

THURSDAY, FEBRUARY 27, 1873

WESTERN YUNAN

A Report on the Expedition to Western Yunan, via Bhamô. By John Anderson, M.D. (Calcutta: Office of the Superintendent of Government Printing, 1871.)

THIS interesting volume consists of the first section of a report on the expedition from Burmah over the Chinese frontier into Yunan, sent out under the auspices of the British Government, in the year 1868. It was under the charge of Major Sladen and Captain Williams, with the author, Dr. Anderson, as naturalist to the Expedition. They were accompanied by Messrs. Bowers, Stewart, and Burn, as representatives of the commercial community at Rangoon; the main object in view being to ascertain how far it was possible for the great highway to China by the valley of the Tapeng, could be made open to British commerce. The desirability of this access to the western frontiers of China has long been felt, and many attempts have been made during the last two centuries to establish an emporium either at Bhamô or in its neighbourhood, and one of the results of the recent expedition has been the sanction on the part of the Burmese Government of the residence of a British representative at Bhamô for the protection of our commercial interests.

The first part of the volume before us is chiefly historical, and deals with the relations of the ancient Shan kingdom of Pong, with the neighbouring States of Burmah and China, and the wars which resulted in Pong becoming a Burmese province. The wars between China and Burmah are also described, but during the last hundred years or more the intercourse between the two nations has been one of peace.

The European intercourse with Bhamô is next traced from the days of Marco Polo downwards; for from some of the details given by that traveller as to the customs of the inhabitants of the province of Kardandan, there can be but little doubt that his route must in part at least have almost coincided with that of the expedition.

The description of the physical features and geology of the Bhamô district and of Western Yunan forms an interesting and important chapter. At Bhamô itself the Irawady, though 600 miles from the sea, is one and a half miles in breadth during the heavy rains, and about a mile during the dry season. Its great valley is, however, in places broken up by low isolated ranges which confine its waters to comparatively narrow but deep channels. These hill ranges are usually of metamorphic and crystalline rocks on which Eocene and Miocene strata, consisting of limestone, sandstone, clay, coal, and ferruginous conglomerates, have been deposited together with interbedded traps. The Tapeng, along the valley of which the course of the expedition lay, has a course of about 150 miles from its rise in the Kananzan hills to its confluence with the Irawady above Bhamô. For a considerable portion of this distance there is a continued succession of waterfalls and rapids, though it is navigable for about twenty miles when it reaches the Burmese plain. The Kakhya hills through which it passes attain a height of 5,000 or

6,000 ft., and appear to be mainly composed of metamorphic and crystalline rocks. Their surface, even to the highest peaks, is strewn with water-worn boulders, to which Dr. Anderson assigns a marine origin, believing that since their deposit this tract of country has been raised from beneath the sea, and that the immense valley of the Irawady was subsequently excavated. The Kananzan range appears to attain an elevation of about 9,000 ft., and to consist of rocks of the same character.

The Nantin valley leading to Momien seems to belong to another geological age, as in that district there has been a comparatively recent outflow of trappean rocks, while the country to the west is exclusively granitic and metamorphic. There, as well as in the Sanda Valley, are hot springs which issue at almost the boiling-point, and at the head of the Nantin valley is the large extinct volcano of Hawshuenshan. An extremely interesting feature in this valley and lower down the stream in the Mawphoo gorge, consists in the well-marked river terraces. Two of these seem to extend the whole length of the valley of Nantin—about sixteen miles—and there are indications of a third at a still higher level.

Of the mineral products, the coal seems to hold out the promise of good fuel and in fair quantity. It crops out on the surface in several places on the right bank of the Irawady, but as yet has been but little worked. Its geological age has yet to be determined.

Galena, rich in silver, is found in the valley of the Tapeng, and gold also occurs, sometimes in grains as large as small peas. The most interesting products of this part of Burmah are, however, amber and jade. The amber mines are at an elevation of about 1,050 ft., in a low range of hills to the S.W. of the Meinkhoom plain, in the Hukong valley. It is procured in a primitive manner by digging holes about 3 ft. in diameter, and sometimes as much as 40 ft. in depth. "Fifteen to twenty feet of the superficial soil is clayey and red, but the remainder consists of a greyish black carbonaceous earth. Foliated limestone, serpentine, and coal, are among the other strata. The amber is found in both of the former, and its presence is indicated by small pieces of lignite which are easily detected." It is made into Buddhist rosaries, finger-rings, pipe mouth-pieces, &c. The dark sherry-coloured amber is most highly valued.

Jade is found in more or less rounded boulders embedded in a reddish yellow clay. Pits are sunk in search of it on no defined plan, and at certain seasons of the year there are as many as 1,000 men engaged in digging for jade in the Mogoung districts. Blocks are occasionally found so large that they require three men to turn them. Everything in connection with the trade is taxed—diggers, purchasers, jade, and even the ponies used for its transport—and the revenue from the mines was, in 1836, about 4,000%. The jade used to be largely worked at Momien, and the manufacture is still carried on there to some extent. It is cut by means of thin copper discs about eighteen inches in diameter, used in conjunction with fine siliceous grit, composed of quartz and little particles resembling ruby dust. The boring of ear-rings and bracelets is effected by a revolving cylinder tipped at the free end with the same siliceous mixture. The most valuable jade is of an intense bright green colour, but the red and pale pink varieties are also prized. A pair

of bracelets of the finest jade costs about 10*l.* at Momien.

At some remote period the jade appears to have been applied to useful rather than to ornamental purposes, for celts formed of this material are found all over the district, lying on the surface soil, and doubtless turned up by the plough. They have also been formed of various other rocks, such as quartz, Lydian-stone, green-stone, clay-slate, &c. Lithographic plates are given of twenty-three of these instruments of various size, form, and material; but about 150 were procured by different members of the expedition. A good series of them has been presented to the Christy collection by Major Sladen.

A bronze celt, socketed, but without any side loop, and of peculiar form, with an oblique segmental cutting edge, was also procured. These are so highly valued that as much as 5*l.* apiece was asked for them. The composition, curiously enough, is identical with that usual in European antiquities of the same class, being 9 of copper to 1 of tin. The stone celts being more abundant than those in bronze, were less valued, being sold in the bazaars and elsewhere at from 4*d.* to 1*s.* 6*d.* each. Both they and the bronze celts are regarded as thunderbolts, which, after they fall and penetrate the earth, take nine years to work their way up to the surface. Not only is this belief in the celestial origin of these implements common to Asia and Europe, but the healing powers attributed to them in most European countries, are also accorded them in Yunan. They are worn as charms and carefully kept in small bags; and water, in which they have been placed, is administered as a medicine, especially in the case of tedious labour. It is rather a compliment to the students of prehistoric archæology that the only objects thought worthy of being figured by Dr. Anderson should be these celts.

The ethnological details given by the author as to the Shans, and what may be regarded as the transitional varieties between them and the Burmese on the one side, and the Chinese on the other, are highly interesting. A more barbarous people with whom the expedition was brought in contact, are Kakhyens or Chingpaws, who, though hemmed in on either side by Buddhist nations, still retain an ancient worship of good and evil spirits whom they call "nâts," and to whom they are constantly making propitiatory offerings of pigs, fowls, and rice.

Their method of producing fire is very remarkable, and is effected by "the sudden and forcible descent of a piston in a closed cylinder. There is a small cup-shaped cavity at the end of the piston rod, into which a little tinder is inserted. The piston is then introduced into the cylinder, which it tightly fits, and by a blow is made to descend with great rapidity and force, and is as rapidly withdrawn, when the little pellet of tinder is found to have become ignited." The instruments are not more than four inches long, and are in general use. It would be highly interesting to trace the origin and date of this invention.

At Bhamô one of the articles exposed for sale in the shops was flint, which would therefore appear to be the fire-producing material of the Burmese-Shans. Iron is abundant, and the Chinese-Shans, who resort annually to Bhamô for the purpose of manufacturing the dâhs or swords, are expert blacksmiths, their bellows consisting

of a segment of bamboo with a piston, and a valve at each end.

Among some of the Shan tribes neck-rings or *torques*, curiously like those found in Western Europe, are still in use; but the majority of the ornaments appear to be Chinese in character. It would, however, extend this notice beyond all reasonable limits were an attempt made to give even a short abstract of the chapter on the Shans, Kakhyens and other races to the east of Bhamô. The curious practice of horse-worship in connection with the Buddhism of the Sanda Valley may, however, be noticed, as well as the Shan method of concealment of gold and precious stones, by burying them beneath the skin of their chest and necks by making slits, through which the coins or stones are forced, and which subsequently heal up. When the valuable object is wanted a second cut is made upon the spot, and it is extracted. In some instances, as many as fifteen stones or coins were found to be hidden beneath the skin of men just arrived with a caravan at Mandalay. It is needless to follow the author in his report on the Mahomedans in Yunan, the presence of whom, however, proved of great service to the expedition, as many of their guard were of that religion, and thus found friends. Nor need the trade routes of Upper Burmah be here discussed. The geographer will find much information in the chapter on the Irawady and its sources, and in the accompanying map. This chapter concludes the Report, and the remainder of the volume contains the diary of the author, written during the expedition. His report on the Natural History collections formed during his travels, has yet to appear, and will no doubt contain curious details. Even now we may call attention to the remarkable instance of the taming of fishes in a large river like the Irawady, by the phoongyees or Buddhist priests. At the boatman's cry of *lit, lit, lit*, numbers of fish came to be fed with rice and plantains, putting their heads above water, allowing themselves to be stroked, and even permitting Dr. Anderson to put his fist into their mouths so as to feel their teeth. He was unable to procure a specimen, as there were strict orders from the king that they should not be killed.

With this anecdote we must conclude our notice of this interesting Report, and must express a hope that a certain number of copies of it may be consigned to some London publisher so that it may become accessible to the general public, which as yet it apparently is not.

JOHN EVANS

THE HYGIENE OF AIR AND WATER

The Hygiene of Air and Water. Being a Popular Account of the Effects of the Impurities of Air and Water, their Detection, and the Modes of remedying them. By William Proctor, M.D., F.C.S., Surgeon to the York Dispensary, and formerly Lecturer on Chemistry and Forensic Medicine in the York School of Medicine. (Hardwicke.)

THIS is a useful little book, but it wants some revising: it is too sweeping a statement to say that the oxygen of the air is constant in amount and the carbonic acid variable; it is true that the variations in the amount of oxygen are very small in proportion to that amount. It would have been well to state even in a popular treatise