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Book Reviews

Ethiopia. A Geomedical Monograph, by K. F. Schaller and W. Kuls, 1972. Published by Springer-Verlag, Berlin, Heidelberg, and New York.

This is one volume (number 3) of a remarkable series from a world-famous publishing house, the others being *Libya* (vol. 1), *Afghanistan* (vol. 2), *Kuwait* (vol. 4) and *Kenya* (vol. 5). Volume 3 has 159 pages (this comprises a combined English-German text), and there is a superb set of maps in a pocket at the end of the book, which is hard cover. In view of the important data on dapsone resistance in Ethiopia which appear in this number of *Leprosy Review* and the numerous research links between Ethiopia and research units in Europe, we reproduce here the major part of Professor K. F. Schaller's text. Tables IX, X and XI, and Section D; "Ethiopia and its Diseases–a Geomedical View" should be consulted in the original.

3. LEPROSY

"Leprosy is one of the oldest diseases known in Africa and the Middle East. In Egypt it was a common disease long before the Exodus. Ethiopia and Egypt are neighbouring countries, that have maintained contacts since time immemorial. In the east their traffic proceeded via the Red Sea and through the Sabaean kingdom, in the west through ancient Nubia. Leprosy was spread towards the south and the west of the African continent by migrating Cushitic tribes probably after the disease had been brought to the Ethiopian highland by the pre-nilotes [335].

"Even in the oldest *folk-tales*, leprosy occupies a special position among the diseases. Nowadays, leprosy patients still revere St. Gabrechristos as their patron [338]. It is generally believed that leprosy is a God-given malady.

"According to another conception, leprosy is transmitted by *heredity*. People blame the Evil Spirit or the Evil Eye for causing leprosy. Victims of leprosy must endeavour to pacify the evil spirits by making offerings. Another superstition is that a man will develop leprosy if he has sexual intercourse with a woman in the open—a superstition encountered, by the way, in the Far East as well.

"The habits of the 'Lalibellas' appear mediaeval to us. Originally, they were patients who came from the Welo Province in pairs, and wandered about the country begging. With veiled faces they used to sing at doors of the villagers' huts before sunrise. Today's 'Lalibellas' are not sick. They suppose that the aforementioned way of life will save them from catching leprosy. Customs, traditions and philosophy show that the population of this country has been preoccupied with leprosy for a long time.

"Previous travellers' reports indicate that leprosy once prevailed in the Ethiopian Highland in particular [282]. Reports dating from Italian authors [51] are very similar. Agostini [2]; and Talotta [383] describe 559 cases of leprosy in Eritrea. Thirty years later, in 1961, Greppi [164] estimated the number of sufferers in Eritrea at 1000, half of whom had come there from other provinces. At all times, leprosy patients felt attracted by hot springs and by the warm water of the Red Sea, which they hoped would cure them. Fadda [128] reported in 1936, that Tigre, Adis Abeba, Jima and Dire Dewa has 'very' many sick. In 1938 Mariani [235] estimated the prevalence of leprosy at Adis Abeba at somewhat less than 0.5%.

"By *mass* surveys of school-children, the author tried to get an idea of the extent to which the population is infected with leprosy. Table IX shows the results obtained at 30 places during the period 1957 to 1959. These results are not conclusive as to the *prevalence* among the whole population, and any conclusions must be made with reservations since children attending school in Ethiopia themselves represent a minority. Around 1960 only 5% of the children of school-age went to school.

"The percentage of leprous Ethiopian children who *heal spontaneously* is not known. The investigations confirmed, however, that the prevalence of leprosy is particularly high in the

provinces of Gojam and Shewa. The *leprosy-index* for all age-groups in the Gojam Province was 49 in 1000, and an almost equally high index, i.e. 42 in 1000, was found in the western part of Gurageland near Welkite. The index of 25 in 1000, found among the school-children of Fiche, Salale, in the Shewa Province, suggests that the endemic occurrence of leprosy in this area is very high.

"The *prevalence* of leprosy in the individual provinces has been estimated on the basis of the statistics kept by the leprosy control service, which have existed since 1954, and on the basis of data collected at numerous places.

"Table X also provides information on the 'open' cases registered in 1961.

"The fact that leprosy is irregularly *distributed* even in countries like Ethiopia, where the disease is highly endemic, renders any estimates as to its total prevalence very problematic.

"If the prevalence is determined only on the basis of one investigation, repeated studies are absolutely necessary to substantiate the results. Even 'official' estimates must be taken with reservation, as will be shown in the instance of Ethiopia. Prior to 1950, the number of leprous patients was estimated at 9000, in the following years at 15,000, and in 1954, eventually, the estimate amounted to 36,000 cases. The fact, that ten years later 80,000 persons were registered, proves that all these estimates were incorrect. Besides, less than half of the vast country is medically cared for by the health services provided. The leprosy rate can be estimated at 10 to 12 per 1000 people, Thus, the number of leprosy patients in Ethiopia may well exceed 200,000.

"The estimated *indices* for the individual provinces vary from 1 to 25 (Fig. 27, back of Map 6). The Gojam Province shows the highest prevalence, i.e. 25 per 1000. The neighbouring Welo Province, Begemdir Province and Shewa Province, situated on the central high plateau of the country, together with the Arusi Province in the lake district, have also very high endemic rates of 10 or more per 1000.

"The examples of the Gojam Province (Fig. 28) demonstrate that leprosy is not evenly *distributed* over a given province. On the basis of data collected Jungk [203], in 1969, takes the prevalence for the Harer Province to be 8 to 13 per 1000 instead of 4 in 1000 as previously estimated.

"Price [312] considers in 1969 that a genetic susceptibility of the Amharas to leprosy cannot be ruled out. The inhabitants of the Arusi Province belong to the Galla-tribes. According to Jungk [203], the Amharas and Gallas living in the Harer Province are affected equally. The Gurage and the Kambata in the Shewa Province as well as the Agaus in the Gojam Province are also very susceptible to leprosy, as shown by the indices determined. Thus it is difficult to distinguish plainly any of the many Ethiopian tribes as being especially susceptible. In a country like Ethiopia with a prevalence of 5 and more per 1000 for most of this province's exposure to leprosy, or rather to *Mycobacterium lepra*, is unavoidable. The percentage of '*open*' cases of leprosy living in isolation is negligible, since the majority of patients share the life of the community without restriction. Owing to the fact that in Ethiopia people are exposed to leprosy to a great degree, a maximum of morbidity is to be expected. The results obtained by the examinations of school-children in the Gojam Province sufficiently confirm this hypothesis. It may be assumed that up to 10% and more of the population are susceptible to leprosy and contract the disease at some period of their lives.

"Seventy-one of every 100 patients are males. In children up to the age of 12, the sex-ratio of boys to girls is 60:40. Approximately one-fifth of the patients are children up to the age of 15. An analysis of 4000 cases of leprosy seen at the Princess Zenebe Work Hospital in Adis Abeba provides information as to the *age* of the patients when leprosy became manifest in them (Table XI). Twenty per cent of the patients had contracted leprosy by the age of 15. More than 90% of all cases had become leprous before they reached the age of 40. Two cases of leprosy occurred in children during their first year of life. During puberty, the curve of morbidity rises steeply. More than 9% of the patients contracted leprosy after the age of 40 (Table XI).

"A *breakdown* of 26,195 cases, registered in 1963, into the various types and groups of leprosy shows an increase in tuberculoid leprosy at the expense of indeterminate leprosy, while lepromatous leprosy together with the 'Borderline'-group, i.e. the interpolar forms, continuously averages nearly one quarter of all cases in the country. The occurrence in the various provinces differs considerably, ranging from nearly 11% in the Tigre Province to more than 56% in the Kefa Province. Rates above average of 'open' cases are also encountered in the provinces of Harer, Welo, Sidamo and Eritrea. These data will have to be confirmed by further investigations and must be considered as preliminary results. However, comparison of results has become

difficult, as the extended conception of intrapolar leprosy is now generally applied. Leprosy is subdivided into three groups according to the place the respective type holds within the immunity spectrum, so that it is practically impossible to render the previous results accordant with the statistics of the present time. However, for epidemiological purposes it is sufficient to determine the respective proportion of '*open*' cases of leprosy. They are those forms that discharge *mycobacteria* in larger quantities (Photo 59).

"Among others, Bucco [48], in 1946, studied the problem of the *primary lesion* of leprosy in Ethiopia. In adults, the initial lesion consisted of a solitary macular focus accompanied by sensitivity disorders, with no evidence of free mycobacteria. The author [338] studied the localization of primary lesions and compared his findings with those of Chaussinand in Vietnam (Table XII). The characteristics, which in part deviate highly, may be explained by the different life styles of the two groups compared.

"*Deformities* due to leprosy are seen in about one-fifth of the cases. According to Price [312], paralysis of the hands, feet and eyes was found in a proportion of 5:2:1. Three per cent of the patients were completely, and 6% were partially disabled by leprosy. The high proportion of deformities may be explained, not least, by the belated treatment of the infected persons. Only a very low percentage of patients came under treatment during the first year of their illness, as shown by the records of the Princess Zenebe Work Hospital on 2091 patients. In fact only 15% of the sick came under treatment during the first year of illness. Half of all patients were treated only after they had been suffering from leprosy for more than three years. A change for the better has nevertheless occurred following the institution of the Leprosy Control Service and the rural health services. However, the objective of tracing patients for treatment during the early stages of the disease has not nearly been accomplished.

"The Leprosy Control Service, under the direction of the Ministry of Health, was instituted in 1954 in order to *control leprosy systematically*. Its headquarters is the Princess Zenebe Work Hospital in Akaki, a suburb of Adis Abeba. Approximately 40 leprosy-stations, distributed throughout the country, and staffed with one dresser and providing out-patient treatment, were integrated into the public health service, the health-centres and health stations in 1962. In 1964, this process was prematurely discontinued owing to problems which, at the beginning, did not appear to be insoluble. A factor contributing to this development was the foundation of the supra-national All Africa Leprosy and Rehabilitation Training Centre (ALERT), with headquarters at the former leprosarium of the Princess Zenebe Work Hospital. ALERT is supported by a number of leprosy relief organizations of various countries and is still in the process of organization. The services of the institution include treatment and rehabilitation of sick at a hospital, urban and rural leprosy control, as well as the administration of rehabilitation and reintegration programme. Since 1970 the Armauer Hansen Institute (ARHI) for research on leprosy and its causative organism—an institution supported by the Norwegian and Swedish relief organizations—has been affiliated to ALERT. The Princess Zenebe Work Hospital with its capacity of 250 beds is the main teaching institution of ALERT.

"Most of the other institutions for in-patient treatment of leprosy are supported by European and American relief organizations. One of the most important institutions is the leprosarium of the Deutsches Aussätzigen Hilfswerk (DAHW) (German Leprosy Relief Organization) at Bisidimo in the Harer Province with 120 hospital beds, which is treating 500 in-patients and about 5000 cases as out-patients. Attached to the leprosarium is an outpatient department for the medical care of non leprous patients from the near and farther vicinity. Bisidimo is the centre of the leprosy control activities for the Harer Province [203], where the number of cases is estimated at more than 20,000. At the beginning of 1970, the institution at Bisidimo provided medical care for more than 3000 patients by operating a regular mobile service along the surfaced roads.

"Other leprosaria and segregation villages are found at Boru Meda near Dese in the Welo Province, at Shashemene, Hosaina and Gindeberet in the Shewa Province, at Tibela in the Arusi Province, at Finote Selam in the Gojam Province and at Asmera in Eritrea, where a ward of 30 beds for leprosy is attached to the general hospital. It was also planned to set up a leprosy-centre at the former Maltese-Leprosarium at Selekleka in the Tigre Province. The leprosarium and the segregation village at Harer are being shut down, and their functions have been taken over by the facilities at Bisidimo. The leprosarium at Finote Selam, developed with Swedish funds, has not started work yet. The total capacity of the facilities for in-patient care is approximately 3000 cases. This meets the requirements, as in Ethiopia as well as elsewhere the centre of leprosy

control is the *out-patient* treatment. In the long run it will be mandatory to *integrate* leprosy control into the general rural health services.

"In vast areas of Ethiopia leprosy represents a major problem for the public health service, with which the country will be confronted for many years to come. According to experience the disease will be eradicated only when the basic conditions have been established, which will increase the living standard for the whole population."

A Practical Guide to the Diagnosis and Treatment of Leprosy in the Basic Health Unit, by H. W. Wheate and J. M. H. Pearson, 1978. Published by All Africa Leprosy and Rehabilitation Centre, Addis Ababa, Ethiopia.

In preparing this booklet of 26 pages the authors have drawn on their long experience of teaching medical auxiliaries how to diagnose and treat leprosy. They describe, in these pages, the main symptoms and signs of early leprosy, the way to test for sensory loss and enlarged nerve trunks, the technique of taking skin smears, routine treatment with dapsone, and simple exercises which the patient can be encouraged to do for fingers which are weakened or deformed. The risks associated with loss of sensation in hands and/or feet are outlined, followed by the basic treatment of dry skin, plantar ulcer, and weakness of eyelids due to facial nerve damage. The clearly and concisely written text is illustrated by four black-and-white photographs, four drawings, and one "flow chart".

The reviewer would like to offer some constructive criticism: (1) The importance of asking the patient about nasal symptoms has not been mentioned; only those who *ask* patients about nasal symptoms will discover how commonly they occur and how helpful they can be in diagnosing early lepromatous leprosy, for frequently they make their appearance before any skin lesions are noticed. (2) Testing for touch sensation by means of a wisp of cotton wool is the only method of sensory testing described. It would have been better to advise the medical auxiliary that, having found absent touch sensation, he should then proceed to establish impaired pain sensation by means of pinprick, for a number of skin diseases with thickened epidermis are likely to be anaesthetic to cotton wool but, unlike lesions of tuberculoid and borderline leprosy, will be fully sensitive to pinprick. This is particularly important as the booklet tells the medical auxiliary that he can diagnose a leprosy lesion if touch sensation is absent (facial skin excepted) and can, on the strength of this single finding, initiate treatment. (3) In describing the nerve trunks which should be systematically palpated for thickening, two important nerves have been omitted, namely, the superficial peroneal nerve and the sural nerve. (4) Why allow the patient to keep his underpants on when being examined, when it is stressed that the examination should be in private? The authors can be excused for being bashful on the subject of underpants, but they cannot be excused for not insisting that they must be pulled down so that the buttocks can be seen—a very important site for early leprosy lesions. (5) When advising sites for skin smears, no mention is made of smears from fingers. Since the original publication from the Hospital for Tropical Diseases, London, in 1976, studies in India have confirmed that fingers are the most informative sites. (6) Every medical auxiliary treating leprosy should be warned that patients are adept at defaulting on treatment or on clinic attendances, yet in the chapter on routine dapsone therapy this vital and all-too-common problem is not mentioned. Furthermore, a warning on the subject of dapsone resistance would not have been out of place.

This booklet is a brave attempt to meet its stated objective, namely, to enable any member of a medical team to diagnose leprosy in its early stages and to initiate treatment with confidence, using the booklet in association with clinical demonstrations of the methods it describes.

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