease. Whosoever is known to suffer from leprosy is ostracised and therefore, in order to avoid this, he conceals the disease, as long as it is possible to do so. Health education will greatly help solving this problem.

Dr Subrahmanyam : I think we have had a very useful discussion for which I wish to thank you all. It is obvious that like other infective diseases, leprosy is a curable, and preventable disease. Early detection and treatment of all

cases of leprosy on a mass scale appears to be essential for controlling the spread of the disease and its ultimate eradication. I am glad that in our country increasing efforts in this direction are being made both by the Government and private organisations. These efforts will have no doubt to be augmented. In addition to the problem of treatment and prevention, the social and economic problems created by the disease have to be dealt

with. For this purpose two things are essential. First to educate the general public so that they adopt a rational attitude towards the disease and persons suffering from it; second, to organise active social services to meet the various needs of the patients and their dependants and to rehabilitate the cured patients.

(Courtesy—All India Radio, Bombay)



(Continued from page 74)

A demonstration was also arranged for three lady teachers from a local school on the use of flannel-graphs. Interesting developments are expected to provide further experience regarding its suitability as a simple teaching aid in the schools.

Another field of interest and activity of the Bureau is the development of materials, teaching aids and methods suitable for use under different local conditions, rural as well as urban.

At present, the Bureau is more interested in methods which permit contacts and work with people in a direct and oral way. Interviews, surveys, talks, role-playing, flannel-graphs and group discussions are some of these methods and the training programme attempts to familiarise future health workers with them in a way that by practice in the field they will finally develop the necessary skill in some of them. A basic orientation has been provided during the courses at the Bureau for this purpose.

#### **Future Plans**

As regards future development, it is planned to have a regional bureau of health education at each divisional headquarters. There are six divisions in the State. In order that there be effective health education programme in all the districts, it is essential to establish a health education sub-bureau in

each division with the necessary staff. Each of these will be provided with a van, generator, projector, films, models, charts, etc. This is the regional set-up.

Regarding the districts, it is proposed to appoint 21 health educators so that one health educator serves two districts. The health educator in the district will assist the Bureau to carry out health education work in his district and will also be responsible for arranging health exhibitions and shows in secondary schools in his district. He will also organise mobile museums and talks.

The State Government is planning to spend about Rs 10 lakhs during the Third Five Year Plan on the development of health education activities throughout the State.

#### **Health Museum**

The Government is also establishing a health museum at Nagpur. It will have an auditorium and open space for the use of children as parks and playgrounds.

The museum will have a mobile section which will tour the rural areas from time to time so that its benefits will not remain confined only to people of Nagpur but will be shared by the rural people as well.





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**WORLD HEALTH DAY, 7 APRIL 1960**

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