Santal Medicine.[1]

THE Santals are one of numerous aboriginal tribes inhabiting those hilly tracts of western Bengal that extend southwards from the Ganges into Chutia Nagpur. They are—or were—distinguished for their bravery, independence, and love of sport. It was of the Santals that an English magistrate, coming among them with an official experience limited to the low-lying eastern districts of Bengal, complained that they confused him by their obstinate adhesion to the simple truth, or, as his Bengali clerk is said to have expressed it, by their ignorance of the value of a lie. More than other untutored races do Santals live in dread and constant appeasement of malignant spirits, or *bongas*. So much do these *bongas* exclude the supreme but impassive good spirit from men's minds that the earliest European missionaries, seeking among the people for some native concept of the supernatural upon which to ingraft the theology and message of Christianity, are said to have based their first unhappy attempts upon a misconception of the nature of a *bonga*.

Santal medicine, like that of the vast mass of humankind, consists of superstition tinctured with *materia medica*; but from the memoir under review, one gathers that among the Santals the superstitious element, though much preponderant, is strangely logical. The supreme excellent spirit, Cando, desires that all Santals shall live to a good old age. He may, though slow to anger, visit the whole congregation with an overwhelming punishment such as famine, but the idea of slitting the individual thread by disease is not a part of his plan. Sickness must needs occur during the allotted span; but Cando has provided a sufficiency of herbs of powerful grace, which restore health. This being the ordained plan, it is useless to try to get it changed by individual supplications. For the given disease the given remedy is already provided in Nature: it may be a household remedy known to all men, or it may be known only to persons who have acquired an extensive knowledge of diseases and their appropriate treatments. The author states that there are among the Santals persons professing such knowledge, who treat the sick solely and simply under Cando's good providence, without invoking supernatural aid. Such persons he calls 'medicine men'; but if only they had received—as they have not—a professional training, they would come nearer our idea of an orthodox physician.

The true signification of 'medicine man' belongs rather to the *ojha*, a more pretentious person, who, while professing a knowledge of diseases and of natural remedies, professes also to have acquired, by special training and formal initiation, a knowledge of the supernatural which explains why the sick man does not recover, or recovers only to relapse. Serious menacing disease is due mainly to *bongas* and ancillary witches, and can be treated only by the *ojha* with perhaps the co-operation of the *ján* or witch-finder. The *bongas* can only do damage; they have neither the will nor the power to heal. They act not directly, but through human errors and through ubiquitous *tejos*, which, like microbes, exist in great numbers in the body—*e.g.* scabies, ringworm, leprosy, rabies, etc., are due to the activity of *tejos*. The witches also act indirectly, by secretly obstructing the efforts of the *ojha* to discover and appease the appropriate *bonga*.

The *ojha* is on familiar terms with the *bongas*. If by proper divinations, incantations (*muntars*), and sacrificial vows (*sakets*), he can get in touch with the responsible *bonga*, he may be able to appease it and can then apply his pharmacology. His attempts at communication with the *bonga* may, however, be obstructed or diverted by a witch, and then the assistance of a *ján* may be necessary. Witches, of course, are not treated by propitiatory methods—*tout au contraire*.

It is notorious that the beliefs of most of the aboriginal races of India have been modified—sometimes absorbed—by the circumambient insinuating Hinduism, and the Santal theory of disease is a good example of the process. As the author points out, the *ojha* with his *muntars* (Hind. *mantra*) and *sakets* (Hind. *sakht*), and the *ján* are of Hindu origin—their names bewray them. Among the *bongas*, too, there is a special contingent with Hindi names. The conclusion therefore seems obvious—although the author makes no explicit statements—that the remaining and more rational parts of the theory are indigenous, and that the Santals, with their characteristic commonsense, have made a remarkably sagacious setting of the heavy exotic superstitions.

This interesting memoir in this first instalment deals in minute detail with all the paraphernalia of superstition. A second instalment, treating of *materia medica* and medical treatment, is stated to be in the press.

[1] *Memoirs of the Asiatic Society of Bengal*, vol. 10, No. 1. "Studies in Santal Medicine and connected Folklore." By the Rev. P. O. Bodding. Part I. The Santals and Disease. Pp. vii+132. (Calcutta.) Rs. 5.1.

Egyptian Fisheries.[1]

NEARLY all the fisheries of Egypt lie within the territorial boundaries and are State owned. In 1924 they brought in to the Government the substantial income of some 83,000*l*.

There are three main sources from which the fish supply is drawn: (1) The Nile and inland waters, including basins and irrigation canals; (2) the Mediterranean and, to a small extent, the Red Sea; and (3) the Delta lakes. Of these three fisheries, that of the Delta lakes is by far the most important, yielding a yearly catch equal to two-thirds of the total fisheries. In the Mediterranean, Egypt possesses, in addition, very fine sponge beds within her territorial waters along the north coast of Africa, west of Alexandria.

Little information of scientific interest about the fisheries was available to the public up to 1919, except for the interesting chapter on nets and gear in use on the lakes and inland waters by Loat in Boulenger's "Fishes of the Nile." In 1919, however, the Coastguards and Fisheries Service, under the disciplinary control of which the fisheries now lie, secured the services of a scientific and technical assistant, Mr. G. W. Paget. From that date we received annually reports of great interest. In April 1924 the Government closed down the Fisheries Research Section.

Between these dates the mere economic value of such an office became apparent to any one reading the reports. Of outstanding interest was a large stocking experiment that has proved an unbounded success. Of the four Delta lakes—Menzaleh, Brullos, Edku, and Maryût—the first three are either permanently, or temporarily during the year, connected to the sea by narrow straits. This allows of the population of these waters by immense numbers of grey mullet, chiefly *Mugil cephalus* and *M. capito*,

[1] Report on the Fisheries of Egypt for the Year 1924. By Kaimakam G. Jenkins Bey. Coastguards and Fisheries Service. Ministry of Finance, Egypt. (Government Press, Cairo.) P.T. 5.

These fish, which form a very large percentage of the lake catches, migrate to the sea from the lakes to spawn. Where exactly the eggs are laid is not known, none having yet been certainly identified. As a result of the spawning, countless fry, under an inch in length, make their way back through the straits to the lakes, there to renew the stock, being attracted thither by the outflow of comparatively fresh water into the sea.

Lake Maryût, however, is at no time directly connected with the sea, the water-level being kept down by the action of immense pumps. The mullet fry are attracted by the outflow of fresh water flowing down the canal from the pumps into the sea; they swim up this canal, but their way into the lake is barred by the pumping-station. Consequently, the mullet fishery in this lake was negligible up to 1920. In that year Paget inaugurated stocking operations, whereby these fry were captured at the pumps and taken in a specially designed transport boat far out into the lake, where they were released. The following figures speak for the success of the operation. The number of fry introduced varies from year to year, but is in the neighbourhood of 30 millions. The actual lake-side weight of grey mullet caught rose from practically nil in 1920 to 223 tons with a lake-side value of £17,500*l.* in 1923, and to 406 tons in 1924, and is still rising. The actual cost of transport of the fry remains at about 350*l.* per annum. As a direct result of this experiment, Paget was further enabled to study accurately the rate of growth, under natural conditions, of the fish through three years, and to correlate growth with scale markings, with the advantage of knowing the size at which they were put into the lake. The closing of the Research Office prevented this interesting problem from being carried through the later years of the fish's life.

It is at any rate gratifying to note in the 1924 report, compiled by Kaimakam Jenkins Bey of the administrative staff, that attempts are being made to continue stocking the lake and also that other schemes of a somewhat similar nature, designed to improve the fisheries of the lakes and inland waters generally, that Paget had planned, are now being put in action. Amongst these is a method of driving, by means of fine-meshed nets, thousands of young fish into the main waters of the Nile from flooded areas that dry up in the heat of the summer, thus causing much waste of fish life.

A further source of valuable information to the Government was a survey of the sponge beds along the north coast of Africa, made in 1919. These beds, up to 1915, had been exploited by nomadic Greeks, who took their catches home with them. From that date until 1920 the fishery lapsed on account of the War. The 1919 survey provided a basis for determining to what extent the beds will bear fishing without producing effects that may be harmful to the crops of future years. The fishery is now run on an economically sound basis and is put up to auction each season by the Government, the fishing fleet being licensed and their catches inspected at regular intervals.

It is surely false economy for a Government to dispense with an office, in no wise costly, that renders such signal service. It is, however, perhaps a promise of better things in the future to read the following passage in a covering letter to the 1924 report:

"For motives of economy the Fisheries Research Section was closed down in April 1924 and the service of the Staff dispensed with, consequently no improvement in the conditions of the industry can be expected in the future except through natural causes until such time as the situation allows for the re-establishment of the Research Section, to study local conditions, to make scientific observations and to conduct experiments with a view to increasing the fish supply and to recommend methods for preventing the destruction of immature fish."

F. S. R.

Peat in the British Isles.

A PAPER not without importance in its application to one aspect of afforestation work in Great Britain and Ireland appears in the *Empire Forestry Journal* (vol. 4, No. 2, 1925). This paper bears the title "Types of Peat and their Connexion with Afforestation," and is by Mr. A. C. Forbes, Director of Forestry, Irish Free State. The problem of afforesting peat lands has been the subject of experiment for a considerable period of years in various parts of Europe, and in the British Isles two notable examples exist. The opinions of experts in this branch, based on experimental work, can scarcely be said to have been unanimous.

Mr. Forbes' paper is of value on one count, since he directs attention to the fact that the term 'peat' as used in the past has resulted in considerable confusion, and as a consequence the values of experiments undertaken have become either misleading or altogether useless for other regions or countries. The author roughly classifies what he terms 'peats proper' into five classes: (1) Turf peat, (2) heath peat, (3) mountain peat, (4) sphagnum peat, and (5) marsh peat. He shows that, so far as the bulk of the peat areas which may be of importance for afforestation purposes in the British Isles are concerned, the mountain peat is the most important. Forbes says that the confusion arising in the past, especially in connexion with German literature, has been occasioned by endeavouring to apply experiments which have proved satisfactory in the case of marsh peat to the other types of peat of his classification. "Mountain peat," he says, "is developed under humid conditions and usually at high elevations. Owing to the climatic conditions being favourable to sphagnum development, mountain peat accumulates faster and attains a greater thickness than heath peat, and may often terminate in pure sphagnum, the lower layers of which solidify, and cut off the connexion between the soil water and the surface." Mountain peat extends down to sea-level on the west coast of Ireland and Scotland and in Somerset and Devon not much below 1500 ft. The author hazards the statement that there may be no less than 10,000,000 acres covered with peat in Great Britain and Ireland. The two examples of attempts to plant mountain peat on any scale were at Knockboy, County Galway, which was a failure, and the classic work carried out by Sir John Stirling Maxwell at Corrour, a high-lying valley on the Moor of Rannoch, which is considered to be a partial success.

The author puts forward his term of 'mountain peat' with an apology, and states that 'tundra' might be a better term, though a word seldom used in the English language. The word 'tundra,' however, is essentially applied to the great marshy and peaty wastes in North Russia and elsewhere. These by the author's own showing fall under his (5) marsh peats. The term 'tundra' would therefore be misapplied to the mountain peat.