

*THE FAR-NORTH AUSTRALIAN.*¹

THE three volumes of studies of the natives of Central Australia which were published by Prof. Baldwin Spencer and the late Mr. F. J. Gillen, required for their completion some account of the natives of that portion of the continent

organisation, in which the tribe is divided into two main divisions, each with its subdivisions regulating marriage, and with descent either in the male or female line, many of the northern tribes follow a local organisation. The people are divided into a series of local groups, each owning and occupying a special district, and on marriage a man of one group takes his wife from another, and brings her and his children into his own group. The details of the various systems are fully given by Prof. Spencer, with tables of relationship terms in a series of typical tribes, and also the status terms applied to individuals at different periods of life.

With respect to the initiation ceremonies, the author divides the northern people into three groups. The first, occupying the islands, Coburg peninsula, and adjacent mainland, practise neither circumcision nor subincision. Adjacent tribes on the south practise circumcision only, whilst others inland from the coastal ranges and towards the centre of the continent practise both circumcision and subincision.

There is much variation in the totemic systems of the tribes. Where there is class organisation the totem groups are variously divided. Exogamy,

though usual, is not always strict. Where the local organisation prevails, though there may be some marriage restrictions, there is sometimes no question of descent involved, and a child's totem



FIG. 1.—Two Kakadu Men. From "Native Tribes of the Northern Territory of Australia."

which stretches northward to the shores of the Arafura Sea. This natural sequel, an account of the people of the Northern Territory, is to be found in the new and valuable record, dedicated to the memory of his dead colleague, which has just been written by Prof. Spencer. With the experience gained in his previous investigations, the author has produced an excellent volume, which is in every way equal to its forerunners in anthropological interest, in scientific value, and in clear description of another group of the totally uncivilised tribes of Australia.

The introductory chapter, aided by nearly thirty pictures, gives a particularly vivid description of the country occupied by the tribes, their appearance and dwellings, general way of living, character and mental ability. A map shows the location of the tribes, those dealt with in most detail being resident on Melville and Bathurst Islands, on the mainland about Port Essington, the Alligator Rivers and Port Darwin, and southward to the region between Victoria River on the west and Roper River on the east. The total population is estimated at about 50,000.

The social organisation most prevalent in this region was found to differ from that usual in other parts of Australia. Instead of the class

¹ "Native Tribes of the Northern Territory of Australia." By Prof. Baldwin Spencer. Pp. xx+516. (London: Macmillan and Co., Ltd., 1914) Price 21s. net.



FIG. 2.—Placing the Bull-roarer on the hands of the Initiates, Larakia Tribe. From "Native Tribes of the Northern Territory of Australia."

is revealed to the father in a dream. The totems in all the tribes are usually edible articles, animal or vegetable, but in some cases implements and natural objects are totems. In many of the tribes a man may not eat his totem, but in others,

though he may not capture or gather it, he may eat it if it be given to him by a man of another group. For the purpose of increasing the supply of the totemic animal or plant, certain magical ceremonies are performed. The bull-roarer and other sacred objects so prominent in the central region was not found among the tribes of the islands, the Coburg peninsula, and coast southward. The Kakadu (Alligator River) call the bull-roarer *kumali* and the Larakia (Port Darwin) *bidubidu*. The ceremonies in which they are used, and the traditions regarding them, are described by Prof. Spencer. Burial and mourning ceremonies vary greatly. The Melville islanders bury their dead in graves with elaborately ornamented grave-posts. The Kakadu of Alligator

tralia, is found also among the northern tribes. The far-off ancestors, as they travelled about, shook off spirit children into caves and trees. These enter the women at these places and are born as natives. The dead go back to their old home, and after a time are born again, the sex being changed at each new birth. Half-castes are the result of eating the white man's flour.

Two extremely interesting chapters are devoted to traditions and legends. Food restrictions are also dealt with. They show the natives specially hampered by definite rules of eating during child-bearing and youth, age being privileged.

Separate chapters describe the weapons and implements, clothing and ornaments, and decorative art, the latter including rock and bark draw-

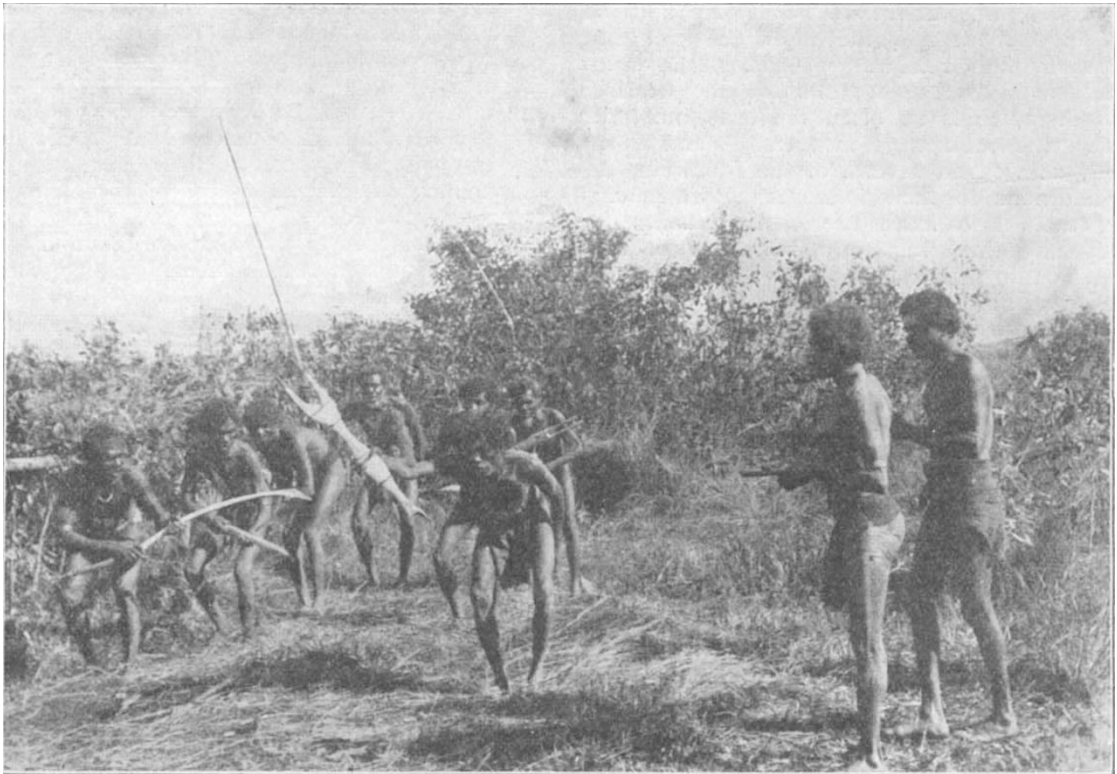


FIG. 3.—Scene from the Muraian Ceremony, Kakadu Tribe. From "Native Tribes of the Northern Territory of Australia."

River also bury in the ground, but other tribes place the body in a tree. The Larakia follow tree-burial by burial in the earth or in holes in rocks. The Mara tribe eat their dead, and after exposing the bones on a tree platform, bury all but the long bones of the arm.

An interesting account is given of magic and medicine. Evil is wrought by burning excrement. This entices away a man's protecting spirit, and so renders him liable to accident or hunger. The same practice will give a strong man's power to a youth. Maleficent magic is also wrought with a fragment of the victim's food, or with mud scraped from his foot. Disease is cured by eating pounded ant-hill.

The author discusses the curious belief as to the origin of children which, as in Central Aus-

ings. The illustrations to these chapters, some coloured, show these northern natives to be more advanced artistically than other Australians.

There is no suggestion of Malay influence in the region, and the author gives reasons against its possibility. The valuable linguistic appendix, mainly relating to three tribes, shows the languages to be characteristically Australian.

A few inconsistencies and omissions may be noted. The Umbia and Bingongina of p. 483 appear as Umbaia (p. 7, 17), Binbinga (p. 7). The organisation of the Maluuru tribe is given (p. 56), but there is no indication of its locale or that of the Allana tribe (p. 483). The use of Austral-English appears in the use of such words as: goanna, sugar-bag, lubra, pitchi, wurley, miamia, billy, billabong, tuck-out, and tucker.

Special features of the volume are the number and quality of the illustrations. There is a good index.

The work is an exceedingly valuable contribution to anthropological literature, indispensable for the student of primitive beliefs and ceremonial.

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THE EVOLUTION OF THE PETROGRAPHICAL MICROSCOPE.

WHEN Henry Clifton Sorby laid the foundation of the science of microscopical petrology, in the year 1851, the instrumental means at his command were of the simplest kind; his microscope had attached to it two Nicol-prisms, one above the eye-piece and the other below the stage, the latter being capable of rotation, thus rendering it possible to study the sections of minerals in rocks by plane polarised light. Then, as is so often the case, necessity became "the mother of invention," and Sorby himself, as well as several of his followers, devised additions to their microscopes which converted them into more useful instruments for investigating the optical properties of minerals, as seen in thin sections of rocks. The designers of these improvements were, of course, dependent on the able makers of optical instruments for putting their suggestions into practical form.

In the year 1876 the late Prof. Rosenbusch, of Heidelberg, who had been led to the microscopical study of rocks by Heinrich Fischer, one of the earliest pioneers in this branch of research in Germany, described "a new microscope for mineralogical and petrological researches." The chief features in this microscope were an accurately graduated, revolving stage, with verniers, and a complex nose-piece enabling the objectives to be rapidly changed. About the same time MM. Fouqué and Michel Lévy—with the co-operation of M. Emile Bertrand—had also turned their attention to the improvement of this class of instruments. The eminent optical instrument-maker of Paris, M. A. Nacet, carrying out their designs, constructed a microscope which embodied many advantageous features for petrographical work. In this instrument the necessity for the troublesome centring arrangements, for keeping an object on the cross-wires of the field of view, is got rid of by dividing the tube into two portions moving independently, the upper section carrying the eye-piece, analyser, and some accessory apparatus, and the lower attached to the finely graduated revolving stage bearing the objectives; these latter are easily changed by moving in a slide with spring-catch. Another important addition to the instrument which we owe to the French petrologists is the series of converging lenses with a magnifying lens above, by which interference figures may be viewed in the thin sections of minerals in rock-slides. It is true that these interference figures are only partial ones, but by the aid of diagrams supplied by the authors of

the method their interpretation is rendered possible.

Outside France, the Nacet instrument would not appear to have come into very general use, a fact which is perhaps accounted for by the rather cumbrous arrangements necessitated by the division of the tube. In this country an arrangement having the same object has been devised by Mr. A. B. Dick, and has found much favour with many petrologists. It consists in having the rotating, polarising and analysing prisms so connected that they can revolve together, while the stage is fixed. The forms of the ordinary and Dick types of petrographical microscope, as employed by the officers of the Geological Survey of Great Britain are illustrated in Figs. 1 and 2.

Still more recently the celebrated Russian crystallographer, Féderow, has devised a form of the mineralogical and petrographical microscope, in which the crystal or section to be examined is carried on a stage which is capable of movement and inclination at exactly measurable angles, by which means very important optical determinations may be made. Instruments constructed on Féderow's plan are made by the Société Genevoise pour la Construction d'Instruments de Physique et de Mécanique, 87 Victoria Street, London, S.W.

As a matter of course, all the improvements in the mechanical and optical arrangements in microscopes introduced during the last fifty years have been made available for the instruments constructed for mineralogical and petrographical work. With the addition of many pieces of accessory apparatus, such as sections and wedges cut in definite directions from the crystals of various minerals, stage goniometers, and special arrangements for stage-movement, the instruments of this class have now become, as will be seen from the figures, more and more complicated as the refinement of methods has increased.

Not less important than these elaborate instruments employed in research are the simpler forms used in elementary and advanced geological teaching, which must necessarily be produced at much smaller cost. There are also special petrographical microscopes made, which are adapted for projection purposes in lecture-theatres, for photographic work, for examining crystals and sections while being heated and cooled, and for studying the development of crystals in solutions and fused materials. Examples of many of the types of petrographical microscopes are exhibited in the Science Museum at South Kensington.

As a direct offspring of the petrographical microscope, we may refer to the instruments now so extensively employed in metallographical researches. In 1864 Sorby, while studying sections of meteorites, for the purpose of comparing them with terrestrial rocks, was led to examine the grains of nickel-iron in the "sporado-siderites," after they had been etched, by reflected light. It occurred to Sorby that the same method of study might with advantage be employed in the case