

A question of importance in connection with leprosy control methods is brought up in an inquiry appearing in this issue by Dr. P. D. Strachan, who, as medical superintendent of the leprosarium in Basutoland, has for years observed the parade of views on the matter. The general opinion as to the usual manner in which a victim acquires the infection is often expressed as "prolonged, intimate contact with a leper." This is usually understood to imply "with an *infectious* case of leprosy," and in the minds of most leprologists those of the neural type of the disease are not included in that category. Strachan asks what grounds there are for considering cases of that type to be noninfectious.

This inquiry is occasioned by the fact that considerations of economy have led to a proposal to modify the system of leprosy segregation now in effect in Basutoland by discontinuing the isolation of neural cases. South Africa as a whole, including both the Union of South Africa and Basutoland which lies within the bounds of its territory, is one of the important endemic areas in which serious efforts have been made through segregation to control leprosy. This effort was started in the Union early in the present century, at about the same time as that in the Philippines. Under the system applied in the latter country the bacteriologically negative cases (which means, in effect, incipient, abortive and neural cases) are not isolated, whereas in South Africa for many years all were isolated

that were diagnosed as leprosy. In Basutoland this practice is still in vogue. Several years ago the late J. Alexander Mitchell, for a long time the main figure behind the work in the Union, had a survey made of the cases in isolation there and as a result about a thousand cases that were considered noninfectious were released, though this did not by any means include all that were of the neural type. After that there was some selection; in the last issue of this JOURNAL (p. 352) note was made of the system that for some time was in vogue in that country for deciding which of the neural cases found might be considered at least potentially active and so to be isolated.

The comments on Strachan's question that have been received are interesting, presenting as they do the present views of a considerable group of leading workers. There is really no essential incompatibility between them as regards the position of the "closed" neural case, though there may seem to be at first glance. Ignoring the question of forms of the leprosy organism other than the acid-fast bacillus, these comments may be summarized as follows:

Wayson believes that "there are no grounds for assuming that patients with the neural forms of leprosy may be considered noninfectious," holding—apart from the danger that such cases may pass over to the cutaneous type—that "a large percentage" harbor bacilli in the nasal mucus membrane. Lie, less inclusively, holds as "more or less infectious" those with "infiltrations or other active processes in the skin, for the reason that leprosy bacilli are to be found there,"¹ but considers that "pure nerve" cases may be looked upon as noninfectious. Rodriguez prefaces his discussion with the conservative statement that "few leprosy workers would care to affirm [that neural cases] are absolutely noninfective," but gives examples of the epidemiological evidence that they are "much less infectious than the nodular form." Le Roux states that in South Africa the closed case is dealt with as noninfectious, though Mostert records surprising figures suggesting the contrary; both of these men distinguish neural from cutaneous cases rather differently than do most leprologists today. Muir, after discussing four groups of cases to be considered in this connection (including secondary neural cases and "juvenile" cases of uncertain future course), holds that "pure" neural cases and those with "raised, indurated lesions" of the skin (meaning, obviously, the tuberculoid variety) "may as a rule be allowed to mix freely with others, provided that they remain under medical supervision and treatment."

Thus it is seen that none of these authorities holds positively for the absolute noninfectiousness of neural cases (though it may be ventured that they would hold as probably noninfectious those with old, residual neural signs in which years of total inactivity evidence

¹ A note by Lie on the occurrence of bacilli in macules appears in this issue.

complete arrest of the disease), and the concensus of opinion seems to be that those in which bacilli, however few, are present in surface lesions are at least potentially infectious. A consideration noted by one contributor (Wayson) and probably implied by two (Muir, Rodriguez) is that active neural cases are liable to become cutaneous—and, it may be added, they are liable at any time to begin to discharge bacilli from lesions of the nasal mucosa.

Two correspondents (Lie and Muir) distinguish degrees of possible infectiousness. This is a matter of importance as regards the question of what should be done with a given patient at a given time. For this viewpoint the varieties of neural cases may be summarized, in ascending degrees of possible infectiousness, as follows:

1. Those that have no active surface lesions and are definitely negative bacteriologically in the nose. In the skin there may be only areas of anesthesia, or at most areas of moderate hypopigmentation, usually indefinitely demarcated—"pure nerve cases." The danger from these is probably quite negligible. Some authorities would doubtless also include cases with more definite pale anesthetic macules which are not progressive, and which do not react to potassium iodide if that is used. In this group will fall many "abortive," fully arrested cases.

2. Those with simple, active, progressing macules, hypopigmented in colored skins; they may be flat and pale throughout, or they may have reddish margins, perhaps with very slight infiltration; there is typically more or less anesthesia in these leprides and perhaps elsewhere. Lie and others hold that these cases are potentially if infrequently infectious, though bacilli cannot be found in smears from the skin or nose; they find that a few can usually be demonstrated in sections if sought with sufficient care.

3. Those with more marked and extensive skin infiltrations, typically showing abruptly raised edges; the infiltrated portion may be marginal, with central healing; or the entire lesion may be infiltrated; the surface is often irregular, "granular." This refers to the tuberculoid variety. Though, typically, cases of this kind are bacteriologically negative in smears, there is evidence that by and large the lesions contain more bacilli than do the simpler leprides, and that they may occasionally give (very sparsely) positive smears, especially when in a state of lepra reaction. For the present such cases are best looked upon as probably less free from suspicion than the preceding group, though far from the category of the cutaneous-type case.

4. Of a somewhat different clinical category, apparently, are the cases referred to by Muir as "juvenile," which when seen may be bacteriologically negative but are of particularly uncertain future. This may be the group with pale but reddish lesions which Rodriguez, in an article in this issue of the JOURNAL, describes as prone to develop into the cutaneous form. This group needs more precise differentiation.³

³ A note by Muir on the "juvenile" case will appear in the next issue of this JOURNAL.

5. Administratively of a different category from the foregoing are those neural cases which, whatever their original clinical variety, have become bacteriologically positive though without becoming clinically "cutaneous," (i.e., with lepromatous lesions). Such cases, whether the positive smears are from the nose or skin lesions (tuberculoid), are obviously open and to be dealt with as such.

6. Quite apart from the foregoing, so much so that they hardly come within the scope of the present discussion, are the *secondary* neural cases. These in the past have had lepromatous lesions which have subsided and left only neural manifestations. These cases are recognized (a) to be apt to have more bacilli in their residual lesions than have the primary neural cases; (b) to have, frequently, persistent residual nasal lesions; and (c) to be prone to relapse.

Lie makes the important point that the actual infectiousness of the neural cases is relative and theoretical, and that practical considerations must be taken into account. He knows definitely of only one case of infection of another person by one with maculo-anesthetic leprosy, while Rodriguez knows of none, though he points out that the conditions in a highly endemic region are not particularly favorable for investigating the matter. On the other hand, at least some of the authorities in South Africa are not satisfied as to this, and they tell of new cases appearing in kraals where so far as they know only a neural case or two has existed. The figure given by Mostert is extraordinary.

However, with the foregoing as a basis an antileprosy campaign will be planned to meet practical requirements. Where financial conditions do not prevent, it may be that all cases can be isolated, those of neural type for observation and treatment until there is sufficient assurance that they are entirely inactive. On the other hand, where the economic element or some other controlling factor limits the antileprosy work the most infectious cases will be dealt with first, the scope to be extended when circumstances permit, as Lie suggests. Under some circumstances the less infectious cases might be subjected to home isolation; this is essentially the practice in Norway, but it would hardly be practicable in most regions.

It is being realized more and more that it is of the greatest importance to maintain close observation of the population in order to find the earlier cases, to watch for relapses in arrested cases, and to learn when neural cases become cutaneous and obviously dangerous. With this, more positive information than is now available should be gained on the question of whether and to what degree the ordinary neural case is actually infectious.