

peroneal area. Posterior tibial artery denuded of its sympathetic fibres behind the medial malleolus on 20th May, 1945. Complete relief of pain. In hospital.

13. *Case 11.*—Median causalgia. Shell wound, right upper arm, on 7th June, 1944. Median causalgic pain noticed on 16th June, 1944. Brachial artery aneurysm noticed on 14th July, 1944. Aneurysm explored on 6th November, 1944. Arterial, saccular, median nerve found adherent to its wall. Carefully separated. Aneurysm excised. Pain subsided by itself gradually. Free of pain from 17th February, 1945.

14. *Case 9.*—Median causalgia. Gun-shot wound, left arm, on 21st May, 1944. No paralysis. No loss of sensation. Injection on 8th November, 1944. Complete relief of pain. Injection repeated on 8th January, 1945, because slight pain had recurred. Complete relief.

All the case summaries are not given to avoid repetition. The cases given above are sufficiently representative. Case 30 requires some comment. It shows that causalgic pain can occur with the nerve supplying the limb completely divided. That again would lead us to the conclusion that all the sympathetic fibres do not run with the main nerve of the limb. They either join it later or reach their destination *via* the blood vessels.

Another interesting point elicited during treatment of these cases was the result of experimental stimulation of the lumbar sympathetic trunk during operation. In three cases the lumbar sympathetic chain was exposed under local anæsthesia taking good care that the chain itself was not affected. On stimulation of the chain below the second lumbar ganglion with rapid faradic current little or no pain resulted, but compression or pinching of the nerve fibres produced marked pain which the patient vaguely referred to the leg on the same side. The pain could not be accurately localized, but all the patients maintained that it was felt deep down in the leg. In spite of carefully controlled laboratory experiments conducted on animals (Burget and Livingston, 1931), the above experiments would go to show that in human beings at least pain fibres of some sort travel through the sympathetic chain.

Another noticeable fact about these cases of causalgia was the constancy of the site of the pain. Irrespective of the level of the lesion in the median nerve, the pain always started in the lateral half of the palm of the hand. The level of the lesion in the nerve varied from the axilla to the palm of the hand, but the pain always started in the same area of the hand. Similarly, the lesion in the tibial nerve varied from the buttock to the leg, and yet the pain was always felt in the sole of the foot. One wonders if there is not a close similarity between the causalgic pain and the visceral pain with which we are so familiar. The character of the pain in the two, no doubt, varies but that can be explained by the difference in stimuli in the two cases. The focus of irritation in causalgia lies in the intraneural fibrosis in which the central fibres of the divided nerves are involved. Impulses from this focus of

irritation set up changes in the spinal or thalamic centres. This would explain why causalgia was so commonly seen among Gurkhas and also why the cases of causalgia diminished to a negligible number after the general use of penicillin. This view of ætiology of causalgia is my own interpretation of facts always known. It is put merely as a suggestion.

*Summary*

1. Thirty-two cases of causalgia are described.
2. Their treatment by sympathectomy is discussed.
3. Case histories of some of the cases are included.

My thanks are due to Brigadier D. Denny-Brown, consulting neurologist, India, and Lieut.-Colonel R. A. Elliot, R.A.M.C., advisor in neurology, for valuable suggestions, and to General Gordon Willson, D.M.S., India, for permission to report the cases.

REFERENCES

BURGET, G. E., and LIVINGSTON, W. K. (1931). *Amer. J. Physiol.*, **97**, 249.  
 LERICHE, R. DE (1913). *Lyon Chir.*, **10**, 378.  
 MITCHELL, S. W., MOREHOUSE, G. R., and KEEN, W. W. (1864). *Gun-shot Wound and other Injuries of Nerve*. J. B. Lippincott Co., Philadelphia.  
 SICARD, J. A. (1916). *Presse Méd.*, **24**, 241.  
 SMITHWICK, R. H., and WHITE, J. C. (1935). *Surg. Gyn. and Obstet.*, **60**, 1106.

PSYCHIATRY IN BURMA AFTER RE-OCCUPATION

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I ARRIVED in Burma on the 10th September, 1945, and was appointed in Cas (B) as Officer Commanding, Mental Hospital. This at that time only existed on paper. A few old demented and criminal insanes who had survived the Japanese occupation were accommodated in the local jail. The old Mental Hospital which was a comparatively new building, and before the war accommodated over 1,000 patients, presented a grim picture due to our bombing. This hospital had been one of the best in the east with spacious grounds, extensive gardens, big dairy and every facility for occupational therapy, etc. It had been used by the Japanese as a wireless transmitting station and the Indian national army were kindly permitted to have a hospital there! Many buildings had completely disappeared—the female section no longer existed and it was difficult to recognize the European wards or the hospital block.

The first problem was to find accommodation and a small jail which at one time was the Borstal Institute was decided upon and efforts were then made to get possession from the military authorities. Early in October the move was made and the place was tidied up. This

was rather like a jungle; petrol tins and shell cases were scattered all over the place. The wells contained, among other things, cartridges and Japanese hand grenades.

The patients soon adapted themselves to their surroundings. The wards had been partitioned off into wooden cages by the Japanese and there was a large bomb-proof shelter which after it had been demolished also provided us with timber. These were removed and converted into beds, benches and tables, etc., as furniture was very difficult to obtain.

Patients' clothing which before the war had been weaved on the premises by the patients themselves presented some difficulty which was largely solved by means of obtaining a number of parachutes from army salvage and converting them into clothes.

There were no records, no books, no forms, no penal code, no courts manual and no copy of the Lunacy Act to refer to. The hospitals in India responded to my requests and copies were sent which were printed by the government press which was now functioning. A few copies of the courts manual were obtained on loan from the judicial authorities.

Gradually the old staff returned from India and the few who had remained behind reported for duty. Two experienced doctors belonging to the pre-war mental hospital arrived from India and modern treatment was instituted forthwith. There was no nursing staff until early in December when a matron and two sisters were appointed. Later, one of the sisters resigned her job, leaving only the matron and one sister. Although the nursing staff was very inadequate and unfortunately remains so, our problem with regard to treating patients with insulin shock and nursing sick insanes was considerably eased.

#### TREATMENT

*Convulsion therapy.*—Since October 1945 to the end of April this year 366 injections of leptozole (made by Boots Pure Drug Co., Ltd.) have been given for the convulsion treatment of various types of insanity. I find this drug vastly superior to cardiazol as there is no apprehension and until an electrical convulsion therapy apparatus can be obtained there is no doubt as to its great value. In any case there is no electricity at present. Sixty-two cases were treated by means of leptozole injections. Out of these 29 cases were discharged cured, 26 discharged improved and 7 cases showed no change in their mental conditions.

*Insulin-shock therapy.*—Ten cases were treated with increasing doses of insulin. Seven of these cases were discharged recovered, two improved and one patient died of irreversible coma.

*Dementia paralytica.*—Fifteen cases of dementia paralytica have been admitted during the last six months.\* Four of these cases were

\* In a later communication the author agrees that 'compared with India the incidence of G.P.I. in Burma is very high.'—EDITOR, *I.M.G.*

treated with two courses of penicillin 2.4 m.u.—40,000 units every 3 hours, night and day for a week at a time. They all showed improvement physically and slight mental improvement. As no further penicillin was available further treatment of dementia paralytica cases by this method had to be suspended. Dementia paralytica cases are now being treated by means of induced pyrexia with inoculations of malarial blood followed by tryparsamide.

*Pre-frontal leucotomy.*—Three patients who showed no improvement after extensive convulsion therapy and insulin were operated on for pre-frontal leucotomy by the military neuro-surgeon who fortunately was stationed in the vicinity. The first patient, a Chinese youth, suffering from schizophrenia—catatonic type, who was impulsive, negativistic, resistive and dirty—became pleasant, clean and amenable and now works in the hospital. Second, a Burman, age 45, an ex-clerk, who had delusions of persecution with auditory hallucination and who was suspicious, dirty and seclusive, has improved remarkably after the operation. Though he still hears the voices, these no longer trouble him—he behaves normally, converses pleasantly and adapts himself well to the surroundings. The third case was a young Burmese woman, who was in a state of chronic excitement with schizophrenic features. Unfortunately she has not so far shown any improvement in her mental condition though it is now nearly a month after the operation. The first two patients showed improvement within the first week of the operation.

One hundred and seventy patients have been admitted since the re-opening of the hospital. Out of these 95 patients have been discharged recovered (56 per cent). This percentage of recoveries is far above the pre-war rate (26 per cent).

Nevertheless, in spite of our initial difficulties, a jail which is far from suitable for a modern mental hospital, being very limited in area and having too close proximity between male and female patients, will have to suffice for the present until the old hospital is repaired.

Everything possible is done to make convalescent patients contented and happy and what little ground is available is used partly for patients' games and the remaining space as vegetable gardens which have already given a good yield this season.

#### Summary

1. The difficulties encountered in recommending the care and treatment of mental patients in Burma and our efforts to establish psychiatry on modern lines, first under the military administration and later under the civil government, are described.

2. Intensive treatment with modern psychiatric methods are discussed and the very favourable discharge rate is compared with the pre-war percentage.

3. Three cases of pre-frontal leucotomy are described briefly.

I wish to thank Drs. Chari and Naidu and the nursing staff (consisting of matron and one sister) for their able assistance and their willing co-operation, and Colonel M. L. Treston, C.B.E., I.M.S., Inspector-General of Civil Hospitals, Burma, Rangoon, for his permission to publish this short note.

### A NOTE ON THE USE OF SULPHONAMIDES IN THE TREATMENT OF PLAGUE IN THE FIELD

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THE value of sulphonamides in the treatment of bubonic plague is now well established. Sokhey and Dikshit (1940) showed sulphathiazole to be possessed of remarkable therapeutic action in experimentally induced plague infection in mice. On the basis of this experimental work, extensive field trials were carried out with a grant from the Indian Research Fund Association. The first field trial was conducted at Bettiah, Bihar, from January 1940 to April 1940. Bettiah Raj erected a temporary hospital and provided other facilities for a controlled trial to be conducted by workers from the Haffkine Institute. Two hundred and seventy-five cases of plague were treated and the therapeutic action of sulphapyridine, sulphathiazole and Haffkine Institute anti-plague serum was studied. Later, H. E. H. the Nizam's Government invited the Haffkine Institute to conduct field trials at Latur. The State built a temporary plague hospital and provided all the necessary facilities. This trial lasted from November 1940 to April 1941. During this trial, 267 cases were treated. A third trial was also carried out at Latur from December 1941 to March 1942 and 140 cases were treated. The same drugs were tried during these field trials. Later at Poona, from November 1943 to February 1944, the comparative value of sulphathiazole and sulphadiazine was tested.

Fuller details of these trials have been described by Wagle *et al.* (1941), Sokhey and Wagle (1943) and Wagle (1944). Salient features of the trials are, however, given here for ready reference.

#### Methods

**Diagnosis.**—On admission every patient was examined for a bubo and other clinical signs of plague. Next, before any treatment was given, 0.5 c.cm. of blood was drawn from a vein of each patient and plated in equal quantities on two agar slopes. This was done to determine the presence or absence of plague septicæmia at the time of admission and its severity. These slopes were incubated at room temperature

for two days and if the cultures remained sterile bubo was punctured with a syringe and the fluid drawn up plated on agar slopes to confirm diagnosis. If 0.25 c.cm. of blood gave less than 10 colonies, it was noted as a case of mild septicæmia while cases with more than 10 colonies in 0.25 c.cm. of blood were considered as cases of severe septicæmia. Many severe septicæmic cases showed over 1,000 colonies for 0.25 c.cm. of blood and some gave even a confluent growth.

During the field trials it was noticed that the most important single factor which decided the issue in human bubonic plague was the development and degree of septicæmia. If the lymph-gland prevented the spread of infection to the blood stream and the infection remained localized, spontaneous recovery usually resulted. On the other hand if the organisms passed the lymph-gland and septicæmia resulted, death almost invariably followed, unless an effective curative agent was given to control the infection. Among the control cases, several, which had no septicæmia at the time of admission, developed septicæmia later and died. While with the three therapeutic agents under test septicæmia seldom developed if it was not present at the time of the exhibition of the agent. Thus a truer picture of the results of a given treatment is obtained if only those cases are considered which had septicæmia at the time the treatment was started. For this reason results of trials are given in two tables. One table shows the results of the treatment in 'all cases' and the other of 'cases with plague septicæmia at the commencement of treatment'.

**Division of cases.**—When two or more different treatments were given, they were given in strict rotation, no selection of cases was made. Yet the composite figures of all the trials given in the table do not total up to an equal number for each drug. The principal reason is that in our earlier trials, we had used only anti-plague serum, and in the first trial of the present series, we tested serum, sulphapyridine and sulphathiazole, in the next one only sulphapyridine and sulphathiazole were tested, and in the third one sulphathiazole and sulphathiazole plus serum, while only in the last (fourth) trial at Poona did we try sulphadiazine, and compared its action against that of sulphathiazole.

**Dosage.**—The sulphonamides were given in a large dose on the first day with a view to getting the desired concentration in the blood quickly. The concentration was maintained by smaller doses on subsequent days. The drugs were not usually administered for more than 7 to 10 days.

During the trial at Bettiah in 1940, we gave sulphapyridine in a dosage of 3.5 gm. on the first day and 3.0 gm. each succeeding day for 7 days. In this trial we were not equipped to measure the concentration of the drug in blood and so we were not sure whether we had used an adequate dosage. During the next trial at Latur in 1940, we tried a dose of 9.5 gm. the