

I believe it to be efficient and safe in the hands of careful doctors and nurses. The rough sketch shows at a glance the construction of it. It is a room inside a room with a corridor or space all round, the measurements being: outer room, length 10 feet, width 9 feet and height 8 feet; inner room, length 8 feet, width 6 feet and height 8 feet. The skirting is weighted by small sand bags sewn at intervals along the lower border.

The nets which are sewn together along the roof only should be suspended by tapes from wires or ropes tightly stretched across the room and the skirting should lie on the floor. Nurses and attendants are to enter and leave by lifting up one net at a time. After actual trial, it has been found that several mosquitoes succeed in getting inside the outer room and a few into the inner room but they are easily killed by flit if nurses entering in the room make it a point to flit them as soon as they are seen in either of the rooms. The important thing is not the mosquitoes that enter but those that escape from the rooms after having fed on the patient inside; these will infect other persons, so it is important that every mosquito trapped should be killed as soon as it is seen.

A simple net of this design was made for Rs. 62 from the ordinary cotton mosquito-curtain material, and it has been tested by two differing civil surgeons by actually nursing patients in it. I am indebted to Colonels D. Kelly and W. Scott for their assistance and suggestions for improving the room.

### RURAL DISPENSARIES IN BENGAL\*

#### CAUSES OF THEIR UNPOPULARITY AND A PLEA FOR THEIR IMPROVEMENT IN THE SCHEME OF POST-WAR REORGANIZATION OF MEDICAL RELIEF

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At the end of the year 1940, the total number of rural hospitals and dispensaries stood at 1,681; of these, 16 were state public, 41 state special, 1,242 local and municipal fund (including the village and union board dispensaries), 123 private aided, 71 railway, and 10 subsidized by district boards.

I focus my attention to the 1,365 local, municipal and private dispensaries, most of which are outdoor dispensaries falling under classes III, IV and V of the Dispensary Manual. Taking the rural population as 50 millions (including those of municipalities other than

Calcutta), there is one dispensary for a population of 30,000 in an area of about 40 square miles.

The unpopularity of these dispensaries among the rural population with a high sickness rate may be attributed to the following causes:—

(1) *Inadequate number of dispensaries.*—Not infrequently, the writer had to attend cases of fainting or collapse from the effects of a long and exhausting journey of 10 to 20 miles, taken on foot, by an already debilitated patient. The daily attendance in each rural dispensary often ranges from 100 to 400 patients. The average time that a medical officer can devote for one patient is about 2 minutes or less in the working time of 6 hours a day. It is evident therefore that the patient does not get the time and attention he deserves or desires.

(2) *Inadequate supply of medicine.*—It is a common experience of all medical officers that the average patient thinks that a charitable dispensary gives nothing but 'water' meaning thereby the infinite dilutions of active principles of the drugs. The annual budget for the establishment and supply of medicines in a rural dispensary ranges from Rs. 1,000 to 2,000. The average amount budgeted for the cost of medicines including appliances is from Rs. 300 to 600 per year. As the total annual number stands at 1,500 to 20,000 and the total annual attendances including old and new cases come to about 30,000 to 60,000, the expenditure *per capita* amounts to 1 or 2 annas, and is quite insufficient for the treatment of patients.

The above two factors make the dispensary not an attractive proposition except for those poor and indigent people who can ill afford to buy medicines from a private pharmacy or to call a private doctor.

(3) *The insufficient and in some cases inefficient staff.*—All these dispensaries are in the charge of medical officers of the sub-assistant class with a few exceptions where there are medical graduates. They are of course rendering yeoman's service for the amelioration of the sufferings of a people who form 90 per cent of the population and their aggregate services outweigh those of the better qualified members of the profession, mostly settled in towns, whose services are limited to the upper and middle classes. But the inadequate pay and prospects do not make these dispensaries attractive to the more educated members of the profession who naturally go to and settle at the nearest sadar or sub-divisional towns to build up their private practice. The utilization of more scientific knowledge and experience is thus lost to the rural population who are the backbone of the nation.

The pay of a medical officer in some of the rural dispensaries is as low as Rs. 20 to 30 per month. This is an indirect inducement to the medical officers to do private practice to

\*The subject-matter of this paper is a report to the Chairman of the Municipality in reference to a recent Government circular to elicit the views of local bodies, district magistrates and civil surgeons on the causes of present-day unpopularity of rural hospitals with their suggestions for steps to be taken in post-war period to increase their popularity.

Paper abridged by editor.

the detriment of dispensary work. It is no wonder therefore to see him a victim of malicious propaganda and nasty village politics.

(4) *Defective management.*—The management of some of the dispensaries is directly under a local body, either district board or municipality; in some cases it is vested in a local committee, the members of which are rich enough to get themselves treated by private and more popular doctors. It is unusual therefore that they take any interest in the improvement and proper working of these dispensaries. Usually most of them remain on the committee rather for the purpose of self-aggrandisement than for the service of the poor. The government control over these dispensaries is nil or negligible. In many cases the dispensary committee, consisting of laymen, interferes with the professional work of the medical officer who, instead of being free, has to satisfy these members for the security of his service. The public interest of the medical officer thus dwindles into one of job-keeping.

The poor villager thus visits a rural dispensary only because he cannot afford to pay for his medicine and attention. As I have already pointed out, the medical officer cannot treat his patient up to his capacity and satisfaction with an insufficient dispensary stock.

(5) *Want of diagnostic facilities.*—For correct treatment there must be correct diagnosis. On account of the high incidence of diseases such as malaria, kala-azar, dysentery, anæmia and pneumonia, the use of a microscope for examination of blood, urine, stool and sputum is essential in every dispensary, but is not available.

(6) *Obstruction by private practitioners.*—There is a tendency among the private practitioners of a locality to underrate the utility of the services of a charitable dispensary as a part of their propaganda for building up their private practice.

The facts stated above are the results of the experience of a period of 10 years of a medical officer of a charitable dispensary in rural areas. They need serious attention and thought by those of our statesmen and experts who will soon be engaged in the work of post-war reconstruction. I venture to make the following constructive suggestions for consideration in this connection :—

(1) *Area.*—Each dispensary should be a treatment centre for not more than 10,000 people, i.e. the population roughly equivalent to that of one union board.

*Site.*—As the existing buildings of class III dispensaries with such increase in their number as suggested in (1). The site should be centrally situated and be easily accessible to all sections of people.

The dispensary building should be of masonry work with the following parts :—

(i) Medical officer's room.

(ii) Dispensing room.

(iii) Operation room.

(iv) Room for examination of female patients.

The size of each room should be at least 14 feet  $\times$  10 feet  $\times$  12 feet, and it should be well lighted and ventilated. There should be a verandah on at least three sides, each of at least 5 feet width. The verandahs are to be used by waiting patients, the one for females being partitioned by walls. They should be connected by doors with the medical officer's room. The cost of such a building should not be more than Rs. 2,000 in a post-war period.

(2) *The dispensary budget.*—This should not be less than Rs. 4,000 a year, of which at least Rs. 1,500 should be spent on medicines and appliances, in addition to the cost of quinine and kala-azar specifics which should be distributed free and in a more practical way than at present by the government. The pay of the medical officer should not be less than Rs. 200 per month to attract medical graduates and licentiates alike. It is essential that the medical officer should be provided with free quarters attached to the dispensary.

(3) *The management.*—(a) The whole system of rural medical service should be centralized and the management taken over directly by the government with the civil surgeon of the district as the head of such organization.

(b) The dispensary committee, if essential, should be of the nature of an advisory body with the medical officer as its secretary ex-officio.

(c) The disciplinary control of the medical officer should be the function of the civil surgeon alone.

(d) It is observed that the civil surgeon of the district cannot make time to inspect a dispensary even once a year. It is suggested, therefore, that the civil surgeon should be assisted by an inspecting staff suitably selected and remunerated from among the medical officers of rural dispensaries of not less than 5 years' record of good service.

(e) The Dispensary Manual is old and antiquated and should be rewritten to suit modern conditions.

(4) *Diagnostic facilities.*—Each dispensary should be provided with a microscope with ordinary stains such as Gram's, Leishman, and acid-fast stains. There should be a centrifuge (hand propelled). There should be one sterilizer of the miniature autoclave type for sterilization of dressings, etc. There should be a Berkefeld filter as the water obtainable at such places is very hard for purposes of mixtures. There should be a high-power light of the Petromax type for work at night in emergency cases.

(5) *Efficiency of staff.*—Each medical officer should be required to undergo a refresher course every 5 years to be acquainted with up-to-date developments in diagnosis and treatment. These courses should be arranged in suitable

teaching hospitals. Each medical officer should also have some training in public health.

(6) *Dispensary assistants*.—Each medical officer should have at least one qualified compounder, one dresser, one nurse-midwife or a trained dai, and a peon and one sweeper. Suitable pay and quarters should be provided for these staff.

(7) *Transport facilities*.—Facilities should be provided for removal of patients requiring specialized attention and indoor treatment to sadar, sub-divisional or even Calcutta hospitals. The conveyance charges of such patients should be met from public sources. The sadar and sub-divisional hospitals should be expanded to house such patients.

(8) *Local subscriptions and donations*.—There should be local subscriptions and donations to supplement government funds allotted to the dispensary. The surplus amount should be utilized for expansion of the dispensary service. Two to four indoor beds should be arranged wherever funds permit. They should be used for indigent patients only.

The public health aspect of rural medical service including the maternity and child welfare service cannot be discussed here.

#### Summary

The actual state of affairs prevailing in rural dispensaries are described by an experienced rural worker. Some suggestions for the improvement in rural medical service in the scheme of post-war reconstruction have been made.

## Current Topics

### Defeat of Epidemic Typhus

(Abstracted from the *Lancet*, ii, 22nd July, 1944, p. 115)

IN the epidemics of the last war, the chief methods of delousing were by heat and to a lesser extent by fumigation. Both these methods have since been improved in various ways by all the principal belligerents. Hot-air treatment has been made more rapid and reliable by the use of air-circulation systems. For fumigation, many alternatives have been proposed instead of the dangerous hydrogen cyanide formerly used—methyl bromide in the U.S.A., methyl-allyl chloride in Britain, trichloroacetonitrile in Germany and methyl formate in Russia. Although hot air and fumigants are effective in killing lice they made little headway in combating general lousiness in a large group of people living under difficult conditions, because the deloused people soon became reinfested. The need has been for some treatment which would keep the lice away, but no suitable insecticide was known which would ensure more than two days' freedom from them. This need for a louse-proofing agent was realized by British scientists early in the war and two partial answers were fairly soon evolved. One was a very finely ground insecticide, 'AL63', which by clinging to dusted underwear protected the wearer from reinfestation for five or six days. The other remedy was to spray the underwear with organic thiocyanates

which killed lice and prevented reinfestation for a month. The thiocyanates could also be used on an anti-lice belt woven so as to attract lice which were then killed by the impregnated drug. Unfortunately the thiocyanates caused smarting of the skin if the wearer began to sweat profusely. When the Americans entered the war they set several teams of biologists on investigating the louse problem. Whereas the practical trials in Britain were done on naturally verminous vagrants, the Americans studied the effects of treatments on artificially infested pacifist volunteers. They also acquired much valuable knowledge about the organization of control measures by attempting to eradicate lice from village communities in Mexico. As a result of this work, the insecticide first adopted by the American army was a fine dust, 'MYL', rather like the British AL63 but more efficient. This MYL contained pyrethrum which was scarce and wanted for other purposes. In the meantime our Russian allies had developed two synthetic compounds: a powder containing diphenylamine and clothing impregnated with the chemical bis-ethyl-xanthogen. The diphenylamine dust was successfully used among the civilian population in Moscow in the winters of 1941 and 1942. Two large hotels were taken over as treatment centres and the staff instructed in methods of application. The powder is about as insecticidal as AL63. Garments, impregnated with bis-ethyl-xanthogen, which is of the same order of effectiveness as the thiocyanates, were widely worn in Bessarabia when the Russian troops were there last time. The Germans say it has long been used in veterinary practice but that its unpleasant smell makes it unpopular among soldiers.

All these insecticides developed in different countries suffer from more or less serious disadvantages. But the new synthetic compound, 'DDT' (dichloro-diphenyltrichlorethane), seems at last to give trouble-free protection from lice. Synthesized in 1874 by the German chemist Zeidler, its insecticidal properties were not suspected until quite recently. In 1940 the Swiss firm of Geigy & Co. took out patents, and two years later they revealed the formulæ to Britain and America. Since then intensive research in both countries has perfected its manufacture and use, investigated the health hazard and extended our knowledge of its toxic effects on other pest insects. For combating lousiness it can be used in two principal ways. As a powder diluted with kaolin or pyrophyllite it can be rubbed into underwear and will give protection from lice for two or three weeks. It is even effective when blown up the sleeves or down the necks of dressed people, and was largely applied in that way by the Americans working under General Leon Fox in Naples. The speed of this treatment accounts for his astonishing peak number of 73,000 people treated in one day. Here is obviously the method par excellence for dealing with large-scale lousiness. For people under discipline (soldiers, medical personnel, etc.) it can be used to impregnate under-garments which then protect the wearers from lice for about six weeks. Garments are unaffected and the DDT is not readily removed by laundering. As usually applied it is harmless to the human skin and its smell is unobjectionable. DDT thus provides a simple but effective means of quelling typhus epidemics. Its use demands energy and skill in organization, but now that we at last have the proper tools for the job, plus the experience of the Naples outbreak, it should be impossible for typhus epidemics to ravage territory under Allied control.

### Tests of Liver Function

(From the *British Medical Journal*, ii, 16th September, 1944, p. 378)

THERE is a fascination about the measurement of the human functions. Evidence of this is seen in the vast amount of work done on tests of human intelligence, cardiac efficiency, and renal and hepatic function. All this work is inspired by the belief that once we can