

LEPROSY REVIEW.

VOL. I. No. 4.

OCTOBER, 1930.

EDITOR - R. G. COCHRANE, M.D.

Contents.

	PAGE
Editorial	2
The Early Diagnosis of Leprosy E. MUIR	4
The Intradermal Leprolin Test for the Detection of Early and Latent Leprosy LEONARD ROGERS	9
Grants for Leprosy Work	11
Routine Examination of Nasal Smears. T. N. ROY and S. N. CHATTERJI	12
A Note on the Treatment of Some of the Commoner Dermatological Conditions R. M. B. MACKENNA	15
Some Observations on the Employment of Lepers, Out-Patients and Others, During and After Treatment .. R. S. DONALDSON	24
Reports. The Mandalay Skin Clinic (Leprosy). Report for Year ending December 31st, 1929.. .. .	30
Literature	32

The Association does not accept responsibility for views expressed by the writers. Communications may be sent to the Editor, at 29, Dorset Square, London, N.W.1.

NOTES ON CONTRIBUTORS.

E. MUIR, M.D., F.R.C.S.E., is the Research Worker under the Indian Research Fund Association, School of Tropical Medicine and Hygiene, Calcutta.

Sir LEONARD ROGERS, M.D., F.R.S., is one of the leading authorities on Leprosy, and was Professor of Pathology at the School of Tropical Medicine and Hygiene, Calcutta.

T. N. ROY and S. N. CHATTERJI are Assistants at the Leprosy Department, School of Tropical Medicine and Hygiene, Calcutta.

R. M. B. MACKENNA, M.A., M.B., M.R.C.P., is a well-known Liverpool Dermatologist

R. S. DONALDSON, M.B., D.T.M., is Medical Officer of the Lady Willingdon Leper Settlement, Chingleput, India.

Editorial.

IN this number of the REVIEW we are glad to bring to the notice of our readers several important articles. Dr. Muir, in a contribution which was prompted by certain statements made by Prof. Marchoux in our July issue, rightly insists on the value of purely clinical methods of examination for establishing the diagnosis of leprosy. In these days of rapid advance in bacteriological, serological and other laboratory tests, the need for clinical acumen is not always realised. In no field is this better seen than in the field of leprosy. We therefore welcome Dr. Muir's article stressing, as it does, the importance of clinical diagnosis, and suggesting that serological tests are unreliable in the earliest stage of the disease, a stage which, needless to say, is the most amenable to treatment. While we hold similar opinions, yet we would suggest that the Intradermal Leprolin Test, described by Sir Leonard Rogers, should be given an extended trial. Sir Leonard states that places such as the S. Sudan are excellent for an extended investigation. Not only is early leprosy very prevalent in that area, but the authorities there have knowledge of the existence and place of residence of more than 90 per cent. of such cases. The Secretary of the Association, from experience in his recent tour, has accumulated a certain amount of evidence which gives support to the view that a large percentage of early lesions in adults can probably be termed abortive infections, and do not generally develop into the more serious forms of the disease. This observation is important when one is contemplating the treatment of lepers in some of the areas of British Africa, where the incidence of leprosy is extremely high. We should like to state for the guidance of workers who are perplexed regarding the matter of choosing cases for treatment, when it is impossible to provide therapeutic remedies for all the lepers coming to hospitals or centres that :

(1) Healthy adults who present one or two isolated flat depigmented patches, which have been in existence for years, and have shown no tendency to increase or spread, do not need active treatment. They should, however, be warned of the necessity of keeping absolutely fit, and they should also be examined, if possible, every six months.

(2) Advanced anæsthetic mutilated cases who present no raised patches, and whose nasal smears are negative, need no active antileprotic treatment.

Children and young adolescents, whatever the signs of the disease, should be treated actively, for it is during the "growing period" that the disease is most liable to extend.

As a rough guide, infective cases may be considered to be those with raised rashes or nodules, the former mildly or moderately infective, according to the number of bacilli found in skin clippings, or, where the microscope is not available, according to the redness or infiltration of the patch. Nodular cases should always be classified as highly infectious.

In this connection we draw attention to the article reprinted from "Leprosy in India," on "Routine Examination of Nasal Smears in Leprosy." The importance of this question was recently seen in S. Africa, where a large percentage of apparently non-infective cases were found on examination to have strongly positive nasal smears. In some cases these were only discovered on the examination of contacts, and had no outward manifestation of the disease. It would be interesting to investigate the possibility of the existence of carriers of the infection. The term carrier is used to mean an individual who is discharging active bacilli with no clinical signs of the disease. If the Shiga technique for the cultivation of the mycobacterium lepræ is confirmed by other workers, it might be applied to cases indicated here in order to determine whether such persons are actually discharging live bacilli. We intend to refer to these and other interesting points in abstracts of the Secretary's reports to the East African Colonies, which will be published in the REVIEW from time to time.

Dr. R. S. Donaldson contributes an interesting article on the employment of lepers. This is a difficulty which has to be faced by all those who are treating cases as out-patients who wish to pursue their own vocations. It is pointed out that there are occupations such as nurses and school teachers which should not be undertaken, no matter what stage of the disease the patient is in, or whether he is a healed case or not. While we would not go as far as this, yet, if the patient concerned cannot be examined periodically, then, in the interests of the children, we consider that it is better that such persons should seek some other occupation.

Dr. Donaldson lays stress on the importance of institutional treatment for all infective lepers. At a time when out-patient treatment is being so widely advocated, it is well to stress the value of institutional care. The need for institutions is often greater to-day than ever, for as a result of out-patient centres any institution in the vicinity benefits, because there are cases which cannot, or should not, attend clinics, coming in greater numbers to such hospitals. We stress this point for it is only by maintaining the right

balance between the leper hospital and the treatment centre that this problem can be adequately tackled. We commend the conditions laid down for Government servants before they can be discharged from Chingleput, to the careful consideration of all those who are in difficulty over this matter.

We feel that reports from workers are of extreme interest, and therefore, in this number we publish an account of the work at Mandalay for 1929. Our readers are invited to send such items of news for publication.

We would also like to draw the attention of our readers to the Annual Report of the Indian Council of the Association. This gives an account of the progress of the work in India and the information which has been amassed through the Special Survey Party of the Association. Those who are contemplating anti-leprosy schemes are advised to procure copies of this report.

The "China Medical Journal" has just issued a Leprosy number which contains extremely valuable information. We will be glad to secure copies for our readers of not only this, but also of the September number of the "Prescriber," which contains a useful summary of the Therapeutic Progress of Leprosy during the past year.

The Early Diagnosis of Leprosy.

E. MUIR.

A STATEMENT in an article entitled "The Curability of Leprosy," by Prof. Marchoux, appearing in the July number of LEPROSY REVIEW, has prompted the writing of this paper. After referring to a case of leprosy in which the disease showed apparent spontaneous cure, he says: "Observations of this kind would doubtless become very common if we possessed signs for discovering leprosy in the early stages as easy to demonstrate as those by which we can demonstrate incipient tuberculosis. We should have still more astonishing surprises if we possessed for leprosy a reagent of a sensitivity as great as that of tuberculosis. Without doubt, we should in leprosy areas obtain proportions, if not of 98 per cent., as for Koch's bacillus (for the latter is carried by very subtle means), yet certainly of unsuspected size." So far, all attempts to produce such a test have proved of little use, although many such tests have been put forward. One of the latest, the reaction of Botelho, is described in the Bulletin de la Societe de Path. Exot. By means of it, 78 per cent. of nerve, 70 per cent. of skin, and 66 per cent. of mixed cases were found positive.

But if a serological test is to be of any value in the diagnosis of leprosy, it should surely be positive in every case in which the diagnosis can be definitely proved either bacteriologically or clinically. We have tried out this test in Calcutta in early bacteriologically negative but clinically positive cases, and have found it of no practical value in making an early diagnosis.

This goes to show that we must depend for early diagnosis of leprosy on clinical rather than on serological examinations. It should be of interest to Prof. Marchoux and other European workers to know the high proportion of cases only clinically positive as compared with those bacteriologically positive in a highly endemic country like India. Two examples out of many available may be given. At the clinic of the Calcutta School of Tropical Medicine there attended during last year 929 leprosy patients. In only 372 or 39 per cent. was it possible on careful examination to find acid-fast bacilli; in the remaining 557 cases the diagnosis was entirely dependent on clinical evidence, and yet in not a single one of these cases was there any doubt as to the actual presence of leprosy, the symptoms being considered quite definite. Of these 557 cases, 146 had acroteric lesions, showing anæsthesia, deformity and other trophic lesions of the hands and feet. But the remaining 411 were early cases without trophic lesions.

Another still more striking example was the result of the examination of coolie labour in Calcutta. 16,889 cases were examined, and out of these 159 or 0·94 per cent. were found to have definite symptoms of leprosy. The incidence was probably higher as several examinees absented themselves, probably from fear of losing their work if they were found to have leprosy. Out of these cases, thirty-nine were bacteriologically positive, six showed acroteric lesions (A2 type), and 114 or 72 per cent. were early cases diagnosed on clinical evidence only. In some places in northern Bengal the incidence of leprosy has been found to be as high as 6 per cent.

All this goes to confirm the contention of Prof. Marchoux that, as in the case of tuberculosis, the incidence of leprosy infection is far higher than is generally supposed. The frequency with which cases of the A1 type are found among the contacts of highly infectious cases of the B2 and B3 type would lead one to believe that over and above those showing actual clinical signs there are many who are infected, but in whom the resistance is sufficient to prevent the development of the disease to an extent which can be diagnosed either clinically or bacteriologically.

Moreover, in Calcutta, we have abundant evidence that even the slightest infection may persist for many years with scarcely any advance. As an example may be mentioned a patient who had had two circular, anæsthetic patches on his thigh for twenty-two years. On examination he was found to have anæsthesia of the lobe of an ear and a very markedly thickened great auricular nerve. It is not unlikely that in many cases the infection may persist internally for an equally long period without the patient having, as he had in this case, unmistakable clinical evidence of the disease.

We have then two factors, the widespread infection of contacts and the long persistence of infections which are so slight that they cannot be diagnosed or can be recognised only after very careful examination. These two factors provide the presence of the seed ; the important determining factor is the resistance of the body. Any prophylactic or therapeutic measures which are taken to cope with leprosy must aim at :

- (i) Examining for signs of leprosy, especially in contacts with infectious cases.
- (ii) Distinguishing between infectious and non-infectious cases, and taking all possible means to prevent the former from spreading infection.
- (iii) Providing advice and treatment to early cases with a view to preventing them from developing into infectious cases.

Since much depends upon the early clinical and bacteriological diagnosis of leprosy, the common early signs and symptoms may be mentioned here : Leprosy most commonly first appears in the form of one or more patches or macules, annular or circinate in shape. In the dark skins depigmentation is one of the first signs which brings the patient for examination. One or more depigmented patches may appear anywhere on the surface of the skin. The depigmentation is not complete, but the patch is of a lighter colour than the surrounding skin. In lighter skins depigmentation is more difficult to distinguish, but this is made up for by the more easily distinguished erythema. Erythema and raising of the skin surface generally accompany each other, and may either affect the whole patch or, more commonly, only the margin. In early slow-spreading patches the epithelium is generally raised at the margin in the form of reddish papules which coalesce. As the patch spreads a few papules may often be noticed, like scouts, outside the advancing margin. In other cases the raised margin may be absent or difficult to distinguish.

Parakeratosis is another marked feature of early patches. The skin surface becomes coarse and shiny in appearance. Along with this there is anhydrosis, and the hairs first become coarse, and then break off at the mouths of the hair-follicles, leaving a black bulbous head marking the position of the follicle, inside which the hair is curled up.

There is almost always some disturbance of sensation. In the more chronic cases there is epicritic anæsthesia, the patient failing when blind-folded to respond to the touch of a feather on the patch. In more acute cases epicritic sensation is not lost, but deep analgesia is present, pricking with a pin being felt much less on the patch than on the surrounding healthy skin. In the former, acid-fast bacilli cannot be found, but they can be found as a rule in the latter.

The thickened nerve branches supplying the affected skin can often be felt running under the skin before they pierce the deep fascia. Such nerve thickening is characteristic of leprosy, and is useful in confirming the diagnosis in otherwise doubtful cases. When the sensory nerve branches at once pierce the deep fascia on leaving the skin they cannot be felt, but deep percussion on the patch or at a spot immediately proximal to it will often elicit a tingling sensation due to the thickening and consequent tenderness of the nerve.

In other chronic cases there is no definite patch at all, the disease apparently first showing itself as an infection of some nerve trunk, most commonly the ulnar. Following this there is anæsthesia of the most distal parts of the skin supplied by the affected nerve, and frequently in the case of the ulnar there is flexion of the small finger due to the cutting off of the trophic supply to the small muscles of that finger and their consequent wasting and contracture.

The above-mentioned signs are generally sufficient to make a definite clinical diagnosis of leprosy, but there are some patients who come to our clinic with signs which are suspicious, but are not sufficient to make a clear diagnosis. In these cases it is our custom to correct any accompanying disease which would lower the resistance of the patient, such as malaria, pyorrhœa, dietary defects, etc., and to tell the patient to return after three months. In some of these cases the suspicious signs disappear, while in others the signs increase to a point at which a definite diagnosis of leprosy can be made.

The extreme importance of making an early clinical diagnosis may be judged by the fact that almost 100 per cent. of cures may be expected in early cases if they are thoroughly

treated. By *cure* is meant the disappearance of all active signs of the disease. By *permanent* is meant *continuation over a period of years*. It is impossible to say that all the leprosy germs have been eradicated from the body, but then it is equally impossible to say that leprosy germs are absent from the body of anyone who has been in close contact with an infectious case of leprosy, even though no recognisable signs of leprosy have ever appeared. By *active signs* are meant :

- (a) Positive bacteriological findings in skin, mucosa or lymph nodes.
- (b) Appearance of fresh lesions.
- (c) Erythema or raised margin in original patches.
- (d) Keratosis, anhydrosis or depilation in original patches.
- (e) Increase or decrease of the size of a lesion either visibly or as judged by the extent of abnormal sensory signs.
- (f) Thickening or tenderness of nerves.

It must, however, be made clear that leprosy, however limited the extent of the lesions, will often leave certain permanent signs in the form of diminished sensation, anhydrosis, depilation and colour change. But when these have been reduced to a minimum, and no further change is found over a period of, say, six months, I consider that, generally speaking, one is justified in considering as permanent such visual and sensory signs as remain. They do not indicate the presence of infection, but of irreparable destruction of nerve fibres, hair follicles and sweat glands.

A patient in the most advanced stage of leprosy, with most of the skin of his body thickened with the disease and containing in any cubic centimeter of its area billions of Hansen's bacilli, can still remain in apparently good health, and daily carry on work implying an immense amount of physical exertion. This goes far to indicate that the toxicity of leprosy is very low as compared with tuberculosis, and it is therefore not surprising that a reliable test, which would correspond with the tuberculin test in tuberculosis is not available.

Clinically, however, early leprosy can be diagnosed with much more ease and certainty than can tuberculosis of a corresponding stage of advancement. It has been through the overlooking of early clinical signs that the frequency of leprosy in endemic areas has not been recognised, and that the method here advocated of dealing with leprosy by treating such early cases has so long been neglected.

The Intradermal Leprolin Test for the Detection of Early and Latent Leprosy.

LEONARD ROGERS.

NOW that the solution of the leprosy problem depends mainly on the early diagnosis of infections, especially among the households and other contacts of infective cases, the intradermal leprolin test of P. Bargehr, which has been confirmed by C. D. de Langen and W. de Vogel, deserves to be more widely known and utilised. Leprolin was made by Bargehr by mincing lepra nodules containing large numbers of the bacilli in a little water, heating on a water-bath at 100° C. for twenty minutes, and adding $\frac{1}{2}$ per cent. carbolic acid, but de Langen prefers to keep lepromatous emulsions in dry powdered form in sealed ampoules after sterilising at 120° C.

The test is carried out by scarifying two small areas on the upper arm and lightly rubbing a little of the leprolin into one of them for five minutes and allowing it to dry for one hour ; the other area is kept as a control. A positive reaction consists in the appearance of a slightly raised erythematous patch ; this appears in one to seven days, and may last up to five or six weeks. It is not every leprous nodule which yields a suitable preparation of antigen, and de Vogel states that it is not easy to obtain a suitable one, so it is necessary to obtain a reliable preparation from a well-equipped laboratory, such as that of E. Muir, in the Calcutta School of Tropical Medicine.

The principle on which the reaction is based is that patients with active leprosy infections, whose tissues are accustomed to the influence of the toxins of the lepra bacilli, give negative results on the application of leprolin to the scarified skin ; but those who have never been in contact with the disease, as well as old " burnt out " nerve cases of leprosy with no active symptoms for some years, give positive reactions. Some of those who have been in contact with lepers for long are also found to give negative reactions. This indicates that they have become infected at some time or other, and they may either be in the incubation stage of the disease, or they may have developed immunity through a mild infection without showing active symptoms, as with tuberculosis. Very early cases of the disease give negative reactions ; these may be of diagnostic value. For example, Bargehr reports on 168 tests, in 82 of which lepra bacilli

were found in the tissues of the patients and all were negative, while forty-five out of eighty patients in whom no lepra bacilli were found also gave negative reactions, and most of these showed clear symptoms of leprosy. The thirty-five positive reactions included persons with no signs of leprosy, and also some with healed mutilated fingers and toes of nerve cases of leprosy, who were in good general health and had shown no change for several years. De Vogel records tests in nine family groups of whom only the healthy reacted, with the exception of two who will be watched for the appearance of early symptoms. Further, some very early cases gave negative reactions of diagnostic value. Professor Lyle Cummins has recently tried subcutaneous injections of leprolin supplied by E. Muir in a number of lepers and others in South Africa, but the results were irregular, so the intradermal method appears to be the better one.

*Application of the Test in the Early Diagnosis
of Leprosy Contacts.*

I have repeatedly pointed out that the rapid reduction of leprosy depends on the frequent examination of the household and other close contacts of all known lepers, because about 90 per cent. of new cases are likely to be found among them, and the great majority of these could be cleared up before they had reached an infective stage, if detected by such examinations of contacts and treated in the earliest stages of the disease. This theory has now been demonstrated to be true by the work of Dr. George Bray under very favourable conditions in the small island of Nauru, in Oceania, for by means of a monthly examination of all the small population for the first signs of leprosy, the segregation of the infective cases on one side of the island, and the regular treatment of the bacteriologically negative ones as out-patients without isolation, a very heavy incidence of the disease has been reduced by about one-third in three years. *Moreover, no early treated case has gone on to the advanced highly infective nodular stage.* Under such carefully controlled conditions the intradermal leprosy test promises to be of great value if used in the following manner, and it should also furnish important scientific data.

All close contacts, who have lived in the same house with a leper, should be tested, and all who give negative reactions should be looked on as having been infected at some time or other. They may either be in the incubation period, or possibly they may have passed through a mild unrecognised

infection and developed immunity, but further experience is required on these points. I therefore suggest that one-half of such negatively reacting cases should be treated for leprosy by injections for six months or so, with a view to clearing them of infection while still in the incubation stage, and so preventing the appearance of definite symptoms. The remaining half should be kept as controls, and watched very carefully for the first signs of the disease before being submitted to treatment. The negatively reacting cases should be retested after six months or more treatment, as the appearance of a positive reaction might indicate that they had been cured of a latent infection. If experience of the test should show that the control negatively reacting cases develop signs of the disease in definitely larger proportions than those who are treated in the incubation stage, the value of the test will be so evident that all such incubation period cases should be treated without delay. In that event, a further aid of great practical importance in the campaign against leprosy will be established. Bargehr also suggests five to seven intradermal leprolin scarifications may possibly produce immunity against leprosy, but this remains to be proved.

Grants for Leprosy Work.

The Executive Committee of The British Empire Leprosy Relief Association have recently made the following grants :

N. RHODESIA.

Dutch Reformed Church Mission, Madzi Moyo,	
Fort Jameson	£160

BRITISH SOLOMON ISLANDS.

Melanesian Mission, Fauabu	£200
-----------------------------------	------

These grants have been made for the provision of buildings and simple housing accommodation for lepers undergoing regular treatment, drugs, equipment, etc. Applications for financial aid will be sympathetically considered by the Committee, and all applications should, in the first place, be sent to the Director of Medical Services of the Colony concerned, who will forward them to the Secretary of the Association.

Routine Examination of Nasal Smears in Leprosy.

(Reprinted from "Leprosy in India," July, 1930.)

T. N. ROY and S. N. CHATTERJI.

BEFORE entering into the subject we should give an explanation to our readers why we have selected this for an article while all the other workers are dealing with the more important sides of the disease. It is because it seems to us that the results of the examination of nasal smears have a strong bearing on the diagnosis, prognosis, treatment and after-treatment of cases of leprosy. More than once we had to revise our diagnosis as to the type of the disease, and consequently the prognosis turned from good to bad, the main treatment required some additions and alterations and the after-treatment was more prolonged than we had calculated before.

During the last year we had a total number of 929 new cases attending our out-door clinics, out of which 140 patients had their nasal smears positive bacteriologically, and a table is given below to show their different grades in comparison with our findings in skin smears.

	Skin +	Skin ++	Skin +++	Skin ++++
Nose +	10	39	14	1
Nose ++	2	16	26	1
Nose +++		6	14	
Nose ++++		7	4	

We think that the cases with numerous skin lesions are less dangerous to the community than the more innocent-looking patients discharging numerous bacilli in their nasal secretions, because cases with erythematous patches and nodules on the body, face and ears are usually repulsive to the public, and people always shun their association, but they will mix freely with those patients who do not look like lepers at all. Thus we find many innocent-looking infectious patients working as professors, teachers, clerks, servants and maidservants, cooks, sweetmeat vendors or hawkers. They are found in all walks of life, and (more or less) in all societies, and nobody is going to object because nobody knows what it is, unless the disease grows into an advanced

condition, producing some deformities and ulcerations. One bill collector was found to be a B2 case. He was not looking bad, but his nasal smears were positive. A case like this should be rather designated as a distributor of Hansen's bacillus than a bill collector.

In our out-door clinics, on being asked their family history and the source of contact, the patients in most cases deny a family history or any contact with a leper. But so long as we are travelling in public vehicles, taking our meals in hotels and restaurants, or allowing the leper beggars to loiter near our houses, we cannot dare to say we have not come in contact with an infectious leper, or that we have not soiled our clothing with their discharges, or have never been served by a nose-positive khansama. The most striking example which came to our clinic was a sweeper driving a scavenger car. Accidentally he was found in the street, and the Health Officer in charge was requested to send him for treatment. Apparently he was a very advanced case of leprosy, and the diagnosis was clearly written on his face. In spite of this fact, and in spite of the foul smell coming from the ulcerated nose which almost turned the stomach of everybody present in the out-door clinic, he had not been noticed as an infectious leper by the Health Officer or by the Superintendent, and his co-workers also did not raise any serious objection. Neither was he inclined to believe our diagnosis, nor to go to Gobra Hospital. His argument was that as he had been in this condition for over ten years, it was not serious, and he should be allowed to continue his work—and thus go on infecting other persons with his nasal secretion.

Now let us turn to the main subject. Two cases almost evaded our diagnosis, and had we not taken the nasal smears for routine examination, we should never have known the serious mistake we would have made in our diagnosis.

Case I.—Jnan Chand came to our laboratory with two symmetrical scar marks on the shoulders. The history was that he had depigmented patches on the shoulders, which were treated with some caustic application, and due to that these scars have resulted. Slightly depigmented patches were found spreading from the margin of these scars, and besides these there were anæsthetic patches on the right forearm. He was diagnosed as an A1 case, but on examination of the nasal smear we found numerous acid-fast bacilli (++++) in it. This was shown to Dr. Muir, and according to his suggestion, a clip was made from the scar tissue over the right shoulder, and the smears were found

bacteriologically positive (++) . So that from A1* the case turned into a B2 to B3 type.

Case II.—The second case, Kalicharan, came with slightly depigmented patches on the body and face, some of them were anæsthetic. There was no mark to suggest that it was a “ B ” case. As a routine measure, a smear was taken from his nose, and was found bacteriologically positive (++) , and this was confirmed by repeated examinations. According to our previous experience we expected that his skin would also be positive. But we failed to find acid-fast bacilli, although we tried from many places. In spite of the fact that the skin is negative, it is a B1 to B2 case.

From the table one can find that there are many patients who are very strongly positive in both the nose and the skin. There are some among them who do not look very bad externally, and as this is a chronic form of disease, the patients carry on their daily work and mix with people without ever being objected to. There are other cases which look very bad, but as most of them come from the beggar class, they are usually found squatting in the streets or loitering near houses without any prohibition. These patients easily spread the disease to the people of the same community and to the children and other persons walking barefooted. There is still another class of patient who is very strongly positive in the nose, but whose skin does not look obviously leprous. These are the most innocent looking patients, and they travel in public vehicles, and take part in public functions, dine in hotels, and enjoy public theatres and bioscopes, but we do not know how many they are infecting daily. If a patient like Jnan Chand is travelling in the same compartment of a train or bus, or working as a servant or a cook, even a specialist in leprosy will have no reason to suspect or object to him.

So the importance of the routine examination of nasal smears comes in for the proper diagnosis of a case whether it be an advanced or an early case, or a case just suspected of leprosy. And necessarily, if a case be strongly positive in the nose the prognosis becomes grave, and he requires the addition of nasal treatment. The after-treatment should be continued for a much longer period, and before a patient is declared cured his nasal smear should be examined again and again, although the smears from the skin may be negative long before.

* According to Dr. Muir's classification.

A Note on the Treatment of some of the Commoner Dermatological Conditions.

R. M. B. MACKENNA.

IT has been truly said, in regard to medicine, that "life is short, and the art long, experience fallacious, and judgment difficult," and many will readily agree that in no branch of the art is experience more fallacious or judgment more difficult than in the treatment of dermatological conditions. The ointment which will cure a given case of eczema will but serve to aggravate an apparently similar case of the same disease, and almost in self defence the general practitioner has fallen back on calamine lotion and Lassar's paste as the two standard remedies which are least likely to aggravate an inflamed skin, and which may be relied upon to cure the majority of the simpler skin diseases.

Calamine lotion and Lassar's paste are both excellent standard remedies, but, unfortunately, "stock recipes" (although one has to rely on them when handling large numbers of patients in hospital) are of little use in dermatology. There is no "Digitalis mixture" in a hospital pharmacopœia, for the dose of digitalis has to be determined for each individual patient; similarly each ingredient in a lotion or ointment must be chosen deliberately for its therapeutic action, and the amount of each ingredient should be a matter of deliberation, and must vary for each case. It follows, therefore, that a true knowledge of the therapeutics of dermatology can only be acquired with some difficulty and by long practice, but the acquisition may be facilitated by the memorisation of the four following principles which form the foundation of a rational method of treating skin diseases :

- (1) Soothe and cool a hot inflamed skin by the application of lotions or powders.
- (2) Never apply ointment to an oozing skin condition.
- (3) Stimulate chronic eruptions.
- (4) If the skin is dry and harsh, lubricate it with oils or fats.

There are, of course, exceptions to these rules, but let us consider the treatment of a few diseases in the light of these generalisations :

Firstly, Impetigo, which, in its commonest form, is an acute infection of the skin with streptococci (streptococcus

pyogenes being usually inculcated), and which is characterised by the effusion of a copious sero-purulent exudation from the affected area. If the usual mercurial ointment is applied on lint, it forms a waterproof covering under which the exudation spreads, thus infecting adjacent areas. Further, the lint and bandage prevent loss of heat from the covered area, the temperature of the skin rises, the openings of the sebaceous and sweat glands are dilated, and a very fertile soil is prepared in which the streptococci may increase and multiply in warmth and comfort. If the ointment is applied on gauze the local temperature is not increased to such an extent, and therefore a dressing of gauze is preferable to one on lint, but the best method of treating impetigo is to apply a lotion frequently, and to keep the discharge from spreading over the adjacent skin. Good results may be obtained by the following line of treatment :

(1) Remove the crusts either by softening them with olive oil, or by the application for four or six hours of a starch and boracic poultice.

(2) Apply the following lotion six or eight times daily :—

<i>Recipe</i> : Sulph. precip.	...	...	gr. ii
Ichthyol	...	...	gr. iii
Calaminæ prep.	...	...	gr. xl
Zinci oxidi	...	...	gr. xx
Glycerini	...	...	m. xx
Aq. calcis	...	...	dr. iv
Aq. ad.	...	...	oz. i

M.

(3) Remove the crusts regularly once every thirty-six hours.

(4) When the exudation ceases, and the only symptom is slight redness of the affected areas, apply the following ointment twice daily :

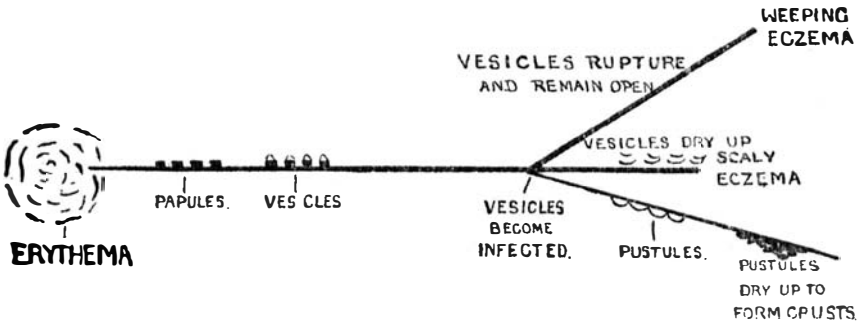
<i>Recipe</i> : Hydrarg. ammon.	...	...	gr. v
Paraffini mollis ad.	...	...	oz. i

M.

It will be seen that the rationale of this line of treatment is to soothe the inflamed areas with a modified calamine lotion, to increase the formation of crusts, so that the exudation is localised, and to apply the lotion so frequently that the ichthyol and the sulphur, and to a lesser extent, the other ingredients, can exert their antiseptic action on every drop of exudate.

The word "eczema" is usually employed to indicate an acute, subacute, or chronic inflammation of the skin, the

etiology of which is unknown. The word is used to cover a multitude of inexactitudes in diagnosis, but the average case may be schematically represented thus :—



From R. W. McKenna "Diseases of the Skin" (Baillière, Tindall and Cox).

The condition begins with an erythema, and within a relatively short time vesicles form. The aftermath depends on the progress of the vesicles.

Having regard to our principles, the treatment must vary in accordance with the stage of the disease. In the erythematous, papular and vesicular stages, the eruption must be cooled and soothed, and the following recipes will be of service :—

<i>Recipe</i> :	Liq. carbonis detergens	...	m. iv
	Ichthyol	... ..	gr. ii
	Calaminæ prep.	... ..	gr. xl
	Zinci oxidi.	... ..	gr. xx
	Glycerini	... ..	m. xx
	Aq. calcis.	... ..	dr. iv
	Aq. ad.	... ..	oz. i

M.

<i>Recipe</i> :	Zinci oxidi	... ..	gr. xxx
	Liq. plumbi subacet. fort.	... ..	m. iii
	Glycerini	... ..	m. xx
	Aq. ad.	... ..	oz. i

M.

<i>Recipe</i> :	Pulv. acidi borici	... ..	gr. xv
	Pulv. zinci oxidi	... ..	dr. iii
	Pulv. talc. venet. ad.	... ..	oz. i

M.

It should be noted that the lotions are best applied on gauze, and that no oil silk, lint, wool, or gamgee tissue should be inserted between the gauze and the bandage. The lotions can then slowly evaporate, thus keeping the area under the

dressing cool, and helping to relieve the irritation which is the prominent symptom in these early stages.

The pustular and "weeping" stages are best treated with mildly astringent lotions, *e.g.*, calamine lotion with 1 per cent. ichthyol, and as the acute condition subsides thin ointments or creams should be used, *e.g.* :—

<i>Recipe</i> :	Ichthyol	...	...	gr. iiii
	Zinci oxidi	...	...	gr. c l x
	Ol. olivarum	...	...	dr. i fs
	Aq. calcis	...	...	dr. i fs
	Adepslanæ hyd. ad.	...	...	oz. i
	M.			

Chronic, dry, scaly eczema should be treated energetically, *e.g.*

<i>Recipe</i> :	Liq. carbonis detergens	...	oz. iv.
-----------------	-------------------------	-----	---------

Sig. : Add dr. i to half a pint of warm water and use to bathe the affected part for three minutes before applying the paste.

<i>Recipe</i> :	Sulph. precip.	...	...	gr. ii
	Ichthyol	...	...	gr. iv
	Acidi salicyl....	...	...	gr. x
	Zinci oxidi	...	...	dr. ii
	Pulv. amyli	...	...	dr. ii
	Paraffini mollis ad.	...	...	oz. i
	M.			

Sig. : The paste. Apply twice daily.

It will be noted that many of the above prescriptions contain ichthyol. There are many varieties of this preparation on the market, and I have found the majority, which are synthetic preparations, to be unreliable and irritating. It is, therefore, wisest to specify a reliable brand. The ichthyol manufactured by Crookes, and the original German preparations are, in my opinion, the best.

Eczematous conditions of the external auditory meatus are often extremely resistant to treatment. The following well-known prescription has stood the test of time :—

<i>Recipe</i> :	Acidi carbol liq.	...	...	m. iv.
	Glycerini ad.	...	...	oz. fs.

M.

Excellent results, however, may be obtained with a perchloride of mercury lotion applied on plugs for half an hour thrice daily, after which the meatus is dried and a little calamine lotion or zinc ointment applied. The recipe for the mercurial lotion is as follows :—

Recipe : Hydrarg perchlor. gr. 1/6
 Glycerini m. xx
 Aq. ad. dr. i
 M.

It is almost useless to generalise in regard to internal treatment, and dietetics, in the treatment of acute dermatoses. Arsenic, iron, quinine, intestinal antiseptics and polyglandular preparations must all be employed in accordance with general principles. Too frequently, in actual practice, the dietary prescribed varies more with the pre-conceived notions of the practitioner than with the actual requirements of the patients. In the majority of acute dermatoses and in cases of furunculosis it is advisable to instruct the patient to avoid taking sweet, sour, spicy and salty foods ; the four "s's" form a convenient mnemonic easily remembered both by the practitioner and the patient, and restrict the latter to a simple, but adequate diet, which fulfils most of the required desiderata.

With regard to alcohol, most patients suffering from acute or chronic skin diseases are much better without it, but if they insist on being allowed to take it, let them keep to the lightest French white wines. It is interesting to note that many psoriasis patients can bring out a florid eruption by a temporary and not immoderate indulgence in alcohol.

Furunculosis may, perhaps, be mentioned here in order to present a slightly different line of treatment than that usually employed by the surgeons. Boils may frequently be made to abort by painting them with a varnish made of equal parts of ichthyol and water, or by applying pure ichthyol on a whisp of cotton wool to the lesion. If abortion does not occur, the surrounding skin should be shaved and covered with ung. hyd. nit. dil., and hot fomentations may then be applied without the risk of adjacent pilo-sebaceous follicles being infected under the dressings. The boil should be incised as soon as central necrosis occurs, and the contents expressed by gentle pressure, or removed by means of a Bier's suction glass. Hot fomentations may be discontinued thereafter, and the following preparation (which, incidentally, is also an excellent remedy for bed sores and varicose ulcers) should be applied on lint thrice daily :

Recipe : Ichthyol gr. x
 Olei ricini ad. oz. i
 M.

Personally, I have found the local application of "anti-virus" solutions to be of but little value in the treatment of urunculosis.

One to three tablets of Stannoxyl (a proprietary preparation containing oxide of tin) may with advantage be taken thrice daily by the patient, as well as an iron and quinine tonic. Intramuscular injections of butyrate of manganese (1 to 1½ c.c.), or collosol manganese (½ to 2 c.c.) given once every five days, are of the greatest value. They markedly increase the resistance of the patient to staphylococcal infections; they may be administered during the acute stages whilst he is in a "negative phase," and they have a stimulating effect on the organism. Unlike vaccines, they may, therefore, be given in the most acute stages; they do not produce the depression and lethargy which so frequently follows a course of vaccine.

In cases of furunculosis, complicating diabetes, or albuminuria, small injections of manganese preparations may be given without risk, and it may perhaps be noted here that these preparations are excellent remedies in the treatment of erysipelas, and in many instances are preferable to polyvalent antistreptococcal serum.

The fourth principle, given on an earlier page, viz. : that dry and harsh skins should be lubricated with oils and fats need scarcely be enlarged upon. It should be remembered when treating the later phases of an acute seborrhœic dermatitis, when an ointment containing ung. aqua rosæ and ung. zinci oxidi. is frequently of use, viz. :—

<i>Recipe</i> : Sulph. precip. ...	...	...	gr. iiii
Hydrarg. ammon. ...	...	...	gr. ii
Acidi salicye. ...	...	...	gr. x
Pulv. amyli. ...	...	...	dr. i
Ung. zinci oxidi	...	...	dr. iv
Ung. aq. rosæ ad.	...	...	oz. i

M.

And in the chronic, dry, scaly condition, known as Ichthyosis, considerable relief may be obtained by the application of the following ointment :—

<i>Recipe</i> : Glycerini amyli.	
Ung. acidi salicyl.	aa partes æq.

M.

Finally, I should like to discuss a parasitic disease, as an example of a condition in which none of the four principles mentioned above can be made to apply, and in which, in

order to obtain a cure, substances which are irritating to the skin have to be used.

One of the few certainties in the whole realm of therapeutics is that sulphur will cure scabies. Unfortunately, sulphur ointment frequently produces a severe dermatitis, and it is, therefore, often advisable to dilute the ung. sulphuris of the British Pharmacopœia with two or three drachms of ung. zinci oxidi, to each ounce.

The usual method of treating scabies is for the patient to take a sulphur bath containing one-eighth of an ounce of potassa sulphurata to each gallon of water (a normal bath contains 25 to 30 gallons) on three successive nights, and after the bath to rub sulphur ointment into the affected parts. On the third night the bedding and clothes should be removed and disinfected, and the patient should be cured.

The S.P. Charges Co., of St. Helens, have two excellent preparations known as sulphaqua bath charges and unguentum thiomel. The former is a sulphur preparation to put in the bath, and it does not have the same deleterious action on the bath itself as "liver of sulphur." Ung. thiomel consists of sulphur in a honey-like base.

The use of these two preparations in conjunction is most satisfactory, as they cure the disease with a minimal risk of dermatitis.

The German firm of Bayer and Co. have recently put on the market a preparation known as "Mitigal." This will kill the sarcoptes scabiei, and will destroy its ova, and whilst being at least as efficient as sulphur ointment, does not seem to have the same proclivity of producing dermatitis.

The parasite which causes scabies is said only to be active during the night, and Norman Walker's suggestion that precipitated sulphur should be sprinkled between the sheets and over the body at night is therefore of value, for copulation between the male and female acari occurs on the surface of the skin, and the males do not burrow into the epidermis.

If the patient is unduly sensitive to sulphur, a 3 per cent. β naphthol paste is excellent, viz. :—

<i>Recipe</i> : β Naphthol	...	...	...	gr. xv
Pulv. tragacanth	...	...	...	gr. xx
Glycerini	...	...	...	m. xx
Aq. ad.	...	...	...	oz. i

M.

There remains one further line of treatment for scabies which should be mentioned here. It consists in the inunction

of an ointment, the formula for which is extremely complicated. Marcussen discovered this cure in 1911, and Ehlers made it widely known in 1912. It was described in full in the British Medical Journal of January 25th, 1930, by A. Cannon, M.D., and is significant, because its protagonists claim that a single inunction of the ointment will cure the disease. The formula for the ointment is as follows :—

(a) 1 kg. of sublimated sulphur is dissolved by heating it gently in 1 kg. of a 50 per cent. solution of potassium hydroxide, a clear yellow solution resulting.

(b) Two hundred and twenty-five grammes of vaseline and 225 grammes of water-free lanolin are mixed with care, no heat being used.

(c) To this mixture 375 grammes of the solution of sulphur in potash lye [*vide (a)*] is added.

(d) Fresh zinc hydroxide is prepared by mixing 28 grammes zinc sulphate and 40 grammes of a 20 per cent. sodium hydroxide solution. Then this is added to the ointment.

(e) Liquid paraffin is added to make a total weight of 1,000 grammes.

(f) Five grammes of benzaldehyde is added to check the somewhat disagreeable smell of sulphuretted hydrogen.

The active principles in the ointment are the “high” sulphides of potassium, and such is their potency that certain dermatologists do not consider that it is necessary to disinfect the clothes and bedding after this treatment has been employed.

Cannon gives the following “procedure in treatment” :—

- (1) The patient takes an ordinary cleansing bath.
- (2) He then dries himself thoroughly.
- (3) He applies the ointment to the whole of the body, except the head, by gentle rubbing only. Someone will assist him in anointing the back.
- (4) He waits for twenty minutes, to allow the ointment to soak in.
- (5) He then goes to bed, or does otherwise.
- (6) The next day, twenty-four hours after receiving the application of the ointment, the patient receives his second bath.
- (7) He puts on fresh underclothing, and walks away cured.

I cannot claim to have any experience of this line of

treatment, and can only say that a small quantity of the ointment made for me by a reliable firm of chemists deteriorated rapidly when kept in an ordinary gallipot.

The ointment, or a modification of it, is prepared by Zimmermann; it is named "Kathiolan" or Ung. hepatis sulfuris (Marcussen), and is packed in air-tight tins, but the method is worthy of considerable attention because it is known to have been of the utmost value in the treatment of the severe scabies common among the Norwegian lepers, which is believed to be due to infection with *acari* which are normally parasitic on wolves.

The whole of Dr. McKenna's useful article has been published, for apart from treating skin conditions in lepers, it will be of great value to nurses and others who have been perplexed regarding the treatment of skin conditions among European staffs and their families on their stations.

One or two points might be mentioned. Ordinarily in the native there is little fear of causing a sulphur dermatitis. The Danish treatment for itch mentioned by Dr. McKenna may not be practicable in certain institutions and camps, and the following treatment, which I have used, is very efficient :

Sulphur	..	..	..	..	..	1 part.
Lime	..	..	..	..	..	1 part.
Water	..	..	..	..	..	10 parts.

Boil down to five parts and cork well.

S. Apply with brush all over body. Make patient wash twenty-four hours later, and repeat this twice.

This mixture gives off sulphuretted hydrogen, and is a quick and efficient method of clearing up scabies among natives.

For the ordinary tinea (ringworm) crude coal tar is effective, or the following :

Crude coal tar	..	..	..	..	..	1 part.
Kerosine	..	..	..	..	..	2 parts.

This application is more irritating, and should not be used if septic conditions complicate the ringworm.

When an oily application is required, there is nothing better than crude hydnocarpus oil. When a boggy condition of the skin is found as a result of ringworm, complicated by scabies and eczema, then rubbing the patient with the following is very useful :

Sulphur	..	..	..	..	..	oz. iv
Hydnocarpus oil	..	..	..	..	..	oz. x

EDITOR.

Some Observations on the Employment of Lepers, Out-patients and others, during and after Treatment.

R. S. DONALDSON.

“**F** AITH, oil and work, but the greatest of these is work.” So wrote Dr. R. M. Wilson, of Korea, in his excellent article on “Industrial Therapy in Leprosy,” in the *LEPROSY REVIEW* for January, 1930. I do not intend in this article going into the question of work for lepers in leper colonies—I refer readers to the article I have mentioned for that—but if every leper colony should be “an industrial therapeutic institution,” how fortunate is the man who can take his treatment and still carry on with his own work without becoming an inmate of a leper hospital.

With the advent of out-patient treatment for the non-infectious leper, and the fact that there will no doubt be a great increase in the number of out-patient clinics in the near future, the question of employment of lepers during their treatment, the duration of their treatment and their after-care, are things which will require attention.

I have found that a great number of our in-patients who voluntarily left their employment to take treatment in the Settlement found great difficulty in getting back their jobs after treatment. Many of them, in fact, never got them back, in spite of their having certificates stating that they were no longer a danger to others with whom they may come in contact.

We want to encourage employees not to hide their disease, but this very fear of losing their employment makes them hide it until they are advanced cases. Government servants in Madras Presidency—constables, for instance—are encouraged to report any suspicious signs or symptoms of leprosy on their bodies by being promised leave with pay during treatment, provided they take such treatment at a recognised treatment centre for leprosy and produce a satisfactory certificate from the Medical Officer of the institution. The consequence is that we have almost a sufficient number of constables taking treatment at the Settlement to form a police force. How common the disease must be in India. When there is no need to hide the disease because of the fear of loss of employment, how much better it is for everyone—

patient and doctor—getting the disease diagnosed early, and having it treated.

But what of the general body of employers? Are they encouraging their employees not to hide their disease, but to come forward and get it treated early? In many instances they are not. If difficulty were experienced before in getting employers to grant *leave* to their workers suffering from leprosy so as to obtain treatment in a leper hospital, it is not going to be any easier to get them to allow certain of their employees to continue their work *during* treatment.

After opening the out-patient clinic at Chingleput Leper Settlement about four years ago, I discovered that many employers would not allow their employees to continue with their work while undergoing treatment, though every assurance had been given that the cases were not infectious, nor would they give them any guarantee of employment after completion of treatment. These people had therefore either to become inmates of the Settlement, where they had proper food and attention, or else become out-patients with no work and no pay, and therefore difficulty in procuring the wherewithal to live. Such cases provide a very strong argument for hospitals being available even for certain non-infectious cases. There are always going to be cases without the means of getting proper food and care during treatment, and these to my mind do not seem to be very fit subjects for antileprotic treatment.

If out-patient treatment has to be the order of the day for non-infectious cases, something will have to be done to convince employers that all types of leprosy are not the same. The very name of leper is often enough to have a man dismissed, no matter what arguments are brought to bear against it. Even if you succeed in convincing him he wants an idea as to how long the treatment is going to take, and whether the patient during treatment and after being declared symptom-free, or whatever declaration is made, is going to remain as fit for his work as he was before. He wants a prognosis. These are quite legitimate things for him to know. I therefore think that all those who are treating leprosy to-day will have to be very careful if the treatment is not going to be brought into disrepute. We must remember that it is very easy to bring new forms of treatment into disrepute, but it is very hard to establish them so strongly that everyone will have confidence in them. For this reason, therefore, I would ask that the questions of prognosis and the very careful decision as to which are infectious and which are non-infectious should not be lightly passed over. Now is

the time to gain the confidence of the public as to the effectiveness of modern methods of treatment, and careful diagnosis as to the type and also the stage and phase of the disease, careful prognosis, and greater care in finally signing off cases, never were more essential.

Type, Stage, Phase, etc.

A thorough understanding of your case classification is all-important. For a very good and concise account of the types, stages and phases of leprosy I would strongly refer readers to Dr. E. Muir's booklet on "Leprosy, Diagnosis, Treatment and Prevention," 5th edn. (Ch. i, Sects. 6 and 7), issued by the Indian Council of the British Empire Leprosy Relief Association. A study of the sections I have referred to will be of great help in classifying a case of leprosy.

It is absolutely necessary to make a clear distinction between infectious and non-infectious cases. A great number, perhaps the majority, of cases of leprosy in India at any one time are non-infectious cases. Many are not infectious to begin with, though due to their poor resistance, they become infectious later on. Many of these infectious cases again become non-infectious towards the end of the disease. The criterion of whether a case is infectious or not must be whether it is possible for a specially trained physician to discover bacilli upon careful bacteriological examination. As the infection is not on the surface of the body, but under the epithelium, when it exists, it is not too much to assume that cases in which careful examination of the deeper parts of the skin or mucous membrane fails to show any Hansen's bacilli cannot be regarded as a danger to others. Leprosy differs from tuberculosis in not producing disease of the bowel, and Hansen's bacilli are not therefore found in the fæces. They are also practically never found in the urine. With modern treatment of early diagnosed cases it should be possible almost always to arrest and gradually get rid of all signs of the disease before cases become infectious.

Non-infectious cases should only be allowed to carry on their trades on condition that they place themselves under specially trained medical supervision in a recognised centre both for treatment and inspection. This will ensure that they do not drift on into the infectious stage after being passed as non-infectious cases.

Duration of Treatment and After-care.

Treatment should be carried on for a varying period

in different cases, but on an average for six months after all active signs have disappeared. In Madras, government servants before being discharged from treatment must satisfy three conditions, and these must be shown on their certificates signed by the Medical Officer of the recognised treatment centre. They are as follows :

- (1) No new lesions have appeared for at least six months.
- (2) Old lesions have shown no tendency to spread or other form of activity over a period of six months.
- (3) Repeated bacteriological examinations of skin, mucous membranes and lymph nodes on puncture have proved negative over a period of six months.

It would be wise, I think, to see that every patient has such a certificate in his possession before he stops treatment, and employers should demand to see them.

Then, again, it must be insisted on that patients return at stated intervals for examination. They ought to return at least every three months for a period of two years. Even then some bacilli may be lying latent in the body, and a lowered resistance at some future time may allow them to act. I consider therefore that patients should carry on with some kind of treatment during the two years, because, from a therapeutic point of view the six months' freedom from activity of the disease noted above in the conditions for discharge should be two years. I have noticed on several occasions that patients who left the Settlement before completing their treatment have returned for readmission after a month or two looking better than when they left. They had continued to improve in the interval. It would appear that the hydnocarpus group of drugs which had been used had a cumulative power, and was stored up in the body, and continued to act after injections had been stopped. I would therefore advise that patients after discharge should return for one month's treatment four times a year during their two years of observation. This might have the effect of preventing any return of active disease and destroy any latent bacilli which may be present.

Prognosis.

I do not intend going into the question of prognosis. All those who are working on the subject of leprosy know how different it is to give a prognosis in leprosy as compared with other diseases. That is why I think it is important with modern methods of treatment to give as careful a prognosis as possible. In making a prognosis, remember

that it depends on several things, among them being the stage of the disease, the duration of the disease before the patient came for treatment, the presence of concomitant diseases and the type of treatment given. It is only after careful consideration of all these that one can give a candid opinion of the case and an idea as to the possible time the patient will require active treatment. An article on the subject of prognosis by Dr. R. G. Cochrane appeared in *LEPROSY REVIEW* for January, 1930, and I refer readers to it as well as to the section on prognosis in Muir's booklet already referred to.

We have occasionally had cases of all types, stages and phases of the disease brought or sent to us, who certainly were not then, and never would be, able to carry on their duties as before. We must be candid about these cases to employers, and tell them that the outlook is not good. Should we consider that a case can be very much benefited, though it may take two or even three years of active treatment, then it is a matter for the employer to consider whether he can grant leave with pay or part of it, or only leave with a promise of re-employment after treatment, to such patients, for so long a period. For the sake of other patients in the future, however, he ought to know exactly what the position is, and not be made to think that it will only be a matter of a few months before his employee will be quite fit again. Whether the case be non-infectious or infectious, whether he be treated as an out-patient or as an in-patient makes no difference to the care required in classifying and advising so as to give the employer and the patient himself a true idea of the situation.

Cases.

In conclusion, may I quote two cases which I have met with, and which show the great difficulty and the care necessary in making decisions in certain instances.

A teacher came to me for examination, and I diagnosed him as suffering from early nerve leprosy. He was bacteriologically negative. I stated that he could come to me as an out-patient for treatment and carry on with his duties. On reporting the matter to his superiors he was served with a dismissal notice, although he had been teaching in the school for many years. I took the matter up, and after some discussion he was allowed to continue his work while attending the hospital as an out-patient. Here is an instance of a person suffering from non-infectious leprosy and continuing his duties while undergoing treatment, which creates a little

doubt even in the mind of a doctor, chiefly because the man was engaged in teaching young children. Are we so sure of our ground as regards the non-infectivity of bacteriologically negative cases as to entitle us to allow teachers to continue teaching in schools while they are under antileprotic treatment?

The second case was that of an Anglo-Indian woman employed as a children's nurse. She was employed by Europeans. On a visit to England with her employer the ring and little fingers of her left hand began to bend, and she lost sensation in these two fingers. She was diagnosed as a case of syringomyelia, and demonstrated as such to students. Later, a dermatologist diagnosed leprosy, and advised her to return to India, as she would get better treatment there. Being a native of Madras district, she came to Chingleput, and I at once saw that she was a case of mixed leprosy, and was very infectious. Her nasal septum was badly ulcerated, and smears contained abundance of Hansen's bacilli. She had had occasional nose bleeding for two or three years. Her cheeks were also slightly infiltrated, and snips from a patch on the back were positive. She had a typical main-en-griffe. After treating her for two years, I declared her a "disease arrested" case, and asked her to return periodically for a period of two years for observation. She asked me when she could resume her duties as a children's nurse, and I told her that I really did not consider it was right of her to think of continuing as a children's nurse under the circumstances.

I do not know whether I was justified in doing what I did in these two cases, but I quote them as exemplifying the necessity for careful consideration in deciding (1) whether a patient should continue his employment during treatment even though he be a non-infectious case, and (2) whether a patient, especially a highly infectious one, should return to his or her original employment after treatment.

There are certain trades and occupations in which it is undesirable that a patient during treatment for leprosy should be employed even if he is a non-infectious case. These are such trades as would interfere with or impede his own general health, and then there is the question of the advisability of his working among certain others, such as children, as noted in the case of the teacher.

The question as to the resumption of the same employment after treatment as was engaged in before treatment, especially if the case was highly infectious, also resolves itself into two, that from the point of view of the general

health of the patient in preventing a return of the disease, and consideration for others.

I may say here that I do not consider that any case of leprosy of the infectious type, *i.e.*, bacteriologically positive, no matter how few acid-fast bacilli can be found, should be treated as an out-patient, unless it is found impossible to find accommodation for him in a leper hospital. If it is not possible to get him into a hospital, he should not be allowed to work with others until he has been rendered bacteriologically negative.

REPORT.

The Mandalay Skin Clinic (Leprosy).

Report for the Year Ending December 31st, 1929.

THE Clinic was opened in 1925, since when 257 cases have been treated.

Treatment.

Alepol replaced hydnocreol from February 1st, 1929. Of the hundreds of injections given with this preparation there were only three cases of abscess, all these three cases occurring in the calf. The average dose administered has been 5 c.c., and the maximum single dose 16 c.c., with no ill-effects whatever. Potassium iodide by mouth has been tried in a few selected cases, but from the experience gained with it in the asylum, only those cases in robust health and able to take a fair amount of exercise were placed on it. Trichloroacetic acid has been used and found very useful in reducing the swellings when applied to enlarged ears and tubercles on the face, the quickly apparent results thus obtained greatly helping to create confidence in the treatment in the new case, and an interest in the progress of his disease. Injections continue to be given twice weekly, and at these times the opportunity is seized for advising and educating patients and their accompanying friends and relations on personal hygiene and prophylaxis. The sphere of usefulness of the clinic was not, in the year under review, confined wholly to the treatment of lepers for leprosy. Mandalay has its regular yearly visits of various epidemics—small-pox, cholera, plague; advantage is taken of the clinic at these times to vaccinate and inoculate lepers there, whether they are patients who are under treatment for

leprosy or not. For various reasons, with the presence of a leprosy clinic, it is only right that lepers should be attended to there instead of congregating and mixing with the healthy public. The Mandalay Municipality was informed of this, and requested to circularise its health department with this information, and have lepers refused inoculation at other depots and directed to the Clinic instead, in the hope of, in this way, introducing the clinic to those lepers who have not heard of it before. There is little doubt from the numbers who attended for the various inoculations that the clinic was in no small measure responsible for keeping down the mortality figures from these epidemics.

Further to encourage attendance either for examination, advice, or treatment, even the hopelessly advanced case is given a few injections, and when confidence is gained in the treatment, the patient is advised admission into the asylum. Marked improvement in the condition of all but these far-advanced cases is the general result of out-patient treatment noticed at the clinic. Institutional treatment has its place in the leper problem, but for various reasons, generally for want of funds, could never produce results such as are obtainable at an out-patient establishment.

As pointed out on a previous occasion, the facts arrived at, based on the experience of the four years that this clinic has been functioning are :

(1) That out-patient leprosy clinics, if cautiously run, would readily be taken advantage of in Burma.

(2) The necessity for providing such out-patient departments at the head of every district in Burma, preferably apart from existing hospitals, dispensaries or asylums.

(3) Amending the Government rules requiring the dismissal of a leper from Government service irrespective of his condition and the nature of the infection or the stage of the disease with reference to its infectivity.

(4) The greater possibility of getting in touch with the entire leper population in course of time, which could never be accomplished by the present system of resident leper institutions alone.

(5) The great value of visiting a leper at his house. When this was carried out in several cases with a view of discovering whether there were any other members of his family affected, in nearly all cases others were found in early stages of the disease, sometimes not even suspected by themselves.

(6) The very slight cost at which an out-patient clinic could be run. To quote from remarks on the Mandalay Clinic made by the Director, Pasteur Institute of Burma,

“ The treatment of cases in the early stages is probably of the greatest importance in preventing them from becoming infective, and with the very large numbers of lepers in Mandalay City this work deserves encouragement, and should be extended as much as possible. The total monthly expenses show, in return in prophylactic value in proportion to expenditure, much more satisfactory results than under Institutional conditions of treatment.”

Remaining under treatment on December 31st, 1928 (Male, 13 ; Boys, 3)	.. .. .	57 patients.
Admitted during the year 1929 (Female, 11 ; Girls, 3)	.. .. .	30 ..
Total treated	.. .. .	87 ..

Total treated classified as below :

Cured.	Greatly improved.	Improved.	Stationary.	Not classified.	Worse.
8	19	11	5	19	2
Discontinued. Transferred. Died. Total.					
20 3 0 87					

The nineteen not classified were those who were less than three months under treatment. Transferred were those sent to the asylum for admission.

Those under treatment for leprosy with the disease of less than two years' duration : Men, 9 ; women, 15 ; boys, 5 ; girls, 3. Total, 32.

Literature.

Leprosy Review, Vol. I, No. 3, July, 1930. Issued quarterly by the Association. Price 2s.

A Review of the Present Methods of Treatment of Leprosy, by Dr. R. G. Cochrane. (Reprinted from the British Journal of Dermatology and Syphilis, March, 1930, Vol. XLII, pp. 125-134.

Leprosy in India, Vol. II, No. 3, July, 1930. Issued quarterly by the Indian Council of the Association.

Report, 1929. Annual Report of the Indian Council of the Association.

Leprosy, Diagnosis, Treatment and Prevention (5th Revised Edition), by Dr. E. Muir.

China Medical Journal, August, 1930 (Leprosy Number).

Therapeutic Progress. Leprosy. The Prescriber. September, 1930.

LEPROSY REVIEW. VOLUME I.

INDEX OF TITLES.

A Form of Medicinal Treatment in Severe Cutaneous Leprotic Fever	No. 3, p. 10
After a Year's Work	No. 3, p. 26
A Note on the Treatment of Some of the Commoner Dermatological Conditions	No. 4, p. 15
Causes of Painful Injections	No. 3, p. 20
Choice of Hydnocarpus Preparation	No. 2, p. 19
Classification and Routine Treatment of Leprosy	No. 3, p. 3
Correspondence	No. 1, p. 30
Curability of Leprosy	No. 3, p. 17
Early Diagnosis of Leprosy	No. 4, p. 4
Early Treatment of Leprosy	No. 1, p. 15
Evolution of the Campaign in the Philippine Islands	No. 2, p. 3
Grants for Leprosy Work	No. 1, p. 32
	No. 2, p. 30
	No. 3, p. 7
	No. 4, p. 11
Industrial Therapy in Leprosy	No. 1, p. 25
Intradermal Leprolin Test for the Detection of Early and Latent Leprosy	No. 4, p. 9
Kahn Reaction	No. 1, p. 10
Leprosy in Ceylon	No. 3, p. 8
Leprosy in the Hills of Assam	No. 3, p. 14
Leprosy in Korea	No. 1, p. 28
Leprosy in the Nose and Mouth	No. 2, p. 21
Literature	No. 1, p. 20
	No. 2, p. 32
	No. 3, p. 25
	No. 4, p. 32
Ocular Leprosy	No. 1, p. 6
Ocular Complications, Treatment of	No. 1, p. 8
Pathological Changes in the Central Nervous System in Leprosy	No. 1, p. 18
Personal Prophylaxis by Healthy Workers	No. 3, p. 21
Prognosis in Leprosy	No. 1, p. 3
Puncture of the Lymphatic Glands for the Diagnosis of Leprosy Recent Advances in the Treatment and Prophylaxis of Leprosy	No. 3, p. 31
Report on 18 Cases Treated with Sodium Gynocardate	No. 1, p. 21
Reports—The Mandalay Skin Clinic. (Leprosy). Report for Year ending December 31st, 1929	No. 2, p. 31
	No. 4, p. 30
Routine Examination of Nasal Smears	No. 4, p. 12
Sedimentation Index ; Its Value in Leprosy Treatment	No. 2, p. 15
Some Observations on the Employment of Lepers, Out- Patients and Others, during and after Treatment	No. 4, p. 24
Treatment in Persia with 2 per cent. and 6 per cent. Alepol Solutions	No. 3, p. 12
Work in the Gold Coast	No. 2, p. 26
Work in Norway	No. 2, p. 8

INDEX OF AUTHORS.

Chatterji, S. N.	No. 4, p. 12
Cochrane, R. G.	No. 1, p. 3
	No. 2, p. 19
	No. 3, p. 3
Crozier, G. G.	No. 3, p. 14
Dixey, M. B. D.	No. 2, p. 26
Donaldson, R. S.	No. 4, p. 24
Fowler, Henry	No. 1, p. 28
Gushue-Taylor, G.	No. 3, p. 21
Hoffman, H. F.	No. 1, p. 15
Howell, Park	No. 1, p. 6
Kahn, R. L.	No. 1, p. 10
Kerr, Isabel	No. 2, p. 15
Kirkpatrick, Henry	No. 1, p. 8
Landemann, E.	No. 2, p. 31
Lichtwardt, H. A.	No. 3, p. 12
Lie, H. P.	No. 1, p. 18
	No. 2, p. 8
MacKenna, R. M. B.	No. 4, p. 15
Marchoux, E.	No. 3, p. 17
Muir, E.	No. 3, p. 20
	No. 4, p. 4
Pavloff, N.	No. 2, p. 21
	No. 3, p. 31
	No. 4, p. 9
Rogers, Leonard	No. 1, p. 21
Ross, F. W.	No. 3, p. 26
Roy, T. N.	No. 4, p. 12
Sivasithamparan, C.	No. 3, p. 8
Wade, H. W.	No. 2, p. 3
Wardmann, Marie	No. 2, p. 31
Welch, T. B.	No. 3, p. 10
Wilson, R. M.	No. 1, p. 25