and the white-cell count 2,000 (polymorphs 22%, lymphocytes 70%). The patient was given one litre of blood intravenously and was treated with penicillin, crude liver extract, and pentnucleotide. Under this regime his condition progressively improved, and 15 days after the first rise of temperature the white-cell count had returned to normal. A sternal puncture specimen taken on the eighth day of his illness showed maturation arrest of the granulocytes.

It was at first thought that in the case of this individual the dosage of pyrimethamine administered (250 mg. in five days) had exceeded the limit of tolerance. He had been in the hospital for over 12 months and had received no previous treatment likely to give rise to such a syndrome. However, in the 36th week after the infective feed he experienced a malarial relapse attended with profuse epistaxis and leucopenia. The clinical picture, though considerably less severe, resembled that observed in the previous attack. Malaria parasites were seen in the peripheral blood, though in very scanty numbers. The only antimalarial drug given on this occasion was quinine (5 gr. (0.32 g.) thrice daily for 10 days).

The patient had had no pyrimethamine since his primary attack except the eight-weeks course of 25 mg. weekly which was completed three months before his relapse. It seems probable that his symptoms were attributable rather to an abnormal susceptibility to this strain of malaria parasite rather than to any effect of the drug. None of the other patients in this series (three of whom underwent a second five-day course of 50 mg. of pyrimethamine daily during their first relapse) showed any ill-effect from taking the drug, nor was there any abnormal feature in their blood count.

Summary

Twelve patients suffering from primary attacks of mosquito-induced vivax malaria (Madagascar strain) were treated with 50 mg. of pyrimethamine daily for five days. The clinical response to the action of the drug was slow, and for this reason alone we regard it as unsuitable for treatment of the clinical attack in non-immune subjects.

Four of the patients relapsed between the 55th and 99th days after completing the course, one of them on two occasions.

On the 99th day 11 of the group were given a single dose of 25 mg. of pyrimethamine, which was repeated at weekly intervals for the following seven weeks. All of them relapsed on one or more occasions between the 8th and 18th weeks after completing this eight-weeks course.

There is no indication that either of the two courses of pyrimethamine administered in this trial (50 mg. daily for five days during the primary attack and 25 mg. weekly for eight weeks, starting three and a half months later) were of any value in preventing the incidence of relapse, though it is possible that the attacks might have occurred somewhat earlier had the drug not been given.

We wish to express our thanks to Dr. J. H. Watkin, physician-superintendent, and to the staff of Horton Hospital for their co-operation in carrying out this investigation.

The British Standards Institution has issued a sectional list of British standards for hospital equipment. It catalogues standards for medical and surgical apparatus; laboratory glassware and scientific apparatus; furniture and fittings; textiles and clothing; photography and radiography; methods of testing; symbols, tables, and definitions; and electrical equipment. The list also includes a note on what new standards for hospital equipment are now being prepared. The list (P.D. 1644, dated June, 1953) is obtainable from the British Standards Institution (Sales Branch), 24, Victoria Street, London, S.W.1.

LEPROSY: REPORT ON FOUR CASES

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Although a temporary increase in the incidence of leprosy in Great Britain was expected following the second world war (Ryrie, 1947), the disease remains relatively uncommon. Compulsory notification was introduced in September, 1951. In England and Wales 48 cases were notified in 1951 and 65 in 1952, but at least 100 of these were existing known cases. In Scotland seven cases had been reported up to the end of 1952.

During the past four years the four cases reported below were encountered in routine hospital practice in one city. It will be seen, however, that not all were due to the aftermath of global war, at least two being attributable to factors peculiar to a jute-manufacturing seaport. Even in this small series the diverse symptomatology and varying clinical types of the disease are well illustrated.

Case 1

The Goanese wife, aged 23, of a British Service man was first seen in May, 1948, with a circinate lesion of the right lower leg of 18 months' duration (Fig. 1). The margin of the lesion was raised and infiltrated, while the central flat area showed marked loss of sensation to light touch and pinprick. No other skin lesion was present, nor could any thickened nerves be found. Biopsy of the active edge showed a tuberculoid histology; no acid-fast bacilli were demonstrated either here or in a nasal scrape. The lepromin test was positive.

FIG. 1.—Case 1. Circinate lesion of leg before treatment with solapsone.

Treatment with weekly intradermal injections of "moo-grol" for two months produced no improvement. In December, 1948, solapsone by mouth was started. The maximum tolerated dose of three 0.5-g. tablets was taken intermittently over a long period. When last seen in May, 1951, the leg lesion had almost disappeared and sensation in the area showed considerable improvement.

Case 2

A British man aged 30, who had served in Cyprus, Syria, and India during the second world war, attended in August, 1948, with a generalized non-itchy eruption of brownish-red slightly infiltrated patches over the whole body surface. The Wassermann reaction was negative. A tentative diagnosis of sarcoidosis was not confirmed by biopsy, which showed an infiltrate of mononuclear cells and lymphocytes surrounding sweat ducts and follicles. In view of the possibility of a pre-mycotic eruption x rays and thorium X were applied to selected areas, without clinical benefit.

More lesions appeared, and in April, 1950, the face had become "leonine" (Fig. 2). The following neurological signs were then elicited: impairment of all forms of sensation over the larger plaques on the trunk, with palpable thickening of ulnar and lateral popliteal nerves on both sides. A thick palpable nerve was present on the medial

FIG. 2.—Case 2. Before treatment with thiosemicarbazone.

side of the right knee-joint. Biopsy of a nodule under the chin revealed numerous acid-fast bacilli in "globi" and scattered throughout the dermis. Bacilli were also found in a nasal scrape. The lepromin test was negative.

Treatment with thiosemicarbazone, 150 mg. daily, was started in May. Frequent blood examinations and liver-function tests revealed no deviation from normal and the patient had noted no side-effects. The skin lesions flattened gradually, and the leonine facies dis-

appeared within one year. A nasal scrape was negative in March, 1952, and biopsy at that time revealed scanty and degenerated acid-fast bacilli in the skin. Treatment was continued with a dose of 100 mg. of thiosemicarbazone daily.

Case 3

A British man aged 65, who had retired after 30 years' service in India, was first seen in February, 1950, complaining of numbness and wasting of the right hand for four years, followed a year later by numbness of the left forefinger and of both feet.

Examination revealed scattered areas of depigmentation of the skin on the arms and legs. Weakness of both grips, the right more than the left, was present. There was wasting of the small muscles of the right hand, particularly the three ulnar interossei and the hypothenar muscles, and slight wasting of the left hypothenar muscles. Trophic sores and healed blisters were present on both hands, particularly on the right. The deep reflexes were normal in the arms; the right knee-jerk was diminished, the left normal; both ankle-jerks were absent. The plantar responses were flexor; the abdominal reflexes were present. Scattered areas of sensory loss to light touch, pin-prick, and temperature were present on the arms and legs. Position, vibration, and pain senses were normal. Some thickening of the ulnar nerves behind the medial condyles of the humeri was noted.

Biopsy of the edge of a depigmented area on the leg showed histological changes compatible with a diagnosis of leprosy, but no acid-fast bacilli could be demonstrated. The diagnosis of leprosy was confirmed by Dr. Ryrie. On his recommendation diaminodiphenyl sulphone (D.D.S.) was started in February with an initial dose of 100 mg. daily, later increased to 300 mg. daily. Only slight improvement was noted during treatment with this drug. The grips became stronger but the sensory loss was not appreciably lessened. After six weeks' treatment the drug had to be stopped for 10 days on account of malaise accompanied by slight cyanosis and an increase in urinary urobilinogen. In March, 1951, after 12 months' treatment, the condition had become static. Thiosemicarbazone was then substituted after a rest period of two weeks. The initial dose of

100 mg. daily was quickly increased to 150 mg. daily and this latter dose was maintained for 12 months without toxic effects. The disease seemed to be arrested, though no dramatic change in the condition had occurred.

Case 4

An Indian aged 30, temporarily resident in the city, was first seen in January, 1953, complaining of numbness and tingling of both feet. There was a history of treatment for leprosy in India until August, 1952.

Examination revealed no skin lesion, but a thickened nerve was palpable on the dorsum of the right foot and a similar thickened nerve was found below the right knee. The ulnar nerves also appeared thicker than normal. Areas of partial anaesthesia were found above both wrists; while in the feet hyperaesthesia of the proximal two-thirds was associated with diminished sensation over the distal thirds. A nasal scrape revealed numerous acid-fast bacilli, mainly packed in macrophage cells. Treatment with oral solapsone was started.

Comment

All four patients had contracted the disease in areas where leprosy is endemic. Cases 1 and 2 are connected with the movement of Service men during the war, but Cases 3 and 4 stem from the interchange of personnel between a jute-manufacturing Scottish town and the jute-producing areas of India and Pakistan.

Case 1 illustrates the tuberculoid type of the disease, while Cases 2 and 4 are undoubtedly lepromatous. Case 3 apparently belongs to the uncharacteristic type which cannot be placed in either polar group (Muir, 1948).

Little inference can be drawn from the results of treatment. It is doubtful if the intermittent and inadequate treatment with solapsone by mouth had any influence on the tuberculoid case. In the uncharacteristic case, in which irreversible tissue changes have occurred, therapy could not be expected to show any positive response but the symptoms and signs have certainly not progressed. The response of Case 2 to thiosemicarbazone has been good, and the gratifying absence of toxic side-effects supports Ryrie's (1950) views on the use of this drug. Nevertheless, many years must elapse before the question of "cure" by this or any other chemotherapeutic method can be assessed (Cochrane, 1952).

Summary

Four cases of leprosy occurring in hospital practice in one British city during the past four years are reported. The relatively high incidence is explained by local factors in addition to the expected post-war increase. Results of treatment to date are recorded.

We are indebted to Dr. John Kinnear and to Professor I. G. W. Hill for permission to publish these cases. We gratefully acknowledge the expert assistance of the late Dr. G. A. Ryrie and of Dr. R. G. Cochrane, of the British Empire Leprosy Relief Association.

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The Foot Health Educational Bureau has been incorporated in the Central Council for Health Education. The Bureau was founded in 1941 to stimulate public interest in the care of the feet, to effect liaison between the leather and shoe trade on the one hand and the medical profession on the other, to advocate good standards of shoe manufacture and fittings, and to influence the public towards the purchase of the right shoe for the job. It has run conferences and "Foot Health Weeks," and published many booklets and pamphlets. Its advisory services are used by local authorities, hospitals, schools, and the trade.