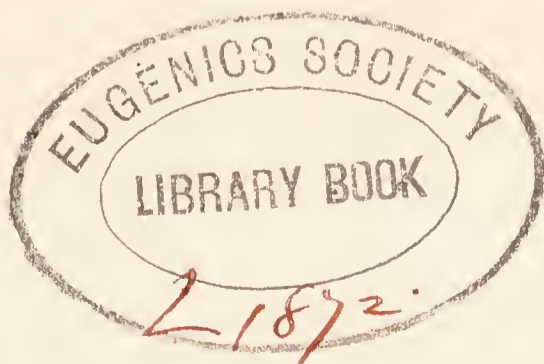


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WANDERINGS IN
WILD AUSTRALIA



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WANDERINGS IN WILD AUSTRALIA

BY

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NORTHERN TERRITORY

IN TWO VOLUMES

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TO
THOSE WHO SHARED
AND TO THOSE WHOSE HELP
MADE THESE WANDERINGS
POSSIBLE



INTRODUCTION

It is long years since, in 1894, I first made acquaintance with the real wilds of Australia. Before then I had tramped on foot, "humping my swag," in company with other naturalist friends, across King Island, which lies half-way between the mainland of Victoria to the north and Tasmania to the south. The island is now the home of prosperous settlers. When I knew it, in 1887, the population consisted of two lighthouse-keepers and a solitary wallaby hunter. When Flinders and the two Frenchmen, Baudin and de Freycinet, landed there in 1803 they found a little colony of wild sealers living with a few old aboriginal women whom they had abducted from Tasmania. The island was then the home of wombats and emus, the latter much smaller than the mainland bird. Both of them were so tame, and so good to eat, that there were none alive when the sealers left, and now we know them only from the scattered and broken skulls and bones that come to light when the strong winds blow from the sea across the sand dunes on the western coast-line.

In the same way, in 1888, I had tramped through Croajingolong, as Eastern Gippsland was then called, when there was no Prince's Highway for motorists, but only rough bush tracks—often indeed only a "blazed" one¹—leading through the dense forests and across the mountains, with only one little habitation near Mt. Ellery, half-way

¹ A "blazed" track is one that leads through forest country and is marked only by cuts on the trunks of trees. These cuts or "blazes," made with an axe, enable the traveller, before definite tracks are formed, to find his way through the virgin forest.

between the mouth of the Snowy River and the southern border of New South Wales.

I knew also the undulating plain country in the interior of Victoria, around Lake Hindmarsh, then covered with endless miles of mallee scrub, the home of the mound-building bird.¹ In the early days this dry Mallee country, except so far as it provided "mallee-roots" for fires, was looked upon as useless and hopelessly inhospitable for human habitation. To be lost in the Mallee country was equivalent to being lost for ever, because the scrub was so dense that there were no such things as guiding landmarks; even if there were, it was useless to climb the trees, because the thin branches simply bent down to the ground under the weight of the body. The scrub is now cleared, and in its place roll hundreds of miles of waving wheat-fields, dotted over with the homes of prosperous settlers.

The well-watered bushlands and mountain ranges of South-Eastern Australia and the mountain Lake Lands of Tasmania, with their wonderful giant gum trees and beautiful fern-tree gullies (Figs. 1 and 2), were full of interest, but they did not possess the fascination, at least in imagination, of the vast and comparatively unknown interior of the continent, and, in 1894, I more than gladly accepted the invitation of Mr. W. A. Horn to become a member of an expedition that he was organising to carry out scientific investigation in the Central wilds. There was no suggestion of our exploring, geographically, unknown country. The continent had been traversed and explored

¹ *Leipoa ocellata*. The mound-building birds of Australia belong to two different genera, *Leipoa* and *Talegalla*, the latter being found only in Queensland and the far north. As their name implies, they make mounds of extraordinary size, as much as ten or twenty yards in diameter and eight or ten feet in height. The birds scrape the earth up into a huge mound, lay their eggs in a crater-shaped depression on the top and cover them with leaves and earth. The fermentation of the decaying vegetable matter provides heat enough to incubate the eggs, and when the chicks are hatched they scratch their way out into the open and are ready to begin life on their own.



B.S.

FIG. I.—GUM-TREE FOREST. VICTORIA.

from south to north and east to west by men whose names are famous in the records of the early history of Australian exploration: Eyre, McDouall Stuart, Sturt, Mitchell, Grey, Leichhardt, Gregory, Gosse, Warburton, Forest and Giles; but, apart from purely geographical explorations, little systematic scientific work had been done. For one thing, none of the early explorers were scientifically trained, at least in natural history, and, for another, travel in the Central wilds in early days, before the introduction of camels, usually left the explorer little time to think, or trouble about anything, except where to find water and keep his horses and party alive. A certain amount of botanical collecting had been done, chiefly at the instigation of Baron von Mueller, because dried plants are easier to secure and carry than animals that can run or fly away and cannot be pressed flat. In fact, apart from small collections, mainly of birds, we then knew comparatively little of the central fauna, and, scientifically speaking, the Central Wilds were almost a *terra incognita*.

Australia is the present home and refuge of animals, including man himself, that have elsewhere become extinct and given place to higher forms. It seemed possible that, in what, not having seen them, we imagined to be great fertile, wooded and well-watered valleys amongst the Central Ranges, there might even have been preserved some remnants of an ancient fauna extinct elsewhere on the continent, because, for a long time past, climatic conditions have erected a barrier between the Centre and the coastal regions. Once in the Centre and amongst the dry and thinly wooded plains forming the lower Steppe-lands, later on, in the desert country around Lake Amadeus and, lastly, amongst the higher Steppe-lands in the Macdonnell Ranges, any illusions we had cherished as to spectacular discoveries, either botanical or zoological, vanished once and for all.

In the dry season, and this may lengthen itself out so as

to extend over a year or two, you can travel hundreds of miles and scarcely see a living thing, except here and there a bird and ants innumerable. In the wet season all is changed. The trees and shrubs burst into fresh leaf and blossom, the desolate plains and even the sand-hills (Fig. 3) become green with grass and herbage and gay with flowers: animals of all kinds, birds, lizards, frogs and, worst of all, myriads of flies by day and mosquitoes by night, appear as if by magic. For a short time the rivers actually run, and great stretches of country, once impassable through lack of surface water, are covered with flood and quagmires that make travelling impossible. This does not last for long, and in a week or two the creeks and rivers dwindle till only scattered water-holes remain. Animals go into their hiding-places to tide over the dry season as best they may; the face of the country becomes once more dry and parched; silence and desolation reign everywhere. It is no wonder that the accounts of different travellers vary so much. One will describe a land of wonderful fertility, another, crossing the same country, finds nothing but sand and flies, withered shrubs and dried-up water-holes, with here and there the bleached bones of some poor beast that has perished in the drought. Both of them are right, and, to understand really and know the Centre, you must traverse it in summer and winter, in both the "dry" and the "wet," as the two seasons are called. Not only so, but whilst, on the northern coastal regions, you can rely with certainty on a rainfall during the summer season from November to May, when the monsoons blow, there is no such regularity of season in the Centre, and the rainfall may dwindle from a maximum of perhaps twelve inches to a minimum of two or even less, and, so far as settlement is concerned, it is the minimum that tells.

It is now nearly seventy years ago since, in 1862, McDouall Stuart first crossed the continent from south



B.S.

FIG. 2.—A GIPPSLAND FERN-TREE GULLY.

to north. The vast stretch of country lying between the railway heads, Oodnadatta in the south and Katherine River or Emalgan in the north, is little changed since then. After his time, Warburton, Forest, Giles and Lindsay crossed from the Centre to the west coast. Giles and Tietkins, in early days, in 1872, discovered and named Lake Amadeus, Ayers Rock and Mt. Olga, and traversed much of the Macdonnell Range country, but McDouall Stuart's name will always be most prominently associated with the exploration of the great Central area and, when South Australia gallantly undertook the responsibility of connecting the settled parts of South and Eastern Australia by telegraph with the outside world, the route followed by the line of wooden poles, carrying the single iron wire that ran in an unbroken line from Adelaide in the south to Darwin in the north, was practically that followed by Stuart in 1862. For more than thirty years, as when I first went across, it formed Australia's only means of telegraphic communication with the outside world.

Gradually the railway pushed north from Adelaide to Terowie, then, and still, the termination of the broad-gauge line. A little to the north of this, the Broken Hill line now branches off to the north-east, passing into the western hinterlands of New South Wales. The great northern line continues on its course until, by steep gradients and sharp curves, it creeps up and over the Flinders Range and reaches Quorn, where the train halts for the night and whence a short line runs south to Port Augusta to connect, now, with the east-west transcontinental line. The next day the northern train continues on its way, traversing the eastern side of the Lake Torrens Basin and keeping close to the base of the Flinders Range with its line of sharply serrated, picturesque hills, for the most part bare of vegetation from base to summit save for here and there patches of pine trees. Once more it rises amongst the hills, which here sweep round from

east to west, and then, at Leigh's Creek, it descends abruptly and enters the Lake Eyre Basin. From an elevation of nearly 1300 feet on the summit of the watershed between Lake Torrens and Lake Eyre, the line gradually descends until, at Hergott Springs, the next stopping-place for the night, the height above sea-level is only 155 feet. Further on, at Stuart Creek, it is actually twenty-five feet below sea-level, the surface of the lake being fourteen feet lower. Gradually the land rises again until at Oodnadatta, 400 feet above sea level and nearly 700 miles north of Adelaide, the railway ends far out in the wilds. At the time of which I write there was a daily train from Adelaide to Quorn, one every week from Quorn to Hergott, and one every fortnight from Hergott to Oodnadatta—a fair indication of the relative loneliness of these far-away spots, even by railway. From Oodnadatta you travelled as best you could, by camel or horse, across the 1063 miles that lay between it and Pine Creek, the termination of the short line, only 150 miles in length, running south from Darwin. In those days a horse mail ran once every six weeks from Oodnadatta to Alice Springs in the Macdonnell Ranges. At the present time motor traffic is quite common over the Central area.

Since 1894, when the Horn Expedition traversed the Central area, I have wandered over many parts of the great stretch of country occupying the central and northern central parts of the continent, which, until it was taken over by the Commonwealth in 1907, was officially styled the Northern Territory of South Australia. It is now divided into two, Central and North Australia; the former with its head offices at Alice Springs or Stuart; the latter is to have a Government Resident at Newcastle Waters. Some idea of the size of the whole Territory may be gained from the accompanying map (Map 1), in which Great Britain is represented in proportionate size within the boundaries of the Territory. The latter comprises some 523,000 square



B.S. J

FIG. 3.—THE SANDHILLS IN FLOWER, AFTER A FALL OF RAIN.

miles: it is two and a half times the size of France and four and a half times that of Great Britain.

The salient physiographical features of the interior are indicated in Map 1, but of course only in a very general way. Fortunately they are of such a nature, and on such a scale, that they can be represented more or less simply. Apart from the northern and north-western coastal districts and those bordering the Gulf of Carpentaria on the east, there are three great areas of river drainage occupying almost the whole of the interior, each of them entering into the composition of the Northern Territory. They all run in a general north-east to south-west direction. The most southern of the three is the Murray Basin; in the Centre lies the Lake Eyre, and in the north the Lake Woods Basin. The two latter are inland basins with no outlet to the sea. To the south-west is the true desert region in which Lake Amadeus lies. The dotted lines indicate roughly the lines of watershed that separate these basins from one another and from the coastal districts. Though some of the Ranges and high lands, forming the watershed of the Lake Eyre Basin, are far away from the Central area, they are intimately associated with it, because along them lies the area of intake for a large part of the supply of water that is tapped by the artesian wells of the interior. It will be seen that a line drawn from Sydney to the mouth of the Victoria River, or Cambridge Gulf, passes across the centre of each of the three basins.

Summarising, briefly, the physical features of the Central and Northern divisions of the Territory we can recognise four distinct parts:

(1) A relatively small portion in the south-west containing Lake Amadeus. This consists of true desert country across which no streams run, or only very insignificant ones, and then only for a very short distance from the hills amongst which they take their rise.

(2) A south-eastern part, which forms a portion of the Lake Eyre Basin and is drained by the Finke River and its tributaries. This really includes the great Central Ranges, because the line of watershed, with an elevation of nearly 3000 feet, lies actually to the north of the main ridge from which the highest peaks of the Macdonnell Ranges rise, and across which also the rivers run, at right angles, in their southward course.

(3) The Lake Woods Basin lying to the north of the Central Ranges. This is a great saucer-like area; its southern margin, which coincides with the Tropic of Capricorn, is bounded by the Macdonnell Ranges, its eastern by a continuation of these to the north-east, and its northern by the Coastal Ranges of the Gulf of Carpentaria and the Indian Ocean. From north to south it measures, roughly, 450 miles. The elevation of its southern margin is a little under 3000 feet; at Barrow Creek, 140 miles further north, it is 1700 feet. At Powell Creek, 270 miles on, it is just 1000 feet; 70 miles further north again, its lowest point, 700 feet, is reached, and here, in the rain season, the water accumulates in vast sheets and forms Lake Woods. This has no definite boundaries and really consists of a number of great, shallow sheets of water that become confluent during exceptionally heavy rainfalls. East and north of this, the land rises again to a height of 1000 feet on the watershed which sweeps round, following roughly the outline of the coast and separating this great inland basin from

(4) The coastal regions. A little to the north of the Daly River telegraph station, on the overland line, a watershed is crossed which marks the dividing line, not only between the inland and the coastal regions, but, running northwards, separates the eastern and the western divisions of the latter. On the one side the tributaries of the Daly, Katherine and Victoria, flow westwards to the Cambridge

Gulf, and on the other those of the Macarthur, Limmen, Roper and other streams flow eastwards to the Gulf of Carpentaria.

Of these four areas the second and the third (1 and 3 on Map 1), which, together, occupy a large part of the Centre, may be known as the Australian Steppe Lands.¹ The Finke Basin forms the Southern, and the Lake Woods the Northern, Steppes. The Finke Basin, or Southern Steppes, is crossed by numerous watercourses coming down from the Ranges and may be divided again into two parts, the Higher and Lower Steppes. The former comprises the northern elevated plateau and the latter the great sandstone plains laid down long ago in inland seas that once washed up against the southern margin of the Central Ranges and the western slopes of the Queensland Highlands.

My wanderings have led me over much of the country comprised in the Northern Territory, from Lake Eyre in the south to Darwin in the north; across to Bathurst and Melville Islands and through the coast regions, westwards along the Daly River, northwards to the Alligator Rivers and eastwards to the Gulf country on the Roper and Macarthur Rivers.

In 1894, as Zoologist on the Horn Expedition, I had the opportunity of seeing not only the Lake Amadeus region but the whole of the country drained by the great Finke River, including the wonderful Macdonnell Ranges. It was then that I met Mr. F. J. Gillen, my late friend and comrade during many years of work amongst the Central aborigines. In 1895, in company with Mr. P. M. Byrne, then in charge of the telegraph station at Charlotte Waters, I had the good fortune of being able to see the southern part of the interior after a heavy rainfall. This enabled me to study the animal life of a very typical part of Central

¹ I described these originally in the Report of the Horn Expedition, "Through Larapinta Land," 1896.

Australia in a way that it was impossible to do during the dry season that we experienced on the Horn Expedition. In 1896, 1897, and 1898 Mr. Gillen and myself were working amongst the Arunta at Alice Springs and the Urabunna tribe in the Lake Eyre district. Later on, still working amongst the natives, we spent a year, extending from March 1901 to March 1902, in a traverse of the continent from Oodnadatta to Powell Creek and then across, eastwards, to Borraloola at the mouth of the Macarthur River, on the Gulf of Carpentaria. In 1911 I was the leader of a small expedition sent by the Commonwealth Government to make preliminary scientific investigations into conditions in the Northern Territory, and traversed the country from Darwin southwards and then eastwards along the Roper River to the Gulf of Carpentaria. In December 1911, at the request of the Commonwealth Government, I returned for a year to the Territory as Special Commissioner and Chief Protector of Aborigines, which gave me the opportunity of seeing much of the country and of studying the natives under very favourable conditions. In 1923, in company with Dr. L. Keith Ward, the Government Geologist of South Australia, I had the opportunity of traversing again a considerable area of the Macdonnell Ranges, and finally, in 1926, visited Alice Springs in order to revise and extend the earlier work of Mr. Gillen and myself amongst the Arunta people.

Motor traffic is now opening up the central and northern areas of the continent. Parts that, in the earlier days of my wanderings, were difficult of access, have now been brought near; the aborigines, whom we knew in their primitive conditions, are rapidly degenerating and disappearing. Aeroplanes now fly across the Macdonnell Ranges and swoop down to a landing-place at Alice Springs, right in the very heart of the continent. In two or three hours they traverse easily the country that, in the early days,

it took us as many weeks of often weary travel to cross with horses and camels.

It must be confessed that there are wide areas in the centre of Australia where the scenery is extremely monotonous and travelling, at least on earth, anything but pleasant. Everything is on a large scale, whether it be the boundless plains covered with meagre scrub; the great valleys, two or three hundred miles in length, in the midst of the Macdonnell Ranges; the impressive gorges that cut across the mountains; or the wide river channels, for the most part absolutely dry but sometimes filled with floods of water. Despite its dreary scrub, its often intense heat, its seasons of drought when everything is parched and dry and most things dead or dying, its dust and plagues of flies and mosquitoes, it is, when once one has grown to know and understand it, a fascinating country.

It is impossible adequately to acknowledge the kindness, not less than the constant and ungrudging help, extended to me by colleagues and comrades who either shared my wanderings or made them possible. First and chiefest there is Frank J. Gillen. We met at Alice Springs in 1894, and our friendship and partnership in work amongst the aborigines continued unbroken until his death in 1912. On our last expedition, in 1901, we spent twelve months together in the field, sometimes amidst surroundings not always comfortable but always deeply interesting. He was the truest comrade that one could have wished for. In those early days the centre of Australia was emptier than it is even now. There were then only three white women between Oodnadatta in the south and Pine Creek in the north—a distance of 1063 miles—and one can only say that the presence of Mrs. Ross at Crown Point, Mrs. Gillen at Alice Springs, and Mrs. Kell at Powell Creek made these three isolated spots veritable oases of rest in a desert of discomfort. At Charlotte Waters P. M. Byrne was in charge

of the station, and to his generosity and long friendship I am deeply indebted for invaluable help in my Zoological work. In early days at Illamurta, Mounted Trooper E. C. Cowle; at Barrow Creek Station, W. Scott; at Tennant Creek, J. Field, and at Borraloola, on the Gulf of Carpentaria, Sergeant Stott, officers in charge at these outlying posts, were personal friends and gave freely the help that they alone were able to do in these remote parts. At a later time, when I was working in the far north, the Administrator of the Territory, Dr. J. A. Gilruth and Mrs. Gilruth helped me most generously in ways far too numerous to mention. On two occasions, more recently, at Alice Springs, my old friends Sergeant and Mrs. Stott again gave me most valuable help. Melville Island when I first went there was wild and uninhabited, save for one celebrated buffalo hunter, Joe Cooper, whose presence and help alone made it possible for me to get into touch with and work amongst the natives, of whom at that time little was known. I am especially indebted to the opportunity afforded to me by Mr. and Mrs. Cahill to work in the East Alligator River country amongst the members of the Kakadu and other tribes. Throughout the far north Paddy Cahill, as he was always called, was known everywhere as "a mighty hunter," and the two months that I spent with him and Mrs. Cahill at their delightful, remote and picturesque little home at Oenpelli, and later on with him as my guide and comrade on the Flora River and Bathurst Island, are amongst the most cherished memories of wanderings that have led me into places often far away from beaten tracks.

All of those whom I have mentioned, men and women alike, are amongst the many pioneers who have given of their best in the attempt to open up Australia's Great Lone Land. To those of them who still remain and to the memory of those who have passed away I tender here my deep and grateful thanks.



MAP Nº 1.

The dotted red lines indicate approximately the boundaries of

1. LAKE EYRE BASIN.
2. MURRAY RIVER BASIN
3. LAKE WOODS BASIN.
4. LAKE AMADEUS BASIN.

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BOOK I
LARAPINTA LAND



PART I
THE COUNTRY

CHAPTER I

THROUGH LARAPINTA LAND

I. THE LOWER STEPPE LANDS

LARAPINTA is the picturesque Arunta name of the Finke River, the main stream that flows south from the Macdonnell Ranges until it loses itself in the desolate wastes of sand that stretch for many hundreds of miles across the central area of the continent in the southern part of which lies Lake Eyre. It means, literally, a "flowing spring," or "flowing water," but any such thing is only very rarely to be found along its whole course, which must be actually 1000 miles, though only about 500 in a direct line. However, it does flow in flood times and the name must have been given to it in honour and memory of those rare occasions, all the more notable because they occur so seldom.

Larapinta Land may really be regarded as including all the country drained by the Finke with its tributary streams the Hugh, Ellery and Palmer; down its northern and eastern side runs the Todd River; its south-west portion is drained by the Alberga, Neales and Macumba rivers, all of which, coming in from the Musgrave and other ranges and the higher lands that form the western margin of the Lake Eyre region, flow, in a general south-easterly direction, across the lowlands towards the lake. It has the form of a great quadrangle slanting across the Centre from north-west to south-east. Its northern side, about 300

miles in length, coincides in latitude with the Tropic of Capricorn. Larapinta Land forms, in fact, the smaller, western part of the great Lake Eyre Basin which, to the east of it, is drained by the great river system of the Georgina, Barcoo, Warburton and Diamantina. The Finke River itself drains an area of approximately 80,000 square miles. The total area of the Lake Eyre Basin is estimated to be 500,000 square miles. Right across the centre of Larapinta Land runs the overland telegraph line. From north to south it measures about 450 miles and is the home of the Arunta, one of the largest—perhaps the largest—of Central Australian tribes.

Its southern part, which now forms the gateway to the Centre from the settled districts of South Australia, is closely associated with the early history of exploration in the latter State. It was to traverse and find out as much as we could of the natural history, the physical structure and nature of this little known country that the Horn Expedition was organised in 1894. In early days Eyre discovered, or thought he did, a lake extending in the form of a great horseshoe, the western limb of which ended near the head of Spencer Gulf, while the eastern curved back touching nearly the western boundary of New South Wales (Fig. 4). On old maps, of one of which, published in 1842, the illustration is a copy, the total length of the Lake from its southern to its northern limit is represented as covering no less a space than 300 miles. Eyre penetrated into the centre of this supposed horseshoe. He saw from the top of a hill, rising amidst an endless stretch of barren sandy country in which he could find neither fresh water nor food for his horses, what seemed to him to be a vast sheet of salt flats and salt water barring any progress northward. Believing that it was all one continuous mass he named it Lake Torrens, and the hill on which he stood, Mt. Hopeless, little thinking that in some thirty years it



FIG. 4.—COPY OF PART OF AN OLD MAP OF AUSTRALIA PUBLISHED IN 1842 SHOWING THE SUPPOSED HORSESHOE-SHAPED LAKE TORRENS.

This was subsequently found to consist of a chain of lakes now known respectively, from west to east, as Lakes Torrens, Eyre, Gregory, Blanche, Callabonna and Frome. The approximate position of each of these is indicated.

would form the gateway to the Centre, traversed by a railway and a trans-continental telegraph line. As a matter of fact there was no continuous sheet of either salt flats or water, the horseshoe being broken up by stretches of dry land into a chain of lakes now known as Torrens, Eyre, Gregory, Blanche, Callabonna and Frome, whose approximate position, as determined at a later time, is indicated on the map. The railway now runs between Eyre and Torrens, across the head of the Torrens Rift Valley, where there is an elevation that separates the Lake Eyre depression from the Spencer Gulf. In 1860 the name Lake Eyre was officially recognised for the first time.

Early in May 1894 those of us who were to take part in the Horn Expedition left Adelaide. Our party was a small one. The scientific personnel represented the three Australian Universities then existing. Professor Ralph Tate of Adelaide, together with Dr. J. A. Watt of Sydney, had charge of the Geological and Botanical work; Professor E. C. Stirling of Adelaide undertook the Anthropology and, representing Melbourne, I acted as Zoologist and also as photographer, and was fortunate in having with me G. A. Kearthland, the well-known ornithologist of Melbourne, who devoted his time to the collection of birds. Professor Tate, as senior member, was leader of the party, the guidance of which was placed by Mr. Horn in the hands of Mr. C. Winnecke, well known for his explorations in Central Australia. Except in a very general way, we knew practically nothing of what the country was like or where it was probable that we should secure the best results in our various spheres of work, so it was arranged that the scientific staff should decide, from time to time, upon the route to be followed, the various places to be visited and that, having done this, the safe-conduct of the expedition should devolve on Mr. Winnecke, provided, of course, that, with his previous knowledge, he considered the scheme to be a

practicable one. As our guide took a keen interest in scientific work we had no difficulty in carrying out this plan.

From Adelaide the train took three days to reach the head of the line at Oodnadatta. To myself, at least, everything was new and a wonderful contrast to the dense luxuriant forests and fern-tree gullies of Gippsland and, indeed, even to the dry Mallee country in the Wimmera, around Lake Hindmarsh. I must confess that there were times during this and many later wanderings in the Centre when I would have given much to have been spirited away, at least for a little time, to a Gippsland fern-tree gully. It was all intensely interesting, but I soon began to wonder whether my position as Zoologist was not going to be a sinecure, more especially when, at Stuart Creek, the level of the land fell to thirty-nine feet below sea-level and we caught our first glimpse of Lake Eyre.

The railway runs close to the southern margin of the lake, which, as we saw it then, was simply a vast sheet of snow-white salt glistening in the sunshine and merging into a misty haze on the horizon (Fig. 5). There may perhaps always be a certain amount of water in the centre of the lake, but it can only be seen from an aeroplane. It is quite invisible from the low hills and sand dunes that border its margin, and the treacherous, boggy, salt flats around the lake are absolutely impassable. Photographs from the air show a most extraordinary network of dry watercourses forming huge deltas, across which, in times of heavy flood, the streams meander and carry water into the lake. It looks just as if a number of great branching trees had been felled and flattened out, with their trunks, representing the main courses of the incoming streams, leading away from the deltas across the flats. The country all around the margin of the lake is a scene of silent desolation.

Later on, in 1898, Gillen and myself left the railway line at Warrina, a side station near the other end of the lake,

and spent some time with our friend the late Mr. E. C. Kempe on his outlying run known as Peake Station, studying the habits of the Urabunna tribe. Before the railway was built, the telegraph line, which now follows it, was carried, for some reason, across the western edge of the Lake Eyre flats, and there are still remains of the old telegraph station—about as desolate a place to choose for human beings to live in as can be imagined. The head of the Torrens Rift Valley, separating the latter from the Eyrean Basin, is formed of low ranges of hills of older rocks that dip down beneath the more recent deposits forming the dreary flat country bordering the shores of Lake Eyre, which is distant about twenty miles. The hills, that can be seen trending away northwards (Fig. 6), forming the western limit of the Eyrean Basin in this part of the country, are here and there dotted with remains of abandoned copper mines, while their margins are fringed with lines of white travertine deposited by numberless mound springs where the water, meeting the older rocks, rises to the surface and deposits its mineral contents (Fig. 7). Each spring has a little stream of water bubbling up into a pool on its summit, which may be cool or warm or even hot and is usually bordered with coarse grass and rushes, the only green things to be seen in this land of drought and desolation. Later on we saw them on a more extensive scale at Dalhousie Springs.

A few miles to the north of the spot at which this photograph was taken, we were camped with some old natives of the Urabunna tribe by the side of a water-hole called Tjantjiwanperta. The country would not be called attractive by the ordinary tourist, but to the aboriginal it is his home. Every rock and water-hole is associated with traditions of his ancestors. The hill close by our camp, which the white man calls Mt. Kingston, he calls "Korara merkunda," which means "clouds arising," and reminds him of the far past mythic times when certain of the ancestors of the



B.S.

FIG. 5.—DISTANT VIEW OF LAKE EYRE.



B.S.

FIG. 6.—RECENT DEPOSITS FORMING THE PLAINS AROUND LAKE EYRE FRINGING THE OLDER GRANITIC ROCKS FORMING THE SURROUNDING HILLS. THE MOUND SPRINGS ARISE AROUND THE MARGIN OF THE PLAIN.



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FIG. 7.—MOUND SPRINGS DEPOSITING TRAVERTINE : AT THE OLD PEAKE STATION.



B.S.

FIG. 8.—GIDDEA TREE.

tribe—the forefathers of the present rain-men—arose from the ground in the form of a great cloud. Because they were thus the earliest rain-makers their descendants now possess the same power. While we were with them, the leading rain-man performed a ceremony, and, within two days of the performance, there was a downpour—possibly associated with the fact that it was the usual time of the year for rains to fall in this part of the country. Whether this was so or not, at all events the reputation of the rain-maker as a magic man of no mean order was once more firmly established. We had been camping out in the open, but were fortunately sheltered under the hospitable roof of our friend Mr. Kempe before the efforts of the rain-maker were crowned with success. When next we saw him he was brimming over with undisguised but, at the same time, dignified self-satisfaction.

Our camp at Tjantjiwanperta was in a little valley amongst low-lying hills, through which, in rain times, the water drains away on to the Lake Eyre plains. Here, sleeping on the ground in the open at night, and sheltered from sun during the day by a friendly clump of giddea trees (Fig. 8), we spent some time with the few old men of the Urabunna tribe. Giddea, variously spelt Gidya or Gidgee, is the native name, in New South Wales, for a species of *Acacia* known scientifically as *Acacia homalophylla*, and, popularly, as the stinking *Acacia*. The latter name is due to the fact that, in the flowering season, or when the leaves are damp, the tree has a strong and most objectionable smell. When young, it forms a thick shrub, with a dull, olive-green foliage, but, when older, it grows into a rather rugged-looking tree, reaching a height of perhaps fifteen or twenty feet. Like very many of our *Acacias*, what is commonly spoken of as the leaf is, really, only the flattened-out leaf stalk; the true leaf is quite wanting, but the stalk becomes so modified that it assumes the shape and takes

on the form and functions of a leaf. In some of the Acacias, and, more especially, the one known as the golden wattle, whose masses of yellow blossom give rich colour and perfume to many a hillside in Victoria in the early spring, the transition from leaf to leaf stalk is very clearly seen in the young plants, which alone have the feathery leaves characteristic of the silver wattle. In some cases the leaf and stalk are normal, in others the leaf is present and the stalk is flattened out, while in others the leaf has been suppressed and the stalk, simulating a leaf, alone remains. When the plant is fully grown there is rarely any trace of the true leaves, and the stalks, which do duty for them, are very similar in shape to many gum-tree leaves.

There had been a considerable rainfall a month or two earlier and evidently water had been lying for some time in the slight hollows in the ground, many of which were filled with masses of Nardoo (Fig. 9), a plant that is very characteristic of the dry interior. Each one forms a little clump with a mass of green trefoil leaves, the stalks of which are long enough to allow them to float on the surface of the shallow water. The most interesting part about it, however, consists in the spore cases, which are formed just at the base of the leaf stalks. They are, when ripe, very hard, almost wooden, but the natives make a kind of flour out of them by grinding them to powder between their so-called Nardoo stones (Fig. 34). The latter consist of a larger nether and a smaller upper, or grinding, stone. The former varies in length from one to three feet, in width from less than a foot to two feet, and in thickness from three-quarters of an inch to perhaps a little more than an inch. The upper stone, which may be circular or elliptical in outline, is always very much smaller than the lower one and capable of being easily handled. These stones, or mills, are very highly valued and are traded over long distances, as they are found in camps often more than a



B.S.

FIG. 9.—CLUMPS OF NARDOO PLANT GROWING IN A SLIGHT DEPRESSION WHERE WATER HAS STOOD FOR SOME TIME.



B.S.

FIG. 10.—KOCCHIA SHRUB IN FULL FLOWER.



B.S.

FIG. II.—“THREE-CORNERED JACK.”



B.S.

FIG. 12.—RAIN-MAKER'S ROCKS AT TJANTJIWANPERTA.

hundred miles away from the nearest available supply of sandstone rock, out of which they are made. They are much too heavy to carry about on ordinary journeys, and are left in the camp, securely hidden from view, when the natives move on from one camp to another.

It was upon this Nardoo that King, the sole survivor of the Burke and Wills Expedition, was subsisting precariously when he was found by Dr. Howitt on the banks of Cooper's Creek.

In addition to the Giddea, which formed the prevailing scrub tree, and the Nardoo, which was only present in patches, there were other plants very characteristic of the country—most of them, however, not growing beyond the size of small bushes—such as the Kochia, called *Kadnunga pitingura* by the natives, which means “home of the wallaby,” in allusion to the fact that it often forms a shelter for a small species of this animal (Fig. 10). Then, again, there was the wild geranium, the salt bush, and species of plants, many of them soft and pliable enough at this time of the year, but with fruits which hardened as they ripened and developed sharp, piercing spines and thorns. Amongst the latter kind of plants the most common was a creeping species of Tribulus. The large yellow flowers are very attractive, but its dry prickly seed-cases (Fig. 11), popularly known as “three-cornered Jack,” are more than irritating when you have to camp amongst them. Quite as irritating, though fortunately not quite so plentiful as the Tribulus, are various species of Bassia. Their seed-cases have a pretty, downy centre, half an inch in diameter, but projecting from this are a number of stiff, sharp spines.

We had taken a few of the older men into camp with us, as we wanted to have a quiet time with them, and find out as much as we could about certain of their beliefs and customs, so as to be able to compare them with those of the Arunta tribe which adjoins them on the north, and we

spent some very pleasant days in our camp with them amongst the hills at Tjantjiwanperta. The country round about Lake Eyre has been opened up for many years, and the railway, north to Oodnadatta, now runs across the old hunting grounds of the Urabunna, of whom to-day there are but very few left. The general barren nature of the country and its liability to long droughts, during which animal and plant life become, for the time being, almost blotted out, must, however, have prevented the possibility of the existence of a large human population. This, of course, refers to the country under the climatic conditions at present existing. The annual rainfall never exceeds five inches and may fall to zero. The average is under two and a half inches at Warrina on the railway line just to the West of Lake Eyre. In, probably, Pleistocene times things were quite different. A chain of fresh-water lakes, fed by large streams, then stretched across the present desiccated Eyrean region. Their waters, as we know from fossil remains, were occupied by animals such as crocodiles and lung-fishes (*Ceratodus*), now only found in more northern, fertile parts. Amongst the abundant herbage growing on their banks, browsed huge Diprotodons and other marsupials, now quite extinct. At that time, when the food supply was plentiful, the land could easily carry a population such as could not possibly exist under present conditions; but whether in those far back times it was, or was not, occupied by human beings we have no evidence to show.

The hills around our camp were dotted over with groups of picturesquely weathered granitic rocks, all of which are associated in tradition with the ancestors of the natives. Those in Fig. 12 belong to men who are much needed in this part of the world, the rain-makers, and each of the great stones is supposed to be the home of one of these, to which his spirit returns when he dies.

Just as the rain-men are responsible for the supply of

water, so other men have charge of some special animal or plant that the native feeds on. The big rock in the centre belongs to a great old leader who carried a boy on his back just as the small rock is now perched on top of the larger one. The rocks in Fig. 13 belong to pigeon people. It is not altogether a pleasant thing to be the head-man of one of these little groups because, though he is looked upon as a person of importance, he is held responsible for his own animal or plant, and has to submit, at times, to a procedure which must at least be rather inconvenient. We watched the old head-man of the snake people while he was performing his ceremony to increase the snakes. He was painted with lines of red and yellow ochre and wore a little kind of banner on his head ornamented with bunches of white cockatoo feathers. Kneeling on the ground with four other men he extended both arms at full length, holding a sharpened kangaroo leg-bone in each hand (Fig. 14). A man on the right took the bone out of that hand and pinched up the skin of the arm while the performer with his left hand thrust the bone right through it; then the other bone was pushed through the left arm. The men got very excited, one keeping time by pounding the ground with a stone, while they all sang a refrain that sounded like

“Lirri watthai umpai
Lara nalari tjinta.”

Then the bones were pulled out and all was over. The old man told me that he sometimes used three or four for each arm, and I counted more than twenty scars on each of them. When not in use the bones are wrapped up in hair cut from a snake-man and are hidden away so that women cannot see them. When the snakes appear, which they usually do, because the ceremony is always held at the breeding season, no one eats them until the old man gives them permission to do so.

However, to return to the Horn Expedition. Leaving Lake Eyre behind us, the train leisurely steamed on to the north until we felt as if we were swallowed up in the desert. At each wayside station it halted, often apparently for no special reason except to put in time, and give us the chance of seeing the line streaking away north and south to the horizon. The third evening brought us into the railway head at Oodnadatta (Fig. 15). The little township, which is only 400 feet above sea level, consisted then of a railway station, the usual little bush hotel, since then much enlarged and altered and now very comfortable, two stores and a few corrugated iron houses. Out to the north stretched the line of telegraph poles with the track beside it that we had to follow and, away in the distance, low, flat-topped terraced hills.

The way in which you travel in the Central area, that is between Oodnadatta and the Macdonnell Ranges, depends very much on the nature of the season and what you want to do. In early days the explorers had no choice. They were obliged to take horses and face the risks attendant on the probable scarcity of water and their total ignorance of where water-holes were to be found. If they were fortunate, as on the whole McDouall Stuart was, they could penetrate the unknown country with more or less difficulty, but if, like Sturt, they chanced on bad seasons, they were helpless. No amount of bushmanship will suffice to take horses and human beings across more than a certain extent of absolutely dry country, and only those who have crossed the Central area, since it has been opened up by the early explorers, can realise the difficulties with which they had to contend.

In 1866 Sir Thomas Elder, to whose enterprise South Australia owes much, introduced camels, and henceforth the explorer was rendered largely independent of water supply. Not only will the camel carry water for the use



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FIG. 13.—PIGEON ROCKS AT TJANTJIWANPERTA.



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FIG. 14.—SNAKE CEREMONY, URABUNNA TRIBE.

The snake man is piercing the skin of his arm with a pointed bone.



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FIG. 15.—OODNADATTA. TERMINUS OF THE OVERLAND RAILWAY LINE FROM ADELAIDE.

of the human members of the party, but it will, itself, do without any for long periods. Camels, however, do not normally, and of their own accord, go without drinking for any length of time. Under ordinary conditions they drink daily, just as a horse does, but they can be trained to endure abstinence (Fig. 16). On one of the expeditions fitted up by Sir Thomas Elder they performed a waterless march of twenty-four days. Not only are they invaluable in this way, but they carry greater burdens than horses and can feed on almost anything. A strong bull camel may be loaded up to seven or even eight hundred pounds. For horses you must have grass and water, but the succulent *Claytonia* and the most spiny *Acacia* that grows on the sand-hills are eaten, with apparently equal relish, by the camel without any need of water.

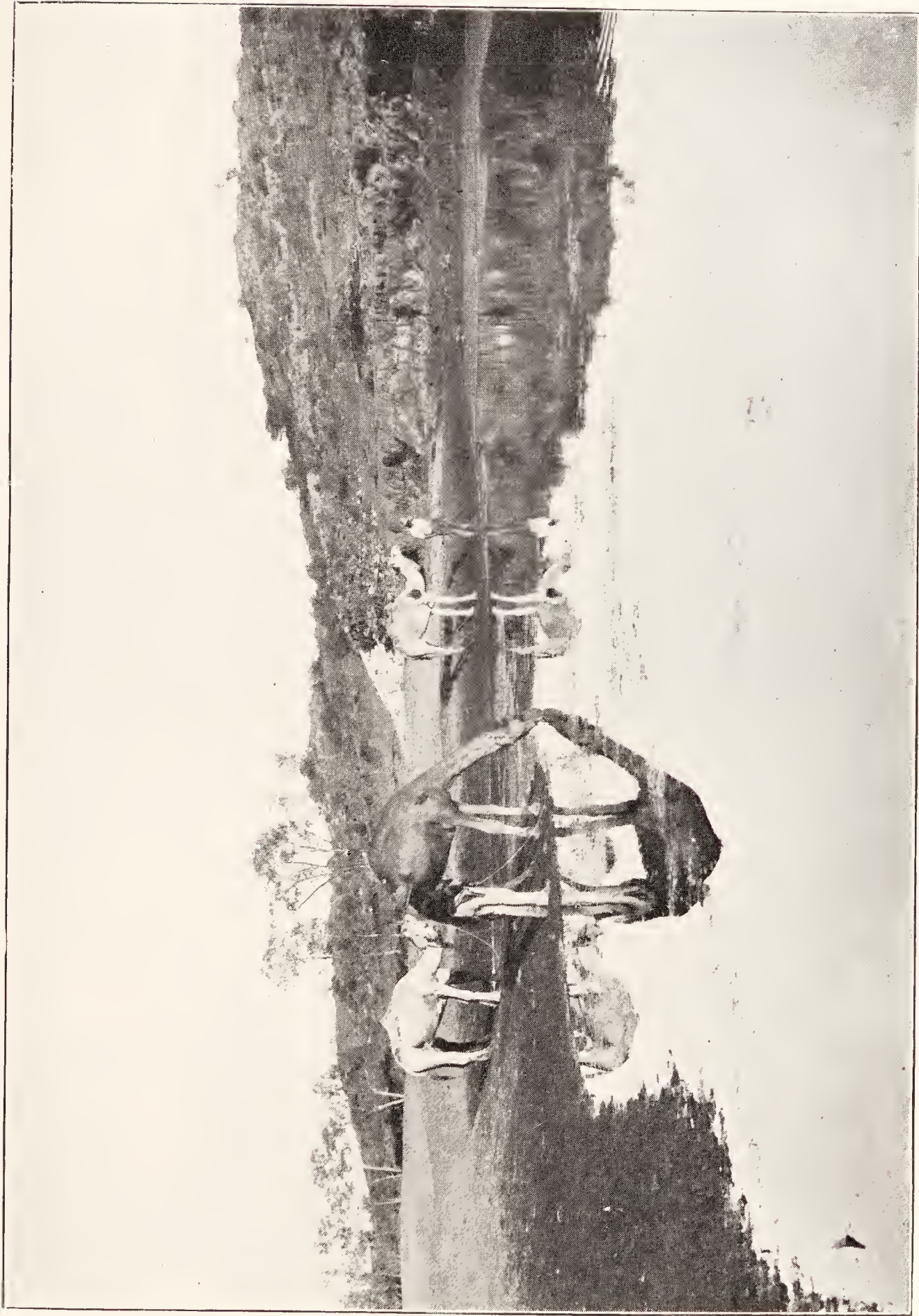
Both camels and horses are now rapidly becoming superseded by motor traction, even across the worst sand-hills and the broad, dry river beds that used to make travelling difficult and sometimes almost impossible with horses. When the country is dry the mails between Oodnadatta and Alice Springs are still carried on camels (Fig. 21).

It was early in May when we reached Oodnadatta. There is no such thing as spring, summer, autumn and winter in Central Australia; only two seasons, a dry, comparatively cool winter from May to September, and a hot summer during the rest of the year, with rains that may or may not fall late on or early in the year.

We found that Winnecke had made our camp a mile out of the township. None of us had previously any experience of camels, outside of a Zoological Garden, and it was a novel experience to find ourselves in camp with some thirty of these uncouth, malodorous beasts sitting down on their haunches—you never see a camel lying down—chewing their filthy cud, which they have a habit

of spluttering about if you go near them, watching you all the time with evident contempt and dislike. I did not know then that they were all loading camels and that, at least for comfort of travel, there is as much difference between a loading and a riding camel as between a rough draught and a riding horse. Attached to the camp we had two Afghans who took charge of the team, two white men who acted as general camp assistants, a cook who superintended the commissariat, and two "black boys" who acted as trackers. As a matter of fact they were neither "black" nor "boys," but chocolate-coloured men of quite mature age. They belonged to the Arunta tribe and were the first Central Australian aborigines that I had seen, but they were as well clothed as we were and too civilised to be really very interesting.

Of our camels, six were used for riding, four to draw a buggy and the rest were loaded; one old vicious bull camel carrying two great water-casks. There was only one horse. We had, of course, to carry with us everything that we wanted to use, whether for collecting or eating, during our four months' traverse, except that, every now and then, we could get a bullock to replenish our store of fresh meat. I had one camel devoted to my collecting material, which consisted of large tins for spirit specimens and air-tight boxes for birds' skins, to keep out insects and damp, if there should be any such thing as the latter. These were carried in two large wooden cases five feet long and two feet in width and depth. They were slung one on each side of the saddle, while another box on top held countless phials and general collecting material. Everything had to be as strong as possible to avoid being smashed by the ceaseless, rough, lurching movement of the camel, and I soon learned that every specimen must be wrapped up separately, unless it was to become rubbed to pieces. Fortunately I had taken large supplies of muslin



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FIG. 16.—WATERING CAMELS IN THE BED OF THE FINKE RIVER.



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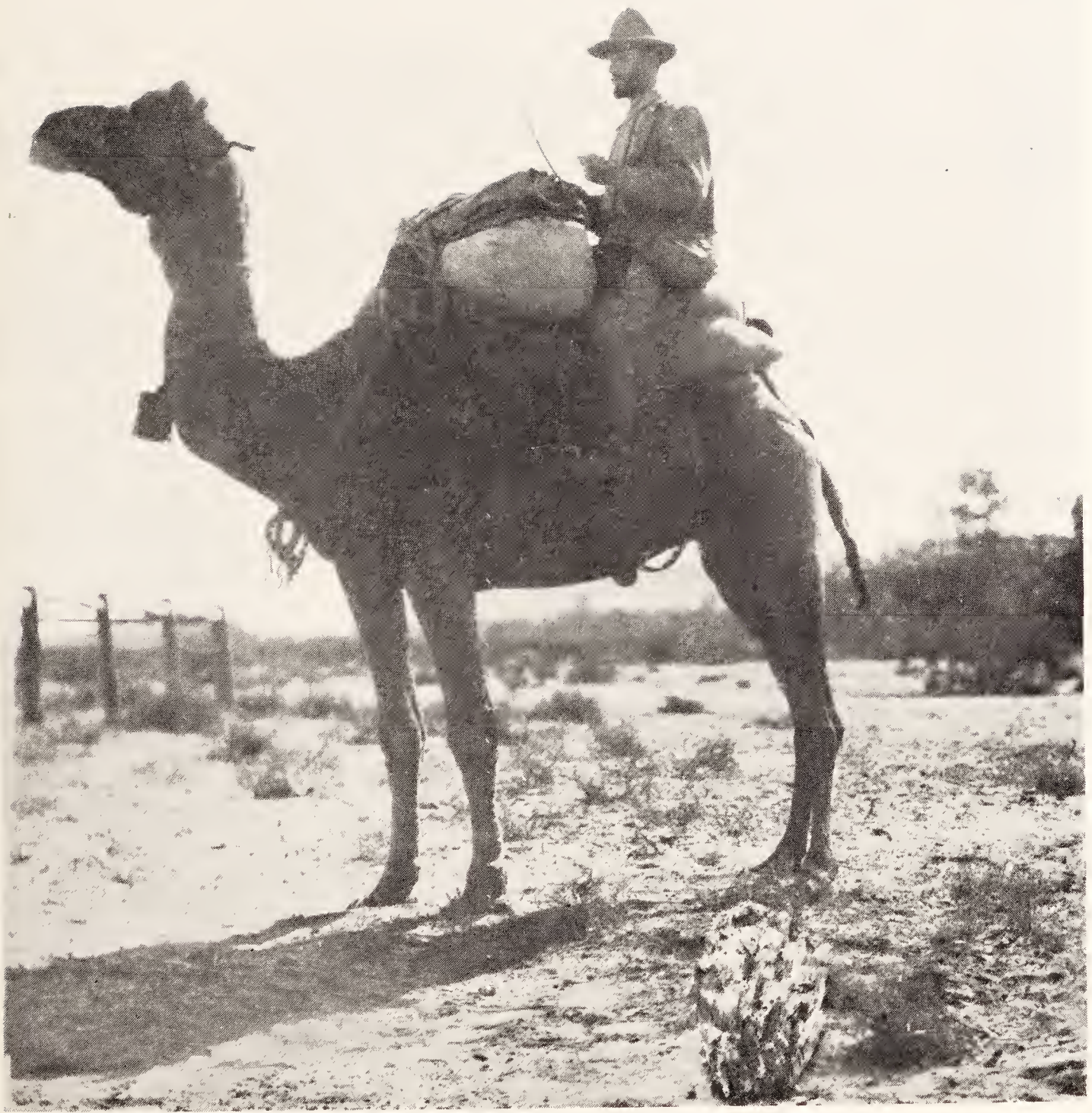
FIG. 17.—LOADING CAMELS.

and cheese cloth and, in the end, all my specimens travelled well and safely.

We were soon introduced to the camel and its ways, and, personally, I got to dislike it daily more and more, despite its value as a beast of burden in bad country. For filthiness, viciousness and crass stupidity it would be impossible to beat it, that is, at least, a loading camel. We each of us loaded and unloaded his own beast, which was perhaps the most unpleasant of our daily experiences (Fig. 17), especially when, as was often the case, our hands were sore with scratches made by porcupine grass or, worse still, sharp spikes of Mulga wood. The latter, especially, gives rise to spreading sores locally known as "Barcoo rot," and very annoying and uncomfortable. From a small prick-point it will spread over the back of your hand, and, for a year or two, I had a special scar reminding me of many an uncomfortable half-hour's camel loading.

The camel saddle is a very primitive and cumbersome thing that must have been invented by those who first domesticated the beast, and has evidently remained as unchanged as the East whence it came. It is a weighty affair, about five feet in length and consists of four Λ -shaped pieces of wood fastened together by two longitudinal pieces on each side, in such a way that when the saddle is on the animal, two of the Λ 's are in front of, and two behind, the single hump (Fig. 18). The inner sides of the bars are padded so as to prevent any chafing of the skin. Two girths are attached to the bottom horizontal bar on the right side. The animal sits down on the ground. First of all you have to lift the heavy saddle into its position; the next business is to fasten the girths, one passing in front of and the other behind the callosity on the animal's under surface. This is not always an easy matter, especially as the camel, if in a bad humour, which is its normal condition, is not disposed to help you. As a general rule you

have to scoop out two holes in the sand on which it sits, so that you can pull the girths round under its body, and this is done to the accompaniment of groans and grunts and very likely an attempt to bite, which is very disconcerting to one who, like myself, was only an amateur at the work of camel loading. Once the saddle is fixed, you are faced with the difficulty of arranging your baggage so that it shall stay in its place. This is no easy matter, because the movement of an ordinary loading camel is a combined pitch and toss and roll—it is veritably a “ship of the desert”—and you have to provide for a fore-and-aft and sideways motion of the most perplexing kind. The reins consist of a short string tied to a small double-knobbed piece of wood that pierces the left nostril in such a way that one knob is inside the nose and the other outside. Two strings, that serve as reins, are attached to the short piece, one passing round each side of the neck. A more primitive or hopelessly inadequate arrangement for guiding a beast can scarcely be imagined. Fortunately the camel is usually quite content to follow the one in front of it, so that it needs comparatively little guidance, but there is no chance of holding the animal in if, as sometimes happens, it runs away, for of course everything like strong pressure brought to bear upon the knob at once pulls the peg out of the hole in the nose. The camel team always walks in single file, with the result that a very definite pad is formed about twelve or sixteen inches wide; indeed a pad such as this runs for hundreds of miles right up to the centre of the continent. In the case of the loading camels, the string from the nose of one camel is tied loosely on to the tail of the animal next in front. The Afghan in charge always rides on a special camel that has been trained to lead; another brings up the rear so that he can see if anything goes wrong, and there are usually two or three black boys and lubras, who help in loading and camp



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FIG. 18.—RIDING CAMEL.



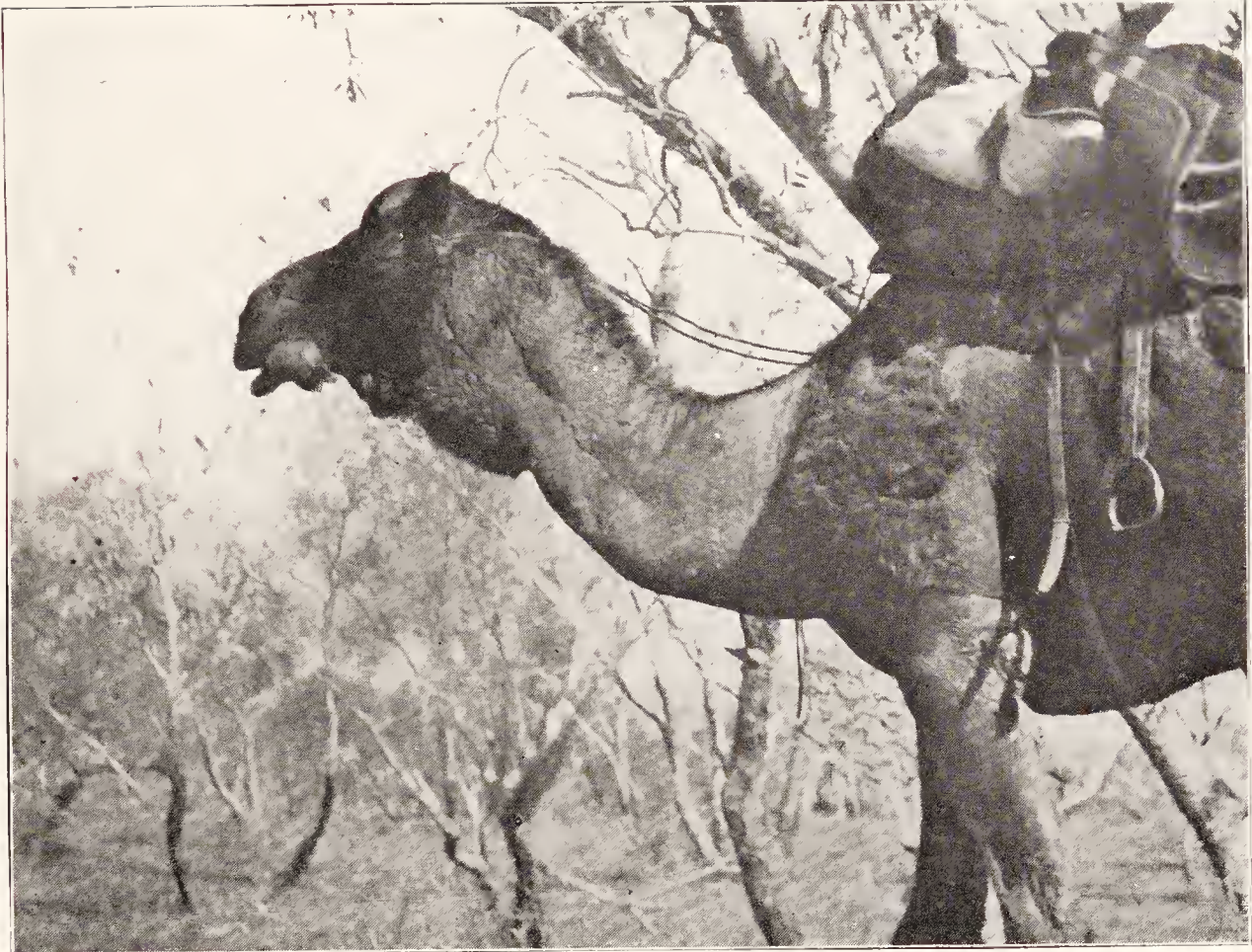
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FIG. 19.—CAMEL TEAM ON THE OVERLAND TRACK.

work, walking alongside or perched up amongst the loading while the team is on the march (Fig. 19). Every animal carries a load on each side that is hung on to hooks on the saddle by straps and ropes, and these two loads must be carefully balanced if the saddle is to ride safely and comfortably. A third load goes on top. The loading of an ordinary team consists of everything needed either for the building of a station or for use in or on it. Flour and sugar pack and ride easily; corrugated iron forms an awkward load, if a strong wind springs up; glass and china need very special packing, and I have even seen a piano slung on one side of a strong bull camel on its way to a far back station. The usual day's march is about eighteen or twenty miles, but, of course, this depends on the nature of the country and whether all goes well. If creeks have to be crossed, a good deal of time may be lost by breaking the nose-ropes. One of the camels will perhaps go down a steep bank with a sudden run; this means a sharp pull on the nose-peg of the animal next behind. The jerk may, by good fortune, only result in the undoing of the knot, which is always loose, on the tail of the animal in front, but it usually means that the nose-peg of the animal behind is pulled out. Whatever happens, the second stands still, sniffing the air in an idiotic way, the rest of the team crowding up behind it and getting tangled up, with the loss of a few more nose-ropes. The damage repaired and the team set in order again, the weary, monotonous march is once more resumed until, just before sunset, camp is reached. The animals are brought in so as to form a rough semicircle. Their loads are taken off and placed on the ground so that there is just enough room for the animal to sit between them. It is then hobbled—that is, its two front feet are tied together so that it cannot wander far away—and turned out of camp to find what food it can. The bull camels are much given to fighting and, when

excited, have a curious habit of forcing air in behind the uvula. The result is that, to the accompaniment of an abominable gurgling noise, a thin, membranous bladder gradually protrudes from one side of the mouth until it is as large as the animal's head (Fig. 20). After a minute or two the gurgling ceases and the bladder collapses, like a balloon out of which the gas is escaping, until it is completely withdrawn. When fighting, the beasts become almost mad with rage. Each one tries to twist his front legs around those of its opponent so as, if possible, to throw it down, while all the time they are biting one another with their great canine teeth. Sooner or later one gives in, and then it is a case of a wild stampede, the beaten animal fleeing for its life with its victorious enemy in full pursuit.

It takes some little time before you are an adept in the art of mounting a camel. When you have arranged your packs on the front part of the saddle you take a careful look at your seat, which lies behind the hump, wondering if anything special will happen before you are safely there. The only time when a camel is in a hurry, unless it wants to catch up to its companions, seems to be just the moment you are trying to get on to its back. The best way to do this is to pull its head round to the left side, only you must not pull too hard or the nose-peg will come out, and then, as rapidly as you can, you must throw your leg over and jump into your seat. Before you are seated, in fact often before you have touched the seat, the beast rises with a jerk half-way on its hind legs—of course throwing you forwards. Before you can regain your balance up go the front legs half-way, throwing you back; then without a pause up go the hind legs again, so that you are seated on an inclined plane with a see-saw movement. Finally, it rises completely on its front legs and starts off. Its movement is a most peculiar one and, of all methods of travel,



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FIG. 20.—CAMEL WITH BLADDER PROTRUDING FROM ITS MOUTH.



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FIG. 21.—CAMEL MAIL, CROSSING THE LOWER STEPPE LANDS.



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FIG. 22.—CAMEL WAGON.

the back-breaking pitch and toss and roll of a rough loading camel is the most uncomfortable. Unlike the horse, the camel moves the two near and the two off legs together, as the case may be, so that, when it is walking, there is a constant see-saw motion. When you want to make the animal sit down you must first of all persuade it to stop, which is almost impossible to do unless the animal immediately in front of it does the same. It has, by long usage, become so accustomed to travelling in teams and doing exactly what every other member of the team does, the leading camel being always a specially trained one ridden by the Afghan in charge, that it is very difficult to make any one animal act independently of the others. As soon as ever I began to try to collect whilst on the march I realised at once the difference between an intelligent and sympathetic horse and an utterly stupid and unintelligent camel. When once you have persuaded the beast to stop, then you must utter the magic word "husht" until such time as it realises that you wish it to sit down, when, with a sudden flop, down it goes half-way on its front legs, then half-way on its hind legs, then comes another forward lurch, a final one backwards and you are free to dismount, to the accompaniment of much groaning and gurgling and spluttering.

The morning of our first day at Oodnadatta was a busy one, as we had to arrange all our loads, which left us little time to look around—not that there was anything much to see. We were camped by a muddy water-hole with a few miserable crows perched on dead trees. I saw one of them fly away with a good-sized pellet of mud fastened on to one of its legs. If there were any little snail or crustacean, or even fish eggs in it, they would, as likely as not, be left behind in some other water-hole miles away. In this way many little animals and their eggs get carried across country from one place to another.

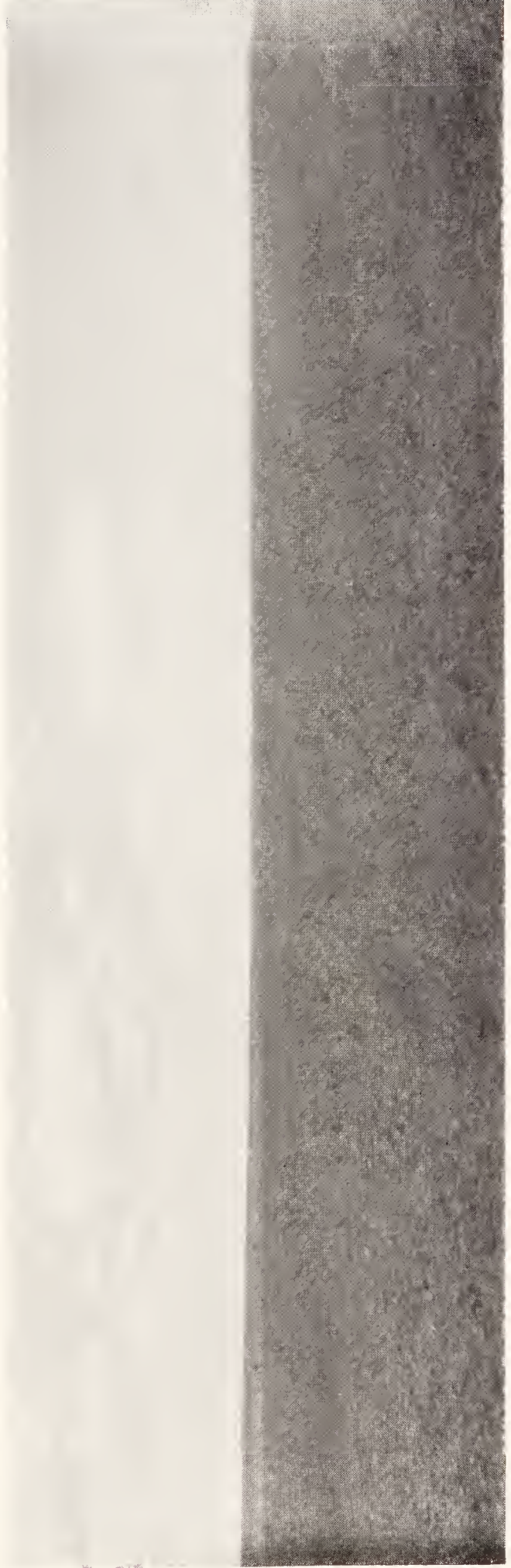
We left camp in the afternoon, partly to make a start

and get under way and partly to give us our first experience in camel riding. We soon made acquaintance with them and their ways and, for four months, travelled some two thousand miles on their backs under a blazing sun before, without the least regret, we parted from them. Out from Oodnadatta we saw the overland track (Fig. 23) stretching away northwards, leading into the great Interior. It did not offer exactly a cheerful prospect. The two or three years previous to our visit had been seasons of drought, but, fortunately, a few months before we started there had been some good summer rains that had left enough surface water to carry us over the country, of which we had to traverse a great expanse in a limited time. We had to do more or less definite stages daily to reach the scattered water-holes and keep the camels in good condition, as we depended on them for everything. Away from them, of course, we could carry neither provision nor collecting material. We travelled, until evening set in, over dreary parched-up flats and between low-lying flat-topped hills, among which the Neales River spreads itself out in flood-time, but there were no definite watercourses, not a speck of water nor a sign of anything green—nothing but white and cream and pink and lilac-coloured sand and stretches of hard quartzite stones—and made our first real camp in the Interior, away from all sign of human habitation. The Geologists had enough to interest them, but it did not offer a cheerful prospect to a Zoologist. It was winter, and at this time the climate of the Centre is perfect. The days are warm with usually a pleasant but sometimes rather strong south-east wind blowing, the nights are cold. All day long the sun shines brightly in a cloudless sky and at night the stars are brilliantly clear. From now onward our daily programme was much the same. We were usually up some time before sunrise, only to find our cook Laycock already hard at work getting breakfast ready. I



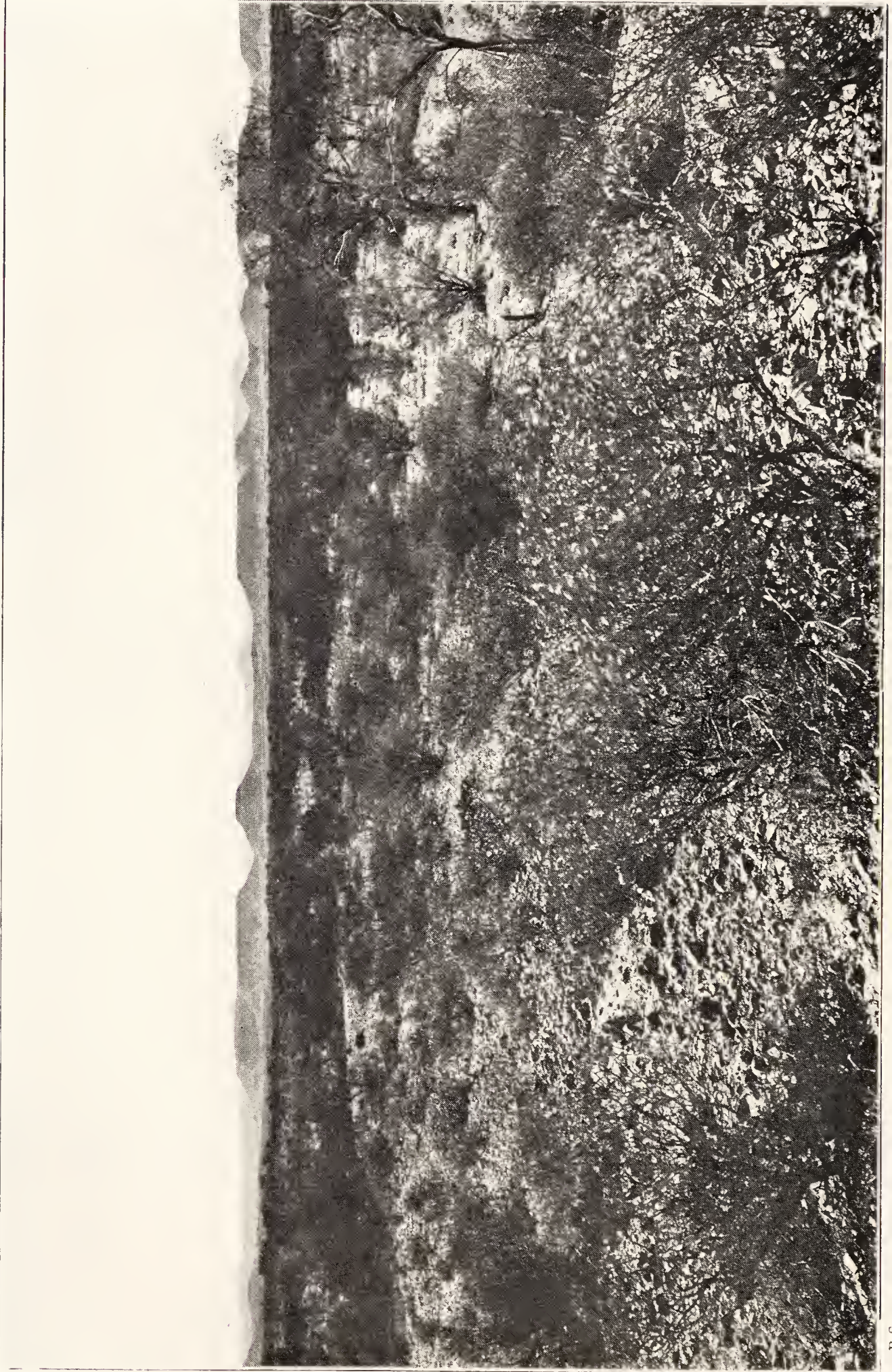
DR. KEITH WARD.

FIG. 24.—GIBBER FIELDS.



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FIG. 23.—THE OVERLAND TRACK ACROSS THE LOWER STEPPE LANDS.



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FIG. 24A.—TERRACED HILLS OF THE LOWER STEPPES.

sometimes wondered if he slept at all, because very often, in fact always when we were in the main camp, we had both a hot meal in the morning, when it was very welcome, and another in the evening. A little after sunrise we had breakfast, the black boys and the Afghans brought in the camels, each of us loaded his own, and then off we started in single file, leaving the main team of loading camels to follow us. After ten or twelve miles came the midday halt, when we were glad of any shelter afforded by a thin Acacia or a stray gum tree. The camels had a rest, chewing their cud and spluttering. Mounting again we travelled on until dusk brought us to our camping-place for the night. The camels were unloaded, taken to water, if there were any, hobbled and set free to find anything they could that was worth eating. Camp fires were lighted, notes written up, specimens labelled and packed away and then, after a final pipe, we lay down on the ground and slept in the open. Often it was so cold that we awoke to find our water-bags frozen solid; but the air was so dry that we felt the cold but little.

About thirty miles north of Oodnadatta we passed on to gently undulating country with low-lying, flat-topped hills and remarkable plains covered with small stones forming what are called the Gibber fields (Fig. 24). For the greater part of the year everything is bare and dry and as desolate as possible, except just here and there where there are small loamy flats with thin lines of Mulga or Gidgea trees or poor gum trees, marking the course of little creeks that come down from the hills and soon lose themselves. There were just a few tussocks of coarse yellow grass but, except for grasshoppers innumerable and now and then a few small lizards, no sign whatever of animal life. Very rarely we came across a little pool of muddy water sheltered by stunted gums and bordered by thin bushes. A sure sign of even a minute supply of surface water was the presence

of little flocks of gregarious chestnut-eared finches. As we approached any water-hole they rose in great flocks, and even a small bush often contained eight or more of their little grass nests. They fall an easy prey to the falcons, who are often seen pouncing down on them. There was little else to be seen. All day long the track led over these Gibber fields and endless loamy flats: there was not a cloud in the sky: the sunlight was intense, and from the top of our camels we looked out to the horizon, shimmering and indistinct where it merged into the skyline.

Such few shrubs as there had been were now dead and withered, and the wiry branches of each one threw its shadow over the body of some poor beast that had crept under it to die. One of the most characteristic plants of this part is the so-called roly-poly (*Salsola kali*). It forms great prickly spherical masses, a yard or more in diameter, and all day long we watched them torn up by the roots and scudding away before the wind across the Gibber fields and loamy flats. These Gibber fields (the *g* is hard) are amongst the most characteristic features of this part and extend, with intervals of long, loamy flats, over hundreds of square miles, right on to Charlotte Waters, a hundred and twenty miles to the north. Though, for the most part, the country is flat or undulating yet, every now and then, there are low, flat-topped hills capped with a thin layer, perhaps only a few feet thick, of a hard silicified or chalcedonised sandstone. Each hill has a very distinct table-top with a nearly perpendicular escarpment, beneath which the softer rock slopes away, forming a broad base like a great truncated pyramid (Fig. 24*a*). So long as the hard quartzite remains intact, the softer rock is preserved, but, as the former breaks down, the latter rapidly weathers and the sand to which it gives rise is soon carried away and, for the most part, blown across the plain by wind storms, and finally carried to the river flats when the summer rains fall

in torrents. The quartzite again breaks up into smaller and smaller pieces which become smooth and polished by the wind-blown sand, a thin coating of oxide of iron giving them a rich purple-red colour, though there is every variation in tint from light yellow to almost black. As the sandy soil is removed the stones come to lie closer and closer together, until at last they form almost a tessellated pavement that covers the dreary Gibber fields (Fig. 24). In passing from the latter up the sides of the hills the Gibbers can be seen in all stages of formation, from the small polished pebble on the plain to the large irregular block that has just tumbled off from the exposed surface of the quartzite capping of the hill. The finely grained varieties of the stone, sometimes forming a yellow or pink chalcedony, have long been used by the natives for making little stone knives, and, on the hill-tops, especially if there be a water-hole anywhere near, by the side of which the natives have camped, you can find plenty of little roughly shaped stone flakes, that have served their temporary purpose as knives and have then been thrown away or left behind.

Desolate as these plains and Gibber fields are during the heat and glare of the day, there is just a short time at dusk when they are fascinating in their beauty. The western sky is suffused with a rich after-glow against which the Mulga branches stand out sharp and thin and all the shrubs and tufts of grass are deep purple-coloured as you see them against the golden light. Looking towards the east the scene is changed completely. The white-blue salt bushes, with pale silver-grey patches of low herbage and still lighter tufts of grass, stand out in strong contrast to the warm, rich brown of the Gibber fields, stretching away to the horizon where the sky is a cold steel-blue, melting above into a deep ultramarine speckled with brilliant stars. Gradually the light fades and the outline of the horizon becomes indistinct. Save for the plaintive call of the

curlews flying, unseen, overhead or the pleasant sound of a horse-bell, everything is absolutely silent. One after another the stars rise in the east and mount higher and higher in the sky, and then with a feeling of perfect freedom and a delicious sense of absolutely fresh air, as the night wind rises and blows over you, gently rustling the leaves of some old gnarled gum tree, you fall asleep.

During a season of drought any poor beasts that may be wandering over the country—cattle, horses, or perhaps even a stray camel that has been too weak to keep up with the team and has been left behind—gather into some miserable hole to drink the last remnants of muddy water before they die. At Wire Creek, where we camped and where a bore has now been put down to water travelling horses and cattle, I saw, away from the track, a great heap of whitened bones in which the remains of cattle, horses and a camel or two were all mixed up together in hopeless confusion (Fig. 25). Had they been covered in flood-time and preserved in fossil form it might have puzzled some future generation of geologists to account for the strange assemblage of so many bones in one small spot.

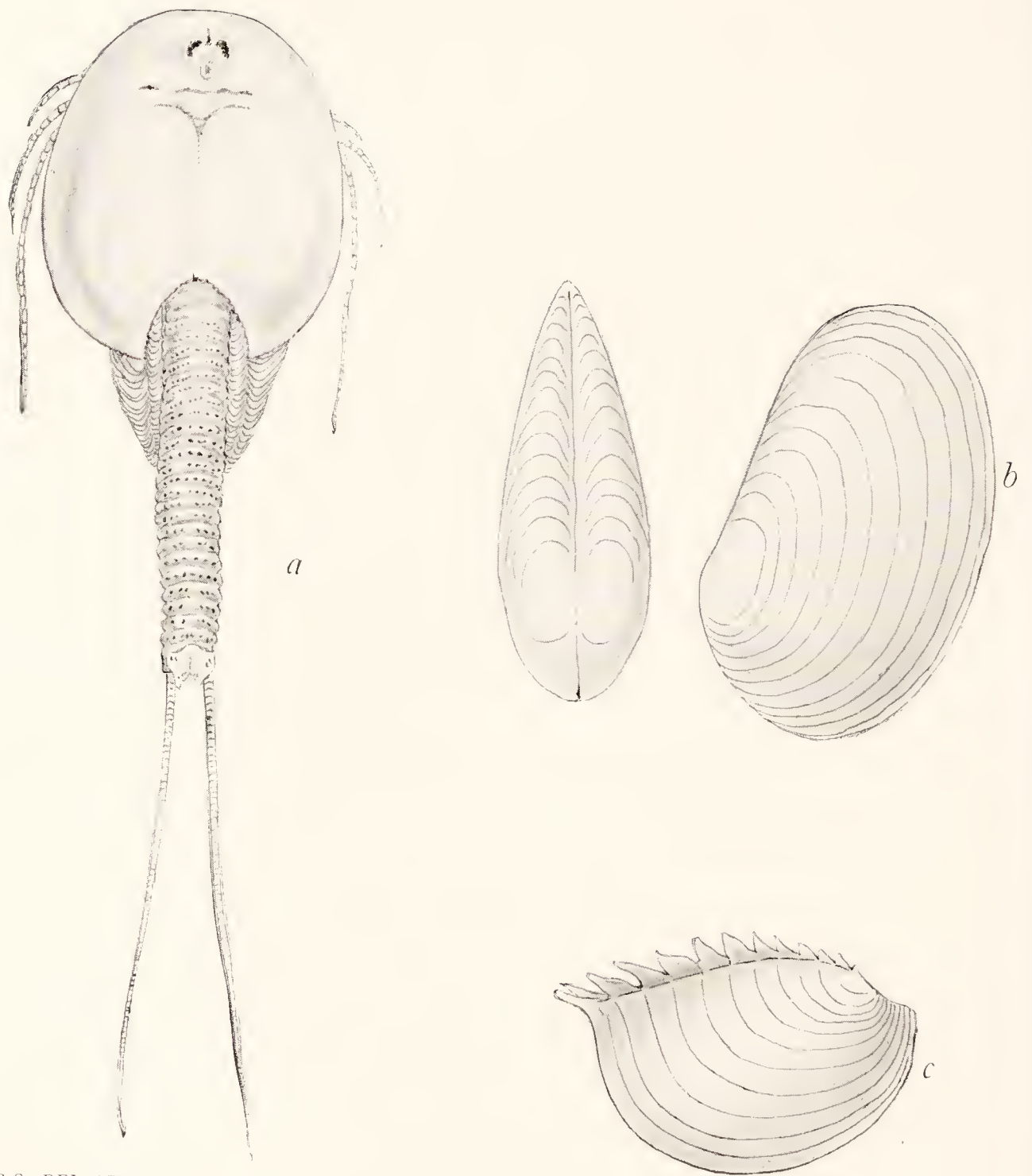
About ten miles further north we passed, for a time, out of the Gibber country into the Alberga Valley. The fall is so slight that, were it not for a series of dry river courses, we should not have known that there was any such thing as a valley. In the rain season, however, it serves as a broad channel, carrying large quantities of water into the Lake Eyre Basin. There were numbers of fair-sized river gums (*Eucalyptus rostrata*) growing right in the river bed, but the most characteristic tree in this part of the country that grows on the flats and borders the watercourses was the Giddea.

There were plenty of depressions in the river course where the water had evidently lasted longer than elsewhere, and the surface was covered over with little curled and



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FIG. 25.—BONE HEAPS OF ANIMALS THAT HAVE PERISHED DURING A DROUGHT. WIRE CREEK.



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FIG. 26.—*a* APUS AUSTRALIENSIS. *b*, ESTHERIA. *c*, LIMNADOPSIS.

blistered flakes of a clayey material on which I found plenty of dried shells of little Crustaceans (Fig. 26), but there was not a speck of water. There were remains of an Apus, a primitive shrimp-like form that is found in many dry parts of the world and has developed a curious habit that enables it to survive where most water-loving animals perish. It lays its eggs in the sand on the edge of the pools, and they must be dried up before they will develop. There is no difficulty about this in Central Australia, and also they are so small that when the sand storms sweep across the country, as they do in the dry season, the eggs are whirled up into the air and carried away for scores of miles to populate far-distant water-holes when the next rain falls. Along with this I got a still more interesting little animal, or rather its shell, that looked at first like a bivalve mollusc, but was really again a little shrimp form. I searched in vain for any water, but there was not a drop to be seen and, consequently, no living specimens, and began to realise fully that zoological collecting was not going to be an easy matter or a great success in Central Australia during the dry months of winter. We had crossed the Alberga near to its junction with the Stevenson River, and now our course lay northward along the valley of the latter for thirty miles. A little way up we struck the old Macumba Station, which was almost deserted. It consisted of a small home with the remains of two or three old sheds and a forge, and was placed on a low rise, fifty yards away from the main stream of the Stevenson, which here actually contained water. The pool was at least a hundred yards long and overhung with green trees. At first I could find nothing but water-beetles that were darting up and down in the muddy water, but to my surprise, after searching along its muddy banks for some time, I came across the claw of a crayfish, and further on, in a part where the margin was muddy and drying up, I found the casts that it had thrown up. I

thought at first that it must be the same animal as the so-called "land crab" that burrows in the ground in the Victorian and Tasmanian bush, but it turned out to be identically the same species as the freshwater crayfish, popularly known as the yabbie (*Engæus bicarinatus*). It was rather astonishing to find an animal, to which fresh water was as necessary as fresh air is to us, living where, for months at a stretch, everything was dry and sterile. I could scarcely believe my eyes, when a little further on, I caught sight of a real crab sidling away to its hole in the muddy bank of the creek (Fig. 27). Zoological collecting began to give promise of being more interesting than at first seemed likely. One's ideas of crabs are so bound up with the seashore that of all places in which to meet with a true crab, the dry Steppe lands of the interior of Australia were about the most unlikely and surprising. Later on I found that the same crab was widely distributed over the Central area right up to within two hundred miles of Darwin. It is the same form, *Thelphusa transversa*, that is found on the seashore at Cape York. The crayfish is evidently a hardy animal capable of adapting itself to various conditions of life. Amongst the lower forms it is one of the most widely distributed animals in Australia, the same species occurring in the permanent water-holes of Victoria and New South Wales, on the hill-sides in Queensland and all over the dry and arid areas of Central and West Australia. Conditions of life in Central Australia are very different from what they were in Cretaceous times, when it was occupied, in its northern parts, by a great inland sea and in its southern by lakes and forest land, amidst which browsed huge Diprotodons and monster kangaroos, whilst the waters teemed with crocodiles and lung fish (*Ceratodus*). As the land rose and the sea receded northwards to the Gulf of Carpentaria, the lakes and rivers gradually dried up, and later on again, when the central plateau sank to form the depressed Lake

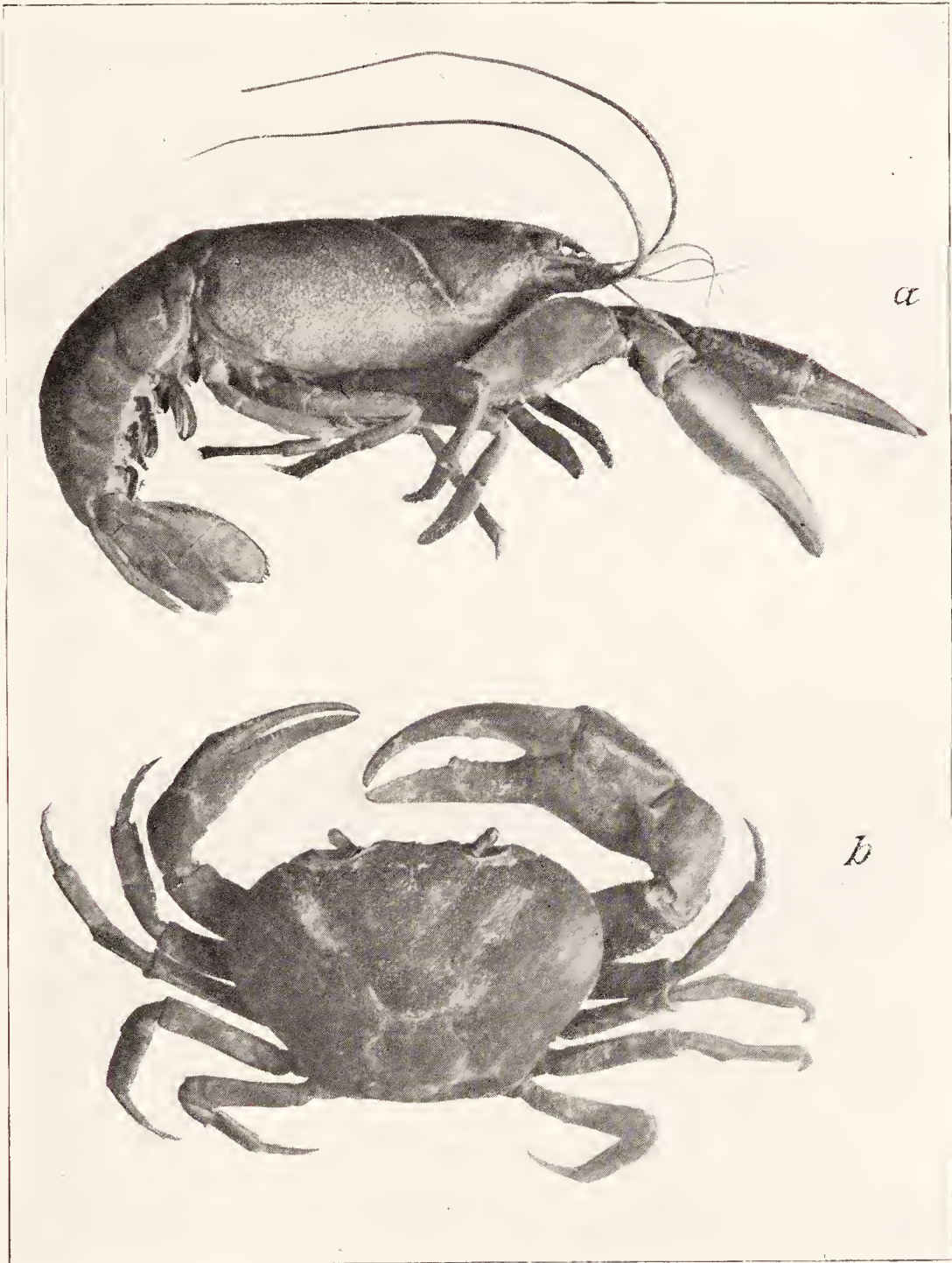


FIG. 27.—*a*, FRESHWATER CRAYFISH, *Engaeus bicarinatus*.
b, FRESHWATER CRAB, *Thelphusa transversa*.



FIG. 28.—BAG MADE BY SOCIAL CATERPILLARS, HANGING ON A GUM TREE.

Eyre Basin, with no outlet to the sea, the larger animals, unable to adapt themselves to arid conditions, simply died out, leaving only their bones behind them. It was only some of the smaller ones that were able to live on, and amongst these it is, perhaps, the little crab that remains as the one living representative of the inhabitants of the old inland sea.

The only other freshwater animal that I found along the river courses in this part was the freshwater mussel (*Unio* sp.). Here and there dead shells were scattered about, more especially broken ones where the natives had been camping. They find them by the very simple method of feeling about with their toes in the muddy bed of the water-holes.

As we travelled north along the Stevenson the flies became a perfect pest, though they were nothing like so bad as they were when I traversed the same part of the country a year later. By the side of, and right in the river bed itself, the river gums grew with their white trunks; the surrounding flats, liable to flood in the wet season, were covered with swamp gums (*E. microtheca*). The latter, especially, were infested by a special kind of social caterpillar (*Nola lugens*). The insects make a big, very tough, papery kind of bag, very irregular in shape and measuring as much as two and a half feet in length and height, slung on to the smaller branches and twigs (Fig. 28). On one tree only, which happened to be a large *Acacia* (*A. Farnesiana*), I counted no fewer than fifty-seven bags of various sizes. Many of the larger ones are the product of hundreds of caterpillars whose excrement, hairs and cast skins fill the bag with material that causes intense irritation if it touches the skin. The natives are very careful to avoid it, believing that it blinds anyone on whose face it falls, and no white men willingly camp under a swinging bag. From the bag an irregular track of web-like material leads down to the ground, along which

the caterpillars walk in a procession from one tree to another. When we went up the Stevenson in May the bags were filled with caterpillars, which came out to feed in such swarms that on our return journey, in August, it was hard to recognise the place. Scarcely a leaf was to be seen on the trees, on which the empty bags were swinging about in the wind. Six months later, in the early part of 1895, I went through again. The trees were once more green and there was not a single bag to be seen.

Still travelling along the Stevenson we came, about thirty miles to the north of Macumba, to the Hamilton Creek, running in from the west. A bore has been put down here from which warm water—quite hot enough to make bathing a luxury in this dry land—streams out and fills a long water-hole fringed with gum trees and tall rushes and dotted with flocks of ducks. It is one of a chain of bores sunk by the Government to make it possible to drive cattle down from the Centre to the railway line-head in dry seasons. A few yards away from the margin of the pool everything was absolutely dry and parched, and, of course, travelling cattle very soon eat out the country around a bore.

At the Hamilton we turned out of the Stevenson Valley and travelled across undulating stony country, with dry watercourses and *Giddea* scrub, to Dalhousie Springs. The name is due to the fact that here there is a great group of Mound Springs, of which I saw much more during a later visit in company with Dr. Ward. At the present day the mounds are relatively small and lie in the centre of what long years ago were very much larger ones (Figs. 29 and 30). Viewed from the top of a long, curving hill-side that really forms part of the margin of one of the older ones, which was at least a mile in diameter, the whole country seems to be covered with what look like huge, broken-down volcanic craters. Each mound at the present day has a pool of water on its summit, varying in size from a few feet to two



DR. KEITH WARD.

FIG. 29.—VIEW FROM THE LARGE MOUND, DALHOUSIE.

The remains of still larger extinct Mound Springs are seen in the middle distance.



DR. KEITH WARD.

FIG. 30.—CIRCULAR MOUND SPRING OF WARM WATER. DALHOUSIE.



DR. KEITH WARD.

FIG. 31.—NATIVE BOUNDARY STONES.
DALHOUSIE.

or three hundred feet in diameter, forming little lakes bordered with green bushes, reeds and grass. In some the water is quite cold and in others it is hot; and hot and cold springs lie side by side just as they do in the hot-spring region in New Zealand. Everywhere there are beds of white sinter deposited by the evaporation of the water flowing from them, just as we had seen them further south in the Lake Eyre Basin. Thermal activity, as indicated by the springs, is regarded as having reached its maximum in these parts in the Lower Cretaceous period, and over the flats are scattered numbers of boulders that are regarded by Messrs. David, Howchin and Ward, to whose work we owe our knowledge of these and of the Dalhousie Springs formations, as being true glacial erratics deposited by floating ice during the existence of glacial conditions in the Upper Cretaceous period,¹ when, also, the deposits that now form the flat-topped hills amongst which we had been travelling were laid down. Dalhousie was really the most picturesque spot that we had seen so far, and we spent a most interesting day riding round amongst the mound springs, glad to be free for a few hours from the weary, back-breaking movement of the camels.

There were very few natives about, and those we met with were too civilised to take any interest in, or know much about, the customs of the tribe. They were chiefly concerned with securing tobacco and food. Years later, when Dr. Ward and myself again visited them, in 1926, on our way north to the Macdonnell Ranges, there were still fewer of them left, but we found a very interesting relic of their ancestors in the form of little heaps of stones placed at intervals of two or three hundred yards along a line running roughly east and west across the mound country. The

¹ Sir Edgeworth David and Professor Howchin, *Proc. Aust. Ass. Adv. Sci.*, vol. xvi., 1924, pp. 74-94. Dr. L. K. Ward, *Trans. R.S. South Aust.*, vol. xlix., 1925, p. 74.

country and springs to the south of the line thus marked belonged to one group of natives and that to the north of it to another group. The line, in fact, indicated the limits of their respective hunting grounds that could not be exploited without the consent of the owners (Fig. 31).

From Dalhousie we travelled slowly on for thirty miles across stony uplands and flats, with the usual dry water-courses and flat-topped terraced hills until, at Blood's Creek, we again struck the telegraph line which at the Hamilton we had left running away to the west.

Blood's Creek, now a small store and comfortable house of rest on the overland track, was then a dirty little one-roomed shanty with a not too enviable reputation as a sly grog shop of a low kind. We looked inside and found only three men, the proprietor and two swagmen, lying stretched out on wooden bunks, who scarcely spoke when we disturbed them and seemed as little pleased to see us as we were to see them, so we moved on and camped some distance away. The next day we travelled on along wide, open valleys, alternating with rough, stony hills. The dry watercourses running across a special narrow belt in this part of the country, not more than twelve or fifteen miles in width, were bordered with a peculiar variety of *Acacia* called Red Mulga (*A. cyperophila*) which we only saw in this district. The ordinary Mulga (*Acacia aneura*) grows into a tree from twelve to twenty feet in height. Its branches usually spread out fanwise from the ground with scarcely anything that can be called a trunk. The tree is one mass of stiff, wiry branches and thin, dull, olive-green leaves, or rather leaf stalks, that serve as leaves (Fig. 32). In some parts, however, especially on the sandstone hill country, the foliage is more bluish-grey and the branches grow out almost horizontally from a centre stem that can be used for building posts. When split the thinner layer of wood on the outside is light coloured and sharply marked



B.S.

FIG. 32.—MULGA SCRUB.



F.J.G.

FIG. 33.—AN ARUNTA WOMAN OUT IN THE SCRUB WITH HER CHILD IN SEARCH OF GRASS SEEDS, ETC., FOR FOOD.

She carries a *pitchi* on her head, a digging-stick in her right hand and supports the child on her hip with her left arm.

off from the main mass on the inside, which is a rich, dark red. The wood is valuable because it is very hard. White ants do not touch it, and for long ages past it has been used by the natives in the making of their wooden implements, such as boomerangs and hardwood *pitchis* or troughs for carrying food and water. Especially to the north of the Macdonnell Ranges the country is covered for hundreds of miles with nothing but these trees, growing close together and forming the well-known Mulga scrub so much dreaded by the early explorers (Fig. 32). The intertwined branches with their sharp points, pricks and scratches from which cause nasty, festering sores on man and beast, made the country almost impenetrable. In times of drought, when the grass has all dried up and disappeared, the foliage serves as fodder, but, unfortunately, there is usually no surface water in true Mulga country. Alone amongst the Acacias, the Red Mulga has a deciduous bark that peels off and covers every branch and stem with little, close-set, curled flakes of a deep orange-red colour. When the light shines through the trees every branch is outlined with a soft halo of rich, warm colour.

It is a curious thing that in this arid region many of the plants have become modified in two entirely distinct ways in order to withstand the effects of the excessively dry climate. Some, like the Acacias and so-called Desert Oaks (*Casuarina sp.*), have their leaves, or leaf stalks, modified into switch-like structures, others go to the opposite extreme and become thick-leaved and succulent with a strong cuticle that prevents evaporation. The most striking examples of the latter are species of *Claytonia* and *Portulaca*. They grow in little clumps low down on the ground and remain soft and juicy, like the leaves of a pig-faced *Mesembryanthemum*, when everything else is dry and withered. The various kinds of *Claytonia* not only form a welcome vegetable diet, so far as their leaves and stalks are concerned, but the

natives gather their little black and brown seeds, which they call Munyeru and Parakilia, in enormous numbers. In parts of the country where the *Claytonia* grows it is a common thing, towards evening, to come across a little party of women trudging home to their camps, each of them (Fig. 33) carrying on one hip her youngest child, and on her head a *pitchi* full of Munyeru, which she has spent the whole day in collecting and patiently winnowing to free it from the husks. The winnowing is done by the simple process of pouring the seed from one *pitchi* into another. Any puff of wind—and there is usually a strong one blowing from the south-east during the Munyeru season—serves to blow the husks away, the little heavier seeds, each of them about the size of a cabbage seed, falling into the lower *pitchi*. The grinding down is also a simple but rather tedious process. The woman squats down on the ground. In front of her she has a flat oval-shaped stone that may be two or three feet across and one or two inches thick. One or both surfaces are marked by concavities made by the rubbing of a smaller upper stone held in the hand. Sometimes (Fig. 34) there will be only one large cavity, but there may be two or three. These big stones are very much like the querns that, not long ago, were used for grinding corn in places such as the Orkney Islands. They are commonly known as Nardoo stones because they were first of all found in Australia in parts of the Centre where the natives grind Nardoo and use it for making a kind of flour.

Nardoo is a little trefoil plant that grows in shallow depressions where the water stands for some time after rain (Fig. 9). On account of the shape of its leaves it is commonly called the clover fern, but it has no real resemblance or relationship to either of these two. It is very common in the Lake Eyre district, and I came across little patches of it in the bed of the watercourses along the Stevenson Valley and between Blood's Creek and the Abminga, but it was not very

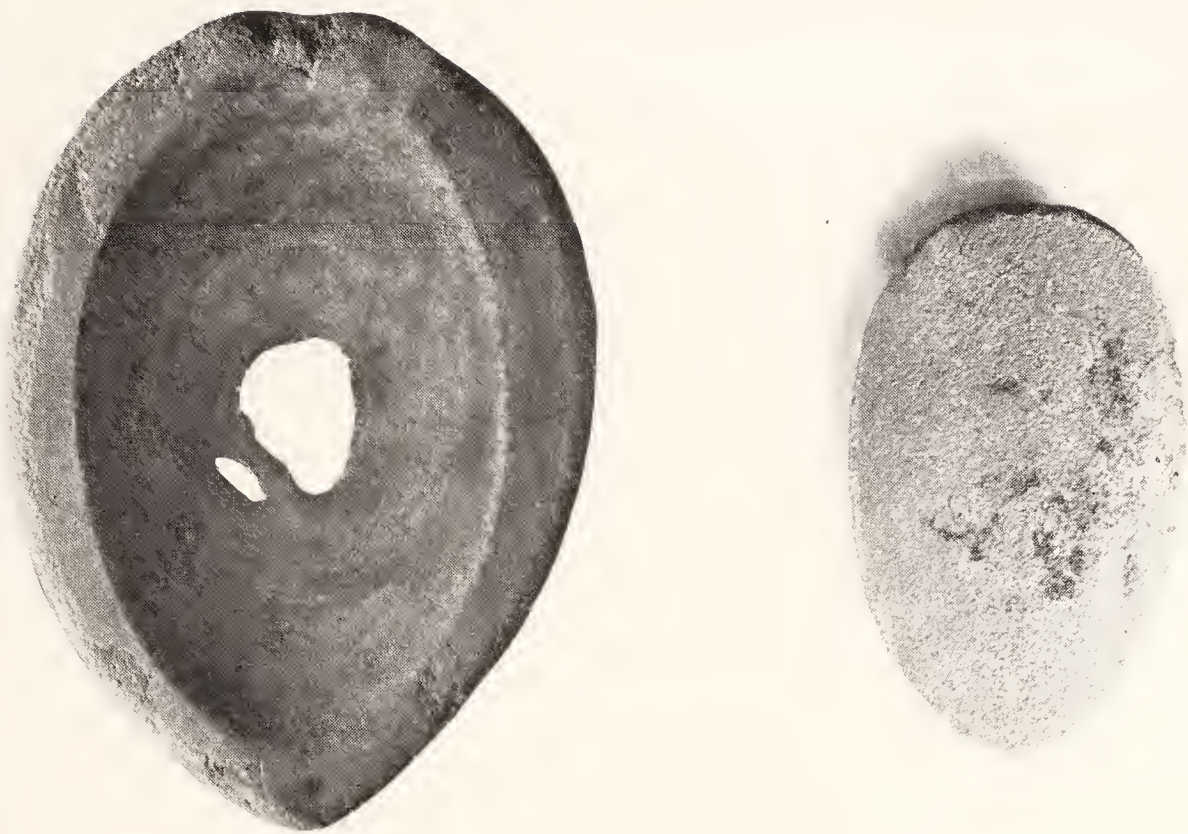


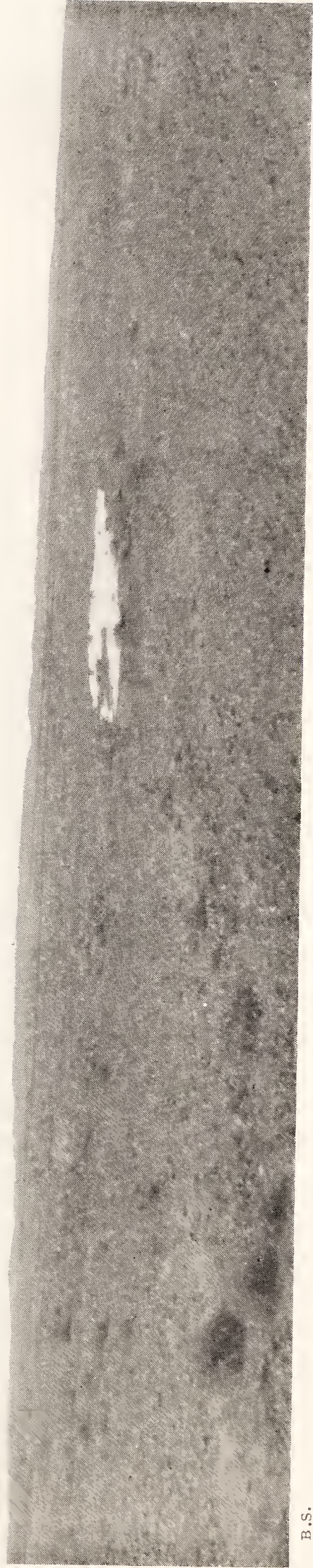
FIG. 34.—NARDOO GRINDING STONES.

The larger, lower or nether stone, must be of great age. The floor of the depression made by the grinding has been reduced to a thin shell and then broken through. The larger stone is two feet six inches in length, the smaller is seven inches.



F.J.G.

FIG. 35.—ARUNTA NATIVE USING GRINDING STONES.



B.S.

FIG. 36.—A “CRAB-HOLE” ON THE PLAINS NEAR CHARLOTTE WATERS.

common. Each little plant forms a clump of leaves with a little group of hard spore cases about a quarter of an inch long that lie on the ground when the waters dry up. They are as hard as wood, but the natives further to the south, such as the Urabunna and Dieri round Lake Eyre, collect them in great quantities and grind them up into a kind of flour. I found the Urabunna using Nardoo but never the Arunta natives, the latter preferring Munyeru, probably because it is very much more common and more easily collected—in fact I never came across the Nardoo plant except in the southern part of the Larapinta country and about as far north as the Abminga Creek. When in use, the large nether stone is placed on the ground, the seeds are poured on to it and then the grinder (Fig. 35), holding the small upper stone in his hand, grinds it backwards and forwards, pouring a little water on until a dark, muddy paste is formed. This may be eaten at once—to me it tastes like black mud, but the natives like it, and it must be nutritious, as they thrive on it. It may also be made into a kind of small, flat cake and baked in ashes, just as the bushman makes his damper out of flour and water. When cooked it is just as hard as a brick and needs the strong teeth of a blackfellow to grind it. It is really food of this kind that both keeps the teeth of the Australian savage in good state and wears them down until, as is so characteristic of their jaws, all the teeth have a level, flat surface. In the really old people the teeth are worn down nearly to the gums.

Another characteristic plant of the upland stony plains that we were travelling across is the salt-bush (*Rhagodia sp.*). There are several different kinds and we found a larger and a smaller one. The foliage of the larger, which is best known as the “old man salt-bush” and grows into a little shrub two or three feet high, has a peculiar blue-grey tint very much like that of a sage plant, and is caused by the presence of a mealy secretion on the leaves that is probably

useful in preventing too rapid evaporation. Its popular name is due to the fact that it contains a considerable amount of salt that renders it very useful for fodder. Cattle feed on it greedily, and, partly for this reason and partly because of the drought, it has become almost exterminated along the stock routes. In the dry season their light blue colour gives a distinct character of its own to the well-known salt-bush plains of the Interior.

Grasses such as *Spinifex paradoxus* grow in the form of tussocks often of considerable size and always separated from one another, so that the individual plants can be counted; indeed, except for a short time just after rain, or in especially favoured places where water happens to lie longer than elsewhere, it is always possible to count the plants. There is no such thing, normally, in the Centre as anything that could be described as a "grassy turf." For a short space of time, directly after rain has fallen, the ground is covered thickly with endless bright green seedlings. The question of which are to survive and which are to perish is settled at a very early stage. Only those that reach a certain size and send their roots deep down before the hot, dry season really sets in have any chance of surviving. The weaklings are rapidly killed out. There is no struggle, as between plant and plant, for room in which to live and grow; the real hard struggle is against climatic conditions.

In some ways the relative poverty of both animal and plant life was very disappointing. There were few new species and no profusion of different kinds, but, for the most part, a few dominant types that seem to have been able to take possession of the land. The river and the swamp gum trees were the same here as elsewhere in Australia and were also the only Eucalypts that were widely spread: the Hakeas and Grevilleas were only hardy species of their kind that grow everywhere else in dry country; the Acacias were dominated

by the ubiquitous Mulga and Gidgea. Day after day and week after week we collected just the same species of plants and animals—anything at all new was seldom met with. The one really interesting thing, especially amongst the animals, was to see, at first hand, how species, often identical with those in more favoured parts of the continent, had adapted themselves to the arid conditions of the Interior.

It seemed much as if, in ages past, the centre of the continent had originally been occupied by animals and plants identical, for the most part, with those of the eastern coastal areas. The desiccation of the Interior had killed off the least hardy and adaptable ones, leaving behind, in many cases practically unchanged in structure, so far as one could see, those that could modify their habits so as to be able to tide over seasons of drought, and they were those also that in many cases had been able to do this under less stringent conditions existing elsewhere. For example, the water-holding frogs belong to hardy species that have elsewhere taken on the burrowing habit which suffices for their preservation during dry seasons that are of much shorter duration than the prolonged droughts of the Interior. Apart from the ubiquitous gum tree there were two main types of plants, one much more dominant than the other. The Acacias, without exception, belong to species that have lost their leaves; some of them are of the most thorny kind: the Hakeas and Grevilleas are either thorny or have their leaves hard and leathery; the “desert oak” (*Casuarina*) has completely lost its leaves, and its apparent dull green, drooping foliage is made of little stiff, green twigs. The other, equally distinct, but much less strongly developed type, was represented by the succulent Claytonias and Euphorbias, one highly nutritious, the other equally poisonous.

It is customary to associate thorns and prickles with the protection of the plant possessing them against some natural enemy, in the form of an animal, which is deterred from

eating them because of their presence. So far as Central Australia is concerned, I am strongly inclined to think that protection against animals has nothing to do with the presence of prickles on so many plants. This was brought home to me forcibly as, time after time, I watched the camels munching away, apparently with equal relish, at both the most spiny *Acacias*, such as *Acacia ulicina*, covered with very hard, needle-like thorns, two or three inches long, and at the juicy *Claytonia*. The prickly growths, the thorny seeds, the succulent and wiry leaves of various Central Australian plants are, one and all, adaptations to climatic conditions. In the first place, the higher animals are too few in number to affect the trees appreciably. The only animals which really do damage are locusts, caterpillars and white ants, and no thorns, unless very closely set—which they are not on these Central Australian plants—hinder them. Again, amongst the higher forms, the only leaf-eating animal that can climb is the opossum, and this lives on the gum trees that have developed neither thorns nor prickles for defence. The influence of kangaroos and wallabies is limited to a height of five or six feet; thorns and prickles, when they are present, grow equally well and abundantly at all heights.

In Central Australia what the plant needs is protection against too rapid evaporation, and this is achieved in various ways. That some of these methods result in protecting the plant against animals is a secondary matter. The plants become climate proof and if animals, such as camels, want to feed on them they must undergo modification so as to be able, for example, to withstand the hard prickles. It is just in these hot arid and often desert parts, where animals are most rare, that both the most spiny and the most succulent plants are found.

On the other hand, thorns and prickles may be well developed on plants that live in parts where, unlike the dry wastes of Australia, there is an abundant water supply

and where the existence of such structures can only be accounted for on the supposition that they protect the plant against animals that might otherwise injure it. In these plants the leaves are well developed, whereas in all the thorny plants of these dry regions they are, if present at all, hard and coriaceous. It seems evident that thorns and prickles may be developed on the one hand as the result of the influence of climatic conditions, without any connection whatever with protection against living enemies, and, on the other, as a protection against animals without any reference to climatic conditions.

About fifteen miles to the north of Blood's Creek we camped by the Abminga water-hole in the Giddea scrub. In the morning, after mounting a hill close by, we looked, from the top of our camels, across a great wide open plain with the line of telegraph poles and its single wire streaking far away to the horizon, shimmering in the heat waves, and above it, in the mirage, could see the station house at Charlotte Waters, hanging in the air, and to the side of it a line of what looked like gigantic telegraph poles and trees and shrubs that, as we found out later, bordered the Coglin Creek a little to the north of the station. The plain, though it seems to be quite flat when you look across it, is not really so. Looking south from the station you catch a glimpse of any approaching travellers outlined against the sky on a low rise fourteen miles away. They disappear into a hollow and after a little while come into sight again and so on, time after time. At first only a cloud of dust is seen with something darker in it that gradually and only very slowly resolves itself into a team of camels or horses or a travelling buggy. On our loading camels it took us five weary hours to reach the station that lies on the northern edge of the plain across which, nowadays, a motor speeds rapidly. Everything was as dry as possible, but, later on, I spent a few interesting weeks

here under much better conditions with Mr. Byrne, then officer in charge of the station. The main building forms three sides of a quadrangle, the fourth is closed in by strong doors, or rather it used to be in the early days when it was first built and it was necessary to have protection against the natives. At that time all the doors opened on to the quadrangle and the walls were loopholed so that, if necessary, the officers could defend themselves against any attack by the natives.

In early days, when the northern railway only reached as far as Port Augusta, there were eight hundred miles of, for the most part, dry and often drought-stricken country to be crossed between the head of the line and Charlotte Waters. The distance is now reduced to less than two hundred miles, and before long there will be a railway station somewhere near, but, as yet, Charlotte Waters looks out upon a great open, stony plain without a sign of human habitation (Fig. 37). North and south the line of telegraph poles streaks away to the horizon, and the ticking of the instruments, as the messages pass through, only serves to heighten the feeling of desolation. The single wire was naturally liable to interruptions of different kinds. At places, river courses had to be crossed and, during heavy floods, the poles might be washed away or the wire entangled in the boughs of a tree swept down by the flood waters. Or, again, a mason wasp, if it chose to build its nest in one of the insulators, might seriously interfere with the passage of the current by making a connection between the wire and the pole. It was necessary to have stations at intervals of every two or three hundred miles where, if the line worked badly, the messages could be repeated and where also officers were stationed, ready at a moment's notice to start off and repair any break in the line. Horses are always kept in readiness, and as soon as ever an interruption occurs between any two stations, an operator from the southern one

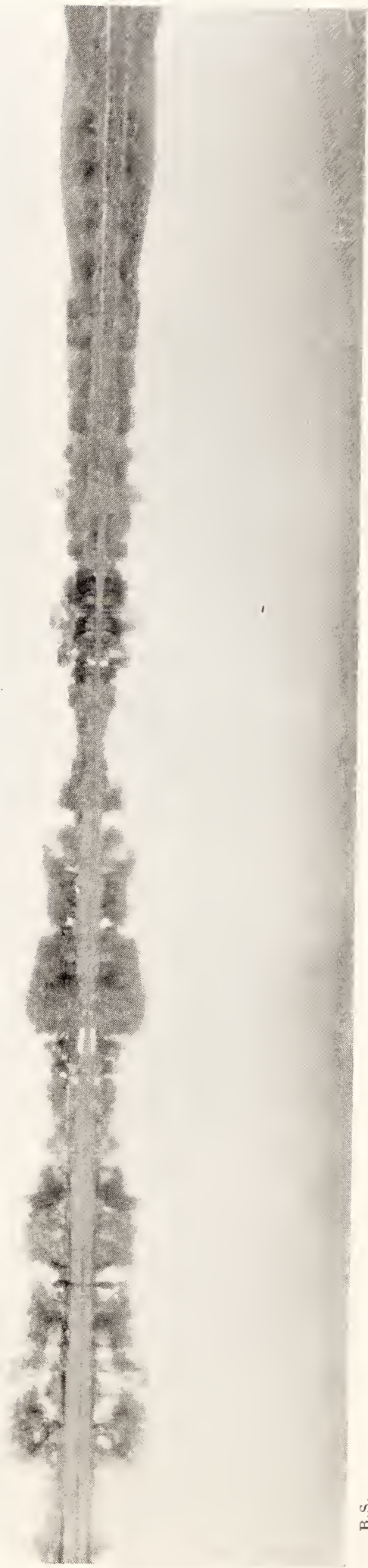


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FIG. 37.—VIEW FROM CHARLOTTE WATERS TELEGRAPH STATION, LOOKING WESTWARDS.



FIG. 38.—OBSIDIAN BOMB.



B.S.

FIG. 39.—A FULL CLAY PAN.

The water is not more than two feet deep.



B.S.

FIG. 39A.—A LARGE DRY CLAY PAN.

The surface is thinly coated with a glistening clay material that shows ripple markings.

starts out north, on horseback, and one from the northern starts out south. There is no delay; the operator starts off by himself and, as soon as they can be loaded, a black boy attached to the station follows him with spare horses and provisions. Each operator has a pocket instrument and, every now and then, he taps the line to find whether he has passed the point of interruption or whether it has been repaired by the other operator. If he finds the break he promptly repairs it: the other operator soon finds out that the line is working and then, usually without seeing one another, each returns to his station.

After calling at the station to receive and send messages we took the camels on for about half a mile and crossed the Coglein Creek which comes in from the west and runs due east to join the Finke, about fifteen miles to the east of the station, which depends for its water supply on a well sunk in the river sands. The water-hole in the Creek was rapidly drying up and had a decidedly goaty flavour which we had good cause to remember, because, unfortunately, Winnecke decided to fill the casks that carried our water supply there and we carried the flavour on with us.

From Charlotte Waters our course ran north-west roughly parallel to that of the Finke River, through sand-hill country with flats between them and clay pans. The clay pans form one of the most characteristic features of the lower Steppe lands (Fig. 39). They are simply shallow depressions that vary in size from a diameter of twenty or thirty yards to an extreme length of at least a mile, with a width of half a mile, as in the case of the Conlon lagoon, in one of the valleys amongst the Macdonnell Ranges.

The depth of the water they contain may be only a few inches, at most it is never more than two or three feet. Some will hold water for a week or two, others for a month or two, or even longer, and there can be no stronger contrast than that between a full and a dry clay pan (Fig. 39*a*).

Whatever be their size they all agree in one feature, which is that they have no outlet. They are formed in such a way that the water draining down into them can only escape by sinking into the ground or by evaporation. There are only certain depressions in which a clay pan is formed, the determining factor being the nature of the sediment that the water contains. If it be simply sandy, then it does not hinder the sinking of the water, but, if it be of a clayey consistency, then it forms a thin, impermeable film that prevents the percolation of the water, and, as a consequence, a clay pan is formed in which the water, always very muddy, remains until it completely evaporates. As it was now the dry season, every one, of course, was perfectly dry, with the clayey film on the surface of the ground broken up into little curled flakes, glistening in the sunshine. Otherwise, save for these, the surface was as flat as a billiard table and perfectly hard. Sometimes when the clayey mud is thick, cracks a foot in depth run down between roughly hexagonal masses of hard earth, that often bears on its surface the characteristic tracks of kangaroos and emus that crossed it in search of the last remnants of water while the clay pan was still moist. During the dry season everything is parched and silent, with not a trace of animal life, except the dead shells of snails, the carapaces of *Apus* and *Estherias* and footmarks of different animals and birds. The margins are bordered with withered shrubs and tussocks of yellow, dried-up grass with, here and there, patches of the dead leaves and hard wooden spore cases of the Nardoo plant.

Scattered over these open table-lands and on the Gibber fields, agates and obsidian bombs are met with lying on the surface of the ground. The latter, often called Australites, consist of a brownish or dark green coloured vitreous material. In perfect specimens there is a central spherical mass (Fig. 38) with a flattened rim. The latter is usually

broken off, and very often the bomb is dumb-bell shaped, as if the central mass were dividing into two. Their origin is a matter of dispute. Some authors hold that they demand volcanic action. If so, these delicate structures are the only evidence left of this in Central Australia. Others regard them as extra-terrestrial in origin. Their shape is such as would be assumed by a small mass of molten vitreous material rotating as it fell through the air. How they land on the ground without smashing, even if they be travelling in the same direction as the rotation of the earth, it is difficult to understand. When imperfect in shape this is clearly due to the action of wind-borne sand.

At the first glance no country could possibly appear more uninteresting to a naturalist, but as we travelled on, day after day, over these desolate flats, sand-hills and clay pans, I realised more and more clearly that it was only when, literally, you dipped below the surface, that you began to understand something of the wonderful vitality and adaptability of the smaller animals. Nothing could be more striking than the marvellous change that comes over these desolate clay pans within a few hours of the fall of rain. After months of brilliant sunshine, such as we had, without intermission, on this expedition, banks of heavy clouds gather on the horizon and slowly overspread the sky. You feel as if the parched ground and dried-up scrub were silently and anxiously waiting, as you yourself are, almost without hope, to see whether the rain will actually fall or whether the clouds will slowly disappear, as they do only too often. A few big drops come down. Then there is an ominous lull, but again the drops fall; this time there is no ceasing and down comes the water in a perfect deluge. Only those who have lived in a drought-stricken country can appreciate to the full the sound of falling rain and the sight of running water. At first it sinks into the ground, but soon the surface soil is saturated, and then it begins to gather

in the depressions. The creek beds that have been dry for months are filled with running water that gradually increases in volume until it overflows the low, vaguely outlined banks and spreads far and wide over the surrounding country.

I saw no rain during this my first visit to the Centre, but, two years later, I was more fortunate. I was travelling along the Finke Valley, where, again, all was dry and parched, with no sign of animal life, save for a few lizards and ants innumerable. Our camp for the night was not far from the banks of a creek, the sandy bed of which had not contained any water for many months. Though a creek bed be dry and the sky quite clear, it is never wise to camp on it during the season when rain may fall, however tempting the soft sand may be as a bed. Even if no rain falls in the actual part where you are camped, it may fall miles away, and then, without any warning, a flood will come tearing down the creek and carry off you and your belongings. One evening, shortly after we were camped, the rain began to fall and the water-holes filled rapidly. Within an hour the croaking of frogs was deafening. There must have been hundreds of them,¹ though we had not seen a sign of one before the rain fell, for the simple reason that they were all buried away a foot or two down in the sand. In this particular instance it was a special form of frog known as *Limnodynastes ornatus*. Later on, after rain, I found still larger numbers of a smaller frog, *Hyla rubella*. The habits of these two are not, however, so interesting as those of another larger kind that I met with on the clay pans during the Horn Expedition. I had heard before of a water-holding frog, and one day, while we were having a midday rest on a wide, open flat, away to the north of Charlotte Waters, I asked one of the black boys if he could

¹ Judging by the large number of these—more than two hundred—that I collected after a rainfall in one small area along the bed of the Finke River, around the roots of the gum trees and under logs and stones, there must have been thousands rather than hundreds.

find one. He took me to a small clay pan where the ground was cut with deep cracks and covered with glistening little flakes of clay. It looked about the most unlikely spot imaginable in which to look for frogs, because there was not a drop of surface water or anything moist within miles. However, my boy began to search about on the margin of the clay pan and, in a minute or two, pointed out some indistinct marks on the hard clay, at the root of a withered bush, that he said had been made by a frog, though it would take a naturalist as skilled as a native, first of all to find them and then to recognise them as made by a frog. The ground

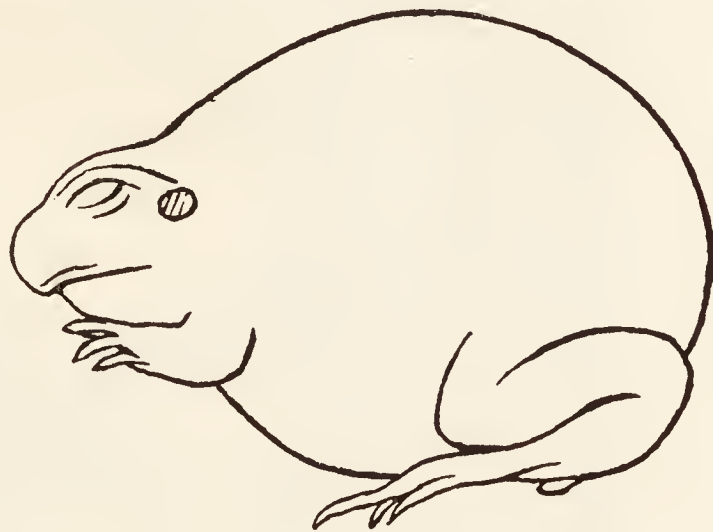


FIG. 40.—WATER-HOLDING FROG (*CHEIROLEPTES PLATYCEPHALUS*) TAKEN FROM ITS BURROW DURING A DRY SEASON. (Natural size.)

was as hard as a rock and we had to cut it away with a hatchet, but, sure enough, about a foot below the surface we came upon a little spherical chamber, about two and a half inches in diameter, in which lay a dirty, yellow frog. Its body was puffed out into the shape of an orange, with its head and legs drawn up so as to occupy as little room as possible (Fig. 40). The walls of its burrow were moist and slimy and the animal was fast asleep, with the lower eyelids drawn up so tightly over the eyes that the natives assured us that it was quite blind. The eyelids, moreover, had a peculiar opaque appearance, quite different from that of the frog under ordinary circumstances. On squeezing the body, perfectly clear water was pressed out, and it is

this peculiar habit of filling itself with water that enables the frog to tide over, it may be, as long as even twelve or eighteen months of drought. Later on I dug out many more of these frogs and found that though a good deal of the water percolates through, and lies in the body cavity, it is really the thin-walled urinary bladder that holds most. It becomes very distended and serves as a receptacle extending all over the under surface, just inside the body wall, so that the skin, as there is practically no evaporation going on, is kept moist. Vital activities are at a standstill during the long period of æstivation. In the frog the bladder is very large and opens directly into the end of the alimentary canal, so that the water must pass through the whole length of the canal and, whilst doing so, loses all the fine mud that it contains when the frog gulps it down. I tasted the water and found it perfectly pure and fresh. Each frog holds perhaps one or two teaspoonfuls, and the natives told me that they drink it when hard pressed and no other supply is to be had save this.

This special frog proved to be *Cheiroleptes platycephalus*, a species that is widely spread over not only the Centre but the interior of Queensland, New South Wales and West Australia. It was the only water-holding frog that we came across on the Horn Expedition, but, on another visit, I found a second species of the same genus and two other frogs, *Helioporus pictus* and *Notaden bennetti*, that had adopted the same habit. All of these frogs live in other, better watered, parts of Australia, but it is only in the dry Interior that they have developed the habit of storing water in their bodies. In Europe and cold countries animals like squirrels hibernate during the winter months, and may even lay in a stock of food, but there is no need for them to provide for more than a definitely fixed time because the seasons are so regular. A frog is a cold-blooded creature, its vital activities are almost at a standstill when it is dormant and it



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FIG. 41.—A SHADOOF OR WELL SUNK IN THE SAND BED OF THE GOYDER RIVER.



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FIG. 42.—VALLEY OF THE FINKE RIVER AT CROWN POINT.

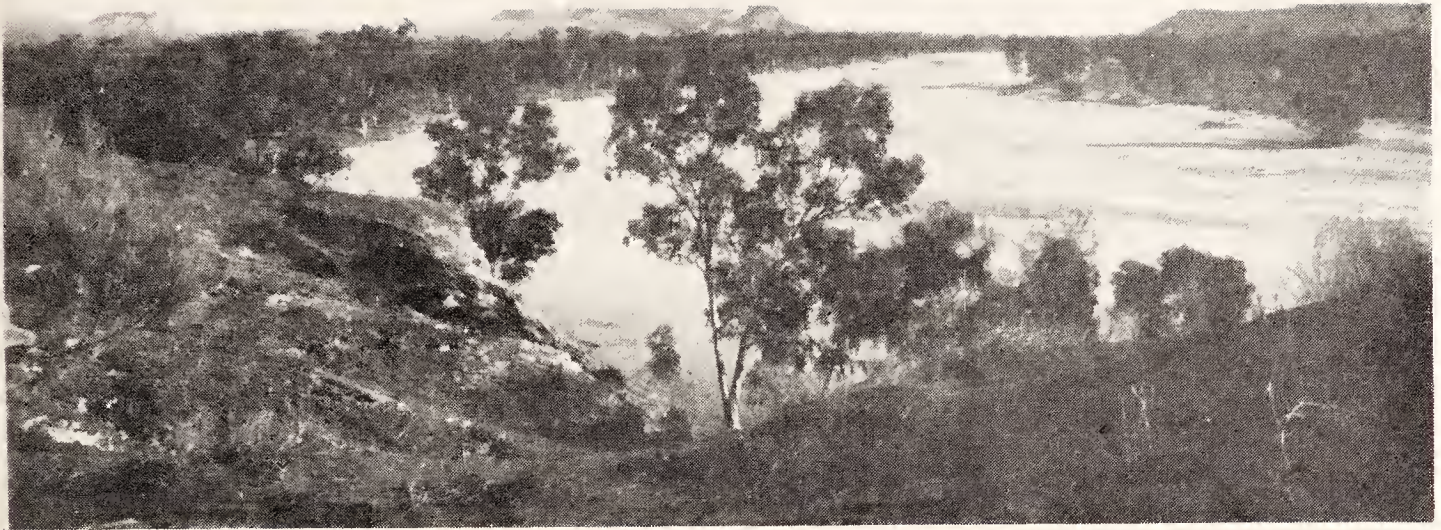
There is no surface water. The light colour of the river bed is due to sand.

needs no solid food, but it must keep moist. In hot climates æstivation takes the place of hibernation in cold ones. In parts of Australia where there is a more or less regular rainfall, a frog can keep moist by the simple process of burrowing, or even hiding under logs and stones, where they are usually found, away from water-holes, in the forest and bushlands of the coastal districts, but in Central Australia it takes still further precautions and lays in a store of moisture that enables it to tide over a year or two of drought.

About thirty miles to the north-west of Charlotte Waters we crossed the Goyder River, in the bed of which grew some really fine white gums. There was no surface water, but a well, thirty or forty feet deep, has been dug in the sand. Its sides are timbered and around it is a strong palisade to keep horses and cattle and camels from tumbling in, and, like all Central wells and bores, it has a wire grating which keeps dingoes and smaller animals out. A long pole is balanced on a strong upright post like a see-saw, with a weight at one end and a bucket at the other, so that the latter can easily be let down into the well and filled with water. By means of a swivel joint it can be turned round, lowered and emptied into a trough. It is, in fact, exactly the same primitive contrivance as the shadoof of the Egyptian, and, save that the palm trees were replaced by gums, the scene might have been one in an Egyptian or Arabian desert (Fig. 41).

Away to the north was Mt. Townsend, a great flat-topped hill, marking probably the northern boundary of the Cretaceous flats over which we had been travelling ever since leaving Oodnadatta. Ten miles north of the Goyder we came to the brow of a small escarpment and, for the first time, actually saw the Finke River—the Larapinta of the natives. From the top of the little cliff on which we stood facing north, we looked down on the wide bed of the river, filled with white sand but without a drop of surface water (Fig. 42). Its banks were defined by gum trees :

first of all a fringe of red gums (*E. rostrata*) with their white trunks shining brightly in the sunshine, and, further away from the river, the swamp gums or box trees (*E. microtheca*), merging into the surrounding undulating sand-hill country, covered with thin scrub and patches of dark Mulga. Five miles to the north was Cunningham Gap, where the river pierced the flat-topped hills as they ran across from east to west. Close to the western bank, an outlier, called from its shape Crown Point, stood out in strong relief against the sky, showing very clearly its level capping of hard, silicified quartzite with the softer and more friable sandstone below it. Immediately below us, on the western side of the main stream and only a few feet above the latter, was a broad flat covered with thin *Acacia* scrub and dotted over here and there with gum trees, remnants of those that once bordered the stream in this part, as they now did everywhere else, so far as the eye could reach. The little series of cliffs, on one of which we stood, was evidently made of material more resistant to denudation than that of the old land surface around them, with the result that the river, impinging upon them in its southern course, had been turned off sharply to the east. This sharp turn in the bend of the river had, at some time, served to bank up a huge flood sweeping down from the north through the broad Gap at Crown Point, and the swirl and eddy of the waters had loosened the soil around the shallow roots of the gum trees, with the result that all but a very few of them had fallen and been swept away in the flood waters. The changes made in the river bed by floods can be seen on comparing the views represented in Figs. 42 and 43. The former was taken on the Horn Expedition in 1894, the latter by Dr. Ward when, together, we visited the Yellow Cliff in 1926. They are both taken from the top of the cliff. In the former there is a broad flat covered with tussocks of grass and shrubs, with here and there fair-sized gum trees, the surviving relics



DR. KEITH WARD.

FIG. 43.—THE VALLEY OF THE FINKE RIVER AT CROWN POINT.

Taken from the same spot as Fig. 42. A heavy flood has completely scoured out the river bed.



DR. KEITH WARD

FIG. 45.—CONTORTED TILLITE BEDS A FEW MILES NORTH OF CROWN POINT.



B.S.

FIG. 44.—CONTORTED TILLITE BEDS FORMING THE BASE OF CROWN POINT AND REACHING A HEIGHT OF 270 FEET ABOVE THE LEVEL OF THE FLATS OF THE FINKE RIVER.

of more numerous ones that had once bordered the river channel. In the latter, remnants of old trunks scattered over the flat, which was only two or three feet above the river bed, were all that were left of them. A more recent flood had completely swept away the whole flat and had covered up everything with sand.

It was only fifty years ago since Stuart, in his overland journey, first struck the river, close to the spot on which we were now standing, and named it the Finke¹ in honour of one whom he describes as "my sincere and tried friend and one of the liberal supporters of the different expeditions I have had the honour to lead." He evidently saw it during a good season, because he says that there was plenty of water with "the finest gum trees we have yet seen." Save for the absence of water the river, in fact the whole scene, must have been much the same as when Stuart, the first white man to see it, gazed down upon the great river bed and on the long series of flat-topped ranges running east and west as far as the eye could see. It was a river in name only, and yet it was quite evident that once—not very long ago as time is measured geologically—there must have been a continuous flow of water, and that on a big scale, to form the great but now dry river bed and the gorge through which it comes down from the north.

The little cliff on which we stood, known from its colour as Yellow Cliff, is not more than fifty feet high and is formed for the most part of soft, easily-weathered yellow, pinkish and purple sandstones, now recognised as part of a great formation of Tillite and glacial, shaly, sandstone beds, existing in this part of the country. These extend from New Crown Point Station, south of the junction of the Goyder and the Finke, for at least eighty miles along the valley of the Hugh River, where they underlie the long series of what are called the Depot Sand-hills, as far north as Percy Hill, where

¹ "Journals of John McDouall Stuart," 1864, p. 149.

Dr. Ward found that a formation 170 feet in thickness of what he calls the Finke Sandstone, associated with the Tillite, overlies 70 feet of older Ordovician rocks. The Tillite of Crown Point (Fig. 44) shows extraordinary contortions up to a height of 270 feet above the Finke flats from which the hill rises. The same contortion is seen very clearly on the banks of the creek draining Paddy's Plain some six miles to the north of Crown Point (Fig. 45). On the east side of the Finke at Cunningham Gap the glacial beds are horizontal. Away to the west lies a wonderful series of terraced hills belonging to the same formation. On the Horn Expedition we only camped for an hour, during midday, at Yellow Cliff, where sundry pebbles that had weathered out showing suspicious-looking striations were found, but the former existence of glacial action in Central Australia was not then suspected and none were collected. Mr. Watt unfortunately was not with us at that time and did not see the Yellow Cliff formation. However, on the return journey he passed along the track leading from Paddy's Plain, and wrote in his field note-book: "Before reaching Crown Point a peculiar structure is seen in the small yellow and white kaolinised sandstone hills, the structure simulating contortion and probably due to settling of partially consolidated material owing to the melting of ice."

I felt sure there was unmistakable evidence of glaciation at Yellow Cliff and went back again a year later with Mr. P. M. Byrne (Fig. 46). We found plenty of striated stones in a thin layer on the top of the cliff and some lying on the ground round the foot of it, but all that we then found embedded in the face of the sandstone cliff were rounded and not striated. There are really, however, numbers in the sandstone, which is crumbling away and every now and then exposes them to view. Messrs. David and Howchin found them later on, and Dr. Ward and myself got some beautiful examples there in 1923. We found also a very fine example



B. S.

FIG. 46.—YELLOW CLIFF.



FIG. 47.—STRIATED STONES, FROM YELLOW CLIFF.

at the base of a cliff on the eastern bank of the Finke River at Engoordina, some forty miles north of the Yellow Cliff. Professor David, to whom Mr. Byrne and myself submitted our specimens (Fig. 47), was inclined to the opinion that the evidence, though slender, was, on the whole, in favour of a time as far back as Permo-carboniferous, for the glaciation of Central Australia and later investigations carried out over the same area by Dr. Ward have confirmed this view.¹

At Crown Point there was, in 1894, when we passed through on the Horn Expedition, a station under the charge of Mr. Alec Ross, the son of one of the pioneers of Central Australia, after whom the Ross River in the Eastern Macdonnells is named. The little homestead was on a rise on the western bank of the Finke, a mile to the south of Cunningham Gap, and there we were made welcome by Mrs. Ross, her husband being away on the run. It was the first of several pleasant days that, at different times, I have spent at the old Crown Point. At that time everything was green, the verandah, overgrown with creepers, was cool and restful; we had fresh vegetables from a garden watered by a well close by the river, and the change from the dust and flies and crudeness of the camp to the comfort and refinement of the little station home was more than welcome.

Just to the north of Cunningham Gap we crossed the Finke, which was here running east and west, and, when it turned north again, we crossed once more to its west bank and for three days were amongst the usual open, thinly scrubbed country with flat-topped hills every here and there. The rivers meander so widely over this plateau country, as it falls gradually to the south, that, in order to keep anything like a straight line of traverse, you have to

¹ Full details are given in "Report of Glacial Research Committee," A. A. A. S., vol. vii. p. 109, vol. xvi. pp. 74-94. L. Keith Ward, "Notes on the Geological Structure of Central Australia," Trans. R. S. S. A., 1925, pp. 66-73.

cross and re-cross them. Once, further to the north, we crossed the Hugh River eight times in one day. Nothing in this part of the country is more astonishing than the great size of these sandy river channels that could not possibly have been made under present climatic conditions. There must once have been a great gathering ground of water away to the north, and the Macdonnell Ranges now represent the denuded remnants of what was then a chain of lofty mountains running east and west across the Centre.

We struck the Finke again at Engoordina, or Horseshoe Bend, where the river sweeps round in a great easterly curve from north to south—hence the appropriate name. At that time there was a little store kept by a well-known Territorian named “Sargent of the Bend,” where a few things necessary to travelling stockmen could be obtained at remarkable prices, and also an occasional meal, served in a little bough shanty. Now there is a real store and a most comfortable wayside hostelry, and travellers up and down the Central track look forward to a most pleasant reunion with their unfailing friends, the host and hostess, Mr. and Mrs. Augustus Elliot.

The eastern side of the Finke is bounded by a remarkable series of hills, of which the main one, Engoordina, gives its name to the place. The colour is striking (Fig. 48). The lower part, for fifty or sixty feet, consists of greenish or deep red-brown shales, above which lies a hundred feet of sandstone, pink and white and cream in colour, with a dark, siliceous capping. Looking south from the hills above the station, in the middle of the horseshoe loop, the river, with its broad bed of white sand, is seen sweeping round to the west across the scrub-covered flats, where its course is marked by a dark line of gum trees. Sand-hills, deep red in colour, stretch back behind the cliffs that rise abruptly from its eastern bank.



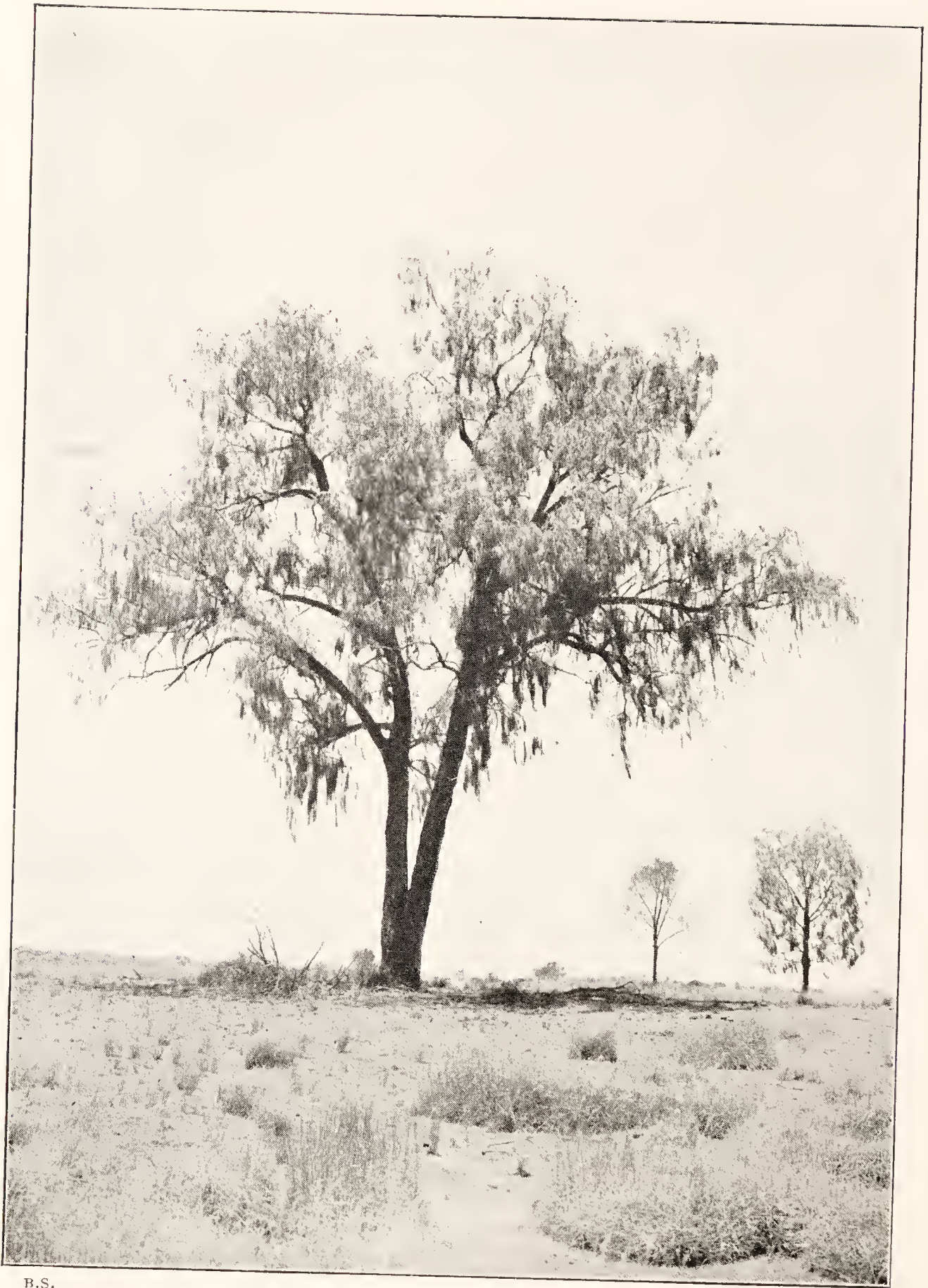
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FIG. 48.—HILLS ON THE EASTERN SIDE OF THE FINKE RIVER AT ENGOORDINA, HORSE-SHOE BEND.
The dry sandy river bed is a quarter of a mile wide here.



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FIG. 49.—RIPPLE MARKS ON THE DEPOT SAND HILLS.



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FIG. 50.—DESERT OAK (*Casuarina Decaisneana*).
The ground is dotted over with clumps of porcupine grass (*Triodia sp.*).

From Engoordina we turned off to the north-west, crossed the Finke, where it was flowing almost due east and west, and found ourselves amongst what are well known as the Depot Sandhills that make travelling at least very uncomfortable. The æolian sands, of which they are formed, cover an enormous area, extending in a great belt, from thirty to forty miles in width, and probably at least a hundred in length from east to west. In this part they are heaped up to form long, rolling dunes, running parallel to one another from north-west to south-east and are apparently stationary. Each has a long, sloping southern side and a short, steep northern face, the distance between the crests, which rise to a height of forty or fifty feet above the intervening valleys, varying from about two hundred yards to fully half a mile. The crest usually has the form of one or more smooth, rounded domes, very clearly ripple-marked (Fig. 49). The dunes look like enormous waves of sand, yellow or deep indian-red in colour, rolling along, one behind the other. The southern slopes and crests are covered with thin scrub, Cassias, Eremophilas and Acacias; the northern is often so steep that no vegetation can grow on it, but there are no dead shrubs such as would be found if the sand were moving, and, so far as can be told, they are genuine dunes and not rock formations mantled with sand.

The flats and valleys between them are the home of one of the most interesting and certainly most picturesque of the trees in Central Australia, the so-called Desert Oak (*Casuarina decaisneana*). It is limited to this part of the country and, with its great rugged trunk and drooping, dull green foliage, made up of little stiff, green twigs instead of leaves, forms a very striking feature in the landscape (Fig. 50). It carries an enormous number of small, hard cones. Young plants, up to a height of fifteen feet, have exactly the appearance of enormous funeral plumes, and are

often met with in large numbers, sometimes forming regular plantations where the older trees have been burnt out or died down.

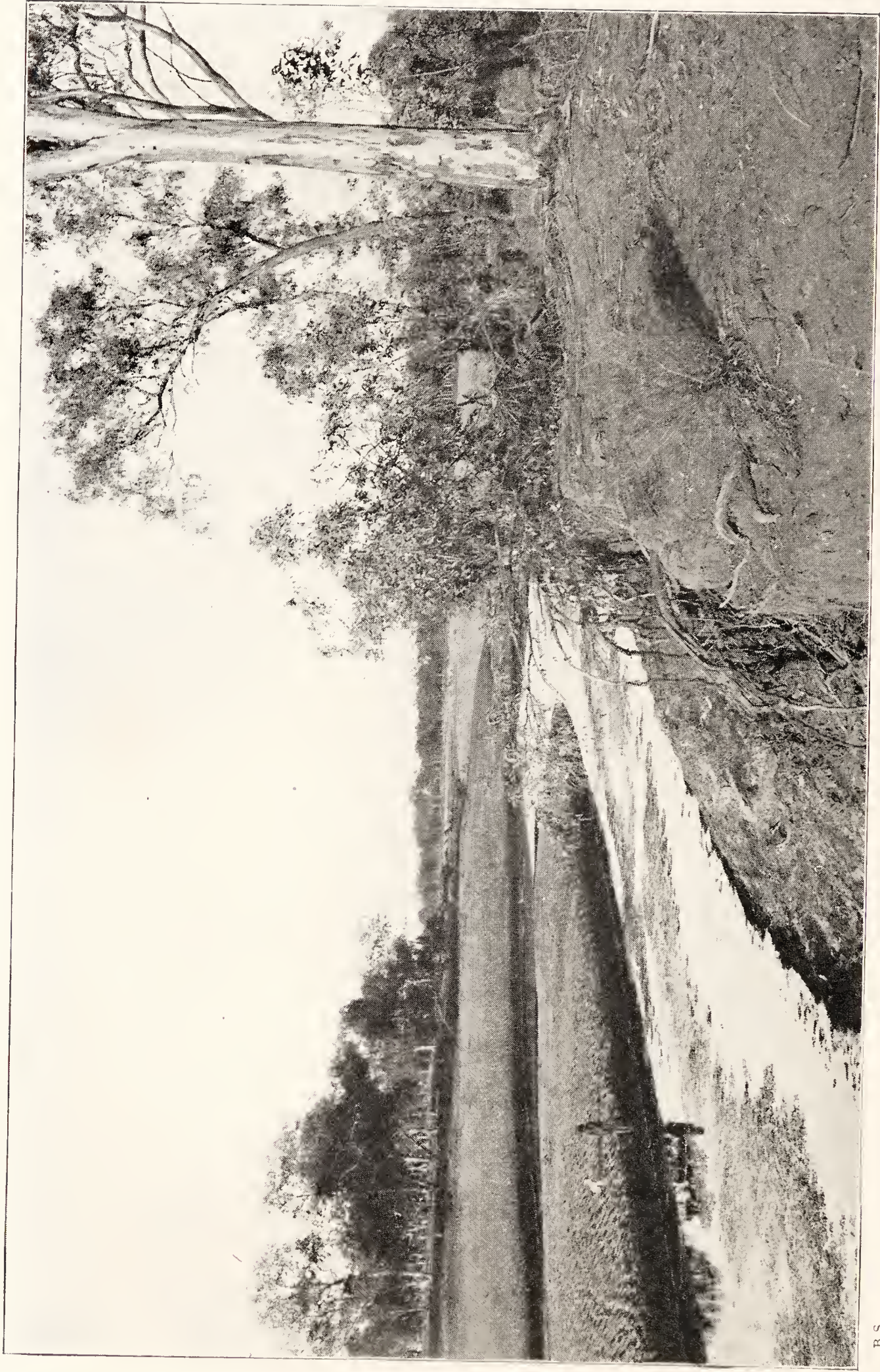
The wood has a beautiful rich, creamy pink colour, very similar to that of the Tasmanian Beech (*Fagus Cunninghami*) and, being very hard and durable and apparently not touched by white ants, it is much to be feared that, when the country is opened up, it will, owing to its usefulness and limited distribution, soon be exterminated. This is all the more to be feared because it grows in just the part of the Centre where no other timber of any size or value is obtainable. It is much to be hoped that it will not meet its fate at the hands of those in search of sleepers for the overland railway that is to pass right across the country in which it grows.

We made a détour in order to see a remarkable natural feature to which the explorer Stuart had given the name of Chamber's Pillar. It was slow and monotonous travelling, because our course lay nearly at right angles to the length of the sand-hills, and in nine miles' travelling we crossed thirty-five of them until, at last, we came on to a small level stretch of country with the Pillar standing in the middle of it, and a line of hills curiously weathered so as to look like the remains of old battlements, a little to the north of it. Chamber's Pillar has the form of a tall column rising from a broad pedestal about three hundred yards in circumference and one hundred feet in height (Fig. 51). The column itself rises about seventy feet higher and is oblong in section, one side measuring about twenty-five and the other fifteen yards in length. It is formed of friable sandstone, similar in appearance and character to the variegated sandstones at Engoordina and Crown Point. The base of the column is cream-coloured, the upper part bright red with a thin capping of darker-coloured, hard, silicified sandstone that has protected the underlying softer rock. The column



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FIG. 5 I.—CHAMBER'S PILLAR.



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FIG. 52.—BED OF THE FINKE RIVER NEAR HENBURY, WITH WATER-HOLE AND BORDER OF GUM TREES.
The larger tree on the right side is *Eucalyptus rostrata*, the smaller is *E. microtheca*.

is completely isolated and, standing out against the blue sky, the yellow sand-hills and dull green Mulga scrub, with a few old battered desert oaks dotted around, it forms a striking object in the otherwise dreary and monotonous landscape.

The column has naturally attracted the attention of the natives, who account for it by saying that in the far-away times that they call Alchera, there lived a very great fighting man who journeyed westwards across the country, killing all the men whom he met with his stone knife and taking all their women captive. One night, on his way back, he stopped here and, for his sins, he and the women were turned into pillars of stone, which seems rather hard lines on the women, who had done nothing except be captured. Chamber's Pillar represents the man and the turrets of Castle Rock the women. The white men call the place Idracowra, which is a corruption of the native name *Iturka worra*, or the evil man.

In the report of the Horn Expedition the whole of the sandstone formation as far north as the southern margin of the Central Ranges was regarded as Upper Cretaceous, the capping of all the flat-topped hills, from Mt. Frank near Charlotte Waters in the south to Crown Point and Chamber's Pillar in the north, being described as Desert Sandstone. Mr. H. Y. L. Brown, who was the first to map the Central area geologically, stated that the northern series were of an older age and called them Sub-cretaceous. This conclusion has been confirmed by the more recent work of Dr. Ward, who describes the lower flat-topped hills as far north as the junction of the Finke and Goyder Rivers as Upper Cretaceous, and the great flat, plain country from which they rise as Lower Cretaceous. He describes the higher Steppe lands north of the Goyder, forming what he speaks of as the Finke River sediments, as Permo-carboniferous, including in this the glacial deposits of the Crown Point district.

Dr. Ward¹ says: "The sediments of the Finke series are capped with the same siliceous crust as the younger rocks to the southwards. . . . The general appearance of the remnants of the plateau which was silicified superficially is identical, whether the rocks of the plateau are Upper Cretaceous or of the Finke series (? Permo-carboniferous). This similarity is due merely to the action of the forces of erosion upon one physiographical unit which embraces formations on different stratigraphical horizons."

Some fifteen miles to the north of Horseshoe Bend the Hugh River junctions with the Finke, which comes down from the north-west (Map 2). We went across country to the west and, after five days' travel, struck the Finke near Henbury close to the southern outliers of the James Range, leaving behind us the monotonous plains and flat-topped hills. The country, with its rugged ranges, was now much more picturesque. The river bed was sometimes a quarter of a mile across and here and there were fine water-holes. The one at Henbury is a good example of one special kind. It owes its existence to the presence of a bar of hard rock running across the river bed. When a flood comes down an eddy is formed on the upper side of the rock where the water strikes against the bar, scooping out the sand and forming a deep pool. The only trouble with this kind of water-hole is that, if only a moderate rainfall occurs, the current may not be strong and, instead of the hole being scooped out afresh, the particles of mud and sand that the water carries will be deposited in the quieter waters of the pool, and so what is, one year, a deep and apparently permanent water-hole, may be a dry sand patch next season. There is, however, one consolation, and that is that the water, though it does not come to the surface, is flowing underground and can always be obtained by sinking to a

¹ L. Keith Ward, "Notes on the Geological Structure of Central Australia," *Trans. R. S. S. A.*, vol. xlix., 1925, p. 77.

certain depth. Fig. 52 represents a very characteristic water-hole in the broad, sandy bed of the Finke. The banks of the river are often thirty or forty feet high and are always lined with gum trees. As usual there is a small number of large white gums which seem to need to be close to the water, and outside them a belt of swamp gums, perhaps a quarter of a mile wide. The gum tree has typically no main tap-root, but it is astonishing how far the lateral roots spread. They run straight out from the tree, often so close to the surface that you can trace them along the ground. On the banks they dip down and, when in flood times the earth is washed away, the thousand rootlets into which the main ones branch are left hanging in tangled masses. I measured one root that ran just underneath the ground and could be traced for forty-five feet, until it reached the side of a water-hole and dipped down.

About fifteen miles to the east of Henbury there is a small shallow cave, or rather a kind of recess hollowed out of the rocks at the base of a range of hills not more than three hundred feet high (Fig. 53). Close to one side is an old gum tree sheltering a water-hole. Above the pool the rock rises perpendicularly for fifty feet, then comes a level ledge with a pool from which, in rain seasons, the water tumbles over into the one below. It is quite a picturesque little spot, looking all the more so by contrast with the monotonous scenery to the south. It is known to the natives under the name of Undiara and many traditions, that I learned about later, are centred in it (Fig. 53). According to one, a great old kangaroo man, or rather half animal, half man, lived here. His name was Ungutnika and he was sorely afflicted with boils. For long he bore with them, but at last he tore them out and put them on the ground beside him, where they turned into stones. When a native wishes to afflict an enemy with boils, he makes a few toy spears and throws them at the stones, from which evil magic enters them.

He then throws them in the direction of his enemy. The result is that the evil magic comes out and gives rise to boils in its victim. The natives have a word, *arungquila*, which they use not only for magic itself but for any object, such as these little spears, in which it is, for the time being, resident.

Later on this same Ungutnika, who was half man, half kangaroo, or, to express the matter more correctly, a kangaroo with human and also superhuman powers, started away to travel northwards from Undiara. It is often difficult to say exactly whether these ancient creatures were animals or human beings; sometimes it is the first and at other times the second aspect of their twofold nature that stands out most clearly. Ungutnika came to a small plain and saw a number of wild dogs, around whom he hopped. The dogs saw him and gave chase, and though he hopped away as hard as he could, they caught him, tore him open, ate his liver and, throwing his skin on one side, stripped all the meat off his bones. Then they lay down to rest. Ungutnika was not, however, by any means done for. His skin and bones remained, and in front of the dogs, very much to their surprise, the skin came and covered the bones and he hopped away. Three times the same thing happened, but, finally, they managed to kill him and carried him into Undiara, sat down beside the water-hole and ate him. They cut off his tail and buried it in the sand, close by, where it still remains in the form of a stone called *Churinga arura paira* (Fig. 54).

Churinga is the native word for secret or sacred, *arura* is a kangaroo and *paira* means tail. We knew nothing of this tradition at the time of the Horn Expedition, but two years later I traversed the same district with my friend E. C. Cowle who, as mounted trooper in charge of the Illamurta country, then patrolled this part of the Centre. My boy, who was himself a kangaroo man and knew all

about it, after making quite sure that no one else was near, took me alone to the place. Though there was nothing on the surface to indicate the position, he went straight to the spot and, after digging down for about a foot, unearthed it (Fig. 54). It was only a block of soft, white-grey sandstone, quite different from the hard quartzite forming the hills around, and must have been carried there from the sandstone hills further south on the Finke River. It was three feet long, one foot broad and triangular in section, with its two upper sides worn quite smooth by constant rubbing. A number of small blocks of quartzite close by represented the bodies of the wild dogs who died there.

It is, however, the recess itself, or rather a rock platform that runs across its lower part, that forms the central object of interest at Undiara. It has a length of about twenty yards and a height of ten feet (Fig. 53). The ground slopes steeply up to its base and, at the western end, a series of rough steps, partly natural and partly artificial, lead on to the upper surface of the ledge. The figure of the native in the illustration will serve to indicate the actual size of the rock. The vertical face is covered with alternate stripes of red ochre and white gypsum. The upper surface is dark, in fact black, in parts, with dried blood that has trickled over the edge and down the face.

There are many traditions concerned with the ledge and its surroundings, all of them relating to old kangaroo ancestors. All over the country of the Arunta tribe little groups of people are scattered, the members of each of which are especially associated with some animal or plant. Very often they are supposed to have been transformed out of the latter, in the far past mythic times which the Arunta call Alchera. Each of these ancestors finally went down into the ground, that is, he died. Some stone or tree arose to mark the spot, but his spirit remained behind, and so different places are now associated with these ancestors.

One spot will be inhabited by kangaroo, another by emu, another by gum tree, another by rat ancestors, and so on. Each of these animals or plants is spoken of as the man or woman's totem, for which the native word is *Knanja*. When a woman conceives a child at one of these totem places, it is the spirit of one of the old ancestors that has gone inside her and is born again in human form. When born, the child of course takes the totem of the ancestor of which it is the reincarnation, and time after time but at varying intervals—it may be after long years—this reincarnation takes place. The old men who are supposed to know everything will often decide upon the particular ancestor who has once more come amongst them in human form. Undiara is the greatest of the many kangaroo centres in the tribe. It is associated not only with men but also with animals, the rock ledge especially with the latter. Tradition relates how, in the Alchera, a great kangaroo wandered about. It was really an animal but, just like a kangaroo man, it carried a big sacred pole, called a *Nurtunja*, that men use in kangaroo ceremonies nowadays. A number of Kangaroo men gave chase and attacked it, but it was very strong and tossed them about in all directions. At length they killed it and placed it in the cave at Undiara, the rock platform arising to mark the spot, and into this its spirit passed. Later on, numbers of other kangaroo animals came and died here, their spirit parts also going into the rock. The natives have a firm belief that, by means of magic, they can control the increase of animals and plants, but it is only kangaroo men who can do this with kangaroos, only emu men with emus, and so on. At the present day, when the natives wish to increase the number of kangaroos, they come to this rock and perform certain ceremonies. First of all they decorate the face of the ledge afresh with white and red stripes, the red representing the fur of the animal, the white the bones. A number of the younger kangaroo men then



B.S.

FIG. 53.—UNDIARA.

The ledge of rock with stripes is the *Knanja* rock of a kangaroo, and the dark colour above the stripes is blood, which has been poured on to the rock during the ceremony.



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FIG. 54.—SACRED STONE CALLED ARURA PAIRA, REPRESENTING THE TAIL OF AN ALCHERA KANGAROO, BURIED IN THE SAND AT UNDIARA.

The smaller stone is used for rubbing the larger one during ceremonies.



B.S.

FIG. 56.—GRASS TREES ON MISSIONARIES PLAIN.

climb on to the top of the ledge. There, to the accompaniment of chants sung by the other men who are grouped on the ground below, they open veins in their arms and allow the blood to stream out on to the top of the ledge, whence it trickles down over the front. This is supposed to make the spirit kangaroos that live in the rock go out and give rise to real kangaroos.

Our camp at Henbury was close to the base of the James Range, and here ended our traverse of the Lower Steppes with their monotonous scrub-covered plains and Gibber fields, whose level outline was broken only by the flat-topped sandstone hills. We had been travelling slowly for more than three weeks across the plains, and it was quite a relief to be away from them and their limitless expanses for a time and to find our view hedged in by the great red, rugged masses into which the older Ordovician rocks of the James Range had weathered.

CHAPTER II

THROUGH LARAPINTA LAND

II. THE HIGHER STEPPE LANDS

FOR six days after leaving Henbury we travelled westwards to the south of the Krichauff Ranges, through which the Finke River cuts its way for more than thirty miles from north to south, in a deep tortuous gorge, to emerge at a place called Running Waters by white men and Larapinta by the natives, and thence meanders southwards across the Lower Steppe lands. It was the first time we had seen water that was really running, but it only ran for a very short distance and then disappeared under the sandy bed. Further again to the west we came to the Palmer River, flowing south from amongst the Ranges, and followed it up to an outlying cattle station in a valley hemmed in at its eastern end by Ranges, but opening out north-westwards on to the great desert plains, stretching away to the boundary of West Australia. To this valley, for some reason, Giles had given the fanciful name of Tempe Vale. With its permanent water-hole on the Walker River, it forms a pleasant contrast to the desert country to the south and west of the Ranges. The valley that broadened out north-westwards was shut in by rugged ranges and was about half a mile broad, where the little station was built. We spent a very pleasant day there with the owner, Mr. Thornton. A fence, built across it from north to south, had once transformed it into a great closed paddock, because the Ranges were too rough and precipitous for cattle to traverse them, but the natives were what is called "bad,"

that is, inveterate cattle-killers, and, though Mr. Thornton treated them generously, a combination of ceaseless depredations and bad seasons led to the abandonment of the station. The cattle were removed to Glen Helen in the northern part of the Ranges and the country reverted to its primitive state. From Tempe Vale we managed to find our way out of the hills, between the George Gill and Levi Ranges, and then travelled westwards along the southern base of the former until we came to Reedy Creek, one of a series of small streams flowing southwards into the desert country. The southern margin of George Gill Range formed a series of bold and really picturesque headlands, formed of hard and usually purplish-coloured sandstone, that dipped down under the great sandy plain stretching southwards to Lake Amadeus (Map 2).

The Ranges sheltered little rocky pools, margined by reeds and ferns and overhung by gum trees and Tecomas, while, every now and then, tiny streams actually trickled down the gorges amongst the hills. To the south, amongst the sand-hills, everything was as dry and sterile as possible, and the contrast between them and the almost verdant foliage amongst the rock pools was most striking. Within actually the space of a few yards we could pass from desert country into a luxuriant growth of reeds, ferns and flowering shrubs. Around the margin of the pools different forms of ferns, *Adiantum*, *Cheilanthes* and *Aspidium*, formed quite a carpet of green. Amongst the larger plants, pines, fig trees, white and purple flowering Tecomas and yellow flowering *Hibbertias* were growing freely. The surface of the water was flecked with the floating leaves of *Vallisneria* and *Potamogeton*. Little fishes (*Chatoessus horni*) were swimming about and, under stones, small frogs were safely hiding, and yet, within at most twenty yards of the margin of the pool, we could walk into the desert. From the sides of the water pool at Reedy Creek the rocks rose precipit-

ously, and it was quite evident that, in the rain season, the water poured down over them in torrents from the hills behind. After travelling for weeks across arid plains and amongst bare and rocky ranges, it was wonderfully refreshing to camp for a day or two in the midst of foliage that was really thick and green, and I have often regretted that we could not spend a longer time amongst, and explore thoroughly, these gorges on the southern slopes of the George Gill Range. I often intended to return to them but never had the chance. The natives evidently enjoyed them as much as we did. Whenever there was a flat rock surface, there we found traces of them in the nature of quaint drawings, done in red and yellow ochre, pipe clay and charcoal. I was especially struck with one of them (Plate I, Fig. 8). Crude though it was, it showed considerable ingenuity and a certain amount of imaginative capacity on the part of the artist, and, when its meaning was explained, we could readily enter into the artist's feeling. It may be said here that there are two very distinct kinds of rock drawings; one is what the natives call "play-about," that is, just done for amusement, another is called *Churinga*, or sacred. These latter are drawn at special places where only initiated men may go and are strictly tabu to the women or, as the natives say, *ekeirinja*. The curious thing is that one and the same design will be "play-about" in one place and *Churinga*, or sacred, in another. This particular drawing was done on a flat rock surface at the base of the cliffs near Reedy Creek, in a sheltered spot by the side of a little water-hole, where remains of fires and débris and roughly chipped stones, used for breaking bones, showed that the natives often camped. The drawing was done simply in black and white and was more than three feet in length. It was drawn upright on the rock and was much more distinct than is shown in the illustration. The artist was supposed



B. Spencer, del.

PLATE I.—NATIVE ROCK DRAWINGS AT AYERS ROCK AND REEDY CREEK



to be underground, looking up at an emu sitting on its eggs. The eggs were there—oval-shaped masses of black charcoal, outlined with pipe clay; the legs, with the three characteristic toes, were strongly outlined, as was also the tail, which was rather exaggerated. The breast of the bird was indicated by a series of white lines and, around the main drawing, a number of broad arrows indicated the tracks of the bird, walking round the nest. There was no attempt to draw the head and neck, probably because this could not be seen from below, though, as a general rule, the native is careful to represent everything that he knows is there, whether he can actually see it or not. The fact that the eggs had been laid at different times, and that therefore some of them were more advanced than others, was probably intended to be shown by the different sizes of the eggs as drawn on the rock. Other drawings represented animal forms, done very crudely. Some were entirely geometrical in nature, consisting of concentric circles, curved lines and dots.

We camped for two days at Reedy Creek, where the water-hole lay in a roughly semicircular hollow in the Ranges, open to the south and shut in to the north by precipitous rocks of dark red and purple sandstone. Climbing up the hill-sides, we could see the Ranges running away east and west with bold cliffs rising one behind the other, looking almost as if they were sentinels posted to prevent the encroachment northwards of the desolate, desert country upon which they looked out to the south. The creeks that run out from the Ranges, though their beds were of course quite dry, could be traced for a few miles with their fringe of gum trees, but, beyond this, all was parched and arid, and it is only for a very short time that, away from the hills, they contain any water. Ages ago, when the Ranges were much higher than they are now, these streams would be proportionally larger and, doubtless,

formed tributaries of some river that emptied itself into Lake Amadeus. At all events the line of watershed separating Lake Amadeus and the Lake Eyre Basin runs in such a way that streams from the south of the George Gill Range flow into the Amadeus Basin, and those away to the north into the River Palmer and so into the Finke River and Eyrean Basin (Map 2). On the other hand, all the streams from the Levi Range, just to the east of the George Gill, run into the Palmer. With the wearing away of the mountains and the gradual desiccation of the Central area, the streams from the George Gill Range have dwindled and dwindled until they are now vestiges and, instead of uniting, each runs out for a few miles on to the sandy flats and is soon lost.

While camped at Reedy Creek I had a good opportunity of seeing the tracking powers of the natives. I was out in the scrub with three of them in search of animals, when suddenly they came to a stop and began to examine the ground carefully. I could see no special reason why they became so excited and interested, as they were, but, when I asked them what was the matter, they told me that there was an old emu with young ones not far away. They said, holding up their hands with fingers extended, *tera-ma-tera-ninta*, which means five, or two-and-two-one, which is the limit of actual counting amongst Arunta natives. Then they held up another finger to show that there was one more. Then they separated, so as to cover as large an area of ground as possible, and off they started at a pace that made it quite difficult enough for myself, carrying collecting material and a camera, to follow, without bothering to look after tracks that I could not see and were only visible, on that hard ground, to the trained eye of the savage who had to find his daily food for himself. As they went along they kept talking, or rather signalling to each other, in gesture language as, one after the other,

they picked up the tracks of the birds wandering about, first in one direction and then in another, through the scrub. After about two miles' pursuit that left me more or less breathless, because the day was hot, they came to a halt and there, in an open patch in front of us, was the mother emu with her six young ones. The natives had, fortunately for the bird, left their spears in camp, so the mother, who made off at once, escaped, but, laughing and shouting like boys, the men chased and soon caught the little ones. They were quite young, not more than a foot high, with the striped, harsh plumage characteristic of the young bird. We carried them back to camp and took them on for some hundreds of miles in a box on camel back.

In order to secure most of the smaller animals the help of the natives is indispensable. Many of them are nocturnal or, if not strictly so, they come out only towards evening, but the natives know exactly where to find their burrows. On the hard, sandy flats skirting the range we found an abundance of mice and Jerboa rats. The body of the latter is about the size of an ordinary rat, but it has developed curiously long hind legs and hops along just like a diminutive kangaroo. Both the mice and the rats make a hole in the ground, just big enough to admit the animal's body. From this the burrow slants down for at most three or four feet, often only for a foot or two, and ends in a little chamber with a small amount of dried grass on which the animals, with their young ones, rest during the day. In the mice burrows (*Mus gouldi*) there was always more than one adult, two, three or even four, sometimes with broods of, usually, four young ones. The Jerboas (*Coni-*lurus mitchelli**) seemed to live alone. They also have the same number of young ones, with, often, two broods of different ages in the same burrow. The mice are just as plentiful as the Jerboa rats.

Side by side with the Jerboa is found the little marsupial called *Antechinomys*, which also has long hind legs and looks like a minute kangaroo. When dealing with *Antechinomys*, Mr. Lydekker¹ says: "this saltatory mode of progression having doubtless developed in accordance with the exigencies of the arid country inhabited alike by *Antechinomys* and *Hapalotis* (*Conilurus*).” Watching the animals in their natural surroundings I found it difficult to understand exactly what was the advantage gained by a small animal, such as a rat, from this jumping mode of progression. In the first place the running mouse and the jumping Jerboa live side by side, in the same arid, sandy country, both of them flourishing equally well. To a larger animal, such as the kangaroo, whose chief enemies are savages and wild dogs, it is doubtless an advantage to be able to go straight ahead, instead of having to dodge round tussocks of tall grass and low shrubs, such as its pursuer must. The little Jerboa rat is, however, far too small to jump over any but very low obstacles. The chief enemies of rats and mice, in these parts, are birds of prey, and what is of the greatest advantage to the former is the capacity to gain the shelter of a tussock of grass, or a shrub, as quickly as possible. A running animal can do this just as quickly as a jumper, possibly even a little better, because the run into shelter is a continuous one, whereas, when the Jerboa has made its final leap, there must be just a momentary pause before it starts to run, because only very rarely can it actually jump into shelter. A very slight difference in time when a hawk by day, or an owl by night, is in pursuit means the loss or saving of the animal and, probably, the real advantage of the jumping method of progression, amongst the smaller animals, lies in the difficulty that birds experience in pouncing down upon an animal moving along by irregular leaps and bounds. It has certainly

¹ "Marsupials and Monotremes," Allen's Nat. Hist. Library, p. 181.

nothing to do with the sandy and arid nature of the country.

As compared with the indigenous rodents—different kinds of rats and mice—the marsupials must be at some disadvantage. While they are travelling, it is not easy to distinguish in colour, size and mode of progression a small Jerboa from an *Antechinomys*. They live side by side in the same kind of country. The latter, which is very rare, is mainly insectivorous, but the former, which is mainly herbivorous, is, or was, met with in hundreds. In one very special respect a marsupial is always at a great disadvantage as compared with a rodent. Not only has it to carry the young ones in its pouch—and there may be as many as ten or twelve of these, the weight of which is a serious handicap when an enemy is in pursuit of it—but, in addition, if the mother loses her life, the young ones also perish, and that at an age when, in the case of a rodent, not only would the mother be free from them, but they would be able to take care of themselves.

At Reedy Creek we were on the very southern limit of the Higher Steppe lands; to the north of us lay the great mountain ranges and, away to the south, stretched the desert country of the Amadean Basin. Three of us, Dr. Watt, F. Belt and myself, under the guidance of Mounted Trooper Cowle, left the main party and, lightly equipped, travelled south with horses to examine the country around Lake Amadeus itself and visit the remarkable, isolated rock masses to which Giles, their discoverer, had given the names of Ayers Rock and Mt. Olga.¹ On our return to Reedy Creek, though not a drop of rain had fallen during the ten days that had elapsed since we were last there, I was very much surprised to find that the water had increased in quantity. Except during the very few days when rain is actually falling, running water is so very rarely met

¹ This part of the Centre is described in Chapter V.

with in Central Australia that its occurrence excites great surprise and interest. When we were camped with the camel team at this spot, there was a series of disconnected small water pools in the bed of the creek, as it came down the valley from the hills. A thin stream of water now trickled in and out of them, and the lowest pool, surrounded by bulrushes, was at least three times as large as it was when we were previously camped by its side. The only possible explanation of this is that there is a constant, small supply oozing out of the hills. For the greater part of the year the evaporation is so great that the supply is hardly enough to keep the pools filled; during the cooler winter months, when we were there, there is no evaporation for perhaps half of the twenty-four hours, or, at most, only a slight one taking place and, in consequence of this, the supply is just sufficient to maintain a continuous flow. If the desiccation of the Central area continues, the day will come when even the present small flow of water will become less. For a time, perhaps, there will be a few pools which, after a rainfall, will be filled with water, but the present slight flow, even during the cooler months, will cease, just as it has done already at Ayers Rock and Mt. Olga.

After a short rest at Reedy Creek on our return, we started off to traverse the Ranges. First of all we skirted the George Gill Range and then crossed a curious flat, called Petermann's Pound, between it and the Levi Range. The Pound was about two miles in diameter and roughly circular in shape. Everywhere, except on its southern side, it was shut in by hills, so as to form, with a fence running across its opening, a safe enclosure for cattle. It had, in fact, for a time, once been used for this purpose. From the Pound we took the horses across the hills until we reached Tempe Vale where we spent two days enjoying, once more, the hospitality of Mr. Thornton whilst we roamed about amongst the valleys and over the hills.

Tempe Vale itself is nearly 1800 feet above sea-level and the ranges enclosing it rise abruptly for another 500 feet. From the hills on the south we had a good general view of the country. At our feet the valley stretched away westwards for twenty miles, broadening out until it opened into the great plain stretching out towards West Australia. To the north of us line after line of hills, forming the Krichauff Range, ran east and west, separated from one another by a series of parallel valleys. The range on which we stood was furrowed by deep gorges, in many of which were little pools sheltered in their deep recesses from the heat of the sun which, even in the cooler winter months, is great during the day-time. In these I found little fishes—high up above the river running in the valley beneath, in positions such that no fish could possibly, unaided, climb into them. The only way in which they can get there is by being carried, most likely in the form of eggs, or at least when they are very young, on the feet of birds that are abundant immediately after heavy rain. The bed of the Walker was quite dry, except in the gorge at the east end of Tempe Vale, where there were one or two pools in which we secured a new species of fish (*Nematocentris tatei*) that we found afterwards in many of the pools scattered amongst the sheltered gorges of the Ranges. In the great majority of cases the fish, that are carried down the rivers at flood-time, find themselves stranded in pools that only last a short time, and then it is often only a question of a few weeks, or even days, before they perish. The same pool contained a little freshwater snail (*Melania balonnensis*), of which we had previously found the dead shells in the flood wrack piled along the banks of the Finke River further south, where there was no water. We had, in fact, as we very soon recognised, come into the part of the Central area which served as the reserve ground where freshwater animals could live during bad times and whence

other parts of the country could be stocked during good seasons and times of rainfall. I was rather surprised to find that, both here and elsewhere, the sandy margins of the pools were marked with ridges made by the mole cricket (*Gryllotalpa coarctata*) as it burrowed its way along through the damp sand. It was a somewhat strange spot in which to find this insect, which, with us in Victoria, always burrows in dry earth. In Central Australia its favourite haunt is the damp sand immediately around a water pool. We never heard it "chirping."

The valley was clothed with a poor scrub of gums, Cassias and Acacias. Amongst the scrub on the southern slopes were more open patches, dotted over with tussocks of porcupine grass. Here, and in many other places amongst the Ranges, the sharp, knitting-needle-like leaves of the grass are encased, sometimes partly but sometimes nearly altogether, except their tips, with red sand, by which the whole plant is practically hidden. Leading away from these sand-encased tussocks there were numbers of little tunnels also made of sand. Each of them had a diameter of from a quarter to half an inch. Sometimes they led from one tussock to another, sometimes they left the ground and led straight up to the trunk of a gum tree. On hard soil, where the tussocks were not too close together, they formed a regular network on the ground. These little tunnels or galleries, as they have been called, are very common and have attracted the attention of several explorers in Central Australia, but their connection with the tussocks had not been noticed nor indeed had they been examined. At Tempe Downs I had time to study them and found that they were made by a little ant that builds its nest around the base and roots of a tussock of porcupine grass.¹ Searching amongst the tussocks, I found a series of stages showing

¹ It has been described as a new species by Mr. W. F. Kirkby under the name of *Hypoclinea flavipes*.

the very beginning of the casing in sand and the final stage, when the tussock looks like a mass of sand tubes. The tunnels are evidently built so as to allow of the ants moving about without being exposed to the great heat of the sun. They must climb the trees to secure something that the insect wants, but I could not find out what this was. On the tussock a start is made in the form of a little cylindrical chamber, about an inch or less in length. It is built so that the grass stalk forms one part of the wall, a space being enclosed between it and the wall of the tube. The upper end is closed in and a small opening left at the lower end. Watching the ants, which are small and black-bodied with yellow feet, I saw them continually running



FIG. 55.—PORCUPINE-GRASS ANT CASE.

in and out of the chambers and, on opening some of these, found that they were built over two or more little *Coccidæ* that were attached to the blade of grass. Here, as in the case of the ants described by Belt in Nicaragua, the *Coccidæ* extract nutriment from the plant and the ants avail themselves of the exudation from the bodies of the *Coccidæ*, so that the arrangement is doubtless of mutual advantage. The *Coccidæ* gain protection from enemies such as birds, to whom by this contrivance they are rendered invisible; also they are shielded from the great heat of the sun and, at the same time, the ants get a supply of food without trouble to themselves.

After examining a large number of tussocks of grass, both at Tempe Downs and elsewhere, I came to the conclusion that the network of sand tubes, that sometimes encloses nearly the whole tussock, begins in a number of chambers built over the *Coccidæ*, which, very likely, are

brought on to the leaf by the ant—though I had no means of testing this. Covered passages are then made on the leaves, leading from one chamber to another and so, gradually, the whole tussock is enclosed.

Tracing the passages down to the roots, the ant nest was seen to be built round the latter. The nest consists of a roughly conical mass of material composed of sand grains firmly fixed together by resin obtained from the leaf sheaths of the porcupine grass. The largest nest that I dug up measured about eighteen inches in depth and a foot in diameter at the top. It was riddled through with irregularly arranged passages, some an inch in diameter, along which the eggs were lying about quite irregularly. Each nest contained larger and smaller winged forms, small black and larger brown-black wingless ones, but we could not find a trace of any other form of insect such as a beetle. It is difficult to understand how the ants actually make use of the resin, though there is no doubt that they do so. When the leaf sheath is handled, the resin sticks to the fingers, just like a varnish, and the ants must have devised some way of dealing with it so that, instead of sticking fast when they touch it, they can loosen it from the sheath and carry it away.¹

Leaving Tempe Vale, we retraced our steps to the junction of the Palmer and Walker Rivers and then, turning northwards, followed the winding course of the former as it came down across the Ranges. There was a succession of roughly parallel open valleys running east and west, and deep gorges running north and south where high precipices rose on either side of us, hemming in the narrow river bed. At times it was no easy matter to find safe

¹ Mr. Maiden, in an appendix to the Botany Report in the Horn Expedition volume, has shown that the nest is built of sand particles fixed together with resin, a coating of ferric oxide giving the whole the colour and appearance of a red-brown clinker.

footing for our horses amidst the jagged masses of rocks, of all shapes and sizes, that blocked the bed of the stream, or rather would have done so had there been any water flowing. It was now the dry season and there were only a few pools left. During the rain season the passage of these gorges is quite impossible. At night-time the cold was severe, though we were actually within a degree and a half of the tropics. The thermometer, when we were camped one night by the side of a little water pool close to the entrance of a gorge, went down to 16° F. We awoke at 5 a.m. to find our water bags frozen solid, and at this low temperature the thermometer remained until sunrise. Camped out in the open, we were always glad of a good fire between sunset and sunrise. An hour or two after sunrise we were glad to be on the sheltered side of the gorge. As we travelled northwards the Ranges diminished in height and the river valley broadened until, at the end of our second day's travel, we reached a spot close to the source of the Palmer. To one side of us the hills ran away to the north-east and on the other to the south-west. After camping for the night at the base of a hill covered with pines (*Callitris* sp.), we crossed a slight rise and passed out on to a plain, here about twenty miles in width, that separates the Krichauff Range from the Macdonnells. Westwards the plain opened out into the desert country stretching across to West Australia. Eastwards it narrowed gradually, as we found out later on until, some four miles to the south of Alice Springs, it is less than a mile wide. In the region of Hermannsburg it is known as the Missionaries Plain, further eastwards it is continuous with the Emily Plain. The vegetation on some parts of this plain was rather different from that of the country we had crossed hitherto and more interesting. In addition to the Eremophilas with their bright yellow, red and blue flowers, the Mallee gum trees were often thickly covered with a bright red flowering mistletoe. In

parts also, the scrub was quite refreshingly green with *Prostanthera* and *Currajong*, but the most interesting plant was a new species of grass tree (*Xanthorrhoea Thorntoni*). The stem of the plants is often five or six feet high. It is covered with a tuft of long wiry leaves and the flower stalk grows up for another five feet (Fig. 56). It is very local in its occurrence. There are a few specimens along the Palmer River and a considerable number on a narrow belt of country that stretches east and west along the Missionaries Plain for about seventy miles, but, beyond this, we did not meet with them anywhere else. In many cases we noticed that different plants were distributed sporadically. For example, we only found specimens of *Swainsonia canescens*, a little pea-flowered plant, in two small colonies, sixty miles apart, and of *Goodenia Horniana* in two places, one hundred miles away from each other. It is, of course, probable that these plants occur in other parts but, as a constant watch was kept every day over the very large area of country traversed, in various directions, by different members of the party, it is safe to conclude that they are very sporadic in their distribution and that they are relics of a once widely spread flora that have, under the gradually increasing desiccation of the country, been able to persist in certain favourable parts.

It took us a day to traverse the Missionaries Plain from south to north. Ahead of us we could see what looked like a series of round, smooth, grass-covered hills, calling to mind the Downs in the south of England, but when once we got amongst them we found that they were a series of jumbled hills, covered all over with porcupine grass, the tussocks of which were so close together that, seen from a distance, they gave the appearance of a smooth carpet of grass. Beyond these low hills we could see the higher peaks of the main Macdonnell Ranges, but it was dusk before we made our way into the near hills and camped for the night by the side of a small water pool. Next morning

we found a narrow cleft leading into the Horn Valley and another cutting through the ridge bounding it on the north and, turning a few miles to the east, into the great Mereenie Valley, soon met the main camel team at a deserted cattle station called Glen Helen.¹ It was three weeks since we had parted company and we arrived at our rendezvous within half an hour of one another, which was fairly accurate timing on the part of our respective guides, because both parties had been crossing difficult country comprising desert, sand-hills and rocky ranges, where there were no tracks and everything was as wild as possible and where, at times, travelling was anything but easy.

To our intense disappointment everything was as dry as possible and there was not a trace of the luxuriant vegetation that we hoped to find. There were, it is true, scattered water pools, but a yard away from their margins there was no more sign of moisture than on the parched lands of the Southern Steppes. The valleys were covered with the same poor scrub of *Acacia*, *Cassia*, *Grevillea*, *Hakea* and *Eremophila* as elsewhere.

The hill-sides were dotted over with small pines, and here and there the strikingly white trunk of a special kind of gum tree (*Eucalyptus terminalis*) stood out against the red rocks and blue sky (Fig. 57). This tree is very characteristic of the Higher Steppes, growing alike on the sandy flats and steep mountain sides right up to and on the very top. The trunk owes its colour to the presence of a perfectly white dust that comes off when rubbed by the hand; in fact the natives actually use this to whiten their head-bands, and locally the tree is known as the "Whitewash" gum. I have never seen any tree to equal this in its intense whiteness, and the

¹ The Horn Valley lies between the ridges of the Macdonnell Ranges numbered VII and VI on the map and section, the Mereenie lies between ridges VI and V. The position of Glen Helen Station is indicated by the number 44.

foliage forms dense, often umbrella-shaped, masses of bright green colour. At its base it usually has a large, white, swollen bole. Patches of native fig trees and the native orange (*Capparis Mitchellii*) and here and there groups of graceful cycads (*Encephalartos Macdonnelli*) varied the scene (Fig. 58), but there was no luxuriance, not a trace of anything like an orchid, and the only ferns seen were two hardy species of *Cheilanthes* growing in clefts and crannies amongst the rocks. Professor Tate discovered an interesting plant, however, high up on Mt. Sonder, called *Styphelia Mitchellii*. Its interest consists in the fact that, though at least one hundred and seventy species are known in Australia, this is actually the only one in the whole of the Central area. West Australia, with about one hundred and ten species, is the home of the genus, but this particular one is a Queensland form, a relationship between these two widely separated parts of the continent that is also noticeable as existing in the case of other plants and animals.

Close by our camp was a dry watercourse called Red-bank Creek. Following this up northwards towards the main range, the bed narrowed and the rocks closed in on either side until, turning round a sharp bend, we found ourselves standing by the side of a small deep pool of water, blocking the entrance to a wonderfully picturesque gorge. For half a mile this gorge (Fig. 59), which is nothing more than a zigzag cleft only a few feet wide—in fact so narrow that, in parts, you can touch each side with arms held at full length—cuts its way across the mountain range. Its narrow bed is filled with water, deep and very cold. On either side the red, jagged rocks rise precipitously, and between them can be seen a narrow belt of intensely blue sky. This is one of the most westerly of the gorges that form much the most striking feature in the scenery of the Macdonnell Ranges. Later on we saw more of them, but, though all were picturesque, none were so imposing as this.



B.S.

FIG. 57.—YOUNG SPECIMEN OF “WHITE-WASH” GUM TREE.

Eucalyptus terminalis.

Paisley Bluff in the background. The view is taken looking towards the east. Paisley Bluff lies in the northern ridge of the Macdonnell Ranges, the strata of which dip northwards.



F.J.G.

FIG. 58.—CYCAD (*Encephalartos Macdonnelli*) GROWING ON ROCKS.

At the present day the Redbank runs only for a very short time in each year and denudation must be at a standstill. The top of Mt. Sonder, the western flank of which forms the eastern face of the gorge, is two thousand feet above the level of the water and the stream must have worn its way down through at least this thickness of rock since first it began to flow.

Many years after our visit, the country to the north of this gorge was occupied as a cattle run. During a drought season the only surface water remaining on the run was the deep pool sheltered from the sun by its precipitous walls. Into the gorge the cattle and native animals—kangaroos, wallabies and emus—came to drink until finally they became so weak that they were unable to fight their way out again and were simply trodden underfoot by those that came in later. The remains of hundreds of animals were piled on the top of one another and their bones were buried under sand brought down during the next flood season. It may be that the extraordinary accumulation of fossil remains in limited areas, such as those of Iguanodons in Belgium, owe their origin to some such cause as this.

In one small pool, close to the southern entrance to the gorge, I found no fewer than six species of fish. There were numbers of them also in the larger and deeper pool in the gorge itself, but this little pool measured only about six feet in length and about four in depth. The water was absolutely clear and quite free of vegetable growth, and it was difficult to understand how the fish contrived to grow, unless they fed on one another, but they all seemed quite healthy and lively. They could have had very little to eat since the last flood-time and were all small in size. As a general rule the size of the fish in any hole is proportional to the size of the hole or, in other words, to the amount of food available. The fish were as follows:—(1) A species locally known as the “bony bream” (*Chatoessus horni*), the

most abundant in the Central area ; (2) a species of Therapon (*T. truttaceus*), silver-grey in colour with golden spots ; (3) a smaller species of the same genus (*T. percoides*), not more than three inches long and very noticeable because of its light silver colour and five strongly-marked dark bands running vertically on each side of its body ; both these species were originally described from Queensland ; (4) and (5) two small, thin-bodied fish closely allied to one another, *Nematocentris winneckeii* and *N. tatei*, with plain golden lines running longitudinally along the body ; (6) a small, but more strongly-marked fish (*Eleotris larapintæ*), yellow brown in colour with ten dark vertical bands on each side. The first five species were swimming about together and, as we noticed in other pools where we found the same fish swimming about in shoals, the little Therapon, with its dark bands, was the most prominent but also the most difficult to catch. When taken out of the water it made a small but quite distinct trumpeting noise. The *Eleotris* did not often swim about with the others but lay near the bottom of the pool—usually, in fact, resting on the sandy bed. We only met with one other species of fish (*Plotosus argenteus*) in the water-holes amongst the Ranges. The six above mentioned are widely distributed and are very characteristic of the region, no fewer than four of them being confined to the Central area. When rains fall and the flood waters from the Ranges flow down the river beds on to the Southern Steppes, they carry the fish with them to stock such water pools as may remain in favoured spots along the sand bed, but, sooner or later, the waters dry up and the fish perish. Once, in the James Range near Illamurta, I saw a small pool, only a foot or two across and a yard in length, that was rapidly drying up. It was so crowded with little bony bream that we could lift them out with our hands. They literally could not move without touching one another. So far as I could find, there was no species that had adopted,



Cayley, del.

PLATE II.—*Spathopterus (Polytelis) alexandrae*
Princess Alexandra Parakeet. $\frac{1}{3}$ nat. size



like the frogs, the habit of burrowing so as to tide over a dry season. This is to be associated with the fact that there is really no mud along the creeks, the beds of which are often many feet deep in sand, which is not suitable for forming anything like a permanent burrow. Such mud as there is, though it is rather like silt than mud, is to be found on the clay pans, but these are away from the river courses and I never saw a single fish in them.

There was, however, one most interesting bird that by good fortune Kearthland, who was untiring in his work of collecting and skinning, secured. In 1863, Waterhouse, who was with McDouall Stuart on his overland expedition, when he succeeded in crossing the continent, discovered a beautiful new parakeet. It is the most lovely and delicately coloured, as it is the most rare of all parakeets, and belongs to a small group characterised by the length and narrowness of their tail feathers, which, as compared with other parakeets, add to their graceful appearance. Its native name is "Inilturung," which means long tail. A full-grown bird has a total length of seventeen inches, of which the tail measures more than eleven. Delicate shades of rosy and coral pink, moss-green, cobalt and purplish-blue, blend together in such a way as to render the bird less garish in its colour than any of our other parakeets (Plate II). Gould named it *Polytelis alexandræ*, and, from that day to when we camped at Glen Helen, it had completely disappeared. We were, of course, keenly on the look-out for it and, when one of our party reported seeing a long-tailed bird that he did not recognise, there was much excitement in camp and we all set out in various directions, acting under instructions from Kearthland. Even the cook, Laycock, forsook his pots and pans and joined in the *Polytelis* hunt. I fancy, from a peculiar twinkle in his eye when we returned, tired and birdless, after an hour or two's vain search, to find him sitting quietly in camp skinning fifteen specimens,

that our ornithologist had wisely sent us out where we were not likely to do much damage and had himself gone to the place where, with his knowledge of bird habits, he thought the parakeet was most likely to be feeding. Anyhow he, and he alone, secured a fine series. This was in June 1894. For years after that the bird again disappeared until, in 1905, it reappeared, far away to the south near Oodnadatta. It feeds on grass seeds, more especially those of the porcupine grass, which shows that it normally inhabits dry and sterile country, such as is avoided, as far as possible, by man. They certainly have a very remarkable habit of never appearing in the same part of the country during two successive years, in fact, when they do come, they make their appearance suddenly and mysteriously, and as suddenly and mysteriously disappear, but whence they come and whither they go, no one knows.

A day or two's work amongst the Ranges around our camp near Mt. Sonder showed us clearly that we must, once and for all, abandon all hope of finding a rich, or even a specially interesting, fauna and flora amongst the Macdonnells—at all events at that time of the year. A yard, indeed a few inches, away from the water pools, everything was as dry as possible. We turned up stone after stone and searched in every nook and cranny, only to find ants, scorpions and beetles, few in species but abundant in numbers. Lizards, of course, were more or less plentiful, Geckoes and various kinds of Skinks preponderating.

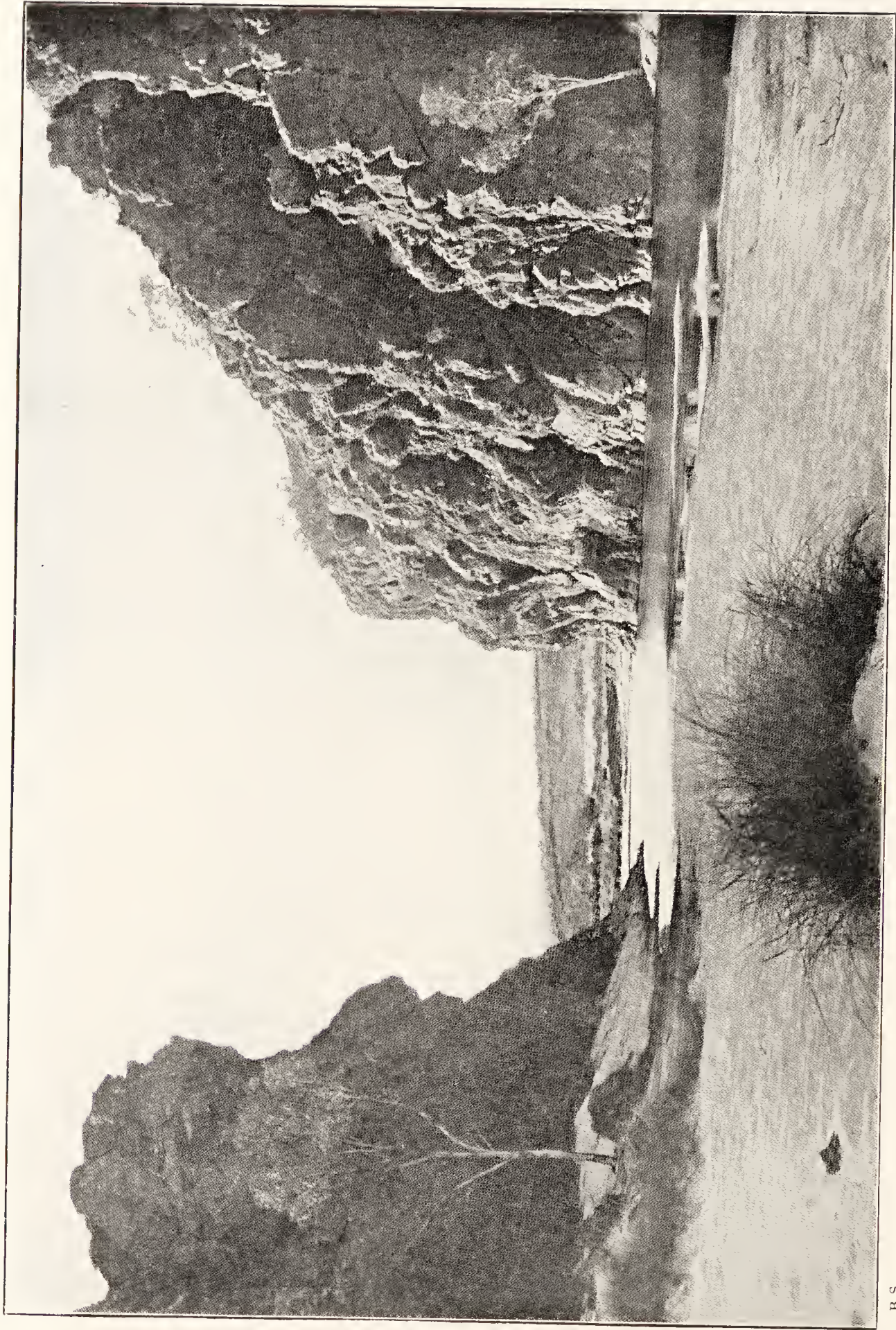
After a short spell near Mt. Sonder we decided to follow down the Finke. This would give the geologists another opportunity of making a traverse of the Ranges from north to south, and, as for those of us who were interested in other branches of science, well, we felt that things could not be much worse or more unpromising, so far as the making of any important discoveries was concerned. We decided to travel eastwards at the base of the main ridge until we



B.S.

FIG. 59.—REDBANK GORGE. WESTERN MACDONNELL RANGES.

MAP 2 AND BLOCK DIAGRAM. No. 2.



B.S.

FIG. 60.—FINKE GORGE.
MAP 2 AND BLOCK DIAGRAM. No. 10.

struck the Finke, which is formed by the union of three creeks, the Davenport, Redbank and Ormiston. These three run through the main ridge from the watershed lying to the north (Map 2). The Redbank junctions with the Davenport, which then flows eastwards until it meets the Ormiston, and then the Finke, thus formed, turns abruptly south, passing, in succession, through three gorges, of which the northernmost, and also, though the shortest, the most abrupt, is called the Finke Gorge (Fig. 60). It is gorges such as these that, when they are dry, afford the only means to travellers of crossing the Ranges. We were travelling on the north side of the Range through which the Finke Gorge cuts its way and, to our surprise, found ourselves blocked by a pool of water that made it impossible to take camels through, so there was nothing for it but to retrace our steps and go twenty-five miles round until the Range was low enough for us to cross. Fortunately we found a place where we could do this and, towards evening, camped on a slight rise in the Horn Valley, not far from the southern entrance to the Finke Gorge. We were not more than two hundred yards from the northern margin of the pool where we had been blocked in the morning. We could work east and west along the Horn Valley. To the north of us was the water pool with red rocks rising abruptly from its margin (Fig. 60). To the south the river, after crossing the Horn Valley, passed through a second range by way of a wider shallow gorge where its bed was bordered by steep banks, covered with scrub, behind which again rose the steep cliffs. In this part the few water pools were decidedly brackish, though they were fringed with reeds and contained the same kind of fish that we had already caught in the Redbank. The only fresh water was a little spring on the steep western bank of the southern gorge, and around this there was actually a patch of black earth—the only one that we had so far seen and one of the very few that we met with during

our journey. In this, and in a similar patch further south, I found the only earthworms that are known, apart from imported ones, to exist in Central Australia. All through the expedition I searched in every likely and unlikely spot, but only found them in just these two places. Each patch of ground measured only a few square yards in extent, and, from this, some idea of the remarkable local and sporadic distribution of animals in Central Australia can be formed. The worm (*Notodrilus eremius*) is of great interest, because it belongs to a genus that is found in only very few parts of Australia, widely separated from one another. It is characteristic of New Zealand and is found also at the Cape of Good Hope and South America. It is a very old form and evidently came into Australia by a land bridge that long ago stretched northwards from New Zealand to junction with an ancient land surface that, at that time, included what is now New Guinea and the North of Queensland, which latter, later on, became separated off from the northern part and now forms Cape York Peninsula. By way of this bridge a certain number of animals migrated into Australia, not directly from New Zealand, but first of all into the Papuan region and then south by the old land connection across the present site of Torres Strait. A very remarkable feature is that only this one genus of earthworms should be represented in Central Australia, and we may feel quite certain that it is not a recent importation. Australia is peculiarly rich in many other forms of earthworms, but not one of them, except such as have been taken there by man, has found its way into the Centre.

Two years ago I found a large number of a common English earthworm at Alice Springs. This worm originally came out from England in what were called "Woodwardian cases," made to carry fruit trees, with soil around their roots, from England to the colony that was then known as New Holland. There is exactly the same

competition going on, though unnoticed by us, amongst the lower as amongst the higher animals. The rabbit exterminates the kangaroo by taking its food and, in the same way, the English earthworm is now exterminating the indigenous Australian ones. In earlier days the latter, that are now peculiar to the continent, were developed in Australia from more primitive forms and took possession of the under-soil, only a very few of the original ones persisting in isolated spots, such as the Finke Valley. The centre of the continent must for long ages have been separated from the moister, coastal districts by a barrier of dry land impassable to earthworms. Even such an insignificant-looking animal as a little earthworm, like this *Notodrilus eremius*, not more than two inches in length, may form a very important piece of evidence in regard to former distribution of land in the old Australian continent before the present age of desiccation set in and may, also, afford some clue as to the length of time over which desiccation has extended. It could not possibly travel now across the wide stretches of inhospitable country that separates it from its allies on the east and west. Such travelling must have taken place at a time when the Central area was well watered and at a time prior to that at which the earthworms, now characteristic of Australia, except the Central area, had arrived on the scene, or else they would have found their way across.

We spent two days camping in the gorge with only poor results and then moved south again, following the Finke through its gorge on to the Missionaries Plain until we came to a number of dilapidated buildings, at Hermannsburg, representing what had once been a Lutheran Mission Station, but was then deserted and fast falling into ruins.¹ There

¹ This was reopened later on and is now completely rebuilt and once more used as a Lutheran Mission Station. For many years, until his death in 1922, it was under the charge of the late Rev. C. Strehlow, who in 1912-17 published important work dealing with the Arunta and Luritcha tribes.

was one white man in charge of the place but the natives were scattered. In this part, as at Tempe Downs, the natives of two tribes foregather—the Arunta and the Luritcha.

The broad Missionaries Plain, here about fifteen miles across, was very uninteresting. Except for the small isolated Gosse Range and one or two small hills such as Pine Point, there was nothing but great, undulating, sandy, flat country across which, from any rise, the course of the Finke, Ellery and Hugh Rivers could be traced, with their wide belts of gum trees and surrounding scrub of Cassias, Hakeas, Grevilleas and Acacias. (Diagram 2, facing p. 128.)

Looking south from the old Missionaries Station, that was built on a high bank above the Finke, we could see the river trending away south to the Krichauff Ranges, three miles away over the flats. It looked just as if it ran up against the hills that rose abruptly from the plain and ended there, but, in reality, it entered the northern front of the Ranges, to run across them, through a gorge winding and twisting about, just as if it were meandering over level country, until it once more emerged, forty miles to the south, to meander slowly across the great southern plains on its way to Lake Eyre. This remarkable gorge was discovered by Giles in 1872. He found a small colony of palm trees in it, the only one of its kind existing in Central Australia. It is curious and interesting to follow the course of the Finke River. Starting in the north we have the three streamlets already referred to—to the west the Davenport, in the middle the Redbank and to the east the Ormiston. Each of these cuts its way in a deep gorge straight across the main range of the Macdonnells: as soon as it has done so, the Davenport turns east and is shortly joined by the Redbank; the stream, still small, junctions with the Ormiston, and the Finke, thus formed, turns southwards and cuts, in a second series of gorges, across the two ridges bounding

the Horn Valley north and south. To the south of these it has clear running across the Missionaries Plain, receiving, every now and then, a small branch, such as Rudall Creek, but making no attempt to flow along the great open valley east and west; in fact it looks as if it were deliberately running across this to reach the hills that rise abruptly from the plains. It is a pity that the name of Finke Gorge has been applied to the smaller northern one and not reserved for the really remarkable one by means of which it crosses the Krichauff Range. On its eastern bank it receives the Ellery Creek, the course of which is closely similar to that of the Finke itself, running across the Missionaries Plain and then through a great, meandering gorge in the Krichauff Range to junction with the Finke. Flowing into the latter from the west, along a short lateral valley, is the Palm Creek.

Leaving the main party camped at the Missionaries Station, Tate, Watt and myself started off to visit Palm Creek. Just below the station there were shallow pools of brackish water and another of fresh, across which the natives had piled lines of stones so as to form a trapping ground for fish. We entered the main gorge some two miles to the south of the Mission Station and followed its windings for ten miles between lofty, picturesque cliffs of red sandstone, which sometimes hemmed the river in closely but at others receded, leaving room for banks of sand covered with bushes. At intervals, side streams came down through gorges that they had hollowed out for themselves. Most of these streams were small; in fact the only one of any considerable size was Palm Creek. There were a few pools of water, and on one of these we counted a flock of nearly seventy teal and duck. We camped, first of all, near the entrance to Palm Creek, at the foot of fine gum trees and palms, with a picturesque background of rock, broken into great red blocks, piled one upon another to form lofty pinnacles. Next morning we wandered further on down the

main stream. There were a few scattered palm trees, about a dozen in number, but not a sign of a young one. Whilst Watt geologised, Tate and myself devoted several hours to a search for land shells, which are by no means easy to find, unless you know exactly where to look for them. Heaped up along the side of the gorge was a talus of material weathered and broken away from the cliffs above. It was now covered with fig trees and smaller shrubs, such as *Indigofera*, but everything is so dry that you would not at first think that so tender-bodied and damp-loving an animal as a snail could possibly exist. However, we set to work, lying down flat under the shrubs, and, by dint of carefully scraping away the loose earth under the dead leaves around the roots, we found several species, of which a little bulimnoid shell (*Liparus spenceri*) was new. Some of the species were so small that, in order not to miss seeing them, we had to search through the débris with the point of a knife blade. Though we searched with equal care in many other parts of the Centre we only met with this one colony of the *Liparus*, confined to a few square yards under the shelter of the fig trees on the Finke, another instance of the sporadic and extremely limited distribution of many of the animals and plants in this region.¹ Next day we shifted camp and went westwards up the bed of the Palm Creek. At first the gorge was comparatively open, but, after traversing two miles, the hills closed in and formed a fine semi-circular sweep of red, precipitous cliffs that rose abruptly from the rocky bed of the river. On the northern side the rocks were covered, in their lower parts, with a thick growth of Cycads, while a few odd Palms had managed to establish themselves in clefts, right in the rocky bed of the creek.

Passing out of the Cycad gorge, the valley opened a little,

¹ For a description of the Mollusca of this region see Tate in "Horn Expedition Report," Pt. II, p. 181; also Hedley, *loc. cit.*, p. 220.

where a small stream came down from the south, but soon closed in again to continue as a long winding gorge leading back amongst the hills. A little way up this we fortunately found a sandy patch, just large enough for us to camp; everywhere else there was nothing but hard, smooth rock with cliffs rising abruptly on each side. A few yards from our camp was a pool of water surrounded with rushes. On the north of this, sheltered by a hill, was a belt of scrub, and rising above this the palms stood out (Figs. 61 and 62). Almost all of them were on the north side of the gorge and there were very few except in this one place. All told, it is doubtful if there were more than one hundred plants at the time of our visit. A very surprising feature was the great rarity of half-grown plants, but there was a fair number of seedlings, a foot or so in height, growing amongst the clefts. This would seem to show that the great majority of these young ones must be torn out and carried away at the rare times when a flood comes down the gorge. Strangely enough, this semi-tropical plant may, at the present time, be dependent for its continuous existence in this little oasis amongst the mountain ranges on the occurrence of two or three dry seasons which allow of the seedlings sending their roots down deeply enough between the cracks, in which alone they grow, to allow of them withstanding the pressure of flood waters to which, fortunately for them, they are only subjected periodically. There is no sand, or soil, in the gorge, except the small amount that finds a safe shelter in cracks and crevices, in which the seedlings live; and, judging by the heaps of *débris* piled up against the tree trunks, the flood waters must come down with great force. Seeds are there in plenty and must be washed in considerable numbers into the main channels of the Finke. It would naturally be thought that they would readily germinate there, because, apparently, the conditions are precisely the same as along the short stretch of Palm Creek in which

they flourish, but, evidently, there is something that acts as a check, and there was not a single seedling to be found along the main Finke Valley though they were numerous in Palm Creek Gorge. It may be partly due to the absence of sand and soil and partly to the fact that the drying-up waters of the Finke are often decidedly brackish.¹ The seedlings have leaves of a very characteristic warm, indian-red colour. A photograph, such as the one reproduced, with its imposing water pool (really only a small one) and its group of palms rising above the scrub, conveys the idea of a semi-tropical scene; but, in reality, there is none of the damp luxuriance characteristic of tropical life and, as usual, a yard or two away from the water edge everything was as dry as possible.

This special palm (*Livistona Mariæ*) is closely allied to the common cabbage palm (*L. australis*) of many other parts of Australia, more especially the coastal districts of the east and south-east, and is evidently, like many other Central Australian animals and plants, a relic of an earlier flora of a much more tropical nature that once existed in Central Australia but has largely disappeared with the increasing desiccation of the country. It is safe to say that it exists nowhere else save in this one very restricted area.

We spent three days quietly working in the pleasant surroundings of Palm Creek—the one really beautiful spot that we had seen. As the animals and plants are very characteristic of those of the Higher Steppes, it may be worth while noting a few of the more important ones that we found here and amongst the Ranges. Amongst mammals, rodents were represented by a little mouse (*Mus*

¹ I brought a large number of seeds down to Melbourne. They were planted in sandy soil in a nursery garden in Bendigo, where the climate is dry and hot in summer and decidedly cool in winter, and they germinated readily and produced thriving seedlings.



B.S.

FIG. 61.—PALM CREEK.
MAP 2. No. 48.



B.S.

FIG. 62.—GROUP OF PALMS AT
PALM CREEK.

hermannsburgensis), a new species.¹ There were two or three species of *Mus*, but, undoubtedly, the characteristic rodents of the Centre are the long-legged, jumping Jerboa mice. We found a new species, the size of a rat, called *Annomys pedunculatus*, characterised by the remarkable nature of its tail. For a short distance from its origin it is about four millimetres in diameter, then it suddenly swells out to twice this size and remains so for some distance, after which it very gradually tapers off. The tail is remarkably brittle and pieces snap off easily when it is handled, so much so that it is difficult to secure a perfect specimen. It is widely distributed over the Lower and Higher Steppes, but I never found it north of the Macdonnells. Rodents are far more abundant than the smaller marsupials and, in addition to the indigenous ones, the imported common mouse (*Mus musculus*) has now found its way into the Centre. Periodically one species will appear in enormous numbers, forming migratory hordes. A year later than this, in 1895, Mr. Byrne, writing from Charlotte Waters, said: "The Jerboa rats are coming from the east and they almost amount to a plague here." These periodic migrations of rats are well known in many parts of the dry interior of Australia. They march on and along a definite route, as the Lemmings do in Europe, appearing and disappearing almost suddenly. Those that escape the birds of prey that follow them, probably perish finally from lack of food and water, because, impelled by some instinct, they march straight ahead, utterly regardless of whether there be food or not.

Amongst the marsupials, the large red kangaroo (*Macropus rufus*) is constantly seen during good seasons on the open flats, the Euro (*Macropus robustus*), a smaller animal, being

¹ For the identification and description of these see Waite, "Horn Expedition Report," Pt. II, p. 393. For nomenclature see also Thomas, "Ann. Mag. Nat. Hist.," Sec. 7, vol. xvii., p. 81.

confined to the rocky hill-sides, never descending to the plains, just as the larger one never affects the hills. Formerly the Euro of South Australia and the Wallaroo of New South Wales were considered as distinct from one another, but the difference between the two appears to be one of colour only, the Euro having a decidedly reddish tinge, the Wallaroo being grey in colour, though intermediate variations apparently occur. In the Centre every specimen has a very distinct ruddy tinge. The larger kangaroos vary much in number, according to the season. In the great drought that preceded the year 1901, thousands of them must have perished. How severely they were affected by bad seasons may be judged from the fact that, during the whole of the time spent by Gillen and myself during that year in traversing the Centre, from Oodnadatta to Powell Creek, we actually saw only two specimens of the large lowland form (*M. rufus*). Along with the Euro, and more abundant than this, there were many rock wallabies (*Petrogale lateralis*). They have definite "runs" along the hill-sides and are often to be seen scampering along at a great speed. On the George Gill Range, rock surfaces along these "runs" were, in places, highly polished by continuous friction of the feet of these wallabies. Their body is about two feet in length and they can be easily recognised by the light line on each side of it. It is commonly found in West Australia. Four that we captured were females, each of them with only one young one in the pouch, so that evidently this is the normal number. On the flats amongst the Ranges we sometimes met with the "hare wallaby" (*Lagorchestes conspicillatus*). It is commonly known as the "spectacled" wallaby because it has a chestnut-coloured ring round each eye. On the same sandy flats we also found one of the "nail-tailed" wallabies (*Onychogale lunata*). The most remarkable feature of these animals, which have a total length of about three feet, body and tail included, is

the presence of a curious, horny spur on the end of the tail which is known elsewhere amongst mammals in some specimens of lions. Unfortunately, I never secured the animal alive and the use of the little spur, which is really only a little blunt knob, is quite unknown. Probably it has none.

One of the most interesting, and also one of the rarest of the small marsupials, is the so-called jumping-pouched mouse (*Antechinomys laniger*). It is a very pretty, graceful little creature, but only superficially like a mouse. In the first place its nose is long and pointed and its teeth are adapted for eating insects. Its body measures from three and a half to four inches in length and its tail from five to six inches. The latter is slender with a tuft of black hair on the terminal inch. Its hind legs are very much longer than its fore legs; in fact the latter are not used in locomotion any more than those of a kangaroo. Apart from the fact that it is very rare, its strictly nocturnal habits are against its being often seen. One bright moonlight night while sitting out alone in the open on a stony plain at Charlotte Waters, where all was perfectly quiet, I saw a little animal darting about. Its movements were so rapid that, until it came close to me, I could not tell what it was, but I saw then that it was an *Antechinomys*. The little creature was evidently curious and, as I remained absolutely still, it jumped about from side to side, stopping every now and then apparently to look at me. It stood on its hind legs, with its body nearly erect and its tail curved upwards so that it did not actually touch the ground. In proportion to its size the space of ground that it covered when jumping was remarkable. Its movements were so rapid that it was difficult to follow them. It would perch itself on a stone, stand erect and look at me and then, like a flash, jump away for quite six feet. It lives side by side with the Jerboa mice, but, for some reason, it does not flourish as they do and is just as rare as they are common.

The only way to secure many, indeed most, of the smaller marsupials is by the aid of the natives, who are perfectly well aware of their habits and not only know where they hide, or burrow, but, from a slight examination of the sand at the entrance, will tell you at a glance whether the owner of the burrow is at home or not. All the animals, except the very small ones, are useful to the native for food, but some of them, in addition, provide him with material that he uses for ornament. Almost every native has one or more tassels that he wears, hanging down over the forehead or suspended from the waist girdle, and made from the tail tips of the rabbit-bandicoot (*Peragale lagotis*). Its popular name of "rabbit" is due to its large ears, otherwise it has no resemblance at all to this animal. It has a long pointed snout, with many front teeth and strong canines, and feeds indiscriminately on vegetables, insects and grubs. The fur is long, silky and soft and generally grey-coloured, with here and there a rufous tinge, save on the under side of the body, where it is white. The ears are almost naked so that the blood gives them a pinkish tinge. The most striking feature, however, and the one that gives it its value in the eyes of the native, is the tail. The basal third is grey, the middle third is black and the terminal third is marked by a prominent crest of white hairs on the upper side. The natives only use the latter. They cut off the flap of skin that carries the crest and twist it round and round in such a way that it forms a small brush of long white hairs. Sometimes as many as twenty of these little brushes will be tied together to form a tassel, which, as also the brush itself, is called *alpita*. In many parts of the Centre the burrows of the animal, which lives in colonies, are very extensive. Each one has an entrance two or more feet in diameter, around which the soil is raised in great heaps. It must be a prolific breeder, otherwise the constant depredations of the native would have exterminated it long ago, because the

alpita tassels are to be counted in hundreds. It spends the day-time asleep at the end of its burrow, which runs along for some little distance, close to the surface of the ground. The native soon finds out where it is and the direction in which its burrow runs, and stamp on it so as to block it and prevent the animal from escaping, and then they easily dig it out.

At Alice Springs we secured a new species of pouched mouse (*Phascologale macdonnellensis*) with a remarkably swollen tail due to the deposition of a mass of fat and elastic tissue. What the use of this is it is impossible to say, and it is present at all times of the year. The little animal is by no means easy to secure, because it lives on the hills amongst the great boulders: also it is nocturnal. The first specimen we saw was caught by a cat at Alice Springs. Later on the natives got two or three more, so that I was able to draw its colours from life (Plate VI).

At Alice Springs the natives also procured a large white bat that they call Erlkintera, a name that later on Gillen and myself became well acquainted with during the performance of totemic ceremonies. Though very light coloured, it is not really white but a very light, almost creamy, grey, and measures as much as twenty-six inches from tip to tip of its extended wings. It lives in caves amongst the Ranges and had only once before been found, in Central Queensland. Years later I found it at Oenpelli on the East Alligator River in the far north. Though it has no prominent canine teeth it feeds on rats and small birds, and will even eat grasshoppers. At Oenpelli a few of them inhabited a shed and made the place very dirty with discarded bones and feathers. Plate V represents a head, life-size, drawn from a living specimen at Alice Springs. It is now known as *Macroderma gigas*.

Amongst the birds that interested us most were two or three kinds of pigeons. One that is popularly known as

the rock pigeon (*Lophophaps leucogaster*) has a curious habit of lying close to the ground. Apparently it never perches in trees and, so long as it remains quiet, it is very difficult to detect amongst the sand and stones, the colour of which it closely resembles with its yellow and brown markings. Often our horses or camels would put their feet down within a few inches of the birds, when they rose with a whirr and then glided away quietly for thirty or forty yards. The crested bronze-wing (*Ocyphaps lophotes*) was common and very often met with near water-holes, both during the day-time and at evening. It flies about in small flocks, and, when coming to drink, the birds alight on the ground near the water and then, forming a procession, run singly down to the pool. One day, sitting quietly by the side of a water-hole in the bed of the Rudall Creek on the Missionaries Plain, during our midday halt, we watched more than twenty of these birds alight on a rocky bank on the opposite side of the pool. They spent a few minutes preening themselves and then, one after the other, ran down a little track that they had worn out for themselves to the water's edge. There was never more than one bird drinking at the same time. As soon as each one had finished it ran up to the top by another track, whilst a second bird ran down the old track. They waited for one another on the top of the bank and, when all had been to the water, they gathered together and flew off.

There are, amongst the smaller birds of Australia, none that are more lovely than some of the superb warblers—that is, the males in full plumage; the females and young are very drab-coloured, the male only attaining his full plumage when quite mature. Three different species inhabit the Ranges, of which the one called the Black-backed Warbler (*Malurus melanotus*) is perhaps the most beautiful, with its brilliant cobalt-blue throat and under surface and a band of velvet-black across the chest. Lambert's Warbler (*M.*

lamberti) is also striking on account of the presence of a patch of cinnamon-brown, edged with deep cobalt-blue, on the top of its head. As usual they fly about in small flocks that are often composed of two or even three species. Each flock will consist of a few fully-fledged males and a large number of females and immature birds. They prefer dense undergrowth, the males, especially, keeping under shelter, as otherwise their brilliant colours at once attract the attention of the hawks that are always hovering around.

Lizards and fish I have already referred to, and there was nothing of any special interest about them at Palm Creek, except that in the water pools we found the same six species of fish that we had previously caught at Redbank Gorge. Insects were very disappointing; in fact there is only one time in Central Australia when insects are really abundant, and that is just at the time of a heavy rainfall. During our three days at Palm Creek we collected forty-five species, of which, however, twenty-five were new ones, but there was not a single attractive one amongst them: all were small in size and dull in colour. The most surprising thing about them was the very small number that we secured on flowering shrubs. In many cases the Cassias were brilliant with masses of yellow blossom, but there was not a single insect to be found amongst their flowers, with which may be associated the fact that very few seed-pods were produced, and those that were contained only ill-formed seeds. The only beetles really numerous were a few species of Curculios, or weevils, some of them hanging on to the twigs, others hiding in cracks on tree trunks. A little Carab of the genus *Tachys*, a small black and a larger black and red species of Staphylinid, or devil's coach-horse beetles, were always to be met with under stones by the side of water-holes; in fact we got quite tired of seeing these and usually no others.

Whilst at Alice Springs I heard a good deal about an

animal known locally as the "barking spider." Nothing could persuade the bushmen that a spider could not, strictly speaking, "bark." There certainly were spots where the noise that they called by this name could be heard, and the evidence in favour of its being made by the spider consisted, apparently, in the fact that the noise had been heard at night, and that, on examining the spot next morning, burrows containing the living spider had been found. Probably the great size of the latter had something to do with the belief. First of all I located a little flat in the scrub some miles away from the station at Alice Springs, where the barking was heard and where the natives showed me openings in the ground leading to the burrows which the spiders make. In company with Mr. Besley, one of the operators, and, like everyone else, a firm believer in the "barking" theory, I spent a night in the scrub lying in our rugs on the ground amongst the burrows. We certainly heard not a "barking" but a "booming" sound, which Mr. Besley said was that attributed to the spider. It was always some little distance away, and when we went near to where the sound seemed to come from it ceased, and then we could hear it further away. There was little doubt but that it was made by a bird, most likely a quail, which is abundant after rainfall, when also the bushmen say that the spider "barks" most. We dug up some of them. The hole on the surface leads into a burrow an inch in diameter, ending, about a foot or a foot and a half below, in a small spherical chamber, in which the spider remains during the day. It contained remains of beetles that had probably tumbled into it. The spider was a species of *Phlogius*, and I kept some in captivity, but there was no "barking," but, one day, teasing a large one with a piece of straw, it became angry and, lifting its body up, rubbed its palps against its mandibles and made a slight but distinctly audible whistling sound. Examination showed that

it had a series of spines on the mandible that could be rubbed across a row of keys on the palp, making a stridulating noise that was probably more audible to many other animals than to human beings.

Amongst plants in addition to the palm, cycad, white-wash gum and the pine, all of which grow on the hill-sides, the most characteristic are those that inhabit the gorges and take root amongst the piles of broken rock fragments that form the talus, beneath the steep escarpments of the Ranges. The chief amongst these are species of *Ficus*, *Capparis*, *Hibbertia*, *Indigofera*, *Tecoma*, *Cassia* and *Eremophila*, all of which form good-sized shrubs; whilst amongst the smaller herbaceous plants are species of *Ptilotus*, *Crotalaria*, *Aster* and the ever-present *Triodia* or porcupine grass. Out of seventy flowering plants that we found growing on the Ranges no fewer than sixty-three are confined to this Central area of the continent. Yellow is the prevailing colour, though, every now and then, large patches of white, pink and purple everlastings (*Ptilotus*) gave a little variety to the colour of the usually dull scrub, and a little cluster of red *Hakea* or mistletoe blossom caught the eye, simply because any colour, other than the prevailing monotonous dull green, was welcome. The only trees that reach any height are the palms, which are from fifty to eighty feet high, and the gums, of which, as usual, the red gum (*E. rostrata*) is confined to the beds and banks of the streams. On the other hand, *Eucalyptus terminalis*, the "whitewash," grows right on the Ranges and, with its dazzling white trunk, forms a very characteristic feature in the vegetation. Though it seemed rather like desecration, we cut down a palm, as we were anxious to find whether, as in other parts of Australia, the sheathing leaf stalks harboured any special form of animal, such as snails or land Planarians. After carefully removing and examining every leaf and its stalk, our efforts, spread over three hours, were rewarded by the

finding of one cockroach and one bug. It was only one of the numberless times on which we realised that Central Australia was often far from being a happy hunting ground for the Zoological collector and, what was more disappointing still, was the fact that very few animals had adopted any special provision to enable them to persist under most trying circumstances of heat and drought. For the most part it was simply the case that, if an animal were hardy enough to tide over bad times, then it did so—only very rarely indeed, as in the case of the burrowing and water-holding frogs or the operculum-forming snails, was there any attempt made, on the part of the animals concerned, to adapt themselves in any special way to a dry climate.

Except Palms and Gums, the trees are only small ones, though occasionally an *Acacia salicina* may reach a height of forty or fifty feet (Fig. 63). This is certainly the most graceful of all the Acacias and is widely met with, but especially on the Northern Steppes, on the flats between the mountain ranges. Perhaps the finest specimens we found were those just to the south of Heavitree Gap near Alice Springs. Its wood is very hard and durable, hence its local name of ironwood, and even now, anywhere near a little settlement, such as Stuart, it is rapidly being cut down and used for building posts, fences and firewood. If there were a population of any size it would very soon be wiped out. On some trees the leaf stalks, which are flattened out and take the place of leaves, are thin and long and hang down below the level of the twigs, leaving the latter bare above, giving the whole tree a striking resemblance to a weeping willow. There was a remarkable difference amongst the trees of this species of *Acacia* in different localities in regard to this feature.

After three days in Palm Creek we retraced our steps along the Finke to Hermannsburg and joined the main camel team which had remained there. Leaving the



B.S.

FIG. 63.—MISSIONARIES PLAIN WITH TUSSOCKS OF SPINIFEX GRASS AND *ACACIA SALICINA* OR IRON-WOOD TREES.



B.S.

FIG. 64.—PAISLEY BLUFF.



B.S.

FIG. 65.—SPENCER GORGE, MACDONNELL RANGES.

MAP 2 AND BLOCK DIAGRAM. NO. 7.

Mission Station, we travelled north-eastwards along and across the Missionaries Plain and struck the Ellery, in which there was then a good water-hole. Next day Winnecke, Tate and myself again left the party, intending to travel right across the Ranges to the Burt Plain on the north, the main party tracking east along the Missionaries Plain eastwards to Alice Springs. We were riding camels but had also two horses with us, and spent our first night at a dry camp. On the afternoon of the second day we got into a regular jumble of low limestone hills covered with porcupine grass, which, from the distance, gave them the same appearance of beautifully grassed hills that had struck us before on our return from Lake Amadeus, when we were approaching the same hills, far to the west of where we were now travelling. By good fortune, because it was just getting dusk, we found a little spring of water issuing from what Professor Tate identified as a conglomerate rock. The water was quite warm and only filled two little pools, each a yard long and a few inches deep, and then disappeared. The camels did not matter, but, fortunately, there was enough to water our two horses, and for this we were thankful and lay down to rest in a patch of Ti-tree by the side of a dry creek. Next morning we climbed the hill behind our camp to obtain a general view of the country. To the south of us lay the Missionaries Plain, stretching away eastwards and westwards to the horizon (Map 2 and Diagram 2). On the south it was bounded by the Ranges that we had left two days ago. Eastward the Ranges trended somewhat northwards, so as to narrow in the Plain, across which a distant streak of gum trees marked the course of the Hugh River. Looking to the north, we found that we were on the ridge forming the southern boundary of the Horn Valley. It was not more than a quarter of a mile wide in this part, and beyond and above the ridge bounding it on the north we could see the main

Macdonnell Ranges stretching away east and west, with Paisley and Brinkley Bluffs and Mt. Conway standing out conspicuously. We were fortunate in finding our way across the comparatively low ridges hemming in the Horn Valley on the north and passed out on to a long plain, here about three-quarters of a mile broad, with great masses of gneissic rocks projecting every now and then. It ran east and west and ahead, to the north of us, was the main ridge of the Macdonnell Range, across which somehow or other we had to find a way. First of all we travelled east, crossing one or two branches of the Hugh River as it came down through the Ranges from the north. We thought it possible that there might be some gorge at the base of Mt. Conway which would allow us to pass through, but could find no feasible route. The ground was very rough and broken and travelling was not easy. Finally, we gave up the attempt and retraced our steps, turning in to the Ranges and following up one of the branches of the Hugh until we camped by the side of a very picturesque pool near the foot of Paisley Bluff, in just the same relative position to the main range as that in which we had camped by the Redbank Creek near Mt. Sonder. It was a delightful camp, all the more so because there was no difficulty in regard to water, and at night, as we lay on the sand in the brilliant moonlight, we could hear the Mopokes calling to one another in the gum trees and see the dingoes sneaking round our camp, evidently anxious to come into water but frightened to do so (Fig. 64).

We gave the horses and camels a day's rest and ourselves the chance of collecting, but, as usual, it was disappointing. The hill-sides were studded with pines and cycads and, in a narrow gorge at the base of Paisley Bluff, we saw the first examples of the paper bark Ti-tree (*Melaleuca leucodendron*) that we had come across. Its popular name is given to it because the bark peels off just like sheets of paper—in

fact the natives here use it for wrapping up their few possessions. Further north they use it for wrapping themselves up in, on cold nights, and as a covering for their Mia-mias or shelters. The gorge was hemmed in by precipitous cliffs, and the small space forming its floor was filled with white-stemmed gum trees, Ti-trees, Cassias and Grevilleas. Cycads and pines studded the hill-sides and great rough masses of rock, that had tumbled down, blocked the passage, so far as horses and camels were concerned (Fig. 65). In this gorge I found the first examples of a new species of honey ant, of which, later on, Mr. Cowle found many more. The nest consisted of a series of burrows opening up under a small block of quartzite. The bodies of the ants were decidedly inflated, but nothing like so much as in the case of the more common species (*Melophorus inflatus*). The insects were even capable of moving about to a certain extent. I tried to examine the nests of two other species of ants that are very characteristic of the whole of the Central area from Ayers Rock in the south to the Burt Plains in the north. One has the form of a mound upwards of two feet in diameter and about six inches high, with a large crater-like depression at the top. The ants arrange a thick deposit of the long, dry phyllodes of the Mulga tree, so as to cover the dome. They are all placed in a perfectly radial manner and give the nest a very definite appearance. The other nest has a mound of the same size but, instead of a crater opening, it has a kind of keyhole slit five or six inches long and half an inch wide. The mound was covered with an enormous number of grass seeds, every one of which must have been brought in separately by the ant, which turned out to be one of the many species of *Camponotus* (*C. denticulatus*). I spent a good deal of time trying to investigate the nests, but the ground was as hard as a stone and the insects were about three-quarters of an inch in length and disliked being disturbed. There was nothing

like any fungoid growth amongst the seeds and Mulga leaves, nor anything that would be of service to the insect, though, of course, such might be present under moister conditions. The two kinds of nests were often close together.

Finding that we could not get through the Ranges at Paisley Bluff, we travelled still further to the east, until we struck another branch of the Hugh River and, following this up to the north, came to a gorge through which the stream had cut a path for itself at the base of Brinkley Bluff. The bed of the creek almost completely filled the gorge, but there was, luckily for us, just enough room to pass between the pool of water and the rocks that hemmed it in on each side. Once through the gorge we were safely on the northern side of the main ridge. We climbed a small hill and saw ahead of us nothing but a long succession of low, irregular gneissic hills all jumbled together. We wended our way in and out amongst them all day long, because we had to cross them before we could reach the Burt Plain. It was dreary, monotonous work; everything was dry, with nothing but gneissic rocks, bush and porcupine grass. Between five or six miles to the north of the main range, that towered up behind us, we crossed the watershed, about 2300 feet in height, though we only knew that we had done so because such little dry creeks as there were trended northwards instead of southwards. Just at sunset we came to a high gneissic ridge, up which we led the camels with considerable difficulty, as there were ugly ledges of rock to be climbed; but, to our relief, when we reached the top, we saw the broad, scrub-covered Burt Plain stretching away to the northern horizon. To the south of us, east and west, the Macdonnell Ranges swept in an unbroken line as far as we could see. A flock of more than fifty black cockatoos, disturbed by our appearance, were screeching loudly overhead, showing us that water



B.S.

FIG. 66.—HEAVITREE GAP, FROM THE SOUTH.
MAP 2 AND BLOCK DIAGRAM. No. 16.



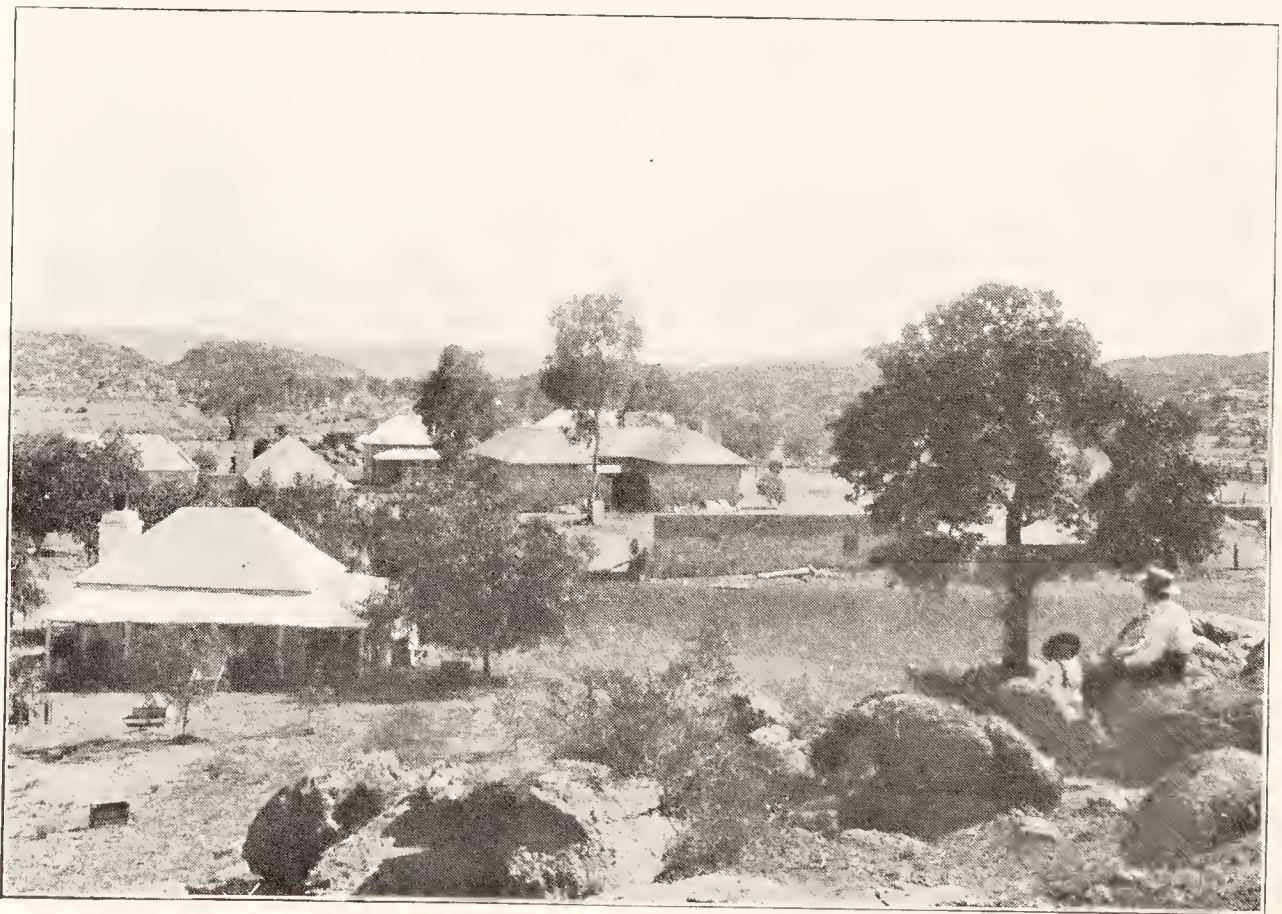
B.S.

FIG. 67.—STUART VALLEY AND FLATS, LOOKING SOUTH TOWARDS THE MT. GILLEN RANGE.
The Heavitree Gap is seen on the left and Mt. Gillen on the right.



F.J.G.

FIG. 68.—WIGLEY GORGE, MACDONNELL RANGE.
MAP 2. No. 32.



B.S.

FIG. 69.—ALICE SPRINGS TELEGRAPH STATION.

The view is taken looking south. The hills in the middle distance are formed of Pre-Cambrian gneiss, which extends as far as the distant range formed of Ordovician quartzite that bounds the Stuart Valley on the south. This ridge is the eastward continuation of the Mt. Gillen Range. The Todd River runs along the valley to the left hand of the station buildings, passing out on to the Stuart Flats through a defile bounded on the east by the rounded gneissic hill in the middle distance, on the left-hand side of the photograph. The view is taken from a little hill immediately to the north of the station. The tree on the right-hand side is a "native orange" (*Capparis Mitchellii*).

was not far away. Zigzagging down the steep face of the hill, after very careful work and a great deal of difficulty in persuading our camels to slide down the steep ledges, we at last reached the plain and camped, just after dusk, at Painta Springs. Peinda, or Pinta, or, as the white men call it, Painta, is the native name for spring or running water. This special one has been known to the natives from time immemorial and figures in their traditions. Years ago some white man planted a date palm seed beside it. The palm that grew from it is now a great big tree and the spring has been fenced in. All the next day we travelled eastwards, skirting the northern edge of the Ranges, until we saw the overland telegraph line, coming south across the Burt Plain. After camping for the night, we once more turned south into the Ranges and reached Alice Springs, the Central station on the overland telegraph line.

The station is built amongst the ancient Pre-Cambrian, gneissic hills to the north of the main ridge of the Macdonnells (Diagram 1). Three miles south of the station is the little township of Stuart, which, at this time, consisted of a store, one or two houses and the inevitable bush hotel (Fig. 67). It lies to the northern side of a broad alluvial flat across which the River Todd runs for about two miles, receiving the Charles River on the western side, until it flows through the southern ridge of the main Macdonnells by way of the Heavitree Gap (Fig. 66). Camel teams are often passing up and down the telegraph line bringing stores to the township, telegraph station and outlying cattle runs, and there are usually a mob or two of camels with their attendant Afghans camped out in the scrub on the flat on which the little township of Stuart is built. The flat is bounded to the south by a high ridge that forms the most prominent feature in this part of the country (Fig. 67). Its summit is fully 3000 feet high, on Mt. Gillen, the native name of which is Gnoilya-mbainda, which means "the camp

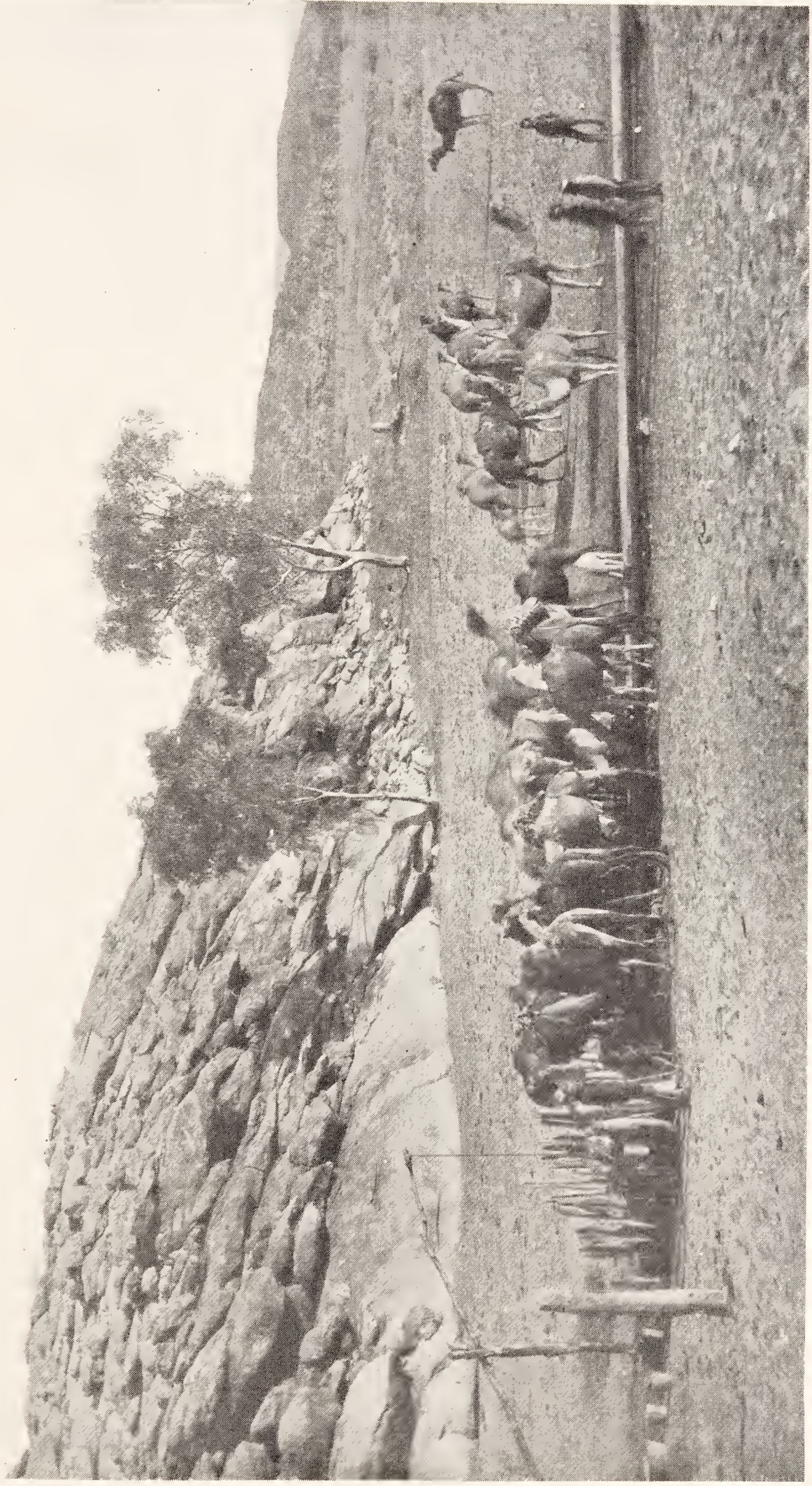
of the dogs." In the Alchera, that is, the far past mythic times, it was inhabited by men of the wild dog totem (*gnoiyla*) whose main camp (*mbainda*) was on the summit of the hill. The sharp point seen well from Alice Springs, or Stuart, is called Alla, which means the nose.¹ On its northern face, that is, the one looking down upon Stuart, the Range has a steep escarpment, forming a precipice of some three or four hundred feet. The southern side is not so precipitous, but is still very steep and slopes down into a wide valley here known as the Police Paddock. Then follows on the south another Range, and to the south of this comes another valley² known as the Racecourse.

The Todd takes its rise some distance to the north of Alice Springs and, after winding about amongst the relatively low hills forming the watershed, and passing through a narrow valley amongst the gneissic hills, called Wigley Gorge (Fig. 68), reminiscent of the more definite gaps of the Ranges to the south, it cuts southwards across the Heavitree Gap, the western wall of which is formed by the eastern end of the Mt. Gillen Range. Except during the very rare times when the bed of the river is filled with flood waters, this gap forms the only means of traversing the Ranges in this part, and through it runs the line of telegraph poles carrying, at the time of our visit, the single wire that then served to connect Australia with the outside world. If anything happened in those days to the single thread of wire, Australia was telegraphically isolated.

Alice Springs Telegraph Station (Fig. 69), with its group of buildings, nestles amongst the hills by the side of the River Todd, at a spot where a bar of rock stretches across the bed and gives rise to a water pool which is very rarely

¹ In "Across Australia" the name was given as Okniambanta and the meaning as "the great father." This is a mistake. The real name and meaning are as given above.

² The general relationship of these ridges and valleys is shown in Diagram 1.



A. M'FEAT.

FIG. 70.—WATERING CAMELS AT A SHADOOF IN THE SAND BED OF THE TODD RIVER, ALICE SPRINGS STATION.



B.S.

FIG. 71.—SIMPSON'S GAP, MACDONNELL RANGE, FROM THE SOUTH.
MAP 2 AND BLOCK DIAGRAM I. No. 9.

dry, though the station has wells sunk in case of drought, and a "shadoof" can be used for camels and stock, as water can always be obtained by sinking in the sandy bed of the river (Fig. 70). During a good season it is a picturesque spot, and the station forms quite a little settlement in itself, with its operating room where, day and night, the machines are ticking ceaselessly, as messages flash through north and south, to and from the outside world with which, at this time, the southern cities of Australia, Adelaide and Melbourne, Sydney and Brisbane, were connected only by one single iron wire. There are separate quarters for the officer in charge; dining, mess and living rooms for the operators, four in number; rooms for the line men, battery room, shoeing forge, blacksmith's shop and all other essentials of a little settlement that must be able to provide for many a sudden emergency, which requires that the officers shall be much more than mere telegraph operators.

CHAPTER III

THE MACDONNELL RANGES

THE Macdonnell Ranges have been described, though only very slightly from a scenic point of view, by early explorers such as McDouall Stuart and Giles. Messrs. H. Y. L. Brown, Tate and Watt have dealt with their geological structure and, more recently, this has been described, in certain aspects, more comprehensively by Dr. Keith Ward. During the Horn Expedition I had the chance of seeing a good deal of them and of making a very hasty traverse across the whole width of the Upper Steppe lands, on the east side along the route of the telegraph line from the Ooraminna Range in the south to the Burt Plain in the north, and on the west side from where, in the south, the George Gill Range rises from the desert country of the Amadean region, to the far north, where the Pre-Cambrian hills dip down beneath the alluvial flats of the Burt Plain. In 1926 I had the good fortune to be Dr. Ward's companion whilst he was occupied, on behalf of the Commonwealth Government, in examining the country with a view to the selection of sites favourable for putting down bores in order to provide water along the main stock routes across the Centre. During this journey we traversed, once more, the whole of the Southern Steppe lands, from Oodnadatta to Alice Springs, and a very large part of the Macdonnell Range country, from the Ross River in the east to Hermannsburg in the west.

The area occupied by the Ranges is of very great extent; it is calculated to be not less than 10,000 square miles,

and much work yet remains to be done before it will be completely and satisfactorily mapped. It is, however, characterised by certain great outstanding features that render it most interesting and attractive to the ordinary traveller. I have tried to give some idea of these in the accompanying plan (Map 2) and sectional diagrams. One of the latter is based on Dr. Ward's work, and I am indebted to him for his generous permission to make free use of this and, more especially, of his sectional drawings of the Eastern Macdonnells. For the section, on which the second diagram is built up, I am indebted to Sir Edgeworth David. It is based upon his interpretation of those, dealing with the western part of the Ranges, that were published by Professor Tate and Dr. Watt in the Geology part of the Report of the Horn Expedition. With the aid of Sir Edgeworth David's and Dr. Ward's sections I have endeavoured, without, I trust, misrepresenting their conclusions, to give the reader some diagrammatic idea of the main physiographical features of the wonderful country lying in the very heart of Australia.

The general features of Larapinta Land, that is, the great area drained by the Finke River and its tributaries, are represented, but only in broad outline, in the plan (Map 2). In all existing maps, whilst the river courses are fairly well laid down, the arrangement of the mountain systems is indicated in, at most, a very indefinite and, in some parts of the country, more especially the Macdonnell Ranges, a very haphazard way. I have attempted simply to block out the main mountain masses, in order to show the configuration of the country on a large scale, together with the general relationship existing between the Ranges and the rivers. It is these outstanding physiographic features, the Gaps and Gorges amongst the Ranges, the broad flats and narrow valleys, between and separating them, that impress the traveller so deeply as he traverses Larapinta Land.

It must be clearly understood that this ground plan is, at best, only a very incomplete sketch. There is still great doubt as to the exact relationship, for example, of the Horn Valley to the Ranges, and it is quite likely that further work will show that there have been earth movements that have resulted in fractures and displacements of the Ranges, more especially in the central parts, where the Ellery and Hugh Rivers and their tributaries pass across that are not shown in this plan. These disturbances may have interrupted the absolute continuity of the Horn Valley as it runs from west to east, but I think that the disposition of the masses and Ridges of the Ranges marked I, II, III and IV at the eastern end and of those marked V, VI, VII and VIII at the western end are, in the main, correct, so far as these two widely separated parts of the country are concerned (Diagrams 1 and 2, facing p. 128).

The name Mereenie Valley was given during the Horn Expedition to the one lying immediately to the south of Ridge V and that of Horn Valley to the one lying between Ridges VI and VII. At the western end of the Macdonnells there is no difficulty in regard to the application of these names. The Horn Valley has been hollowed out of the Upper Limestone formation between the Ordovician Quartzites forming Ridges VI and VII—that is, out of the southern of two such formations that occur here, a northern, Lower one, lying between Ridges V and VI. At the eastern—that is, the Alice Springs—end of the Range there is a valley hollowed out of the Limestone lying immediately to the south of Ridge II. This valley is known as the Police Paddock. To the south of Ridge III follows another Limestone formation forming the floor of a wide valley known as the Racecourse. The latter, lying in the southern, Upper, Limestone, might naturally be expected to be the direct continuation of the Horn Valley at the western end of the Ranges, but until the

intervening country has been carefully mapped this apparently simple explanation can only be regarded as a tentative one.

Judging from what one sees on land, a view from above would probably give an airman approaching from the south along, say, the line of longitude 133° E., the general impression of six great bands, or stretches of country, more or less sharply marked off from one another, running across east and west from, roughly speaking, Longitude 131° E. to 135° E., and north and south from Latitude 26° S. to 23° S., that is, an area measuring, approximately, at least 300 miles from east to west and 200 miles from north to south, as a crow or an airman flies.

Starting from the south, a traveller in the air would see first, great open plain country (A) crossed with series of low, flat-topped, terraced hills, with miles and miles of long lines of sand-hills, rolling across the country like great waves, from north-east to south-west, and, far away in the west, he would catch a glimpse of the long, white, glistening sheet of salt, forming the bed of Lake Amadeus. Save for a few, small, isolated, dark-coloured spots and lines, representing southern outliers of the northern ranges, the whole country, in the dry season, would be a general drab, yellow and buff colour, crossed by bands of dark green, indicating belts of trees bordering the river courses. He would see this flat country ending in a sinuous and, on the whole, abrupt line, though broken by projecting headlands and receding bays, like that of a seacoast impinging on the southern margin of a great band of red-coloured, mountainous country, crossed by range after range, all running with a general trend from west to east. He would see this broad band (B), measuring roughly thirty miles across from north to south, cut through, sometimes by deep, narrow and sinuous gorges, at others by wider but still definitely outlined valleys through which, with

short side streams flowing into them, the rivers run from north to south.

This broad belt of mountainous country (B) represents the southern part of the enormous mass of Ordovician deposits of the Central area, the northern part of which (D) forms the Macdonnell Ranges, the broad Missionaries Plain (C) lying between the two. The north-western part of the southern mass (B) forms the Krichauff Range, which is cut through by the valleys of the Palmer and Walker Rivers, the Ilpilla Creek and the great gorges of the Finke and Ellery. Its eastern end seems to divide into and to be continuous with two ranges, a northern and a southern. On the north it certainly passes directly eastwards as the Waterhouse Range (G), which, with the Krichauff, bounds the Missionaries Plain on the south. Further away still to the east, and slightly to the south of the Waterhouse, lies the Ooraminna Range (H). The southern part of the Krichauff runs eastwards,¹ forming the James Range (K), between which and the Waterhouse and Ooraminna on the north lies a broad, open plain (L), with outcrops of Ordovician strata. The Hugh River runs across amongst the Ranges that dip down under the western end of this plain. The south-western part of the southern Ordovician mass (B) forms the George Gill (M) and the Levi Ranges (N), between which runs the watershed dividing the Finke and Amadean Basins.

To the north of these southern mountain ranges (B) he would see a level stretch of plain country, the Missionaries Plain (C), gradually narrowing from twenty miles and more at its western end to two, or even less, at its eastern end, where it opens out into the Emily Plain. Both of these, which really form one continuous stretch of flat, alluvial,

¹ In the Horn Report the name of James Range was given to the whole of the main Southern mass of Ordovician deposits here described under the names of George Gill, Levi, Krichauff, Waterhouse and James Ranges.

Plain country, end abruptly at the foot of the southern ridges of the great Macdonnell Ranges.

Seen from the air, the Macdonnell Ranges (D) would have the form of three great, main, narrow ridges, running parallel to one another from Longitude 132° E. to 134° E. They are perhaps more sharply marked at the west than at the east end and lie immediately to the south of the Tropic of Capricorn. At their far western end they break up and spread out fan-wise, with high peaks, Mts. Edward, William, Francis, Heuglin and Zeil to the north, and to the south the Mereenie Bluff. At their eastern end, in the region of Alice Springs and Stuart, the northern and the southern ridges fade away, the middle one seems to increase in strength and importance, turns north-eastwards with a sharp bend at the Undoolya Gap (19) and becomes continuous with the great folds that form the Fergusson Range, across which runs the Ross River. To the north of the Fergusson Range lie the irregular masses of the Hart Range.

As already pointed out the exact configuration of these main ridges, in the central part, has yet to be determined. Between them run two great longitudinal valleys, a northern and a southern. At the western end they are called, respectively, the Mereenie and the Horn Valleys. The former is bounded on the north by the great ridge (V) in which occur the Gaps and Gorges through which run the tributary streams of the Finke, Ellery, Hugh and Jay Rivers and, at its very eastern end, the Temple Bar Creek. This ridge apparently runs without any structural break along its whole length, till, a little to the east of Simpson's Gap (No. 9, Figs. 71 and 72), about half-way between the latter and the Todd River, it dies away completely. The remarkable series of Gaps and Gorges that cut across it are represented in the plan (Map 2) and second diagram. It may be that there are more than the nine here indicated, indeed I

think there are others, in addition to the two shown between those numbered 3 and 6, but, unfortunately, there is, as yet, so far as I am aware, no map on which they are named or located clearly, so that I have only been able to indicate them quite diagrammatically.

To the south of the main northern ridge of the Macdonnells (V), at its western end lies the Mereenie Valley, then follows a Ridge (VI), then a long valley—the Horn—then another Ridge (VII) and, to the south of this, the Missionaries Plain (C). The continuity and equivalence of these two valleys and three Ridges at the western end with those of the eastern end have yet to be determined with certainty. Across the Horn Valley, and the ridges bounding it north and south, run, in the eastern and central parts, the channels of the Finke, Ellery, Hugh and Jay Rivers. At the eastern end, what appears to be, most probably, the continuation of the Ridge bounding the Horn Valley on the north becomes more important and rises into the Mt. Gillen Range (II), which, in the region of Alice Springs, where the northern ridge (I) has died down, forms, with its eastern extension beyond the Heavietree Gap, the dominating feature in the landscape. On the west side of Temple Bar Gap 1 (No. 15), which Dr. Ward has shown is located on a fracture, there is a displacement of this ridge (II) northwards. Between this Gap (No. 15 and Fig. 73) and the Heavietree (No. 16), the Ridge rises into Mt. Gillen. Beyond the Heavietree the ridge continues on the same line eastwards, being crossed in succession by the Emily (17), Jessie (18) and Undoolya Gaps (No. 19 and Fig. 74), which last is again located on a fracture where the lofty Ridge, with its fine escarpment facing northwards, turns abruptly north-eastwards towards Mt. Benstead, and runs on into the Fergusson Range (O), where, amongst others, there is a well-marked synclinal fold across which the Ross River cuts its way southwards

amongst the finest scenery in the Central Ranges (Figs. 78 and 79).

To the south of the Gillen Range (II) lies a valley here known as the Police Paddock. Then follows a prominent Ridge (III). At its eastern end this terminates suddenly, immediately to the south of Heavitree Gap (16), where there is a structural break, and a prominent conical hill, called Mt. Blatherskite (27), stands by itself, shifted distinctly to the north of the Ridge (III) of which it forms the eastern end. Travelling westwards, along the Police Paddock, which lies to the north of Ridge III and to the south of Mt. Gillen, Temple Bar Creek is met, flowing down from its northern Gap (No. 15) in the Mt. Gillen Range. The creek cuts southwards through Ridge III, which is here, really, a treble one, consisting of a northern larger, followed by a smaller, and this again by a scarcely noticeable southern one, by way of two distinct Gaps (Temple Bar Gaps, Nos. 25 and 26), and, after passing through these, it turns and flows eastwards along the flat which is continuous still further to the east with the Emily Plain, to junction with the Todd River.

The Gaps and Gorges, like deep slashes, following one after the other in regular succession from west to east, cut through the Ranges, each one forming a passage for a stream running directly southward at right angles to the three main Ridges.

To the north of the latter, which altogether form the Macdonnell Ranges, the country changes abruptly and there is nothing but an irregular jumble of low, rounded hills (E) formed of gneisses and schists and bare of everything save small shrubs and tussocks of porcupine grass. These hills form a belt, flanking the whole length of the northern Ridge of the Macdonnell Ranges. Along their northern margin they dip down below the surface of the alluvial flats of the Burt Plain stretching north to the horizon (F).

Equally distinctive as the Mountain Ranges are the River Systems, of which, from the air, four would be distinguishable.

The first of them is that of the Finke itself, which drains the western and larger part of the Higher Steppe lands and runs away south-eastwards to Lake Eyre. The second includes the Todd and Hale, draining the eastern part and also running south-eastwards, where, probably, they disappear in the sand-hill country, long before reaching Lake Eyre. The third includes the few small streams, Laurie, King, Reedy and Bagot Creeks, running south from the George Gill Range into the Amadean Basin. The fourth includes a number of relatively small creeks, such as the Derwent, Dashwood and Hamilton, draining northwards on to the Burt Plain. The one striking feature of the main rivers of Larapinta Land is that the little streams that form them rise in the jumble of low Pre-Cambrian hills to the north of the lofty Macdonnell Ranges. They flow in a succession of gorges through the ridges that altogether form the latter, running at right angles across the long valleys between them, and so pass out on to the Missionaries Plain (C) that separates the northern (D) from the southern mountain masses (B). Still running south, regardless of the east- and westward trend of the broad Krichauff and Waterhouse Ranges, they cut their way through these in long, tortuous gorges and valleys until, finally, they debouch upon the Lower Steppe lands and meander across them to Lake Eyre.

The line of watershed is indicated on the map by the dotted line. Coming down from the north it runs along from east to west, roughly parallel to the main northern Ridge of the Macdonnell Ranges; at the end of these it turns south, curving round the western end of the Krichauff Ranges, and then runs south-eastwards so as to pass between the George Gill and the Levi Ranges, and



DR. KEITH WARD.

FIG. 72.—SIMPSON'S GAP, FROM THE NORTH.
MAP 2 AND BLOCK DIAGRAM I. No. 9.



B.S.

FIG. 73.—TEMPLE BAR GAP, FROM THE NORTH.
The waterpool, due to a recent rainstorm, is only a few inches deep.

then southwards, separating the Amadean from the Finke Basin. It is clear that when the courses of the main streams of the latter were laid down—the Finke, Ellery, Hugh, Jay, Todd, Ross and Hale—the highest land, in which these original Central rivers took their rise, must have lain to the north of the present Macdonnell Ranges. There must have been a lofty, Pre-Cambrian, dome-like mass, running across from east to west, sloping away southwards under an Ordovician sea, in which was deposited a series of sediments of immense thickness with alternations of sandstones and limestones. Down from this Pre-Cambrian dome the rivers ran southwards across the Ordovician formations as they were being slowly elevated and, by earth movements, thrown into folds that became complicated by faults and thrusts and gradually gave rise to the long, parallel Ridges of the Macdonnell Ranges as we see them now. These earth movements were carried on at a rate slow enough for the erosion of the rivers, whose courses had already been laid down, to keep pace with the gradual rising of the land, so that the main streams cut deep channels for themselves, running from north to south across the Ordovician formations as they underwent uplifting and folding. In the region of the Macdonnell Ranges there appear to have been five distinct periods of deposition, giving rise, finally, to three formations of sandstones and quartzites alternating with two of limestone. These, in the Eastern Macdonnells, are described by Dr. Ward as occurring in the following order, following them down from north to south (Diagram I): (1) Lower Quartzites and Sandstones, (2) Lower Limestone, (3) Middle Quartzites and Sandstones, (4) Upper Limestone, (5) Upper Quartzites and Sandstones.

The most important of the River Systems is that of the Finke. It takes its rise away to the north-eastern end of the Macdonnell Ranges. Travelling, during the Horn

Expedition, to the east from old Glen Helen Station (44), that lies in the Mereenie valley now bounded on the north by the main and loftiest Ridge (V), we came, in succession, on three little streams, cutting their way through the Ridge from the north. These are the Davenport, Redbank and Ormiston. The stream formed by their junction gives rise to the Finke, which, for a few miles, runs east along the valley and then turns suddenly southwards, cuts its way through the two ridges (VI and VII) bounding what is known as the Horn Valley, and then runs due south, across the Missionaries Plain. About half-way across the latter it receives the Rudall Creek, coming in from the west, and, a little way to the south of Hermannsburg, enters the Krichauff Range, cutting its way for twenty miles across it in a most extraordinary gorge that Dr. Ward describes as "an entrenched or incised meander." On its way through the Range it receives, on its western side, the Palm Creek, running in a deep, narrow valley in which, amongst the clefts in the rocks forming the bed of the stream, grows the small colony of palms (*Livistona Mariæ*) peculiar to this one spot. On the southern side of the Krichauff Range the Finke debouches at a spot called, by the whites, Running Waters and, by the natives, Larapinta, which means the same thing and is applied by them to the whole river in these parts. It then runs south-eastwards, meandering leisurely in its course across the plains. First of all it receives the Palmer on its right bank, then, on its left, the Hugh, a stream almost, if not quite, as large as itself. The main Finke thus formed runs on to Horseshoe Bend, or Engoordina, breaks through the hills at Cunningham Gap and Crown Point, flows away to the east of Charlotte Waters and, finally, save in flood-time, loses itself in the great salt flats around Lake Eyre.

The Hugh, like the Finke, takes its rise away to the north of the Macdonnells. There seem to be at least



B.S.

FIG. 74.—NORTHERN RIDGE OF THE MACDONNELL RANGES. DISTANT VIEW FROM THE SOUTH.

In the centre is Simpson's Gap. The ridge dies away northwards.

MAP 2 AND BLOCK DIAGRAM I. No. 9.



B.S.

FIG. 75.—NORTHERN RIDGE OF THE MACDONNELL RANGES. NEAR VIEW FROM THE SOUTH SHOWING TEMPLE BAR CREEK RUNNING THROUGH SIMPSON'S GAP.

The rocks dip northwards, forming the Northern Limb of a great anticline.



B.S.

FIG. 76.—EVENING AT SIMPSON'S GAP.

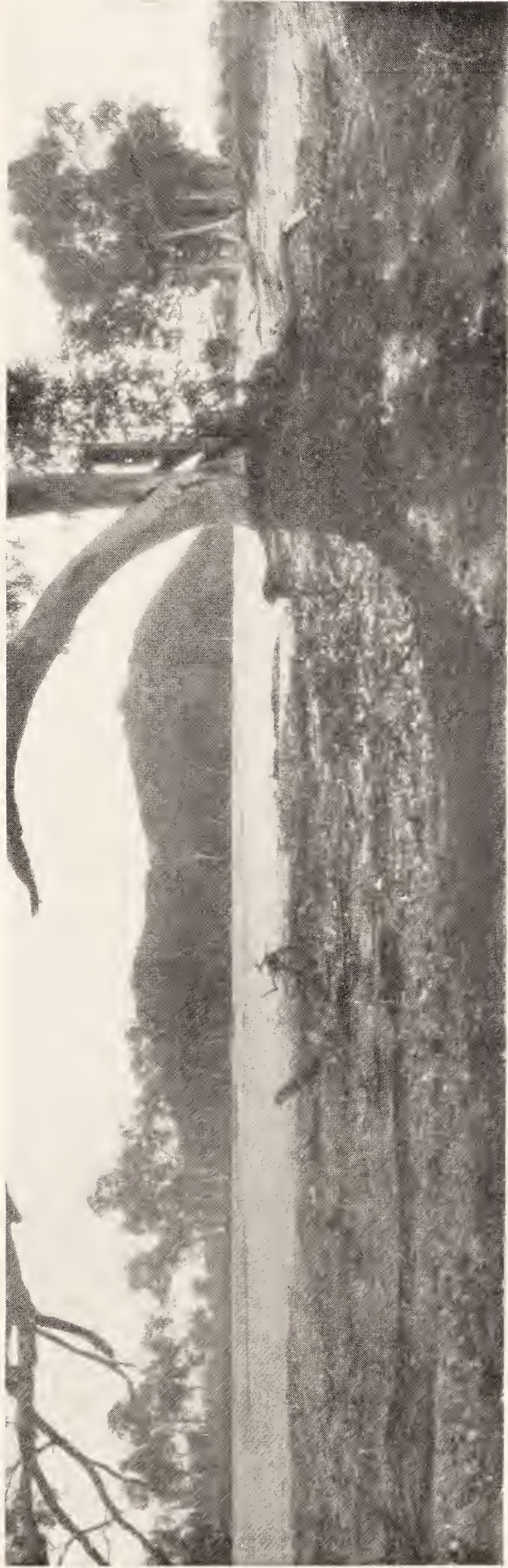
three contributory streams, a small one on the east running under Paisley Bluff through Spencer Gorge (No. 6), a middle, large one, through Brinkley Bluff Gap (No. 7) and, to the east, another large one running under Mt. Conway (No. 8) and giving rise to the Jay, which, after traversing the Macdonnell Ridges, junctions on the Missionaries Plain with the main body of the Hugh, which then runs across the Waterhouse and James Ranges out on to the plains. From Maryvale, south to its junction with the Finke, its broad bed, overhung with great white gums, follows a most remarkable tortuous course through sand-hill country.

The Palmer differs from both the Finke and the Hugh in that its tributaries take their rise to the south of the Macdonnell Ranges. On the Horn Expedition some of us followed the main stream northwards, from Tempe Vale on the south, through a long, winding gorge, cutting right across the eastern part of the Krichauff Range, until we came out on to the Missionaries Plain, on which it took its rise close to a little, isolated hill called Pine Point (Fig. 77). On its way north from the southern plains it receives, first the Peterman Creek that runs along an east-west valley between the Levi Range on the south and the Krichauff on the north and then, on the same side, a large tributary, the Walker, flowing in from the north-west and junctioning with the main stream of the Palmer at the eastern end of the Tempe Downs Valley (47).

The second of the River Systems consists of streams that take their rise in the north-eastern corner of the Larapintine region. They are the Temple Bar (sometimes called the Laura), the Todd with its numerous branches, the Ross and, further away to the east, the Hale. Travelling from the west the Temple Bar is the last of the creeks to force its way through the most northerly of the Macdonnell Ridges (I), which dies down a few miles to the west of

Alice Springs. It runs through one of the most picturesque of all the gorges, Simpson's Gap (No. 9 and Fig. 76), that lies only about twelve miles to the east of the Telegraph Station. From here it passes south across the Stuart Valley, runs by way of Temple Bar Gap 1 (No. 15), along a line of fracture through the Mt. Gillen Range, and then across the Police Paddock, on the southern side of which it passes, again along a line of fracture, across what is really a threefold ridge of quartzite (III), the most southern of which is a very low one. There are two clear Gaps (25 and 26), and a depression, not sufficiently marked to be described as a Gap, but still clearly distinguishable. Once out of the quartzite ridge, it turns sharply to the east, flows away until it comes to the Emily Plain and so onwards until finally it joins the Todd.

The Todd and Ross, and further east the Hale, drain the greater part of the north-eastern area. The Todd rises amongst the Pre-Cambrian hills about twelve miles to the north of Stuart, flows south through the relatively low and long Wigley Gap (No. 26 and Fig. 68), on past the Telegraph Station, across the Stuart flats and then, two miles to the south of the township, runs across the Mt. Gillen Range, through the Heavitree Gap (No. 16) and out on to the Emily Plains. Here it turns due east, skirting the northern base of Mt. Blatherskite (No. 27) and runs on, parallel to and only a short distance away from, the lofty ridge that continues eastwards from Mt. Gillen. It is really running in a transverse valley, equivalent to the Police Paddock on the western side of the Heavitree Gap, to the east of which the southern Ridge is now represented only by Mt. Blatherskite. In just the same way, the Temple Bar Creek, that runs from west to east, south of and parallel to the Todd, may be regarded as running in a transverse valley, the ridges bounding which have completely disappeared east of the level of Mt.



B.S.

FIG. 78.—EVENING LIGHT ON THE SAND-BED OF THE ROSS RIVER.
MAP 2, No. 20.



B.S.

FIG. 79.—DIP SLOPE ON THE FERGUSSON RANGES.
MAP 2, No. 20.



B.S.

FIG. 77.—PINE POINT.
MAP 2. No. 39.



B.S.

FIG. 80.—THE EMILY PLAIN, LOOKING NORTH.
The Macdonnell Ranges can be seen in the far distance.

Blatherskite. This valley would be the eastward continuation of the Racecourse Valley. On the western side of the Heavitree Gap there are only slight indications of these transverse streams, flowing along the valleys between the Ridges, though they may be detected in both the Finke and the Hugh, but they are apparently well marked in the case of the Temple Bar Creek and the Todd River.

The Todd receives on its north bank the Emily (17), Jessie (18) and Undoolya Creeks (19), each running through a very prominent Gap of the same name. It still runs on to the east until it receives the Ross (20), that cuts its way south across the Fergusson Range (O). The Gaps along this river, especially where it cuts through the great synclinal fold, referred to by Dr. Ward, are wonderfully fine. The valley of the Ross with its broad bed of glistening sand, its great, white-trunked gum trees and lofty, precipitous cliffs and crags, brilliant venetian-red in colour, especially when the evening sun floods the side valleys with a rich, golden, almost brazen glow, throwing into deep purple shadow the rocks of the ridges on the western side of the gorges, is impressively beautiful. Apart from its geologic interest, Dr. Ward and myself both felt that, in all our traverse of the Macdonnell Ranges, we had seen nothing to equal this valley of the Ross in scenic beauty and grandeur (Figs. 78, 79, 81).

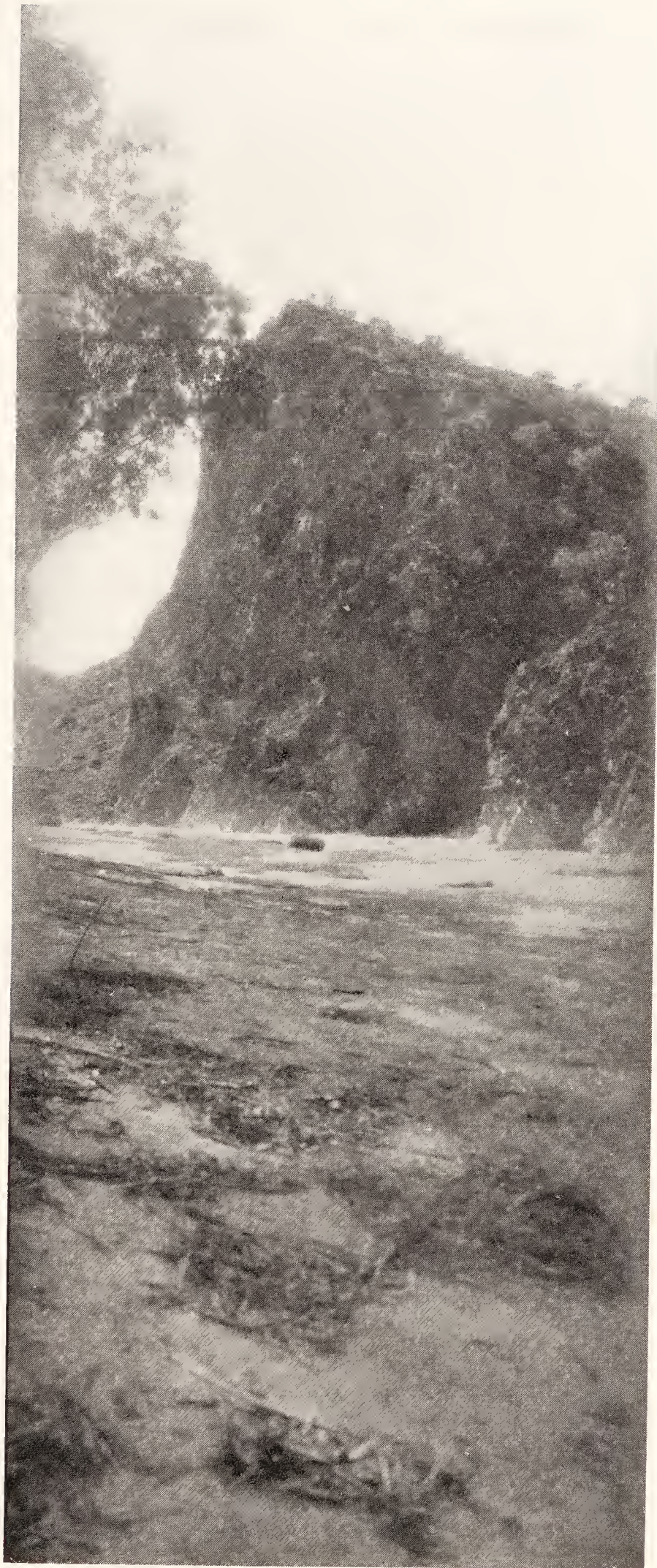
The third and fourth of the River Systems are now quite insignificant and of small size and importance. They must, in fact, be regarded as mere vestiges of drainage systems that, in early days, when the Ranges were much loftier than they are now and there was an abundant rainfall, carried large bodies of water away from the great central mountains of the continent into the Lake Woods Basin on the north and the Amadean Basin on the south.

I have attempted to combine in the block diagrams the main features of two stratigraphical sections, one at the eastern

and the other at the western end of the Macdonnell Ranges, showing, in broad outline, the present arrangement of the different rock formations, together with the main physiographic features due to, and imposed upon them by, earth movements and denudation that have resulted in the production of a region in which lofty Ridges, separated by intervening valleys, some of them broad, others narrow, run parallel to one another for at least two hundred miles, whilst the streams that drain the country take their rise to the north of the Ridges and, one after the other, cut across them in Gaps and Gorges, some so narrow that they form mere clefts, two or three hundred feet in depth, across which, in parts, a man, with arms extended, can touch the rocky precipice on either side of him.

The first is taken at the eastern end, in the region of the township of Stuart and the Alice Springs Telegraph Station looking towards the west. The ridges I, II, III and IV correspond to those indicated by the same numbers in the ground plan of the country. In order to include the great northernmost ridge of the Macdonnells, which dies down just before it reaches the longitude of Alice Springs, the section is taken along two lines, the northern part, as far south as and including Ridge I, lies about twelve miles to the west of the remaining southern part. No attempt is made to indicate in detail either actual vertical or horizontal measurements, but the outlines of the ranges and intervening valleys will perhaps serve to give a fairly accurate idea of the impression left upon the mind of a traveller passing southwards from the Burt Plain and following the telegraph line until he has traversed the whole width of the Macdonnells and, at their end, comes out on to the plain country leading southwards to the Ooraminna Ranges (H). The Gorges are indicated, diagrammatically, by cuts through the Ranges marked with vertical lines.

Starting in the north there are the great alluvial flats



B.S.

FIG. 81.—CECIL CRAG, ROSS VALLEY,
FERGUSSON RANGE.

MAP 2. No. 20.



B.S.

FIG. 81A.—WATER-HOLE AMONGST THE EASTERN MACDONNELL RANGES.

forming the Burt Plain, the elevation of which is about 2100 feet. To the south of it lies a jumbled mass of rough, Pre-Cambrian, gneissic hills, amongst which the country rises until the line of watershed is crossed with an elevation of about 2360 feet. Thence the country gradually falls to the south, until, at the Telegraph Station, it is about 2000 feet. From a little gneissic hillock, just behind the Telegraph Station, where on many evenings Gillen and myself sat watching the brilliant sunset effect on the hills, a good view can be gained of the northern face of the Macdonnells. Away to the west is the Ridge (Ridge I) cut through by Simpson's Gap, and, looking south, the Todd, on the bank of which the station is built, can be seen flowing away to the Heavitree Gap (No. 16). A mile or two beyond the station the river, hemmed into a narrow channel amongst the jumbled hills, leaves these and, broadening into a wide but definite sandy bed, passes out on to the wide Stuart Valley, receiving on its west bank the little Charles River. The northern side of this valley at Stuart itself is shut in by gneissic hills and, along its course, humps of Pre-Cambrian rocks give rise to low ranges and scattered hills. Some twelve miles to the west of Stuart, where the lofty northern ridge appears, it becomes very definitely outlined. This Ridge (I) is really the northern limb of a great anticline, the southern limb of which is represented by the long range here known as Mt. Gillen (Ridge II). In the north ridge lies Simpson's Gap and, further away to the west, other gorges through which the Jay and Hugh Rivers run (Map 2).

The whole of the Macdonnell Ranges, in this part, are formed of Pre-Cambrian gneisses and Ordovician Sandstones and Quartzites alternating with Limestones. From north to south, the Sandstones and Quartzites are arranged in three series, Lower, Middle and Upper with intervening beds of Lower and Upper Limestone. The thick-

ness of these beds along this line of section, as measured by Dr. Ward, is as follows, proceeding from north to south :

1. Lower Sandstone and Quartzite (Ridge II)	. over 750 ft.
2. Lower Limestone	. „ 5500 „
3. Middle Sandstone and Quartzite (Ridge III)	. „ 820 „
4. Middle Limestone	. „ 7030 „
5. Upper Sandstone and Quartzite (Ridge IV)	. „ 550 „

Total, over 14,650 ft.

Ridges I and II are formed of Upper Sandstones and Quartzites. The floor of the Stuart Valley, which forms a broad flat to the north of Ridge II, is composed of Pre-Cambrian gneisses that give rise to little hummocky hills and irregular low ranges.

The dominant feature of the Stuart Valley in this part is the Mt. Gillen Range that rises to a height of 3000 feet, and, on its northern face, has a bold escarpment from 200 to 300 feet high (Fig. 67). Two miles to the south of the township of Stuart it is cut across by the Heavitree Gap (16), through which the Todd flows. The elevation of the river bed here is 1712 feet. Further on to the west is Temple Bar Gap 1, and beyond this the valley again runs far away to the west, bounded on the north by Ridge I. The northern ridge (I) having disappeared there is no appearance of the valley to the east of Stuart; it is only indicated by the flats on the northern side of Ridge II, which is cut through by the Emily, Jessie and Undoolya Gaps.

Passing through the Heavitree Gap the traveller finds himself in another longitudinal valley, known as the Police Paddock, because in early days the little police station was placed on the flat on the west bank of the Todd immediately at the foot of the southern face of Mt. Gillen. A fence runs across the valley here, and another, eight or ten miles further west, closes in a great paddock for the

Police horses and cattle. The broad valley has been hollowed out in the Lower Limestone beds. To the west of Heavitree Gap it is bounded, on the north, by the Mt. Gillen Range, the sides of which follow roughly the southern dip of the rocks at an angle of 50° . On the south it is bounded by the third of the great parallel ridges (III) formed of the Middle Sandstones and Quartzite, with a dip southwards of 70° , and, as in the case of Mt. Gillen, a bold escarpment on the north overlooking the valley. The northern ridge is continued far away to the east of the Heavitree Gap (16), and is pierced through, in succession, by the Emily (17), Jessie (18), and Undoolya (19) Gaps, at the latter of which it has been displaced at a sharp angle to the north-east. Immediately to the south of the Heavitree Gap the ridge (III) on the south of the Police Paddock Valley terminates abruptly at a line of fracture that has not apparently affected the Mt. Gillen Range lying only a little way to the north, but has resulted in the disappearance to the east, as a continuous structure, of Ridge III, which is now represented only by a very prominent, conical mass called Mt. Blatherskite, that lies slightly to the east of the level of the eastern face of the Heavitree Gap, and by disjointed ridges arising at intervals along lines running parallel to the northern ridge (Ridge II). Coming down from the north, one always has the feeling that the Todd ought naturally to be flowing south from the Heavitree through the opening between Mt. Blatherskite and the eastern face of Ridge III, where, structurally, there is a Gap; instead of which it turns abruptly eastwards and runs along the northern base of Mt. Blatherskite and so on eastwards roughly parallel to the southern face of Ridge II. Travelling westwards for eight or ten miles along the Police Paddock, between the Mt. Gillen Range (Ridge II) on the north and Ridge III on the south, the valley widens somewhat, the track coming to lie close to

the southern wall until a sudden break appears in it, on the western side of which the ridge is shifted bodily northwards, indicating a line of fracture in Ridge III corresponding in relative position to the one in Ridge II, where the Temple Bar Gap 1 breaks through. Ridge III is formed of the Middle Quartzite and Sandstones and has a lofty precipitous escarpment, facing north. The Temple Bar Creek coming down from Ridge II runs right across it. The ridge is really a threefold one with a lofty northern division, a lower median and a scarcely noticeable but yet definitely defined southern one. Only the two former of these (A and B) are indicated in the diagram. There are two distinct Gaps in Ridge III, indicated¹ as Temple Bar Gap 2 and Temple Bar Gap 3.

Passing through the Temple Bar Gaps, the traveller comes out on to a wide valley formed in the Upper Limestone beds. The Temple Bar Creek turns sharply eastwards and runs along the Racecourse Valley and so on to the Emily Plain.

The Racecourse Valley, in the region at the level, and to the south, of Mt. Blatherskite measures, according to Dr. Ward, 7030 feet across, from north to south, and is succeeded by a fourth ridge (IV), formed of the Upper Quartzites, dipping southwards at an angle of 55° and measuring 550 feet across. Beyond this ridge the plains stretch southwards to the Ooraminna Range, and they, as well as the Racecourse Valley, are continuous eastwards with the great Emily Plain.

The second diagram represents a section taken at the western end of the Macdonnell Ranges from the region of

¹ Simpson's Gap in Ridge I, Temple Bar Gap 1 in Ridge II and Temple Bar Gaps 2 and 3 in Ridge III lie in line with one another, passing from north to south, Gap 3 being, in reality, immediately to the south of Gap 2, from which it is only separated by the narrow valley that here lies between the two ridges of Middle Quartzite. Heavitree Gap lies some eight or ten miles to the east of Temple Bar Gap 1.

Mt. Sonder in the north, across the Missionaries Plain at Hermannsburg, and south to the Krichauff Range. It is based on the northern part of an extensive section drawn by Sir Edgeworth David to interpret, mainly, those in the Horn Report that deal with this part of the country, and of which he has generously allowed me to make use. On the portion of his section showing the succession and arrangement of the strata, in reference to the ridges of the Macdonnell Ranges, the intervening valleys and the Krichauff Range, I have superimposed a diagrammatic view of the Ranges, Gaps and river courses.

The view is supposed to be taken looking towards the east.

In the north lies the Burt Plain. This is succeeded by Pre-Cambrian gneissic hills, abutting upon the great mass of Ordovician Quartzites that form Mt. Sonder. These correspond to the Middle Quartzites, that is, to those of Ridge III on the east as shown in the first diagram. The northern face of Mt. Sonder, which rises to a height of approximately 5000 feet, is marked by an over-thrust fault. This ridge (V), which continues eastwards, is the northern limb of a great anticline, the southern limb of which (VI) lies on the south side of a broad valley which is the Mereenie Valley of the Horn Report. This valley has been hollowed out in a great anticlinal fold. Its sides are bordered with hillocks of the Lower Limestone formations, presumably the equivalent of those that form the floor of the Police Paddock Valley at the western end of the Ranges, and they, again, have been worn away so that the main part of the floor of the Mereenie Valley is formed of old Pre-Cambrian gneisses that give rise to the surface of the flats on which the old Glen Helen Station is built. The Ridge bounding the Mereenie Valley on the south (VI) forms the northern boundary of a narrow valley, which, again, is apparently the Horn Valley of the Horn Report.

The ridge (VII) bounding the latter on its southern side is formed of Upper Ordovician strata and the valley has been hollowed out in the Upper Limestone beds. This ridge (VII) forms the northern boundary of the Missionaries Plain, which is here from fifteen to twenty miles across. The Quartzites and Limestones of Ridges VI and VII dip southward to form the great syncline, the strata of which, passing under the Missionaries Plain, rise to the south of this to bend over and form an anticline, the denudation of which has given rise to the Krichauff Range (VIII).

In the diagram the three northern ridges are represented running eastwards. The most northern (V) is pierced by Gorges in the following order: Redbank Creek (2), Ormiston Creek (3), Ellery River (5) and the three that junction to form the Hugh River, that is, those that flow, respectively, under Paisley Bluff (6), Brinkley Bluff (7) and Mt. Conway (8). The middle ridge (VI) is pierced by the most northern of the Finke Gorges (10), the Redbank and Ormiston Creeks having united in the Mereenie Valley; next in succession is the second Ellery Creek Gorge (11), and then three corresponding to two branches of the Hugh River and the Jay River (12, 13 and 14). The southern ridge (VII) is pierced by the second Finke Gorge (21), then by the third Ellery (22), and further on by two, the first of which belongs to the Hugh (23), the two streams from Paisley and Brinkley Bluffs having junctioned; the second is the Jay (24). There are thus four important openings in the southern ridge, leading out on to the Missionaries Plain, across which, looking from the hills forming Ridge VII, in the foreground of the diagram, four dark lines of gum trees can be seen, streaking right across the Plain, from north to south, indicating, from west to east, the courses of the Finke, Ellery, Hugh and Jay Rivers. The latter two unite, so that three main streams are left. The Finke enters its main Gorge in the

MAP 2.
LARAPINTA LAND.

Explanation of reference letters and numbers.

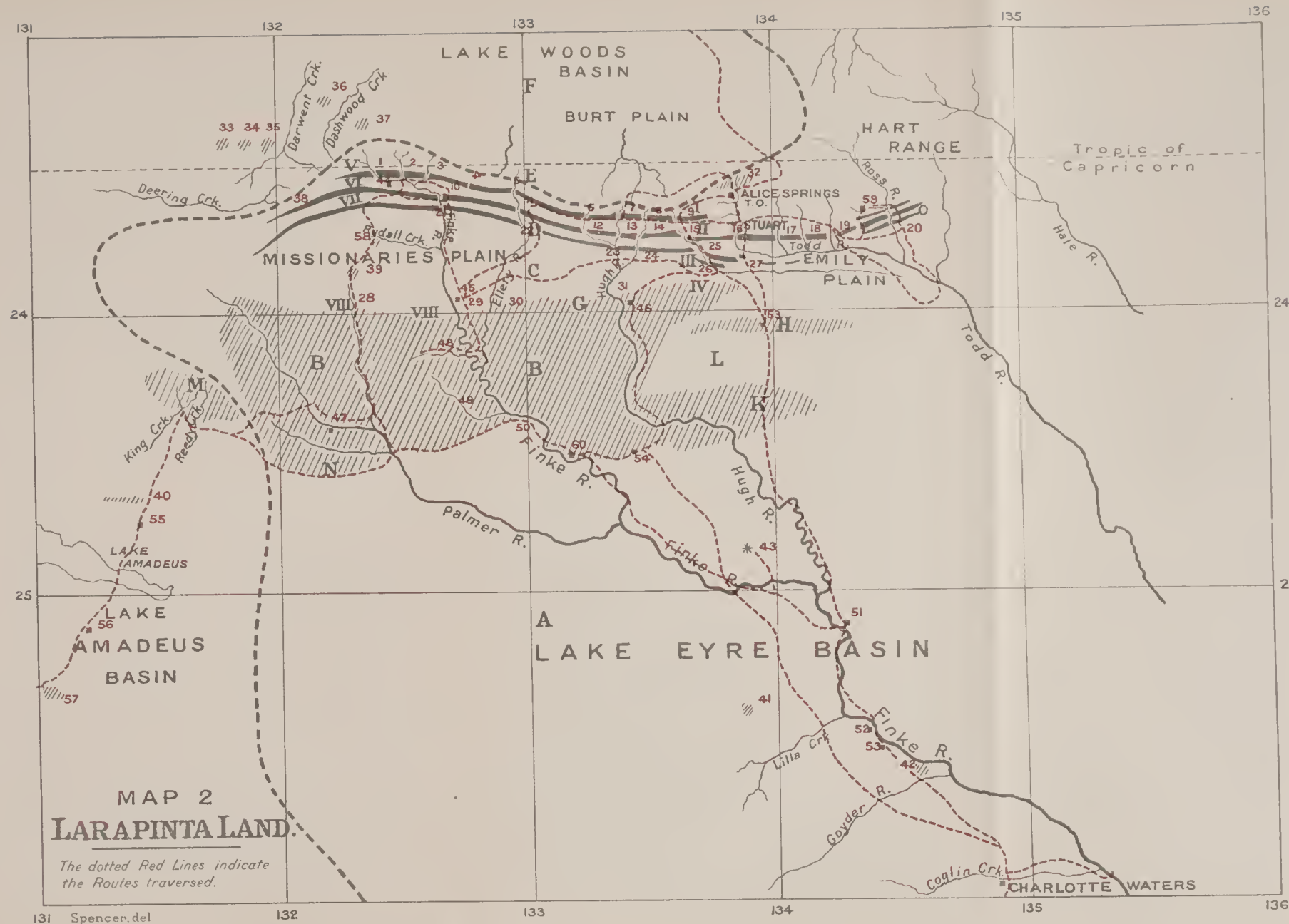
I, II, III, IV. Main Ridges of the Central Macdonnell Ranges in the region of Alice Springs. The Police Paddock lies between Ridges II and III; the Racecourse between Ridges III and IV. (See Block Diagram 1.)

V, VI, VII, VIII. Main Ridges of the Western Macdonnell Ranges. The Mercenie Valley lies between Ridges V and VI; the Horn Valley between Ridges VI and VII. (See Block Diagram 2.)

- | | |
|------------------------------|---------------------------|
| A. Lower Steppe Lands. | F. Burt Plain. |
| B. — O. Higher Steppe Lands. | G. Waterhouse Range. |
| B. Krichauff Range. | H. Ooraminna Range. |
| C. Missionaries Plain. | K. James Range. |
| D. Macdonnell Ranges. | L. Plain between H and K. |
| E. Gneissic Hills. | M. George Gill Range. |
| | N. Levi Range. |
| | O. Fergusson Range. |

GAPS.

- A. In the Northern Ridges (I and V) —
- | | |
|--------------------------------|---------------------------------|
| 1. Davenport Creek. | 6. Hugh River (Spencer Gorge). |
| 2. Redbank Creek. | 7. Hugh River (Brinkley Bluff). |
| 3. Ormiston Creek. | 8. Jay River (Mt. Conway). |
| 4. Branch of Ellery River (?). | |
| 5. Ellery River. | |
9. Simpson Gap.



B. In the Middle Ridges (II and VI) —

- | | |
|---------------------------|---------------------|
| 10. Finke River. | 15. Temple Bar Gap. |
| 11. Ellery River. | 16. Heavitree Gap. |
| 12. Branch of Hugh River. | 17. Emily Gap. |
| 13. Branch of Hugh River. | 18. Jessie Gap. |
| 14. Jay River. | 19. Undoolya Gap. |
| | 20. Ross River. |

C. In the Southern Ridges (III and VII) —

- | | |
|-------------------|-----------------------|
| 21. Finke River. | 24. Jay River. |
| 22. Ellery River. | 25. Temple Bar. |
| 23. Hugh River. | 26. Temple Bar. |
| | 27. Mt. Blatherskite. |

D. In the Southern Ranges (IV and VIII) —

- | | |
|--------------------------------|-----------------------------------|
| 28. Palmer River Gorge. | 30. Ellery Gorge. |
| 29. Great Finke Gorge. | 31. Hugh River Gorge. |
| 32. Wigley Gorge (Todd River). | 46. Owen Springs. |
| 33. Mt. Edward. | 47. Tempe Downs and Walker River. |
| 34. Mt. William. | 48. Palm Creek. |
| 35. Mt. Francis. | 49. Ilpilla Creek. |
| 36. Mt. Chewings. | 50. Running Waters. |
| 37. Mt. Heuglin. | 51. Engoordina, Horse-Shoe Bend. |
| 38. Mercenie Bluff. | 52. Crown Point. |
| 39. Pine Point. | 53. Yellow Cliff. |
| 40. Winnall's Ridge. | 54. Undiara. |
| 41. Mt. Watt. | 55. Unterpata. |
| 42. Mt. Townsend. | 56. Kurtitina. |
| 43. Chambers Pillar. | 57. Ayers Rock. |
| 44. Glen Helen Station. | 58. Gosse Range. |
| 45. Hermannsburg. | 59. Love's Creek Station. |
| | 60. Henbury. |

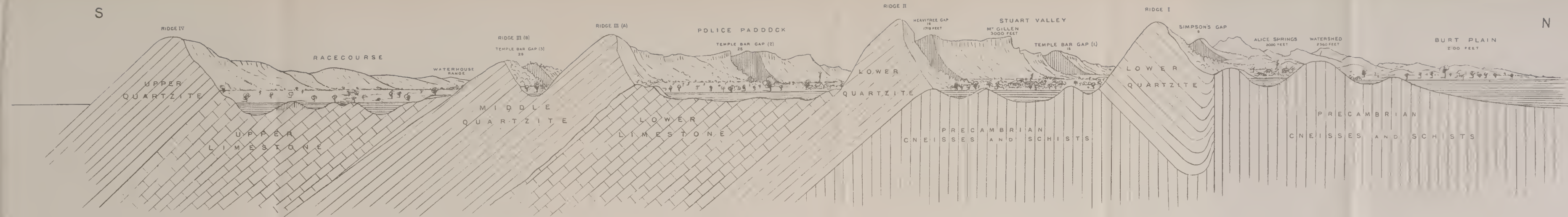
NOTE.

The numbers of the Ridges I, II, III, IV, V, VI, VII, VIII, and of the Gaps 2—31 correspond to those in Block Diagrams 1 and 2.

The Black dotted line indicates approximately the line of watershed.

MAP 2
LARAPINTA LAND.

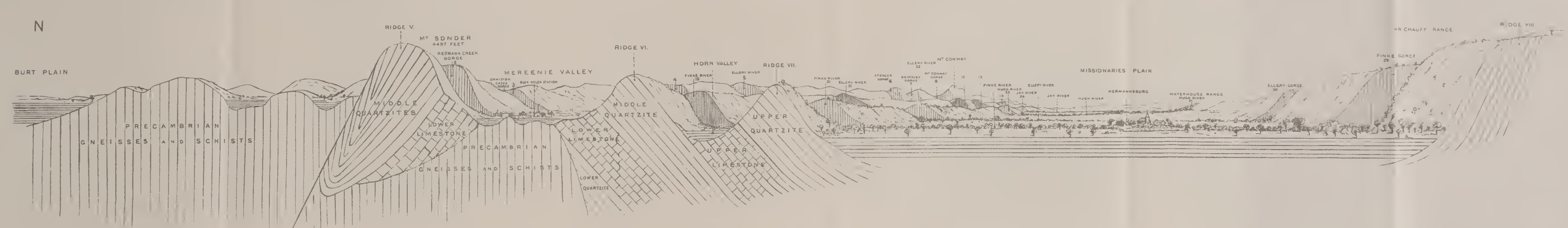
The dotted Red Lines indicate the Routes traversed.



BLOCK DIAGRAM 1. EASTERN END OF CENTRAL MACDONNELL RANGES. LOOKING WEST. *Spencer del.*

NOTE.

The numbers of the Ridges I, II, III, IV, V, VI, VII, VIII, and of the Gaps 2-31 correspond to those in Map 2, Larapinta Land.



BLOCK DIAGRAM 2. WESTERN END OF MACDONNELL RANGES. LOOKING EAST. *Spencer del.*



Krichauff Range immediately to the south of Hermannsburg; the Ellery runs into its Gorge some miles further east, and, still further away, the Hugh passes into the Waterhouse Range. The wide, open flats of the Missionaries Plain are seen stretching far away to the east, where they open on to the Emily Plain.

CHAPTER IV

AFTER "THE WET"

THE Horn Expedition, despite the great interest of everything that we saw, was, in some ways, disappointing. It taught us one thing, both quickly and clearly, that, if you want to know the Centre properly, you must see it not only in the dry but also in the wet season. When I first went across it, in 1894, we started in May. Four months before this there had been good rains and, to some extent, they had helped to replenish animal life that had been almost blotted out by successive seasons of drought, but, even so, it was not exuberant, though it was marvellous how rapidly it had recovered. Whilst trying to write up my notes, taken on the Horn Expedition, I realised more and more forcibly, so far at least as animal life was concerned, how one-sided they were and must of necessity be, without any knowledge of what the animals were like during the actual "wet," before the waters dried up and they went into dry summer quarters to æstivate.

In January 1895 news came down of rains that were quite phenomenal in the southern Centre. Sections of the little railway going north from Hergott Springs to Oodnadatta had actually been washed away, so that, for a time, Oodnadatta was completely shut off from the outside world. This was a chance not to be missed, so I packed up collecting material, went over to Adelaide and waited for the first train to go through to Oodnadatta, grudging every day that went by while the railway line was being repaired and the waters were drying up in the Centre. I decided, in view of the

fact that I had to be back in Melbourne for the opening of the University term in the middle of March, to make Charlotte Waters my headquarters, partly because travelling would probably be difficult and it would be impossible to get much further north in the time available, partly because it would be a splendid centre in which to study animal life on the Southern Steppes and, not least, because I should there have the great advantage of being with my friend P. M. Byrne, who was then, fortunately for me, officer in charge of the outlying telegraph station, and was keenly interested in natural history work. On February 1st I left Adelaide for Quorn. After a night at Hergott Springs we went on more slowly because of wash-aways on the line. The whole country, instead of, as before, being parched and dry, was beautiful with bright green grass and herbage. Lake Eyre was no longer a white sheet of salt. It was full of water that came to within a hundred feet of the railway line, and away on the farther side we could see waves banked up by a strong south-east wind breaking in spray along the foot of a line of low cliffs. Flocks of duck were swimming about and white ibises searching for food along the sides of the water pools. Immediately around the shores of the lake, however, the sand dunes and flats were still barren, save for patches of samphire: it looked as if they had become too impregnated with salt for ordinary herbage and shrubs, that elsewhere covered the whole country, to grow upon them. At Peake Creek the flood wrack was piled up amongst the gum trees, where, for a day or two, the flood had actually swept along nine feet above the level of the line. Big pools still remained here and there in the bed of the stream. At Algebuckina the low trestle bridge that runs across a wide-spreading creek for a quarter of a mile had been partly broken down with the rush of the waters, carrying uprooted trees, and was only temporarily repaired, so the train crept along and across, feeling its way slowly and

very cautiously, until we were thankful to be safely on the northern bank. A few hours later, whilst still miles away in the darkness, it announced to the isolated dwellers in the rail-head at Oodnadatta that the first train from the south that they had seen for more than a month had got safely through.

There was no time to lose, and of course no one in Oodnadatta thought of turning in early that evening, so, after depositing my belongings at the little hotel, I started at once making inquiries as to the possibility of getting some kind of conveyance to carry me to Charlotte Waters. Thanks to the kindly assistance of my friend Mr. Mansfield at the store, I made the acquaintance of a bushman, Jim Allan, a Norwegian. I never knew what his name was in his native land, but he was well known in Oodnadatta and along the northern track by the above. He was a real bushman, never at a loss whatever happened; nothing upset him. Though at first I think he looked upon me as a more or less amiable and harmless creature who, as he informed any friends that he came across, did nothing but "put bugs and beetles in bottles," and had a snake in a tin the smell of which was "enough," as he vividly described it, "to lift the Archangel Gabriel off his throne," he himself soon became interested in the search. After our return he was regarded as a great authority on the natural history of the Centre and received the courtesy title of Professor Allan. In the far north everyone knows everyone else, and what they can and what they cannot do, and, after Mr. Mansfield told me what he knew of Allan, and strongly recommended him, matters were very soon fixed up. Our contract was a very simple one. For the sum of twenty-five shillings per day, as long as the trip lasted, he agreed to provide a buckboard to carry me and my stores, together with the necessary horses and a black boy, across the country from Oodnadatta to Charlotte Waters and back again; also he

was to act as cook *en route*, a not very serious matter, as it only meant making a damper each night—everything of course found. As long as the fresh meat that we started with lasted good, we cooked it on the ashes, each to his own taste; otherwise it was a case of tinned meat with a second course of jam and the inevitable quart pot of tea.

Our stores were soon packed—flour, tea, sugar, tinned meat and jam; beyond this I had tobacco, pipes, knives and tomahawks for the natives, and odds and ends, such as beads and a large tin or two of "lollies," for the piccaninnies. I turned in for a couple of hours, but was up again at 4 a.m. All of the serious packing had been done at the store overnight, or rather in the very early hours of the morning, in readiness for a daylight start. There is no such thing as "early closing" at Oodnadatta, more especially when no train has come in from the south for more than a month. Before six o'clock we were away on the northern track, and Oodnadatta was soon only a little speck left far behind us. Our buckboard was fairly heavily packed; we had eight horses, four in harness and four brought up by the black boy who followed behind us, the loose horses feeding as they travelled along. Some twenty miles' run across sandy hills and Gibber flats brought us to Storm Creek, by the side of which we had a combined breakfast and early midday meal at ten o'clock. There were pools of water in the creek amongst the Giddea trees, and everything was as different as possible from when we passed across it just six months ago. The water was, of course, quite muddy, but there were plenty of frogs and tadpoles, the latter in all stages of development, from the little one just hatched out to the large, fully grown ones whose body measured two and a half inches in length, two in width and was all swollen out. It looked like one of those I had found in the dry season, so far as its shape was concerned, but was very wide awake and very differently coloured, and it was difficult to realise that

it was really the same dirty, dull, sleepy animal that we had dug out of its hard burrow in the dry season. The upper part of the body and of the legs was a general golden colour, with irregular lines and patches of brilliant green that sometimes merged into one another and covered almost the whole surface. The sides were yellow-brown with light lines marking the veins on the inner side of the skin. The toes, and more especially the webs between them, were pink. The tympanum was golden and the iris orange-gold, set off by a horizontal jet-black pupil (Plate III). Judging by the size and form of the body the animal had either prepared itself to burrow down into the mud, or else it was one that was rather late in getting rid of the hard mud enclosure in which it had been æstivating. There was not, so far as I could see, any other species of frogs in this particular water-hole, nor were there any living *Apus*, though I found a few dead "shells" on the margin of the pool. There were only a few *Estherias*, in fact the pool seemed almost given up to frogs and their tadpoles; possibly the frogs had eaten out the smaller animals. The day was very hot and the flies an almost unbearable nuisance. After a spell we put in the second team. Two of them had not been in harness before and did not appreciate the new experience, nor did I. To get them to start was not an easy matter. The leaders reared, turned round, faced the pole horses and got mixed up together, with legs over the traces, until it looked as if the harness must give way. Two or three times it meant undoing the traces and making, or trying to make, a fresh start. Allan plied the whip vigorously while I worked at the hind wheel on one side and Andy, the black boy, on the other. When a start was made, Andy was left behind to bring the horses along, whilst I had to run after the buck-board, smothered in dirt and dust and perspiring hard, and climb up behind as best I could. It was good exercise but not at all pleasant. Another fifteen miles brought us to the

Alberga creek. In the dry season, apart from the gum trees and flood wrack, piled up against their trunks, there had been nothing to show that we were crossing a river. Now, for a quarter of a mile, we crossed a series of watercourses separated from one another by low sand-banks. The last one was broader than the others, and after very heavy pulling we stuck fast. The water was actually running, but fortunately, though it swirled round the wheels, its level was just below that of the floor of the buckboard and, fortunately also for me, on one side we were close to a little sand-ridge in the middle of the stream. Allan and Andy, who had caught us up, standing up to their thighs in water, unharnessed the horses with some difficulty and took them on to the opposite bank. I got, soaking wet, on to the ridge with some collecting material and set to work. Andy looked after the loose horses, who were quite content to feed quietly, while Allan rode on to the Macumba Station, which, luckily for us, was only five miles away, to get a couple of reliable horses, stronger than those we had, to help to pull us out of the stream and up the bank of the river which the flood waters had broken away. It was really a stroke of good fortune for me. The water was muddy and, at first, I could see nothing, except some ripples made on the surface where some kind of animal was constantly darting up to the surface and then diving down. I soon found that it was a big water beetle, of which there were hundreds everywhere. Searching round I found a kind of little back-water where there was a small eddy in the current and the water not quite so thick as in the main stream, so that I could see little animals now and then as they came to the surface. After a time my eyes got accustomed to things, and then I could see that the water pool contained a little world of life full of feverish activity. For the first time I found a few living Apus. They were of very different sizes; the largest had a tough leathery carapace (Fig. 26) an inch and a quarter

in length; beyond this, for the same distance, the abdomen protruded, showing about twenty-five rings. At each side on the front half of the abdomen a large number of soft, plate-like structures or swimmerets were packed closely together. They were filled with bright red blood and never ceased moving with a wave-like motion, so that the water was constantly flowing over and between them. At the tail end there were two long styles. The whole body was light yellow ochre in colour. On the carapace at the front end there were two dark red eyes with a little eye-spot behind them. It turned out to be a new species of *Apus* (*A. australiensis*), though very closely allied to the well-known European form. The animal normally swims on its back close to the surface, probably because in this position its tough shell protects it from the attacks of water beetles, but I saw one, struggling frantically and, on taking it out, found three of them hanging on to it and tearing its soft appendages, out of which the red blood was oozing. It had evidently been caught unawares and was soon dead.

In addition to the *Apus* there were other little Crustaceans swimming about, the empty shells of which we had seen during the Horn Expedition on the hard surface of the clay pans and the dry mud of the river courses, in depressions where the water had stayed longer than in the usual sandy bed. There were representatives of two genera of these smaller Crustaceans called *Estheria* and *Limnetis*. Each has a double-hinged shell, just as if the carapace of a tiny shrimp had been folded in two and hinged and the whole body of the animal withdrawn inside it for protection. The largest of them measured a quarter of an inch in length, the smallest about a twelfth. The *Estherias* were all dark-coloured, with red blood, the *Limnetis* were almost colourless. In general structure the two forms are very closely alike, but the presence of the red colour—just the same as the hæmoglobin in our own blood—in one and its



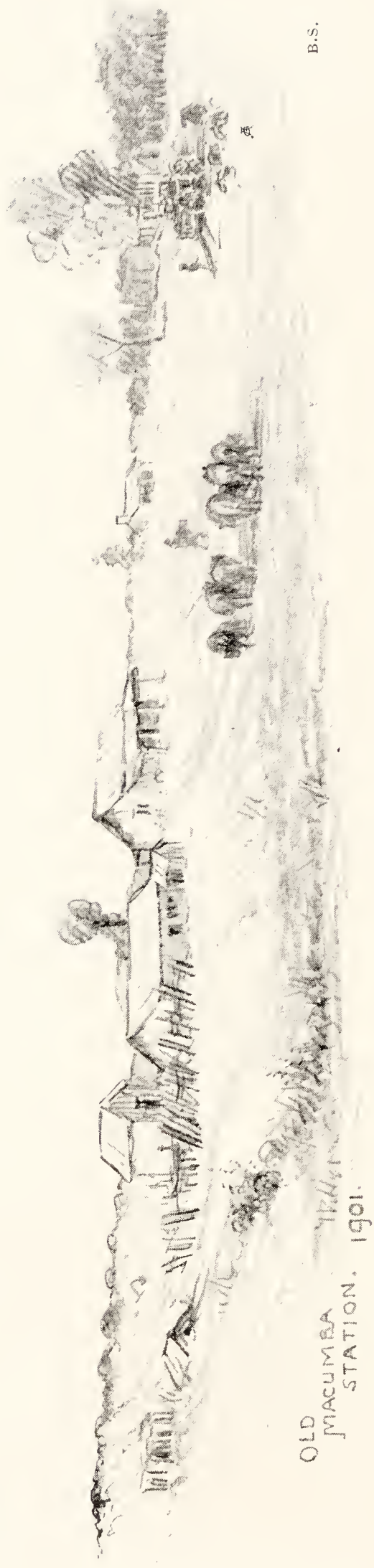
B.S.

FIG. 81B.—CONLON'S LAGOON, A LARGE CLAY PAN AMONGST THE MACDONNELL RANGES.



B.S.

FIG. 82B.—OVERFLOW FROM BORE AT THE HAMILTON CREEK.



OLD
MACUMBA
STATION. 1901.

B.S.

FIG. S2.—OLD MACUMBA STATION IN 1901.



B.S.

FIG. S2A.—CHARLOTTE WATERS TELEGRAPH STATION.

absence in the other were very striking. I found two distinct kinds of *Estheria* (Fig. 26*b*) in the Alberga, a larger (*E. lutraria*) and a smaller (*E. packardi*), the former comparatively few in number, the latter very numerous. On the way back amongst the scattered water pools that still remained, only the smaller red-blooded *Estherias* were alive, all other Crustaceans were dead.

After searching for some time I saw a few larger Crustaceans swimming about and managed to secure three fully grown and three smaller ones. The water in which I found them was muddy and they could only be seen when they came quite close to the surface, because they had no red blood and were, in fact, as nearly as possible the light fawn colour of the water, so that they were difficult to detect, except when quite close to the surface, where their movements betrayed their presence. I tried in vain to secure more, both here and in other water pools, but without success. There must be plenty of them somewhere, because in the dry season we had seen their dead shells in hundreds on the surface of dried-up clay pans and river beds. They are now known as *Limnadopsis squirei*, after Mr. Squire, one of the officers at Alice Springs Station, who first showed us their dead shells on Conlon's lagoon during the Horn Expedition in 1894. Though only an inch in length they are giants amongst their kind (Fig. 26*c*). Each has a bivalve shell with a slightly swollen knob at the front end of the upper side, around which some twelve ribbed lines are arranged concentrically, just like the lines of growth on a mussel or cockle shell. A little serration corresponds to each zone between the ribs, giving a very characteristic appearance to the shell.

If it had not been for this fortunate "sticking-up" in the Alberga, I should never have had the chance of securing the little animal in the flesh. Its life is evidently a very short one. Though searching hard in many water pools

along the river courses and on clay pans, I never came across it again, and yet, in the dry season, on the hard-baked surface of many of the latter, such as Conlon's lagoon near Alice Springs, its dead shells are sometimes to be counted in thousands. You can never rely upon finding it, or other forms such as *Apus*, in the same place during successive seasons. We found, for example, in 1894, patches of the dry clay surface of Conlon's lagoon thickly strewn with its shells. Some years later I searched in vain to find it alive in the water there. There was no trace of it, not even a vestige of a shell on the margins of the lagoon that was rapidly drying up. In 1923, when again I went up to the Macdonnell Ranges with Dr. L. Keith Ward, we searched for, without finding, a trace of *Apus* and *Estherias* in clay pans where before I had found them in plenty.

By the time that Allan came back with the horses I had collected, alive, seven species of Crustacea, of which we had only before seen the dead shells, simply because in the dry season they all disappear. Harnessing them up, the new horses managed to pull us out of the bed of the creek. A short distance ahead the Stevenson River, coming down from the north, junctioned with the Alberga, and we followed its valley for some five miles until we came to the old, deserted Macumba Station (Fig. 82). There were just the ruins of the old place, but Mrs. Gowan, who lived in charge of what remained of the station, gave us a most welcome cup of tea. As we were anxious to push on, we did not halt for long but followed up the river, which consisted of an almost continuous chain of water-holes. Red-legged coots, turkeys (*Eupodotes australis*), Port Lincoln parrots, galahs, flocks of little green grass parakeets, chestnut-eared finches, plovers and other birds were making the most of a short time of plenty. There were not many flowers to be seen, the only really conspicuous one being the Darling lily (*Crinum flaccidum*), that grew in clumps, with clusters of white

flowers from twelve to eighteen on each stalk. We went on till dusk and camped at eight o'clock on the banks of the Stevenson, half-way between the Macumba and the Willow Well. What with heat, no breeze and flies innumerable, the day had been a very trying one, but the interest of everything around us was so great that such minor discomforts counted for little. When, however, the sun set and there was nothing to be looked for, or watched and collected, the crawling of the flies over hands and face and into eyes, nose and ears became an almost intolerable nuisance, more annoying even than the buzzing and biting of myriads of hungry mosquitoes, simply intent, like every other living thing, animals and plants included, upon making the most of a good time that would not last long. Whether and where the mosquitoes had hidden themselves away during the months of drought before the rain fell, or whether eggs had remained dormant during long months of drought and capable of developing when the rains came, was a problem. The Stevenson Valley, with its green herbage and, at this time, almost continuous series of water-holes along its course, is the most pestiferous part of the country between Oodnadatta and Alice Springs, so far as obnoxious insect life is concerned, but it was rather astonishing to find scarcely any beetles, except the ubiquitous *Curulio* or weevil. Day after day I "shook" numberless *Cassias*, *Eremophilas*, *Acacias* and *Asters*, all in full flower, but with little success.

There was not much sleep to be had, but, luckily, the horses, though pestered sorely by the flies, had not wandered far, so, after a hasty breakfast, we got under weigh at 6 a.m. after, of course, the usual trouble of persuading the team to pull together. The *Mulgas* and *Giddeas* were in full flower, looking very bright and fresh with new leaves and clusters of yellow blossom, but the *Giddeas* smelt abominably; even half a mile away, when the wind blew from them to us, their scent was strong. Every pool contained *Apus*,

water beetles, Estherias and tadpoles. I stopped for some time by the side of one that was drying up. The water had receded until it was only about four feet in length, three in width and two to three inches in depth. It was literally a seething mass of Apus and tadpoles swimming about, jostling one another. The tadpoles were all those of *Chiroleptes platycephalus*, the water-holding form, but they were all young ones and would have no chance of growing into frogs old enough to burrow. Though I searched hard every day I was never fortunate enough to find any frog actually in the act of burrowing. The margins of the pool, where the waters had dried up, were thickly strewn with shells of dead Apus and Estheria, but the thing which interested me most was what appeared to be the determination of the Apus to commit suicide. In the water itself they were, as usual, moving about, so far as they could do so in such a crowd, on their backs, waving their red swimmerets aimlessly, but, one after another, the larger and evidently more mature ones wriggled their way out of the water on to the wet, muddy sand. As they did so they turned over and began to scoop vigorously with their front appendages so as to make a little flat hole in which they lay, moving feebly about until the water receded from them and they died, leaving their shells, and the eggs in the egg sacs underneath them, to dry up. The strong winds that sweep across the country in the dry, hot season must carry thousands of eggs in the clouds of dust they whirl along, until finally they are deposited in some depression where, later on, a water-hole is formed and the eggs develop, it may be scores of miles away from the pool from which they originally came.

The flood waters had washed away the banks of the Stevenson in many parts and, with them, the old track, so that progress at times was slow and difficult, and we were by no means sorry to leave the valley and travel for a time over upland Gibber plains until we dropped down again

into the valley where the Hamilton was coming in from the west. Here, for the first time, we came across Red Mulga trees bordering a number of small creeks. A Government party was engaged putting down a bore, so, though it was early, we were glad to camp and get out of the heat under the shade of a large, airy, bush shelter, which unfortunately, however, was made out of *Giddea* boughs that, as usual, saturated the air with an all-pervading and penetrating odour something like that of sulphuretted hydrogen. The scent was just as odious as that of the wattle is delicious, and yet both are *Acacias* and very closely related to one another. There are very few sweet-scented flowers in Central Australia. Fortunately for us, Mr. Bailes, the contractor, and Mr. Jelly, the Inspector of Bores, were there and we spent a very pleasant evening with them, comparatively free from flies and mosquitoes. Our track next morning still lay along the Stevenson with the Red Mulga creeks extending over a belt of country not more than fifteen miles broad. The ordinary Mulga is not entirely absent in this part but is only seldom seen. *Giddea*, on the other hand, is common everywhere but disappears northwards.

There were plenty of water-holes all along the river course with patches of white Darling lilies. We halted for our midday meal by the side of a shallow pool, flecked with the floating green leaves of the Nardoo plant, which is not at all common in these parts, though further south, in the Lake Eyre country, it grows in every watercourse. On the margin of the pool, young frogs (*Helioporus pictus*) were hopping about. In the water were tailed tadpoles of the same species and of *Cheiroleptes* and adults of both frogs. Though I could hear them croaking loudly, I could not at first detect any frogs in the water, the surface of which was covered with the green leaves of the Nardoo that were anchored by long stalks to their roots in the bed of the pool. After watching for a little while I threw a few pebbles into

the water. Instantly the croaking ceased, and at the same time a few green and golden patches that, with the sun glinting on them in the water, I had not been able to distinguish from Nardoo leaves, suddenly disappeared. These were the heads of frogs, which, so long as they remain quite still, as they usually do unless disturbed, are almost impossible to pick out from amongst the green leaves of the Nardoo floating close together.

During the daytime they remain in the water, but they must come out at night to feed, because the stomachs of several that I examined were swollen out to a great size with caterpillars and insects that they can only catch on land.

The *Helioporus* (Plate III, Fig. c), instead of being the dull, green-grey-coloured creature of the dry season, was splotched with dark green patches on orange and lighter green, with brilliant orange iris and vertical black pupil, and the very characteristic jet-black toe on its front leg. The third species, *Limnodynastes ornatus*, had changed from dirty grey to a cream-white with brighter and darker splotches of silver-grey, centering in circular patches of salmon-pink (Plate III, Fig. b). All of these three species store water in their bodies, as also does the Catholic Frog (*Notaden bennetti*), but, unlike the other three, *Helioporus* does not, at least always, form a permanent burrow, in which it lies imprisoned until released by the rains, because, several times during the dry season, I found it, late in the evening, hopping about on the beds of creeks where, during the day, it lies at rest in the relatively cool sand, a few inches below the surface. The little *Hyla rubella*, which is very often met with in numbers under stones around water-holes, does not seem to make any attempt to store water and can æstivate, if necessary, in little crevices that are much too small to hold the larger frogs. About twenty miles north of the Hamilton bore, the Stevenson turned off to the west, just where the telegraph line crossed it, and we followed



a



b



c

B. Spencer, del. ad nat.
Nat. size.

PLATE III.—CENTRAL AUSTRALIAN FROGS

(a) *Cheiroleptes platycephalus*. (b) *Limnodynastes ornatus*. (c) *Heliophorus pictus*

along by the side of this in a straight line for fifteen miles, across a weary, open plain with plenty of crab holes (Fig. 36) and clay pans, all of them apparently containing *Apus*. Years later I saw these same holes under what appeared to be equally favourable conditions, but not a sign of animal life in them, not even an *Estheria* or a water beetle. We camped for the night close to the little hut dignified with the name of Blood's Creek store. It was just as hopeless as when we had seen it on the Horn Expedition, and we were glad to get away from it early in the morning, and, still following the line, crossed some very rough, stony hills on which we could see all shapes and sizes of Gibbers in the making, and then dropped down into the broad valley of the Abminga, shut in by low hills. For an hour we spelled by the side of a long water-hole overhung by *Giddeas*. There was not a sign of *Apus*, just a few water beetles and *Estherias* and well-grown specimens of frogs, the big *Cheiroleptes* and the little *Hylas*, as well as any number of young frogs and tadpoles. There were also plenty of water snails (*Bithinia australis*) alive. On the Horn Expedition I had found some of these in the same place whilst searching round the trunks of the *Giddeas*, when all was dry and there was no sign of life of any kind. Each of them had closed the opening of its shell with a little plug of hard, chocolate-coloured earth, forming a close-fitting operculum that prevented evaporation. The plug was quite different in colour and consistency from the earth around the roots of the trees, in little cracks amongst which the snails were *æstivating*, and must have been ground up finely by the snail. I put about fifty of them into a tin and brought them back to Melbourne. After the lapse of fifteen months, during which time I had forgotten all about them, I turned them out of the tin into water and, when the mud softened, more than half of them came out alive.

Travelling on we crossed the foot of Mt. Frank, a long,

low, flat-topped hill. The telegraph line streaked away to the north in an absolutely straight line for twelve miles, and far off, on the horizon, we could again see in the mirage, looking as if they were hanging in the air, the station buildings of Charlotte Waters, the trees on Coghlin Creek and the line of telegraph poles. Late in the afternoon our journey was over and I was safely housed with my friend Byrne, looking out from the station upon about as desolate a scene as there is to be found even in Central Australia (Fig. 37).

Next morning, with the help of Byrne, I set to work and we soon had a bevy of natives, men, lubras and piccaninnies out collecting, and for days they kept me busy. I had been much hoping to secure live specimens of the "marsupial mole" (*Notoryctes typhlops*), but had no luck. It is purely a matter of chance whether the natives can find it, because it only comes out on to the surface under very special climatic conditions, apparently only immediately after a heavy rainfall. Otherwise it lives entirely underground. It is just about the size of a mole but has a beautiful, very close-set, light, golden-coloured fur. It is absolutely blind, in fact with not a vestige of an eye externally and only a little very degenerate eyeball under the muscles. Eyes would be a nuisance and a great danger, because its life is spent burrowing in fine and often hot sand. Its body is torpedo-shaped with a hard knot on its nose and strong, shovel-shaped feet. It feeds mainly on ants and must depend on a keen scent for finding them, and so far no one has been able to keep it alive in captivity for more than a very few days. We only got one specimen—dead before I saw it. It was a female, with a well-developed pouch opening backwards and two large teats of equal size, so that probably this indicates the normal number of young ones; but it is very difficult to state anything definite in regard to this, so far as marsupials are concerned, because due, most likely, to the

very varied conditions of the environment during different seasons, the number of teats, and evidently of young produced by animals of the one species, varies in a way quite unknown amongst them when they are living in conditions of a more equable character than those of Central Australia.

As soon as the natives had been "sent out bush" with instructions as to what I specially wanted to secure, Byrne and myself went out some twenty miles to the west to see the country over which the flood waters of the Finke had just swept. We had to cross miles of dreary sand-hill country covered with Cassias and Grevilleas, but not a sign of a flower. Here and there little pools of water lay about where a thin layer of clay prevented it from sinking into the sand, but there was no sign of *Apus*. The Finke had carved out for itself a new main channel, fully a quarter of a mile broad. Great gum trees, torn up by the roots, were lying on their side with huge heaps of flood wrack piled up against them; others, with the sand swept away from around them, exposing a great tangle of twisted roots, looked as if any strong puff of wind would blow them over. The whole country was a network of dry channels, running over the flats and amongst the sand-hills, with dead and dying trees and scrub and tussocks of grass heaped up ten and twenty feet high against anything strong enough to withstand the enormous pressure of the sweeping current. If, as sometimes happens, heavy rains fall in gathering grounds far away, the flood waters, without warning, tear down the dry courses. Any camp made on the lower-lying parts of these sandy wastes can, in a moment, easily be overwhelmed, swept away and buried under sand and flood wrack, leaving not a trace behind. It was probably in some flood such as this that Leichhardt's party disappeared from sight for ever.

It was very hot, so much so indeed that the heat of the sand penetrated through the soles of our boots. There was an extraordinary feeling of ruin and desolation. Every-

thing was perfectly silent. Not a bird about, except a few kites—not even a crow; in fact these are scarcely in evidence during rain times, but, as soon as the country dries up, their miserable, depressing cawing is always with you in camp. Two natives that we had taken out with us were busy collecting anything that they could find, especially lizards, and the difference in colour between most of those that I had seen on the Horn Expedition and the same now running about and snatching up insects and grubs was wonderful.¹ Far and away the most abundant was a species of *Amphibolurus* (*A. reticulatus*) with a dull, yellow-coloured body, mottled with dark splotches. Other species of the same genus were amongst the most brightly coloured lizards that we met with (Plate IV). One of them, *A. pictus* (Fig. 1), had a band of blue along the middle of its back, crossed with pinkish bars and flanked on each side with brick red, speckled with yellow spots. The legs were blue and it looked exactly as if it was wearing a pair of blue trousers. Another (*A. maculatus*) had the whole of its upper surface brilliant vermilion, with broken bands and spots of chrome-yellow and jet-black. So far as I know this is the only Australian lizard in which the sexes can at once be distinguished by their different coloration. The male has a black patch covering nearly the whole of the throat, chest and front part of the abdomen; this, together with a black band down each side of the body, is entirely absent in the female. Of these three species, the first was often seen running about in the open, while the other two preferred the shelter of logs and stones, a fact that may probably be associated with the dull ground colour of the one and the brilliant coloration of the others. A fourth species (*A. barbatus*), commonly known as the Jew lizard, and widely

¹ The species collected on the Horn and on later expeditions were described by Messrs. Lucas and Frost, "Horn Expedition Report," Part II. pp. 112-50, Plates 8-12, and Part I. p. 210.



PLATE IV.—CENTRAL AUSTRALIAN LIZARDS

FIG. 1. *Amphibolurus pictus*. FIGS. 2 and 2a. *Physignathus longirostris*. FIG. 3. *Ablepharus lineo-ocellatus*

distributed throughout the whole of the continent, was often met with, sunning itself on the ground or lazily crawling about. It varied to a large extent in its colour. On the open country, near Charlotte Waters, it had a general yellow-brown colour, similar to that of the ground and withered grass. At Crown Point, on the Finke River, the animals had a curious brick-red colour closely resembling that of the sand on which they were resting, but at Alice Springs they were all dull, almost black, though their surroundings were of a general red or yellow colour.

One of the most interesting forms was a representative of the genus *Physignathus* (*P. longirostris*). There is only one other species found in Australia, and it inhabits the eastern and southern coastal districts, where it is never found away from streams. It is essentially a water lizard, spending its time on logs and by the water, into which, when disturbed, it rapidly dives. The Central Australian species is a very graceful, active creature (Plate IV, Figs. 2, 2*a*). Its general body colour is a light blue-grey, except along the back, where there is always a medium light line with a darker and lighter reddish and yellowish-brown band on each side. It darts about with great rapidity, often standing up on its hind legs as it runs, and catches flies and other insects with wonderful dexterity, so much so that the natives call it "*amunga-quinia-quinia*," which means "fly-quick-quick." It resembles its ally in the coastal districts in frequenting watercourses, where it lives amongst the débris on the banks. These watercourses, at the present day, are of course quite dry during the greater part of the year, but the habit may point back to a time when this species also was aquatic and when the now dry creek beds were permanently filled with running water.

The natives collect and eat all these lizards, and, needless to say, though their colour may sometimes protect them from other animals, so long as they remain still, it does not in the

least protect them when the native is in search of food. In some cases the variation in colour, within the limits of the species, was most marked, and this without any relation to the surroundings or locality. Much the most variable in this respect was a small Skink, one of the most widely-distributed of all Australian lizards (*Egernia whitei*). In some specimens the general ground colour was a dull, yellow-brown with a strongly-marked continuous median dark band along the back, discontinuous black lines and spots on either side of this and light yellow or white spots, irregularly scattered on the upper surface. In others the bands and spots were faintly seen, the general colour being a dull, yellow-brown with indistinct darker spots, but side by side with these dull-coloured specimens were others in which the whole upper surface was brick-red in colour. It is very difficult to account for the wide range in colour of this particular species, which has nothing to do with the season. On the other hand, especially in the genus *Amphibolurus* (such as *A. pictus* and *A. maculatus*), there was a notable difference in the coloration of those collected during the dry and wet seasons.

The difference between a warm-blooded and a cold-blooded animal was impressed upon me when one of the natives brought in a very fine example of a large Skink, *Tiliqua occipitalis*. It is covered with scales and has short, stumpy legs, so that the under surface drags along the ground when it moves, or at least keeps coming into contact with it. Being busy with some other specimen I told the boy to wait and not to let it go. To my surprise he put it down on the sand, simply saying in his broken English, "Him no go far, quick fellow him been tumble down altogether." He made no attempt to hold it and I thought it would escape, but the boy knew more than I did, and after moving along slowly for three or four yards, it actually did "tumble down altogether"; it was dead, baked to

death by the great heat of the sand because it had no way of keeping its body cool when the sand on which it lay was hot. There was in this respect a great difference between the stumpy Skink and the graceful, long-legged *Physignathus*. The former had to keep under shelter during the heat of the day; and the latter, running along on its hind legs, which it can do at a remarkable rate, so that its body does not touch the ground, is always in the open, except along the watercourses, where, if pursued, it runs for shelter into the flood wrack. I had a busy time taking colour notes, making sundry sketches of the living animals and packing them away without delay, because the heat was so great that they rapidly became spoilt. Byrne and myself were glad to lie down on the soft sand when it became cooler at night, but one has to be careful to see whether any unwelcome guests have crept into your rug. I found two big scorpions and a nasty yellow centipede, five inches long, in mine. Fortunately no more came in, so far as I know, during the night.

Back at the station, the natives came in daily with their spoils, which were brought to light out of sundry old jam tins, pickle bottles, trouser legs, stockings, coat sleeves, old shirts, in fact anything that could be tied up. The scent of a Jerboa rat that has been for a day or two in an old trouser leg, in company with a mixture of scorpions and cockroaches and caterpillars, all more or less dead, is not very refreshing, and the mixtures that were turned out of some of the collecting receptacles were remarkable. The collectors all returned towards sunset, and it was a daily source of speculation as to whether anything good would be brought in. The best collectors were one or two of the old women. The natives could not in the least understand the basis of payment; why an *Antechinomys* should be worth a pocket-knife and a Jerboa which was just the same size, in fact perhaps a little bigger, with exactly the same long hind legs,

only worth at most half of a stick of tobacco, and this even dependent on the state of freshness, was a problem that they gave up in despair, though it made them keen on *Antechinomys*. That an old woman, who, by chance, brought in a good female specimen of the pig-footed bandicoot (*Chæropus castanotis*), which they call Dubaitja, and was one of the rarest of all the marsupials, should be rewarded with a pipe and two sticks of tobacco and her piccaninny, whom she carried, with sweets as well, made them more or less amazed. Every piccaninny wished that it had had the good luck to be born of a Dubaitja-finding mother, but, unfortunately, only three attained to this distinction. It may be noted that surprise, or satisfaction, is expressed by a peculiar clucking noise made with the right side of the mouth open and the tongue pressed up against the palate, the head being slightly nodded at the same time. The first *Chæropus* I secured was fortunately quite "fresh," having been captured in its burrow and carried in a jam tin the size of which gave it little chance of moving about. It was a light, fawn-chestnut colour all over, and decidedly more so than the few specimens in the Melbourne and Adelaide Museums. On the second day one or two specimens of a very interesting marsupial were brought in. It was called Amperta by the natives, who seemed to know it well, though it was by no means common. It was the size of a small rat with a sharp nose, evidently a *Phascologale* of some kind, and suspiciously like a single specimen found somewhere in the interior of Australia forty years earlier and described by Krefft under the name of *Chætocercus cristicauda*. Later on I compared it with Krefft's specimen in Sydney, and, though this had been badly preserved, stuffed and described, it was evidently the same animal. Later on Byrne secured some more, placing the matter beyond doubt.

I was anxious to secure a specimen of Echidna, the



*B. Spencer,
del. ad nat.
Nat. size.*

PLATE V.—*Macroderma gigas*
The Great White Bat

so-called Australian "porcupine," and one of the boys fortunately came across a well-developed female amongst the quartzite rocks right on the top of Mt. Frank, twelve miles away to the south of the station. The pouch was well marked, but there was no young one, and the natives say that it only breeds during the winter months. It must be very hardy and able to do without water, because there is none, except for a week or two during the actual rain season, within at least ten miles of Mt. Frank, and ten miles would be a long walk even for such a hardy animal as a "porcupine." It belongs to the same species as the Echidna that is found all over Australia, but is decidedly smaller than the Victorian and Tasmanian animal and much lighter in colour. The Echidna, with its short spines, projecting through the hairs all over the back, is really very much more like a large hedgehog, both in build and appearance, than a porcupine, but the latter is now the popular name for it all over Australia, where English names are unfortunately applied in the most curious and often fanciful way to native animals and plants to which they have no affinity and usually very little, and sometimes no, resemblance whatever. In many parts of Victoria and New South Wales it puzzles anyone who is accustomed to European woods and forests to find a gum tree called a "mountain ash," to which it has not the faintest similarity, either in foliage, fruit or manner of growth. So again "'possum up a gum tree" refers to an animal and a tree neither of which are really Australian so far as the original application of the names is concerned. The popular name "gum tree" was given first to an American tree, quite unlike any Australian "gum tree," and "'possum" to an animal which, though it is a marsupial, belongs to a group of pouched animals very distinct from that to which its Australian namesake belongs. The expression "'possum up a gum tree" was really brought over to Australia in early days by miners of the celebrated

“forty-niner” period, who left California to try their luck on the gold-fields of Bendigo and Ballarat in Victoria.

The poetical effusion :

“ De Lord he know de nigger well,
He know de nigger by de smell,
And when de nigger baby cry,
De Lord he gib em 'possum pie,”

must be reserved exclusively for use in America. There are neither “niggers” nor “'possums” nor “gum-trees” in Australia, and its long-headed, chocolate-coloured aboriginals, who are physically much more closely allied to ourselves than to “niggers,” are innocent of any such culinary craft as that requisite for the making of “pies.”

So again the name “ducked-billed mole,” originally given to Echidna's close ally the Platypus, is entirely inappropriate. It has, apart from the most beautiful fur, no resemblance whatever to a mole, and its bill, though flattened out, is covered, when it is alive, with a soft, almost velvety, leather-like material, studded over with numberless delicate sense organs, whose functions are probably akin to those of both touch and smell.

The Platypus does not live in the interior of Australia because it must have permanent water. In fact it is only found in Tasmania and on the well-watered coastal country of Victoria, New South Wales and Southern Queensland, and has just as restricted a distribution as the hardy Echidna has a wide one all over the continent and New Guinea.

The latter is very hardy, feeds on insects, principally ants—hence another of its fanciful popular names, “the ant-eater”—and can adapt itself to the most varied environment. Indeed it is really rather a matter of surprise that so adaptable an animal has not been able to maintain itself in other parts of the world, where its long-since extinct ancestors once existed.

It both lays eggs and suckles its young and, with a fairly

well-developed pouch, is able to do the latter much more efficiently than a Platypus can. However, a mammal in the making, such as Echidna, hardy though it may be, has not been able to survive in contact and competition with more perfectly developed forms having much the same needs and habits.

The natives kept me busy, but, after the first two or three days, it was more or less a repetition of the same things, lizards and Jerboa rats and mice preponderating. The Jerboas were very abundant and easy to catch and, as my collecting capacity was limited, I had to close down on them. In the days of which I am now writing the rabbit had not yet invaded the Centre. Ten years later it was common there and, when I was in the Centre in 1926, it had practically exterminated the Jerboa, which was then just about as rare and difficult to procure as the *Antechinomys* had been in earlier times.

Just two days before I left, the collectors came in as usual in the evening, but it was evident that one of the older women was carrying something that both she and her companions regarded as being very valuable. As their idea of value and mine did not always coincide, I had learned not to expect too much, but the women kept repeating a name which was evidently that of an animal carefully fastened up in an old trouser leg. When she opened one end slightly I peeped in and saw a little grey-furred animal, intermediate in size between a large *Phascologale* and a small *Dasyurus* or native cat. With some difficulty, because it was decidedly wild, we managed to get it safely under an upturned glass battery-cell so that we could see it clearly. It was in perfect condition with a beautiful grey fur, and I was able to get sketches of it alive. It was quite a new creature, neither a *Phascologale* nor a *Dasyurus*, though more akin perhaps to the smaller kinds of the latter, commonly known as "native cats," and is now known as *Dasyuroides byrnei*.

There was great rejoicing amongst the lubras when, in addition to a pipe and three sticks of tobacco for the finder, a general present of tobacco and flour for the collectors all round and sweets for the children was made. Later on Mr. Byrne secured a few more specimens, but it is difficult to get them in good state, and for years past not one has been seen. Drought and rabbits have now evidently killed the animal out in this part of the Centre. There was still another good find, though I was not quite sure about it until later, when Mr. Byrne secured two or three more specimens. Up to this time two species of the rabbit bandicoot were known, the common one (*Peragale lagotis*), called by the natives Alpita, and another (*P. leucrura*) then known only from one specimen. The natives told us of an animal which was evidently a rabbit-bandicoot of smaller size than the Alpita. They brought in one of them, but it was too much decomposed to allow of accurate measurements or description and might have been a young form of Alpita, but Mr. Byrne's later specimens proved that it was a new small species (*P. minor*).

Time went by rapidly and I was obliged to return to Oodnadatta in time to reach Melbourne early in March. The horses had recovered their spirits, which had been somewhat damped by their experiences on the way up, and were very fresh, so Andy and I had a good deal of exercise daily in trying to make the wheels go round and, myself, in catching the buckboard up when once it had started. We followed the same route down as that by which we had travelled up. The country was just as green as ever and the flies and mosquitoes as bad, but the water-holes were rapidly disappearing, many of them, in fact, already dried up. There was scarcely a living Apus to be seen and a surprisingly small number of "shells," in comparison with the crowds of living ones that we had seen on the journey up. In the Alberga, where I had found the large *Limnadopsis*,



PLATE VI.—*Phascologale macdonnellensis*

B. Spencer, del. ad nat. Nat. size.

the water was now quite clear; not a trace of it was to be seen nor of the little white Crustaceans, in fact only red-blooded *Estherias* had survived, and even these were now few in numbers, but, in parts, the surfaces of the dried pools and clay pans were strewn with their dead shells, just as they had been when we saw them on the Horn Expedition. The Darling lilies were all in seed, with clusters of seven to fourteen cases on the stalks, each containing from one to seven seeds. In another month, at most, there would be no surface water except in the deeper pools and the country would rapidly return to its normal dry state. Despite flies, mosquitoes and heat, I was thankful to have had the chance of seeing the country in the "wet." My collecting cases were full of *Spolia eremiana* and my memory stored with recollections of a wonderfully interesting time spent with my friend Byrne right in the centre of the Australian wilds.

CHAPTER V

THE DESERT LAND OF LAKE AMADEUS

ON the Horn Expedition we divided our party into two at Reedy Creek on the south side of the George Gill Range. The main camp, with all the camel team and stores, moved on westwards, along the base of the Range, with the object of turning north, so as to get round the west end of the main Macdonnells and then, travelling east amongst the latter, to reach Alice Springs. Three of us, Watt, Belt and myself, under the guidance of Mounted Trooper E. C. Cowle, a great bushman with a wonderful knowledge of the Central country and long experience of the ways of the savages, decided to make a flying trip to the south across the desert country, with the object of seeing Lake Amadeus and two remarkable rock masses known as Ayers Rock and Mt. Olga. As our time was limited, we decided to travel on horseback and trust to luck in the matter of water. Camels would, of course, have relieved us of any anxiety on this score, but they travelled too slowly to enable us to do what we wanted in the short time at our disposal.

The camel team moved westwards out of camp at Reedy Creek, on the south of George Gill Range early on the morning of June 16th, and, some hours later, so as to give the horses the chance of a good drink, as it was quite uncertain where and when they would get their next one, we packed up and started southwards. After sixteen miles we crossed the end of King Creek, which rises to the east of Reedy Creek, in the George Gill Range. The bed of

the stream, after it left the hills, was very ill-defined; in fact, it was only marked at all, in many parts, by an irregular line of small red gum trees, which gradually grew fewer and fewer until, finally, they disappeared. We found ourselves amongst a series of low sand-hills and camped for the night on a remarkably hard clay pan, which, however, as Cowle pointed out, had the advantage of being "clean," by which he, personally, meant not sandy. I wished several times during the quiet night hours, when sleep was not easy or comfortable, that my friend Cowle, with whom, in after years, I spent many days in traversing the Ranges, had not been quite so hardened a bushman. When in pursuit of natives, who had been spearing cattle or attacking white men, his tireless persistence, until he had captured his quarry, was a source of wonder, and even terror, to the wild blacks, for whom he was a match, even amongst their own mountain fastnesses or in the desert country, where no white man ventured if he could avoid it. I think indeed that his hardihood—because he thought nothing of sleeping out on the hardest ground, with only the thinnest of rugs on him or, perhaps, none at all, so as to enable him to travel lightly and with great rapidity—helped, at least, to bring on the illness that entirely disabled him during the last few years of his life. For long years he was a hopeless cripple, but he bore it all with the same stoical cheerfulness and indomitable courage with which he had faced the dangers and hardships of his life in the Centre. He was a great correspondent, with a keen sense of humour and power of observation, and was known to, and knew, everyone in Central Australia, from Oodnadatta in the south to Powell Creek in the north. His letters, if only they could be collected, would form a valuable original source of authoritative information on the early days of Central Australia.

From a scenic point of view, the country across which

he led us was just as uninteresting as it could possibly be. There was a constant succession of sand-hills with intervening flats of more or less hard ground. On the sand-hills, often right on the very top, we were surprised to find, here and there, well-grown gum trees. Each of them reached a height of from sixty to eighty feet. The trunk was silver-grey in colour, except the butt, which was covered with a paper-like bark that peeled off in long, yellow-brown scales. The foliage was quite dense and formed a kind of umbrella-shaped mass.¹ We were astonished to find a tree of this size, able not only to grow, but to thrive, amongst the waterless sand-hills, more especially as a gum tree does not normally throw its roots down to any very great depth, and the surface soil, down at all events to the depth to which the roots of any ordinary gum tree penetrate, must be almost perfectly dry, except at rare intervals of time, in this part of the country. There were only, comparatively, a few of these trees and we did not see any young ones, though the hard seed cases were lying about on the ground in considerable numbers. It is probable that only during very exceptional seasons, or even a succession of such, is there sufficient moisture to allow both of the seeds germinating and of the young plant growing to such a size that it can take firm root in the ground before it is withered by the intense heat.

On these sand-hills, also, we met with a plant that is well known, at least by repute, in the centre of Australia. It only grows in abundance in certain parts, more especially in the central parts of Queensland, but it is traded, or at least its dried leaves are, far and wide. Scientifically it is known as *Duboisia Hopwoodi*, popularly as the Pitcheri, or Pituri, plant, which is presumably its native name in some part of Australia. The natives use it both as a narcotic and as a means of catching emus. The plant has the form

¹ The tree was identified by Professor Tate as *Eucalyptus eudesmoides*.

of a small, stiff shrub with a number of straight stems, from four to six feet high, carrying yellow flowers and hard, narrow leaves. The leaves and little twigs are gathered by the natives and packed tightly into bags made of woven fur-string (Fig. 132). These bags are traded for hundreds of miles, principally along an old trade route, passing from the north across the interior of Queensland and New South Wales, right to the south of Lake Eyre, shields, boomerangs, spears and other articles being traded back in return for them. Whatever may be the faults of the Australian aborigine, he is, in his native state, perfectly honest and trustworthy in regard to matters of trading. A native will hand over his bag of Pituri to another man, who acts as intermediary, with most perfect confidence that, sooner or later, he will receive its full worth in kind.

The simplest way of using the leaves is that of rolling a few of them together and then sucking them; but the ordinary plan is to dry them by heat, cut them up finely and mix them with ashes, obtained by burning the leaves of a species of Cassia or Acacia. The mixture thus produced is made into a small plug and chewed or, rather, sucked. When not in use it is securely tucked away, amongst the well-greased ringlets behind the ear. If you put your hand up to your mouth and pretend to suck something, a blackfellow at once knows what you mean, and, in the most friendly way possible, will offer you his plug for a "chew."

In this part of the country the leaves are pounded up in water, and the decoction thus made is placed in a wooden vessel, out in the scrub where an emu is likely to come across it; or, more often, it is put into a water pool that is frequented by the bird. After drinking the Pituri water the bird becomes stupefied, or, to use the expressive description given to us by a native who was describing

its action, it becomes "drunk, all same white man," and then falls an easy prey to the blackfellow's spear.

About forty miles south of George Gill Range there is a low one called Winnalls Ridge, forming an outlier of the same Ordovician sandstone rocks that form the main mass of the northern Ranges. Immediately after rounding the eastern end of the Ridge, out amongst the dry, barren sandhills, we came across a little flat in which a patch of Ti-tree was growing.¹ The presence of this shrub is usually an indication of the existence of water, either on the surface or soaking through the ground, and here, in the middle of the Ti-tree, we found a curious "native well," as it is called—that is, a little spring used by the natives as a water supply when travelling over this dry and inhospitable country. The native name for it is Unterpata. Here, in about the very last part of the land where one would expect to find water, there were the remains of what had evidently once been a mound spring. In the middle of a deposit of travertine limestone there was a natural well about fourteen feet deep. At the top it was about ten feet across :

¹ The correct spelling and origin of this word are uncertain. It is pronounced "Tea." There are species of two genera of plants to which the name is given, *Leptospermum* and *Melaleuca*. The commonest species of the former, *Leptospermum scoparium*, is a large shrub, or small tree, growing to a height of twelve or even fifteen feet, with small white, pinkish or even crimson flowers and little, stiff leaves, to which it may perhaps owe its name, because it is said that early settlers actually tried to use its leaves for tea-making. This species, which is the one referred to here, often forms dense scrubs in which the trees grow close together, their strong, wiry branches spreading out from the ground and intertwining, so that Ti, or Tea-tree, scrub is difficult to penetrate. Ti, or Tie, as it is rarely spelt, may perhaps refer to this fact, but there is no certainty as to the origin of the name. It is only in south-eastern Australia that smaller specimens of *Melaleuca* are called Tea-tree. It belongs to the Myrtaceous family and bears great bunches of fluffy flowers just like those of the ordinary myrtle. They secrete large quantities of sweet, sticky nectar that attracts swarms of bees and birds and fills the air with a strong scent of honey. In the northern parts of Australia the tree may reach a height of eighty or even a hundred feet, with a trunk a yard in diameter, and is commonly known as the "Paper-bark."

its wall slanted down steeply until, at the bottom, where a pool of water lay, it was not more than four or five feet in diameter. At one time, just as in the case of the Springs at Dalhousie, there was doubtless a mound with a spring and water pool at the top, but now the underground supply is so small that it does not reach the surface and, as desiccation continues, the supply will cease altogether. We came to the margin of the well hoping, rather against our fears, that we should be able to get a little supply for ourselves and, still more important, for the horses: but, to our disappointment, we found it simply putrid with the decomposing bodies of five dead wild dogs that had ventured into it in search of a drink and had been too weak to clamber out up the steep sides. The only thing we could do was to drag the bodies out and trust that things might be a little better on our return, when a little fresh water might have filtered in. In the case of a smaller well, the natives usually cover the opening with bushes to keep dogs and other animals out, but the mouth of this was too wide to allow of its being effectively closed with the small bushes available.

We were glad to move away from the evil smell and went on, wondering when and where we should get our next supply of water. Of course we were carrying a small supply, though we were obliged to travel on short rations, and, as it was decidedly hot during the day, we had not too much and not a drop was wasted. It was dusk when we came to the top of a sand-hill and saw Lake Amadeus lying at our feet. Just where we stood above it the bed was not more than three-quarters of a mile wide, but, east and west, it stretched away to the horizon, widening out, especially westwards, into a vast sheet many miles across. There was not a drop of water, only a dead, level surface of pure white salt, standing out sharply and strongly against the rich ruddy afterglow in the west, the dull steel-blue

sky in the east, and the dark purple banks, covered with scrub, that margined it north and south. Previous to our coming, only Gosse, Giles and Cowle had seen the Lake, the bed of which, judging by Giles' experience, when he was baffled in his attempt to cross it, is very boggy and treacherous. However, we dismounted and, in the evening light, led our horses across without any difficulty and, just as it grew dark, camped on the top of a low rise on the southern bank. The salt was only about an inch in thickness, and under this was black earth, so that our tracks were marked by long black lines (Fig. 84*a*). Just as it grew dark we made our camp on the top of a small rise on the southern bank (Fig. 84). The silence was intense—not a bird's note of any kind and no sign of animal life, save for a gaunt old dingo, who followed us half-way over and turned back on our tracks, probably to end his days in the native well near Winnall's Ridge. The white sheet of salt, seen through the thin sharp stems of the Mulga amongst which we were camped, looked strangely weird; and as we sat round our camp fire, smoking and making the most of our carefully-measured-out allowance of water, we thought of the strong contrast between the silence and sterility of the scene, as one looked down upon it now, and the fertility and exuberance of life that must have characterised it in bygone ages, when it was a great sheet of fresh water, surrounded by a rich and varied forest growth, amongst which browsed huge Diprotodons and birds as large as the New Zealand Moa. There was neither food nor drink for the horses and all that we could do, as it was useless to let them loose, even close-hobbled, was to tie them up to trees near to our camp, to prevent them from wandering during the night. The few hours that we rested were not especially comfortable to either man or beast and, after breakfasting by starlight, we started off and soon found ourselves amongst a long series of sand-hills running from



B.S.

FIG. 83.—PORCUPINE GRASS.



B.S.

FIG. 84.—LAKE AMADEUS FROM ITS SOUTHERN SHORE.
The whiteness of the lake is due to salt. There is no surface water.



B.S.

FIG. 84A.—CROSSING LAKE AMADEUS.

The surface is covered with a layer of salt, and the tracks in the foreground were made by us on our first crossing.

north-west to south-east. As our track lay approximately due south, we had to cross them slantwise, one after the other, and a more miserably monotonous and toilsome method of travel can hardly be imagined. These sand-hills were considerably the highest that we met with, some of them being fully a hundred feet in height. What made it far worse was that they were covered with tussocks of porcupine grass, each of them like a huge pincushion, with the pins represented by long knitting-needles, radiating in all directions (Fig. 83). There are two or three different kinds of porcupine grass belonging to the genus *Triodia*. The largest, and most formidable one, is known as "old man" porcupine, or *Triodia Mitchelli*. A more common one is *Triodia irritans*, but they are all much alike, except in size. Very old tussocks grow to a diameter of nine feet, and as they spread out, the central part withers away, leaving a circle of spines a foot or two in width. In some parts they grow to a great height; the tallest one that I saw was in the valley of the Palmer River. I could just see over the top whilst riding on horseback, so that it must have been at least eight or nine feet high. The leaf sheaths secrete a very sticky resinous material, that is very useful to the natives. They chop the stalks up into little pieces, burn them and, in this way, make lumps of black resin, that sets hard but can easily be softened again by heat and moulded by the hand, to serve as a handle in which to embed a stone flake or to fix a point to a spear. In West Australia a very similar resin is made from the grass tree (*Xanthorrhæa*), but the porcupine-grass resin can always be recognised by the presence in it of little bits of grass stalk, the grass-tree resin being always more smooth and glossy in appearance. As a fixative, its weak point is that it is very brittle and anything like a hard blow fractures it easily. However, it is just as easily mended with a little heat, and time is no object to a native.

The leaves and seed stalks of the porcupine grass, when the plant is young, are green and soft and cattle will eat them readily, but, as they grow old, they dry and roll up into a stiff needle-like cylinder with a very sharp point. The tussocks, unfortunately, grow so close together that there is no avoiding them and the legs of the poor horses are continually being pricked and irritated. Further still, porcupine-grass country is one in which it is perfectly useless to search for water.

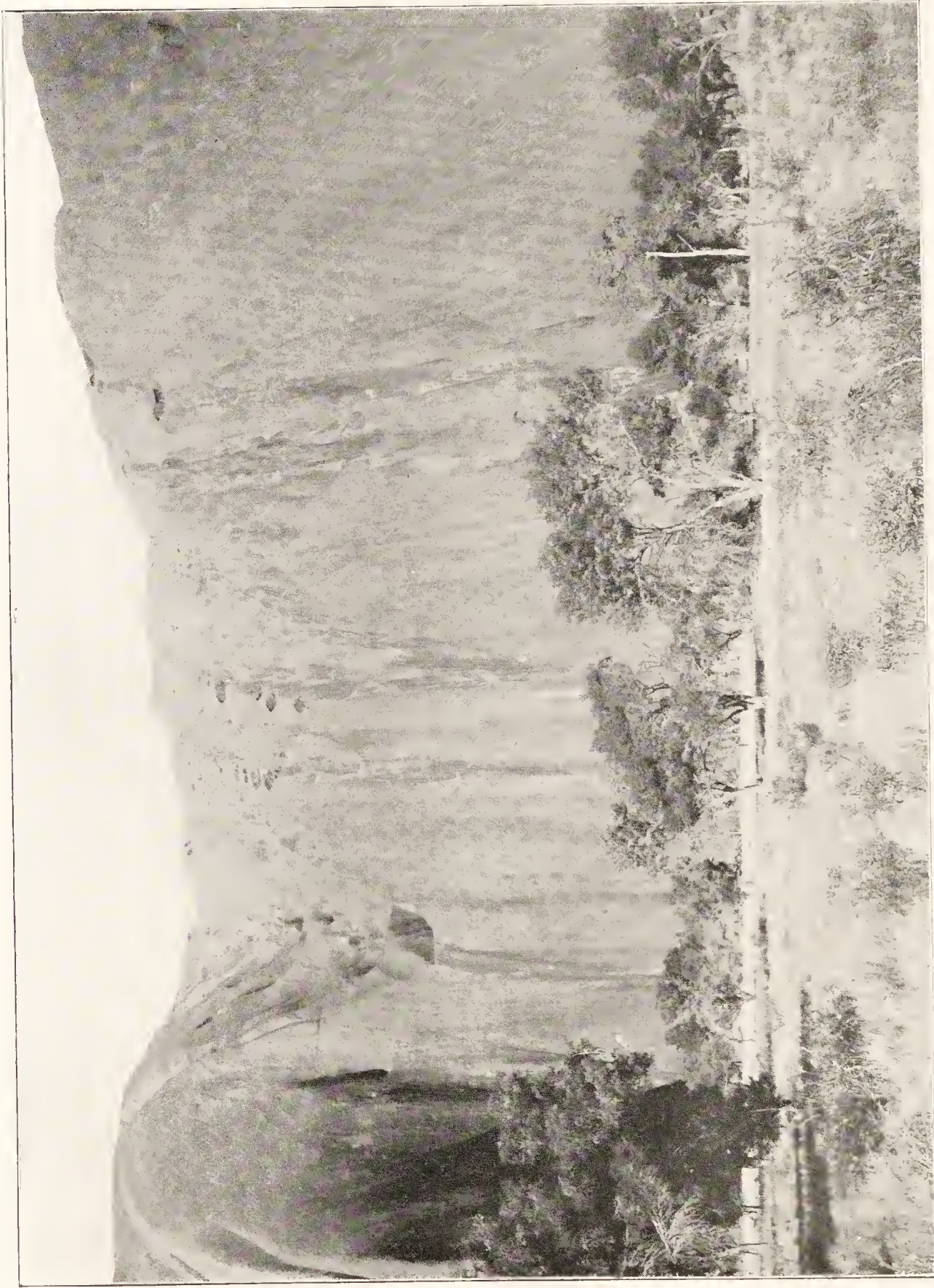
Desolate though the country was, we continually met with little kangaroo rats (*Bettongia lesuerii*), dodging in and out amongst the tussocks on the sand-hills and, away to the south of Amadeus, had an exciting chase after a little, but extremely active, mouse-like creature. It was finally captured as the result of a well-directed shot from a boot, hastily snatched for the purpose from the foot of our energetic leader whilst he was on horseback. It turned out to be a new species of the genus *Sminthopsis*, which includes the so-called pouched mice. We never had the good fortune to see, or secure, another specimen and, judging by the narrowly restricted areas to which many of the Central Australian animals are confined, it is likely to remain for long the sole representative of its special kind known to science, because there is little to tempt ordinary travellers into this desolate, forsaken part of Australia, and it was only by the merest chance that we saw it in the daylight, because all these small mammals are, for the most part, nocturnal.

About ten miles to the south of the Lake we came across another native well called Kurtitina. It was again a deep hole in a travertine deposit, but much narrower than in the case of Unterpata. It started with a diameter of at most three feet, and ran down slanting and curving round slightly for ten feet, where there was just room for one person to turn. From the base of the main hole a smaller



B S.

FIG. 85.—AYERS ROCK.
A mile distant, looking west.
MAP. 2. No. 57.



B.S.

FIG. 86.—AYERS ROCK.

Our camp was in the chasm seen on the left side of the photograph.

one ran off sideways, going down two feet deeper. In this there was a deposit of black mud. We scooped it out and water began to trickle in very slowly—so slowly that we calculated it would take twelve hours to collect three quarts. This might be of help to natives, but was no use to us, so far as our horses were concerned, so we pressed on.

For thirty weary miles we traversed the sand-hills and intervening flats, covered with small funereal-looking "Desert oaks" (*Casuarina Decaisneana*), where at least the ground was hard and the horses, sore and tired with toiling over the heavy sand and amongst the porcupine grass, had a few minutes' respite. At length we reached the top of the last sand-hill and saw Ayers Rock not far away (Fig. 85). From where we stood, the level scrub stretched away east, west and south to the distant horizon. Above the yellow sand and dull green Mulga scrub rose the Rock—a huge dome-shaped monolith, brilliant venetian-red in colour. A mile in length, its sides rising precipitously to a height of two thousand five hundred feet, it stood out in lonely grandeur against the clear sky. Its otherwise smooth sides were furrowed deeply by lines of rounded holes, rising in tiers one above the other, looking as if they had been hollowed out by a series of great cascades, down which, for centuries past, the water in the rain season had poured in torrents from the smooth dome-shaped summit (Fig. 86).

We rode on for three or four miles, wondering whether we should find water, and were relieved when the quickening pace of the jaded horses told us that they had smelt it, and soon we were camped safely by the side of a small water-hole, in a deep chasm hollowed out in the western face of the Rock. It was no small pleasure to watch the horses drink their fill, and to be able to set them free to browse around the base of the hill, because there was no fear of their straying far away from the water. So far as we our-

selves were concerned, it was also a decided relief to feel that we could drink without stint, and could also afford what, after three days' abstinence, was the luxury of a wash. To appreciate this fully you need to have travelled for two or three days, at least, in hot weather, over absolutely dry, sandy country, without any water to spare for such a luxury. There is such a thing, in some of the drier parts of Australia, as what is known as a "dry wash," but this, though better than nothing, is not quite satisfactory. It may, however, be remarked that if, like the Central Australian native, you never wash, you do not become very dirty, or perhaps, to speak more correctly, you reach a certain state and never get beyond it.

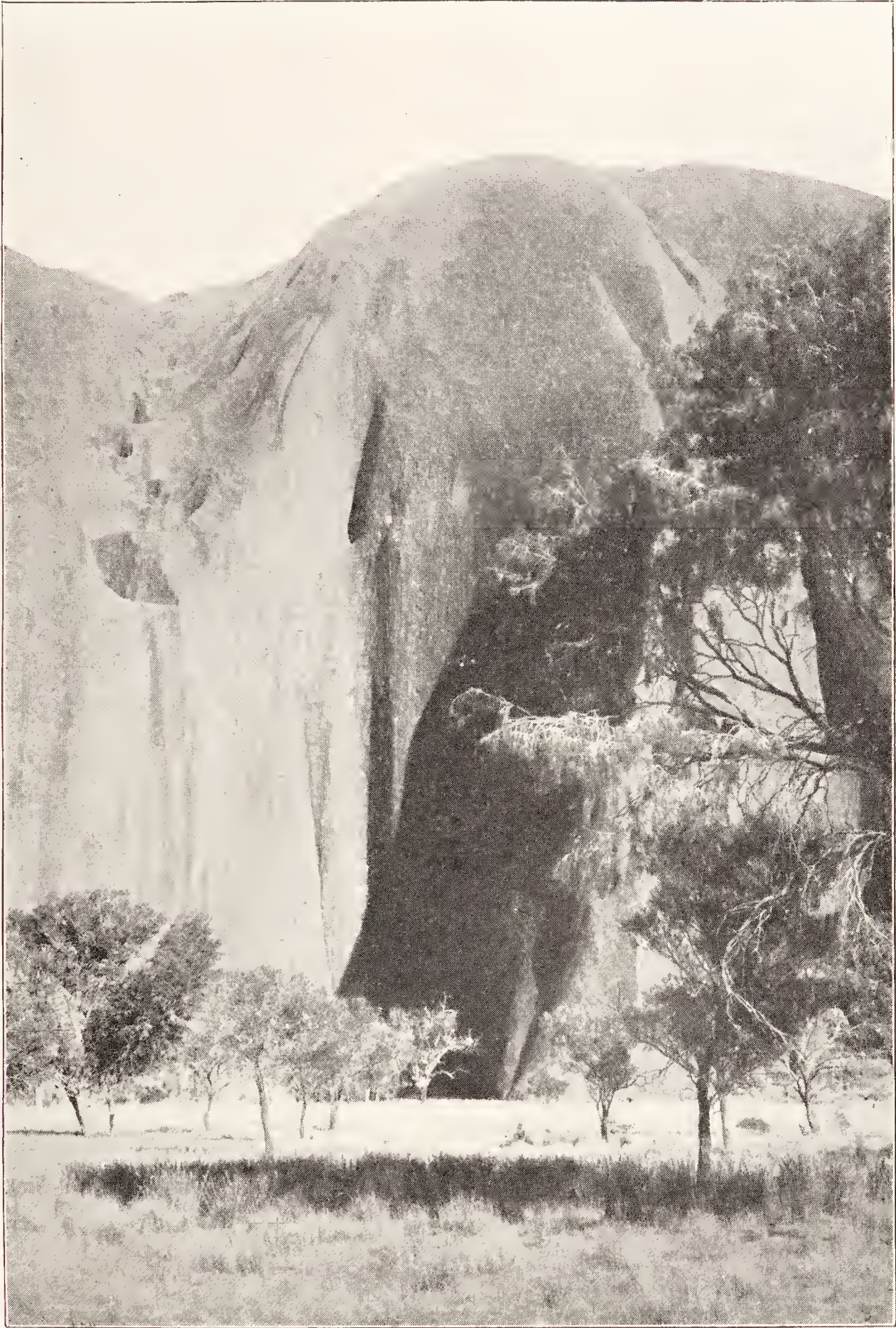
After a period of drought it would be very unsafe to rely upon finding water at Ayers Rock. The nearest water that is at all permanent lies eighty miles away to the north, in the George Gill Range, and, so far as we could judge, there would be but little water at Ayers Rock, or indeed anywhere else in the surrounding desert country, after a month or two's continuation of the dry weather that we experienced. How the natives manage to subsist, as they do, though only in small numbers, is a matter of mystery. There are often long periods of time—month upon month—when no rain falls and when the only supplies of water available to them are little pools, hidden where their existence would only be suspected by blackfellows whose instincts have been sharpened by constant struggle with conditions so adverse that it is difficult for the ordinary white man, accustomed to a daily and regular supply of food and water, to realise what this struggle really means. When the surface water disappears, the native digs down, but there are many parts where no underground supply is available, and then he is dependent on the water that he can obtain from the roots of various trees that he cuts out of the ground. He divides them into lengths of, perhaps,

three or four feet and, standing them upright, allows them to drain into a wooden bowl. At the worst he will manage, in a most wonderful way, to exist, miserably enough, by actually sucking the dew that collects nightly on the scanty herbage and grass. Yet, though his life is one continual struggle against adverse conditions, he has no desire whatever to leave the land—wretched and sterile though it be—which his ancestors inhabited. Every natural feature is associated in his mind with some ancestor, who not only wandered over the country, but actually created the sand-hills, rocks and trees that now exist, and away from them he would be miserable.

We formed our camp in a deep chasm cut in the western face of the Rock (Fig. 87), close to which was a clump of graceful Acacias (*A. Farnesiana*) with pendent foliage, often almost like that of a weeping willow, and a few white-stemmed gums. As we lay down to sleep on the ground we could just see a small patch of starlit sky overhead, shut in by dark precipitous rocks that overhung so as to form a funnel, narrowing from below upwards. We were glad to have a night's peaceful rest, without anxiety as to the morrow, and a quiet day, as on the march it is impossible to do serious work, and spent it searching round the base of the Rock. Some idea of the size and nature of this remarkable monolith may be formed from the fact that it rises to a height of eleven hundred feet above the plain and measures, roughly, five miles in circumference. The Rock, when lighted by the evening sun, is marvellously beautiful, a mass of flaming red slashed with lines of purple where the clefts lie deep in shadow. Its sides are so precipitous that there is only one place at which even the natives will attempt to make an ascent. In the afternoon, Cowle and myself made an attempt to climb, but were quite content to stop when we had reached a height of about two hundred feet. The surface was so smooth and

steep that often we could only climb by means of clinging on with our fingers to little projecting flakes of rock. Every now and then there was a slight hump, on the upper surface of which the incline was less steep than elsewhere, and on one of these we came to rest, quite satisfied that the climb to the top was not worth the attendant risks, as the slightest slip would have been fatal. We were, however, amply repaid for the trouble of our short but uncomfortable climb. Beneath us, the sandy plain was dotted over with thin scrub, and away in the distance it was crossed by dark lines where, mile after mile, the thick Mulga scrub stretched across. The level line of the horizon was only broken by the great, dome-shaped masses of Mt. Olga, behind which the sun was setting, and, against the rich orange of the western sky, its purple masses stood out in strong relief (Fig. 88). Our camp fire began to show out clearly in the dark chasm below us and, to complete the scene, we saw a family of the wild sand-hill natives, making their way, led by our own black boy, round the base of the mountain towards our camp. These natives are not to be relied upon, and Cowle made remarks by no means complimentary to the sagacity of his boy, who ought to have had more sense than to walk ahead of the strangers as he was doing. It is always risky among wild, or even semi-wild natives, to do this, because a savage is sometimes seized with an uncontrollable impulse to spear or club a stranger—white or black—walking close in front of him.

Descending, we found that the family consisted of a man with his two wives and three children. None of them had ever seen a white man before and, naturally, they were at first considerably alarmed, but our boy, who could make himself understood by them, as he had some knowledge of their dialect, did his best to reassure them, and, after we had given them a little of our scanty supply of



B.S.

FIG. 87.—CHASM IN THE FACE OF AYERS ROCK.



B.S.

FIG. 88.—DISTANT VIEW OF MOUNT OLGA FROM THE SIDE OF
AYERS ROCK.

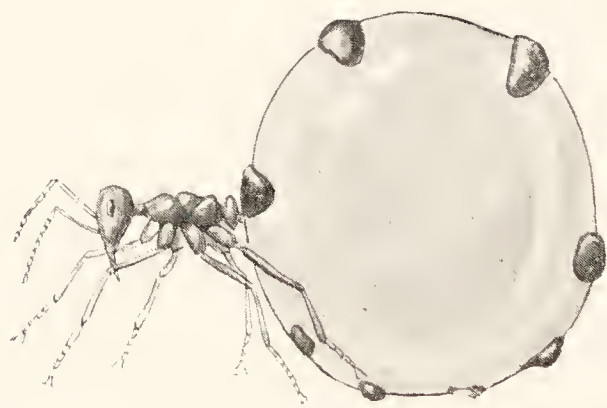


FIG. 89.—HONEY ANT (*Melophorus inflatus*).

food, the man became quite friendly. We found that he belonged to the Luritcha tribe and that his name was Lungkartitukukana. He and his family camped a little distance from us, but, after our evening meal, we invited him to join our circle round the camp fire and, with the aid of our boy as interpreter, I tried to find out some things about the organisation of his tribe, which was very puzzling, and I ended up knowing nearly as little as when I began. All that I found was that some women belonged to what our boy called the right side of the tribe, whom he could marry, and others belonged to the wrong side, and these he could not marry. The Luritcha is a large tribe that inhabits the utterly inhospitable country that stretches around the south, west and, to a certain extent, the north-west of the Arunta country, from Lake Torrens in the south to the far western limit of the Macdonnell Ranges.

Though we only came across this one family at Ayers Rock, yet clear evidence of the presence of natives was afforded in the form of many drawings, made on the walls of shallow caves and shelters round the base of the rock. They had evidently been used for shelter by the natives for long years. Their roofs were blackened with the smoke from small camp fires and their walls were thickly covered with drawings. Some characteristic ones are shown in Plate I. They are reproductions of a few rock paintings at the George Gill Range and Ayers Rock, and are typical examples of the work of the Southern Arunta and Luritcha. All of these are drawings made for amusement during idle hours—"play about" as the natives say—and can be seen by anyone. The materials used are red and yellow ochre, charcoal and a white substance such as kaolin or powdered gypsum. The pigment is first of all ground up finely, sometimes by the teeth but more often on grinding stones. When ground, the ochre, or gypsum,

is usually mixed with water, rarely with grease. A twig, frayed out at one end, and flattened to form a tiny disc, or sometimes a twig with a little hair string wound round it, is used as a primitive form of paint-brush.

There is one particular form of drawing that stands by itself and is met with far and wide over the whole Australian continent. This is what is commonly called the "red hand" and has often been described as having some special mystic or occult significance. In reality it has no such thing and is produced very simply by placing the hand, with the fingers wide apart, against a flat rock that has been damped. Sometimes direct from the mouth, or at others from a little sheet of bark, powdered ochre or charcoal is blown against the hand, with the result that the latter is outlined on the rock. There are, however, real drawings of hands and feet met with, though only rarely, which are of a sacred nature. These are drawn in solid colour and represent the hands and feet of mythic ancestors.

The rest of the ordinary rock drawings may be divided into three series, the first representing, or suggested by, plants, the second associated in the same way with animals, while the third can only be described as geometrical. It is strange how rarely examples of the first are found. Now and again, as in Fig. 9, the drawing evidently represents a leaf, probably the large frond of a Cycad, that grows amongst the Ranges and, being so different from all the other plants that he sees, must attract the attention of the native. Possibly the reason why plant forms figure so little amongst the rock drawings is that these are only made by men, and that it is the women who gather vegetable food, so that plants do not appeal much to men.

Amongst animal drawings there are a certain number, the meaning of which is self-evident, but, as a general rule, they are so conventionalised that it is not at all possible to be quite sure what particular animal each one is intended

to represent. Fig. 1 is probably meant for a dingo and is merely drawn in outline in charcoal. Fig. 2 is apparently a somewhat conventionalised drawing of a bird with a long tail. Crude though it be, there is a certain suggestiveness in the pose, the long tail like that of a wren (*Malurus*) erect in the air, and the head a little on one side. The drawing of the legs, though joined together, shows that the artist had a distinct appreciation of the pose of these birds hopping on the ground. Fig. 3 is the usual conventionalised drawing of a lizard, though ornamented with radiating lines at the head end. Fig. 4 is a still more conventionalised drawing of the same; the artist has given play to his fancy in regard to the hinder end. Fig. 5 is often met with in many parts of Australia and its meaning is unmistakable. It represents a snake coming out of a hole in the rocks—an actual hole being often used for the purpose. Fig. 6 is some animal, so conventionalised that no attempt can be made to say what it is supposed to represent. Judging by Fig. 4, the blunt end is the head and, comparing it with Fig. 2, the yellow looped lines may be supposed to represent legs. The spots are clearly of the nature of “play about” and have been added because they gave the artist pleasure. Fig. 7 is a series of human heads drawn in outline in charcoal. They were close together in a group on the wall of a rock shelter at Ayers Rock, and, were it not for this, it would be rash to form any conjecture as to the meaning of the lower two. Fig. 11 is too conventionalised to offer any suggestion as to its meaning, except that, probably, the main central part is an animal's body and the radiating lines “play about.” Fig. 12 is of quite a different nature and, probably, represents one of the stone knives with a resin haft, which is only conventionally drawn, especially as regards the attachment of the blade.

The remaining figures belong to those that may be

described as geometric in form. They are often met with in the Arunta, and consist of concentric circles, or spirals, drawn in red, yellow, white and black, sometimes only one colour being used, but usually there are at least two. They may be very simple and even irregular in form, consisting, as in Fig. 15, of a looped line, or they may be more elaborate and complicated, as in Fig. 17, which is copied from a design drawn on the rocks at George Gill Range. The strangest thing about them is that they bear a close resemblance to, and indeed in many cases are identical with, some of the designs drawn at sacred spots and intimately associated with the totems, that is, the different animals and plants, kangaroos, emus, gum trees, etc., that give their names to groups of people. That they are suggested by the latter there can be no doubt whatever, but it is very characteristic of the blackfellow's way of thinking, to find that of two designs, just the same in form and colour, one that is drawn on a rock face at one place has no "meaning" at all, is simply "play about," whilst the other, drawn at some sacred spot, is full of significance and symbolises an animal or plant, to which, as a general rule, it has not the slightest resemblance.

After spelling for a day at Ayers Rock, so as to give the horses a rest, we set off to visit Mt. Olga. The country between this and Ayers Rock is covered with the usual wiry shrubs of Cassia plants and belts of Mulga. Fortunately the natives accompanied us, because, for the first time, we came across the nests, or burrows, of the honey ant (*Melophorus inflatus*)—an insect that I was very anxious to see in its native habitat. I found it in several other places later on. The Arunta people call it Yarumpa and are very fond of it. In this miserable part of the country it is one of their chief delicacies. In some places the whole surface of the ground was turned over, just as if a small army of prospectors had been at work. There is nothing

on the surface to indicate the existence of a burrow, except a small opening an inch or less in diameter. From this the central burrow goes straight down. The natives soon found one or two and immediately set to work to dig them out. It was astonishing to watch the speed with which the elder women worked. First of all, the ground round the opening was loosened with the aid of a digging-stick, held in the right hand, and, alternately loosening the soil with her stick and then throwing it out over her shoulder, the lubra soon dug a hole just big enough to hold her body. The main burrow went down for between five and six feet, with horizontal passages going off all around it. A few of the honey ants were found in each of these, but the greater number were in a swollen chamber at the bottom.

In the nests that we dug up here, there were only two kinds of ants, one the ordinary worker and the other the honey ant (Fig. 89). The latter is a most remarkable instance of the modification of certain members of a social community to serve a special purpose, and it is also a noteworthy fact that precisely the same modification is met with in the dry and arid parts of Mexico and Colorado. Instead of storing up honey in combs, as a reserve supply of food when this is otherwise scarce, these ants utilise the bodies of certain members of the community for this purpose. Exactly how the material for making honey is obtained is not known. It is quite likely that the main source is the exudation of insects, such as the Lerp and species of *Coccus*, often met with in the scrub; or the sweet material, afterwards made into honey by the ants, may be derived from the "Mulga apple," which is really a gall formed on the tree. In America the material is obtained from a gall formed on oak trees. The final result is that the special insect is fed until its crop, in which the honey is stored, becomes so enormously distended that

the abdomen has the form of a membranous spherical bag with dark little plates, widely separated from one another on the upper and lower surfaces, which represent the whole of the hard rings covering the abdomen in the normal ant. The head and thorax form only a tiny kind of appendage to the abdomen, and the insect, which becomes converted into an animated honey-pot, can do nothing but remain quiet, wherever it happens to be when this strange feeding process takes place. When the ants want to eat the honey they come and tap the sides of the honey-bag with their feet. In response to this stimulus the honey is passed out in drops from the mouth and is eaten by the others. It is a very strange fact that identically the same extraordinary modification, unparalleled elsewhere in the animal kingdom, should have taken place in two parts of the world so widely separated as North America and Australia. The utilisation of the nectar of flowers, or of sweet material secreted by other insects for the manufacture of honey, seems to be a faculty possessed only by Hymenoptera amongst insects. Bees store it in combs, ants in the bodies of certain members of the community. In regard to this particular habit, both of these insects are more sagacious than the Australian savage, who literally takes "no thought for the morrow" and never thinks of laying in a store of food to help him to tide over bad times, when food is scarce.

It must have been rather a severe trial to the feelings of our savage companions to watch the honey ants that they dug out being transferred to the collecting bottle. They could not understand that they were of any value save as an article of food. Of course they got some recompense afterwards, but one could not help admiring the way in which these savages, without any expectation of receiving anything in return for their labour, worked hard, simply to assist us. It really seemed to give them just as much

enjoyment to please and help us as if they had been working for themselves.

On this occasion we could not find any of the winged individuals, but, later on, Mr. Cowle not only secured these but found a new species of honey ant and a number of specimens of another, of which I had only found a few. Neither of these had the body as swollen out as in the case of the commoner kind, and both of them are capable of a certain amount of movement. One of them (*Melophorus cowlei*) is golden-red in colour. I only came across a single nest of this species under a little block of quartzite, lying on the ground in a gorge in the Macdonnell Ranges. The nest consisted of irregular branching passages, close to the surface, and in these the ants, the native name for which is Itutuni, were moving about sluggishly. The new species discovered by Mr. Cowle is much darker in colour, and though distinctly swollen out, yet the abdomen does not become anything like so tensely distended as in the commoner insect. Evidently these two are not so fully specialised as in *Melophorus inflatus*, the Yarumpa, which is *par excellence* the honey ant of the arid parts of Australia. Its distribution extends at least from Ayers Rock in the south to Barrow Creek in the north, and far away across the intervening desert into West Australia, from which the first specimens, described by Sir John Lubbock, were probably secured.

Apart from these ants, there was very little of interest to be seen on the twenty-five-miles ride across the desert country between Ayers Rock and Mt. Olga. Mt. Olga may be described as consisting of a huge basal hummock of irregular shape, rising at a low angle from the plain with a maximum width of perhaps eight miles (Fig. 90). From this, again, rise enormous rounded masses, like a number of Ayers Rocks all thrown together, only that each of them is much loftier than Ayers Rock. Magnificent

ravines, the sides of which rise precipitously for upwards of fifteen hundred feet, separate the dome-shaped masses, and we steered our course so as to pass round the base of the southernmost of them.

Before reaching the Mount we had to ride through a final belt of Mulga and, suddenly emerging from this, came out on to an open patch of ground where, to our mutual astonishment, we found ourselves close to a number of wild sand-hill natives who had built their little wurlies or lean-to shelters here. They must have been busily engaged with something, because apparently they had no idea that strangers were near until they actually saw us. The men immediately jumped to their feet, seized their spears and poised them on their spear-throwers but, by good fortune, Lungkartitukukana had come with us and his powerful voice was heard just in time to save us from what would have been a very uncomfortable reception. Though much alarmed, they lowered their spears and we rode close up to them. They had never seen either a white man or a horse before and, when we dismounted, and the beast came in two, they were terrified and could do nothing but huddle together on the ground, weeping with fear. However, with the assistance of Lungkartitukukana, we reassured them and tried to persuade them to follow us to our camp, but without success, for, as soon as we had gone into the ravine, at the entrance to which we camped, they made off with all their possessions and fled up one of the lower hills flanking the main mass. There, as darkness came on, we saw their little camp fires dotted about the hill-side. They probably spent a very anxious night watching us eat our evening meal and then, in some, to them, mysterious fashion, bring forth smoke from our mouths as we sat by the light of our camp fires.

Five years before this, the explorer Tietkins, coming in from the west, had visited the spot and we found trees

that he had marked by the side of his camp, and even came across remnants of the four wooden boxes that he records in his journal as having left here. Giles had described the existence of permanent water both here and at Ayers Rock. It is most unsafe to speak of any water-hole in Central Australia as permanent. Everything depends on the season. At Mt. Olga, Giles found a running stream flowing away across the flat country to the south. We only found indications that, in good seasons, the creek might flow for a short distance, and at first were afraid that there was no water to be had for our horses. We had to lead them up a ravine, stumbling along over smooth, slippery rocks until we came to a little pool, about a yard in diameter, and were thankful to be able to give them a drink. Our native guide assured us that this was the only water available, but, of course, there must have been other pools amongst the other ravines—probably, however, quite inaccessible to horses—about which he discreetly said nothing. The huge masses of Mt. Olga are formed of a coarse conglomerate of younger age than the Arkose sandstone of Ayers Rock. They are deep red in colour, except for great streaks of black that look exactly as if tar had been emptied on to their summits from some giant cauldron and had run down their sides, hardening as it did so. Here and there the black and red were relieved by patches of green, due apparently to lichens growing on the surface.

Unfortunately we had arranged to be at a special spot in the Macdonnell Ranges on a fixed date to meet the main party and, as there was much rough country between us and our rendezvous there, we had very reluctantly to retrace our steps without exploring the ravines of Mt. Olga.

The natives had carefully avoided us, but, after striking camp next morning, preparatory to starting back to Ayers

Rock, we made another attempt to come into contact with them. Fortunately, again, the faithful Lungkartitukukana was with us and, halting at the base of the hill, he did his very best to bring the natives down. The contortions of his body as he gesticulated wildly, and at the same time forced out a volume of high-pitched sound, were most remarkable. We could not, of course, understand a word of what he was saying, but his intentions were quite clear and his efforts were finally successful. Slowly, and evidently not without fear, the natives came down to us. We treated them to some sugar and fat, but the former, as they had never seen it before, they at first looked on with suspicion. A savage is always thinking of magic, and to anything that he does not understand he attributes evil magic. However, when we tasted the sugar and no harm came to us, they were reassured and were soon prepared to receive any amount. We made one rather unfortunate mistake. One member of the party was anxious to give them a taste of tea, another, in his desire to enter into friendly relations, thought of coffee, of which we had a small supply, with the result that the two beverages were mixed in the same can. The infusion was considerably sweetened and still the natives did not like it, though it was only when comparing notes afterwards that we understood the wry faces made by the men, who, partly out of fear and partly out of their desire to please us, were too polite to refuse the drink. They must have gone about for days afterwards in fear and trembling as to the result of the white man's potent drink. To their great delight, we gave a few wax matches to one or two of the older men, as a mark of distinction, for in Australian tribes it is always well to pay attention to the older men, however decrepit they be. We had only to rub the brown head of the little white rod on the stone, or even on our body, and out from it burst the fire. The matches that we gave them were

promptly stowed away amongst their greasy locks, and were probably of little use, as they were sure to get damp at night-time when the dew fell. That they could not obtain fire from them would be easily explained by the fact that the white man's magic was stronger than their own, and therefore he could obtain fire from them when they could not.

It was astonishing, when once they realised that we were friendly to them, how quickly the natives placed implicit trust in us. Three of the men, who only an hour before were in deadly fear of us, now insisted on accompanying us to Ayers Rock. Without any difficulty at all, though we were riding, they kept pace with us, sometimes running, sometimes walking, and all the time they were talking evidently trying to point out to us the features of the landscape that were of interest to themselves and which they naturally thought would be of interest to us—as without doubt would have been the case if we could have understood what they were saying.

It was late in the afternoon when we reached our old camp. To the west we could see the purple masses of Mt. Olga standing against the orange-coloured sky. The rays of the setting sun were still shining on the precipitous sides of Ayers Rock, which, once more, glowed brilliantly venetian-red in colour against the cold steel blue of the eastern sky. Gradually the light faded away and there was left only the dim mass of the Rock, with the deep chasm in its side in which the native camp fire was already glowing.

The natives who had come with us had been lucky enough to catch two kangaroos on the way over, in addition to smaller animals, such as lizards. In several places we had set fire to the porcupine grass and the thin scrub, with the result that numbers of smaller animals were driven out of their shelter to fall a prey both to the natives, who were wonderfully expert in catching them, and to the hawks, who made their appearance in a most mysterious

way the moment the smoke of the fire was seen. The kangaroo was the common red species (*Macropus rufus*), which is the only kind, so far as we could find out, that inhabits the sterile, plain country in this part of Australia.

As soon as they came in, the natives set to work to prepare their feast, laughing gaily and chattering hard all the time. They had a good fire, plenty of food and water, and needed nothing more to make them perfectly happy, and our presence did not interfere with them in the very least. Sitting round their fire, two of the men began to prepare one of the kangaroos for cooking. The first thing they did was to take the strong tendon out of each leg. To do this, the skin was cut through, close to the foot, with the stone flake attached to the end of a spear-thrower. Without at first cutting the tendon, a hitch was taken round it at its lower end with a short digging-stick. Then, with one foot against the animal's rump, the man pulled steadily, until the upper end of the tendon gave way and he could pull it out. Then, with the loose end held in his mouth, the tendon being stretched to its greatest extent, the lower attachment was cut with the stone flake. After being thus carefully extracted it was rolled up and stowed away in the man's waist girdle. A tendon such as this, obtained from kangaroos and emus, is of the greatest value to the savage. He uses it for such purposes as that of fixing the point on to the end of his spears and spear-throwers, binding round the splicings on the shaft of his spear or mending broken implements, in the same way as we should use string or wire. The tendon is damped so as to make it pliant, and as it dries it contracts and exerts a strong pull. Every native has a sharp flint and tendon, just like every white boy has a knife and string.

As soon as the tendon was safely extracted, a small opening was made with the flake in the animal's body and, through this, all the intestines were pulled out and cut

off. The sides of the opening were fastened together with a wooden skewer, the tail cut off at the stump, and the limbs dislocated. As a general rule, amongst the Arunta people at least, as soon as ever an animal, such as a kangaroo or wallaby, is killed, its hind limbs are at once dislocated. This is done partly to add a feeling of security—that it cannot even if it returns to life run away and escape, as many of their ancestral animals are reported to have done—and partly to render its body limp and thus more easy to carry. An animal in this condition is said to be *Atnuta*, the nearest translation of which is our word “limp,” though it also implies a condition of complete helplessness.

The intestines were handed to the women and children, who turned them over and over in the hot sand and ashes of the camp fire. Two of the men had meanwhile scooped out a shallow hole with their digging-sticks, just large enough to hold the body of the kangaroo, and had lighted a good-sized fire on it. After this had burned down and nothing was left save red-hot ashes, the kangaroo was laid on the latter, some of which were piled over it, but not so as to cover it completely. The fur, that had been left on, was singed off, or at least the greater part of it was, the skin serving to keep the juices in the body. After lying for an hour in the hot ashes it was supposed to be cooked, and was lifted out and placed on small leafy branches, torn from a neighbouring *Acacia* tree. The carving was done by one man, who, first of all, extended the original cut, so that he could take out the liver and the heart, which were eaten first. Then, with the aid of a sharp digging-stick, he cut the body up, very roughly indeed, into joints, using his teeth to aid him in tearing off the burnt skin, and helping himself as he went along to such dainty morsels as the kidneys. The animal was, at best, only half cooked—some parts were almost raw—and those who wished their portion better cooked simply

rubbed it up and down in the hot ashes until it was done to his or her taste. I watched them as carefully as I could, but there did not appear to be any special portion given to any particular individual, every man, woman and child receiving a share, though of course the men were helped first. I have often since then, in different parts of the Centre and the far north, watched natives, under normal conditions, in their camps, but have never seen any such thing as the women sitting meekly behind the men and receiving, as their share, any odd fragments that may be thrown contemptuously to them by their "lords and masters." This is an account of what not a few writers, who regard the blackfellow more or less in the light of a brute beast, think should be their behaviour, rather than a true description of what actually takes place. In just the same way the common description of how, on the march, the man walks out of camp, leaving his women-kind to follow behind, carrying all the heavy burdens, is equally misleading. It is true that the men usually go ahead, carrying their spears and spear-throwers and shields, but they do this simply because they have to be always ready to hunt the kangaroos or emus and larger game, on which their families depend for food. They can only successfully do this when they are able to steal quietly upon their prey, and a large mob of natives is apt to make a noise that would frighten animals away. As a matter of fact, the man is often as heavily burdened as the women, save that the latter usually carries a young child, if she has one, a custom that is not entirely unknown amongst white people.

It was truly a wild scene. Our fires lighted up the rocks that hemmed in the chasm in which we were camped and shone on the bodies of the natives. As we rolled our rugs around us on the hard ground and watched the stars shining down through the cleft in the great Rock, we realised that we had been carried far back into the early



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FIG. 90.—THE SOUTHERN PART OF MOUNT OLGA, FROM THE EAST.



FIG. 91.—ARUNTA BABY ASLEEP IN A *PITCHI*.



F.J.G.

FIG. 92.—WOMAN CARRYING CHILD, ARUNTA TRIBE.

history of mankind and that we had enjoyed an experience such as now falls to the lot of few white men. We had actually seen, in their primitive state, entirely uncontaminated by contact with civilisation, men and women still living in the Stone Age.

It was late before the natives had finished their feast, in fact we had turned in to our camp before they had coiled themselves round their little fires and all was dark in the great chasm. We were up early in the morning and, soon after sunrise, started on our return journey to the George Gill Range. Our horses had had plenty to eat and drink and we pressed on rapidly, crossing Lake Amadeus once more, until we came to the native well called Unterpata, where we hoped to find water. To our disgust, we found that another dingo had fallen in since we were there before. Its body had been dragged out by some natives who had been to the well during our absence. As the horses were again thirsty, we tried to persuade them to drink some of the water that we baled out into a sheet of canvas, but it was so foul that only one or two of them would taste it: the smell was quite enough for both them and us, and we carried the evil odour of that sheet of canvas with us for many days as a reminder of the native well. There was nothing for it but to take it in turns to watch the horses all night long, lest, closely hobbled though they were, they should wander away to the north in search of water and leave us stranded. We divided the night, or rather sleeping-time, from 10 p.m. to 4 a.m., into three shifts of two hours, each one taking his turn to pace up and down and round and round, keeping also our fire alight, for it was bitterly cold, so cold that at daybreak our water-bags had ice in them.

After three days' ride we were back again at George Gill Range, thankful to be camped once more beside a good water pool.

PART II

THE NATIVES

CHAPTER VI

THE ARUNTA NATIVE: HIS PERSONAL APPEARANCE AND CHARACTER

It was at Alice Springs, where, except for a journey down the telegraph line to Oodnadatta, the Horn Expedition came to an end, that for the first time I met my friend Frank J. Gillen in July 1894. After the other members of the party had gone south, Dr. Watt and myself stayed behind, the former to examine geologically the Arltunga gold-field, away to the east, whilst I, as the guest of Mr. and Mrs. Gillen, remained at the Telegraph Station to do further zoological work. Before coming out to Australia it had been my good fortune to come into contact with and work under Dr. Tylor, then Reader of Anthropology at Oxford. All that I knew of Anthropology was gained from personal contact with him and from my old chief in Oxford, Professor Moseley, who, though better known as a distinguished zoologist, had also, in consequence of his opportunity as Naturalist on the *Challenger* and as a very keen observer of the many native peoples whom he came in contact with during his travels, a wonderful knowledge of certain aspects of the culture of the lower races. My anthropological reading was practically confined to two works, Sir Edward Tylor's "Primitive Culture" and Sir James Frazer's little red book on "Totemism," the forerunner of many other famous ones in later years. Many

are the volumes that have been written on Cultural Anthropology since "Primitive Culture" and "Totemism" appeared, but these two, in years gone by, each in its own way, served to guide and stimulate their students, working some in the study, others in fields far distant from Oxford and Cambridge. Perhaps I may be pardoned for a little bit of personal reminiscence. When an applicant for the Chair of Biology in the Melbourne University, Dr. Tylor, with whom I had been working in connection with the removal of the Pitt Rivers Collection to Oxford, in a letter that he gave me, expressed the belief that he thought I might be able to do some work of value if ever I chanced to come into contact with savage peoples.

Every evening during my stay at Alice Springs, Gillen and myself talked "natives." Gillen had generously handed over to the Expedition notes that he had written on the Arunta tribe, with whom he was on the most friendly terms and by whom he was completely trusted.¹

It was quite clear that we were then only on the very threshold of the inquiry and so we decided to set to work together. Gillen was brimful of enthusiasm. For myself, the words of my old teacher came back to me and I felt that here was the chance of which he had spoken. Neither of us then thought that, in the course of the next few years, we should have the opportunity of living amongst the natives on the most intimate terms, month after month, not only the Arunta, with whom we began our work, but, later on, amongst the tribes right through to the Gulf of Carpentaria.

This, and some of the chapters following, contain a brief outline of the more interesting features of the beliefs and customs of the native tribes amongst whom we worked together, and an account of our journeyings northward along the telegraph line as far as Powell Creek and then

¹ These notes were published in the "Horn Expedition Report."

eastwards to the Gulf of Carpentaria. It was here, in February 1902, that our joint work in the field came to an end. Illness prevented my old comrade, who had many years before left the Territory, from taking further part in the work and he passed away in 1912.

The native is usually spoken of as a "blackfellow," but, as a matter of fact, he is not black at all. His real colour is a dark chocolate. The newly-born child is a light copper-red, but the skin rapidly darkens, and in a few days it assumes the normal tint. At first glance one is apt to think that the tint is darker than it really is. The only way to judge correctly of the colour is to cut a small square hole in a sheet of white paper and place this upon the skin, so as to get a true idea of its colour value in relation to pure white. It must be remembered that the Central Australian native is fond of rubbing himself over with grease and red ochre, especially at times when ceremonies are being performed, but I do not think that in the many individuals examined both in the Macdonnell Ranges and amongst the Warramunga and other tribes further north this interfered materially with the determination, the colour of all the individuals and of all parts tested, chest, back, arms and legs, being strikingly uniform. While at work I always had two or three of them together and they could always detect the patch of colour on the plate that corresponded to that of the skin examined. All of the men examined, save one, corresponded as closely as possible with the chocolate-brown numbered 28 on Broca's scheme,¹ the odd one was slightly lighter. The women, with one exception, corresponded in colour to number 29, the odd one being of the darker shade, number 28, like the men. A half-caste girl at Alice Springs corresponded to number 21 and the offspring, a

¹ "Instructions Anthropologiques Générales," M.P. 2nd edit., 1879. This was the only colour scheme available to me at the time and, for the sake of uniformity, I used it throughout.

few months old, of a white man and a half-caste woman in the southern part of the tribe was indistinguishable in colour from the average English child of the same age.

So far as physical features are concerned the natives of the Arunta tribe may be taken as typical of Australians generally, though variations, both in the amount of hair, in its frizziness and the way in which it is treated, produce a considerable amount of difference in the personal appearance of the men in the different parts of the interior.

For some time after birth, the young child is carried about in a wooden trough or *pitchi* in which some shredded bark makes a kind of bed for it (Fig. 91). As soon as it can sit up it is carried, straddle-legged, across the left hip of its mother, who thus has her right hand free to carry and use her digging-stick (Fig. 33), or on the mother's shoulders (Fig. 92). The young Australian savage, granted a good season with its accompaniment of plenty of food and water, has by no means an unhappy childhood; certainly it is a very healthy one. It is, of course, like its mother, innocent of all clothing. At first it crawls about on all fours (Fig. 93) and is as much the centre of attraction as a white baby of the same age—in fact the Australian native is just as fond of, and just as kind to, his children as the average civilised parent. It is a great mistake to suppose, as Mrs. Milne says in her charming book, "Little Folks of Many Lands," that the Australian child is miserable, underfed and hopeless of face (Fig. 94). Her accounts of the score upon score of babies who were slaughtered by their mothers every year; of babies having their brains dashed out and of a mother flinging her child in desperation from her back in order to be able to carry a load of kangaroo flesh or a heavy dilly-bag, fearful that, if these were not kept safe, she would receive a terrible thrashing from her lord and master, who cared nothing for the baby, reflect, it is true, what has often been written, but are very far from coinciding with my own

experience amongst the many Australian tribes with whom I have been in intimate contact. Amongst all of them there is certainly no need of a Society for the Prevention of Cruelty to Children. In the early days the average white man in Australia, especially in the back blocks, though there were fortunately many exceptions to this, formed a very low opinion of the blackfellow, whom, in most cases, he took not the slightest trouble to understand. When the white man came upon the scene and occupied the country, stocking it with cattle, he very naturally shot the emu and the kangaroo, upon which the native fed. Naturally also the savage thought that, as the white man killed the kangaroo, he was lawfully entitled to kill the bullock. It was only a question of tit for tat, but, unfortunately, the white man had a rifle and the blackfellow only a spear and a boomerang, and, as the blackfellow could not write to the newspapers and put his case before the public, and as, of course, he could not possibly discriminate between one white man and another, any more than the white discriminated between one blackfellow and another, he simply regarded all white men as his enemies and did his best, in his own way, to retaliate and protect himself and his women and children.

There is no doubt that the blackfellow, when he had the chance of doing so, sometimes committed what the white man, from his point of view, rightly regarded as an outrage; but, at the same time, the outrages committed by the blacks were as nothing compared with those committed by the whites. In some cases it is possible that the harassed natives, driven before the white men from one camping ground to another, may, in desperation, have taken the lives of their babies rather than see them and their mothers brutally murdered by white men or, worse still, by blood-thirsty and merciless black trackers. Though it may be hoped that such things do not take place now, they once did, and there are parts of Australia where it is well to draw

the veil over the past history of the relationship between the blackfellow and the white man.

In Central Australia, with undoubtedly rare exceptions here and there, the treatment of the natives has been uniformly kind. Fortunately for them the only white men with whom they came in contact, to any great extent, for a long time in the early days, were the officers of the overland telegraph line. With the solitary exception of the attack, years ago, on Barrow Creek Station, where the natives were entirely to blame, they have always been most justly and considerately treated by the officers of the telegraph line, the few patrol officers of the mounted police and the holders of the few cattle runs.

However, to return to the children. The little black piccaninny enjoys itself just as much as the average white child does. On the march, when too young to walk, it is carried by its father or mother, the former looking after the child just as carefully as its mother does. It may be added that the children are never beaten, though, in after years, youths and girls, men and women alike, are severely dealt with if they offend against the customs and regulations by which the communal life of the tribe is regulated. In camp you hear the children, hour after hour, laughing and shouting at their play. Out in the scrub with their digging-sticks they mimic the actions of their mothers and, at an age when the white child is learning to read books, they are busy, all unknown to themselves, learning to read the book of Nature. They gradually come to know where to find bulbs and seeds that are good to eat and to recognise the tracks of every animal, large and small, that burrows in the ground or nests in the trees. Up to the age of perhaps twelve or thirteen, boys and girls alike live in the women's camp and accompany them in their daily rambles through the scrub in search of food. Of course the moment you come near them with a camera they are sure to become as sedate and

demure as possible, and I never managed to get a really good photograph of a child, that is, one at play, but, under ordinary circumstances, they are by no means "hopeless of face," very much the reverse. I often, at Alice Springs and elsewhere, had a score or two of them around me when distributing sweets and there was never any attempt made by any child to secure more than its own share. The bigger ones always took good care that the little ones were not overlooked.

After the age of about twelve the boys are taken away from the charge of the women and live with the men in their special camp called the Ungunja. Henceforth they begin to take part in the men's occupation and accompany them in their hunting expeditions. Not until he has reached the age of fourteen or fifteen, and is passing through the initiation ceremonies, is a youth allowed to carry a shield and spear—the mark of a man—though as a boy he has plenty of experience with mimic weapons. It is a proud moment for a youth when, for the first time, he is presented with a real boomerang and allowed to use and own the weapons of a man.

The Arunta man is by no means poor in physique, in fact he might often serve a sculptor as a model. Walking behind a native, you are constantly struck with his proportions and graceful carriage. Every muscle in the body seems to be well developed, and though, as is usual amongst savages, the legs are apt to be somewhat spindle-shaped, they are by no means always so, and often, when the face is not seen, you could easily fancy that you were looking at a bronze statue of a lithe athlete.

In the Arunta tribe every man has a well-developed beard and a thick mass of wavy locks on his head. A bald native is practically unknown, but it must be confessed that their habit of continually rubbing grease and red ochre on their hair, though doubtless in such a dry climate efficacious in



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FIG. 93.—YOUNG CHILD, ARUNTA TRIBE.

Walking in characteristic way on "all fours" with the knees pointing forwards and the elbows backwards like an ordinary quadruped.



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FIG. 94.—GROUP OF BOYS, ARUNTA TRIBE.



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FIG. 95.—ARUNTA NATIVE, TO SHOW THE FRIZZLY NATURE OF THE BEARD AND WAVY NATURE OF THE HAIR.



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FIG. 96.—ARUNTA NATIVE, TO SHOW THE WAVY NATURE OF THE HAIR WHEN ALLOWED TO GROW.

assisting its growth and preservation, is not altogether a pleasant one. Amongst the Australian savages it looks much as if the human hair continues to grow almost throughout life, as it does in the lower animals. It is only amongst the really old men, whose hair is nearly white, and this only takes place in extreme old age, that it becomes even thin. Amongst the very many hundreds of natives whom I have seen, I have not met with one who was really bald. The old man represented in front and side face in Figs. 100 and 101 made the nearest approach to it, but it must be remembered that all mature men pull the hair out from their forehead and often as far back as the top of their head. He must have been between seventy and eighty years of age, because he was one of the oldest men of the tribe or, as they call them, Oknirabata, that is, very wise old men. Figs. 95-102 will serve to give a good idea of the personal appearance of the men at various ages.

In some parts the men bunch the hair up on the back of the head and wear a pad of emu feathers on it, fixed in place by bone pins and hair string, so as to form a kind of chignon, into which, on each side, a plume of eagle-hawk, owl, white cockatoo or emu feathers is stuck by way of ornament. At first sight every grown man appears to have an extensive forehead, which is due to the habit of pulling out the hairs. They must be pulled and not cut, and it is very customary to wear a broad forehead band, or *chilara* (Fig. 99), made of closely woven string daubed over with pipe clay and ornamented with geometrical designs drawn in red or yellow ochre. If allowed to grow the hair falls down over the shoulders (Fig. 96) in wavy ringlets, but as a general rule it is kept fairly short, because amongst these tribes human hair is a most valuable commodity and it is the duty of every man and woman periodically to provide others who stand in a definite relationship to them with a supply of their own hair, which is woven into string by means of a very simple

spindle and used for sundry purposes, such as the making of waist girdles, almost the only article of clothing, if such it may be called, worn by the men. In all cases though it may be very wavy it is never woolly; in some men there is a curious difference in appearance between the ordinary wavy nature of the hair on the head and the marked frizziness of the beard. The best example that I saw of this is the middle-aged Arunta man represented in Fig. 95. In colour it is characteristically black, though every now and then you meet with isolated individuals, most usually amongst the girls and quite young children, in whom it is even flaxen-coloured; but this lighter colour is usually confined to the tips and in time it generally, not always, assumes the normal tint. It is certainly never characteristic of any tribe or community as a whole, but is always sporadic in its appearance.

The legs and arms normally have a covering of short, crisp hairs, and sometimes the whole body may be covered, though, as a general rule, this is not perceptible, except on close examination. In rare cases, however, it is very strongly developed, as shown in that of the old man represented in Fig. 101.

On a very old man, such as this, the white hairs stand out vividly against the dark skin.

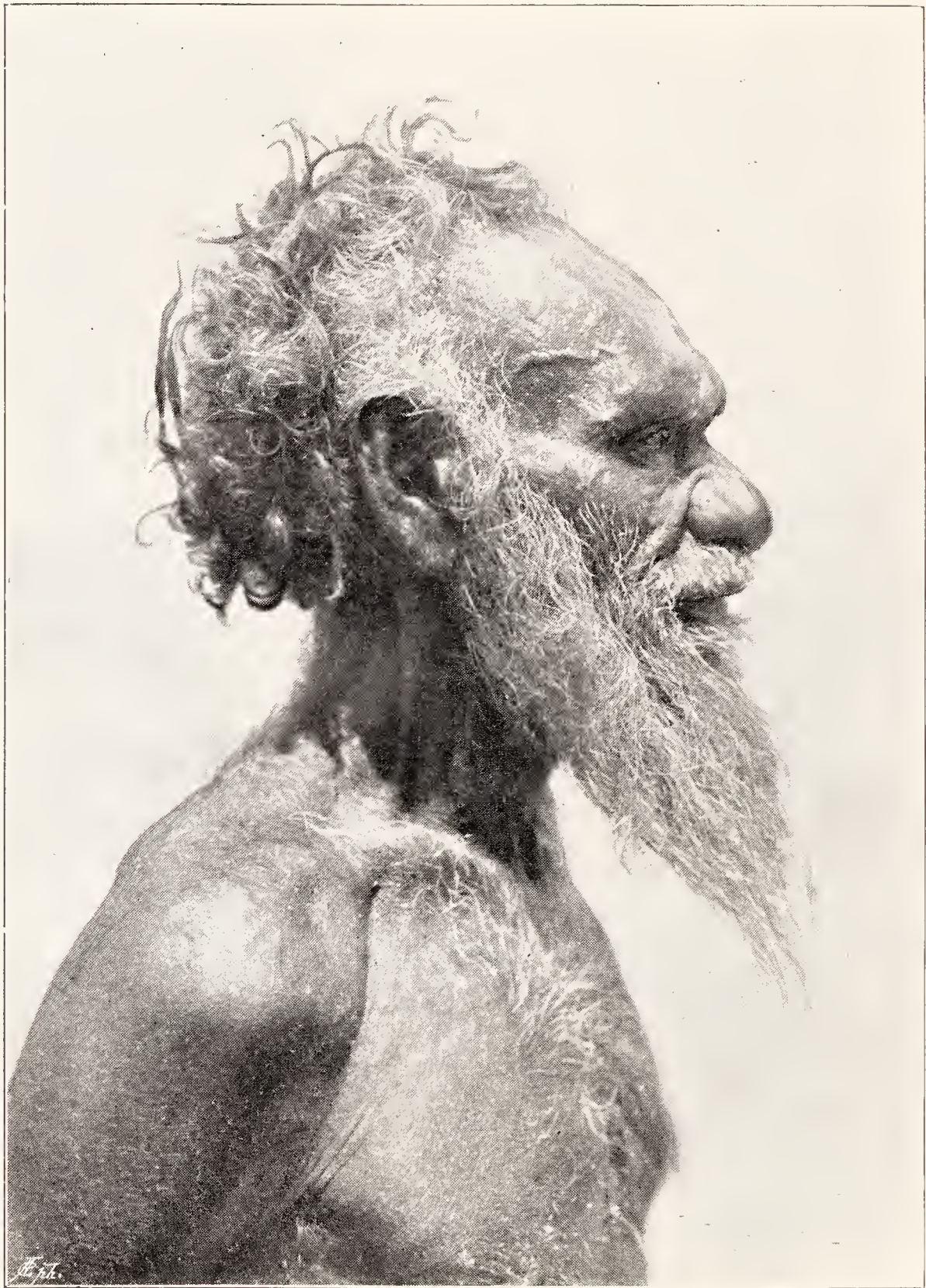
Amongst the women the hair is generally worn short, which is associated with the fact that, at times, each woman must present her hair to the man to whom her daughter is betrothed for the purpose of making him a waist-belt. The body is usually smooth, with at most a development of very fine, short hairs only perceptible on close examination, but there may be occasionally a well-marked development of hair on the lip or chin, which is especially noticeable on the old women, some of whom are probably fifty or sixty years of age and have reached a stage of ugliness that baffles description.

A very striking feature of both men and women is the



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FIG. 97.—ARUNTA NATIVE, FULL FACE.
Undalga, Udnirringita Totem.



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FIG. 98.—ARUNTA NATIVE, SIDE FACE.

body scars in the form of great ridges of keloid tissue, looking often as if they were made of polished, black leather, though these are better shown amongst natives of more northern tribes such as the Warramunga and Gnanji (Fig. 96). Every individual has a certain number of them raised on his body and arms, but very rarely on the back. They are made by cutting the skin with a piece of flint, or, at the present day, glass is used when available, and into the wound thus made powdered ashes are rubbed or the down of the eagle-hawk, the idea being, so they say, to promote healing and not, though the treatment probably has this effect, to aid in the making of a scar. In some cases they may stretch right across the chest or abdomen. As a general rule, the scars are both more numerous and longer on the men than on the women, but no definite distinction can be drawn in this respect. The greatest number of scars that I counted was on a woman, on whom there were forty roughly parallel cicatrices, between the navel and a point just above the breasts. Very often, on the other hand, the scars are limited to one or two that unite the breasts across the middle line. The cicatrices in the breast region usually stand out most prominently, the most marked ones having an elevation of 15 mm. and a width of 20 mm. In addition to these horizontal bands, that are always made in greater or lesser number, others may be present that can be divided into three series: (*a*) a few usually curved bands on the scapular region that are not often met with; (*b*) a series of usually paired, short bands leading off on either side, obliquely, across the chest to the shoulder, and (*c*) bands on the arms. In some cases the latter may be vertically, in others horizontally disposed, and in others we find some of one form, some of the other. In all of them, again, no distinction is to be drawn between those of men and women.

Apart from ornament there is no special meaning, so far as their form and arrangement are concerned, to be attached

to these cicatrices, nor could I find anything in their customs and traditions suggesting that they ever had any deeper meaning. Some of them, both on men and women, are made at special times in connection with mourning and initiation ceremonies. Vague statements have been made to the effect that they indicate in some way the tribe or the special division to which the individual belongs. Amongst the tribes from Oodnadatta in the south to Darwin in the north they certainly have no such meaning, and I am very sceptical as to whether they have anywhere on the Australian mainland, but they are so characteristic of the natives of many parts that the idea of their having a definite meaning is one that naturally suggests itself. At all events, so far as the Arunta and other Central tribes are concerned they have no significance, at the present day, as indicative of either tribe, class, section or totemic group. The only natives who in my experience can be identified by their body scars as belonging to a particular tribe or district are those living on Melville and Bathurst Islands.

Some writers have described the scars on women as evidence of their cruel treatment by the men, whereas, as a matter of fact, by far the greater number of them, which are often a prominent feature on a woman's body, are the result of self-inflicted wounds, and she is proud of them, because they are the visible evidence of the fact that she has properly mourned for her dead.

A flattening of the tibial bone is often met with, and also a curious condition called *Camptocnemia* by Dr. Stirling. The latter consists in an anterior curvature of the shin bone and gives rise to what the white settlers have described by the apt term "boomerang leg." In some cases (Fig. 103) it may be very noticeable. To what extent either, or both, of these conditions are pathological it is difficult to say. They do not seem to be associated with any indication of debility in the man or woman in whom they are present.



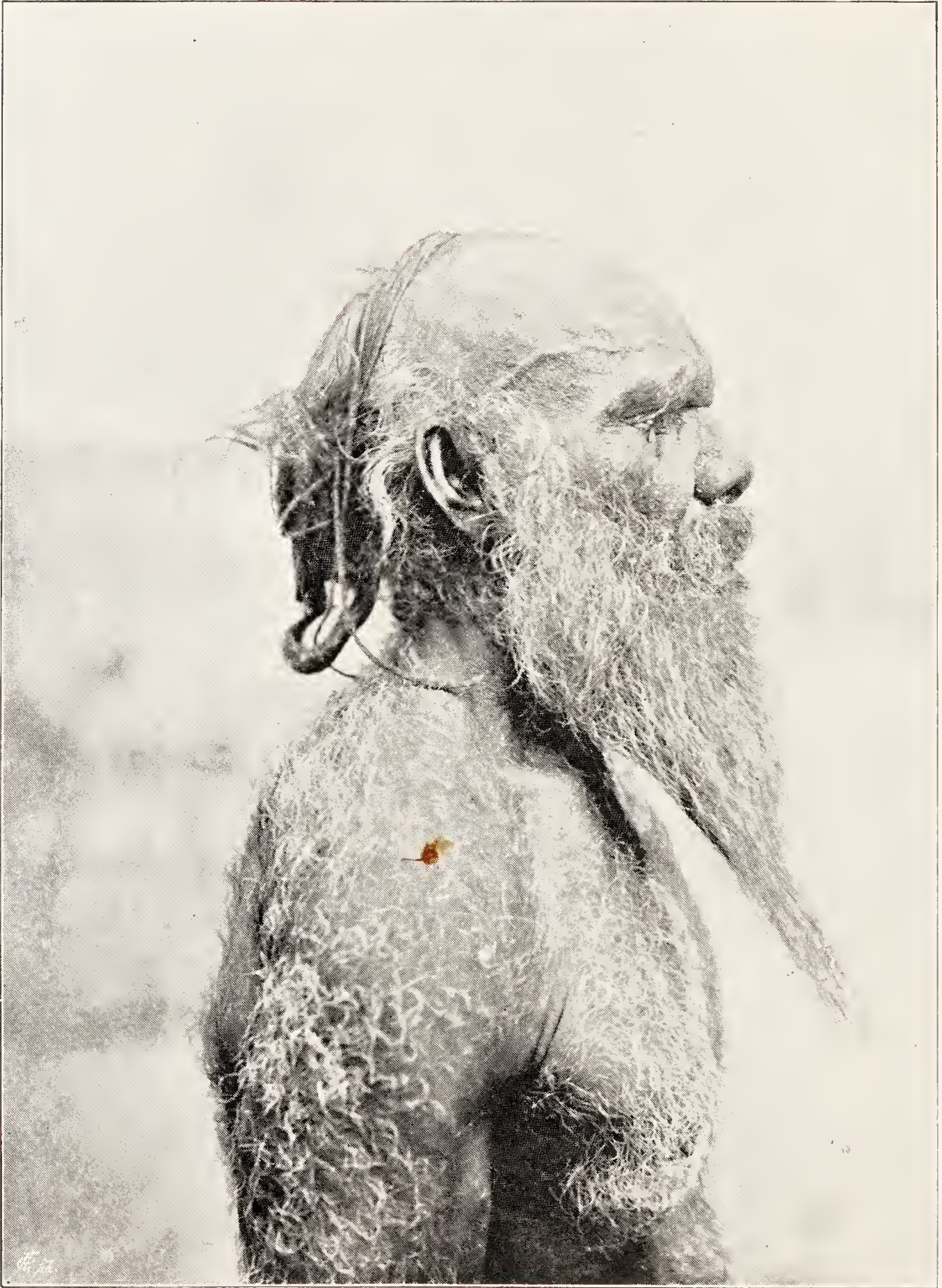
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FIG. 100.—OLD ARUNTA MAN, SHOWING SCAPHOCEPHALIC SKULL.
FULL FACE. (Side face in Fig. 101.)



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FIG. 99.—WARRAMUNGA NATIVE, SHOWING THE NASAL
SEPTUM BROKEN THROUGH.



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FIG. 101.—ARUNTA NATIVE, OLD MAN, SIDE FACE.

Sometimes both men and women knock out one of the upper incisor teeth, but this is purely a matter of individual choice and has nothing to do with initiation. It is most frequently done amongst the north-eastern Arunta in what is known as the Quatcha or water country (Fig. 107).

So far as height is concerned, the average of forty men whom I measured was 169.4 cm., or, in English measure, five feet seven inches. The tallest was five feet eleven inches—an exceptional height for an Arunta native; the smallest one was 158.2 cm., or very slightly over five feet. Five feet six inches may be regarded as a fair average height for the men. The women vary more than the men and, amongst the Arunta, their average height is approximately five feet two inches. Their voice is decidedly soft and musical, except when, as, for example, during a fight, they get excited, and then their shrill shrieking can be heard far away.

The illustrations will serve to give a good idea of the general appearance of the natives, males and females, at different periods of their life. They are commonly spoken of as “niggers” or “blacks,” but in reality are neither “nigger” in race nor black in colour, but are long-headed Caucasians, belonging to the same great race as ourselves, only to a dark variety of it. Amongst the best known and most striking characteristics of the native features are the depression of the root of the nose, the receding forehead and the great development of the ridges above the eyes, which cause the latter to recede into the head and often throw them into deep shade. The depression of the root of the nose, aided sometimes by a slight elevation of the bridge, though most often this is wanting, gives it a superficial resemblance to the Semitic type; indeed observers have often spoken of the natives as being “Jewish” in type, but, on closer observance, the characteristic hook-shape of the latter is always found to be wanting and, in front view, its great

width at once dispels the illusion—a width that is accentuated during the lifetime of the individual by the constant wearing of a nose-bone. The full beard of an Arunta native hides from view an equally typical feature, which is the great size and forward growth of the jaws, producing the prognathic structure that is so characteristic of the Australian skull.

Small as is the opportunity of gratifying the feeling of vanity, it is undoubtedly present amongst these savages. By way of ornament a would-be dandy wears a long nose-bone through the hole in the nasal septum, with a little tuft of bright-coloured feathers in one end. His forehead is covered with a white band and, on his head, a tuft of owl or cockatoo feathers stands out in strong contrast to his black hair. Around the upper part of his arm he twines perhaps as many as twenty little fur string bands which serve for the insertion of little tufts of feathers, a final coating of grease and red ochre completing his toilet.

The women (Figs. 104, 105, 106, 107) vary very much in personal appearance at different times of their life, much more than the men do, simply because they have no beard with which to conceal the outline of their jaws. Under normal conditions they are, except for the use of a small apron, quite naked. This is very convenient during the hot season, when they merely build a little lean-to to shelter them from the sun, but during the bitterly cold nights of winter they must be extremely uncomfortable. A married woman is allowed to wear neck-rings and head-rings; in fact they have a very large number of the latter made out of tightly woven fur string, thickly coated with grease and red ochre. Their most picturesque ornament is made from the bright red seeds of the Bean tree (*Erythrina vespertilio*). Each bean is pierced through with a fire-stick and hundreds of them are threaded on hair string to form a long coil which passes round the neck, under the breast and arm on each side and across the back. The bright red of the



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FIG. 102.—LURITCHA MAN WEARING EMU-
FEATHER CHIGNON.



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FIG. 103.—YOUNG ARUNTA WOMAN, SHOWING CAMPTOCNEMIA OR "BOOMERANG LEG."

beans and the dark chocolate-brown of the lubra's skin form a strong and very effective colour contrast. These necklaces are all traded down from the north where the Bean tree grows plentifully. Like all savages, the woman grows old at a very early age, and this quite apart from any special hardship or harsh treatment. By the time she is twenty-five, or at most thirty, she is completely *passée*, and at forty, a veritable hag.

To what age she attains it is difficult to say, but there are probably few who live beyond the age of fifty. The younger women walk with remarkable grace, due partly to the fact that they are not impeded by a close-fitting dress, and partly also to the fact that they are accustomed to carry a *pitchi* containing water on their heads, using perhaps one hand to balance it with, though, as often as not, they will have both hands full and walk along freely without touching the bowl. One day at Alice Springs I saw a woman walking along, quite comfortably, with a *pitchi* of water balanced on her head, her left arm was round a child, sitting straddle-legged on her hip, and under her right she held a second bowl of seed. Wondering what she would do, I threw her half a stick of tobacco. It fell on the ground but, without a moment's hesitation, balancing herself on her left leg, she picked it up with her right foot, using the great toe as we should our thumb, lifted the leg, transferred it to her right hand and walked on with a smile. After you have become accustomed to the graceful carriage of a savage woman, the walk of an ordinary white woman looks, by comparison, like an awkward waddle. However, they soon lose their figure and seem to shrink up, until the skin hangs in great wrinkles on their bones.

In regard to their character, it is, of course, impossible to judge them from a white man's standard. In the matter of what we call morality, their code differs radically from ours, but it cannot be denied that their conduct is governed

by it and that any known breaches are dealt with both surely and severely. In many cases there takes place what the white man, not seeing below the surface, not unnaturally describes as secret murder, but, in reality, revolting though such slaughter may be to our minds at the present day, it is simply exactly on a par with the treatment accorded, not so very long ago, in European countries, to women who were accused of being witches. Every case of such secret murder, when one or more men stealthily stalk their prey, with the object of killing him, is, in reality, the exacting of a life for a life, the accused person being indicated by the so-called medicine man as one who has brought about the death of another man by magic and whose life is therefore forfeit. This custom must have acted as a powerful agency in keeping down the numbers of the tribe. No such thing as natural death is realised by the native; a man who dies has, of necessity, been killed by some other man, or perhaps even by a woman, and, sooner or later, that man or woman will be attacked. In the normal conditions of the tribe every death meant the killing of at least one other individual.

Side by side, however, with this barbarous custom, we find others which reveal a more pleasing side of the native character. Generosity is certainly one of his leading features. He is always accustomed to give a share of his food, or of what he may possess, to certain of his fellows. It may, of course, be objected to this that, in doing so, he is only following an old-established custom, the breaking of which would expose him to harsh treatment and to being looked upon as a churlish fellow. It will, however, hardly be denied that, as this custom expresses the idea that, in this particular matter, everyone is supposed to act in a kindly way towards certain individuals, the very existence of such a custom, even if it be only carried out with the hope at some time of receiving a *quid pro quo*, shows that the native is alive to the fact that an action which benefits someone else



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FIG. 104.—YOUNG WOMEN, ARUNTA TRIBE, SIDE FACE.
Two sisters, Quordunga and Chitta, both Udnirringita Totem.



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FIG. 105.—YOUNG WOMEN, ARUNTA TRIBE, FULL FACE.
The same as in Fig. 104.



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FIG. 106.—OLD WOMAN, ARUNTA TRIBE.

is worthy of being performed. It is sometimes said that the native is incapable of showing gratitude. It is certainly true that he is not in the habit of showing excessive gratitude on receiving gifts from the white man, but then neither does he think it necessary to express his gratitude when he receives gifts from a member of his own tribe, nor does he expect an expression of gratitude to himself when he gives anything away. It is necessary to put oneself into the mental attitude of the native, and then the matter is capable of being more or less easily grasped and understood. With him giving and receiving are matters of everyday experience and call for no expression of gratitude as between native and native. He simply treats the white man as he would a fellow-tribesman. It does not, indeed, occur to him that an expression of gratitude is necessary. On the other hand, he parts, as a matter of course, and often for the merest trifle (not only what is a trifle to us but also to him), with objects that have taken him much labour to produce but which a white man takes a fancy to. That he is, in reality, incapable of the feeling of gratitude is by no means true. It may be added that, taking all things into account, the blackfellow has not perhaps any special reason to be grateful to the white man, for it must be remembered that his feelings are concerned with the group rather than with the individual. To come into contact with the white man means that, as a general rule, his food supply is restricted and that he is, in many cases, warned off from the water-holes that are the centres of his best hunting grounds and to which he has been accustomed to resort during the performances of his sacred ceremonies. While the white man kills and hunts his kangaroos and emus, he is debarred, in turn, from hunting and killing the white man's cattle. Occasionally the native will indulge in a cattle hunt, but the result is usually disastrous to himself and, on the whole, he succumbs quietly to his fate, realising the impossibility of

attempting to defend what he certainly regards as his own property.

With regard to their treatment of one another, it may be said that this is marked, on the whole, by considerable kindness—that is, of course, in the case of members of friendly groups—with, every now and then, the perpetration of acts often of revolting cruelty. The women are certainly not treated, usually, with anything that could be called excessive hardness. They have, as amongst other savage tribes, to do a considerable part, but by no means all, of the work of the camp, but, after all, in a good season, this does not amount to very much and, in a bad one, men and women suffer alike and, of what food there is, they get their share. The life and treatment of the black lubra are far preferable to those of hundreds and thousands of women in British slums. If, however, rightly or wrongly, a man thinks his wife guilty of a breach of the laws governing marital relations, then, undoubtedly, the treatment of the woman is marked by brutal and often revolting severity. But here again it must be remembered that a man guilty of a breach of marital customs is dealt with with equal severity. To their children they are uniformly kind and considerate, carrying them when tired on the march and always taking care that they get a good share of any food. Here, again, it must be remembered that the native is liable to fits of sudden passion and in one of these, hardly knowing what he does, he may treat a child with great severity. There is no such thing as doing away with old or infirm people; on the contrary, such are treated with special kindness, receiving a share of the food that they are unable to procure for themselves.

The fact is that if one only heard certain tales, that are quite authentic, of what a native has actually done, the conclusion naturally arrived at would be that he belongs to a very high moral type of humanity. If, on the other hand, one only heard certain other tales, equally true and character-

istic of his nature, the conclusion would as naturally be that he was a bloodthirsty savage of low moral type. Neither point of view is correct. The blackfellow's outlook on what we call moral matters is often quite different from our own. In our camp amongst the Warramunga one of the most attractive and capable of the younger men was a cheerful savage named Winithonguru who was quite a favourite with everyone. His merry laugh and lightheartedness were quite infective. He had a number of great scars on his back which evidently implied that he had, at some time in the past, been subject to the infliction of very special and severe cuttings. When I asked him about them he described to me, quite cheerfully and unconcernedly, as if it were a matter of past history that had no concern with the present times, how, one day, years ago, he had been out in the bush with some other natives searching amongst the gum trees for honey-bags. There was one man amongst them whose wife he wished to secure for himself, so he contrived to entice this man away from the others and they two went off to hunt by themselves. When they found a gum tree with a honey-bag high up in the trunk he persuaded his friend to climb up after it, cutting steps in the usual way. He waited for him to come down and, when he was within reach, quite helpless and of course quite unaware of any danger, he hamstrung him on both legs, left him lying helpless on the ground, went back to the camp and ran away with his friend's lubra. Later on he had to pay for the misdeed, but seemed to think nothing of it, and, as he had suffered what was regarded as the rightful and absolving penalty of being very severely cut, he was allowed to return to the camp where he resumed his ordinary life just as if nothing had happened.

Another still more striking case was that of a native belonging to a far northern tribe. He had been guilty of cattle-spearing and was captured out in the bush by a

mounted constable. When the latter was bringing him in, secured as usual with a light chain, both the captor and the prisoner had to cross, on horseback, a flooded creek. The constable's horse became caught in snags and rolled over. The blackfellow immediately went to his rescue. It was, of course, a brave action, but, whilst fully recognising this, to those who understand the native mentality, the award of such a specially high distinction as an Albert Medal to the black boy seemed somewhat out of proportion to the real merit of his deed, which did not by any means signify what it would have done in the case of a white man, the relationship between whom and an arresting constable is very different from that between a constable and a blackfellow, who has not the slightest feeling of resentment or ill-will to his captor. The incongruity of the affair was rather patent when a few years later the same blackfellow was sent to gaol for a very serious offence. It is often both unsafe and unwise to judge the actions of a native from the standpoint of view of the motives and feelings that govern our own.

Infanticide is certainly practised, but, except on rare occasions, the child is killed immediately after birth, and then only when the mother is, or thinks she is, unable to bear it, owing to there being a young child whom she is still feeding, and, with them, suckling goes on for, it may be, several years. They believe that the spirit part of the child goes back to the particular spot from whence it came, and can be born again at some subsequent time, even of the same woman. Twins, which are of extremely rare occurrence, are usually killed immediately, as something that is unnatural; but there is no ill-treatment of the mother, who is not thought any the less of. It is not possible to say what exactly lies at the root of this dislike of twins. Possibly it is to be explained on the simple ground that the parent feels a not altogether unrighteous anger that two spirit individuals should think of entering the body of the woman

at one and the same time, when they know quite well that the mother could not rear them both, added to which the event of twins is a very rare occurrence, and the native has a dread of anything that is strange and out of the common. It may be noted that, on the rare occasions on which a child is born very prematurely, as the result of an accident, nothing will persuade them that it is an undeveloped human being; they are perfectly convinced that it is the young of some other animal, such as a kangaroo, that has, by mistake, got inside the woman.

Whilst human flesh is eaten, it is always that of a child and never, so far as I have been able to find out, amongst the Arunta and Central tribes, that of an adult, as is certainly the case amongst some of the northern tribes. The eating can really be regarded as more or less ceremonial and only takes place on very rare occasions, when children of a few years of age are killed, solely with the object of feeding a weakly but elder child, who is thereby supposed to gain the strength of the younger and stronger one. The flesh is not eaten simply as ordinary food, but with the one object of the eater absorbing, not the actual material, but the quality of strength which it is supposed to possess. As usual, in regard to any practice that the native thinks the white man is likely to disapprove of, he will deny that it takes place in his own tribe but will cheerfully attribute it to another. The Arunta, for example, accuse the Luritcha of eating human flesh for the sake of food, but strenuously deny that they do so. When times are favourable, the blackfellow is as light-hearted as possible. He has not the slightest thought of, or care for, what the morrow may bring forth and lives entirely in the present. At night-time men, women and children gather round the camp fires, talking and singing their monotonous chants hour after hour until, one after the other, they drop out of the circle, going off to their different camps, and then, at length, all

will be quiet, except for the occasional cry of a child who, as not seldom happens, rolls over into the fire and has to be comforted or scolded into quietness.

There is, however, in the Arunta, as in all other savage tribes, an undercurrent of anxious feeling which, though it may be stilled and indeed forgotten for a time, is yet always present. In his natural state the native is often thinking that some enemy is attempting to injure him by means of evil magic, and, on the other hand, he never knows when a medicine man, in some distant group, may not point him out as guilty of killing someone else by magic. It is, however, easy to lay too much stress on this, for here again you must put yourself into the mental attitude of the savage and must not simply imagine what your own feelings would be under such circumstances. It is not, by any means, right to say that the Australian native lives in constant dread of the evil magic of an enemy. The feeling is always, as it were, lying dormant and ready to be called up at once by any strange or suspicious sound if he be alone, especially at night-time, in the bush. On the other hand, just like a child he can, with ease, forget anything unpleasant and enter perfectly into the enjoyment of the present moment. Granted always that his food supply is abundant, it may be said that the life of the Arunta native, man, woman and child alike, is, for the most part, a pleasant one.



F.J.G.

FIG. 107.—YOUNG WOMAN, ARUNTA, SHOWING BODY SCARS AND TOOTH
KNOCKED OUT.

Lungarina, Achilpa (wild cat) totem. She is a recent reincarnation
the Lungarina of the Achilpa tradition.



F.J.G.

FIG. 108.—MEMBERS OF A FAMILY OF ARUNTA NATIVES, SHOWING THE WURLEY, WEAPONS AND IMPLEMENTS USED IN DAILY LIFE.

CHAPTER VII

THE ARUNTA NATIVE: HIS BELONGINGS AND MANNER OF LIFE

AUSTRALIA is a very ancient land that for long ages past has been shut off from the rest of the world so that its animals certainly, and probably man himself to a large extent, lived in blissful ignorance of anything taking place in other parts of the world. They were not troubled by competition from outside, because only animals that could fly or were small enough, like mice, to be able to cross the waters that encircled it, on storm-blown logs, could come and interfere with them. Hence it is that Australia became the home of creatures, crude and quaint, that had elsewhere passed away, in the struggle for existence, and given place to higher forms. This, at least in large measure, applies equally to the aboriginal as to the kangaroo and platypus. Just as the platypus, laying its eggs and feebly suckling its young, reveals to us a mammal in the making, so does the aboriginal show, at all events in broad outline, what early man must have been like before he learned to read and write, domesticate animals and use a metal tool. He affords, in fact, as much insight as we are ever likely to gain into the manner of life of men and women who have long since disappeared in other parts of the world and are now known to us only through their stone implements, which, together with rock drawings and more or less crude carvings, were the only imperishable records of their culture that they could leave behind them.

The aboriginal is a true nomad, wandering from place to place over the country which belongs to the tribe, or to the

local group of which he is a member, camping perhaps for weeks together at some favourite spot at which he can easily get enough to eat and drink. It must be remembered that he has not reached the agricultural stage and has no idea of cultivating cereals, domesticating animals or of laying in a stock of food to maintain himself during a time when it is scarce. He certainly has seed plants that would lend themselves to cultivation, but the kangaroo is scarcely suitable for domestication, either as a giver of milk or a bearer of burdens. He lives from hand to mouth, without any thought of the morrow. Nothing comes amiss: acacia seeds, lily roots and stems, yams, honey of the wild bee and honey ant, grubs, kangaroos, emus, snakes, rats, frogs—in fact everything edible is eaten, even some things, such as flies and pounded ant-hill clay, that we should scarcely call by this name. When food is abundant he eats in plenty and is perfectly happy: when it is scarce he accepts the situation without grumbling, tightens his waist-band and starves philosophically, waiting for something to turn up. There are, of course, times when he is hard pressed, and during a long continuance of drought his life is not a happy one; in fact he is absolutely at the mercy of his surroundings. Fortunately his very lack of any power to control Nature, though he is firmly convinced that he can do so by magic, has been the means of sharpening his powers of observation, and he can obtain water and food, in what is, for him, abundance, in places where a white man would die of thirst and starvation. There are, however, times when even the aboriginal, with all his bush-craft—and this is simply marvellous—is unable to contend against the fierce heat and drought of the Centre and perishes miserably.

The ordinary traveller, trekking across the country, sees, every now and then, a native camp with its Mia-mias, looking deserted during the day-time, save for a few old men and women lazily lounging about, with probably a score or two of dogs of all descriptions. The younger men and women,

with their children, are out in the scrub, the former hunting kangaroos, wallabies and emus, the latter searching for yams and grass seed that, when pounded up, serve them for flour. It looks as if everything were arranged haphazard, as if Mia-mias had been run up just anyhow and anywhere and as if life in camp were as free-and-easy and go-as-you-please as possible. Of anything like law and order there seems to be not a trace, and yet it is there when you begin to notice things a little more closely.

After you get to know something of the organisation of the tribe, you find that every camp that is of any size and occupied for any length of time is really divided into two, though the division often depends on a natural feature and is not noticeable as being made deliberately. The whole tribe is divided into two main groups. If you are passing by a camp in hilly country, you may notice that some Mia-mias are on the flat, others on the higher ground, or some will be built on one side of a small stream, others on the other. It all looks quite natural and accidental but, in reality, it is not so. Everything is more or less definitely arranged. If you spend any time in a camp of any size you notice that there are, at any rate, two special wurleys, or Mia-mias, set quite apart from one another and bigger than the others. You will see that that one is strictly confined to men, the other to women and children. The former is the Ungunja of the men, the latter the Lukwurra of the women. Each is a kind of primitive club house.

There are different kinds of camps, some more permanent than others. When the season is a good one and food and water are abundant, the natives are scattered far and wide, covering as great an area of country as possible, so as to take advantage of food supplies that do not exist, or are not available, in bad, which means dry, seasons, when little water is to be had. Under favourable conditions two or three brothers with their wives and families will wander together, forming a temporary camp by the side of some water-hole.

The Mia-mia (pronounced my-my), or wurley, as it is often called, consists only of two upright forks, perhaps six or eight feet apart, with a horizontal one against which leafy boughs are slanted to protect the occupants from wind, which, if it be during the winter months, is sure to be blowing from the south-east. It is merely a bush shelter (Fig. 108). When wandering about in this way the native probably enjoys the freest time that he knows of. He may not, however, wander anywhere and everywhere. The whole country occupied by the tribe is parcelled out amongst the different local groups, each one of which is supposed to own a definite tract of land, the boundaries of which are all well known. In the southern part of the tribe there are sometimes boundary stones met with, but any such definite indications of territorial rights are rare (Fig. 31). Though the whole country is supposed to be the common property of the whole tribe, no native thinks of trespassing on the hunting grounds of another local group without the permission of the owners.

In front of his Mia-mia, or inside if the weather be cold, there will be a small fire of twigs and a little log that keeps smouldering, for the blackfellow never makes a large fire as the white man does. He regards the latter as a strange being who makes a big fire and then finds it so hot that he cannot go anywhere near to it. This forms the family hearth, where the cooking is done and round which they sit and talk when the day's work is over. In addition, on cold nights, there will be a small fire between each two persons, with a supply of small wood ready at hand to replenish it, if anyone wakes up. The sticks are not put lengthwise on the fire but with one end pointing in, so that they last much longer.

Fire is made in one of two ways, by rubbing and drilling. In the first, two men sit down with a soft wood shield on the ground between them, and with a sawing action rub the edge of a hard wooden spear-thrower backwards and forwards, making a groove on the shield, a little sand being often

used to increase the friction (Fig. 110). The heat makes the powdered wood smoulder. The hot, smouldering powder is dropped into a little tinder made of very dry finely shredded bark, and after a little gentle blowing it blazes up and the native has his fire. In the second method, a man sits with a piece of soft wood between his feet and works a hard stick on this with a drilling motion (Fig. 109) which soon makes a little hole in the lower piece: a nick is cut in the edge of the latter and the smouldering powder drops out into a little dry tinder which is then blown into a flame. The soft wood is spoken of as "the mother of the fire." Any native will make fire in, at most, a minute and a half by either of these methods, but, as a general rule, fires are not allowed to go out and, on the march, women often carry a smouldering fire-stick with them which they keep moving about to keep it burning. No man ever leaves the camp at night without carrying a fire-stick. Early in the morning, if it be summer, but not until the sun is well up if it be winter, the occupants of the camp are astir. Time is no object to them, and if there be no lack of food the men and women all lounge about, while the children laugh and play. If food be required, then the women go out, accompanied by the children, carrying digging-sticks and *pitchis*, and the day will be spent out in the bush in search of small burrowing animals such as lizards and small marsupials. The men will set off, armed with spears, spear-throwers, boomerangs and shields, in search of larger game, such as emus and kangaroos. The latter are secured by stalking, when the native approaches his prey with perfectly noiseless footsteps. Keeping a sharp watch on the animal, he remains absolutely still, if it should turn its head, until once more it resumes its feeding. Gradually, availing himself of the shelter of any bush or tussock of grass, he approaches near enough to throw his spear. The end is fixed into the point of the spear-thrower and, aided by the leverage thus given, he throws it forward with all his strength. Different

men vary much in their skill in spear-throwing, but it takes an exceptionally good man to kill, or disable, at more than twenty or thirty yards. Sometimes two or three men will hunt in company and then, while one remains in ambush, the others combine to drive the animals as close as possible to him. Euros are more easy to catch than kangaroos. The euro is really only a somewhat smaller form of kangaroo than the great red one or, as it is commonly called, the "old man kangaroo." It is more easily caught than the latter because it makes definite pads across the scrub and hilly country that it inhabits. The men lie in ambush by the side of these while women and children go out and drive the animals towards them. On the ranges the rock-wallabies have a very definite run, so definite that, in some places like the George Gill Range, they actually form polished pads amongst the rocks. By one of these a native will sit patiently, waiting hour by hour until some unfortunate beast comes by.

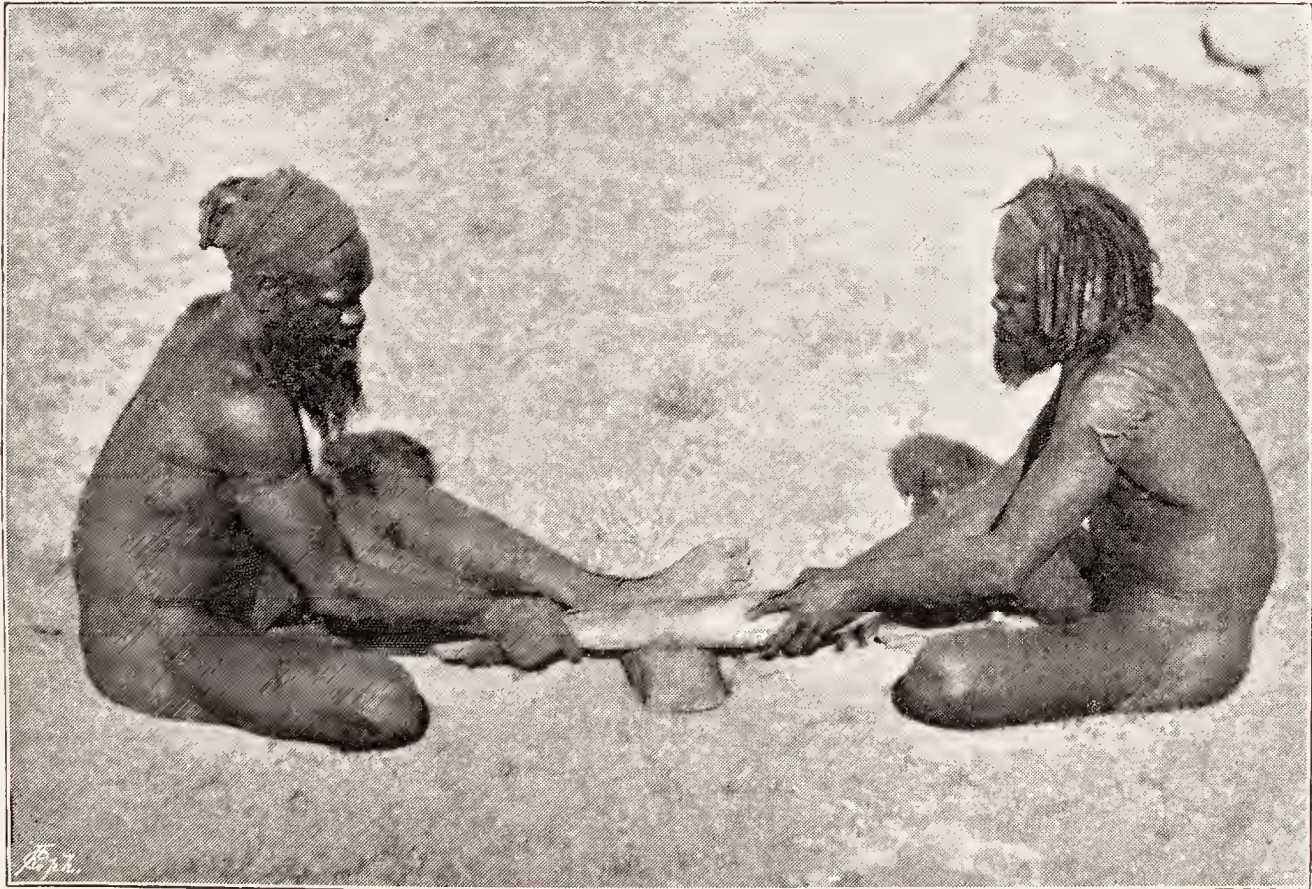
Naturally the emu is a great prize, and they have two or three ways of capturing it. The bird is very inquisitive and, even at the risk of running into danger, seems to be unable to avoid the fascination of anything that attracts its attention. A native makes something that resembles the long neck and head of a bird and fixes it on to himself. Bending forward so that, in the long grass, his body is rather like that of an emu, he moves about, stopping every now and then in the aimless way of an emu quietly feeding. The emu, anxious to know what this strange thing really is, often stops to watch it until the native has the chance of throwing his spear at close quarters. Sometimes they dig a deep pit on one of its feeding grounds. In the pit a short, sharply-pointed stick is fixed upright and the hole is covered with bushes and earth. The inquisitive bird comes up to investigate the matter, probably ventures on the bushes, falls through and is impaled on the spear. In some parts the leaves of the Pituri plant (*Duboisia Hopwoodi*), which is the favourite narcotic



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FIG. 109.—MAKING FIRE BY RUBBING ONE STICK ON ANOTHER,
URABUNNA TRIBE.

The lower stick is of softer wood than the upper.



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FIG. 110.—MAKING FIRE BY RUBBING THE EDGE OF A SPEAR-THROWER
ON A SHIELD, ARUNTA NATIVES.

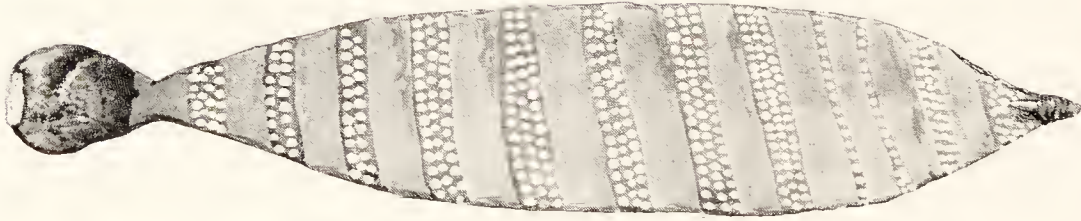
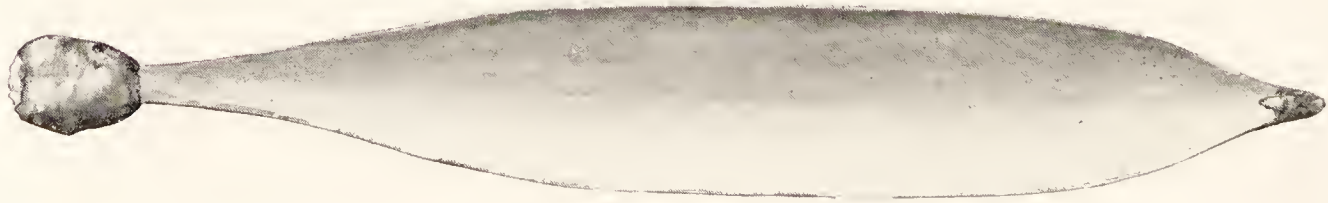
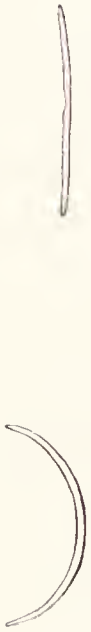
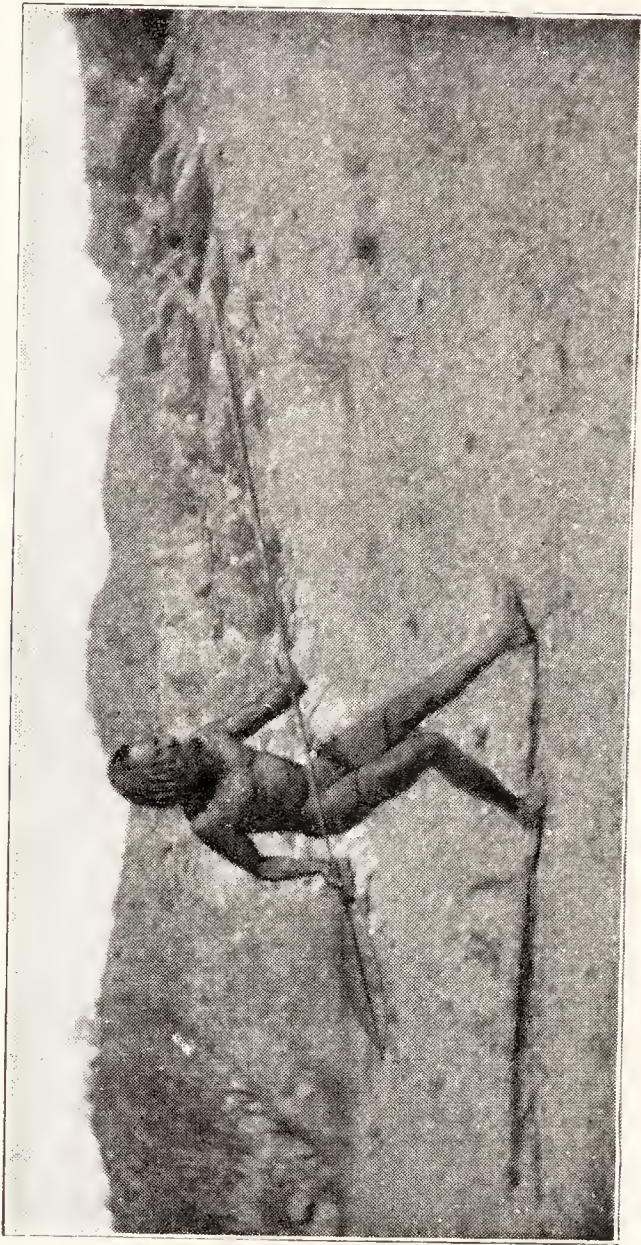
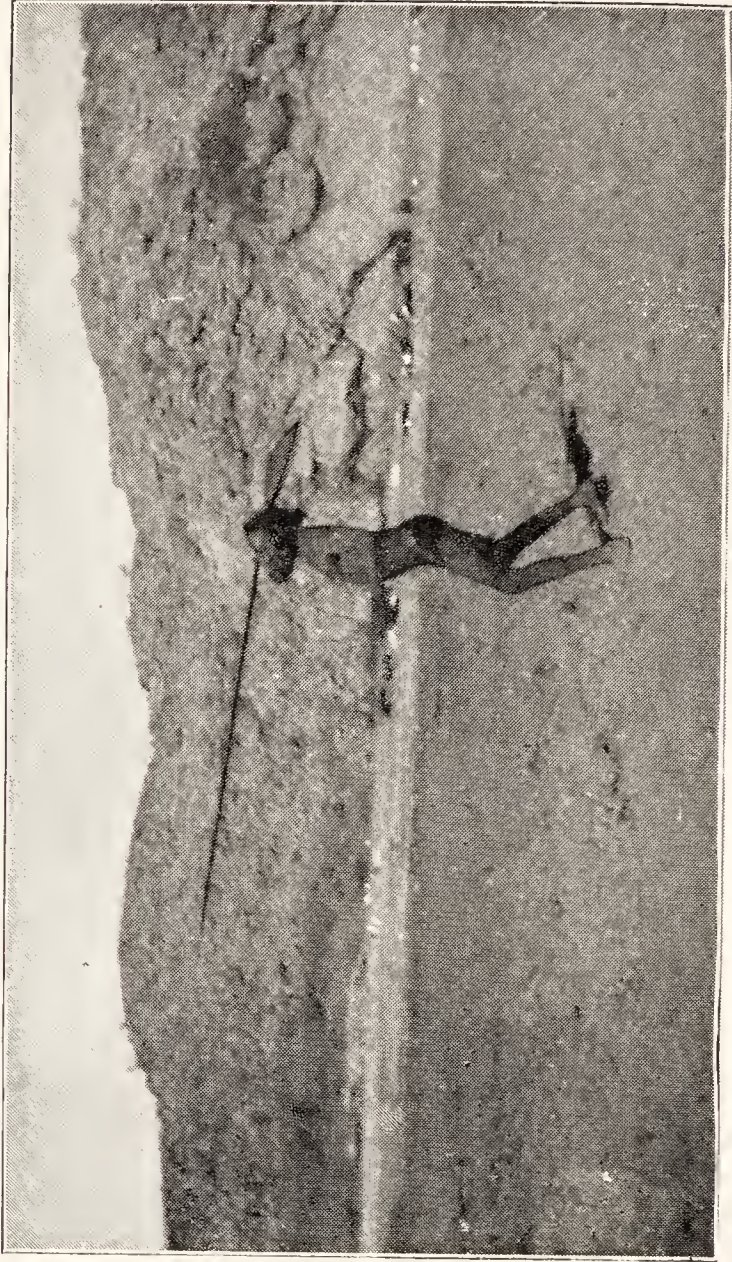


FIG. 113.—TWO SPEAR-THROWERS, ARUNTA TRIBE.
One of them is decorated for use, during a ceremony.



F.J.G.

FIG. 111.—SPEAR-THROWING.



F.J.G.

FIG. 112.—SPEAR-THROWING.

of the native, are used. A decoction of them is made in some small water-hole at which the bird is accustomed to drink. It soon becomes stupefied or, as the natives say, "Him drunk, all same white fellow," and falls an easy prey to the blackfellow's spear. The emu is really one of their greatest prizes. It not only provides them with plenty of meat but, in addition, the feathers are valuable for ornaments, and the leg tendons are highly prized for mending broken implements and for splicing spear-heads on to the shaft. I have never seen an Arunta native make any use of bone, except as an ornamental nose-bone, "pointers" for the purpose of exercising evil magic or "prickers" to pierce boils and sores.

Smaller birds, like rock pigeons and parrots of different kinds, that assemble at water-holes, are caught by throwing boomerangs amongst them, and larger birds, such as eagle-hawks, the down of which is of special value to them for use in decorating the body during ceremonies, are also caught in the same way, but more rarely and with greater difficulty. The boomerang is thrown direct—there is no such thing as a return boomerang amongst these people—but it takes a very good shot to hit a solitary eagle-hawk perched high up on a gum tree. However, every old man seems to have a little pouch, made of the bird's crop, filled with its own down, and each bird provides a large quantity of this. The down is, of course, got from other birds such as ducks, but the eagle-hawk gives them their best supply, because ducks are seldom met with in Central Australia.

So far as cooking is concerned their methods are primitive. Many of the vegetables, such as Irriakura, a little bulb of a Cyperaceous plant (*Cyperus rotundus*), the size of a very small onion, may be eaten raw or roasted in hot ashes, some of which are heaped up over them. Acacia seeds are gathered in large quantities. The pods are placed in hot ashes and when they are cooked, the natives simply sit round and "shell" and eat the seeds as if they were peas—in fact

they taste rather like raw green peas. Perhaps the most standard vegetable dish of the natives, in this part of the Centre, is what is called *Ingwitchika* by the Northern Arunta people, and by white men *Munyeru*. This is the seed of a species of *Claytonia*. The women gather large quantities of the very minute black seeds and winnow them by pouring them from one *pitchi* to another, so that the wind can carry off the loose husks, or else, taking some up in their hands, they blow the husks away. When freed from the latter they are placed on one of the usual grinding stones and then ground down with a smaller stone held in the hand. Water is poured on every now and then and the black, muddy-looking mixture tumbles over the side into a receptacle and is then ready for eating, either raw or after baking in the ashes. *Munyeru* seems to take the place, amongst the Arunta, of the Nardoo (the spore cases of *Marsilia quadrifolia*), which is the staple article of food in the Barcoo district and other parts of the interior of Australia.

The native has no pottery; he carries water in a wooden trough, or *pitchi*, and sometimes, especially amongst the more northern tribes, his bags, made of grass or split cane, are so closely woven as to be able to hold honey, but he has nothing in which water or food can be heated or cooked.

In the case of animals, the larger ones are usually cooked in more or less shallow pits in the ground. An opossum is first of all disembowelled, the wool, which is used for making string, is then plucked off with the fingers and the body placed on the hot ashes. A rock wallaby is treated in much the same way, except that the hair is first of all singed off and then the skin is scraped with a sharp flint. The ashes are heaped over the body, which, when partly cooked, is taken out and an incision made in each groin; the holes fill and refill with fluid, which is greatly appreciated and drunk at once. The animal is then divided up, the flint at the end of the spear-thrower being used for this purpose. When cooking an *Echidna*, which

is regarded, owing to its fat, as especially good to eat, the intestines are first of all removed. Then a hole is dug in the ground, the bottom sprinkled over with water and the animal placed on it. The back is covered with a layer of moist earth, or sand, which is removed after about a quarter of an hour, and hot ashes substituted, which are removed after a few minutes. The idea of this seems to be that of making it more easy to remove the skin, with the strong spines, from the body. Anyone who has tried to skin an *Echidna* knows how difficult it is to do this. The skin with the quills is then cut off with a flint and the body placed amongst hot ashes until cooked.

When any large animal, such as a euro or kangaroo, is killed, the first thing that is always done is to dislocate the hind legs so as to make the animal *atnuta*, or limp. It is then cooked in an earth oven, as we saw it done at Ayers Rock.

The tracking powers of a native are well known, but it is difficult to realise the skill which they display unless one has seen them at work. Not only does the native know the track of every beast and bird, but after examining any burrow, he will, from the direction in which the last track runs or even after taking into his hands a little of the earth from the mouth of the burrow, tell by the smell whether the animal is there. From earliest childhood, girls and boys are trained to take note of every track made by every living thing. With the women especially it is a constant amusement to imitate, on sandy ground with their fingers, tracks of various animals which they make with wonderful accuracy. In their power of tracking, however, the men vary greatly, a fact that is well known to, and appreciated by, those in charge of the native police in various parts of the centre of the continent. Whilst they can all follow tracks that would be indistinguishable to the average white man, there is great difference in their ability to do so when they become indistinct. The difference is so great that, whilst an ordinary

good tracker will have no difficulty in following them up while he is on foot and so can see them close to, a really good one will unerringly follow them up on horse or camel back. Not only this, but, strange as it may sound to the average white man, whose meals are not dependent upon his ability to track an animal to its burrow or hiding-place, the native will recognise the footprint of every individual of his acquaintance. On the Horn Expedition one of our boys could recognise the shoe-print, on the sand, of every one of the twenty members of our party. You never see them actually studying them, but all the time they are watching everything and taking mental notes all day long. Word once came into our camp that a particular man, living some distance out west, had been killed. Later on, whilst we were camped at the Illara water-hole in the James Range, I was out one day with a black boy collecting. As we walked along he suddenly stopped and, after examining the tracks of a small party of natives that must have passed by recently, he pointed one out to me as that of the man whose death had been reported. I told him that it could not be so because he was dead, but the boy was positive that it was, whether he was dead or not, and, when we got into camp, we found that the man had actually come in—the report of his being killed was a false one. You have to be careful when a blackfellow tells you that he has “killed,” whether it be an animal or a human being. A native often says, in his pidgin English, “Me been kill him,” which only means that he has done his victim some damage. “Me been kill him little bit” means a very minor hurt. If it is a case of actual killing he says, “Me been kill him altogether, him been tumble down dead.”

Within his own district, which may be a very extensive one, over which he wanders freely, the native will guide you to any spot unerringly and seems to know every little bit of it in most intimate detail. Outside of his own territory he knows, or pretends to know, nothing.

Whilst in matters such as tracking, which are concerned with their everyday life, and upon efficiency in which they actually depend for their livelihood, the natives show conspicuous ability, there are other directions in which they are as conspicuously deficient. This is perhaps shown most clearly in the matter of counting. At Alice Springs they usually count, sometimes using their fingers in doing so, up to five, but often anything beyond four is indicated by the word *oknirra*, meaning much or great. One is *ninta*, two is *tera* or *terama*, three is *tera-ma-ninta*, four *tera-ma-tera*, and five *tera-ma-tera-ninta*. A man is *Atua*, a small mob of men is *atua numinna*, a bigger mob is *atua inkerinyiga*, a very large one is *atua injarra oknirra*. Time is counted by "sleeps" or "moons," or phases of the moon for which they have definite terms. Longer periods they reckon by seasons, wet and dry, hot and cold, or summer and winter. They have definite words expressing particular times, such as morning before sunrise (*ingwuntagwunta*), evening (*ingwurilla*), yesterday (*tmirka*), day before yesterday (*ingwuntairpinta*), in some days (*ingwuntalkara*), in a short time (*ingwuntanma*), in a long time (*ingwunta arbamaninja*).

The vocabulary is rich in terms denoting everything in their environment. Every animal and plant has its own name, each species, except the very little ones, being recognised. Every feature in the landscape has its special name. If the matter is one of interest to them, so far as their ordinary life is concerned, the completeness of the terms used is striking. For example, everything concerned with water is of great importance to them, so that they have distinct names for different kinds of water-holes. *Quatcha* is water, and, whilst the general name for water-hole is *Quatcha laia*, each different kind of water-hole is recognised. A clay pan is *Underappa*; a soakage dug-out in the sandy bed of a creek is *Quatcha nunja*; a spring is *Quatcha peinda*; a large water-hole is *Quatcha inianga oknirra*; one with small reeds is *Quatcha kullbera*; one with tall bulrushes

round it is *Quatcha tmorliddja*; one in which lilies grow is *Quatcha ungwa*, the roots *ungwa* are eaten; one with scum on it, *Quatcha yaiya*; a muddy one is *Quatcha runurkna*; a rock hole is *Quatcha irkmungura* or *wilima*; a cloud is *Quatcha kangura*; hot water is *Quatcha urimba*; cold water is *Quatcha tanilla*; the ordinary name for creek or river is *Lara*; a running creek is *Lara peinda* or *pinta* (hence *Larapinta*, the native name of the Finke River); a dry creek is *Lara irraja*.

So again, in regard to trees, the general term is *rola* (or *erola*), but all kinds have special names; a white gum (*E. rostrata*) is *Purria*; a box tree (*E. microtheca*) is *Lulba*; a plum tree (*Santalum*) is *Kakia*; an ironwood (*A. Farnesiana*) is *Tunga*; a Mulga (*A. aneura*) is *Tidja*. The trunk of a tree is *Kadnunga*; a large bough is *Indailgwa*; the leaves and branches are called *Yaggakainja*; the shadow of a trunk is *Kadnunga ulya*; of the leafy part of it, *Kainja ulya*; the whole mass, giving shade, is *Rola ngwalga ulya*; bark is *Irknnulla*. To take the bark off a tree is *Irknnulla tuma*; a tree with the bark off is *Rola indjerka*; wood that is rotten and breaking into bits is *Rola indwalda*; a knot formed where a bough has been broken off is *Rola ungulla*. They distinguish between the sexes; thus a small kangaroo is *Arura uria*, a female is *Arura maila*. Nowadays they call an old rooster with a big comb, *Chuk-chuk uria oknirra* and a fowl *Chuk-chuk maila*. The general term for meat or flesh is *Kirra*; meat before it is cut up is *Kirra mberga*,¹ or big meat; a small piece of meat cut from a larger one is *Kirra chilka*; meat going bad is *Kirra indida*; meat that has gone completely bad and is liquefying is *Kirra urkna*.

In many respects their memory is phenomenal, especially in regard to such matters as tribal relationship and to all traditions relating to tribal customs and beliefs, but, except

¹ *Mberga* or *Mberka* is used to signify the whole body, whether animal or plant: *Atua mberga* is a man's body; *Rola mberga* is the whole tree; *Arura mberga* is the whole kangaroo.



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FIG. 114.—GUM TREE FROM WHICH A ROUGH BARK PITCHI HAS BEEN CUT.

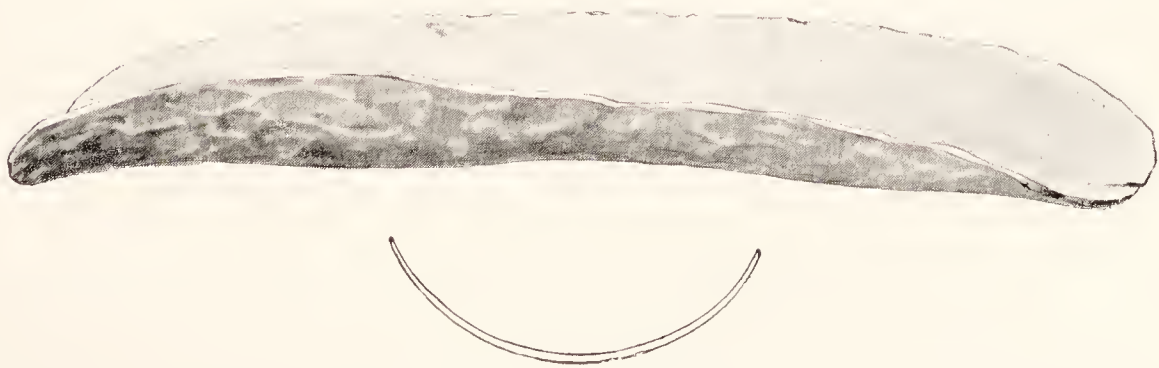


FIG. 115.—ROUGHLY MADE PITCHI, CUT FROM THE BARK OF THE GUM TREE IN FIG. 114.

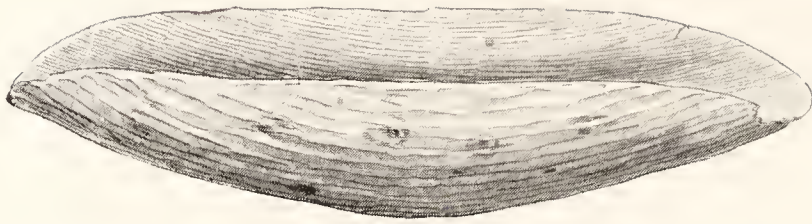


FIG. 116.—HARD-WOOD PITCHI, ARUNTA TRIBE.

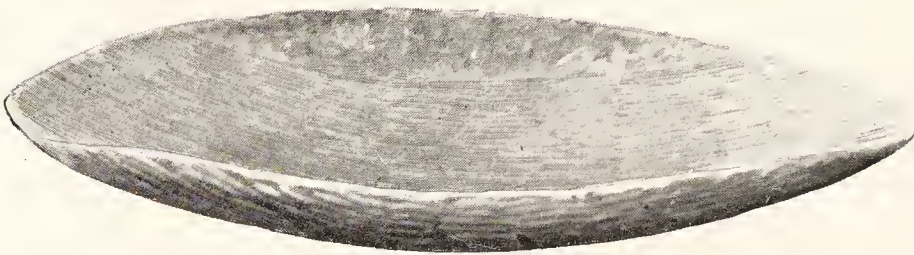


FIG. 117.—HARD-WOOD PITCHI, ARUNTA TRIBE.

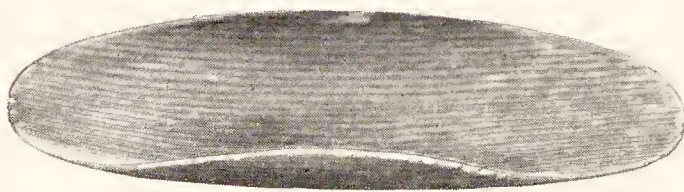


FIG. 118.—HARD-WOOD PITCHI OF VERY SYMMETRICAL FORM,
WARRAMUNGA TRIBE.

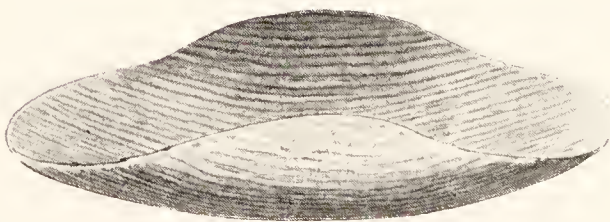


FIG. 119.—HARD-WOOD PITCHI OF VERY SYMMETRICAL FORM, WITH THE
SIDES HIGH, KAITISHA TRIBE.

in the case of the latter, they are not capable of long-sustained effort.

However, to return to the native camp. Their weapons and implements are comparatively simple and few in number. A woman always has a *pitchi*, that is, a wooden trough, varying in length from one to three feet, which has been hollowed out of soft wood of the Bean tree (*Erythrina vespertilio*) or of hard wood, such as a Mulga or Eucalypt. In this she carries both food and water, either balanced on her head or under her arm, often holding it slung on to her hip by a strand of string across one shoulder. Not infrequently, a young baby will be carried about in a *pitchi*. There are different shapes of *pitchis* used for different purposes. The simplest one is a shallow, concave piece of bark, cut from the trunk of a gum tree, often quite irregular in shape according with that of the surface of the trunk (Fig. 114). It is not trimmed in any way and is the simplest possible form of carrying the utensil. A second form is cut out of a solid block of hard wood. It is always very symmetrical in shape, often beautifully so, and entails a great amount of hard and careful work, showing on its surface, as indeed almost all of the *pitchis* do, parallel grooves corresponding in form to the shape of the edge of the stone flint with which they are made (Figs. 116, 117, 118, 119). It must always be remembered that the native has no measuring tool nor instruments of precision to help him. He works simply by the eye; but the results, so far as simple beauty are concerned, are often as perfect as they well could be. A third form is made much more easily than the second out of soft wood. It varies much in shape. Some are simple, wide-open troughs (Figs. 120, 121, 122, 123, 124), others are deep with sides curved over (Fig. 125), while others are distinctly boat-shaped (Figs. 126, 127). Both of the two latter are suitable for carrying water, and are so well balanced that they can be rocked about without overturning. They are often carried by the women on the head, poised on a quoit-

shaped ring of fur string. Though used exclusively by women, all the *pitchis* are made by men, the better being made in the far north-west part of the tribe or, especially the boat-shaped ones, by the Kaitisha and Warramunga people, away to the north, by whom they are traded down to the south.

The only other implement used by the women is what is popularly called a "yam-stick," which is really a digging-stick or, to speak more correctly, a pick. The commonest form is simply a straight staff of wood, with one or both ends bluntly pointed and of such a size that it can easily be carried in the hand and used for digging in the ground. When at work, a woman holds the pick in the right hand, close to the lower end, and, alternately digging this into the ground while, with the other, she scoops up and throws out the loosened earth, will dig down with surprising speed. In parts of the country in which the honey-ants live, that form a very favourite food of the natives, acre after acre of hard, sandy soil is seen to have been dug over by the natives, chiefly the women, in search of the insect, until the whole place has the appearance of a mining field where diggers have for long been at work "prospecting." Very often a small, hard-wood *pitchi* will be used for a scoop to clear out the earth, when the hole, which is made big enough to hold her, gets too deep for it to be thrown out merely with the hand, as the woman goes on digging deeper and deeper, until at last she reaches a depth of some six feet or even more. Of course the children go out with the women, and, from the moment that they can toddle about, they begin to imitate the actions of their mother. In the scrub a woman will be digging out lizards and honey-ants while, close by, her small child will be at work, with its diminutive pick, taking its first lessons in what, if it be a girl, will be the main employment of her life.

The only weapon that a woman has is a straight staff, very much like a large "yam-stick," that is used as a fighting

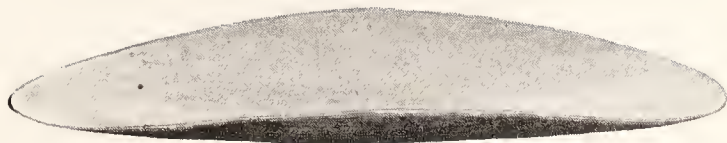


FIG. 120.—SHALLOW SOFT-WOOD PITCHI, WARRAMUNGA TRIBE

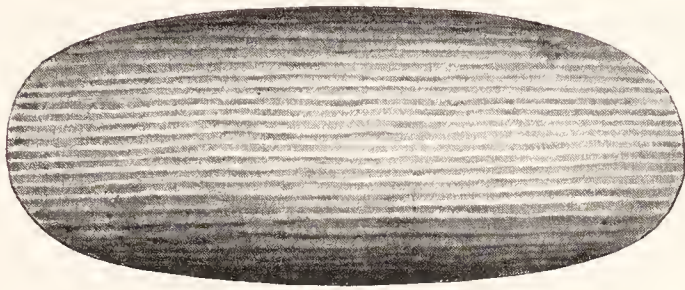


FIG. 121.—SOFT-WOOD PITCHI, SHIELD-SHAPED IN UPPER VIEW,
WARRAMUNGA TRIBE.



FIG. 122.—SOFT-WOOD PITCHI, WARRAMUNGA TRIBE.



FIG. 123.—SOFT-WOOD PITCHI, WARRAMUNGA TRIBE.



FIG. 124.—SOFT-WOOD PITCHI DECORATED WITH A GEOMETRICAL DESIGN
DRAWN IN PIPE-CLAY, KAITISHA TRIBE.

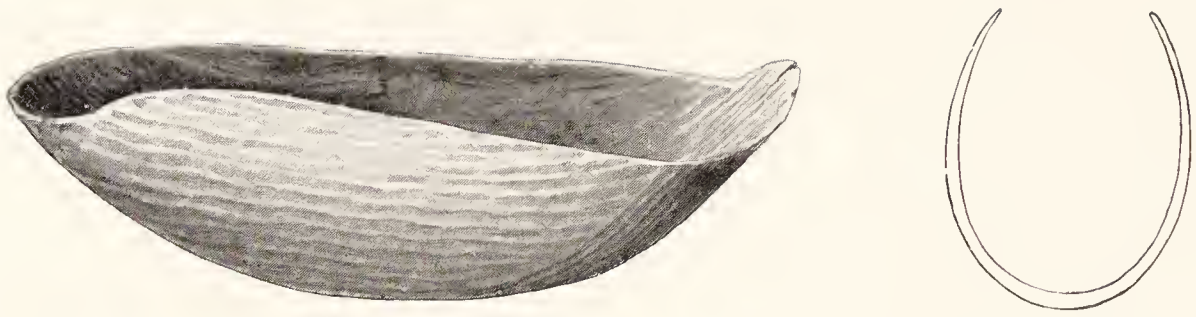


FIG. 125.—VERY DEEP SOFT-WOOD PITCHI, USED FOR CARRYING WATER.
KAITISHA TRIBE.

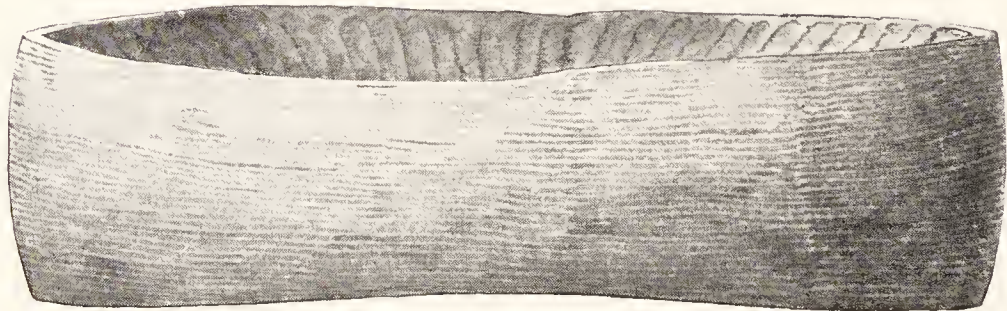


FIG. 126.—BOAT-SHAPED PITCHI, WARRAMUNGA TRIBE.

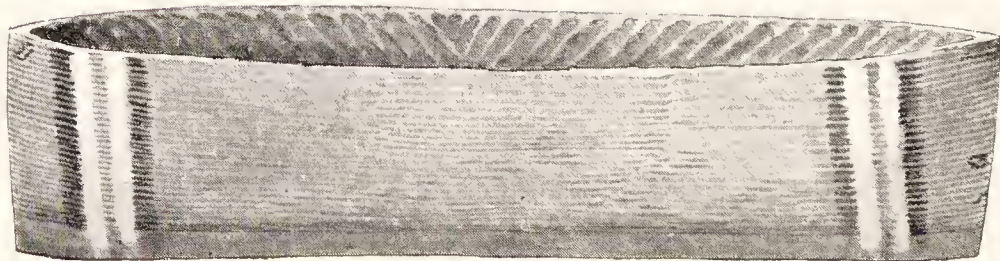


FIG. 127.—BOAT-SHAPED PITCHI, WARRAMUNGA TRIBE.

club. When roused to anger the women get infuriated, but, even when fighting, a certain amount of etiquette must be observed—two women belabouring one another's heads alternately, until one is rendered *hors de combat*. It is astonishing what hard blows they can stand without their skulls being smashed in. One blow from a strong, angry lubra would be quite enough to dispose of an ordinary white woman.

So far as clothing is concerned, a woman is not much encumbered in her work. She usually wears one or two rings round her neck, each formed of a central strand of string round which other strands are tightly wound, till the whole has a diameter varying from a quarter to half an inch. The two ends of the central strand are left projecting, so that they can be tied behind the neck, and the ring thus made is thickly coated with grease and red ochre. A similar kind of ring is often worn over the head and, amongst the younger women especially, instead of, or perhaps in addition to, the neck-ring there may be worn a long string of the bright red beads of the Bean tree. Each bead is bored through with a fire-stick, and the necklace thus made hangs round the neck in several coils that may be three or four yards in length, or it may lace from each shoulder under the opposite armpit.

The men's weapons consist of spears, boomerangs, shields, spear-throwers, stone knives, axes and adzes. In the Arunta anything stone is very rarely met with now except in the more outlying parts such as the far western Macdonnells. There are three kinds of spears, one with a stone and the others with wooden points. The spear-thrower or *Amera* (Fig. 113) is not only the most useful single weapon that the native has, but is of a very distinctive form, exactly similar in outline to the same weapon widely distributed over West Australia. It is in the form of a leaf-shaped piece of Mulga, usually distinctly concavo-convex, though sometimes much flattened out; about two feet or a little more in

length, with one end tapering gradually to a handle and the other, more suddenly, to a blunt point to which, by means of kangaroo or emu tendon, a short pointed bit of wood is attached fitting into the end of the spear. At the handle end is a lump of porcupine-grass resin into which, in all the older ones, a chipped quartz flake is fixed. This forms the most important cutting instrument of the native, with which he cuts his food to pieces and fashions his wooden implements. This form of spear-thrower is confined to the group

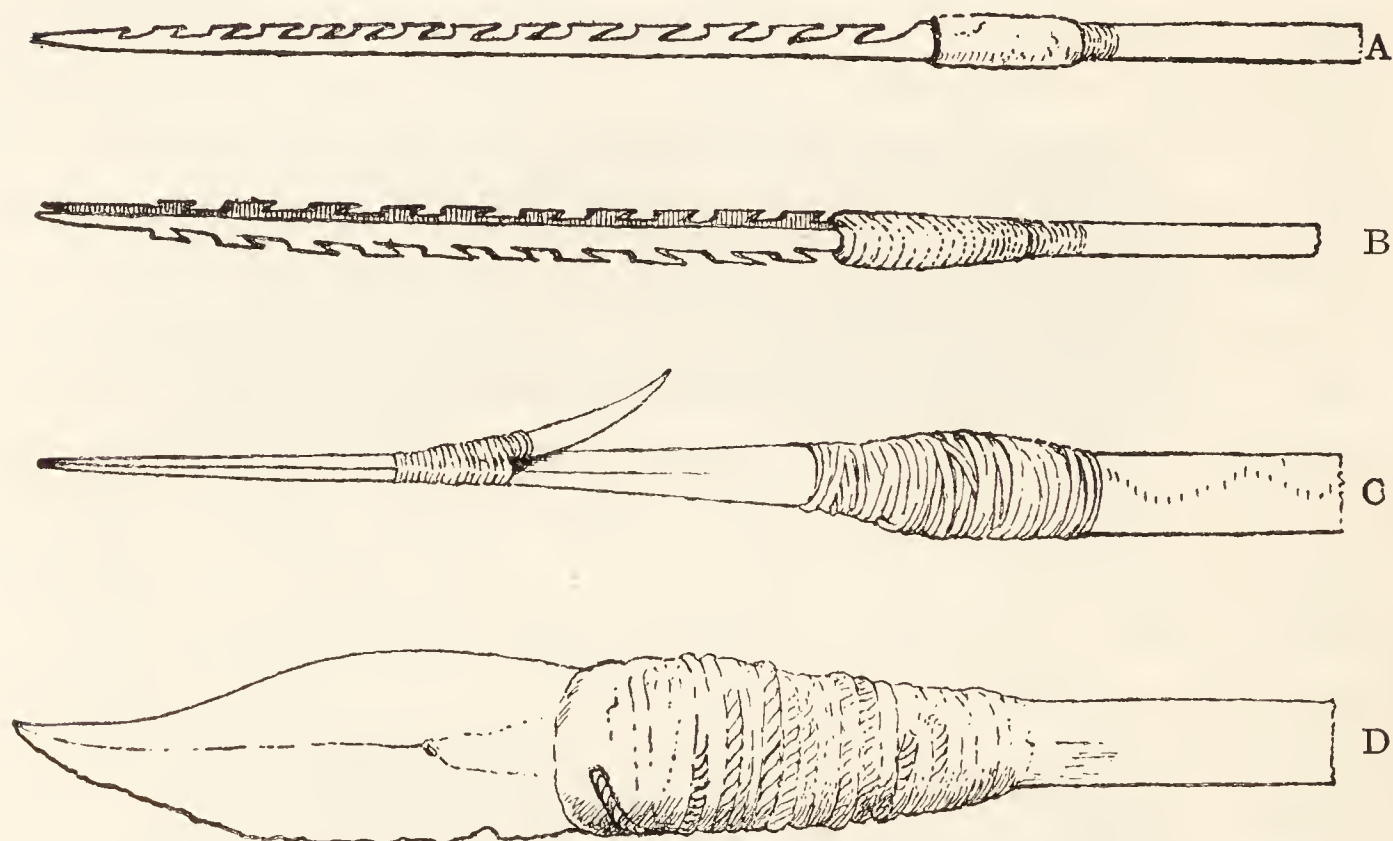


FIG. 128.—A, Single-pronged barbed spear. B, Double-pronged barbed spear. C, Barbed spear peculiar to the Arunta and Luritcha tribes. D, Stone-headed spear.

of tribes occupying the very centre of the continent—the Arunta, Luritcha, Ilpirra and Kaitisha, and, unlike shields, spears and boomerangs, is never traded to distant tribes. It is never decorated with red ochre or ornamented with an incised pattern. The West Australian form is always perfectly flat and carries a zigzag design.

One always thinks of a boomerang as a curved stick that returns to the thrower, but, as a matter of fact, the return boomerang is only met with in certain limited parts of

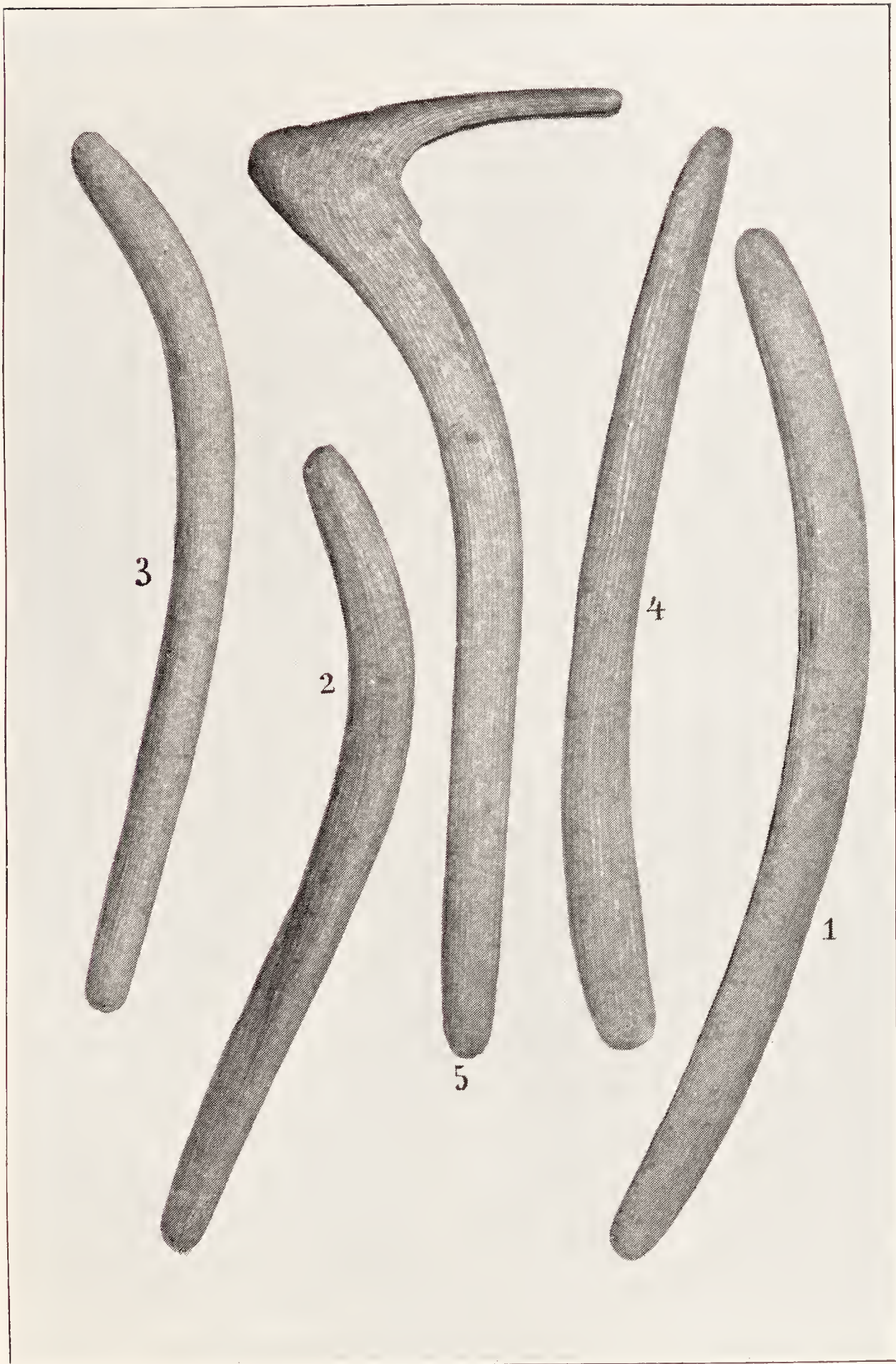


FIG. 129.—BOOMERANGS.

1, 2, 3, 4, Various shapes of Arunta Boomerangs, 5, Beaked Boomerang made by the Warramunga tribe.

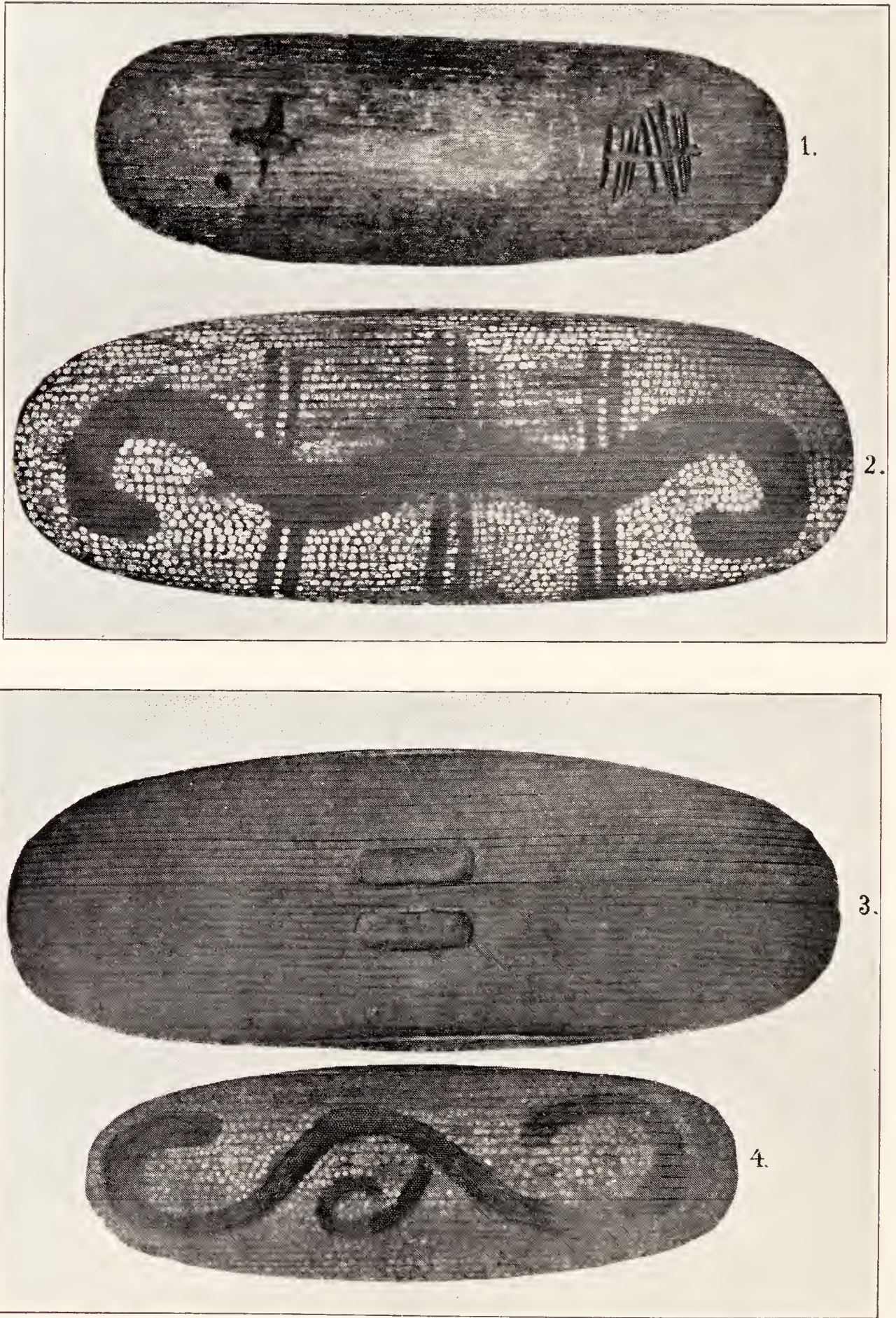


FIG. 130.—SHIELDS.

1, Convex face of a shield, showing grooves made by the rubbing of a spear-thrower during the process of fire-making; 2, Convex face; 3, Concave face of a large decorated shield; 4, Convex face of a smaller decorated shield, Arunta tribe.

Australia, such as the east and south-east and parts, but parts only, of the west. There is no such thing known in the great, broad belt of country, at least five or six hundred miles in width, stretching right across the heart of the continent for more than two thousand miles from south to north. It is strange that this huge, continuous area of non-return boomerang country should intervene between the limited areas in which it is found to the east and to the west. The Arunta weapon is always made of hard wood with a wide-open curve, the blade lying wholly in one plane (Fig. 129). The side uppermost, when it is held with the concavity towards the body, is always fluted with long parallel lines, the other has always irregularly-arranged flakings. Sometimes the curve is an even one, but it is usually more pronounced at the end away from the one held. It is used both for throwing directly into flocks of birds or during fights, when it is usually made to hit the ground, from which it ricochets against the enemy. Without exception it is always red-ochred. In a fight at Alice Springs I saw one, thrown in this way, rebound and strike a man who was not quick enough in his movements to ward it off. It gave him a nasty wound, cutting open his cheek and smashing his front teeth.

Shields are always made of the soft wood of the Bean tree (*Erythrina vespertilio*), most of them being traded down from northern tribes. The Arunta neither make nor use any of hard wood. They have a distinct convex outer surface and a flattened, or somewhat concave, inner surface with the edges often slightly incurved. They vary much in size, from about two feet in length, by six or eight inches in width, to even four feet in length (Fig. 130). For ordinary use the smaller ones are much more convenient, the larger ones being very cumbersome to handle: indeed the very largest are probably only used during ceremonies. Their symmetrical shape is extraordinary when, again, it is remembered that the whole work is done by means of a flint

fixed in resin to the end of a stick, without the aid of any instrument of precision. The specimen shown in Fig. 130 (Nos. 2 and 3) is an exceptionally fine one. The outline is perfectly symmetrical and the two sides are gracefully arched in such a way that, in cross section, through the middle of the shield, the front face is convex, the under surface is slightly convex in the centre and strongly concave on the margins (Fig. 130A). Both back and front are marked by very regular, close-set grooves, running along the length of the shield. There are forty-eight of these furrows on the front and thirty-five on the back, and all of them run along side by side without a single error in their perfect

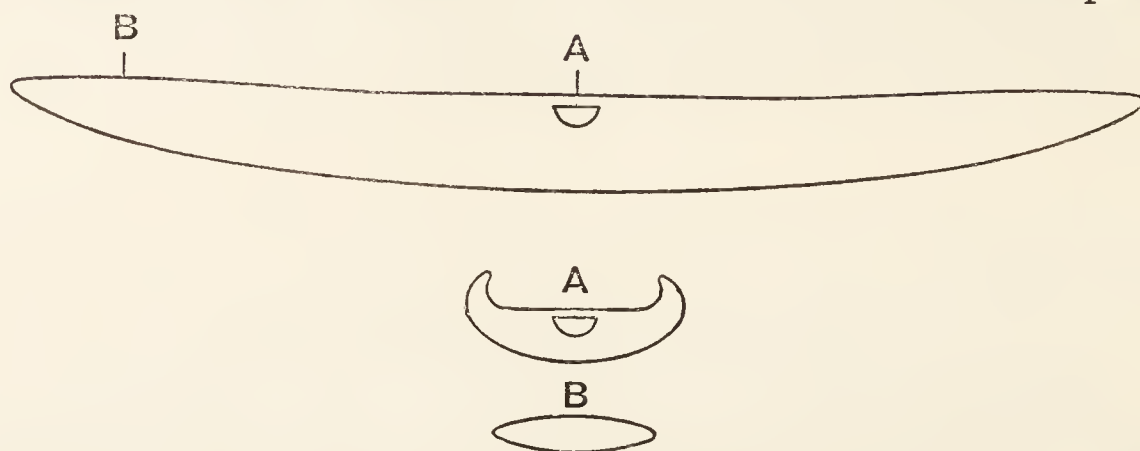


FIG. 130A.—LONGITUDINAL AND TRANSVERSE SECTIONS OF THE SHIELD IN FIG. 130, NOS. 2 AND 3.

regularity of width and line. The bar is cut out of the solid and runs across level with the inner face. A very noticeable feature of them all is the very small size of the hole made for the hand; no ordinary white man can do more than, at most, squeeze his into the cavity which easily accommodates the whole of the hand of the native, so that he can secure a firm grip.

In early days every Arunta man had a stone knife and a ground stone axe. These are not often seen now, and it was not until we got further north amongst the Warramunga tribe especially, at Tennant Creek, that I saw them being made.

In addition to his weapons, every man has a little wallet that he carries with him when he visits other groups for the performance of ceremonies. It is made out of the skin of an animal such as a kangaroo or, perhaps, of strips of bark, tied

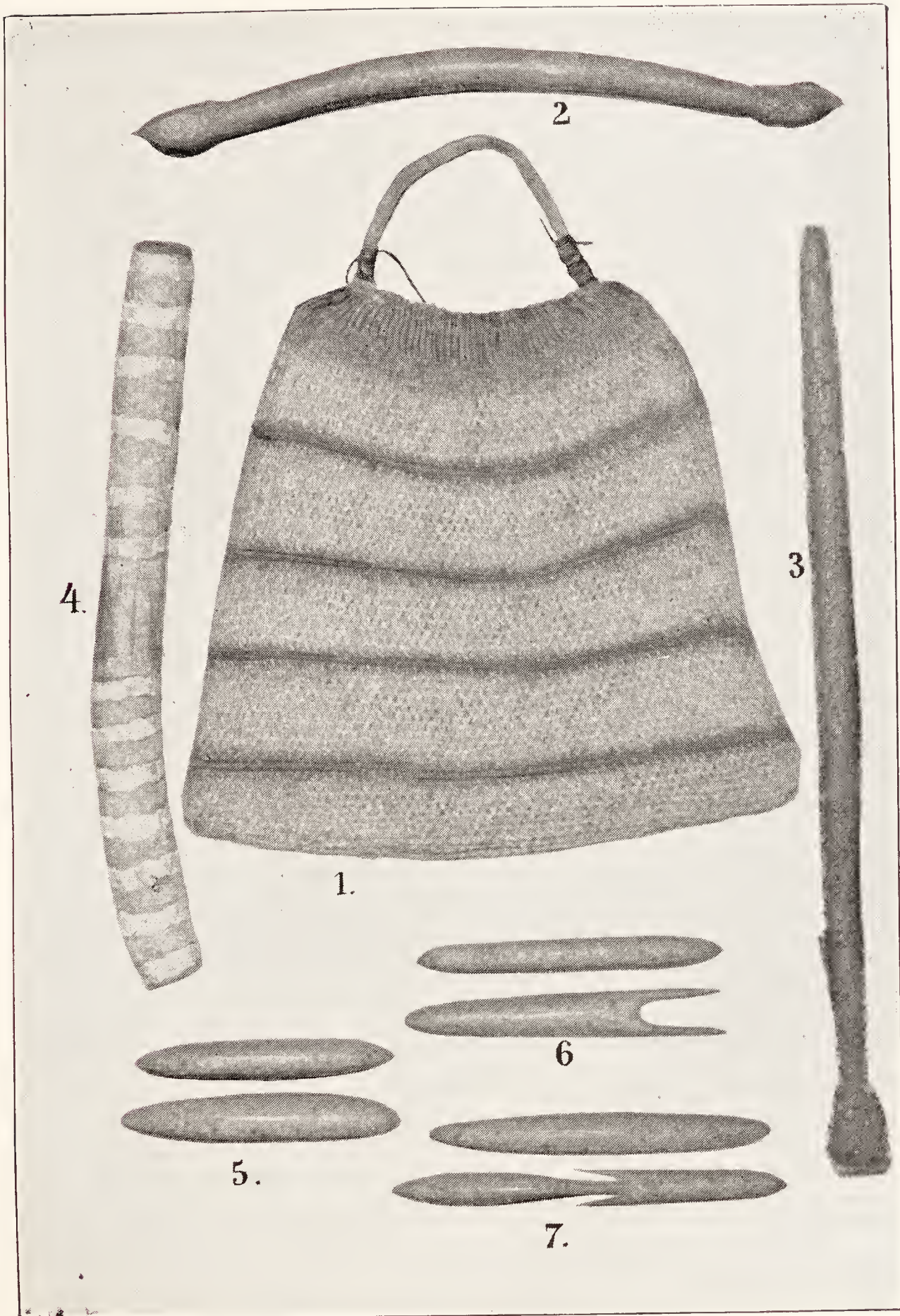


FIG. 131.—VARIOUS IMPLEMENTS OF THE ARUNTA.

1, Bag made of vegetable-fibre string; 2, Curved Adze with flint at each end; 3, Straight Adze with flint at one end; 4, *Ilpirra* or trumpet. 5, 6, 7, Three forms of *Trova* or music-sticks.

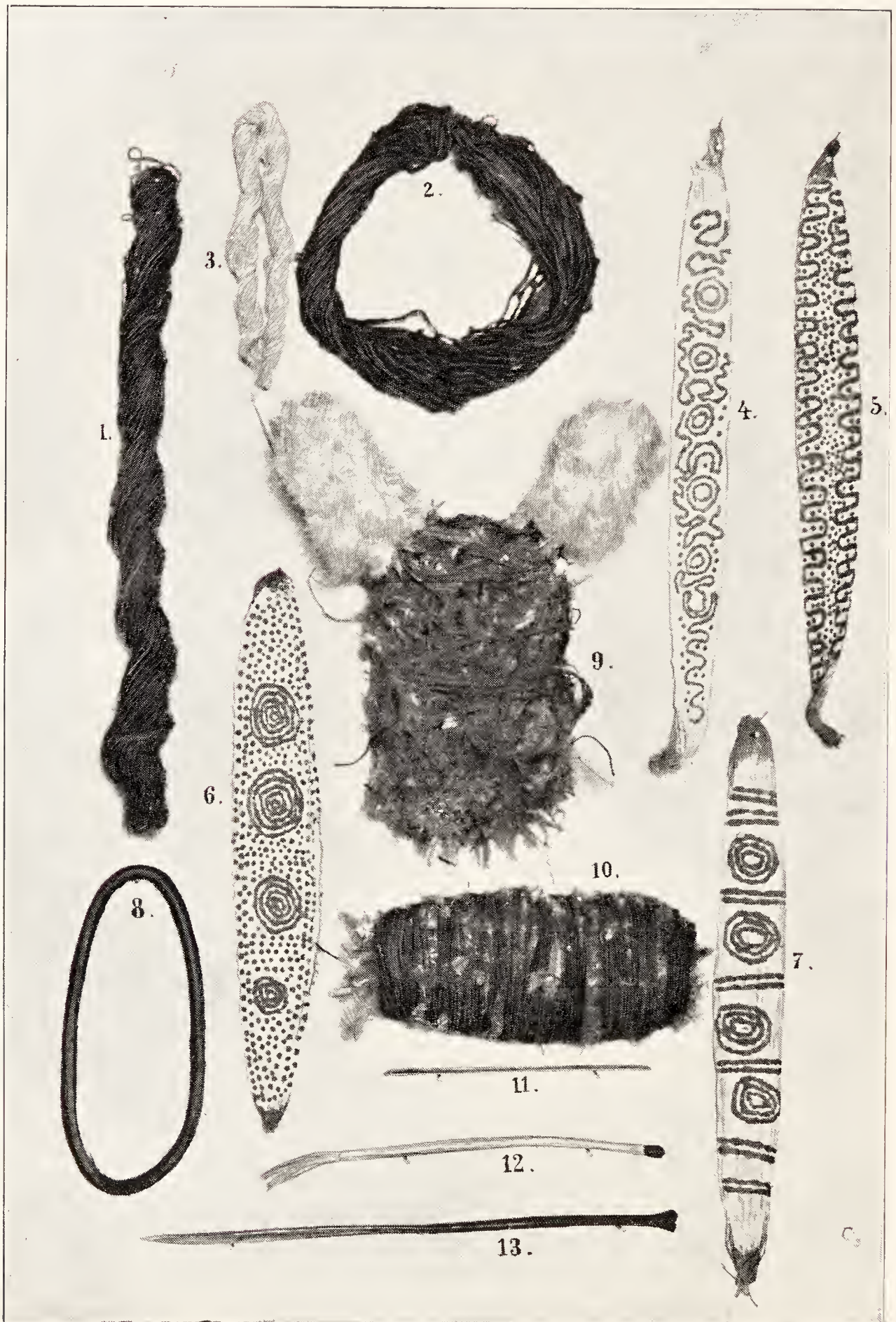


FIG. 132.—CLOTHING AND PERSONAL ORNAMENTS OF THE ARUNTA.
 1 and 2, Uliara, waist-bands made from human hair. 3, Chilara, forehead band made of opossum fur-string; 4, 5, 6 and 7, Forehead bands flattened out and decorated with designs; 8, Head or neck band worn by women; 9, 10, Emu-feather chignon worn by men; the upper one has two tufts of white down; 11, 12, 13, Lalkira, nose-bones.

round with a fur string. In this wallet he carries a tuft or two of feathers for decoration, a spare bit or two of flaked quartzite, a piece of red ochre and pipe clay, a kind of knout in the form of a skein of string, which is supposed to be of special efficacy in chastening and chastising women, and, possibly also, he will have some charmed object, such as a lock of hair cut from a dead man's head, most likely his father-in-law's, carefully ensheathed in hair or fur string. If the man be old he will probably have with him a small sacred stick or bull-roarer, or even a sacred stone.

In the Southern Arunta the women weave bags out of string made of fur or vegetable fibre, in which they carry food, etc., but these are not met with in the northern parts.

As regards clothing and ornaments, the man is little better off than the woman. His most constant article is a waist-belt, made of human hair—usually provided by his mother-in-law. He wears a *Chilara* on his forehead, stretched across from ear to ear. It is a broad band made of parallel strands of fur string. Around his neck he will have one or more rings similar to those worn by the women. His hair is always well greased and often red-ochred and, in the Luritcha and Southern Arunta, it may be surmounted by a pad of emu feathers, worn in much the same way as a chignon and tied on to the hair with fur string (Fig. 102). If he be at all vain he wears a long bone stuck through his navel septum with a rat-tail tuft or a bunch of white cockatoo feathers at one end. His *Chilara* will be covered with white pipe clay on which a design of lines and concentric circles is drawn, in red or yellow ochre, and a tuft of white, or brightly coloured, feathers will be fastened into either side of his chignon. His only other article of clothing, if such it can be called, is the small pubic tassel, which, especially if it be covered with white pipe clay, serves rather as an adornment to attract the eye than as a covering (Fig. 132).

Such are the ordinary possessions of the natives that they use in camp and carry about with them on their wanderings.

CHAPTER VIII

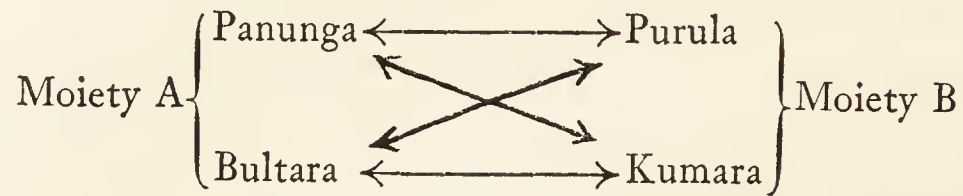
HOW THE ARUNTA PEOPLE ARE ORGANISED

WHEN one goes amongst any savage tribe such as the Arunta for the first time you naturally expect to find family matters arranged more or less as you have been accustomed to in your own circle, and it takes you a little while before you realise that other people's ideas on this subject, and on one's relationship to all the men and women who surround you, are quite different from those to which you have been accustomed.

You begin to realise that the savage has a social system of his own which is absolutely distinct from yours. There are no individual terms such as father, mother, wife, husband, but there are terms, and these in plenty, that are applied to groups of men and women amongst each of which are the individuals to whom we apply the above terms. For example, amongst ourselves the term wife or husband is only applied to one woman or man, as the case may be. An Arunta man calls his wife *Anua* and a woman calls her husband by the same name, but both he and she call scores of other men and women *Anua*. So, again, a man or woman calls his, or her, mother *Mia* and his, or her, actual father *Oknia*, but they also apply the same name to numbers of other men and women. In both cases it is a group name. There are certain men whom, and whom only, a woman may lawfully marry and, vice versa, there are certain women whom, and whom only, a man may marry. All of these lawful wives and husbands are called by the same name, and the same is true in regard to any man or

woman whom your mother or father might have married, that is, might lawfully have been your father or mother, as the case may be—they are all called either *Mia* or *Oknia*. This group, and not individual relationship, is characteristic of almost all Australian tribes. The mother of any woman whom you may lawfully marry is, *ipso facto*, your mother-in-law; any man whom the latter may lawfully marry is your father-in-law. These group relations are met with right through the tribe, and, not only this, but there are equivalent ones amongst neighbouring tribes, so that wherever you go you are possessed of, and hemmed in by, hundreds of miles of wives and husbands, mothers and fathers, mothers-in-law and fathers-in-law, and your behaviour to all of them is regulated by a very strict code of etiquette. You must not speak to any of your mothers-in-law, nor they to you, in fact they flee away at the sight of you: your fathers-in-law expect you to provide them with a share of any food that you secure and, when any one of them dies, whether you have actually married his daughter or not makes no difference—you must cut yourself with a stone knife in token of mourning. These relationships are all well recognised and influence the life of the natives to an extent that the white man can scarcely realise unless he has been amongst them. They all depend upon a very definite system of organisation in accordance with which the tribe is divided, first of all, into two halves, or moieties, and each of these into two, or four, sections. In some tribes there are distinct names for the moieties. In the Arunta they are lost, but the fact that the tribe is so divided is made abundantly clear by evidence of various kinds. One moiety has two sections called Panunga and Bultara, the other has Purula and Kumara, and a man of one half must marry a woman of the other. Every member of the Arunta tribe belongs to one or other of these sections—exactly which is determined by that of his father. If they

are arranged in a simple table, calling the two moieties A and B, the matter becomes clearer. Thus :



The horizontal arrows indicate the marriages and the cross ones the descent of the children.

A Panunga man marries a Purula woman and their children, boys and girls alike, are Bultara: a Purula man marries a Panunga woman and their children are Kumara: a Bultara man marries a Kumara woman and their children are Panunga: a Kumara marries a Bultara and their children are Purula. The system is really a simple and very consistent one. A man marries a woman from the moiety to which he does not belong; that is, the marriage is what is called exogamous or "marrying out." The children pass into the father's side of the tribe, but into the section of it to which he does not belong; that is, descent is counted in the father's or male line. Because the child goes into the section of his moiety to which the father does not belong, descent is said to be in the indirect male line. So far as marriage is concerned, there is, for every man and woman, a wrong and a right side of the tribe.

If a Panunga man wants to marry, say, a Bultara woman, he knows perfectly well that it means certain death to both of them: in fact, so strictly were the marriage laws adhered to in the normal state of the tribe before the advent of the white man, that such an idea probably never entered the head of a native. Nowadays, under the influence of civilisation and the great reduction in the numbers of the tribe, old customs, such as this, are put on one side, but it is very unsafe to judge of the past by what is met with at the present day. That this marriage law was very strictly adhered to

before the white man came upon the scene cannot be doubted. There was a time, years ago, when the missionaries at Hermannsburg, in order to break down old tribal beliefs, all of which were regarded as subversive of Christian teaching, deliberately married men and women of the wrong groups, but after a time, the effort to do so was wisely recognised as a mistake and was abandoned. For a Panunga man to marry a Kumara instead of a Purula is not so heinous an offence, but, here again, it would mean that anyone would be quite justified in killing either of them. They would, in fact, be practically excommunicated. Years ago, in the group of the Arunta living near Charlotte Waters, one man, who was a strong fighter, actually did take as wife a woman of the wrong section. He was a Pununga and she was a Kumara, whereas his proper or, as the natives say, straight, wife was a Purula. Of course they had to run away and dare not return to camp. Parties were sent out to kill him but, by his strength and watchfulness, he managed to outwit his enemies; indeed he actually killed two of them and then the others thought it best to leave him alone, but, ever afterwards, he lived the life of a pariah out in the wilds. Public opinion is very strong amongst savages and it is dangerous to run counter to it.

Right through the whole of the relationship terms, and these may mount up to nearly forty in some tribes, covering five generations in the most perplexing way, everything may be said to refer to the group and not to the individual. It is only at a later stage of civilisation that the individual looms larger than the group. An Arunta native, for example, draws no distinction between any of his *Irundera*, or fathers-in-law. They form a group of men to each and every one of whom he has to perform certain duties. That one or two amongst them are actually what we should call fathers-in-law makes no difference whatever in his treat-

ment of these special men. It is his duty to give a portion of any food he may procure to any *Irundera* who may chance to be in camp with him. If any *Irundera* dies he must cut himself in token of mourning, whether that particular man chances to be his dearest friend or greatest enemy. If he does not do his duty by each and every member of that group, then any one of them may take his *Anua* woman from him and present her to some son-in-law who is more mindful of his duty. So again, he has scores of *Mura* women, that is, potential mothers-in-law, and not one of them may speak to him or he to them: in fact he must avoid them and they must avoid him as much as possible. Whether any particular woman be his actual mother-in-law, or only one who might legally have been so, makes not the slightest difference.

I remember well one day at Alice Springs when we had an interesting little experience that showed very clearly how strongly ingrained this feeling is amongst the natives. Mrs. Gillen had a black lubra acting as housemaid. We were in the dining-room with the door opening out and facing towards the kitchen, a few yards away. The lubra emerged from the kitchen carrying a round of beef, but, by bad luck, a man who might have married her daughter if she had one, which she had not, appeared at the same moment round the corner. There was a sudden recognition and a loud shriek of alarm. The beef was dropped without a moment's thought and away fled the housemaid in one direction and her potential son-in-law in another. Sadly we picked up the fragments of pottery and the sand-coated beef. To Gillen and myself it was much more interesting than it seemed to be to Mrs. Gillen, who, I fear, must often have wished that there was no such thing as anthropology either amongst savages or white men.

The Arunta savage cannot possibly understand how it is that a white man applies the same term of relationship—

nephew or niece—to his brother's and at the same time to his sister's children. To refer again to the table showing marriage relationships. If the reader can imagine himself to be, say, a Panunga blackfellow, then he must marry a Purula woman. Your brother is likewise a Panunga and he must also marry a Purula woman. Your own and your brother's children are Bultara, and therefore they all belong to the same group and you call them all indiscriminately by the same name, *Allira* ; and, as the fathers of all the children belong to the same group amongst the Panunga, the children call them all by the same name, *Oknia*, that is, father. On the other hand, your sister is a Panunga like yourself. She must marry a Purula man and her children are Kumara. That is, the children of a Panunga brother and sister are respectively Bultara and Kumara, so that they belong to two different sides of the tribe. To a blackfellow the idea of applying the same term of relationship to all of them, as we white men do, seems to be the height of absurdity. He cannot understand our mental outlook any more than the average white man can understand his.

CHAPTER IX

CORROBBOREES AND VISITING CEREMONIES

THE favourite form of amusement amongst all Australian tribes is a dancing ceremony generally called a corroboree. Everyone in camp, men, women and children, may take part in it, though, as a general rule, the actual dancing is confined to the men. There are a few corroborees in which the performers are women, but they are seldom met with. I only saw one once and it was a very tame affair, in which the women stood in a row and swayed themselves about, but in no case do both men and women dance together. Also, the corroborees vary very much in different tribes. In some, like those in South-eastern Australia, or in the far north on Melville Island, they may take the form of realistic imitations of the actions of human beings or of different animals, and only occupy perhaps an hour or two or even only a few minutes. In the Arunta, and all Central tribes, they are formal dances with set figures and each one of them is continued night after night for a week or two. The word corroboree was derived originally from the English pronunciation of the name for these performances in some New South Wales tribe near Sydney, where they were first seen by white men, but now the word has spread all over Australia. The Arunta name for them is Altherta or Indada, but they have other dances of a very different kind, that they call Quabara, a word suggestive of corroboree, but not in any way derived from it. These are very sacred performances in which only the initiated men take part and from which women and children are rigorously excluded.

The first time you see a corroboree, when all is novel, it is well enough and decidedly interesting, but, after a week or two of repetition of the same, or almost the same, performance and when one has watched it every night waiting in vain for something by way of variation to turn up, it has a tendency to become somewhat, indeed at times intensely, monotonous. However, the natives enjoy them, because they form their one social form of entertainment, and it gives the younger men the chance of appearing at their best before the women and children who always form an admiring audience. The most interesting one that I saw amongst the Arunta was called Tjitjingalla. In connection with every main camp there is a corroboree ground, some little distance from the former, because no children, and only a few women, are allowed near the ground while the preparations for the dance, which usually occupy the whole afternoon, are in course of progress. There is also another reason why the dancing should be some distance away from the ordinary camp. It is a fixed rule to desert any camping-place for a time as soon as ever a death occurs. The new camp is generally fairly close to the old one, or at least within easy walking distance, and it is therefore convenient to locate the common meeting ground where corroborees are performed at a spot that need not be changed and is yet always handy to the main camp even if the exact location of this be changed.

Except for variations in the decorations of the performers, all corroborees are very much like one another. In this case the Tjitjingalla was held as a kind of introduction to a very special series of ceremonies, called the Engwura, and served to occupy the time whilst parties from different localities, some of them far distant from Alice Springs, arrived, one after the other, at the latter. Early every afternoon the men wended their way to the corroboree ground, sat down in groups and, after a pre-

liminary rest, began, with much deliberation, to make their very simple preparations. Each one carried a wallet, which, in the natural state, is only a piece of kangaroo skin, or Ti-tree bark, tied round with opossum fur string and containing, apart from weapons, all the worldly goods of its owner. Under present conditions it is, as likely as not, an old stocking or part of a discarded trouser leg. When the wallets were opened, they were seen to contain balls of opossum or human hair string, chiefly the latter, bits of white kaolin or gypsum, charcoal, red and yellow ochre, tassels, called *Alpita*, made from the tail tips of the rabbit bandicoot, bunches of feathers, odd chipped flakes and, rarely, little churinga, or bull-roarers, carefully wrapped up. Needless to say these were not intended for use during an ordinary corroboree. On the corroboree ground there were flat stones that are kept here. When not in use, or the men move away to another camping-place, they are usually buried out of sight. First of all some down, obtained from a *Portulaca* plant, was spread out on a grinding stone and was then rubbed over and over with powdered gypsum, or red ochre, by a smaller stone held in the right hand. Some of the men went into the scrub and gathered bundles of stiff, straight twigs of the *Cassia* plants that grew all round. When the down was ready, one or two of the men, it did not matter who, tied string tightly round the upper part of the arm and, with a sharp flake of stone or, better still, a chip of glass, if they could get one, cut open a vein and allowed the blood to spurtle into the concavity of a spear-thrower or the hollow in a shield made to contain the hand. We noticed here and elsewhere that many of the men had the veins that stand out on the lower part of the arm marked with many little knot-like scars showing where they had cut themselves during ceremonies of different kinds. When sufficient blood had been drawn, the string was untied, a finger



B.S.

FIG. 133.—PREPARATION FOR THE TJITJINGALLA CORROBOREE, ARUNTA TRIBE.



B.S.

FIG. 134.—DANCE IN THE TJITJINGALLA CORROBBOREE, ARUNTA TRIBE.

pressed on the wound and the bleeding soon ceased. Then the decoration began. Every corroboree has its own designs that are painted on the bodies of the performers. They consist of straight and curved lines, bands and circles of down and red, white, yellow and black pigment (Figs. 133, 134, 135). The men to be decorated sit down or often lie at full length on the ground. The decorator makes a little brush, made out of a small twig with a little fur string tied round one end, or he will tear the latter with his teeth and then press the small, frayed pieces down with his hand so as to make a little disc, shaped like a pigmy chimney-sweeper's brush. He holds the brush in his hand between the thumb and first finger with the handle lying inside the half-closed hand, and draws his design with the margin of the disc just like an expert artist. The painting occupies hours, and then comes the helmet making. Every man has balls of human hair string, often yards and yards in length, or else he undoes his waist girdle, made of his mother-in-law's hair. The straight, stiff Cassia twigs are cleared of leaves and are then arranged on the head so as to make a conical helmet, shaped like a fool's cap, with the cut ends forming the point. The twigs are bound round and round with hair string, a design painted on the front and tufts of feathers, usually emu, stuck into the apex. The dancing itself, in the Tjitjingalla, was of a very simple nature. There were about a dozen performers, though there is no fixed number for them. In some of the figures they moved in line, simply wheeling backwards and forwards in front of the audience, always with the very characteristic prancing and high-knee action, exactly like a goose-step. In others the men divided into two lots, passing across so as to face one another, at a few yards' distance. Then (Fig. 135) they alternately approached and fell back in line, each party at intervals skipping across, the two lines opening out so that the men of one could pass between

those of the other much as if they were changing sides in an Old World dance like the "lancers." Sometimes each performer held in both hands a stave, made out of a straight piece of wood and a small bough, about four feet long, wound round with human hair string. This was moved up and down in time with the dancing, the audience marking time by the clanging of boomerangs or the beating of them on the ground. One evening each performer had a stick shaped like a gigantic tuning-fork held in both hands, in such a way that the two prongs passed one on each side of his neck. At the close of each movement, which seldom lasted for more than two or three minutes, the performers retired for a short time into the darkness away from the camp fires. There was always an interval in the middle of the evening when, at a signal given by an old man in the audience, the women and children rose and went away to one side of the ground, leaving the men alone to have a quiet chat and rest and, for those of them who were the possessors of such luxuries as a pipe and tobacco, to indulge in a peaceful smoke. As a matter of fact the pipe of peace was passed from mouth to mouth, regardless of who was its special owner. By this time we had usually had as much as we could appreciate at one sitting and took advantage of the interval to retire to our camp. The natives, however, never seem to grow weary and, in our camp nearly a mile away, we could, every now and then, hear the singing and clanging of the boomerangs when the night wind bore the sound towards us.

The only really interesting part of the Tjitjingalla was towards the end, when one man was specially decorated, not with the usual grass seed, but with bird's down, a most unusual proceeding in the case of these ordinary corroborees, which women and children may always watch and, at times, even join in as performers. The first part of the evening's performance was of the usual description, but,



B.S.

FIG. 135.—DANCE IN THE TJITJINGALLA CORROBBOREE, ARUNTA TRIBE.



B.S. del.

FIG. 136.—NIGHT SCENE IN THE TJITJINGALLA CORROBBOREE.

after the interval, the audience, consisting of about one hundred individuals, instead of sitting on the ground, stood beside a small wurley, shaped like a huge beehive (Fig. 136). As it had been built at the beginning of the corroboree the leaves and twigs were quite dry. On this last evening there were fourteen performers, of whom twelve took part in the first half, the other two not being seen, though they were close by under the shelter of a low rise. After the interval in the middle of the evening, the twelve arranged themselves, at first silently, in front of the wurley, looking out into the darkness as if they were expecting something to appear. The women and children were very excited and looked frightened. After a few minutes' pause, the two figures were seen creeping down the low rise close at hand towards the wurley. Both of them crouched down low as they crept along, peering about. The leader carried a shield that he held as if he were trying to hide the man behind from view. As they came into the light of the fires on the corroboree ground it was seen that the latter was elaborately decorated with close-set wavy lines of bird's down all over his face, head and the upper part of his body, and that he had a circlet of tufts of white and pink feathers, each attached to a short stick and all of them radiating from his helmet, like the points of a great tiara. Suddenly he gazed round as if he had just become aware of the group of performers between him and the wurley. Then he sprang forward, holding in both hands a spear tipped with a bunch of feathers, and charged full-tilt at the dancers as if to force his way through them to the wurley, which was supposed to be his own dwelling. Amidst the loud shouting of the men and women, the latter standing to one side and gesticulating violently with their hands as if to ward him off, he charged and re-charged the performers, who ran with a curious side-movement, backwards and forwards, in front of the wurley, yelling

and prancing about wildly. The excitement on the part of the audience became greater and greater. Suddenly an old man came out of the crowd and set fire to a great heap of dry shrubs placed to one side. The decorated man then forced his way through the dancers, or rather they opened out for him to pass through, ranged themselves behind him and followed him as he danced wildly round and round. This was the signal for the women and children to retire, which they did precipitately, the younger ones rather frightened as well as greatly excited. No sooner had they gone than, amidst loud yells from the men and the clanging of boomerangs, the wurley was set on fire, the dancers stamping and dancing on it until it was one mass of flames which lighted up the thin scrub and the white trunks of the gum trees and shone weirdly on the bodies of the men, who continued to dance madly. Gradually the fire died down until only a heap of glowing ashes remained. The outline of the hills and trees and the bodies of the natives grew indistinct and the corroboree was over.

I was not at all sorry when it was done with: the only interesting part was the end, the rest was hopelessly monotonous.

These corroborees are always performed at night-time. At our request some daylight rehearsals were given so that we might photograph them. The scene at night, in front of the camp fires when also the performers were encouraged by the presence of a large and excited audience of women, was much more picturesque than the photographs give any idea of. I have tried in a rough sketch to convey some little idea of the scene at one stage of the proceedings on the last night (Fig. 136).

The performance of this Tjitjingalla corroboree by the Arunta is a good example of the way in which corroborees of this kind are handed on from group to group and even tribe to tribe. As soon as it began, I saw at once

that it was, at least very closely, similar to the one that Roth described in 1897 as performed by the natives of Boulia in the interior of Queensland under the name of Molonga. Apart from the fact that the name was changed, that the time occupied by the Arunta in performing it was more than double than at Boulia and that the closing scene was much more elaborate than in the one seen by Roth, the dances at Boulia and Alice Springs were closely alike. The same corroboree, or rather a fragment of it in mutilated form, was seen by Professor Gregory at the Peak Station near Warrina, lying to the south-west of Lake Eyre, a few months later than the time that we saw it at Alice Springs. Roth suggested that it had originated in the Worgaia tribe in Queensland, and evidently it had travelled south, handed on from one locality to another along two distinct routes through tribes, one belonging to the true Central area drained by the Finke and its tributaries, and the other to the eastern Central area drained by the Barcoo, until, on the one side, it reached the Arunta and, on the other, the Dieri people. This fits in well, and is probably associated with the lines of migration of the Central Australian tribes along two main routes.¹ A very natural result of the handing on of these corroborees from one part of the continent to another is that, after a very short time, the words of the song cease to have any meaning to the singers. They probably became changed to a certain extent, though it is wonderful how accurate the natives are in remembering sounds and designs.

At the close of the corroboree it was decided to make a present of it to a group of the visitors coming from a southern locality on the Finke River, so that, henceforth, the Alice Springs people will have no proprietary interest in the Tjitjingalla, though, if in their turn they chance to visit the country of the southern people, they will

¹ As suggested in the "Native Tribes of Central Australia," p. 113.

probably see it performed as a mark of special attention to them.

The only explanation that the natives could give of the performance was that, in the final scene, the central, specially decorated figure, represents a man who was renowned for wisdom and strength. The bush wurley belonged to him, and the idea was that the other performers were men who were anxious to keep him amongst them and had got in between him and his camp, while he was in the bush, and that, when he came back, they tried to prevent him from getting into his wurley and finally succeeded in persuading him to join them and to place himself at their head. Though it fits in well with the acting, this, of course, is very likely nothing more than a little tale invented to explain a corroboree that once meant something quite different, in fact Roth¹ says that, at Boulia, the natives say that the central figure, Molonga, is invisible to ordinary mortals. On his depredatory excursions on the war-path he ties up the toes of each foot and hitches them up to his knees with string. Another string hitches up each heel, so that Molonga has to walk on the underside of his instep, by which means his tracks are supposed to be obliterated. If this performance be not properly carried out by the natives, Molonga will revenge himself upon them. This sounds rather like a mix-up of the explanation of an ordinary corroboree and a sacred ceremony, which is not at all improbable, because the Boulia natives, as well as those seen by Gregory, were civilised and were quite likely to mix up ordinary and other ceremonies that had to them lost any special significance.

Apart from corroborees and ceremonies of different kinds in the home camp, the one great break in the monotony of life is paying visits to strange camps. Packing up is not a tedious process; the man simply walks out of camp

¹ "Ethnological Studies," p. 121.

carrying his spears, spear-thrower, boomerangs and shield; the woman takes the youngest child across her hip, balances a *pitchi* on her head and, with one arm round the child and a digging-stick in her free hand, she is ready for the road. The girl children and younger women look after the puppies, that are never on any account left behind and, when unable to walk, are carried in *pitchis* like young babies. Five minutes, at most, is all the time needed for an aboriginal family to pack up and start, and there is no trouble in regard to the house while the family is away. If anyone chooses to occupy it during their absence he can do so, but the owners, by looking at his footmarks, will see at a glance who has been there while they have been absent.

Sometimes men, women and children travel, sometimes men only—all depends on where they are going and what they are going to do. If it be to attend an important ceremony, then the whole camp will go; this, of course, means that they move slowly, though the native is very rarely in a hurry, unless he wishes to get out of the way of some special party, or person, in search of him, and then he can travel with remarkable speed. As they wander along they provide themselves with food, but, under ordinary conditions, this is not difficult and, if they come to a good locality for food and water, they just camp there until they feel inclined to move on, or until they think it is time to do so, if they have to be present at some special ceremony. They have to be careful to attend to certain points of etiquette on approaching a strange camp, or on coming into the country of another local group, otherwise they might be received and greeted as enemies. Of course the fact that a party is travelling with women and children is *prima facie* evidence that their intentions are not hostile, but a party of men travelling without any of their women-folk is always looked upon with suspicion. In all cases, the coming of strange natives is associated with some sort of ceremony.

One afternoon at Alice Springs there was a sudden commotion in camp, due, as we soon found out, to the fact that word had been brought in that a party of armed strangers was approaching. Every man and woman was on the alert at once. As usual, the visitors sat down quietly, half a mile away from the main camp. There were some thirty of them, all fully-grown men and all armed with shields, spears and boomerangs and wearing on their heads curious flaked sticks called *Inkulta*. We were very curious to see what would happen, because, especially in the northern part of the Arunta tribe, the wearing of these sticks is a sign that the men mean to kill someone if they can. Men going on an avenging party wear them and, when they have killed their victim, tear them from their heads, break them in pieces and throw them on his body.

After about half an hour, during which no notice had, apparently, been taken of them, though, in reality, the local men had provided themselves with their weapons and had gone to the spot where visitors are received, one or two of the older men went to the visitors, squatted down on the ground in front of them and invited them to come up. After being thus invited, they formed themselves into a solid square and approached at a fairly quick run, every man with his spear aloft and all of them adopting the curious high-knee action that is characteristic of the movements of the natives during ceremonial performances. As they came near to a small defile leading to an open patch of ground, they were met by some of the older women of the local group, whose extraordinary antics as they danced and yelled at the top of their voices were ludicrous in the extreme. No one, however, seemed to pay the slightest attention to them: the visitors themselves scarcely even glanced at them. It was really all part of a well-understood method of procedure and only a kind of preliminary welcome to men who actually belonged, in some cases, to the same



B.S.

FIG. 137.—DANCE OF VISITING NATIVES ENTERING A STRANGE CAMP, ARUNTA TRIBE.



B.S.

FIG. 138.—BURNING THE FLAKED STICKS.

They have been made into a bundle together with dry grass stalks.
The smoke is seen on the left side.



B.S.

FIG. 139.—MEN CUTTING SHOULDERS IN TOKEN OF MOURNING, ARUNTA
TRIBE.

part of the country as did the women who were thus vociferously greeting them as if they were bitter enemies instead of friends. At the same time three men, each armed with a spear, shield and boomerang, appeared on the top of a hill close by, their bodies sharply silhouetted against the sky, gesticulating wildly as if to show the visitors that they were quite prepared, if necessary, to fight. All of this, however, was mostly make-belief, because it pleases the savage to persuade himself that he is a good deal more valiant than he really is.

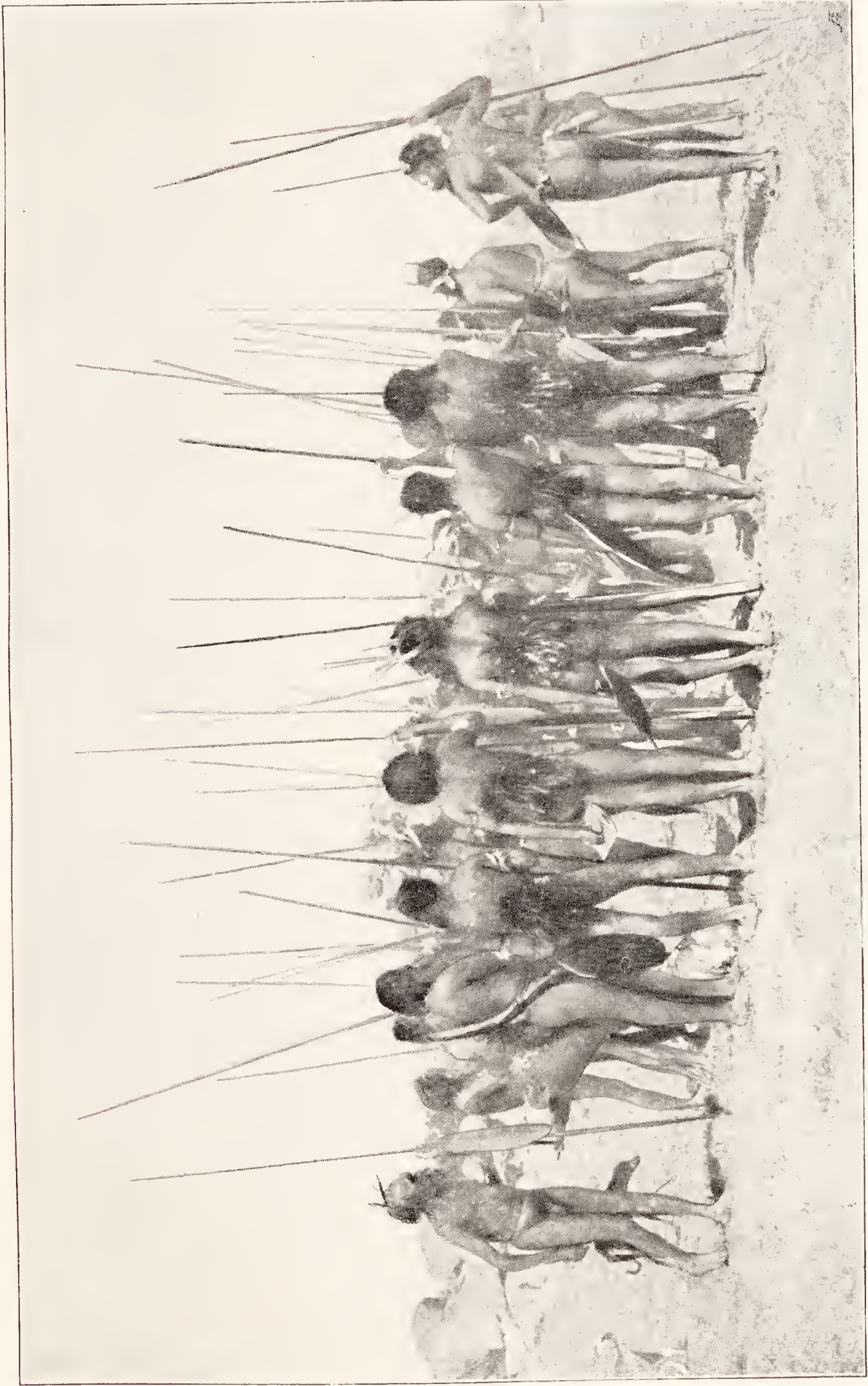
As soon as they had passed through the small gap leading on to the ceremonial ground they were joined by a number of the local men, all carrying arms, and then, forming in a column four deep and led by the chief man amongst the visitors, they all ran round and round with spears aloft and high-knee action (Fig. 137). When this little reception was over, the parties separated; the local people retired to the rocks close by, while all the visitors squatted on the level ground. For a few minutes nothing was said or done, and all the time the local people, men, women and children, were gathering on the ceremonial ground. Then, without a word, the leader of the visitors went round his party, collected all the flaked sticks from their heads—every man had two and some three and four—and solemnly presented them to the head-man of the local group. This was a sign that the visit was meant to be a perfectly friendly one. The head-man at once made a little fire and burnt them—an annoying waste of good ethnological material (Fig. 138), but of course we did not dream of interfering with them, in fact we had no idea of what they were going to do.

After this things began to get, if not more interesting, at least decidedly more lively, indeed at times rather exciting. However friendly two parties of natives belonging to different localities may intend to be when they meet one another,

the chances are strongly in favour of a disturbance of some kind arising amongst, at all events, the younger men, who, with the moral courage that comes from the knowledge that they have plenty of friends around them, are bound to be more or less aggressive; so, knowing something of the native character, we waited quietly, watching for any developments that might occur. We had not long to wait and, when once the ball was set rolling, we had plenty to look at and think about for the next two or three hours. It was more than three of the younger men could stand to see, sitting quietly in front of them, a guest who, in their opinion, had not mourned properly when death had robbed him recently of one of his numerous fathers-in-law. It was not what we should call a real father-in-law who had caused the trouble, but a father of a woman whom the delinquent might legally have married. That he had not actually done so made not the slightest difference to the question of right and wrong. Three of the aggrieved sons-in-law suddenly jumped up from the rock on which they were sitting, pranced up and down the flat, taunting their visitor as an arrant coward who was afraid to do his duty, and ended up, without any warning, by one of them hurling his boomerang at him. This was more than he in his turn could stand. He warded the weapons off easily, but that was not enough to show that he was no coward, so, first of all, he retaliated by throwing his own boomerang and then pranced down to the flat where his accusers stood. He embraced the oldest of the three and then they two sat down together on the ground with their arms around one another, some of the other men coming up to watch the performance (Fig. 139). The accused man loudly expressed his determination to cut himself on the shoulder, right through to the bone, while the other man, instead of taunting him further, or aiding and encouraging him in his repeatedly expressed determination to do himself some serious damage,

tried to soothe him and begged him not to injure himself too much. This did not appear to be a very difficult matter, but it occupied a good deal of time. The final result was that he slightly cut his shoulder with a stone knife, and thereby completely re-established friendly relations between himself and his accusers. The same performance was gone through in the case of two other men and then there was a pause. It felt as if everyone were just waiting to see what would happen next. No one, so far as we could see, seemed anxious to enter into friendly relations straight away. We had not long to wait again, for suddenly an idea struck one of the local men, who jumped up, accused a visitor of having killed his brother some years previously and challenged him to fight. The accused was probably as innocent of the crime as we were, but, of course, he had to accept the challenge or be branded as a coward and, at the same time, in the eyes of the natives, confess by his silence that he was guilty: so he pranced about, denying the charge and daring his accuser to fight. The latter, as accuser, had the right to assume the offensive and, in rapid succession, he hurled three boomerangs, one after the other, at his enemy, who protected himself with a shield. The first two he warded off, but was not quite quick enough to avoid the third, or, rather, he did not hold his shield at the right angle to make it glide off harmlessly. The result was that his shield was smashed and he received a nasty wound in his arm, after which the old men interfered and stopped the fight. Then there followed more charges and more fighting, but no one was hurt. A slight pause gave time to conjure up more real, or pretended wrongs, and a local man accused one of the visitors of having caused the death of his wife more than a year earlier. This created a great hubbub, and at once there was a rush on the part of all present, men and women alike, to where the accuser stood prancing about, yelling and brandishing

his spear as if he would throw it on the slightest provocation (Fig. 140). Accusations of all kinds were now bandied about from one individual to another, until there was probably not a single man, host or visitor, who had not been accused of doing something that he ought not to have done. Then the women took a hand in the affair, and for half an hour they pranced about, until at length, apparently for no special reason, except that everyone seemed to have said all that could be said on the matter, the disturbance suddenly fizzled out. Almost before there was time for quiet to be restored, the man who had made the last accusation, and had evidently worked himself up into a very aggressive frame of mind, turned round and levelled a charge against some of his own party. He was a Bultara man and he accused some of the Purula men of not having paid sufficient respect to the memory of one of their fathers-in-law. Instead of having left the camp and stayed away until, as he put it, the green grass had grown on the grave—how long this would take would depend entirely on the nature of the season—they had only stayed away for a very short time. Apparently this was a serious matter, at all events it was a signal for a general tumult. The din was indescribable. Men turned on one another, gesticulating wildly and threatening each other with spear and boomerang while, regardless of the chance of having their heads cut open by a blow from a boomerang intended for someone else, their women relatives interfered, prancing around their men-folk and yelling at the top of their voices. In vain did some of the older men try to quiet matters down. No sooner would one interfere or attempt to do so than someone else would level an accusation against him and in a moment he would be up in arms, ready to defend himself or assault all and sundry. No one seemed to have the slightest control over his or her feelings and, as the men were fully armed and were constantly in the very act, apparently, of



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FIG. 140.—WELCOMING CEREMONIES. BEGINNING OF A QUARREL, ARUNTA TRIBE.



F.J.G.

FIG. 141.—CEREMONY OF ALKIRA-KIUMA, ARUNTA TRIBE.
Throwing the novice up into the air.

throwing their spears or boomerangs, it seemed simply impossible to avoid a serious fight ; and yet, despite provocation such as would have made the mildest-mannered and most ardent peace-at-any-price member of a white community feel compelled to vindicate his honour, not a blow was struck. This last quarrel led, however, to one interesting result. It divided the combatants into two groups, quite irrespective of whether they were visitors or hosts. The Panunga and Bultara men on the one hand, and the Purula and Kumara on the other, made common cause and, as soon as the tumult subsided, the two parties thus formed left the field and went to their respective camping grounds. The next day relations were somewhat strained, but after that everything was perfectly friendly ; all signs of temporary disagreement had disappeared and camp life pursued its normal course.

CHAPTER X

MAGIC AND MEDICINE MEN

THE Arunta lives in an age of magic. Everything that is of importance to him in life, whether it counts for pleasure or discomfort, for good or for evil, is a matter of magic. Drought and flood, the periodic increase of animals and the mysterious springing up of plants out of the ground, even his own birth and death and that of all the people around him, are not to him due to what we call natural causes, they are all, in his mind, simply the result of magic of some form or another. And all this magic is very real to him.

No sooner is the Arunta child born than a black line is painted over his eyebrow in order to ward off sickness. How or why this should do so does not trouble his savage parents. They have been told by the old men, who know everything, that it will do so and that is quite enough for them. If the young child avoids sickness, that of course is the result of the black line; should it die, it does so simply because an enemy has worked evil magic upon it. The idea of putting any of these beliefs to the test of experiment never enters their heads. Whether there be really any relationship of cause and effect between the means adopted to secure a given result and the result that actually follows is a question that they never ask. If the desired result does not follow, then it means that some other person has worked evil by counter-magic that is stronger than his own, and the savage goes on his way perfectly content with this simple and, to him, very logical explanation.

To the Arunta there are two forms of magic, black and white, harmful and helpful. In some Australian tribes the power to perform magic, whether to injure an enemy or to help himself or a friend, is possessed by only a few members of the tribe, who are commonly spoken of by white men as sorcerers, wizards or medicine men. In the Arunta and, in fact, all the Central tribes, anyone, men and women alike, can perform magic, though it is more generally practised by men than by women and there are certain forms all knowledge of which is confined strictly to men. Just as amongst ourselves no such thing is recognised as equality in ability of any kind, some individuals are supposed to be especially skilful, and there is a distinct class of medicine men whose special ability lies more in the curing than the causing of disease, though they can do this like anyone else can and often more effectually. They are also more skilful in finding out who is responsible for the death of any native. Probably, in all tribes, magic of some kind may be practised by anyone, but, in some, its use has become more and more restricted to a special class of individuals who rank as so-called medicine men, wizards or sorcerers, and may sometimes profit to a large extent by their cunning. Dr. Howitt tells of a medicine man, living long years ago in the Kurnai tribe, who once announced to his fellow-tribesmen that he had received secret information from a great supernatural Being, living far away to the north, that, unless a number of things were sent to him, he would no longer be able to sustain the weight of the sky, which he held up with huge props. It would fall upon the earth and destroy all the natives. The things desired, which all happened to be useful to the local medicine man, were promptly forthcoming and the impending catastrophe averted, with great benefit both to the reputation of the latter and to his private store of worldly possessions.

In the Arunta and the Central tribes, so far as I could tell, magic is not made a means of gain or profit. No such thing as a fee of any kind is paid to a medicine man, even for the successful performance of so serious an operation as the removal of a pointing-bone from a patient's body; the surgeon is quite content with his enhanced reputation and status amongst his fellow-practitioners and tribesmen.

In his early years a boy, and the same is true of a girl, leads a perfectly free life, wandering about with his mother and eating anything that comes handy. His first serious acquaintance with magic comes when he is capable of taking part in the ordinary work and life of the camp, which, for him, consists largely in the search for food. He soon finds himself much hampered by restrictions and learns that the very best things are forbidden to him, such as all nice, juicy bits of meat and eggs, on penalty of suffering from the effects of magic. Not only is he forbidden to touch them himself, but he must provide certain of the older men with them, more especially one who might lawfully be his father-in-law, and there may be not a few men around him to whom this applies. If he neglects to perform his duty he will suffer, not only from evil magic, but from personal chastisement at the hands of the aggrieved man. There comes a time, during the initiation ceremonies, when the boy is thrown up into the air and caught by the men as he falls down (Fig. 141). Any "father-in-law" who chooses to do so provides himself with a cane, and, as the boy rises and falls helplessly, he hears someone shouting "I will teach you to bring me food," and has ample cause to remember and regret his neglect of tribal custom.

The following are some of the restrictions and penalties involved: kangaroo tail or wild turkey and its eggs, penalty for eating, premature old age; large lizards and emu fat, penalty, becoming deformed and diseased; all

kinds of parrots and cockatoos, penalty, a hollow on the top of the head and a hole under the chin; large quail and its eggs, penalty, non-growth of beard and whiskers; eagle-hawk, except the tough, sinewy legs, penalty, leanness—the legs are supposed to be admirable food for a boy, in fact he is often struck on the calf with an eagle's leg-bone, strength passing from one to the other; nightjar, penalty, an ugly enlargement of the mouth. In some cases, such as the last, "the punishment fits the crime," and, everywhere, the most important idea underlying the restriction is very evidently that of reserving the best things for the older men and women. So firmly ingrained is the belief in the power of magic that, in the natural state of the tribe, the restrictions are implicitly obeyed. Needless to say there are just as many of them in the case of women and girls, with equally suitable penalties for non-observance.

As the boy grows up he begins to mingle more and more with the men and hears them, as they sit round their fires at night in the Ungunja, the men's camping ground, where no women and children come, talking of Churinga and other magic things of which, as yet, he has only the vaguest idea; in fact, when he is present they only refer to them in such a way that he cannot understand what they mean and is, in consequence, filled with curiosity. He comes to know, however, that there are objects of magic which he may not see as yet and subjects which, at the risk of his life, he must not pry into, and looks forward to the time when, as an initiated man, he will be allowed to take his place amongst the fully-grown men and learn something of the secret matters that are all the more attractive to him because all knowledge of them is so jealously guarded by the older men.

As soon as he has been initiated, the youth finds himself on a different footing from that which he occupied as a boy. The men now speak freely to him and he hears a good deal

about magic of different kinds ; some of it used to control nature, so as to insure a plentiful supply of food and water, other kinds used to hurt an enemy or charm a woman.

Up to the time of initiation the Arunta boy is taught to believe that the strange noise which warns him, just as it does the women, to keep far away from the sacred ground when the men are performing magic ceremonies is the voice of a great spirit called Twanyirrika. When he is initiated he learns that this is simply a tale told to mystify women and children and that, in reality, the sound is made by the magic bull-roarer—a thin slab of wood (Fig. 142, Nos. 16 and 17) twirled round at the end of a string—and a few are solemnly handed to him by the old men with stern injunctions that they must be safely guarded and under no pretence whatever shown to the women and children. Their sacred nature is impressed on him time after time, and he learns that, in the Alchera, the far past times during which the mystic ancestors of the tribe lived, they made and carried about with them these Churinga, one or two of which are now entrusted to his care for a short time. To the white man there is nothing very awe-inspiring about the Churinga, but to the savage youth who has been taught to believe implicitly in what the old men tell him, it is quite a different matter ; and, in fear and trembling, he takes them in his hands, firmly believing that they are full of the most potent magic, and listens in silence to what the old men tell him about the ancestors whose spirits are still associated with the Churinga which, for the first time in his life, he is privileged actually to see and handle. From that day forward he is gradually taught more and more of sacred and magic matters and allowed to take part in ceremonies, though much depends on his behaviour. If he takes a real interest in the ceremonies of the tribe, then the old men gladly instruct him, but if

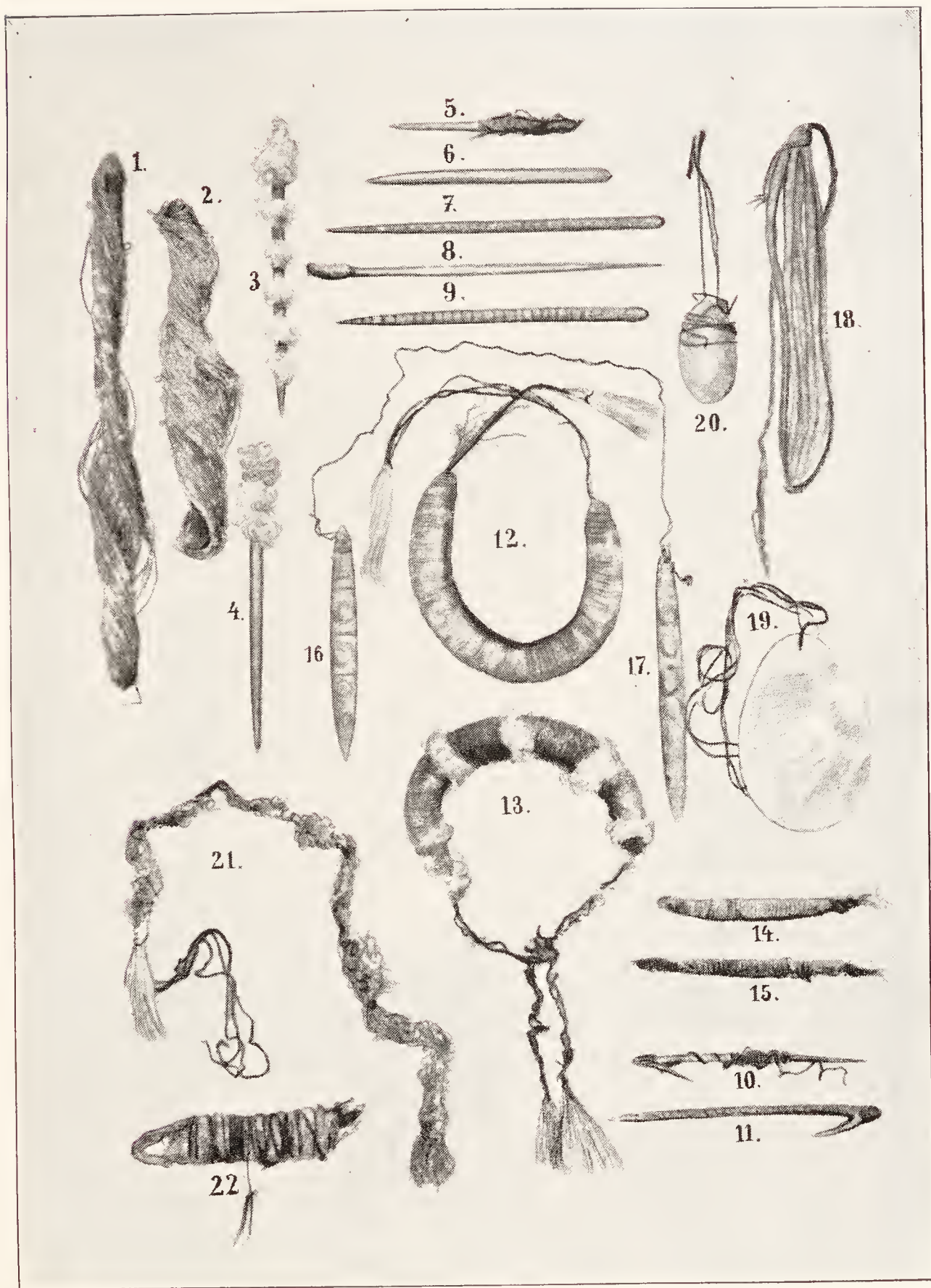


FIG. 142.—VARIOUS FORMS OF IMPLEMENTS OF MAGIC.

1, 2, Ililika or knout of the Warramunga tribe; 3-9, Various forms of Irna and Injilla; 10, 11, Ullinka, the pointing-stick of the spirits or Iruntarinia; 12, 13, 18, Okincha-lanina irulknakinna, necklets containing hair cut from a dead man; 14, 15, Dead man's hair wrapped round with hair string; 16, 17, Namatwinna; 19, Lonka lonka; 20, Itakula, poison stone of Kaitish tribe; 21, Tchintu of Wai-inyurri tribe; 22, Kuru-urkna, girdle made from hair cut from a dead man.



FIG. 143.—POINTING-STICKS,
KAITISHA TRIBE.



FIG. 147.—SPEAR-HEAD USED AS POINTING
APPARATUS AND FOR EVIL MAGIC, CALLED
NAKITJA BY THE KAITISHA TRIBE.

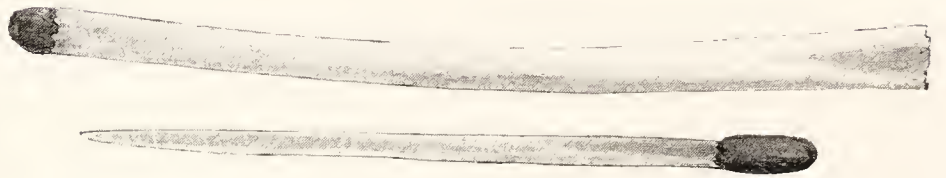


FIG. 144.—INJILLA OR POINTING-BONE, WITH ITS
CASE, ARUNTA TRIBE.



FIG. 148.—UNGAKURA, POINTING
APPARATUS, ARUNTA TRIBE.

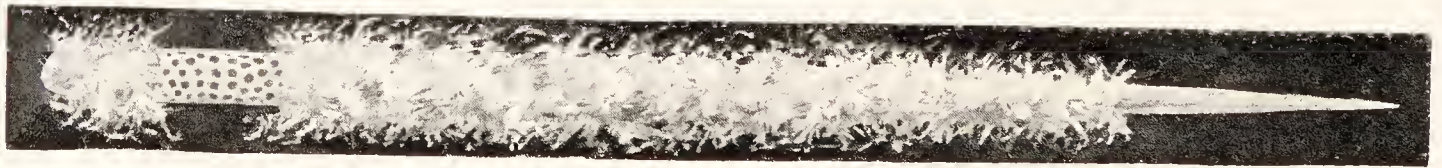


FIG. 145.—IRNA OR POINTING-STICK, COVERED MOSTLY WITH BIRDS' DOWN,
ARUNTA TRIBE.



FIG. 146.—IRNA OR POINTING-STICK, MARKED WITH A BURNT DESIGN,
ARUNTA TRIBE.

he be what the natives call "*irkun oknirra*," that is, light and frivolous and given to chattering like a woman, he is taught little and grows up to be a man of no importance in the tribe.

He hears a good deal about pointing sticks and bones that, in some form or other, are used by all Australian tribes (Fig. 142). Any Arunta man may make and use them, though it is rather a risky game and is, of course, carried on more or less in secrecy. There are various forms, but the essential feature of them all is that, in some way or another, usually by being what is called "sung," they are charged, so to speak, with evil magic, or *Arung-quilta* as the natives call it. There are many forms of them, but the two simplest and most often used are called, by the Arunta, *Irna* (Figs. 142, 145, 146), or pointing-stick, and *Injilla* (Fig. 144), or pointing-bone. The former is only a small piece of wood, varying in length from three to perhaps eighteen inches, and resembling a skewer in general shape. At one end it tapers to a point, and at the other is tipped with a little knob of resin to which a strand of human hair string is attached. Usually it is ornamented with notches, or circles, or a spiral groove made with a fire-stick and, in addition, it is often decorated with white or red bird's-down arranged in various ways. To endow it with evil magic it must be "sung." When this is done the man who intends to use it goes, sometimes alone, sometimes accompanied by a friend, to some spot in the bush, far away from the camp, where he will be free from observation. Placing it in the ground, he mutters over it some such curse as the following:

Ita pukalana purtulinja appinia-a—"May your heart be rent asunder."

Purtulinja appinia-a intaapa inkirilia quin appani intapakala-a—"May your backbone be split open and your ribs torn asunder."

Okinchincha quin appinia-a ilcha ilcha-a—" May your head and throat be split open."

In this way the stick, or bone, is charged with magic and is then left in the ground for a few days.

It would, of course, be absolutely impossible to watch the actual "pointing" and it took a good deal of persuasion to induce two natives to show how it was done, but Fig. 150 represents what the natives said was the actual method of using a pointing-bone. One of them knelt down so that the body formed a kind of platform over which the other, holding it at arm's length, pointed the bone, jerking it backwards and forwards, the "poison" being supposed to be projected from it into the body of his victim. While doing this he thrust his beard into his mouth, as the native always does when performing any ceremony in connection with which he feels fierce and savage.

Sometimes the pointing is done close to camp, in which case, after it is dark, and while the men are sitting round the camp fires, the man, carrying the *Irna* creeps up stealthily, taking care that no one sees him, until by aid of the fire-light he can see his victim's face. Then he stoops down and jerks the stick either over his shoulder or between his legs, bending down away from the man.

The evil always goes from the point of the *Irna* straight to the man, who soon afterwards sickens and dies, unless his life be saved, as fortunately it often is, by the aid of a medicine man who can discover and remove the *Arung-quilta* or poison. It is often believed that the stick itself is projected into the victim's body and a clever medicine man will remove this, either in pieces or sometimes even whole. Sometimes the string, attached to the lump of resin on the stick or bone, is slowly burnt, an act that is supposed to render the death of the man just as certain as the destruction of the string.



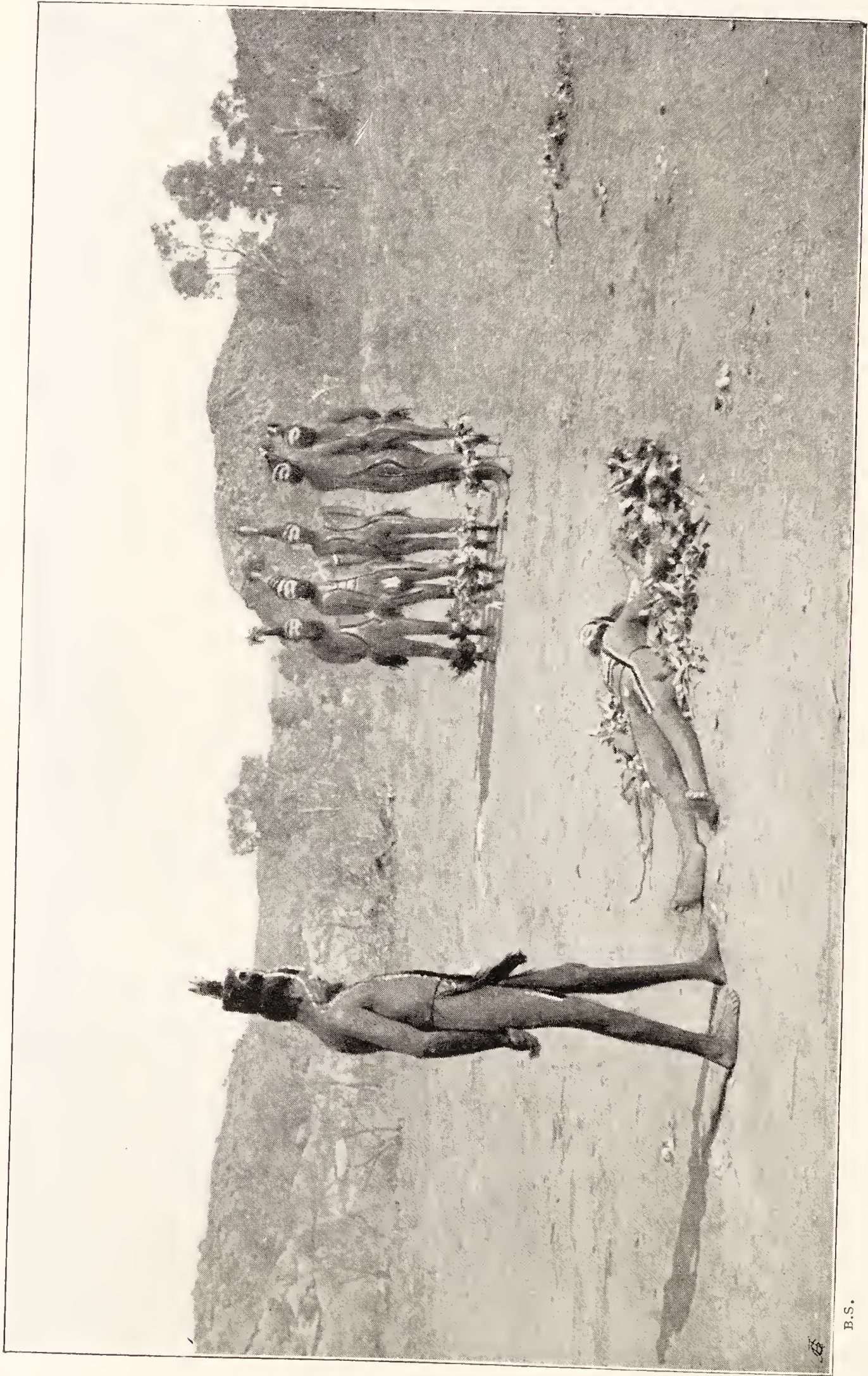
F.J.G.

FIG. 149.—POSITION ASSUMED WHEN POINTING THE UNGAKURA.



F.J.G.

FIG. 150.—POSITION ASSUMED WHEN POINTING THE IRNA, ARUNTA TRIBE.



B.S.

FIG. 151.—SCENE IN THE ILLIONPA CORROBBOREE DEPICTING A MAN GIVING MAUIA TO ANOTHER INDIVIDUAL WHO IS SUPPOSED TO BE LYING ASLEEP, ARUNTA TRIBE.

The man carries the *Mauia*, or stone containing evil magic, between his toes.

Every now and again one meets with a form of pointing apparatus peculiar to a special locality. Possibly the headman of the group of natives inhabiting that part, being of an ingenious turn of mind, sets himself to work to invent some specially effective piece of apparatus wherewith to injure his enemies; for it must be confessed that, though he has many good points, the Australian savage is particularly fond of injuring an enemy when the latter is unable to help himself. A man who can invent any implement which is, rightly or wrongly, supposed to be especially effective and deadly is regarded as a really great man and a benefactor to his people.

A peculiarly effective instrument of magic has been invented by a man living out in the Eastern Macdonnells. It is called *Ungakura* and consists of a strand of human hair string more than two yards long (Fig. 148). To one end are attached five little pointing-bones and to the other, a pair of eagle-hawk claws and a single pointing-bone. It needs two men to work it properly (Fig. 149). First of all a little heap of earth is pushed up in front of them to serve as a protection. If this were not done the intended victim would probably dream of the ancestral camp of the mother of the man who was using the bone. Such a dream would be a sure sign to him that her son was trying to injure him by evil magic and, of course, he would naturally retaliate. The claws and bones have been "sung" in order to fill them with magic which, when they are jerked towards the victim, goes straight into him, causing great pain, more especially because the claws grip and tear his internal organs.

Another very powerful one (Fig. 142, No. 21) had been given to an Alice Springs native by an old man who had lived far away in the Western Macdonnell Ranges and had himself received it from another old man of the Waiinyuri tribe, so that the magic it contained was very potent.

On the principle of *omne ignotum pro magnifico*, magic that belongs to a distant place and people is endowed with strength far superior to that of any local product and is feared accordingly. This special object was a very simple thing to look at. It consisted only of two feet of human hair string, covered with red down. To one end a lump of black resin was attached from which two front teeth of a rat stuck out. It was called *Tchintu*, which is the Wai-inyuri name for the sun. All that has to be done to make it work is to "sing" it, that is, to mutter over it an incantation that has the effect of drawing down into it a great store of heat from the sun. Then, having found some track marked by the footprints of the enemy, you place the *Tchintu* in one of the latter, with the result that the heat at once follows up the doomed man, goes inside and quickly burns him up. In this way they explain the cause of what we should call a violent fever.

The spirits are supposed to use a special form of pointing-stick called *Ullinka*, which is merely a little twig of wood, about four inches long, with a small crook at one end (Fig. 142, Nos. 10 and 11). The spirit, who of course is invisible, inserts the stick into the victim's body and every now and then, by the aid of an unseen string, gives it a malicious little twist which causes very uncomfortable feelings inside. It requires a very able medicine man to extract one of these *Ullinkas*. Sometimes it is brought out whole, but most often only in broken fragments.

Away to the north of the Arunta, the Kaitisha tribe has a special form of evil magic called *Mauia*, which is contained in little stones that they themselves secure by barter from still more northern tribes. Gillen and myself had heard much about this *Mauia* and, one day, the natives brought into our camp a parcel, about the size of a small pillow, made of rolls of paper-bark tied round with yards upon yards of human hair string, that they proceeded to

unwrap, layer after layer, with an air of the greatest mystery. We waited patiently, expecting to see something very special, but, when it was all opened out, there was nothing inside except just a little innocent-looking lump of white stone that turned out to be a small fragment of magnesium limestone. The natives, however, were very frightened of it and explained to us that, if they wanted to kill anyone, all they had to do was to powder a little of the stone off on to the tip of a spear and then drop it very quietly on to the man's body while he was asleep. Sometimes a little is carried in a piece of bark between the toes, and can be dropped, without causing suspicion, on to the victim, who soon sickens and dies. In one of their corroborees, called Illionpa, that we saw at Alice Springs, a native is represented in the act of doing this (Fig. 151). Amongst the Warramunga tribe, an old man of the bat totem is supposed to have had a store of *Mauia*. He was travelling away to the north of the Murchison Ranges, out to the east of Tennant Creek, carrying stone axes and knives, barbed spears and *Mauia*. By accident he dropped some of the latter which fell on to the ground and made a great explosion, a large mass of white stone arising to mark the spot, and from this place *Mauia* can now always be obtained.

A still more curious case of the influence of magic that owes its potency to the fact that it comes from a distant place is associated with what, from its form, may be called a knout. It consists of from thirty to sixty strands of string, made from vegetable fibre. Every Arunta man used to carry at least one of these about with him, wrapped up out of sight in his wallet (Fig. 142, Nos. 1 and 2). The one and only object of the knout, as used by the Arunta man, is to frighten the women. It is believed by the latter to be endowed with strong magic, and the very sight of it is enough to bring an erring woman immediately to a sense of what is right and proper—that is, to obey her

husband. The curious thing is that the magic knout of the Arunta is nothing else but the waist girdle of a more northern tribe, the Warramunga, amongst whom it is an article of everyday wear. The knout is simply one of these girdles that is supposed to have been "sung," and so endowed with magic, far away to the north and then traded down to the south.

Any native who believes that he has been struck by a charmed spear is almost sure to die, whether the wound be slight or severe, unless he be saved by the counter-magic of a medicine man. There is no doubt whatever that a native will die after the infliction of even a most superficial wound if only he believes the weapon which inflicted the wound had been "sung" over and thus endowed with *Arungquila*. He simply lies down, refuses food and pines away. Not long ago a man from Barrow Creek received a slight wound in the groin. Though there was apparently nothing serious the matter with him, still he persisted in saying that the spear had been charmed and that he must die, which accordingly he did in the course of a few days. Another man coming down to Alice Springs from Tennant Creek contracted a slight cold, but the local men told him that members of a group of about twelve miles away to the east had taken his heart out, and believing this to be so, he simply laid himself down and wasted away. In a similar way a man at Charlotte Waters came to us with a slight wound in his back. He was assured that the wound was not serious, and it was dressed in the usual way, but he persisted in saying that the spear had been "sung," and that it could not be seen, yet in reality it had broken his back and he was going to die, which accordingly he did. As the result a party was organised among the members of his group to avenge his death, and the man who was supposed to have wounded him with the charmed weapon was killed.

Instances of occurrences such as these could be multiplied, and though, of course, it is impossible to prove that death would not have followed under any circumstances—that is, whether the native had or had not imagined the weapon to have been “sung”—yet, with a knowledge of what wounds and injuries he will survive if he does not suspect the intervention of magic, it is not possible to explain death under such circumstances except as associated with the firm belief of the injured man that *Arungquilta* has entered his body, and that therefore he must die.

It is useless for an ordinary local medicine man to operate in these cases. Wounds from charmed spears or other weapons are of a different nature from injuries due to the placing of a pointing-stick in the body of the victim. In this latter case there is something tangible which the medicine man can remove, but in the former there is simply an intangible form of *Arungquilta*. A case which occurred recently during a fight at Alice Springs will serve to illustrate the matter. An Arunta native was hit by a boomerang, which inflicted a wound by no means dangerous as such, but the difficulty was that the wounded man declared that the weapon, which had come down from the Ilpirra tribe which lives away to the north of the Arunta, had been “sung” by an Ilpirra man. An Arunta medicine man was of no use under such circumstances, but fortunately there was an Ilpirra man in camp, and he was brought and “sang”—that is, went through the usual pantomime of making passes, sucking and muttering over the wound. As he belonged to the same locality as the man who had originally “sung” the boomerang, it was supposed that he could counteract the influence of Ilpirra *Arungquilta*, which he successfully did.

In most cases perhaps the chief object of magic is to inflict harm by means of projecting some form of evil influence, or an object such as a “poison bone” that has

been made full of this, which is always called *Arungquilta*, into an enemy. In some cases, like the Kuru-urkna, the magic helps the owner against an enemy, and, in the third case, it is used to assist a man in procuring a wife. When the woman is close at hand a man will sing over, and in that way charm either a painted Chilara or head-band (Fig. 142, Nos. 4, 5 and 6), or a flat shell ornament called Lonka lonka (Fig. 142, No. 19). He wears one of these at night-time during a corroboree. The light that flashes from it is seen only by the woman, who becomes what the native calls *okunjepunna oknirra*, which means "much infatuated." Next day the woman will pretend to go out hunting, but in reality she follows the man and they run away together to a distant group where they will have to remain until the injured husband's feelings have calmed down. When they venture to return there will be a great fight between the two men concerned, the thief being often seriously cut about, whilst the woman will come in for rough handling, but much will depend on the strength and standing of the man in his own local group. If they belong to the proper intermarrying groups the chances are that the man will be allowed to keep the woman; if not, no amount of fighting will produce a reconciliation and the two delinquents will only save their lives by living far away, and even then they are certain sooner or later to be caught and killed.

Another recognised form of charming a woman who belongs to the right group from which a man's wife must come is by means of a small Churinga-shaped object called a Namatwinna (Fig. 142, Nos. 16 and 17). If the man has not got one, then he will manufacture one for the occasion, marking it with a design of his own totem. This particular form of Churinga is called a Namatwinna from the words *nama*, grass, and *twinna*, to strike, because, when using it, it is struck against the ground. Armed with it

he goes into the bush alone or accompanied by two or three friends whom he has asked to come, and who may be of any relationship to him. All night long the men keep up a low singing of Quabara songs, together with the chanting of amorous phrases of invitation addressed to the woman. At daylight the man stands up alone and swings the Churinga, causing it first to strike the ground as he whirls it round and round and makes it hum. His friends remain silent, and the sound of the humming is carried to the ears of the far-distant woman, and has the power of compelling affection—that is, if she be willing—and of causing her sooner or later to comply with the summons. Not long ago at Alice Springs a man called some of his friends together and performed the ceremony, and in a very short time the desired woman, who was on this occasion a widow, came in from Glen Helen, about fifty miles to the west of Alice Springs, and the two are now man and wife, the union being regarded as a perfectly lawful one, as they belonged to intermarrying sections.

This custom is a well-recognised one. If, by its means, a man obtains a wife of another blackfellow, and the latter comes armed, as he most likely will, to resent the interference, then the men who belong to the group of the aggressor will stand by the latter and support his claims, if necessary, by fighting. The woman naturally runs some risk, as if caught in the act of eloping, she would be severely punished, if not put to death. Under no circumstances would a man be aided in securing a woman of a section into which he might not lawfully marry.

The most interesting form of magic, or at least the one that is best known, is connected with what are called the Kurdaitcha or “debbil-debbil” shoes. They are popularly supposed to be worn by a man who goes out to murder an enemy, and many deaths that cannot be explained otherwise are put down to a Kurdaitcha.

The shoes are really remarkable structures (Fig. 152). Each is made of a pad of emu feathers, about an inch or more in thickness and rounded at both ends. This serves as the sole of the shoe; the "upper" consists of a network of human hair string, with a hole in the middle for the foot to pass through, a thick string passing across this from side to side. The network is stitched on round the margin of the pad, but, apart from this, there is no stitching employed and the emu feathers are formed into a compact mass by means of prodding them with a sharp pointed bone. In some cases a certain amount of human blood is used to assist in matting them together, but, even with the shoes in one's hand, it is difficult to understand how the feathers are kept together without any stitching.

Years ago, when these shoes came down from the Centre, they attracted a good deal of attention and various ideas were current as to their use and meaning. The most popular theory was that they were designed to enable the Kurdaitcha man, as he was called, to travel over the country without his tracks being seen, or at least, as both ends of the shoes were alike, without it being possible to detect either who he was or which way he was travelling. To anyone who knows the natives and their phenomenal power of tracking, this explanation is quite inadequate. It is true that the shoes might prevent the recognition of the actual wearer, so long as he was wearing them and they remained intact, but they would not be of the slightest use in preventing any native from at once detecting the direction in which the wearer had travelled. A blade of grass bent in one direction, or a stone turned over, is quite sufficient clue to a blackfellow, and if an expert tracker chose to follow the tracks up, he would not have the slightest difficulty in finding the spot at which the shoes were put on—if they ever were—and when once he had done this he would not, again, have the slightest difficulty in detecting



FIG. 152.—EMU FEATHER SHOES WORN BY THE KURDAITCHA.

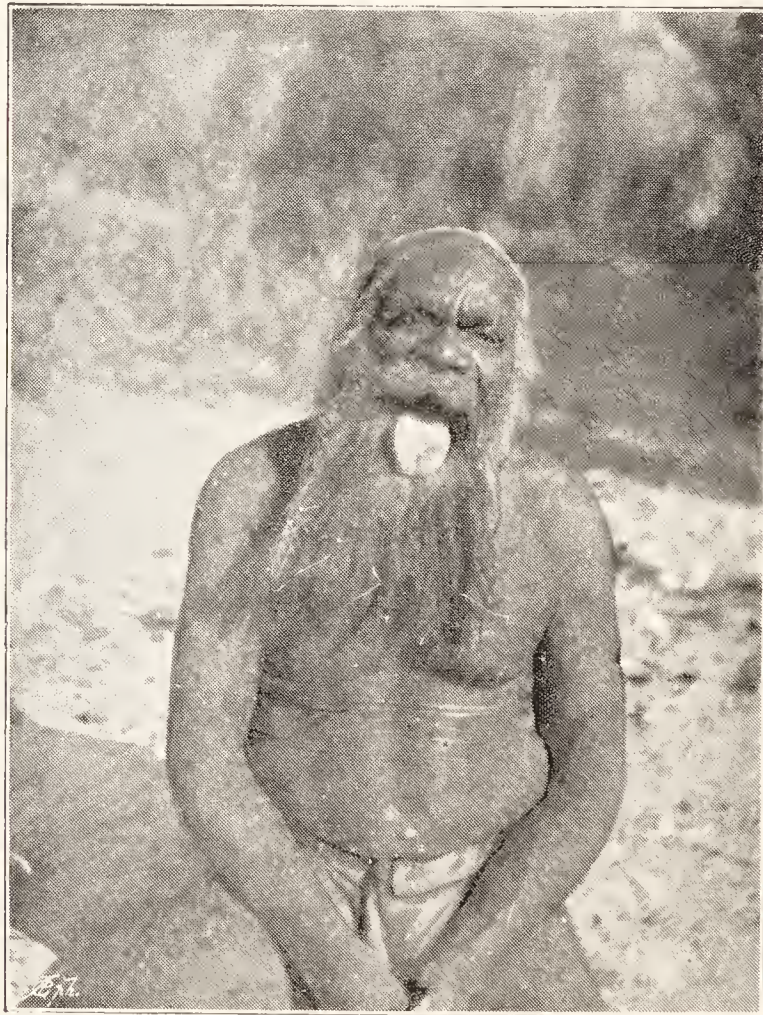
- 1, The shoe decorated with down; 2, the under, and 3, upper, surface of undecorated shoe; 4, human hair string used to tie the shoe to the foot; 5, small Churinga carried by the Kurdaitcha.



F.J.G.

FIG. 153.—ATTITUDE ASSUMED BY KURDAITCHA WHEN CREEPING UP TO HIS ENEMY.

Between his teeth he holds a small stone Churinga; the shoes are seen on his feet, and in his left hand he holds a shield and two or three wooden Churinga.



F.J.G.

FIG. 154.—MEDICINE MAN SHOWING THE HOLE MADE IN HIS TONGUE.

the individual who wore them. As a matter of fact, the wearing of the shoes is more or less of a myth; indeed it is safe to say that they are never actually worn, except possibly in connection with some ceremony, though, at the same time, the natives implicitly believe they are.

The Kurdaitcha is only a special one amongst many forms of magic and, like many other things, a great deal of humbug is associated with it. The native has no idea of death as the result of what we call natural causes, but imagines that it is always due to evil magic of some kind. He has, therefore, to account for every death and, amongst other things, has invented this myth of the Kurdaitcha and produces the feather shoes as proof positive of the existence of the man who wears them. There is no doubt but that every native believes most firmly that there is such a being as a Kurdaitcha. Not only this, but he is willing, or at least some of them are, to undergo what must be a very uncomfortable and painful ordeal in order to make other people believe that he is qualified to act as one. No man is supposed to wear the shoes unless he has had the little toe of one of his feet dislocated. When this operation is conducted the patient first of all puts the ball of the toe on a stone that has been heated to redness. The object of doing this, so the natives say, is to soften the joint. Then, with a sudden jerk, the toe is pulled outwards and the joint dislocated. There is no doubt whatever that some such ordeal as this is actually passed through. I have examined the feet of men who claim to be true *Atua Kurdaitcha*, that is, Kurdaitcha men, in various parts of the Arunta tribe, and every one of them has had the toe of one foot—it does not matter which—abnormally twisted outwards. Not only is this so, but the true Kurdaitcha shoe has a small opening left in the network, through which the toe is supposed to be thrust.

That the whole thing is a piece of magic can be told

from the account that the natives give of the *modus operandi*. As a general rule, though not always, a medicine man accompanies the Kurdaitcha. The latter is rubbed over with charcoal—black being especially associated with magic in the Arunta—and has vertical bands of white down painted on his face and the front of his body as far down as the knees. The medicine man has a median line of white from the top of his helmet to the tip of his nose, a curved line round each eye and two curved ones on each side of his body, so that he can easily be distinguished from the Kurdaitcha man. Each man wears the shoes, which are decorated with pink and white down, and, while they are being tied on, the Kurdaitcha mutters the following simple refrain :

“ Interlinia turla attipa,
Interlinia atippa,”

which means “ *Interlinia* (the native name of the shoes), to me stick fast, *Interlinia*, stick fast.” Each man carries a shield, spears and also one or two bull-roarers that are supposed to impart strength, courage and accuracy of aim and also to make them invisible to their enemies. Further still, the Kurdaitcha wears a girdle made from hair cut from the head of the man whose death he is going to avenge. This girdle, the hair to make which is cut from the man after he is dead, is a very potent object of magic (Plate VIII, Fig. 3).

Thus armed and decorated the two men start out from some place in the scrub at which they have, in perfect secrecy, made all their preparations, no one else having any knowledge of the affair. They creep along carefully, avoiding coming into contact with any other natives until the victim is seen. Then, the medicine man drops behind and the Kurdaitcha stealthily creeps forward (Fig. 153), carrying the bull-roarer in his mouth, until he is within striking distance, when he rises and strikes his enemy

from behind. This done, the medicine man comes on the scene, and, by means of magic, closes up the wound, a special kind of lizard being used to suck up the blood so that no trace of it is left. The two men then return quietly to their own camp. The victim, after a time, comes back to life and goes to his camp, quite oblivious of the fact that he is full of evil magic, but in a short time he sickens and dies, and then it is known that he has been attacked by a Kurdaitcha. It is possible to recover from such an attack, but only with the aid of a specially skilled medicine man, who is himself an *Atua Kurdaitcha* and possesses magic strong enough to overcome that of his rival practitioner.

The whole affair is a perfect myth, and yet the natives implicitly believe in it, just as they do in many other forms of equally unmeaning magic. To those who have had no personal contact with Australian or other savages, it may appear to be almost incredible that one man should actually believe that another can do something which he is perfectly well aware that he himself cannot do, though, at the same time, he pretends to be able to do so, and wishes and allows others to believe that he can. This, however, is quite in keeping with the native character. The mystery that surrounds, and adds importance to, a man who is regarded as an *Atua Kurdaitcha*, is just exactly what appeals to the imagination of the native, and he is quite willing to suffer even considerable pain and inconvenience if only he can gain the reputation of being a man strong in magic. It is quite possible that, in the course of time, he actually comes to believe in his own supposed powers—certainly he is willing to allow others to do so, even though it makes him a marked man, liable at any time to be accused of causing the death of others.

Some of the Kurdaitcha men carry shoes about with them, carefully hidden from the sight of women and

children, who are never allowed to see them. They are certainly never used for walking; the rough ground of the Central stony plains and scrub would tear them to bits in a very short time. The only real use to which, apparently, they are put is that of carrying small objects, such as bull-roarers or stone knives, used during ceremonies, which objects must themselves be carefully concealed from sight.

The best feather shoes are made in the southern section of the Arunta tribe, and during recent years, since it has been discovered that they have marketable value, a considerable number have been manufactured by the natives and have, for some time past, been finding their way into museums and curiosity shops; but, as a general rule, they can be distinguished by their size, most of them being too small for even the foot of a native. As usual, in the case of any special object, such as these, there are only a few men who can make them properly, and it will not be long before the art is lost, unless the market price remains remunerative enough to tempt a few natives to continue the manufacture, though, before long, lack of emus will prove a serious obstacle to the trade.

Amongst all the Central tribes very special magic is associated with the hair of a dead man, especially that which has been cut from his body after death. In the Arunta as soon as ever the man dies his waist girdle and necklets are taken off and, more important still, as soon as the body is placed by the grave the hair is cut from the head, always by a son or brother or brother's son. The old girdles and necklaces are made into special necklets known by the lengthy name of *Okinchalanina irrulknakinna*. The first word is the ordinary name given to a fur-string girdle, the second is made up of *irra*, he, *ulkna* (or *walgna*) is the name for a grave, and *kinna*, he, so that the name implies their close association with the dead man. These

necklets have usually the form of curved sausages decorated with rings of coloured bird's down (Plate VIII, Nos. 12 and 13), and are always given to men who belong to another local group than that of the dead man. They are valuable as charms to protect and strengthen the wearer, but are not so powerful in magic as the girdle called *Kuru-urkna* (Plate VIII, No. 3), which is made from the dead man's own hair. The name is derived from *Kuruna*, which means spirit, and *urkna*, which means the essence or essential part of anything. So that this girdle contains the very essence of the dead man and must always be worn by the leader of the party that goes out to avenge any man's death, because it endows him with all the attributes and strength of the dead man and protects him, so that no spear will hit him nor, on the other hand, can any spear he throws miss its aim. When not in use the girdle is carefully wrapped up in paper bark wound round and round with human hair string and has a little tuft of rabbit-bandicoot tail tips attached to it in which the spirit rests when it chooses to do so. Needless to say the *Kuru-urkna* is absolutely tabu to women and children.

Probably every Australian tribe has one or more men, and sometimes women also, who are commonly known to white men under the name of medicine men, wizards and sorcerers. The native name for them is, amongst the Arunta, Raitchawa.

In the Arunta three distinct schools are recognised: (1) those made by the Iruntarinia or spirit-people, (2) those made by the Eruncha, who are really only special kinds of spirits of a mischievous nature, and (3) those made by other medicine men. The two first are more highly thought of than the third, probably because they are supposed to have come into actual contact with the spirits and owe their powers directly to them. So far as professional status is concerned, they stand to the latter in

much the same relative position as, amongst us, medicine men who had taken a degree used to do to those who only held a licentiate.

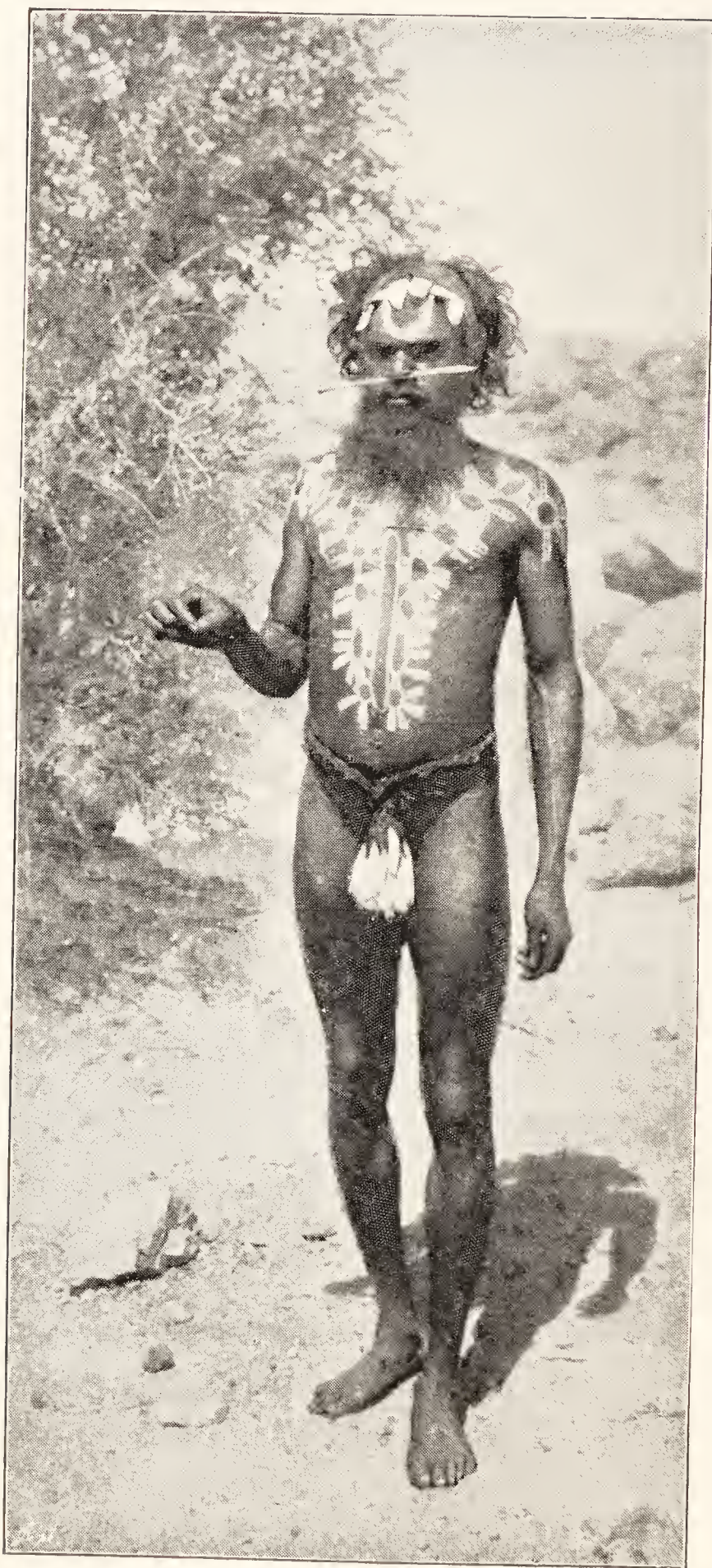
The method of graduation, as conducted by the Iruntarinia, is as follows. About fourteen miles to the south-east of Alice Springs Station there is a shallow cave, called Okalpara, in a range of hills bounding the northern margin of what is now called the Emily Plain. The cave is inhabited by the Iruntarinia, or rather it serves as an entrance to the underground dwellings of the spirits. The would-be medicine man, taking care that no one sees him, wanders away from the camp and, with considerable trepidation, lies down to sleep at the mouth of the cave. He must not go inside; if he were to do so he would annoy the Iruntarinia and most likely be spirited away for ever. At break of day one of the spirits comes to the mouth of the cave and, seeing him lying asleep, throws an invisible lance at him which pierces his neck from behind and comes out, making a large hole in his tongue (Fig. 154). How this is actually made cannot be said, but every medicine man made by one of the Iruntarinia has his tongue pierced. Possibly he may do it himself but, naturally, he never admits that this is so and, in course of time, he might quite easily come to believe that the hole was really made by the Iruntarinia. A second lance pierces his head from side to side, killing him. He is then carried into the cave, which is supposed to extend many miles under the ground. His internal organs are taken out and he is provided with a new set and, shortly afterwards, comes to life again. He is perfectly dazed and silly and does not know where he is or what has been done to him, but the Iruntarinia, who is invisible, save to certain very highly gifted medicine men and to the camp dogs, leads him back to his camp. For several days he remains more or less strange in appearance and behaviour until, one morning,

he appears with a band of powdered charcoal and fat across the bridge of his nose and it is at once recognised that a new medicine man has graduated. He must not, however, according to the strict etiquette of his profession, engage in practice for about a year, and if, during this time, the hole in his tongue closes, as it sometimes does, then he knows that his powers as a medicine man have departed. Meanwhile, he cultivates the society of other medicine men, learning from them the secrets of their craft, which consist principally in the power to hide about his person, and to produce at will, small quartzite pebbles or bits of stick and bone and, what is of hardly less importance than this sleight of hand, the power of looking preternaturally solemn, as if he were the possessor of knowledge quite hidden from ordinary men. The Iruntarinia not only provide him with new insides, but they implant in his body a supply of small magic stones, called *Atnongara*, which he can project into the body of a patient so as to combat the evil influences at work within him. In modern language, the medicine man is able to inject an anti-toxin.

So long as these stones remain in his body he is able to perform the work of a medicine man, but sometimes they are withdrawn, in which case they are believed to return to the Iruntarinia from whom they originally came. With their departure the man recognises that his power has also departed and he retires from the profession. There are certain foods that the medicine man must abstain from. He may not eat fat or warm meat, neither must he inhale the smoke from burning bones nor go near the nest of the large "bulldog" ant, because, if he were bitten by one of these, his medical powers would depart for ever. He must not drink anything hot. At Barrow Creek there was an erstwhile medicine man who had become disqualified simply because he had, inadvertently, taken a drink of hot tea.

The method of initiation into the profession as con-

ducted by a medicine man is naturally very different from that of the Iruntarinia, because he does not possess the same supernatural powers as the spirit. Incidentally, it involves a very disagreeable experience, and one wonders why any young aspirant to the profession chooses this method of graduation when a less exacting one is open to him. A young man, belonging to a group of natives on the Upper Finke River, described to us the way in which he had been initiated by two old medicine men, one of whom had been made by an Iruntarinia and the other by an Eruncha. Early one morning they took him away to a secluded spot amongst the Ranges. First of all they made him stand straight up with his hands clasped behind his head and told him that, whatever happened, he was to maintain perfect silence and not cry out. Then they withdrew from their bodies a number of the small, clear, pinkish-coloured stones, called *Atnongara*, which were placed one by one, as they were abstracted, in the hollow of a spear-thrower. When they had a sufficient number, each of the men took hold of one of his legs and, gripping the stones firmly, pressed them slowly and strongly along the front of his leg and then up the body, as high as the breast-bone. This was repeated three times, the skin being scored with scratches from which the blood flowed. The magic crystals were supposed thereby to be forced into his body. After this, he was told to lie down at full length on his back. One of the medicine men then went a little distance away and, striking an attitude, pretended to project some of the crystals into his head. When this was over they came and repeated the scoring process over the legs and abdomen and treated the arms in the same way, after which, to make quite certain that some of the magic stones entered his head, each of them pressed a crystal upon his scalp and struck it hard. The next operation must have been very painful. One of the men took a "pointing-stick,"



F.J.G.

FIG. 155.—MAN DECORATED TO REPRESENT A
MEDICINE MAN MADE BY THE ERUNCHA,
WITH THE ERUNCHA MARILLA, OR DESIGN OF
THE ERUNCHA.

The drawing on the forehead is the *Erunchilcha*,
and represents the Eruncha's hand.

which was itself full of magic, and, after tying some hair string round the middle joint of the first finger of the man's right hand, he forced the point for some distance under the nail into the flesh, into which he pretended to force a stone. The man was then made to keep a finger pressed against the hole to prevent the crystal from coming out, after which he was told to remain perfectly quiet and go to sleep. The scoring was repeated in the middle of the day and again in the evening, after which he was given meat to eat and water to drink which actually contained small stones that he had swallowed. On the second and third day also, the same process was repeated and, on the latter, he was told to stand with his hands behind his head and put his tongue out. One of the medicine men then withdrew from his skull, just behind his ear, a thin, sharp stone—a special *Atnongara*—and, taking some dust from the ground, dried the man's tongue, pulled it out as far as possible and made a cut through it, about half an inch long (Fig. 154). After a short rest the old medicine man, who had been made by an Eruncha, rubbed his body over with grease and then, placing him on the ground, on his back, proceeded to paint a special design on his chest, abdomen and forehead (Fig. 155). This design is called *Marilla* and is the sacred drawing of the Eruncha, the mark on the forehead representing what is called the *Erunchilcha* or “devil's hand,” the *Eruncha* being the evil or, at least, mischievous spirit of the Arunta, and *ilcha* the word for hand or fingers. A long black line, drawn down the middle of the body, represents the Eruncha himself, and the designs round it are supposed to be the magic crystals that he carries in his body. When the drawing was made, the man's fur-string bands were placed on his head and leaves of a gum tree were fixed so as to hang down from beneath them, partly hiding the drawing of the Eruncha's hand. He was then told that he must remain at the

Ungunja, the men's camp, and maintain strict silence until the wound in his tongue was healed. As he could not go out hunting, he was provided with food by women who stood to him in the tribal relationship of mother, wife and elder, but not younger, sister. The treatment to which he had been subjected, which was much more severe than that in the case of an Iruntarinia-made medicine man, left him really in a very weak state. When he recovered, the medicine men told him that he might go back to his own camp.

In the case of sickness, the natives have implicit faith in the power of the medicine men and in serious cases two or three of them, if available, are called in consultation. In ordinary cases the patient lies down while the medicine man bends over him and sucks away vigorously at the affected part of the body, spitting out every now and then little bits of wood or bone, the pressure of which is supposed to be causing the injury and pain. This sucking is one of the most characteristic features of native medical treatment, because pain in any part of the body is always attributed to the presence of some foreign body that must be extracted before relief can be given. Amongst the Western Arunta, especially, the medicine man, in addition to the *Atnongara* stones, is supposed to have a particular kind of lizard distributed through his body which endows him with great sucking powers, such as the natives attribute to the lizard itself. In serious cases the action is often very dramatic and the medicine man needs a clear space in which to perform. The patient, perhaps too ill to sit up, is supported by some individual, while a distinguished medical man who has been called in, and may have come a long distance, gravely examines him and consults with any local practitioners who may be present, and with the more immediate relatives of the patient, as to the cause of the illness. It may be that it is simply a case of senile decay, when the natives must know that there is no chance of

recovery, but they take the whole thing very seriously. The diagnosis always occupies a long time, during which everyone maintains a solemn silence and appearance, all conversation being carried on in whispers. As a result the medicine man will perhaps decide that the sick man is suffering from a charmed bone inserted by a magic individual, such as a Kurdaitcha; or, perhaps, worse still, the verdict is that one of the Iruntarinia has placed an *Ullinka* in his body, that is, a short, sharp, barbed stick, attached to an invisible string, the pulling of which by the malicious spirit causes great pain. If such be the case, it requires the greatest skill of a renowned medicine man to effect a cure. While the patient is supported in a half-sitting attitude, the medicine man first of all stands close by, gazing down upon him in the most intent manner. Then, going a few yards away, he looks fiercely at him, bends slightly forwards and repeatedly jerks his arm outwards at full length, during which performance he is supposed to project some of his *Atnongara* stones into the patient's body, in order to counteract the evil magic inside him. Going rapidly, with the characteristic prancing, high-knee action, from one end of the cleared space to the other, he repeats the movement with dramatic effect. Finally he comes close again and, after much mysterious searching, finds and cuts the string, which is invisible to everyone save himself. There is not a doubt amongst the onlookers as to his having really done this. Then, once more, the projecting of the *Atnongara* stones is repeated and, after this, crouching down over the sick man, he places his mouth on the affected part and sucks, until at last the *Ullinka* is extracted, either in parts or—very rarely, and only if he be a great and very distinguished practitioner—whole and shown to the wondering audience, the *Atnongara* stones returning immediately, and unseen by the onlookers, into his own body.

CHAPTER XI

ALCHERA BELIEFS AND THE CULT OF THE CHURINGA

To the casual onlooker, the life of the aboriginal seems to be made up of a daily, ceaseless search for food and a nightly performance of corroborees. It is only when you come to live amongst them in their camps, and get to know them and they to know and trust you, that you find out that there is quite another side to their life. At the present time we know savages almost entirely from the man's point of view, the woman's side has not yet been studied, and just as no woman may pry into the men's secrets, so it is just possible that women may have some that they keep hidden from men. So far as the men are concerned, a man's life is divided into two parts, absolutely and sharply marked off from one another. In fact it rather reminds one of the double life led by some of our own strict ancestors, not so many years ago—the ordinary week and work-day life, contrasted with the sanctity of the Sabbath, only that, with savage man, these two aspects of life, though distinct, are always with him, existing side by side and, one may say, ever present in his mind. The Arunta has his sacred beliefs, in connection with which he has many ceremonies that must be performed and, the older a man grows, the more time does he devote to these. All knowledge of them, except in a very general way, is studiously kept hidden from the women and children, who are supposed to know nothing, and dare not pry into them, on penalty of dire punishment, such as blinding with a fire-stick or even death.

In the first place, there are the initiation ceremonies through which a youth must pass before he is admitted as a fully grown member of the tribe. In different Australian tribes these vary to a great extent, or rather they did before the white man came. It is many long years since there was any initiation ceremony in Victoria or New South Wales. In the south-east of the continent they usually took the form of knocking out an upper incisor tooth; in the Central tribes the essential ceremony is circumcision; in Northern tribes, such as those on Melville Island, hairs are pulled out and the youth is knocked about and buffeted in a very uncomfortable way in order to test his endurance. The more he complains, the worse things are made for him, so generally he keeps quite quiet while his elders make things as unpleasant for him as they can. He has, however, the consolation of knowing that, in his turn, he will be able to pass things on to the next younger generation.

To the women and children it is all a matter of the deepest mystery, which of course the men take very good care to maintain, because it makes the women feel their inferiority.

The Central ceremony of Initiation is concerned with showing the youth the sacred bull-roarer or Churinga. The women never see this, but they hear the noise that it makes, sometimes shrill and piercing, at others deep and booming, but, to them, always awe-inspiring, because they believe it is the voice of a great spirit, Twanyirrika, who comes to take the youth away and change him into a man. The men are supposed to know all about Twanyirrika; they, the women, know a very little and must never seek to know more, but remain content with what the men choose to tell them. It certainly is little, for the simple reason that there is really nothing much of serious importance to tell about him, but this the women never know.

Of all things connected with the Arunta, the sacred

objects, that they call *Churinga*, are the most fascinating in their interest (Figs. 156, 157). At the present day, the centre of the continent is the great home of the *Churinga* cult and of the many customs and beliefs that have grown and clustered round them through long years, during which the Central Australian savage has been cut off from contact with the outside world and left to develop along his own lines.

The word *Churinga* is used both as a substantive and as a qualifying term. Anything associated with the totemic ancestors, a shield, a boomerang or a stone knife, anything, in fact, that they used or possessed is spoken of as being *Churinga*.

The ordinary, simple bull-roarer is known in many parts of the world under different names. It consists essentially of a small slab of flattened wood, usually, but not always, pointed at both ends, with a hole bored through it to which a string can be fastened. When whirled round the little slab rotates in the air, tightening the string, which then vibrates and gives out a sound, the quality of which depends upon the size of the "roarer"; the smaller the slab the shriller the sound. The Arunta people call them *Churinga*, a term that they apply to everything that they regard as sacred. The slabs vary in length, from an inch to even five or six feet, that is, the wooden ones do, the stone ones are very rarely more than two or at most two and a half feet long. In width they vary from an inch to perhaps five or six, according to the length. In some cases they may be quite smooth, but, as a general rule, they are decorated with incised lines. Sometimes they are only curved or straight lines, but most often they have the form of very well and wonderfully accurately-cut series of spirals and concentric circles. Designs of this kind are well known amongst the relics of early people in other parts of the world, especially in Ireland, where designs, cut on slabs of rock, are—except



FIG. 156.—WOODEN CHURINGA OR SACRED STICKS OF THE URABUNNA, LURITCHA AND ARUNTA TRIBES.

1, Chimbali of the Urabunna tribe; 2, Churinga of bell-bird totem, Luritja tribe; 3, Churinga of frog totem, Arunta tribe; 4, Churinga of lizard totem, Arunta tribe; 5, Churinga of emu totem, Arunta tribe; 6, very old Churinga of lizard totem, Arunta tribe; 7, Churinga wrapped in bark as it is when carried about.

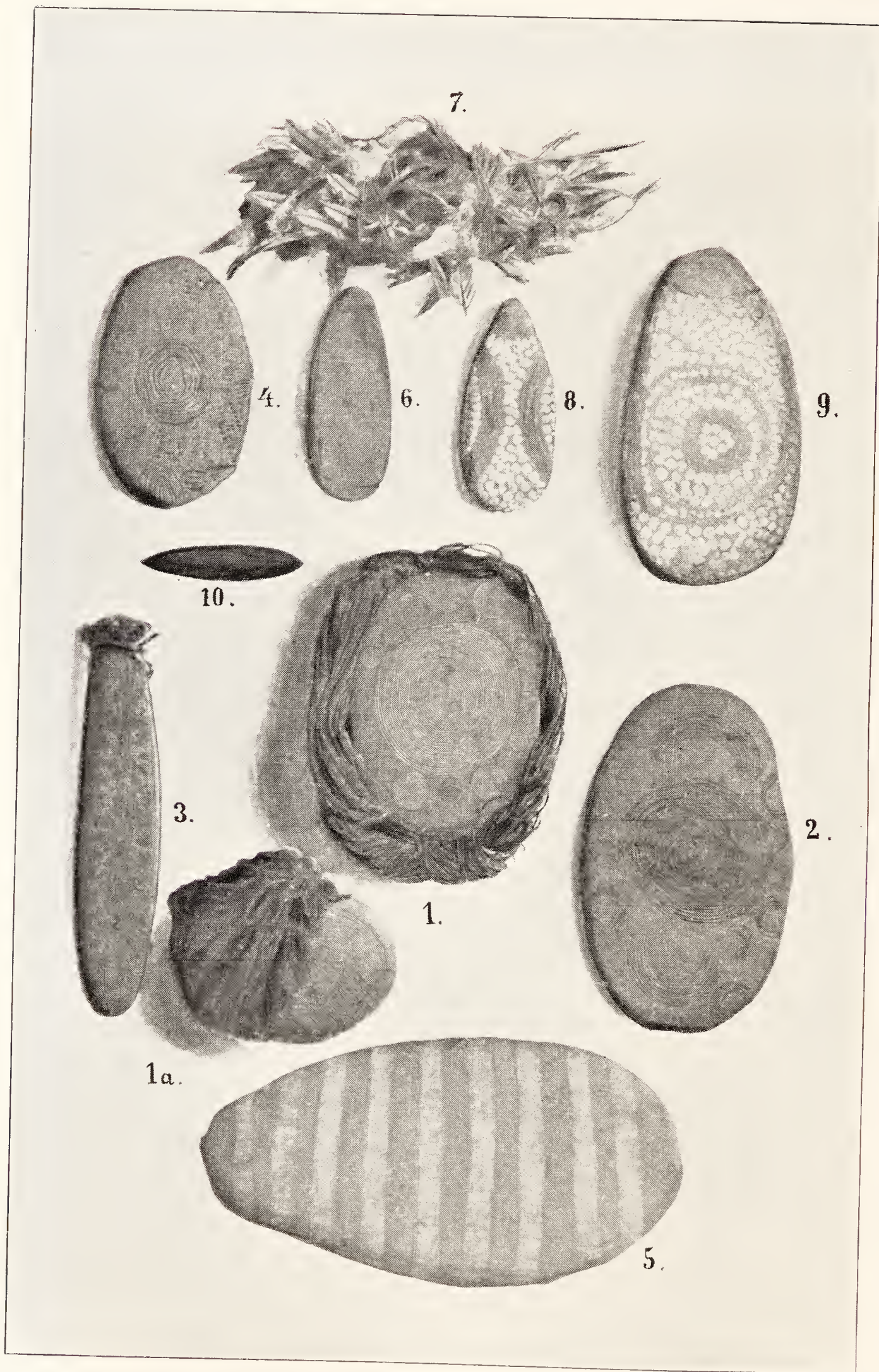


FIG. 157.—STONE CHURINGA OF THE ARUNTA, KAITISHA AND WARRAMUNGA TRIBES.
 1, 1a, Churinga enclosed in human-hair string and carried about together, Arunta tribe; 2, Churinga of euro totem, Arunta tribe; 3, Churinga of water totem, Arunta tribe; 4, Churinga of witchetty grub totem, Arunta tribe; 5, Churinga of Hakea tree totem, Arunta tribe; 6, 7, Churinga and feather covering of the Warramunga tribe; 8, 9, Churinga of the Kaitisha tribe.

for their much larger size—exactly similar to those on the Central Australian Churinga. In early days the natives of Eastern Australia had bull-roarers, but they were crude in form, few in number and simply little bits of flattened wood, with a hole bored through one end, so that they could be swung round. In West Australia similar objects, the exact meaning of which is not known, are always decorated with zigzag lines. It is only in the centre of the continent that spirals and concentric circles are met with.

In the normal conditions of our Australian tribes a woman or child, handling a Churinga, even accidentally, would be very severely punished. I have even seen a woman who had one of her eyes blinded with a fire-stick because she had once, out in the bush, by mere accident, stumbled across one that had been lost, and it was found out that she had done so. Probably it was only a little Namatwinna, such as is often carried about by a man, but it was tabu to women, and an unpardonable offence for her to handle it however innocently. If a woman deliberately tried to pry into any of the sacred things she would meet with very short shrift. As a matter of fact the women are far too frightened to attempt any such thing.

Amongst the Arunta there are various traditions that deal with their ancestors, with whom these Churinga are intimately associated. Everywhere there is a belief in a far past mythic time during which his ancestors, who were gifted with powers that he himself does not now possess, lived and moved about. To these far past times, and everything associated with them, he applies the term Alchera. They may indeed be said to form the background of his whole life. That these times and these ancestors existed and that they could do what he himself cannot do now; that they performed ceremonies that have been handed down to his parents and will soon pass to him and that then, later on, he, in turn, will hand them down to his son and so on

for generation after generation, of all this he has no doubt whatever. We call what he tells us about them "Myths of the Alchera," but, to the savage, they are not at all what we mean by myths, they are actual realities. They are as much real history to him as is any account of the Norman invasion or the Napoleonic wars to us. One may indeed go further still and say that these beliefs and customs, associated with the Alchera and the great men of the Alchera, are just as sacred and real to the Arunta savage and have, on his own lower level of culture, as much influence on his life and thought and conduct as what are commonly called the religious beliefs of higher civilisations have on men and women who are born into these.

This aspect of savage life and conduct is unceasingly borne in upon anyone who digs beneath the surface and must always be remembered as of fundamental importance in studying and dealing with the customs and beliefs of any savage people. As I have said, what we call myths are not myths to them, they are actual realities upon which their beliefs are moulded and their actions are based.

A white man could easily live amongst the Arunta for the whole of his life without having the faintest idea of the existence of such words as *Alchera* and *Churinga*. They were first mentioned in the form of *Altjira* and *Tjurunga* by the missionaries Kempe and Schultze, working amongst the Arunta on the Hermannsburg Station in the West Macdonnell Ranges, as long ago as 1891. Though they did not study deeply their significance, they realised that they were terms, especially the former, of sacred import. Schultze described the Tjurunga as "festival plates" and, in regard to them, wrote, "they (*i.e.* the Arunta) pretend that these *Tjurunga arknanoa* were *Altjira*—that is, were not made." Schultze, it may be noted, never uses the word *Altjira* as the name of any individual, human or super-human, and, when dealing with the religious aspect of the

work of the Mission Station, in those early days, he writes : “ The word of God alone can produce a change here . . . to explain spiritual matters to them is not easy, especially as there are not words to express the ideas and they will have to be coined for the purpose.” The missionaries, unfortunately, looked upon all native ceremonies as wicked and to be sternly repressed. The rules of the station forbade them from witnessing or countenancing them in any way, and one primary and essential condition of any native becoming and remaining a member of the community was his complete renunciation of all such works of the devil, on penalty of loss of all benefits accruing to him as a member of the community—benefits, for example, such as compulsory attendance on Church services, free meals and tobacco.

The word *Altjira*, or *Alchera*, was unfortunately adopted by the missionaries as the equivalent of “ God ” in their hymns and also in a translation of the New Testament, carried out during later years, with infinite patience, by Strehlow, who laboured zealously amongst them until his death in 1923.

It may seriously be doubted whether the natives were much interested in the use of the term *Alchera* by the missionaries. They were quite willing to gratify them by using it, in any sense and meaning agreeable to them, so long as it ensured their receiving food and tobacco, but, in private, they retained their own idea of its true significance so far as they were concerned. When the missionaries were safely in bed, or perhaps out of sight and hearing during daylight, their savage pupils were, quite unknown to them, engaged with zest in the performance of ceremonies in which the word *Alchera* was used in quite a different sense from that in which they employed it whilst lustily singing hymns and reciting words, of the meaning of which they had no conception, in the church at Hermannsburg.

It was not until Gillen and myself had the opportunity, by good fortune, of witnessing at Alice Springs, in 1896, the long Engwura ceremony, extending altogether over four successive months, that we really gained an insight into the true significance of the Alchera and Churinga beliefs—indeed it was not until 1926, when revising our work amongst the Arunta, that I learned more fully the meaning of certain of the Engwura performances dealing with the Alchera beliefs and what may be called the cult of the Churinga in its association with the Kuruna or spirit part of each individual.

There are four terms that are of special importance in connection with the fundamental beliefs of the Arunta—Alchera, Knanja, Churinga and Kuruna.

The term *Alchera* is one of somewhat vague and wide import which it is difficult to define with anything like absolute precision. It is not applied to any being, human or superhuman, mythical, or regarded as actually existing, but is intimately associated in the native mind with the far past times in which his totemic ancestors came into existence, lived, wandered about, and died. Each individual has his or her Alchera and here we come in contact with the second term, *Knanja*. *Knanja* is the native word for totem; that is, the particular animal or plant between whom and every individual a very special relationship is supposed to exist. In many cases the native's ancestors are supposed to have been transformed into human beings out of the totemic animal or plant. The term *Alchera* includes it, and with it the original ancestors of the totemic group, the natives' association with them, everything they possessed, everything they did and the times in which they lived. If you ask a man the question, "*Iwunna Alchera unta?*" "What is your Alchera?" he will answer, "*Alchera nukwa Achilpa* (wild cat)," "My Alchera is wild cat," or whatever his totem may be. A man's Alchera and his totem and totem

group, or *Knanja*, are so closely interwoven in his thoughts that they are practically inseparable. So much so in this case that the reply to either of the questions, "*Iwunna Alchera unta?*" or "*Iwunna Knanja unta?*" will be the same, simply the name of his totem. The word *Alchera* can be used both as a substantive and as a qualifying term. Sometimes the word *Alcheringa* is used; *ringa* meaning of or belonging to, but, most often, the natives simply say *Alchera*.

The following phrases will serve to show the meaning and significance of the word as associated with what are commonly called sacred beliefs.

(1) *Iwunna Alchera unta?*—What is your Alchera? The reply is *Alchera nukwa Achilpa*—My Alchera is wild cat.

(2) *Numbakulla Alchera inderanunta umbairaka*.—In the Alchera Numbakulla made everything.

(3) *Atua Alchera* (or *alcheringa*) *mara oknirra*. The Alchera men were very great.

The word *Alchera* is, however, not only used in this sense but it is also the one commonly used for dream, as in the following :

Ingwendama, inwulla; Alchera, erlia, ta eruka.—Sleep, last night; dream, emu, I saw.

Ingwendama, inwulla; Alchera, atnitta nukwa, kurna, ta eruka.—Sleep, last night, dream, my stomach, bad, I saw. That is, last night I dreamt I was bad inside or I felt bad inside. Seeing and feeling are very closely akin to one another in the native mind.

From the above it is very evident that the word *Alchera* is not applied to any individual and, further, that one of its fundamental meanings is dream. As a matter of fact it is significant to find that natives who can speak, as many of them now can, a little English, when referring to a man's Alchera and everything associated with it, always call it "his dreaming."

The third and fourth terms, *Churinga* and *Kuruna*, are closely bound together. The *Churinga* are, one and all, connected with the totems. At the present day the whole country occupied by the *Arunta* is divided into a very large number of larger or smaller areas, each of which is associated with some special totem, kangaroo, emu, *Hakea* tree and so forth, and in each such area there is a sacred storehouse, often a cleft in the rocks or the hollow stem of an ancient gum tree, in which the *Churinga* of the group are safely preserved under the charge of the head-man of that local totemic group. These storehouses are called *Pertalchera*, from *Perta* a rock and *Alchera*. No woman, of course, ever ventures near to one of these and no man dare touch the *Churinga* that they contain without the consent, and almost invariably in the presence, of the head-man who is in supreme control, not only of it but of the most important ceremony associated with each totem group, the object of which is to ensure the increase of the totemic animal or plant.

The fourth term, *Kuruna*, is the name applied to the spirit part of each individual member of the tribe. Each of them has his, or her, special *Churinga*, and between this and his, or her, *Kuruna* there exists a most intimate relationship. Originally the *Kuruna* came out of the *Churinga* and, when a native dies, it goes away to the *Pertalchera* where its *Churinga* is stored, and there it remains until such time as it chooses to undergo reincarnation. As the result of a splitting in the early *Alchera* days, each *Kuruna* has also a double or another-self called *Arumburinga* which always remains associated with the *Churinga*.

The earliest traditions of the *Arunta* deal with the origin of the ancestors of the various local totemic groups in the *Alchera*. There are various traditions in different parts of the tribe, which occupies a great extent of country, but they all deal with one or more great superhuman Beings called

Numbakulla, a word that means "self-existing," or "out of nothing." They it was who did everything in the early Alchera times, created the country, or at least its main features, made Churinga and the Kurunas associated with them, founded the totem groups, gave and taught the natives everything they now possess and know.

The Arunta is a very large tribe and so there are many differences in traditions in different parts, but, in all of them, a Numbakulla is associated in some way or another with the origin of men and women. According to one tradition no actual men or women existed at first in the Alchera but only incomplete creatures, half human, half animal. The Arunta savage has worked out for himself a crude theory of evolution. According to this tradition, he believes that, in the Alchera, the whole country was covered with *Kwatcha alia*, or salt water, which was drawn away to the far north by people who always wanted to get it and keep it for themselves. It is a curious coincidence that this tradition reflects, in general outline, what geological evidence indicates to have been the case, so far as the former existence of a great inland sea, once covering the country now occupied by the Arunta, is concerned. In those early days there were only groups of what are called *Inapatua*, or incomplete human beings, who dwelt on the shores of the salt water. They had no distinct limbs and ate no food but looked just like human beings, all huddled up into rounded masses, in which only the outlines of the different parts of the body could be seen. It was supposed that some of them were being changed into men out of lizards, others out of rats, kangaroos, snakes, emus, parakeets, Hakea trees and so on. Far away, in the *Alkira aldorla*, that is, the Western sky, there lived two great Numbakullas. Coming down to earth, armed with great stone knives, they took hold of the *Inapatua*, one after the other. A few cuts released the arms and legs; fingers and toes were added by making

four cuts at the end of each limb; the nostrils were bored by the fingers. A slit on each side separated the eyelids and a cut with the knife made the mouth, which was pulled open several times to make it flexible. Thus, out of animals and plants, arose the original groups of human beings who, when they were formed, were naturally associated with the same animals and plants. The particular one with which the human ancestor was thus closely associated, out of which he was supposed to have been evolved, is spoken of as that individual's totem or *Knanja*, and thus we see the earliest origin of totemic groups amongst the Central tribes, or rather the savages' idea in regard to their origin. To the Arunta man of the present day, the connection between him and his totem is a very close and intimate one, in fact the totem of any man is regarded as the same thing as himself. As a native once said to us, when we were discussing the matter with him, "That one," pointing to his photograph which we had just taken, "is just the same as me: so is a kangaroo (his totem)."

According to this tradition, when once they had come into existence, these ancestral people, or at least many of them, started to walk across the country—lizard people along one track, kangaroo people along another, frog people along another and so on, right through the various totem groups. Every one of these ancestors possessed, and often carried with him, or her, a sacred *Churinga*, with which the spirit part of the individual was supposed to be intimately associated. As they wandered over the country they made all the natural features—mountains, valleys and plains, creeks, clay pans, water-holes and gorges—that are now familiar to the natives. At certain places they halted to perform ceremonies, and there, certain members of the different parties died, or, as the natives say, went down into the ground; that is, their bodies did, but their spirit parts

remained above in company with the Churinga and stayed behind when the party moved on, remaining in some rock or tree that was ever afterwards sacred to them and was called that individual's *Perta knanja* or *Rola knanja*, that is, his totemic rock or tree. It very often arose to mark the spot where the ancestor died (Fig. 158).

When all their wanderings are plotted down on a map, it looks just as if the whole Arunta country were crossed by an intricate network of railway lines, with hundreds of stations representing the stopping-places of the different totemic groups, where the spirits have remained, forming what are called *Knantikillas*, or local totem places, and at each one of these there is the secret hiding-place, where the Churinga are kept, which is called a *Pertalchera* (Fig. 159).

The old men know all about these things and what spirits inhabit different places—kangaroos in one, wild cats in another, emus, rats, snakes, fishes in others, and so on. When a child is born, it is simply one of these old ancestors who has undergone reincarnation, and thus every individual in the tribe gets his, or her, totem name and belongs to the same totemic group as did his ancestor. In most Australian tribes the totem of a child is inherited from either its father or its mother, but in the Arunta this is not so.

The Arunta firmly believe that a child, in spirit form, if it chooses to do so, can enter any woman who comes near to its *Knanja* tree or rock.

As the members of different groups nowadays wander over the country, visiting other camps and attending ceremonies in various parts, matters become complicated in regard to the totem. Talking to a woman about her baby, she described how, one day, she had been walking not far away from a gorge called Emily Gap near Alice Springs, when, suddenly, she heard a child's voice crying out, *Mia, Mia*, the native word for mother. Not being anxious to have a baby, she ran away as hard as she could, but

it was no use. She was fat and well-favoured, and the spirit children prefer to have such women as mothers, so it went inside her. When it was born, the old men decided that it was the spirit of one of the old witchetty grub ancestors, who inhabit Emily Gap, that had run after the woman and had been reincarnated and so, of course, the child's totem is now witchetty grub. The children of any one family may thus, and in fact usually do, belong to various totems. The totems of the members of two families at Alice Springs will serve to show this. Family 1: husband, Little Hawk; wife 1, Rat; daughter, Witchetty grub; wife 2, Kangaroo; no children; wife 3, Lizard; daughters, Emu and Water. Family 2: husband, Eaglehawk; wife 1, Hakea tree; wife 2, Hakea tree; sons, Witchetty grub, Emu, Eaglehawk and Elonka; two daughters, each Witchetty grub. Not only does every man and woman have a totemic name that is known to everyone but, in addition, everyone has a secret or sacred name, which is called his, or her, *Aritna Churinga*, that is, Churinga name, and is only known to the really old men, never to any woman. Women do not even know their own. This is either that of the original ancestor, or is one decided upon by the old men, who consult together over all these matters. The natives call these spots, where the totemic spirits live in company with their Churinga, *Knanikilla*, a word compounded of *Knanja*, totem, and *la*, a suffix indicating place or position, so that it means the place of the totem.

The *Pertalchera* may be looked upon as the early rudiment of a city, or house of refuge. Everything in its immediate neighbourhood is sacred and must not be touched or hurt. No tree or flower or fruit growing on it is ever touched. A kangaroo or wallaby, running by chance anywhere near to it, is safe, for the time being, from the spear of a native, out hunting. Even a man being pursued by others would not be touched, so long as he remained at



F.J.G.
FIG. 158.—THE KNANJA ROCK OF KUKAITCHA. LEADER OF THE PLUM-TREE
TOTEM GROUP.



F.J.G.
FIG. 159.—ROCKS AT THE EMILY GAP, IN WHICH IS THE ILTHURA OF
THE WITCHETTY GRUB TOTEM GROUP.



B.S.

FIG. 160.—EMILY GAP FROM THE NORTH SIDE.



F.J.G.

FIG. 161.—SACRED DRAWINGS, CHURINGA ILPINTIRA OF THE WITCHETTY GRUB TOTEM ON THE ROCKS AT THE EMILY GAP.

this spot. No strange native, even if he knew where it was, which is unlikely, would dare to rob it, partly because if he ventured to do so he would live ever afterwards in mortal fear of the anger of the spirits associated with the Churinga, and partly because, if he ventured to touch them, his life would not be worth a moment's purchase. On one or two occasions, in the early days, *Pertalcheras* were shown to white men by degenerate natives but, on each occasion, the latter were killed. Once, when the Churinga were removed by a white man, who did not understand their significance, the natives remained in camp for two weeks weeping and mourning and plastering themselves over with pipe clay, the emblem of mourning for the dead. The treachery of the native who revealed this treasure place finally cost him his life. This was in the early days. Almost all of the old men have passed away, and the young men care little or nothing about the ancient traditions of the tribe and willingly barter the Churinga for knives and tomahawks and nowadays sell them. Except in outlying parts there are few of them left. When the overland railway line goes through I have no doubt but that a local industry will arise and that they will be on sale to supply the needs of tourists at the railway stations.

The most interesting and fullest of the traditions dealing with the Alchera and Churinga is one that is especially associated with the Achilpa, or wild-cat totem, which seems to have been a powerful totemic group in early times. According to this there was one special great Numbakulla, who arose out of nothing, at a place called Lamburkna in the Lake Eyre region, far away to the south of what is now Arunta country. This is what the natives call his *Tmara alchera*, or Alchera camp. First of all he wandered all over the country, right away as far north as the Macdonnell Ranges. As he went along he decided upon various places which were afterwards to be

local centres of different totems. He himself had no special totem, but made and owned them all and decided upon the special design, called *Ilkinia*, that was to be used by the men of the totem, when they performed their special ceremonies. He is said to have put his foot down at each place, saying, this is the Achilpa (wild-cat) totem place, this is the Erlia (emu), this is the Arura (kangaroo) place, and so on right through all the totems. As he went along he made, as the natives say, all the country, that is, mountain ranges, rivers, clay pans; at all events many of the main features, as they exist to-day, are due to him though, later on, great Alchera leaders created others. When he had completed his work he returned to his camp at Lam-burkna and, for a while, rested from his labours.

As yet there was no one in all the land except himself, but, soon, he made a small cave to serve as a *Pertalchera*, or store-house for Churinga. On the floor of this he painted a design, to serve as the *Ilpintira* or ground drawing of the Achilpa, the wild-cat totem. Outside the cave he drew another one and planted a tall pole, called a *Kauwa-auwa*, in the middle of it. A representation of this was used at the great Engwura ceremony that Gillen and myself witnessed at Alice Springs. Then he made the first Churinga or bull-roarer, and placed in it a spirit or Kuruna which came out and gave rise to the first Achilpa man, who is known as the *Inkata achilpa maraknirra*, the great original head-man of the Achilpa totem. *Inkata* is the name given to the leader or head-man of a totem group; *mara* means very and *oknirra* great. He was the first man created.

After this Numbakulla made a large number of other Kurunas and Churingas, representing different totems, and sent the Inkata out, telling him to deposit them at the different spots that he had decided upon as local totem centres. The track that the great Achilpa man followed, as he travelled from south to north and back again, is now

represented by the Parra mound at the Engwura ceremony. He walked right across the country, throwing out Churinga belonging to all the different totems. Each of these Churinga contained a special Kuruna, and with it, in some mysterious way, a large number of other Kurunas and Churinga, that had been made and placed in it by Numbakulla, were connected. Later on, these emanated from it. In this way different spots, dotted all over the country, became peopled by spirits belonging to different totems each with its own Churinga, and all of them were kept in the sacred storehouse, or *Pertalchera*, which then became the centre of a *Knantikilla*, or local centre, of some *Knanja* or totem. Each Churinga is called the *Churinga Knanja* of the man or woman who was the incarnation of the Kuruna belonging to it.

On the Inkata's return Numbakulla taught him all about the totems, how to perform ceremonies connected with the totems, how to make Churingas, Nurtunjas, Waningas—in fact everything used in the ceremonies—and gave him final instructions in regard to all matters concerned with the founding of the totems.

Finally, he said to the Inkata, "Your Churinga is in the *Pertalchera*, we two will go up to see my camp." Telling the Inkata to follow him, he began to climb the tall *Kauwa-auwa*, but he had smeared it with blood, which made it too slippery for the Inkata, who slid down, so Numbakulla went on alone, drew the pole up after him and was never seen, or heard of, again.

When he went to the *Pertalchera*, the Inkata found not only his own Churinga but a very large number of pairs of others, all made by Numbakulla and representing all kinds of totems. The first series of Churinga made by Numbakulla were all stone ones called *Talkara*. Each of these he split into two, so that there were a large number of mates, called *unpora ninga*, or *chua ninga*, tied together.

According to the tradition of the Achilpa, or wild-cat totem, the old *Inkata maraknirra*, who had originated at Lamburkna, threw out a Churinga to a place called Wairidija. Out of this came a Kuruna, or spirit, that gave rise to a man called the *Inkata Achilpa oknirra*. He went back to Lamburkna, where the *Inkata maraknirra* gave him two pouches, called *Ambilia-ekura* (Fig. 183), full of Churingas and Kurunas, or spirits. Returning to Wairidija, he took a pair of Chirunga out of one of the bags, and from them arose a man and a woman. The former was called *Inkata Achilpa kupitcha*, or little leader of the Achilpa, the woman's name was Illapurinja. They were the two great progenitors of the wild-cat totem. The *Inkata oknirra* then gave his two bags of Churinga and Kurunas to the *Inkata kupitcha*, along with all the instructions handed down from Numbakulla, and sent him and Illapurinja off to travel over and populate the country. They camped at different places. One of the first things that the Inkata did was to take all the Churinga out of his pouches, undo the pairs and lay them out in two rows, so that the upper row contained all those with male, and the lower all those with female Kurunas. At first they were all stone, but he changed the lower row into wooden ones, called *Tidjanira*, so that, ever afterwards, all of the men's *Churinga Knanja* were stone, or *Talkara*, and all of the women's were wooden, or *Tidjanira*. *Tidja* is the native name of the Mulga tree, out of which most wooden Churinga are made. At the first two camps a number of Kurunas entered Illapurinja and gave rise to men only: a second woman, called Lungarinia, then arose and, after that, both men and women, in large numbers, always as the result of Kurunas entering one or other of the two original women. At some camps, the *Inkata kupitcha* held a special ceremony, called Engwura, after which he sent men and women off in pairs to various places, giving to each man a number of Churinga with

their associated Kurunas. These men and women went off to places that had, long before, been determined upon by Numbakulla for the formation of local totem centres. Here the Kurunas entered the women and gave rise, of course, to wild-cat offspring, so that at first all the people in one locality belonged to one totem. Later on, as the natives began to move about the country and visit different camps, men and women of one totem came into contact with natives of other camps and other totems. A wild-cat woman, for example, would visit a camp of emu people, where Emu Kurunas, or spirits, were hovering around, who, if they chose to do so, could enter her, and so a wild-cat woman gave birth to an emu child, and just the same throughout all the totems, with the result that members of one and the same family could belong to half a dozen different totems, if the mothers travelled. All this sounds rather complicated, and it is wonderful how the native, who is a pure nomad savage, has evolved so complete a system of social and totemic organisation, which not only embraces the whole of his own tribe, but covers and determines his relationship to every member of all other groups and tribes with whom he comes in contact.

It is extraordinary how complete is the knowledge of the natives with regard to all the doings and wanderings of their old Alchera ancestors. The township of Stuart lies on a flat right in the centre of the Western Macdonnells in a great amphitheatre of hills, range after range enclosing it on all sides. From the top of the little hill in the centre of the flat a complete panoramic view of them could be had. Talking to an old man who was with me, I found that every natural feature was associated in tradition with one or other of the groups of ancestors who wandered over the country in the Alchera. I roughly sketched the outline of the hills all round the amphitheatre, and Plans A and B, which represent the section stretching across from south-east to

south-west, will give some idea of this very strongly developed side of native life and thought, because it must be remembered that to him the traditions of his ancestors that are associated and bound up with the different natural features amongst which he lives are very real and always present in his mind as he wanders over his country. The different totem groups with which the traditions all known to the natives are associated in Plan A are indicated as follows :

46. A long stretch of low hills forming what is called *Teppa Udnirringita*, along which parties of witchetty grub people were continuously travelling in different directions and meeting one another. The grub people were eating grubs, pulling their insides out as they did so and throwing them about as they walked and ate.

46a. A hill called *Unjailga idanuma* associated with a small witchetty grub people.

50. A Gap called by the whites *Undoolya* and by the natives *Inderta indaiya*. It was made by the great leader of the opossum people, and the immediate surroundings were a great opossum totem centre.

57. *Innagurra-nambugga*, a great centre of the *Ullagubbera* or small hawk people.

58. *Immurgna*, centre of the Fire totem people.

59. *Knorinia*. Jessie Gap. 60. *Imbulgan*. 61. *Indurja Erlia*. These three are associated with a group of *Erlia* (emu) people who walked across the country from the south-east. They formed a very important totem group and had a storehouse of their *Churinga* in the Jessie Gap.

62. *Uramunna Twaidja*. A saddle in the Ranges crossed by one of the *Achilpa* (wild-cat) groups that marched up from the south.

63. *Underga*. Emily Gap, the great centre of the *Udnirringita* (witchetty grub) people where they had their great storehouse.

64. *Indurja Udnirringita Teppa*. The long mountain ridge stretching from Emily Gap to Heavitree Gap (I, in Plan B). This belongs to the Udnirringita people, some of whom originated here, whilst others marched across country to it from other parts.

65. *Twaidja kangulla aranua*. A saddle made by Intwailiuka, leader of the Udnirringita people, where once he sat down.

Plan B. This continues on from Plan A. 64 is continuous with the *Indurja Udnirringita Teppa* and terminates at and forms the eastern face of the Heavitree Gap. The whole of the Range, right to its western end, is associated with the great leader of the Udnirringita people called Intwailiuka and some wild-dog people. This tradition is a very characteristic one and is a good example of hundreds of others, all of them associated with the ancestors of different totemic groups and the natural features of the country over which they wandered, and many of which, indeed, they created. The whole of the ridge, at least five miles in length, from 1 to 8, is called *Perta indurja teppa gnoilya*, or the Rock Ridge of the dog's back. (*Perta* is rock; *indurja* a ridge or range; *teppa* a back; *gnoilya*, dog.)

Tradition says that Intwailiuka, who was an *Inkata oknirra Udnirringita*, that is, a great Udnirringita leader, arose at Underga, now called Emily Gap (Fig. 160). He started off to walk westwards along the flat, taking with him a *pitchi* called *Meimba* in which he carried plenty of Churinga and Kurunas (spirits) associated with them.

He came first to a place a little to the north of Heavitree Gap, which did not then exist, put his foot down, and a hill called *Unjailga idanuma* (46a) arose, at which he left an Unjailga, a little grub, man. He walked on a short distance, put his foot down again, and a small hillock a little to the west of the first one arose called *Unjailga-kunia-kurta* (66). Then he turned south and sat down so heavily on

the top of the mountain range that it sank under his weight, and so the present Heavitree Gap, called *Undairipa* (1), was formed.

Intwailiuka was the great leader, the *Inkata*, or *Alatunja*, as the natives call him, of the *Udnirringita*, the witchetty grub, *Knanja*—that is, totem group—but the latter has three other grub groups associated with it, known respectively as *Unjailga*, *Yippija* and *Alkneja*, which may be spoken of as sub-totems. *Unjailga* has a head-man called *Inkata kupitcha* (small *Inkata*), but the other two have no *Inkatas*. The one *Knanja* is regarded as including all four; the *Ilkinia*, or totem design, is common to them, and they have one *Pertalchera*, or *Ertnatulunga*, that is, a sacred storehouse, at *Underga*, in which all the different *Churinga* were stored at that time. The *Ilpintira* or rock design of the totem is painted on the eastern wall of Emily Gap or *Underga* (Fig. 161). Later on they had two more storehouses in *Undairipa* or Heavitree Gap.¹

After making the Gap, Intwailiuka walked about in search of *Udnirringita* grubs, but found none, only *Unjailga*. He said to one of these, You are *Unjailga*, you have got a different mark from mine. Then, when he found *Yippija* and *Alkneja* as well as *Unjailga*—they were really grub men—he said to each of them in turn, You “sit down” or stay here with the name *Alkneja*, *Yippija* or *Unjailga*, according to what grub the man was; your mark is different (to mine). After seeing all the different grubs, he started off to walk along the top of the Range, running east from Heavitree Gap, but, before this, whilst wandering over the flats to the north of the Gap, he had come across a lot of dog tracks, but none of men. He said

¹ This was the case when first Gillen and myself worked amongst them in 1896. During recent years they have been taken away by white men. The old men, speaking recently of what had taken place in this and other local groups, told me that all their *Churinga* had gone, so that now, when a child is born, they do not know which of their ancestors has come back to them.

as he wandered about, I have not seen men's feet, I have seen dogs' feet. He walked on the top of the ridge, which in this part is called *Tidjililpaipa* (2). Being tired, he sat down, and the rock sank, making a saddle in the hill called *Twaidja*, or a little saddle (3); then he went on to *Kulidja-uldagga-kulla* (4), where again he sat down and rested all day, making a deeper saddle. The next day he went on, but only for a short distance, along a part of the ridge called *Uldmarilla-tagaluga* (5). Then he camped, saying, *Tmaranukwa*, this is my camp, made a ravine running down the southern side of the hill and slept there. Close by was a cave, *mulla*, in which were two dogs. He thought they were *Gnoilya*, dogs, not men, when he saw them. As soon as he came near, one ran on along the top of the hill, the other down the steep face of the ridge. He only saw the back of the first dog as it ran away, and called the ridge *Gnoilya teppa*, or dog's back (7). It ran on till it came to a sharp, steep bluff, stopped, and said, *Arukwilla irrima?* Which way shall I look? Then it jumped right across to a place called *Underba*, about twenty miles away, where it stayed and where there is now a great *Gnoilya* (dog) *Knanja* or totem centre. The point of the hill (8) from which it jumped is now called *Perta* (stone) *Alla* (nose) *lukwallila*, the latter word being the *Aritna Churinga*, or secret name of the dog. On the face of the mountain below the *Alla* are two points (9 and 10) which are supposed to have been made by the hind feet of the dog as it made its great leap, and are called *Gnoilya inka* (feet). On the top of it is the *Gnoilya mbainda*, or main dog camp. The second dog ran down a shallow gully called *Perta* or *Kultna*, on the steep face of the hill. Intwailiuka followed, and, just when he got down on to the flat, threw his yam-stick at it and cut it open, so that its intestines (*yarinja*) came out. A small heap of white stones called *Perta yarinja* (12) now marks the spot. The intestines caught on a stone, and, as the dog ran

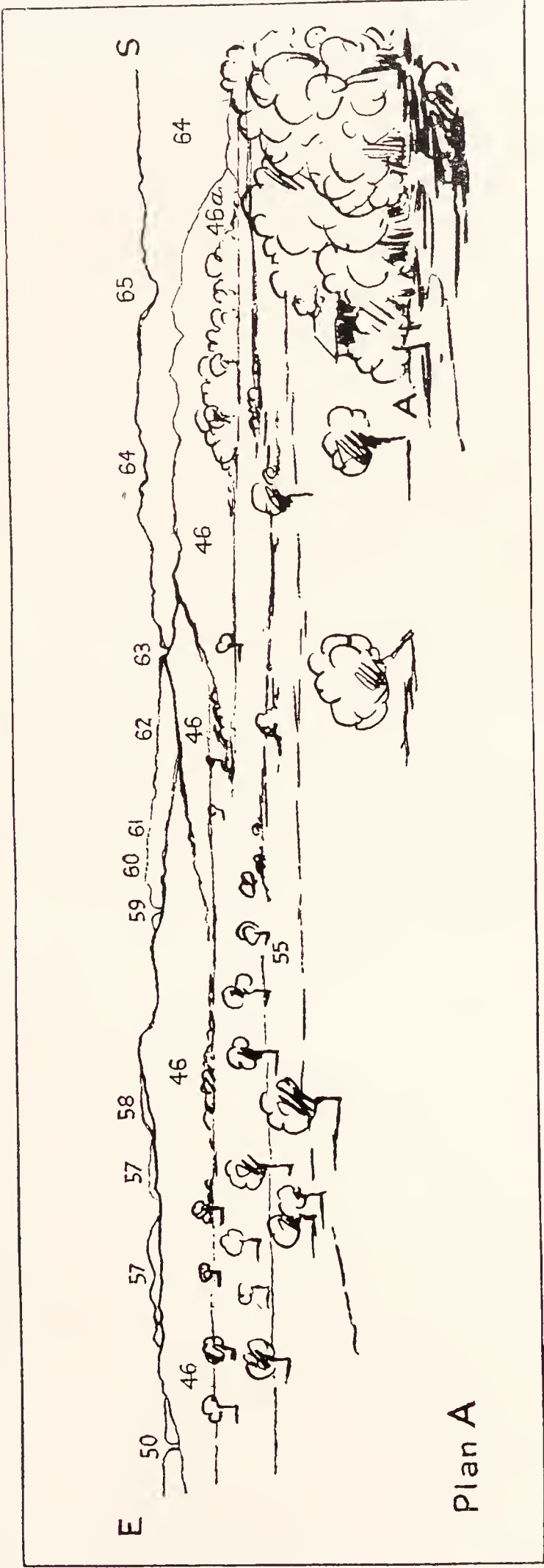
along, they became unravelled and pulled out straight. It ran back towards Undairipa or Heavitree Gap. Intwailiuka threw his spear and killed it, just as it was turning round the corner into the Gap. Both the yam-stick and the spear are, or rather were, until they were carried away by white men, represented by Churinga in the *Pertalchera* at Undairipa. As he stood over the body of the dead dog, Intwailiuka said, The black dog I altogether break (beat) in pieces. A big white gum tree called *Purria Udnirringita*, still existing, arose to mark the spot where Intwailiuka stood looking down on the dog which had changed into a man as soon as it was killed. Both of the dogs were really men who had put dogs' feet over their own and covered themselves with dogs' skin, but inside this they were men.

The dead dog-man had Churinga, and so, close to where he died, a storehouse of the dog totem was formed. The Udnirringita had two storehouses in the Gap, one on each side; the Gnoilya had only one, on the west side. Later on all the dog-men died, and then the Udnirringita took charge of their storehouse and Churinga.

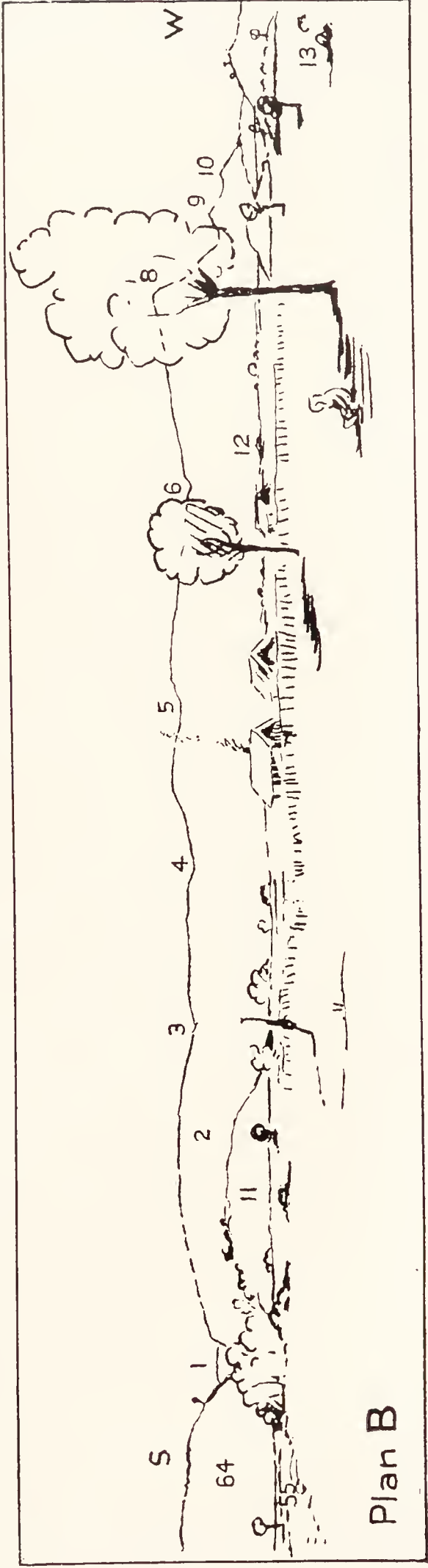
After killing the dog-man, Intwailiuka walked through the Gap and, half a mile beyond this, where he again put his foot down, the hill *Irpailpa*, or Mount Blatherskite, arose. There he left a man, telling him he was Unjailga.

After this Intwailiuka went back to Emily Gap, or Underga, and remained there until he died, when a large rock rose to mark the spot and can be seen there to-day (Fig. 160). On the rocks at the Gap he drew the sacred design of the Udnirringita totem and there it still remains (Fig. 161). Here also he performed, as his descendants now do, the great ceremony called Mbanbiuma or Intichiuma, by means of which the leader of the witchetty grub men can ensure every year the increase of witchetty grubs.

Every old leader of a totemic group, emu, wild dog,



Plan A



Plan B

kangaroo and so on, possessed a large number of Churinga, and these were deposited in the different storehouses scattered all over the country. The stone ones (Fig. 157) are always flat on both sides, the wooden ones (Fig. 156) may be of the same form or, more usually, have the one side flat and the other side slightly concave, or they may often be concavo-convex in section. A certain number of the wooden ones have a hole pierced at one end, the smaller ones of this kind may be used as bull-roarers. Almost all of them are ornamented with wavy lines, incised spirals or concentric circles. Very often the design starts as a spiral and then merges into a series of circles. The latter is, with very little doubt, derived from the former.

The designs, with very few exceptions, are perfectly conventional and have no reference, at the present day, to the objects that they are supposed to represent. The only exceptions are representations of the very characteristic imprints of the feet of emus and animals, such as kangaroos, though these are extremely rarely met with. On one Churinga a spiral, or series of concentric circles, will represent a man, on another, precisely the same design will be used for a fly, a tree, a kangaroo, a frog or, indeed, any other natural object. Curved lines may represent a creek, a snake or a track. Straight lines may represent tracks or an animal's legs or tree roots or marks on women's bodies. On any particular Churinga the design has a very definite meaning, but, in order to decipher any individual one, it is essential to gain the information from an old man of the totem to which it belongs. Other natives may volunteer information, but, as the same device means one thing to a native of one totem, and quite another to a man who belongs to another totem, it is quite unsafe to ask, say, an emu man, to explain to you the markings on a wild-cat Churinga, or vice versa. As a matter of fact, it would be extremely bad etiquette, not to say dangerous, for a native to interfere

in any way, unless invited to do so, with the private affairs of anyone else's totemic group. An old man, after having seen and handled the Churinga belonging to other totems, as he often does, while they are being examined and used during ceremonies, in which he is invited to take part, may know a good deal about them, but he will close up like an oyster if you try to get any information out of him and politely, but firmly, disclaim the possession of any knowledge.

It is an easy matter, in some cases, to take these conventional designs and, by adding, from imagination, one or two others, intermediate between a more or less crude representation of the supposed original and the drawing in its present form, to construct a theory of the derivation of the designs, such as some of those on the Churinga. When, however, it is found that exactly the same designs are used on plant-bulb, fly and frog Churinga, and that series of concentric circles are used for human beings, trees, fruits, frogs, emus, kangaroos, flies and all sorts of animals and plants, it is evident that the designs on the Arunta Churinga, as we know them now, must have originated at such a distant time that any explanation of the exact mode of their evolution, seeing that no intermediate stages actually exist, must be quite fanciful.

The only instance I have ever seen, amongst Australian tribes, in which it was possible to detect the passing of a realistic representation of an animal or plant into a purely conventional one, was in the case of some of the designs used by the Kakadu tribe, living away in the very far north. On some Papuan objects, spirals and circles, very suggestive of those on Arunta Churinga, are undoubtedly derivations of original drawings of human faces, with eyes strongly accentuated, but it is a far cry from a spiral or a series of concentric circles to the gum tree or grub that they are supposed to represent on many Churinga.

All that the native can tell you is that every *Knanja* or totem has its own peculiar mark or design that they call its *Ilkinia*, and that these marks were settled long ago in the Alchera by some superior Being, such as the one called Numbakulla, and that they have been handed down unchanged from generation to generation.

In addition to the old original ones made in the Alchera, very many are supposed to have been made by celebrated ancestors who lived long ago but since those far back times. Some of these are six feet long and are now used during ceremonies. Nowadays, also, the paternal grandfather of a child will make a wooden one, on the birth of the latter, and mark it with a design of the child's totem. It is regarded as a Churinga, that is, as a sacred stick, and is kept in the storehouse but has no Kuruna associated with it. The smaller ones amongst these have holes bored in them and are used for whirling. One or two of them are given to the youth to carry about while he is passing through the initiation ceremony, and the children and lubras believe, or at all events are supposed to believe, and the former certainly do, that the sound that they make is the voice of the great spirit Twanyirrika who comes to take away the boy, providing him with new insides during his initiation.

Extraordinary precautions are taken to prevent the women from seeing them, and all this mystery serves to make them feel their inferiority to the men.

The accompanying drawings, reproduced from rubbing of a few wooden Churinga, will serve to give a good idea of the nature and meaning of the designs.

The stone ones are always flat on both sides, the wooden ones may be the same or, more usually, have one side flat and the other slightly convex, or they may often be slightly concavo-convex in section.

Now and again there may be no design on the Churinga; in rare cases, as in the stone one of a Hakea tree or Un-

jiamba totem (Fig. 157, No 5), the decoration takes the form of bands of colour, red and white. In the Kaitisha and Warramunga tribes similar objects are usually pear-shaped and decorated with dots and bands of pipe clay. In almost all the Arunta ones, stone and wood alike, the design takes the form of concentric circles, spirals, curved and straight lines and dots, all incised with remarkable regularity by means of the incisor tooth of an opossum implanted in the jaw, which is tied on to a wooden handle. So far as the designs go there is no difference between those on the stone and wooden ones, nor is one form of Churinga more sacred than the other.

The general form of the wooden Churinga is shown in Fig. 156. Often they are wrapped in paper bark, emu feathers or hair string. Very old wooden ones (No. 6) may have the design nearly or quite obliterated by constant rubbing, and all the wooden, and many stone ones, are coated with grease and red ochre. The stone ones are made of a micaceous rock, the wooden ones are almost always made out of the Mulga tree (*Acacia aneura*), the native name for which is Tidja; hence the general name for wooden ones is *Tidjanira*, though they are sometimes made out of a hard gum-tree wood. Mulga is preferred because white ants do not touch it.

Fig. A represents the *Churinga knanja* of a dead man of the frog totem. It is 39 cm. in length. On either side there are three large series of concentric circles (*a*) which represent three large and celebrated gum trees that grow by the side of the River Hugh at Imanda, the centre of the particular group of the frog totem to which the owner belonged; the straight lines (*b*) passing out from them, on one side of the Churinga, represent their large roots, and the two series of curved lines at one end (*c*) their smaller roots. These trees are intimately associated with the frog totem because frogs are supposed to come out of them, which

is doubtless an allusion to the fact that one kind of frog is often found on the banks of rivers in the sand around their

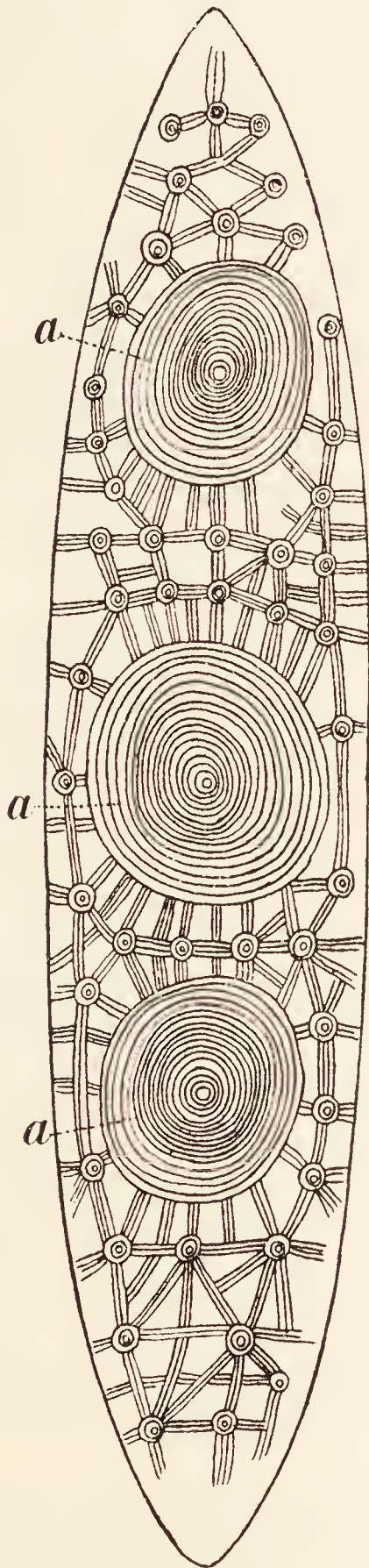


Fig. A.

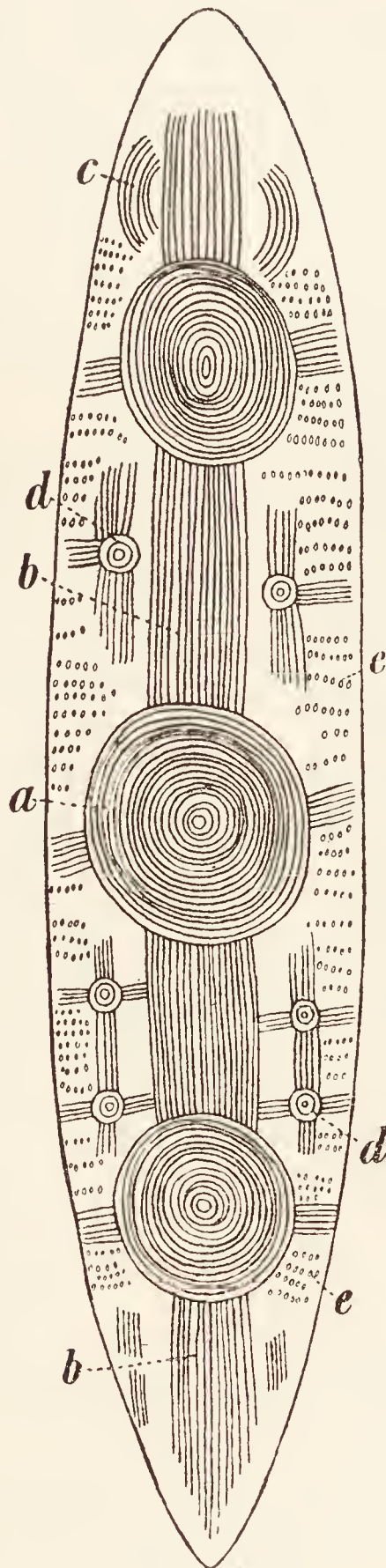


Fig. A.

roots, and can always be heard croaking there before the advent of rain. The smaller series of concentric circles on

the same side of the Churinga (*d*) represent smaller gum trees, the lines attached to them being their roots, and the dotted lines (*e*) along the edge are the tracks of the frogs as they hop about in the sand of the river bed. On the opposite side of the Churinga, the large series of double concentric circles represent small frogs that are supposed to have come out of the trees, and the lines connecting them are their limbs. This

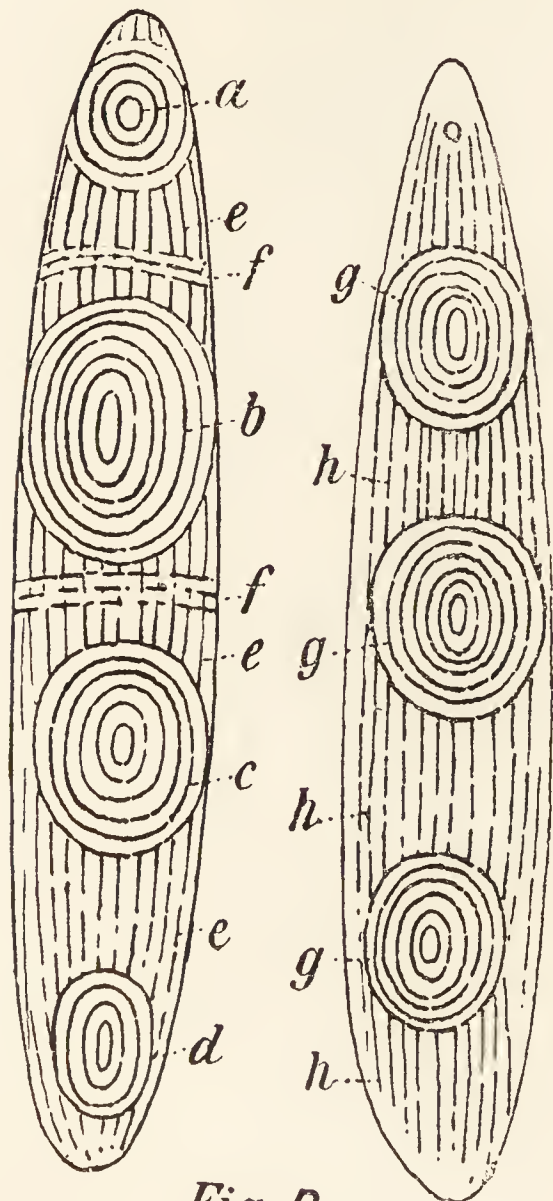


Fig. B.

design of small concentric circles united by lines is a very common one on frog Churinga, but has nothing whatever to do with the representation of a frog. Precisely the same design is found on Churinga of the Irriakura, a plant-bulb totem.

Fig. B represents the *Churinga knanja* of the celebrated Ilatirpa, a great leader of the Yarumpa or honey-ant totem and is kept in the storehouse at Ilyaba. The series of circles (*a*) with the central circle represents the eye; the circles (*b*) represent the intestines, (*c*) the painting on the stomach, and (*d*) the posterior part of the man. On the reverse side the circles (*g*) represent the

intestines of the Alatipa, a little bird that is regarded as a mate of the Yarumpa.

Fig. C represents the Churinga of an Achilpa or wild-cat man. The three series of circles (*a*) represent Unjiamba or Hakea trees, while the circles of spots (*b*) represent the tracks of the men dancing round them. The lines (*d*) represent the Wanpa sticks that are beaten together to keep

time in dancing, and the dots (*e*) represent the tracks of dancing men. This Churinga is in the storehouse at Imanda.

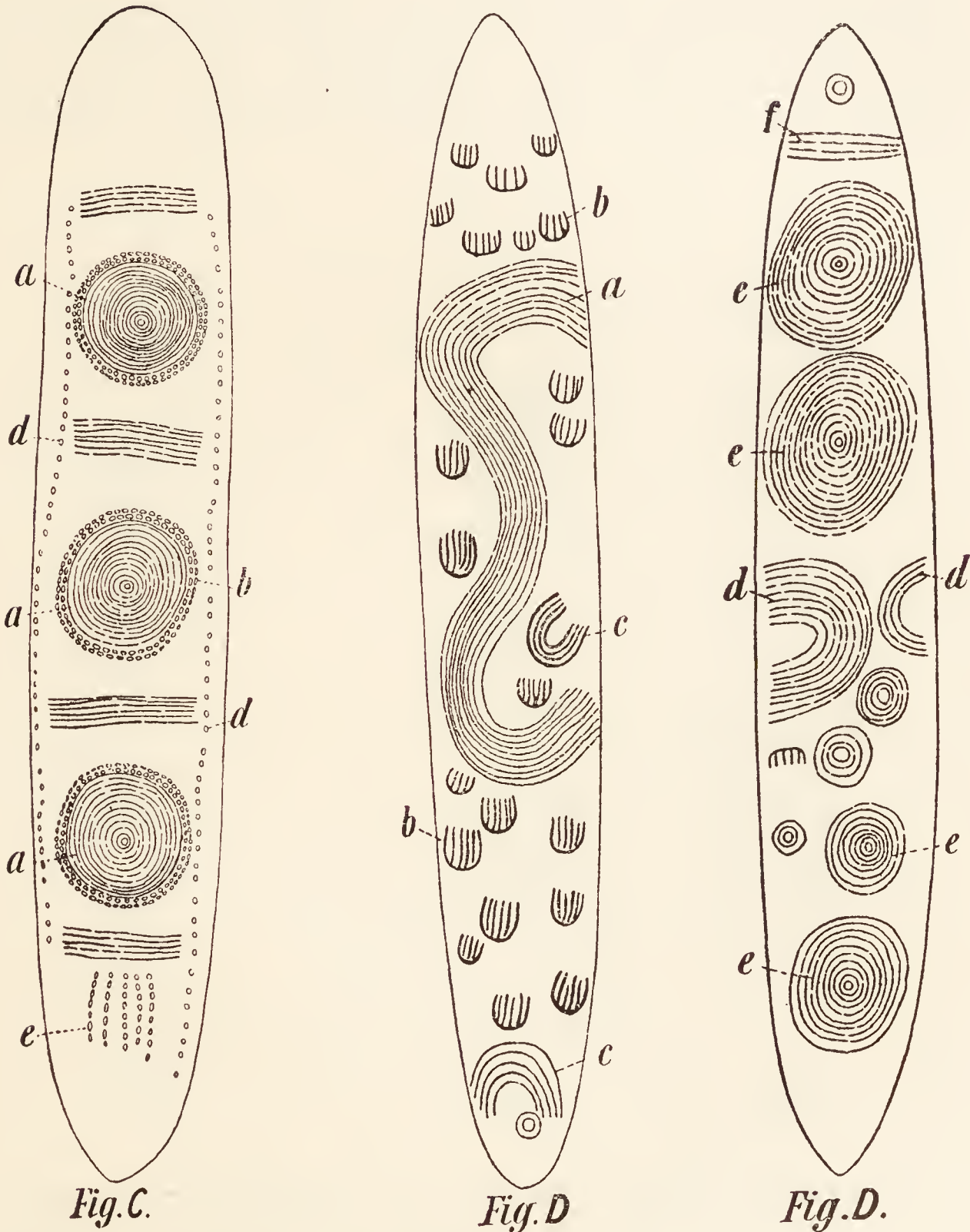
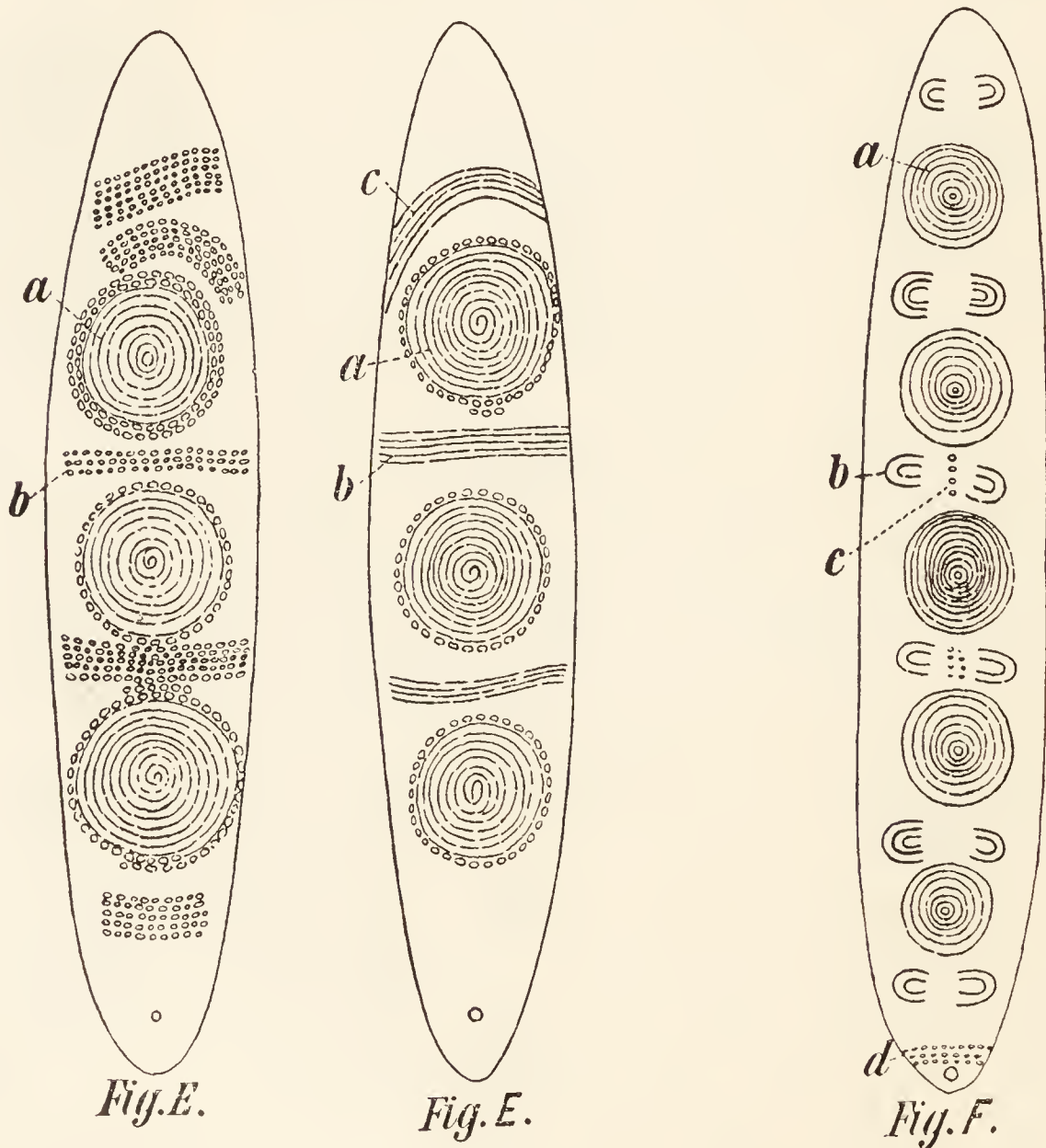


Fig. D represents the Churinga of an Udnirringita, or witchetty grub, man and is in the Emily Gap storehouse. The curved lines (*a*) represent a large grub, (*b*) represent a lot of grubs in a hole that is scooped out in the ground, and (*c*) represent a man sitting down squeezing the dirt out

of the animals before cooking them. On the reverse side the curved lines (*d*) represent grubs, (*e*) the eggs of various sizes, and (*f*) marks on the body of the grub.

Fig. E represents both sides of the *Churinga knanja* of the elder of two women who accompanied the men of the Akakia or plum-tree (*Santalum sp.*) totem in the Alchera



and were taken away to the north by a celebrated individual called Kukaitcha. The three series of concentric circles (*a*) represent frogs, the two outer series of dots represent the tracks of the women. The lines across the Churinga represent bark of gum trees, and the curved lines at one end (*c*) represent an old woman collecting frogs.

Fig. F represents one side of the *Churinga knania* of the

younger of the same two women. Here again the concentric circles (*a*) represent frogs, the semicircles (*b*) represent women sitting down opposite each other, while the dots between them (*c*) are the holes that they make, scratching the frogs out of the sand. It will be noticed that each of these Churinga has a hole bored through it, which means that they belong to a special set of women who are called Alknarinja. There is a curious tradition about these women. Every woman is allotted as a wife to some man, often before either of them is born. In this case an arrangement is made by two men that a son of one shall marry a daughter of the other. The children must, of course, belong to the proper intermarrying sections and, under ordinary circumstances, the marriage takes place as a matter of course. In the Alchera, however, a number of the Tidjanira or wooden Churinga, belonging to women, had holes bored in them. Such women were called Alknarinja, and the same name is now given to the women who are supposed to be their reincarnations. Alknarinja means a woman who "won't look," in other words she is not obliged to marry the man to whom she is allotted—she may do so if she likes to, but she may be "charmed" by another man and marry him, provided always he belongs to the section from which her husband lawfully comes. She is "charmed" by a man going out secretly into the bush and swinging one of the smaller bull-roarers called *Namatwinna*. *Nama* means grass, and *twinna* to hit, in allusion to the fact that, to make the little Churinga rotate and so tighten the cord and make it vibrate and produce the sound, it must first of all, when whirling, be struck on the ground. The sound is carried magically to her ears, and hers only; she becomes what is called *okunjepunna*, or much infatuated, and sooner or later joins the man. This is quite a recognised and lawful way of securing a wife, but it must be done secretly, because the older men are supposed to be angry if they know that

any younger man intends to charm a woman in this way.

It looks rather like a kind of revolt on the part of the younger men against the right exercised by the older men of taking possession of younger women, because a young woman secured by an old man can be charmed in this way.

Fig. G represents the *Churinga knanja* of an Echunpa or lizard man (the large lizard, *Varanus giganteus*), and is remarkable as being one of

only five Churinga of this shape, amongst the very large number used during the great Engwura ceremony, and amongst also very many others that I have seen, and handled, on other occasions. The central part of one side is occupied by five roughly parallel, sinuous lines that represent the long tail: the horseshoe-shaped lines indicate the ribs, and dotted lines, at one end, are the tracks of the animal.

On the other side (*a*) represents the shoulder of the animal; (*b*) the spotted black marks across the chest; (*c*) the large ribs, those, as the natives say, with much fat on them; (*d*) the smaller ribs, and (*e*) the spotted marks along the under surface of the animal. This Churinga is evidently a very old one; it is slightly broken at one end and, by constant rubbing, the design has become indistinct in parts.

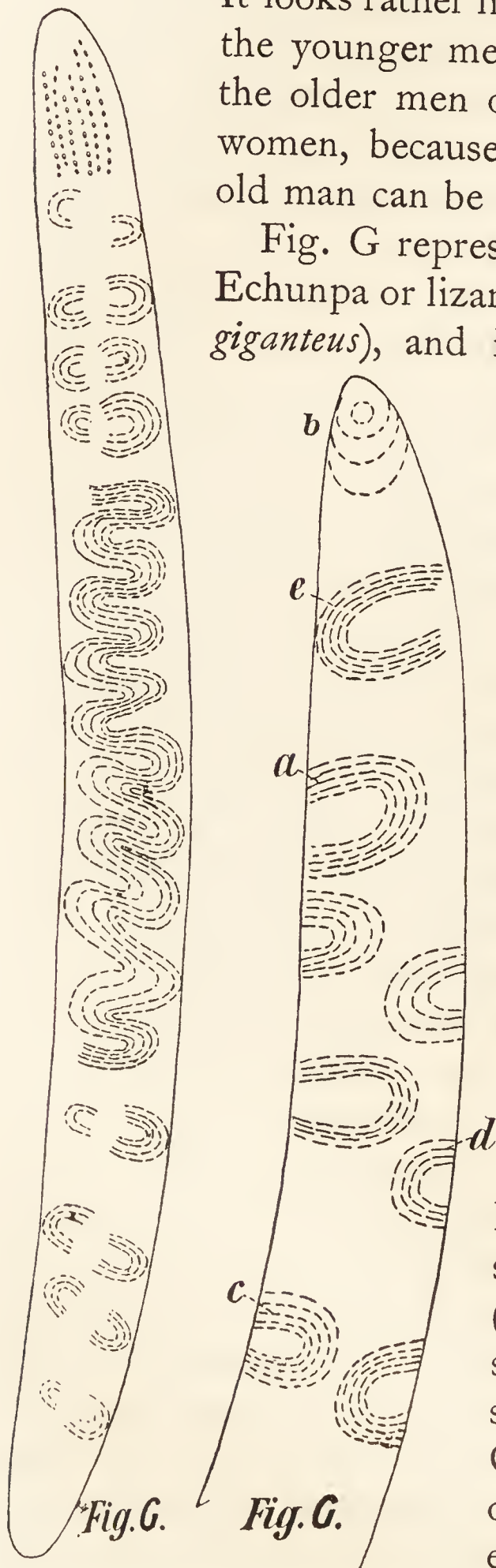
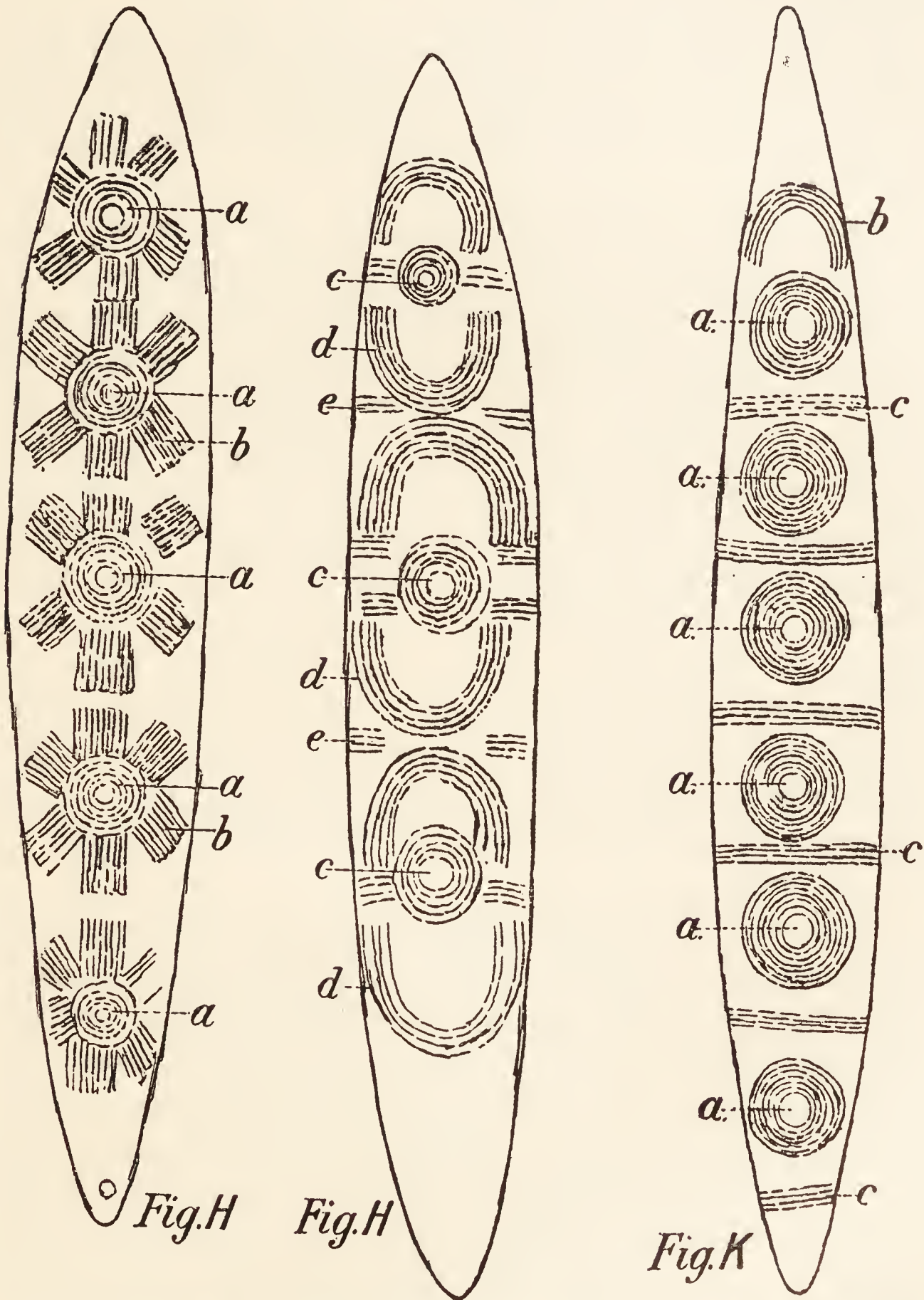


Fig. G.

Fig. G.

the design has become indistinct in parts.

Fig. H is the Churinga of a woman of the Injiparilla (a small fly) totem. The women collect this in large numbers,



rub the wings off and grind the bodies up. On one side the five series of concentric circles (*a*) represent the flies, the radiating lines (*b*) their tracks as they fly in swarms.

On the other side the circles (*c*) represent young women (*wunga*), the curved lines (*d*) women sitting down, the straight lines (*e*) their tracks.

Fig. K is the Churinga of an Akakia (plum-tree) man. The circles (*a*) represent plum trees, the curved lines (*b*) at one end men sitting down, and the straight lines (*c*) their tracks.

Amongst the Northern Arunta, and especially the witchetty grub men at Alice Springs, the storehouse of the Churinga, which is always under the charge of the head-man of the group, is called *Ertnatulunga*, but its more common name is *Pertalchera*. Its exact location is known only to the old men, no woman or child may go anywhere near it. The old women know, approximately, where it is and tell the younger ones. In the old days there were three such storehouses, clefts in the rocks, at Heavitree Gap near Alice Springs. Two belonged to the witchetty grub group and one to the wild dogs. If a woman wished to cross the Ranges, she could not go through the Gap but had to climb up one side of the steep mountain and down the other, which was an effectual method of preventing the women of camps on the north of the ridge from wandering into those on the south.

Many of the Churinga in the storehouses are the very ones that belonged to the old ancestors who went into the earth at that special locality, and they are most carefully watched over, periodically examined minutely and rubbed over with grease and red ochre. Where these Churinga came from originally, who they were actually made by and when, and by whom, they were gathered together, are questions that cannot be answered. Many of them are evidently of great antiquity. The designs that they once had carved upon them are, in some cases, completely obliterated by rubbing, and, as this is done by the hand only, some idea may be formed of the length of time that these Churinga have been

in the possession of the natives. Similar objects are met with in other parts of Australia. They are also found amongst savages in other parts of the world, as in South and West Africa and amongst certain of the North American tribes. Prehistoric objects, bearing so striking a likeness to them as to suggest that they have some relation to Churinga, have been unearthed in Europe. It is, of course, possible that these latter may have been of the same nature as the Australian Churinga, but in the absence of direct evidence it is far from safe to assert that such was the case. There can be no doubt, however, that objects of the Churinga, or bull-roarer, type were at one time widely associated with sacred ceremonies and beliefs. Possibly even, the bull-roarers, that are now playthings for children in Europe, are surviving relics of a far past time when children were the very last who would be allowed to see and use them.

CHAPTER XII

THE ENGWURA CEREMONY

By good fortune the Arunta people decided to hold the greatest of their ceremonies, called the Engwura, at Alice Springs during the latter part of 1895. This, fortunately, fitted in with the University Long Vacation in Melbourne, or rather was made to do so, with the help of leave of absence, readily granted by the University, which was necessary for me to be able to see the whole ceremony, which lasted over four months. In those days there was only a six-weekly mail running between Oodnadatta and Alice Springs. The season was a bad one south of the Macdonnell country; both food and water were scarce. At different places along the overland track the mail man was supposed to have small mobs of horses waiting for him from which to secure relays as he travelled along. These were under the charge of black boys who were employed to "shepherd" them, that is, to look after them in the bush, and have them "yarded," which means brought into a small space, roughly enclosed with bushes and dignified with the name of "yard," at certain times when the mail man was due to pass. The natives, of course, were perfectly innocent of any knowledge or appreciation of time, so far as keeping an appointment was concerned, so each of them was provided by the mail man with a stick that had a number of notches marked on it to indicate the days, or rather, what was more important to the boy, the "sleeps," that would elapse between the time at which he was given the stick and the day on which he was to have the horses brought in and yarded ready for the mail man.

It had been a very dry season and there was very little surface water. Grass for the horses was scarce and, at night-time, though close-hobbled, they wandered far. I was the only passenger. The back of the buggy was piled with mail-bags, amongst which I devised a sleeping-place, not to be despised during the day-time, when, hour after hour, under the blazing sun, we toiled along through the withered scrub, over what seemed interminable miles of sand-hills, across dried-up, glistening clay-pans, fissured with a network of cracks, and ploughed our way through and over sandy river courses, bordered with gum trees that threw only thin shadows across the dried-up water-holes. The flies were a perfect pest, from early morning till late in the evening; how they managed to live and where they got their food, except from the bodies of stray cattle that had died of thirst, was a problem. All day long the sun shone in a cloudless sky. We watched it, day after day, with wearying monotony, rise in the east above the scrub or level plains, mount northward, until, at midday, we could stand on our shadows, and then, only too slowly, it sank in the west and brilliant daylight gave place to a rich afterglow. Fortunately the nights were cool, with, often, a dew that for an hour or two in the morning freshened things up a little, but as soon as the sun rose it dried up.

The buggy was not exactly a well-built mail coach, and, after we had jolted along for a week on the old overland track that I had traversed twice before, the rough, stony track began to tell upon it, and odd bits of fencing, or discarded telegraph wire and thongs of cow-hide, were pressed into the service, to keep the wheels together and the spokes from tumbling out. We simply went on all day long, camping for the night wherever we happened to come to, long after dark; in fact it was usually well on towards midnight before we came to a halt, unharnessed and hobbled the horses, lighted a camp fire, boiled a billy of tea, and then stretched

ourselves out on the ground in our rugs to enjoy a final pipe. Jack Fountain, the mail man, was a noted whip, full of resource, as indeed he needed to be along such a far-back track, where in those days, between Oodnadatta in the south and Alice Springs in the Macdonnell Ranges, he only passed one telegraph station—Charlotte Waters—and one outlying cattle station at Crown Point on the Finke River. I had been looking forward to a comfortable meal and quiet evening there with my old friends Mr. and Mrs. Alec Ross, who were then living alone in this remote spot, but it was midnight before we reached the little station, so we just turned the horses out and lay down in our rugs without even troubling to light a fire. In the morning, after breakfast with Mrs. Ross and a very pleasant and only too short spell at the little station, with its comfortable homestead, we harnessed up—that is, Fountain and the black boys did—on a slope amongst the gum trees bordering the bank of the Finke River. The horses were for once decidedly fresh and one of them, at least, had never been in harness before. As soon as we were seated and the boys who held the leaders' heads were told to let go, the whip cracked and immediately there was a scene of wild confusion. The leaders turned round so as to face the pole horses, and plunged and reared until it was a marvel that the whole harness did not fall to pieces. However, only two or three traces and odd bits gave way and, after these were set right and mended, we essayed another start with the same result.

Nothing whatever disconcerted Fountain and, simply by a masterly use of the whip, he at last started the team. First of all we went round in a circle, performing wonderful feats in the way of missing the gum trees and then off we went, at full gallop, through the scrub, heading for the river bank. Fountain advised me to hold on, which naturally I was trying to do as hard as I could, but it was

not easy, because the bumping was phenomenal. As we came near the river bank, crashing through the smaller scrub and dodging the trees, I saw, in front of us, a sudden jump of three or four feet straight down into the river bed. How the horses managed the jump in safety I do not know, but the whip cracked, first to one side, and then to the other, picking out effective spots with unerring accuracy and, before I knew what had happened, the trap had gone down plump into the soft sand. Before the horses realised where they were, the whip was cracking again and they were hard at work, ploughing their way through the river bed, dragging the buggy across. By the time they had climbed the opposite bank they probably realised that they had a master whip behind them and, except every now and then, they went on quietly enough. All the day before reaching Ooraminna we had toiled along slowly. The horses were dead beat—one of them had been in harness for more than two hundred miles—and, as darkness came on, we simply crawled along. Hour after hour passed by and the track, at best only a poor one, became more and more indistinct. Fountain walked ahead, while I followed him with the buggy, watching where he went. Amongst the hills the darkness became intense, but we knew that we could not be far from Ooraminna and, a little after midnight, to my delight, we saw ahead of us the light of a camp fire, the size of which showed that it belonged to a white man. Gillen had come out from Alice Springs to meet me and, in a very short time, we were comfortably settled in camp and spent what remained of the night discussing our plans and future work amongst the natives. Early in the morning we drove on across the plains, which were dotted over with large, red kangaroos. There were scores of them feeding quietly and, as we drove along, they stood up on their hind legs, gazed complacently at us and then hopped away across the level plain. The same afternoon we started work

amongst the natives, who had gathered in from far and wide and were already busy with the initial ceremonies of the great Engwura. We knew that it was the most important of their sacred ceremonies, but had little idea that it would keep us busy, and occupy the whole of our time, for the next four months. It began in the middle of September and was not finished until well on into January.

Travelling through the Arunta country, you meet with group after group of natives, each inhabiting a certain very definite locality. The groups vary in size, and so does the country occupied by them, indeed the two things which strike you about them are, first, their very local character, and, secondly, the fact that each one of them is supposed to be especially associated with some material object, most often an animal or plant, which is spoken of as the totem of every individual member of that group. For example, Alice Springs is the centre of the witchetty grub group, though, at the same time, members of other groups are to be found amongst the natives living there. When, but only when, you get to know them intimately, you find that each group has a number of very quaint ceremonies that only the fully initiated men know about, and perform on special occasions. These ceremonies, or at least a large number of them, are associated with what we should call the mythical ancestors of the group, though to the natives they are very real and by no means mythical; in fact, living amongst them there are always individuals who are supposed to be the reincarnations of certain of these old-time ancestors, whose names they bear. In their sacred storehouses they carefully cherish the wooden and stone Churinga, or bull-roarers, that these ancestors are supposed to have carried about with them in the Alchera, when they wandered over the country. The very existence of these sacred objects is quite sufficient proof to an Arunta savage of the former existence of their owners.

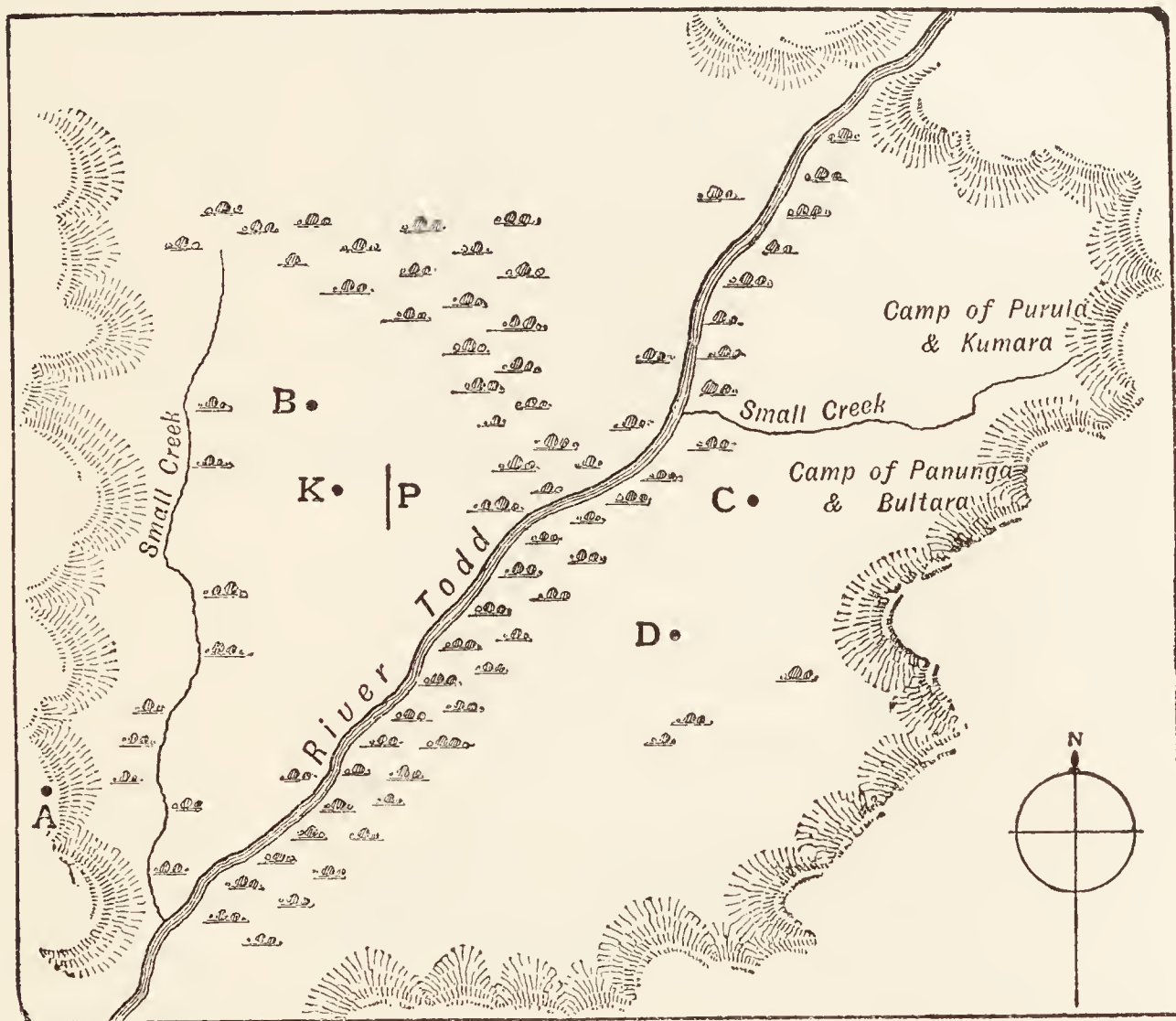
Every local group has its head-man, usually called Inkata, though at Alice Springs he is known as Alatunja. He has charge of the storehouse, and no one may go to it, or take anything from it, without his permission. In the case of the Alice Springs group of witchetty grub people, there are, or used to be, three storehouses—one in Emily Gap and two in Heavitree Gap, one on each side. The one at Emily Gap contains a sacred stone representing the adult insect, and large numbers of small ones representing its eggs. The two at Heavitree Gap contain a number of stone and wooden Churinga, of the usual shape, some of them so old that the pattern, that was long ago incised on them, has been obliterated by constant rubbing, because every now and then, when sacred ceremonies are being enacted, some of them are brought on to the ceremonial ground and reverently rubbed with grease and red ochre, while the older men tell the younger ones the names and deeds of those to whom they originally belonged (Fig. 180). In this way the unwritten history of the tribe is handed on from generation to generation. Each ceremony represents some episode in the life of an ancestor, and their number seems to be endless.

When it is proposed to hold such an important ceremony as the Engwura, the head-man of one local group first of all consults with the head-men of one or two other groups. In this case the witchetty head-man of Alice Springs discussed the matter with the head-man of the Achilpa, or wild-cat totem group, at a place called Imanda on the Hugh River, and it was decided to call the natives together at Alice Springs. In order to summon them, a specially accredited messenger was sent out. He carried, as evidence of his *bona fides*, a few Churinga, which, as well as himself, are called *Ilchinkinja*, a word compounded of *ilcha*, hand, and *inkinja*, to lift up, so that the real significance may best be rendered by the term "beckoning hand." A messenger

such as this can travel from group to group with perfect safety. The *Ilchinkinja* man bears a summons that no native, in the normal condition of the tribe, dare disobey. He imagines that, if he should venture to disregard the summons thus received, he would be sure to suffer some evil. The spirit of the old ancestor, who once carried the Churinga with him which the messenger now carries, is still closely associated with it and powerful to work evil magic against him if he neglects the call. The *Ilchinkinja* man passes from group to group, delivering his message. In this case he travelled long distances and it took a long time, two or three "moons," for some of the parties to reach Alice Springs. In order to fill in some of the time between the arrival of the early contingents and of those who had to travel long distances, the evenings were occupied with the performance of an ordinary corroboree called *Atnimokita*. As is usual on such occasions, it was decided to hand it over, as a matter of courtesy, to the head-man of the most important visiting group, who, in the future, would possess the right to perform it. This occupied ten nights, by the end of which time most of the visitors had arrived at Alice Springs.

The real part of the ceremony now began in earnest. The old men had already selected a site amongst the hills where the performances could be carried out without being seen by strangers or by women and children. The accompanying plan shows the general arrangement of the ground, which was supposed to be an exact reproduction of the one on which the original Engwura was carried out in the Alchera (Fig. 162). It occupied a flat amongst the hills, across which the River Todd, or rather its dry bed, ran from north-east to south-west, dividing it roughly into two halves, hidden from one another by the trees and scrub bordering the river. The main ceremonial ground was on the west; the camps of the visitors, to which all women

and children were strictly confined, were on the east side, none of them ever venturing to cross the river. A small creek ran across this eastern part of the flat, but, as of course it contained no water, and was little more than a mere runnel, it formed a symbolic rather than an effectual line



Walker & Boutall sc.

FIG. 162.—PLAN OF THE ENGWURA GROUND.

A, storing-place of Churinga of the Panunga and Bultara; B, storing-place of Churinga of the Purula and Kumara; C, spot where the Panunga and Bultara women stood when throwing fire over the *Illpongworra*; D, spot where the Purula and Kumara women stood when throwing fire over the *Illpongworra*; P, the position of the *Parra* mound; K, the position of the *Kauava*.

of division between a northern and a southern part of the camp. It served, however, to mark a primary division of the tribe. To the north of it, the Purula and Kumara, and to the south, the Panunga and Bultara camped. It was also noticeable that the former, from choice, camped on the flat, the latter on the rising ground—a feature of very

considerable interest, and one that is to be noted whenever the camping ground lends itself to this arrangement. This curious feature served to bring more strongly into relief the existence, and the marked separation, of the two primary moieties of the tribe. Within each division there was a still further division of the Mia-mias. Those belonging to the men from the south camped at the southern end of their part, those from the north at the northern, and so on through the various localities. That is, in such a camp as this there is a primary division of the moieties, and within this a secondary division, based on locality. Flanking the hill on the western side, a small creek ran from north to south in a channel, cut deep enough to hide from view any men decorating themselves in preparation for ceremonies, for which it was constantly used. All the Inkatas, or head-men, had brought with them, from their storehouses, bundles of Churinga. Two special platforms, called *Tanunda*, made of boughs, were built to hold these. One of them (B) was on the flat at the north end, the other (A) was on the hill-side at the south end. The first was made of four upright posts, with boughs on the top, forming a table on which the Churinga of the Purula and Kumara men were laid, hidden from view by a thick layer of leafy twigs (Fig. 163). The second was built in a Mulga tree on the hill-side at the south end and contained the Churinga of the Panunga and Bultara men. The relative position of the two *Tanundas* was the same as that of the camps of the two moieties. One of them was under the charge of a Purula, the other under that of a Bultara man, and without their consent no Churinga could be removed from its store place, which for the time being was sacred ground. Once, a few of the younger men began to quarrel near the Purula man's *Tanunda*, but he sternly ordered them away, because no fighting or quarrelling might take place anywhere near the sacred Churinga.



B.S.

FIG. 163.—OLD MEN IN CHARGE OF THE STORE OF CHURINGA BELONGING TO THE PURULA AND KUMARA, DURING THE ENGWURA CEREMONY. THE CHURINGA ARE STORED ON A PLATFORM CALLED TANUNDA.



B.S.

FIG. 164.—GROUP OF OLD MEN WHO ACTED AS LEADERS AND TOOK CHARGE OF THE YOUNGER MEN DURING THE PERFORMANCE OF THE ENGWURA.

Everything in native camps is governed by custom and, on this occasion, the supreme control lay in the hands of one man, who apparently, without any trouble, or the slightest hitch, governed the whole camp, comprising more than one hundred full-grown men, apart from women and children, who were taking part in the ceremony. With him were associated some eight other older men, all of them head-men of different local groups. The proper leader of the Engwura was really an Achilpa, a wild-cat man, the head of the Imanda group, but he was very old and had requested permission to hand on his duties to a younger brother, called Arrai-iga, of the emu totem. In his hands lay the final decision on all points, but there was what we used to call the "cabinet," which consisted of himself, the old Achilpa man, Intwailiuka, the head-man of the witchetty grub totem at Alice Springs, and another old head of an emu group. In addition to these three, there were five or six other old men, each of them the head-man of a local totem group, who were often consulted. It was very interesting to watch the proceedings. The leader with his two chief colleagues would get up from amongst the men with whom they were sitting and, without a word being spoken, such others as the leader invited to come, rose and followed him as he walked away to a secluded spot where they very gravely and deliberately discussed matters of procedure. When the cabinet meeting was over, the leader gave his orders and everything proceeded with perfect smoothness. The younger men had no say in the matter, and the natural effect upon them was to heighten their respect for the old men; more especially as, on an occasion such as this, they realise that in course of time it will come to their turn to be leaders and to be respected and looked up to by the younger men, just as they themselves now looked up to, and respected, the older men (Fig. 164).

When the head-men of the different groups had reached

Alice Springs and the visitors had settled down in their camps, the former went to the ceremonial ground and, on its eastern side, made a mound of earth called Parra. It ran north and south, was thirty feet in length, two in width and one in height, and was supposed to represent the track of the great ancestor of the Achilpa, or wild-cat totem, who, in the Alchera, had been sent out by Numbakulla to deposit Churinga of different totems at places that he had decided upon as the local centres of the latter. It was ornamented along its whole length with a row of small, leafy twigs that were supposed to represent those carried by men who, in the Alchera, were passing through the Engwura ceremony. Close to the Tanunda on which the Purula and Kumara Churinga were stored, Gillen and myself had a small bough wurley, and in this we spent our days and, very often, our nights also. It was enclosed on three sides, the southern being open, so that we commanded a general view of the Parra and ceremonial ground, over which we wandered freely, quite unheeded by the natives. Many were the talks we had in this with the old men, sheltered from the scorching rays of the summer sun, they squatting on the ground, we sitting on the edge of our rough bunks, made of four posts and sacking. Even now, when handling, two thousand miles away, a well-greased and red-ochred native weapon, or head-ring, its peculiar scent carries me back to this old wurley on the Engwura ground. Every race of human beings has apparently a special odour of its own; certainly the Australian savage has, and there were times on the Engwura ground when it was rather strong, and, in our wurley, I often noticed that it was strongest when the men got excited, either during the performance of ceremonies or when they were telling us of the deeds of their mythic ancestors; in fact it used to get stronger and stronger as the men got more and more excited.

The Engwura is really the last of the initiation ceremonies. The word is compounded, in part, of the word *ura*, which means fire, and indicates the fact that certain fire ceremonies form an important part of the series. They come at the end, and when a man has passed through these fire ordeals, he arrives at the status of *Urliara*, that is, he is regarded as a fully initiated man, entitled, not only to take part in all the various ceremonies of the tribe, but also to take charge of younger men who are passing through them—a status of some importance, because these younger men are, for the time being, under his control and must provide him with food. The natives say that the Engwura has the power of strengthening all who pass through it. It imparts courage and wisdom, makes the men more kindly disposed and less quarrelsome—it is certainly regarded as a means of wiping out all quarrels up to date—it transforms them indeed into *atua mara oknirra*, words that mean “men, good, very or great.” The word *mara* is translated by our English word “good,” but, of course, this must be taken in the native sense of the word, which is not always identical with our own.

Many of the customs of these savages display a good deal of organising ability and forethought. Unless, for example, some special scheme were devised, the commissariat of a large party of individuals, such as this one, that met to perform the Engwura, would present great difficulties. In the first place, the holding of it, both as regards time and place, must be a matter of mutual agreement, after consultation between, perhaps, two or three Inkatas, that is, the head-men, of important local groups. It can only be held at a favourable place and time. A sufficient supply of food and water must be available. It would, for example, owing to the nature of the season, have been impossible to have held this special Engwura anywhere in the tribal country south of the Macdonnell

Ranges. We did not know it at the time, but, many years later, I learnt that there are several forms of Engwura, that vary very much in importance and are associated with different local totemic groups. There is one, for example, belonging to the Irriakura (a plant-bulb) totem that only occupies a day, and another of the Latchia (a yam) totem, only two days. The one that we saw is much the most important and lengthy of all. It was actually under the control of, and is regarded as belonging to, the Achilpa (wild-cat) totem groups of Undiara and Urapitchera, on the Finke River, and Imanda on the Hugh River, but the Erlkintera (white bat) and Unchichera (frog) groups of Imanda took an important part in it. They are closely associated locally with the Achilpa people of Imanda, and it was their Inkatas who were consulted before it was finally decided to hold it, on the suggestion of the Inkata of the Udnirringita totem group of Alice Springs, in the country of the latter. It was, in fact, by far the most important and lengthy of all the Engwuras, extending, in all, over four months, and was supposed to be a reproduction of the Engwura as arranged in the Alchera first of all by the great *Inkata maraknirra* of the Achilpa totem.

When it began we had no idea of its real nature, beyond the fact that, in some way, it was very closely associated with the totems and that there was some form of fire ordeal connected with it. We soon found out that the main feature, for the first two months and more, was the performance of a series of ceremonies, one and all of which were concerned with various totems. Not a day passed without one of them, and sometimes there were as many as six during the twenty-four hours. Ordinary corroborees are always held after dark, but these sacred ceremonies are performed at any time, a favourite hour being just about sunset. Often, when anxious to get a photographic record, I used to chafe at the irritatingly deliberate way in which

the decorating was carried out, but, of course, the whole thing had to be done exactly as it had been from time immemorial by their ancestors. Fortunately, a good number were performed in daylight; in fact there were four favourite times—about noon, sunset, from ten to eleven at night, or even about midnight, and just about daybreak. Sometimes during one consecutive twenty-four hours they would be performed at all these times, though it must be understood that there were no such things as fixed hours, those given are only approximate. If you ask a native at what time anything took place, or is going to, his answer will take the form of pointing to the position in the sky that the sun occupied, or will occupy, at that particular time.

Each ceremony was associated with some particular totemic ancestor and spot and was called a *Quabara Undattha*. The first word is suggestive of the one of which, in the eastern part of the continent, corroboree is the Anglicised form, but, in the Arunta, these dances are called *Altherta*. *Undattha* means bird's down, and its use is due to the fact that this material is used for decorating, just as grass-seed down is, in the ordinary corroboree. One ceremony, for example, was called the *Quabara Irriakura* of Umbanjum—that is, a ceremony of the *Irriakura* totem of a place called Umbanjum; another, the *Quabara Udnirringita* of Underga—that is, a ceremony of the *Udnirringita* totem of Emily Gap; another, the *Quabara Unchichera Imanda*—that is, a ceremony of the frog totem of Imanda, and so on. Further still, each ceremony was usually associated with some old totemic ancestor and represented an episode in his life. Every ceremony was the property of some special individual who had received it, by inheritance, from his father or, sometimes, from the latter's brother, if he had no son. No woman, of course, owns any of these ceremonies. After the performance,

the younger men are called up and the old men tell them who it refers to and what it means. The men who perform the ceremonies are supposed, for the time being, to represent the ancestors and to act as they did and be decorated as they were in the Alchera. The whole thing is purely symbolical and the ancestor is rarely represented as doing anything more interesting than looking around, wriggling his body in an extraordinary way, or perhaps eating something—as often as not his own totemic animal or plant. Their interest and importance lie in the fact that they constitute, amongst savages who have not developed even the simplest form of written language, a record, or at least a supposed one, of the past history of the race as represented in the doings of its ancestors.

The natives are intensely interested in the performance of these ceremonies and it is regarded by the younger men as a mark of favour to be asked by the owner to take part in one—though it is not altogether a disinterested matter on the part of the old man. One of the most striking features of any such ceremony as the Engwura, when older men are showing younger ones anything of a sacred nature, is that, in the first place, the younger men are supposed to be very abstemious and self-denying in the matter of food, especially meat. Every old man, at such a time, has a few of the younger ones immediately under his charge. He is what is called their *Abmoara*, and every day a party of these young men is taken out in the bush, in charge of one or two old men, for the express purpose of hunting for food that they must hand over to their elders. Sometimes these parties will be out for two or three days, with results most beneficial to their guardians. There may, of course, be occasions when, in a secluded spot in some deep ravine, out of sight of the old men, a fire is lighted and one or two of the younger men, who must often be very hungry and exhausted also by loss of blood used during the cere-



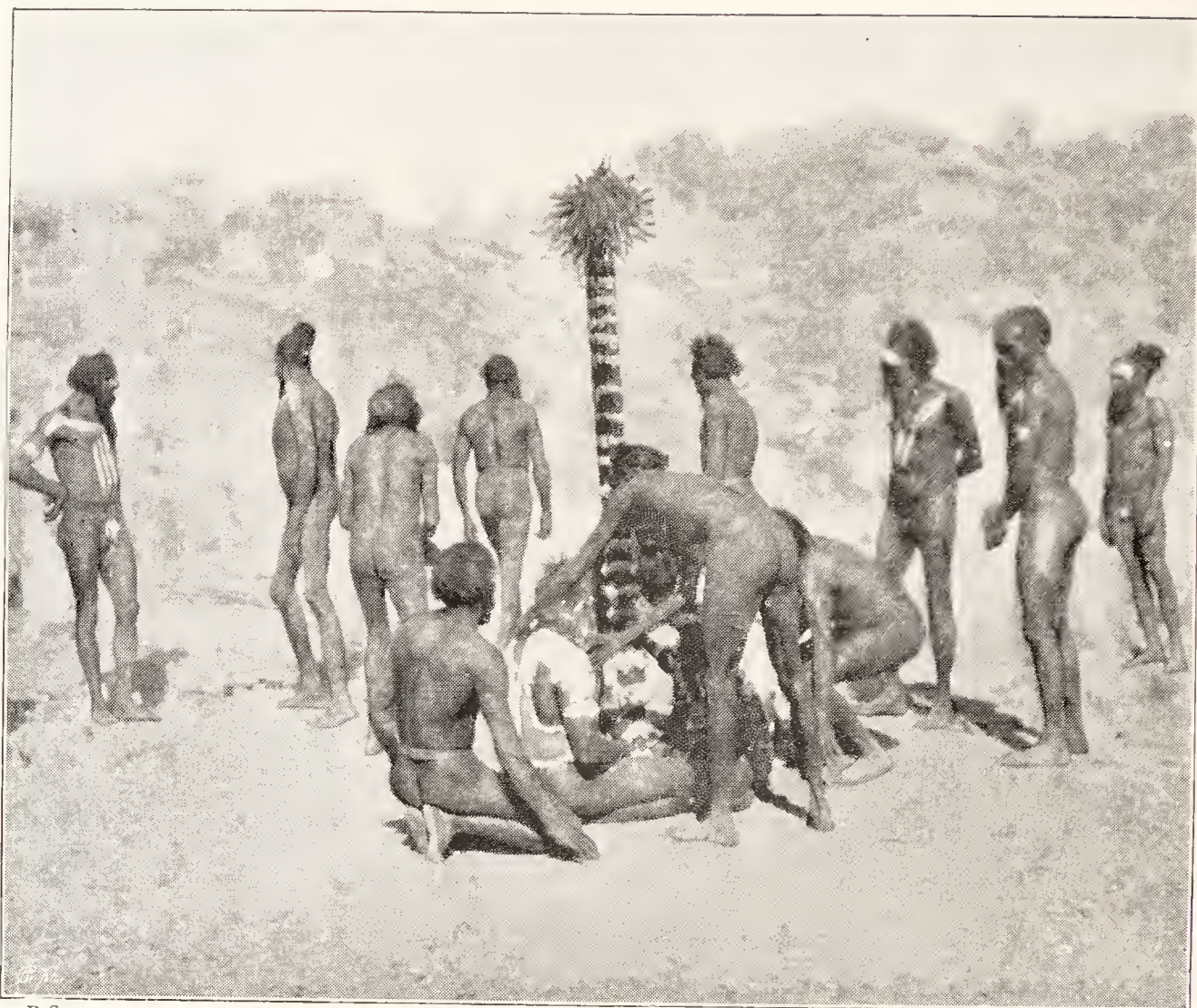
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FIG. 165.—CEREMONY OF THE PLUM-TREE TOTEM.
The performer is supposed to be eating plums.



B.S.

FIG. 166.—VISITORS RUNNING ON TO THE CEREMONIAL GROUND.



B.S.

FIG. 167.—CEREMONY OF THE WILD CAT TOTEM.
Showing the laying on of hands to cause the performers to stop.



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FIG. 168.—PERFORMANCE OF A SACRED CEREMONY OF THE SUN TOTEM,
ARUNTA TRIBE.

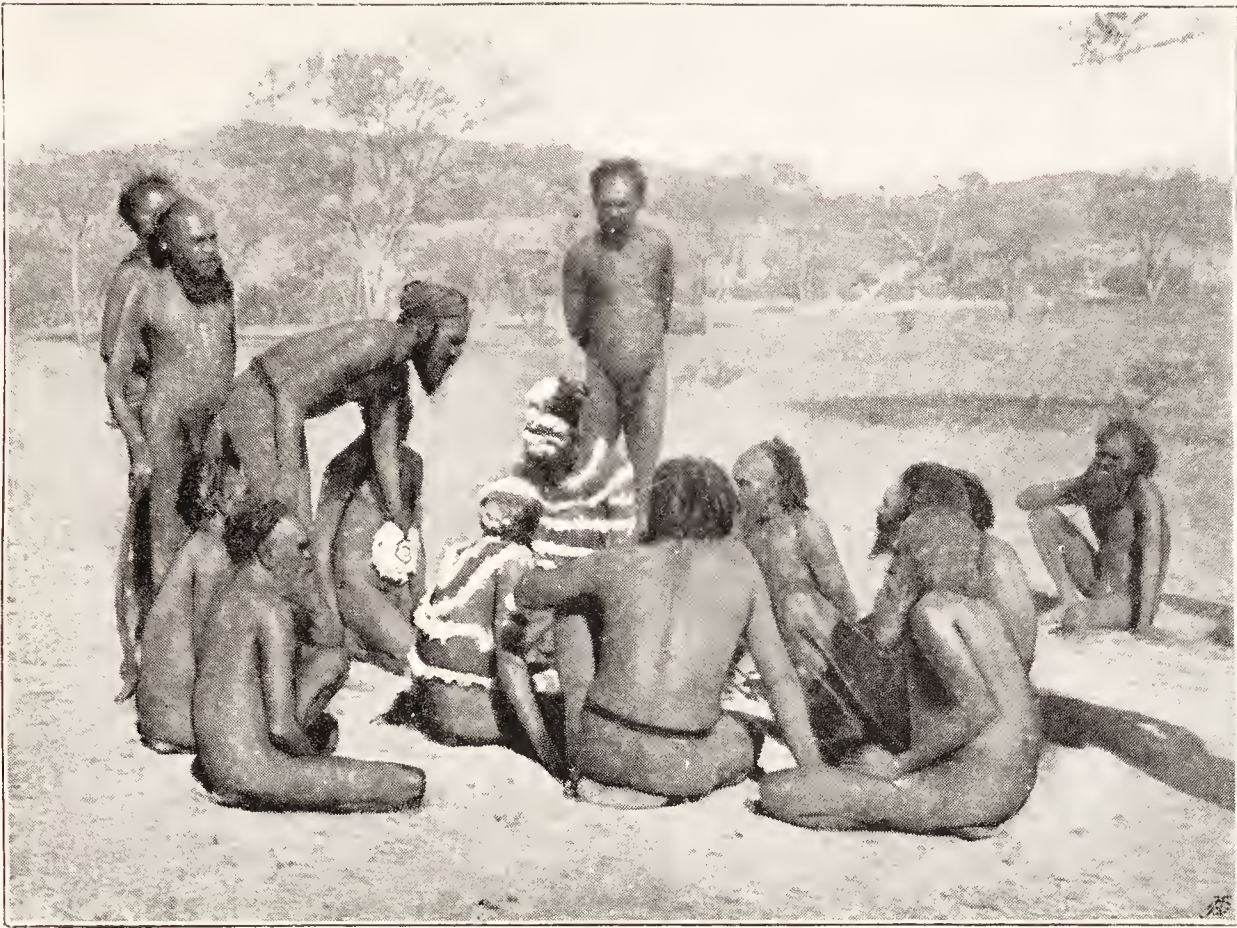
monies, make a surreptitious meal off some bird or wallaby that ought, by rights and tribal custom, to have gone to feed an older man. It is not, however, likely that this takes place very often. For one thing, the fear of evil magic which would follow the breaking of any tribal custom has a very strong hold on the native mind; and, for another, the old men are very keen of observation and would soon detect anything like a serious discrepancy between the actual and, what they think should be, the proper supply. The whole arrangement is a very ingenious one, from the point of view of the old men, because they are provided with food and, at the same time, the three or four young men who hunt for them are prohibited from eating much under the penalty of suffering from evil magic.

The preparation for each ceremony occupied anything from two to five or even six hours. After the old leader had determined the particular ceremony to be enacted, the performers retired to a secluded and also shady spot in the little creek, for the weather, as it was well on into the summer, was very hot. They were always accompanied by a few other men, all of them, as a general rule, belonging to the same half of the tribe and often to the same locality, as the owner of the ceremony, though this was not by any means always the case. With the utmost deliberation, each man opened his little packet of belongings. The contents were always very simple—bird's down, red and yellow ochre, white pipe clay, gypsum and, in rare cases, wad, a manganese ore used for rubbing on the skin to produce a pearl-grey colour.

The preparations for a performance by a Bultara or Panunga man were always made at a spot in the southern part of the creek, and those for one by a Kumara or Purula man in the northern half; that is, each party was near its own store of Churinga.

It would be tedious to attempt more than the merest

outline of the sacred ceremonies. We never knew what was coming next and were obliged constantly to be on the look-out. Fortunately, we had the free run of the camp and, of course, were careful never to interfere in any way, so that things went on in the normal manner, just as if we were not there. In the simplest performance, such as that represented in Fig. 165, there was only one performer. In this instance he represented a man of the plum-tree totem, a celebrated ancestor named Kukaitcha. It belonged to the head-man of the Alice Springs group, and he invited one of the younger men, who was a tribal son of his own, to perform it. He himself was a Bultara and therefore his son was a Panunga. The materials were opened out and, while the red ochre was powdered and mixed with down, the singing began. It consisted simply in a constant repetition of the words "the sand-hills are good." When all was ready, the head-man's eldest son went over to where the selected performer sat, rubbed his forehead against his younger brother's stomach and then embraced him. This over, the latter was embraced by one of the older Bultara men, who also stood to him in the relationship of father's brother, that is, tribal father. The meaning of all this was that it was the right and proper thing for him, a young man, at first modestly to decline the honour of performing, but, when he had been thus embraced, no choice was left him and he must no longer refuse, which, needless to say, he had no intention of doing, but savage etiquette prescribed this little bit of polite pretence. The young man's actual father then opened a vein in his arm, so as to secure blood enough to act as a fixative for the down used in his decoration. By means of twigs and stalks, bound tightly round and round on to the performer's head, the old Inkata began to make a remarkable head-dress that was supposed to represent a great top-knot of hair, on the head of the old Kukaitcha. While it and the upper part



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FIG. 169.—CEREMONY OF ATNITTA ULPAILIMA.

Touching the stomachs of the men with some object used during the performance.



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FIG. 170.—PREPARING FOR A CEREMONY OF THE FROG TOTEM OF IMANDA.



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FIG. 171.—CEREMONY OF THE FROG TOTEM OF IMANDA.

of the man's body were being decorated with alternate bands of red and white down, the men sat round singing of the top-knot of the old ancestor Kukaitcha :

“ Yai yai kukai
Ul lal arai
Yai yai kukai
Yai yai Alchera
Mal arai.”

It was just sunset when the decorations were completed and the performer came up out of the bed of the creek on to the centre of the ceremonial ground near the Parra. At the same time, the arrival of a fresh contingent of visitors from the south was announced. In accordance with etiquette, they had remained seated on the side of the river opposite to the ceremonial ground, not venturing to come on to the latter until they were invited, their women-folk and children going to the women's camp. To welcome them, a party of men armed with spears, shields and boomerangs ran across to where they were seated and, yelling at the top of their voices, danced round and round them, with a peculiar high-knee action like an exaggerated “goose-step” always adopted on these occasions. To anyone unacquainted with the ways of the natives it looked much more like a savage threat to exterminate them, root and branch, than a hearty welcome to a strange camp and country. However, everyone knew what it meant and, suddenly, the welcoming party wheeled round, crossed the river and came running up the bank. Without stopping, they threw their weapons amongst the bushes and ran circling round and round the performer, shouting loudly “Wha! Wha!” (Fig. 166). The performer, who was squatting on the ground with his legs folded under him, in the usual attitude adopted during these ceremonies, jumped about slightly from side to side, quivering and wriggling his body in a remarkable way. The whole

performance only lasted three minutes. To indicate its close, two men sat down, one in front of and one behind the performer, a third bent over him, and the three then placed their hands on his shoulders and he ceased from wriggling (Fig. 167). The shouting and running round are called *Whakutnimma* and are supposed to stimulate the performer to increased exertions of his movements (Fig. 177). After a pause he got up and embraced the old men, one after the other. This little bit of after-play is always enacted by the Arunta. It is called *Atnitta* (stomach) *ulpailima* (to soften), and its meaning is that the old men become so excited, when they see the ceremony that represents the old ancestor, that their insides get tied up in knots, which can only be softened and undone by magic "virtue" which passes into them either from the body of the performer, who for the time being represents the ancestor, or from some object, such as the head-dress, which is closely associated with him and is itself regarded as sacred for the time being. In many cases it is customary to press such an object against the stomachs of the old men. In the ceremony of the sun totem (represented in Figs. 168 and 169), a disc-shaped object, ornamented with rings of red and white down and supposed to represent the sun, was pressed against the stomach of each of the old men.

Another ceremony, which was decidedly striking on account of its really extraordinary decorations, was associated with the frog totem. Only one man performed, but his decorations were so elaborate that their preparation occupied between five and six hours (Fig. 170). The ceremony belonged to the leader of the Engwura and he himself acted as performer. It was really associated with the frog totem, whilst he himself was an emu—an instance of how a man may inherit both Churinga and ceremonies associated with them, that belong to a totem other than his own. It was evidently considered a very important ceremony,



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FIG. 172.—IRUNTARINIA CEREMONY OF THE WILD CAT TOTEM OF APERA-NA-UNKUMNA—TO ILLUSTRATE ONE FORM OF NURTUNJA.



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FIG. 173.—CEREMONY OF THE UNJIAMBA TOTEM OF ARAPERA—TO ILLUSTRATE ONE FORM OF NURTUNJA.

because, during the preparations, though they really only differed from others in being more elaborate, all the younger men were ordered off the Engwura ground and spent the greater part of the day in the bed of the Todd River, under the charge of the head-men of the Alice Springs group. This was probably done to imbue them with a proper sense of the power and importance of the old men, and especially of the leader of the Engwura who was performing.

With the aid of twigs and grass stalks, bound round and round with endless yards of human hair string, a large, almost bun-shaped helmet was built up on the performer's head while he sat on the ground. It was then decorated with alternate circles of pink and white down. The whole of his face was covered with down, and a mass of pink spots, each of them encircled by white, completely hid every part of his skin from view, back and front, as far down as his waist. Passing across his thigh was a series of white bands. Whilst some of the older men were busy decorating the performer, one or two others were ornamenting a large wooden Churinga of the frog totem, five feet in length, with rings of red and white down. Its upper end was tipped with a bunch of owl feathers. Others were preparing eight sticks, each two feet long, with a tuft of black eagle feathers tied to one end. When these were ready, they took about twenty strings of opossum fur string, each about two feet long, covered all over with pink and white down, and tied tufts of the tail-tips of the rabbit bandicoot to one end of each. When all the decorations had been prepared, a shallow pit was scooped out in the sand, simply because the surface was too hot to sit on with anything like comfort, and in this the performer squatted on his haunches. The Churinga was worn upright in the helmet; the sticks, with their attached tufts of black feathers, radiated all round the helmet, from the base of which the down-covered strings hung so as completely to hide from view the man's face.

The Churinga represented a special large gum tree on the banks of the Hugh River, at a place called Imanda, with which the ceremony was connected. The circles on the helmet represented the roots; those on the body were frogs of different sizes; the cross lines on the thighs represented the legs of various full-grown frogs (Fig. 171). It must have been extremely uncomfortable for the performer, because, in the first place, all the down, with which his body was closely covered, had been fixed on with human blood that dried and contracted on the skin and must have produced a most unpleasant sensation. The general effect must have been very like that of being wrapped up in a tightly-fitting eiderdown quilt and then exposed to the rays of the scorching sun—the temperature on that day during the performance of the ceremony registered 140° F. in the sun—all this quite apart from the weight of the helmet and Churinga.

When all was ready, three of the old men were sent to bring the young men in. Two of them carried small bull-roarers, tied on to human hair string. They went one to each side of the spot where the young men were seated out of sight in the bed of the creek. Then the shrill sound of the bull-roarer was heard and, amidst great excitement, the young men were driven up the bank on to the ceremonial ground. As they came at a run through the belt of scrub bordering the river, they halted for a moment and lifted their hands as if in astonishment. Then, driven by the old men, they ran up to and circled round and round the performer for nearly three minutes, shouting "Wha! Wha!" until, at length, one of them—a Purula man—laid his hands on the shoulders of the performer, who had been wriggling and swaying his body from side to side. His movements ceased and the actual ceremony, which did not occupy more than five minutes, though its preparation had taken over five hours, was over. As usual, its meaning



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FIG. 174.—CEREMONY OF AN ANT TOTEM OF ALKNIWUKULLA—TO ILLUSTRATE ONE FORM OF NURTUNJA.

The lines of down represent roots of wattle trees amongst which the women dig for ants; the performers represent women.



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FIG. 175.—CEREMONY OF THE WATER TOTEM,
SHOWING HOW THE WANINGA IS CARRIED.

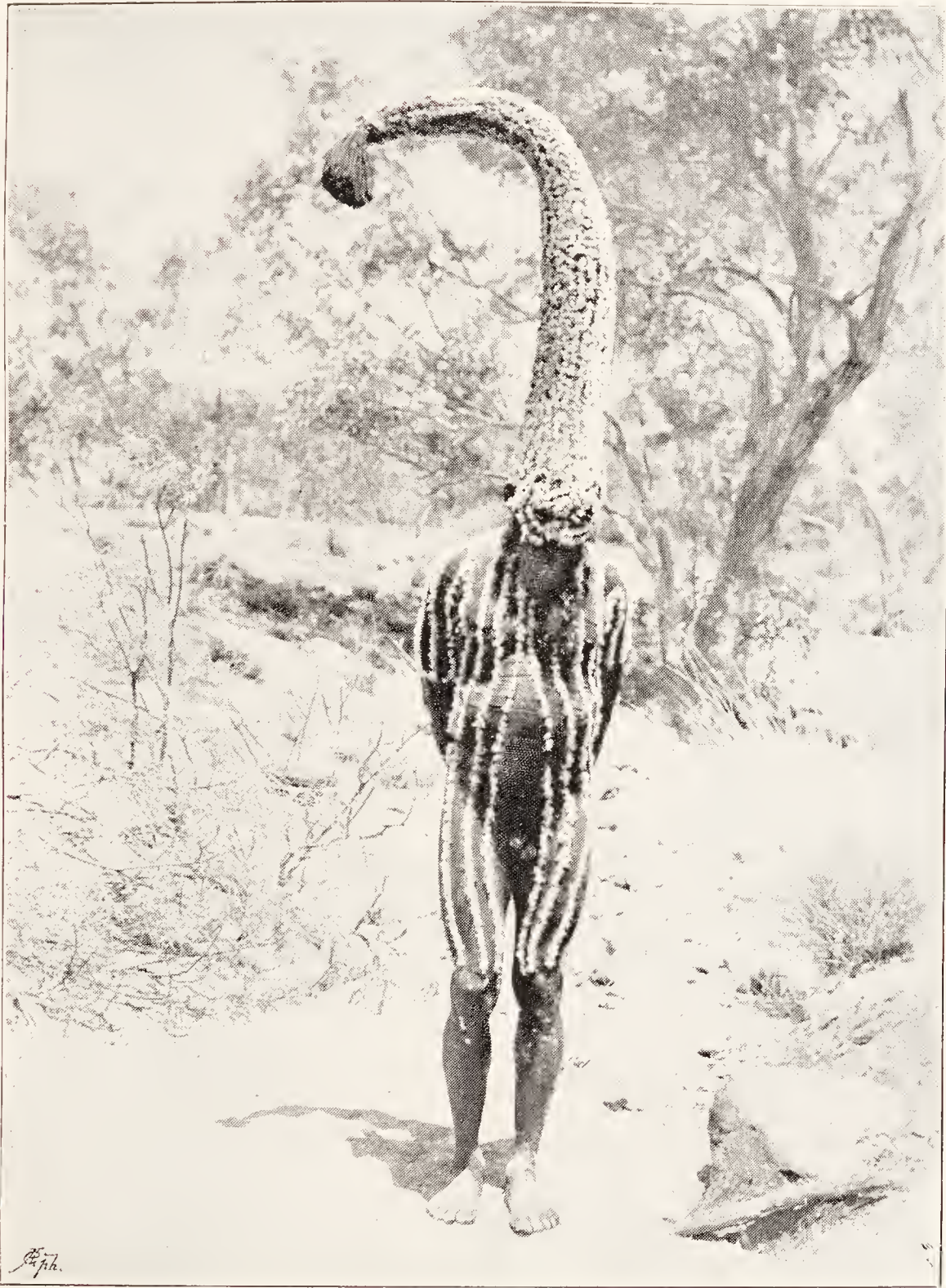
was then explained to the younger men, none of whom had seen it before. The sum-total of the explanation was that a celebrated old head-man of the frog totem lived and died at Imanda and that the banks of the river there are inhabited by numbers of human frog spirits, just as the banks are full of frogs nowadays.

In connection with a great number of the ceremonies, objects called Nurtunjas were used (Plate VII, Figs. 172, 173, 174). They varied to a remarkable extent in form and size, but they all agreed in one thing—each of them represented, for the time being, the object that gave its name to the totem group. One of the smallest and simplest had the form of a structure shaped very much like a monstrous cigar, about three feet in length and six inches in diameter. In the centre was a straight piece of wood, round which long grass stalks were wound with human hair string. Circles of white down were fixed on with human blood, at intervals of an inch, so that the black string showed between and set them off. One end was tipped with a bunch of emu feathers. This particular one represented a wild cat and was placed upright in the ground during the ceremony (Fig. 172). Others, shaped in some cases like a torpedo and in others like a cross, were worn on the top of the head. The most usual method of making one was to take a long spear. In rare cases nothing more than a single layer of human hair string was wound round it, and then rings of red and white down were added, but, most often, the spear was encased with grass stalks round which the string was wound, so that the diameter would be from three to six inches. In one special ceremony of the wild-cat totem, that referred to a great ancestor who, in the Alchera, lived at Undiara, no fewer than twenty spears were lashed together to form a great Nurtunja that was just eighteen feet high. As can easily be imagined, it took a great many hair-string girdles wound tightly and

closely, round and round, to enclose the column, and, when this was done, the whole was covered with rings of down. Finally, fourteen Churinga were taken from the store, decorated with rings of down, and hung on to the Nurtunja at intervals. The preparing of this occupied a considerable part of one night, because, for some reason, it was made in the dark by the side of little fires lighted in the bed of the creek, and the ceremony was performed just before sunrise. I often wished, whilst it was in progress, that it were possible to obtain some real record of such a scene as the making of this great Nurtunja; the firelight glinting on the dark bodies of the natives, who, squatting on the ground, with infinite patience wound the hair string round and round the spears and grass stalks and decorated them with down; every now and then a man opening a vein in his arm, when the supply of blood ran short; other men, not actually engaged for the moment in decorating, wandering around, out of the light of the fires into the darkness of the outer scrub, against which the trunks of the gum trees, catching the firelight, stood out like columns of white marble, while the men at work talked in low voices or, every now and then, broke out into a refrain that continuously rose and fell with intervals of perfect silence.

A Nurtunja of this size is, of course, fixed upright in the ground, as it is too heavy to carry.

In one form or another the Nurtunja is very characteristic of the Northern Arunta. In the southern part of the tribe it is less often used, its place being taken by a banner-like structure called a Waninga (Plate VII, Nos. 25, 26, Fig. 175). This also varies much in size and form, but consists essentially of a central bar with one or two smaller ones at right angles to it and strands of string arranged so as to form a flat, expanded surface. The smaller ones measure only a foot or two in length. A larger one such as that in Fig. 175 may reach a length of ten feet. This particular



F.J.G.

FIG. 176.—CEREMONY OF THE EMU TOTEM.

The head-dress represents the neck and head of an emu.



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FIG. 177.—DANCE OF THE MEN ROUND THE PERFORMERS OF A CEREMONY.

This running round is called *Whakutimma*.

one was used in a ceremony of the rain or water totem. It was made out of a spear ten feet long with two sticks, each three feet in length, fixed on at right angles, one a little distance from each end. Strands of human hair string were strung tightly, and as closely as possible, together. At both the upper and the lower end each took a turn round the bar, then slanted off to twist round the spear, and so back again to the bar on the opposite side and then, once more, ran down the whole length between the two bars. In this way there was formed, as can be seen in the figure, a flat, rectangular area between the two bars and a smaller triangular one beyond each of them. For the space of about an inch and a half up each side, indicated by a white band, the human hair string was replaced by opossum fur string, whitened with pipe clay. On the inner side of this a band of human hair string was red ochred. The white transverse bands seen in the illustration, as well as the bands on the bodies of the two performers, were made of white down and each end of the cross-bars and the tip of the spear were ornamented with a tuft of the red-barred tail feathers of the black cockatoo, a bird often associated with rain ceremonies, for the simple reason that, in Central Australia, a flock of black cockatoos is a sure indication of the presence of a water pool not far away.

Each part of the Waninga has a definite meaning, but it must always be remembered, when dealing with sacred objects such as this and the Nurtunja, that the same decoration will mean one thing when used in connection with one totem and quite another in connection with another totem. On this Waninga, the red strings represented thunder, the white bands, lightning, and the black strings, falling rain. The white down represented clouds and the red of the feathers, and also a number of wood parings, smeared with blood and worn on the head of the performers, represented the masses of dirty, brown froth and

scum that float on the top, and gather at the sides, of a stream in flood.

One of the most striking decorations was that of a man who was performing an emu ceremony and was supposed to represent an old emu ancestor. On his head he wore a remarkable head-dress consisting of a long, tapering, trunk-like structure made of grass stalks bound round with hundreds of yards of human hair string. The whole was decorated with lines of whitened bird's down and the tip ornamented with a bunch of emu feathers. The weight caused the end of the trunk to bend over, and as the performer walked about, which was all that he did, the swaying was rather suggestive of the aimless peering about of the bird (Fig. 176).

There were two or three ceremonies that had no reference to ancestors and were evidently regarded as on a somewhat different footing from the others. They were concerned with the *Eruncha* or mischievous spirits. In one of them two performers came on to the ceremonial ground on all-fours, pausing every now and then to kick the dust up while they peered around (Fig. 178). Their antics amused the audience, in fact it was the only ceremony during which anyone laughed. Finally, an old man came out to meet them armed with a club and, after a fight, killed them. The second was concerned with a special *Eruncha* which is supposed even now to live in the ground near to Alice Springs. A hole in the trunk of a big white gum tree is believed to be the entrance to the underground caves in which he lives. The ceremony shows him wearing two horn-like structures which the natives call *Inwunina*, that is, the devil's pointing-sticks. The huge bundle on his head represents the body of a black-fellow whom he has killed and whose body he is taking home to eat (Fig. 179).

I must confess that, after two months spent on the ceremonial ground, watching the men prepare and then perform



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FIG. 178.—AN ERUNCHA CEREMONY.
The performers coming on to the ground.



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FIG. 179.—ERUNCHA OF CHORITJA.

The head-dress represents the man whom he has killed. The two horns are the devil's pointing-sticks.

their sacred ceremonies—the actual performance never taking more than five minutes—we sometimes felt that their old ancestors might have spent their time a little more profitably than, judging by tradition, they are reputed to have done. However, to the native every ceremony was one of great importance.

Two or three times during the Engwura, large numbers of Churinga were brought on to the ceremonial ground and spread out under the shade of a tree while they were examined by the old men and shown to some of the younger men. Each one was reverently handed round, every man in turn rubbing it, whilst conversation concerning it, and its owner in the Alchera, was carried on in whispers, so low that it was difficult to hear what was said. In some cases, one or other of the older men actually shed tears whilst they handled the Churinga that was associated with some relative—a father or a mother—who had died not long ago. The solemn function lasted two or three hours, and it was very evident that it meant something very real to them and that they sincerely believed that the spirits of their dead ancestors were hovering round watching what was being done (Fig. 180).

The last week of the Engwura was decidedly the most interesting part of the proceedings from a spectacular point of view. At all events, it was more varied than the earlier part; in fact, at times, it was quite exciting and amply repaid us for a good deal of very monotonous work during the earlier part of the ceremony. Every day the men who were passing through it for the first time were taken out into the scrub under the charge of the older men, for whom they had to provide animal food. The collecting of vegetable food, except such as is required for consumption on the spot, is usually left in the hands of the women. This is mere drudgery, whilst the capture of emus and kangaroos combines, with the securing of food, the excite-

ment of the chase, which appeals largely to savage man. At sunset, every day, the men were brought back to the Engwura ground by way of the main camp, where only the women and children remained. Some of the older women had been present at previous ceremonies and knew what they had to do. Under their guidance a supply of dry grass was collected and two fires were made; at one the Purula and Kumara women gathered, and at the other the Panunga and Bultara.

When the men returned they halted for a short time, out in the scrub, on the side of the river opposite to the main camp. An old man went on ahead to tell the women that the party was approaching and, when the fires were lighted and all was ready, the men came on. Each of them carried a shield and also a number of branches of a leafy scrub. They came first to one group of women and then to the other, holding their shields and branches over their heads, to protect themselves from the bunches of burning grass which the women threw over them with good-will (Fig. 181). Then they turned and ran across to the Engwura ground, the women chasing them right into the scrub on the river bank. Occasionally one or two of the men got singed with burning grass, but the shields and bushes formed a very effective shelter, because the men always ran in a compact body. This visit to the women's camp and the fire-throwing took place on each of the four nights of the last week, during which the young men were sent away at sunrise, for the whole day, from the ceremonial ground and were only allowed to return at sunset. On the fifth day the leader sent three old men out with special instructions to prepare a long pole that was to form a very important feature during the conclusion of the ceremonies. According to tradition, this is not supposed to touch the ground until it is brought into camp. On this occasion it took the form of a straight, gum sapling about nine inches in diameter



FIG. 180.—GROUP OF MEN EXAMINING THE CHURINGA.

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FIG. 181.—THE WOMEN THROWING FIRE OVER THE MEN.

and some twenty feet in length; the branches were removed and the bark peeled off, and then the three men carried it into camp and hid it in the bed of the creek—out of sight, for the present, of the young men. Meanwhile the leader, assisted by a few old men, was busy preparing a sacred object which was to figure in an important ceremony. It consisted of two wooden Churinga, each of them three feet long. They were placed side by side and enclosed in a great bundle of human hair string, covered with down, one end being ornamented with a tuft of feathers. The whole structure was called *Ambilia-ekura*. *Ambilia* means a baby, or a very young child, and *ekura*, a pouch or bag.

When the young men returned to camp at sunset they first of all saw one of the usual ceremonies and then lay down in a long row, side by side, with their heads on the Parra mound (Fig. 182). The leader, and the two men who were to assist him during the night's performance, sat silent and motionless in front of them. Perfect silence was maintained, except for a little whispering every now and then amongst the older men, until nine o'clock. Then, as soon as it was really dark, a number of small fires were lighted and bundles of sticks, about two feet in length, were arranged in radiating groups, each with one end in the fire. There was enough for every man to have three or four of them. A few of the older men went across to the women's camp, where they and the children were gathered together, and told them to protect themselves with boughs and sticks. Then, at a signal from the leader, the young men stood up, and we wondered what was going to happen, because we knew nothing more than the young men did, and had to watch carefully so as not to miss anything. All the young men took fire-sticks and went in a body towards the river, the old men telling them what to do. On the bank they broke up, ran across the sandy bed and then up the opposite side, dividing, as they did so, into three parties—one in

front of, one to the left, and one to the right of the women. When about twenty yards away from the line of women and children, who, under the orders of the old men, were waiting to receive them, they hurled their fire-sticks in rapid succession over the women's heads. Hundreds of them whizzed like rockets through the darkness, each with its trail of fiery sparks. The younger women and children screamed with terror; the men were yelling at the top of their voices and, of course, the camp dogs added their quota to the din. Save for the smouldering ends of the fire-sticks strewn upon the ground, everything was soon dark again. The men turned and ran back as hard as they could to the ceremonial ground, while we followed after them, tumbling down the bank of the river and tripping over bushes in our anxiety to see everything. Events succeeded one another so quickly, that it was as much as we could do, sometimes, to keep pace with the natives and, at the same time, take note of everything that occurred. However, on this occasion, after a short but decidedly rapid and exciting traverse of the scrub and river bed in the dark, we got back to the ceremonial ground and found the three men who had remained behind, solemnly sitting down in front of the Parra mound, the central man—the leader of the Engwura—grasping the *Ambilia-ekura* in both hands, each of his arms supported by one of the sidesmen (Fig. 183). No sooner had they all arrived in camp than the young men were once more made to lie down with their heads on the Parra, and in this position they had to remain all night. No one was allowed to move or utter a word without the permission of the old men in charge, who spent the whole time walking up and down. In fact no young man moved the whole night through. As soon as they were stretched out on the ground, the leader began to lift the *Ambilia-ekura* slowly up and down. Without cessation, save for not more than half a minute every now and then, the central man, assisted by the



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FIG. 182.—THE YOUNG MEN LYING DOWN WITH THEIR HEADS ON THE PARRA, BEHIND WHICH ARE STACKED THE BUSHES THAT THEY CARRY WHEN RETURNING TO CAMP.



B.S.

FIG. 183.—AMBILIA-EKURA CEREMONY.

other two, continued to do this all night long. The old men walked up and down, singing and watching the young men, who remained perfectly silent, as did the three performers. One of the oldest men present—the “old white bat,” as we used to call him, in allusion to his totem—was much in evidence and evidently entered deeply into the spirit of the ceremony, singing without ceasing until his cracked, squeaky voice gave way, and whispering solemnly every now and then to one or other of the younger men, all of whom probably were by no means sorry to have a comparatively quiet night’s rest.

The night passed by very slowly. Gillen and myself had nothing to do save watch the monotonous rising and falling of the *Ambilia-ekura*, which went on without ceasing, and listen to the equally monotonous singing of the old men. Shortly after five o’clock, when the earliest, faint glimmer of the approaching dawn could just be distinguished, the old men gave instructions to the young ones, who then rose to their feet, stiff and cold, for they had been denied the comfort of fires and, when you are stark naked, even in summer, it grows chilly towards dawn out in the open. Then also, for the first time since nine o’clock on the previous evening, the old leader and his two sidesmen ceased from lifting their arms up and down. It was a remarkable test of endurance and, after eight hours of continuous exertion, it was no wonder that they looked tired and haggard. Instructions were shouted across to the women’s camp and then all the young men, and a few of the old ones, ranged themselves in a solid square behind the three performers; the whole party crossed the river and, in silence, approached the women, who stood in groups moving their hands as if they were inviting the men to come near, all the time saying softly, “Kutta, kutta.” When within five yards of the women, the three performers threw themselves on the ground, so as to hide the *Ambilia-ekura* from view. The

younger men immediately threw themselves on the top of them, so that only their heads could be seen, projecting from beyond the pile of bodies. It was a very strange scene and must have been rather a trying experience for the men underneath. After about two minutes, during which there was perfect silence, the younger men got up and formed a square, facing away from the women. Then the three performers rapidly followed, turned their backs on the women and were hustled through the square which they led back to the Engwura ground, and thus this remarkable *Ambilia-ekura* ceremony came to a close. In one important respect it called to mind the old account of Aaron and Hur holding up the hands of Moses.

It was not until many years later that I found out that the *Ambilia-ekura* was supposed to be the representation of one of two similar bags carried by the great leader of the Achilpa, or wild-cat, totem group and used by him during his Engwura ceremony in the Alchera, when he sent out men and women to populate the different local totem centres. The bags were full of Churinga and spirits associated with them, that later on entered women and gave rise to the early members of the different totem groups all over the Arunta country. The two men who assisted the leader represented the two women who accompanied the old Alchera leader and into whom, originally, the spirits entered and were born in human form.

Unfortunately, it was not possible to obtain a photograph of the wild and picturesque scene at the women's camp, because the ceremony took place at early dawn; in fact we were back on the Engwura ground before the sun rose. Everyone was rather tired, especially the old men, none of whom had a wink of sleep and all of whom, moreover, had been singing for eight hours, almost without ceasing. As for Gillen and myself, we had been watching carefully the whole night, because we never knew what was going



B.S.

FIG. 184.—THE ERECTION OF THE SACRED POLE, OR KAUAUA.

The man who has climbed up is arranging the Churinga.



B.S.

FIG. 185.—PREPARING THE FIRE FOR THE YOUNG MEN PASSING THROUGH THE ENGWURA.

to take place next, and were rather glad to hear the old leader give orders for the men to be taken out into the bush for two days. This meant at least one day without any special ceremony. It was a very quiet day in camp, for the old men were too tired to do anything except sing, which they did for two hours at night, sitting by the Parra and clanging short pieces of wood together. These were supposed to represent little frogs that had been buried in the Parra mound, and the steady clank, clank produced by one stick falling upon another was not unlike the call of the real frog.

The next day was a very important one and we, as well as the natives, were kept very busy. In the first place, the sacred pole, called *Kauaua*, was brought from its hiding-place in the creek. One man opened a vein in his arm and allowed blood to spurtle out, until, five times over, he had filled the small space left for the hand in a shield. As if this were not enough, he actually, afterwards, walked slowly once up and down by the side of the *Kauaua*, allowing the blood to trickle over it in a thin stream. The pole was then smeared over completely with it, except the lowest part, which was to be embedded in the ground; the upper end was surmounted by a tuft of eagle-hawk feathers, whitened forehead bands were attached under this; a bunch of white, rabbit-bandicoot tail tips hung down on each side, and below the head-bands a nose-bone was fixed, crosswise. The whole decoration was so exactly like that of a human head, decorated for the performance of an Alchera ceremony, as to suggest at once that this was its true significance, but the present-day natives say that the nose-bone represents simply a cross-piece that Numbakulla, the great Being who originally made the *Kauaua*, used to help him in climbing.

When the decoration was done, the pole was firmly fixed in the ground, about six yards to the west of the centre of

the Parra—so firmly that a man was able to climb it, while he attached a few Churinga to its upper part (Fig. 184), and then, for a few hours, the old men, who had remained in camp, had a respite from their labours.

Leaving most of them in camp, Gillen and myself went to a secluded spot, some few miles distant amongst the Ranges, to meet the young men, who, we were told, had to pass through another fire ordeal. We found them seated by the side of a water-hole, after having spent an uneventful night in the scrub. All but one of the old men, who was left in charge of them, were busy at a spot not far away, but hidden behind a hill. Here we found them making a fire of logs and branches, about three yards in diameter (Fig. 185). When this was done, they called the young men up and placed green boughs upon the red-hot embers. Then, in batches of five and six at a time, the young men were made to lie upon the smoking boughs, which prevented them from coming into actual contact with the live embers beneath. No one might get up without the permission of the old men in charge, and each of them was made to remain on for about five minutes. Then, when all had been on, and we thought the ceremony was over, the old men decided to repeat the process. They added more logs and made the fire up again, this time a good deal hotter than before, and, amidst dense masses of smoke, one old man lifting up the boughs with a pole, so as to allow of the free access of fresh air, the young men lay down once more, wriggling about, trying to prevent any one part of the body from remaining too long in contact with the hot boughs (Fig. 186). Fortunately they were not kept on so long during this second ordeal, but it must have been, to say the least, very unpleasant. I went and knelt down on the boughs to see what it was like, but got up rapidly, thankful that, even with clothes on, there was no old man who had the power to make me remain there longer.



B.S.

FIG. 186.—YOUNG MEN ON THE FIRE.



FIG. 187.—CEREMONY OF THE FROG TOTEM OF IMANDA.

The young men are standing in a line by the side of the Parra facing towards the *Ka:ta:ta*, which they see for the first time. Of the two performers, the one on his knees represents a frog, and the one with the large Churinga in his head-dress, a tree. The bough shelter on the left is the one in which we spent our time during the Engwura.

B.S.

When it was all over the men, some of whom were decidedly singed, had a well-earned rest beside the water pool. Quite apart from the heat of the fire, the day was hot enough to make things uncomfortable, the thermometer reading 110.5° F. in the shade and 156° F. in the sun—this was the real shade reading at the telegraph station in Alice Springs, and not that under the few scantily-leaved gum trees, which afforded the only shelter in the scrub. The fire, of course, was in the open and the heat of the sand was so great that we could feel it easily through our boots. Fortunately for them, the natives have got very thick soles to their feet.

At sunset the men returned to camp and, standing in a line in front of the Parra, they saw the *Kauaua* for the first time and witnessed the last of the sacred ceremonies. Whether or not it was relief to them I do not know, but certainly it was to Gillen and myself. As soon as the ceremony was over they once more lay down in a long row, with their heads on the Parra, and here they remained for more than two hours. After dark, a dozen little fires were lighted around the base of the *Kauaua*. The younger men were told to get up, and sat about in groups, each of the old men taking charge of three or four to whom he was *Abmoara*. They might not henceforth speak to him until the whole ceremony was completed, though, of course, he was at liberty to speak to them and tell them what they must do. Stores of red and yellow ochre, gypsum and charcoal had been provided and the old men proceeded to decorate the backs of all the younger men with designs belonging to the different totems (Fig. 188). Every totem has its own *Ilkinia* or badge, drawn in ochre, gypsum or charcoal, as the case may be, and every man has the right to paint the *Ilkinia* of his own totem on his body. There was no such thing as sleep that night and the scene was very picturesque. Across the river we could see the light of the fires in the main camp, flickering through the trees, for the women,

as well as the men, were busy and excited. At intervals, one or the other of the old men would shout across to the women, saying, "What are you doing?" and the reply would come back, "We are making a fire." "What are you making a fire for?" "To burn the men," they replied. The old men dared the women to come over to them, one old man being especially vigorous in his invitation. That there was something very unusual in preparation was very evident. Things were decidedly topsy-turvy. A man would call out to his *Mura* woman, that is, mother-in-law, whom under ordinary circumstances he would not think of addressing, asking her to come across to him. Then again, there was no necessary relation between the totem design that was drawn on the back of any man and his totem; in fact there was actually only one man who was decorated with the design of his own totem, and, as none of the younger men who were decorated were allowed to speak during the whole night, no one knew what design was painted on his own back, unless he could tell by the feel. Under ordinary circumstances no man has any right to wear the badge of any totem save his own, but, at this special time during the Engwura, the young men were supposed to represent individuals of all the totems made by the great Alchera Numbakulla.

Gillen and I went across to the women's camp to see what they were doing, and found everybody there very wide awake. The Panunga and Bultara women on the one hand, and the Purula and Kumara on the other, were busy with digging-sticks, making two shallow pits, side by side, each about two yards in diameter. When this was done, they gathered materials for making a large fire in each. All the time, a regular kind of badinage was kept up between the men and women in their two camps, though neither party could see the other, because they were separated by the river and the trees and scrub that bordered it. It was



B.S.

FIG. 188.—TOTEMIC DESIGNS PAINTED ON THE BACKS OF THE YOUNG MEN.



R.S.

FIG. 189.—THE YOUNG MEN GATHERED ROUND THE KAUAUA.

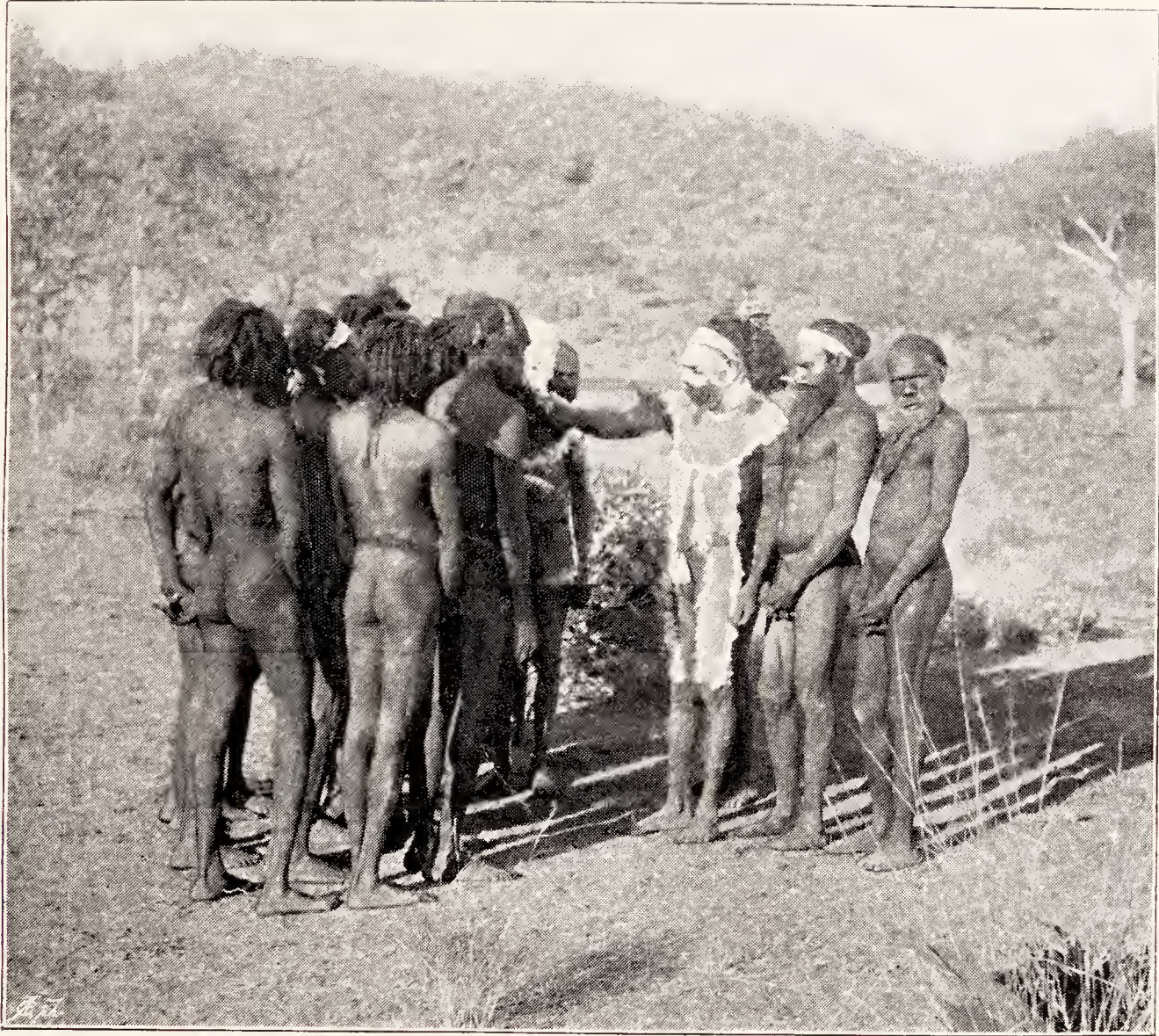
In the foreground the Parra and line of bushes are seen; they have been broken through by the leader of the ceremony, and through the opening thus made the young men are about to pass on their way to the women's camp

just five o'clock in the morning when the decorating was complete. The women had lighted their fires and all was ready for the concluding scene. On the ceremonial ground, the leader opened a passage through the middle of the Parra—the first time that it had been touched since the start of the Engwura (Fig. 189). Each of the old men led his protégés several times round and round the Parra, all of them yelling “Whrr! Whrr!” This over, all of them then gathered round the base of the *Kauaua* and, after a short pause, the whole party, in perfect silence, passed, one by one, through the break in the Parra and on towards the river. Each of the old men went at the head of his protégés, and linked together hand in hand they walked in single file. The picturesque procession stretched right across the sandy bed from one bank to the other and, on the far side, halted about fifty yards from the two fires, that were now giving out dense volumes of smoke, for the red-hot embers had been covered with green gum-tree boughs. The women and children were massed behind them, in two groups, bending their knees and moving their hands up and down in the curious way that they always adopt during ceremonies. Except for the low “Kutta, kutta” of the women, not a word was spoken. For a minute the men stood in silence, watching the women and the women watching them. Then each old man ran forward with his charges, taking a somewhat semicircular course towards the women and back again. When each of them had done this once, they ran round a second time, in much the same way, with the usual high-knee action, only, on this occasion, they came up to the fires. Each man knelt down on one of them, Panunga and Bultara men on those made by the Purula and Kumara women, and vice versa. All that happened was that the women placed their hands on the men's shoulders and gently pressed them down, but no one remained on the fire for more than half a

minute and, when the last man had risen from the fires, they all returned silently to the Engwura camp and, until sunrise, gathered together talking quietly round the *Kauaua*. Very shortly after sunrise the ceremonial ground was deserted, save for two or three old men who took down the *Kauaua* and rubbed off all traces of blood. The young men were sent out into the bush and, before the ban of silence between each of them and the old man who had charge of him could be removed, the former had to present his old *Abmoara* man with a present of food called *Chaurilia*—usually a wallaby or small kangaroo—after which the old man touched the young man's mouth with a sacred object, such as a Churinga, or even a piece of down used during the ceremony, and he was free to speak (Fig. 190). The visitors from distant parts returned to their own hunting grounds and thus ended the Engwura.

For months afterwards the ceremonial ground was what the natives call *ekeirinja*, that is, tabu or forbidden, to women and children. The *Kauaua* was carried away to the top of a hill, where it was eaten by white ants and rotted away. The Parra mound was left untouched, but the little gum-tree branches, exposed to the heat of the summer sun, soon disappeared, and the wind carried away the sand of which the mound was made until not a trace of it was left.

It is more than thirty years ago since we watched from start to finish this great Engwura ceremony. From that day to this no other has been held, and now the old men are gone and the young men no longer take any interest in such things. There can never be another Engwura.



B.S.

FIG. 190.—CEREMONY OF CHAURILIA, RELEASING FROM THE BAN OF SILENCE.
Touching the mouths of the younger men with a sacred object.





PLATE VII.—OBJECTS USED DURING TOTEMIC CEREMONIES

- 1, 2, 3. Ceremonial tablets used during the performance of a rain ceremony. Arunta tribe.
4. Object worn in the head-dress of a man performing a ceremony of the yam totem. Tjingilli tribe.
- 5, 6. Two head-dresses worn during the performance of a Tjudia (deaf adder) totemic ceremony. Warramunga tribe.
7. Head-dress worn during the performance of a ceremony of the wind totem. Warramunga tribe.
- 8, 9. Head-dress worn during totemic ceremonies. Anula tribe.
10. Object representing a white cockatoo, worn during a totemic ceremony. Tjingilli.
11. Object representing a white cockatoo, carried by the headman of the totem when performing Intichiuma. Warramunga tribe.
12. Object representing the limp body of a dead kangaroo, worn on the head-dress during a kangaroo ceremony. Arunta tribe.
13. Wooden slab worn on the head during the performance of a ceremony of the snake totem. Anula tribe.
14. Black cockatoo tail feathers, ornamented with down, worn on the head during the performance of a rain ceremony. Arunta tribe.
- 15, 16, 17, 18. Decorated shields used during the performance of ceremonies connected with the witchetty grub totem. Arunta tribe.
19. Shield used during the performance of a rain ceremony. Arunta tribe.
20. Nurtunja used during the performance of an achilpa ("wild-cat") totemic ceremony, with Churinga attached. Arunta tribe.
21. Nurtunja used during the performance of a kangaroo ceremony, with Churinga attached.
22. Small nurtunja worn on the head during the performance of a plum-tree totemic ceremony. Arunta tribe.
23. Small nurtunja worn on the head during the performance of a Hakea plant totemic ceremony. Arunta tribe.
24. Object representing the sun, carried during the performance of a sun totemic ceremony. Arunta tribe.
25. Waninga used during the performance of a kangaroo totemic ceremony. Arunta tribe.
26. Small waninga worn in the head-dress during the performance of a kangaroo totemic ceremony. Arunta tribe.

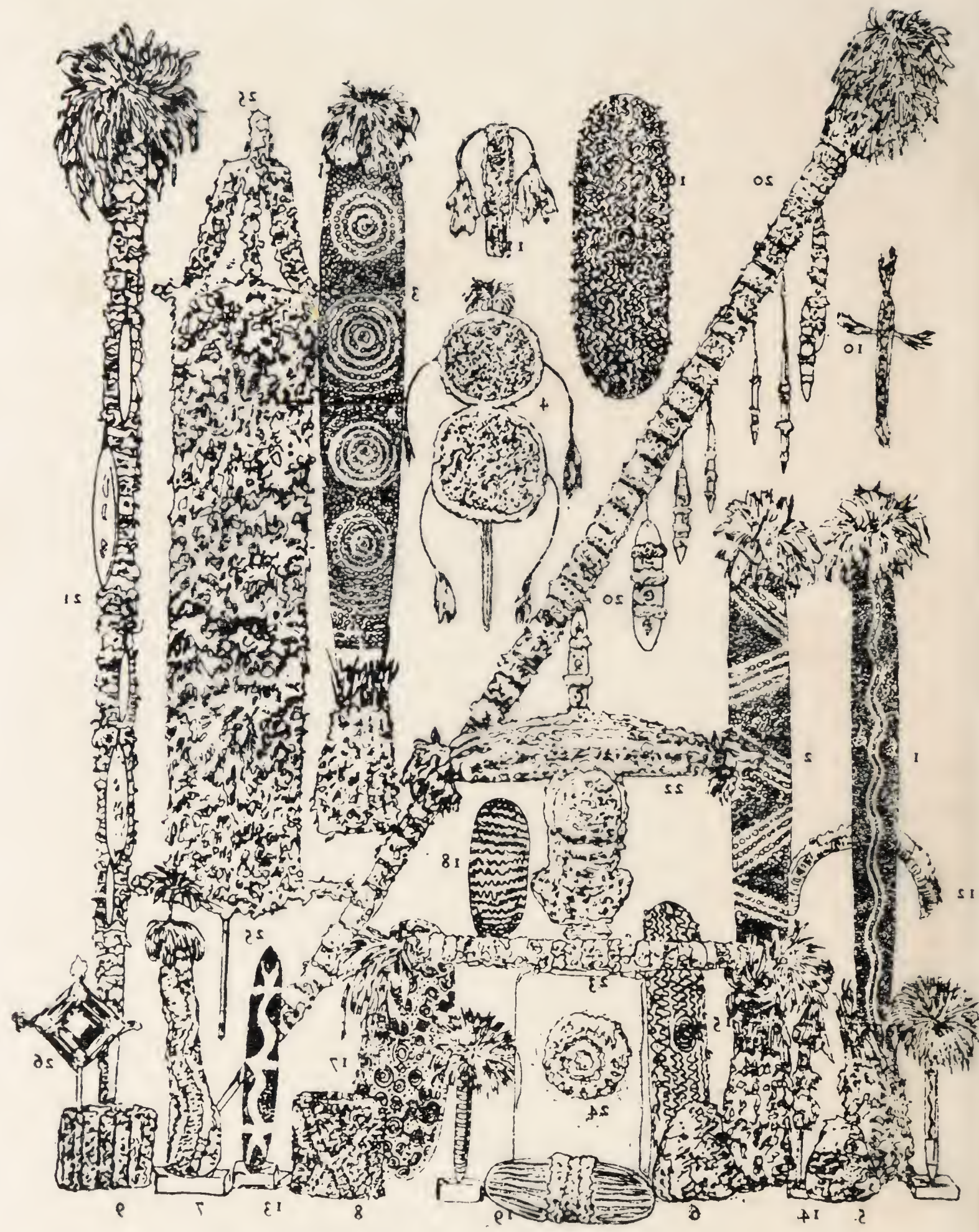


PLATE VII.—OBJECTS USED DURING TOTEMIC CEREMONIES

- 1. 2. 3. Ceremonial tablets used during the performance of a rain ceremony. Arunta tribe.
- 4. Object worn in the head-dress of a man performing a ceremony of the Yam totem. Tingilli tribe.
- 5. 6. Two head-dresses worn during the performance of a Tjindja (deal sader) totemic ceremony. Warrawungas tribe.
- 7. Head-dress worn during the performance of a ceremony of the wind totem. Warrawungas tribe.
- 8. 9. Head-dress worn during totemic ceremonies. Arunta tribe.
- 10. Object representing a white cockatoo, worn during a totemic ceremony. Tingilli.
- 11. Object representing a white cockatoo, carried by the headman of the totem when performing Intichiuma. Warrawungas tribe.
- 12. Object representing the limp body of a dead kangaroo, worn on the head-dress during a kangaroo ceremony. Arunta tribe.
- 13. Wooden slab worn on the head during the performance of a ceremony of the snake totem. Arunta tribe.
- 14. Black cockatoo tail feathers, ornamented with down, worn on the head during the performance of a rain ceremony. Arunta tribe.
- 15. 16. 17. 18. Decorated shields used during the performance of ceremonies connected with the witchetty grub totem. Arunta tribe.
- 19. Shield used during the performance of a rain ceremony. Arunta tribe.
- 20. Nurtunja used during the performance of an achilpa ("wild-cat") totemic ceremony, with Gbunja attached. Arunta tribe.
- 21. Nurtunja used during the performance of a kangaroo ceremony, with Gbunja attached.
- 22. Small nurtunja worn on the head during the performance of a plant totemic ceremony. Arunta tribe.
- 23. Small nurtunja worn on the head during the performance of a Hakes plant totemic ceremony. Arunta tribe.
- 24. Object representing the sun, carried during the performance of a sun totemic ceremony. Arunta tribe.
- 25. Warnings used during the performance of a kangaroo totemic ceremony. Arunta tribe.
- 26. Small warnings worn in the head-dress during the performance of a kangaroo totemic ceremony. Arunta tribe.



PLATE VII.—OBJECTS USED DURING TOTEMIC CEREMONIES





PLATE VIII.—MAGIC IMPLEMENTS

1. Arm-bone used for magic purposes. Secured in the Warramunga tribe, but made by a man of the Gnanji tribe.
2. Akuntilia, containing whiskers cut from the head of a dead man. Kaitisha tribe.
3. Kuru-urkna, a girdle made out of the hair cut from the head of a dead man. The girdle is wrapped in paper-bark wound round with human hair string. Arunta tribe.
4. Various bands of fur and hair string which have belonged to a dead man. Kaitisha tribe.
- 5, 6. Tana, containing whiskers cut from the head of a dead man. Warramunga tribe.
- 7, 8. Waillia-waillia, made out of the hair cut from the head of a dead man. Kaitisha tribe.
9. Waillia-waillia and girdle worn by a dead man, wrapped in paper-bark. Kaitisha tribe.
10. Waillia-waillia wrapped in paper-bark. Kaitisha tribe.
11. Burumburu, dead man's arm-bone wrapped in paper-bark, ornamented with a design of yellow and black spots. This was taken out of the ground, after having been broken and buried. Warramunga tribe.
- 12, 13. Okinchalanina-irrukakinna, neckbands enclosing hair cut from a dead man. Arunta tribe.

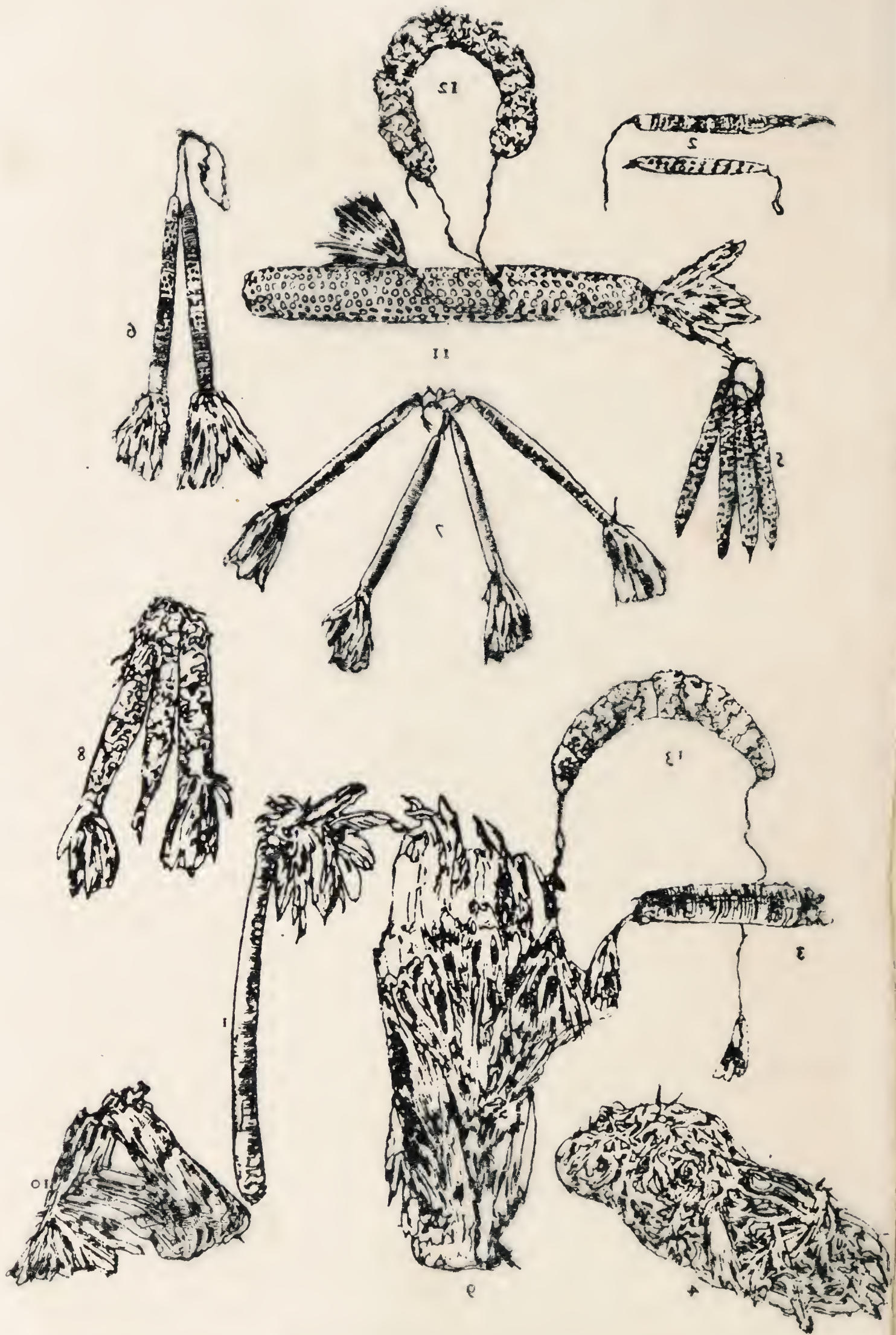


PLATE VIII.—MAGIC IMPLEMENTS

1. Arm-bone used for magic purposes secured in the Wairanunga tribe but made by a man of the Guanji tribe.
2. Akuanilia, containing whiskers cut from the head of a dead man. Kaitiaba tribe.
3. Kuru-urkua, a rattle made out of the hair cut from the head of a dead man. The rattle is wrapped in paper-bark round with human hair string. Aruta tribe.
4. Various bands of fur and hair string which have belonged to a dead man. Kaitiaba tribe.
- 5, 6. Tans, containing whiskers cut from the head of a dead man. Wairanunga tribe.
- 7, 8. Wailis-wailis, made out of the hair cut from the head of a dead man. Kaitiaba tribe.
9. Wailis-wailis and rattle worn by a dead man, wrapped in paper-bark. Kaitiaba tribe.
10. Wailis-wailis wrapped in paper-bark. Kaitiaba tribe.
11. Burumbur, dead man's arm-bone wrapped in paper-bark, ornamented with a design of yellow and black spots. This was taken out of the ground, after having been broken and buried. Wairanunga tribe.
- 12, 13. Okinchalana-irrikakiana, neck-bands enclosing hair cut from a dead man. Aruta tribe.



PLATE VIII.—MAGIC IMPLEMENTS



BOOK II
ACROSS AUSTRALIA



CHAPTER XIII

OODNADATTA TO ALICE SPRINGS

UNTIL you have traversed Australia from north to south or east to west you do not realise its extent. The Northern Territory alone is four and a half times the size of Great Britain and the whole of Australia is a little larger than the whole of the United States of America. One cannot help smiling inwardly when a hostess in London, in all kindness and innocence, says to a guest from Australia, "I wonder if you happen to know So-and-so, I think he lives somewhere near to a place called Darwin." It is much as if a Melbourne hostess were to say to a visitor from London, "I wonder if you happen to know So-and-so, he lives somewhere not far from Timbuktu." The average Timbuktuan is, or was, just about as likely to be known to the average Londoner as the Darwinite is, or was, to the Melbournite. I am writing of thirty years ago. Nowadays motor-cars, aeroplanes and wireless are revolutionising everything, even in such remote parts as Central Australia. Out-back stations, that in those days it took weeks to reach with horses, are now within easy reach of a railway head by motor transit, and when the day's work is over you can "listen in" to the music in Melbourne and Sydney concert rooms and theatres and even perhaps catch distant echoes from the outside world.

In March 1901, Gillen and myself left Adelaide for Oodnadatta. This time our plans were laid for a year's traverse of the continent, the first two or three months to be spent amongst the Arunta, the rest of the time amongst

the tribes between the Macdonnell Ranges and the northern coast. We started with the intention of making our way right through to Darwin, but, as events turned out, we had to alter our plans and, from Powell Creek, struck eastwards and, following down the Macarthur River, reached Borraloola on the Gulf of Carpentaria.

It was Sunday evening when the fortnightly train took us into Oodnadatta, where the little hotel was full of the usual bushmen, some of them coming to meet the train and get their stores, others to see friends off, and a few more fortunate ones waiting to be seen off by the train that took them away for a time to the south and civilisation. There was not much rest to be had and, as the hotel was built of wood, you could hear pretty well all the conversation that went on from one end to the other, and the remarks about "them two exploring blokes, as is going out collecting bugs and beetles and looking after niggers," were not always complimentary.

So far as white men were concerned, our party was a very small one and consisted only of Gillen, myself and Mounted Trooper Chance, whose services had been generously placed at our disposal by the South Australian Government. We had selected him out of many applicants because of his long experience of the Centre, his tact in dealing with the natives and his general handiness in all kinds of ways useful, in fact essential, in camp, from shoeing horses to cooking. We could not have made a better choice, and throughout our whole expedition we had in him a companion and camp manager on whose cheerfulness and resource, no matter whatever happened, we could place complete reliance.

We were anxious to get away as soon as possible. Gillen had to make investigations into some matters connected with the Post Office, so while he was doing this, Chance and myself sorted out and arranged the stores that

we had brought up by train and intended carrying with us on an express wagon. These were, of course, only a small portion of our equipment; the main supplies had been sent on ahead, some months earlier, to be carried on camels to the telegraph stations at Alice Springs, Barrow Creek and Tennant Creek which the South Australian Government courteously allowed us to use as depots.

What we carried with us was simply all our personal belongings, including photographic material, guns and ammunition and collecting boxes, together with a stock of provisions sufficient to carry us through to Alice Springs, and a certain amount of "trade" for the natives, chiefly tobacco, pipes and knives, with a few bags of flour. Most of this we packed on the Express wagon, which was to be under the charge of Chance, the lighter material and Gillen's and my own "swags" we carried on a "buckboard"—that is, a four-wheeled arrangement with a seat for two in front and a somewhat lengthy kind of platform behind, on which a wonderful amount of luggage can be piled. There are no springs to a buckboard, but it is quite comfortable and it is astonishing how much can be packed on to it. We had also a little hood arrangement built over the seat so as to afford some protection from the sun, which was a great comfort during the middle hours of the day, when it was shining straight down on us. Sun and dust, especially if there be a following wind, often make driving, to say the least of it, uncomfortable on the open sandy plains.

It was three o'clock before the packages were all sorted out and packed, and we started Chance off in charge of the Express wagon, so as to let things settle down generally. We had five horses in harness, three leaders and two polers, and also five spare ones, three of which were packed with stores. Until you are accustomed to it, it looks quite strange to have three horses in the lead. One

black boy rode with Chance in the wagon and two others on spare horses, whose duty it was to look after the packs.

We were glad to see Chance off and felt as if we were really beginning to get to work. That night was our last one under a roof for many months, but it was not exactly a quiet or restful one, because the train was starting for the south in the morning and a concertina made things hideous. We were up early and, putting the horses into the buckboard, started off. Oodnadatta was soon out of sight and we were out once more amongst the stony plains and flat-topped hills. Rains had fallen not long ago and, in parts, the ground was actually tinged green with grass, especially along the watercourses, with their fringe of green-grey *Giddea* trees, but, for the most part, it was very dry and, as we had a following wind (Fig. 191) we drove along, hour after hour, in the heat and dust until we came to where Chance was camped beside a small water-hole, on the Swallow Creek, and here we halted for the rest of the day. The flies, as usual in warm weather after a rainfall, were awful and neither we nor the horses could get any rest. We had brought with us a special fly tent (Fig. 192). It was about five feet square and the same in height. The sides were made of cheese-cloth and the top of calico. One side had two overlapping flaps, so that you could manage to get in and leave most of the flies outside, but, though it was the only thing that made writing possible during the day-time, it was very close, as not a breath of air came through the cheese-cloth and, after the first day or two, we did not trouble to put it up, and simply waited patiently until the sun set and the flies gradually dropped off and went to roost on the grass, leaving us in peace beside our camp fire, because, luckily, there were scarcely any mosquitoes about.

The black boys did not seem to mind the flies as much as we did and, when we got into camp and the horses had been taken to water and then hobbled and set free for the



B.S. *del.*

FIG. 191.—IN THE DUST WITH A FOLLOWING WIND



B.S.

FIG. 192.—CAMP AT WIRE CREEK, WITH FLY TENT.



B.S. *del.*

FIG. 193.—OUR BOYS WATCH THEIR BILLIES BOIL.

night, they simply lay down on their backs, pulled their hats down over their faces and went to sleep, much to our envy. We took three of them on with us from Oodnadatta. One of them we intended to take right through. He was known to the white men as Warwick, but his native name was Erlikiliakirra. He was a first-rate boy, who could pack horses and track them up splendidly and had only once been in jail. Amongst other accomplishments that he had acquired in the latter was that of shaving. Somewhere he had managed to pick up an old razor, which would have torn any ordinary white man's face to pieces, but he managed to make it serve its purpose. The other two boys came up in the train with us, having just emerged, for the second time, from six months spent in Port Augusta jail as the result of cattle-killing. To have been in jail does not in the least interfere with the social status of a native when he returns to his country and people, in fact it is rather the reverse. It gives him a *cachet* which is often the envy of his friends who, as yet, have not had the experience and been able to broaden their outlook by travelling and residing, free of expense, in foreign parts. Amongst these civilised, or semi-civilised natives, a man is rather gratified if pointed out as one who has "been along Port Augusta," which is their way of saying that he has been to jail—almost always for cattle-killing, which is by no means regarded as a crime. They are not, after all, so very different in their outlook from a certain class of white men in Central Australia, by whom horse-stealing is, or at all events was, not very many years ago, regarded rather in the light of a profession and on quite a different level from that of the more vulgar calling of one who appropriates someone else's coat or a five-pound note.

One's first night camp in the wilds is always a pleasant one. There is a delicious sense of freedom—no evening newspapers, no telephones, no wireless forecasts of weather

or reports of sport meetings, no hootings of motor-cars—at least there was not on this night, late in March 1901. Nowadays the overlander travels in a Reso motor-car, sits down to a luxurious meal in camp and, as soon as darkness falls, brings out a portable “wireless” and listens to the latest news. Our meal was a very simple one, only some rather tough beef, dry bread, tea, jam and tomato sauce, all of which, save the last, were to form our staple articles of food, except for the welcome addition, every now and then, when we formed a more or less permanent camp, of desiccated potato and fruits, principally prunes. It is curious that prunes are the dried fruit of which one tires last in camp.

A little way from our camp fire the three boys had made theirs, which, as they had been in jail and learnt the ways of white men, was much larger than the usual native fire. In front of this they squatted, perfectly contented, each with his old quart pot, or discarded jam tin that did duty for this, waiting till the water boiled and he received his pinch of tea mixed with sugar, enough to discolour and sweeten the water (Fig. 193). There are two articles that are indispensable in the Central Australian camp—one is a “billy” and the other a “quart-pot.” The origin of the word “billy” seems to be wrapped in mystery. It is simply a tin vessel, like a small pail with a lid and top handle, holding anything from one to three or four quarts. Every bushman, in the out-back parts of Australia, carries a quart-pot, which is really a double structure. There is a larger tin, holding, as its name implies, just a quart, and a cup which fits into it, upside down. Both have two handles, hinged so that they can be folded back and occupy as little room as possible. Our cups had two little flanges on the bottom, so that a small wire gauze receptacle, fitting inside the cup when not in use, could be attached. This holds the tea so that, when the quart pot boils, it can be

dipped down into the water, attached to the bottom of the cup, and then, when the tea is strong enough, the leaves are thrown away so that they do not remain in the quart pot itself. This, however, is rather too Epicurean for most real, old-fashioned bushmen, who like their tea to be well stewed. Also, the proper way is to boil the quart pot, not actually on, but by the side of the fire, so that the handles, turned away from it, do not get red-hot. Another important item is a camp oven, used mainly for bread-making. It is a kind of small iron cauldron, perhaps a foot or fifteen inches in diameter and six inches in depth, with a close-fitting lid, standing on three feet that raise it a few inches above the ground. In this a flat loaf, like a glorified damper, is cooked which makes excellent eating. The real, genuine damper of the bushman is simply a mixture of flour and water, kneaded on a piece of bark and shaped into flat buns, varying in size from a diameter of a few inches to a foot or even more, and quite innocent of anything like yeast or baking-powder. When the camp fire has burned long enough to produce a good supply of fine hot ashes, a hole is scooped in the latter, the dough bun laid in it and then covered over with a layer of ashes. The older the camp fire and the more powdery and dusty the ashes, the better and more easily is the damper baked. An old hand knows exactly when to take it out. The dust and any ashes that cling to the hard-baked crust are scraped off and it is stood up on end, in front of the fire, so as to cool down, but not too rapidly. A real damper is very satisfying but needs good teeth. A camp oven usually connotes a more or less luxurious camp, in which there is a supply of yeast or baking-powder. Red-hot ashes are taken out of the main fire; the cauldron, with its big damper inside, stands over these; the lid is put on and covered with a layer of hot ashes, so that the heat is equally distributed both above and below, and

every now and then the lid is lifted to see if it is rising, as it should do. If necessary a fork easily shows whether it is properly baked or whether there is any soft dough left inside the hard crust, though an expert scorns any such extraneous help and relies on intuitive knowledge, that comes only of long experience of camp life in the bush.

When night came on and hid the dreary plains from view, the camp was quite picturesque. The three boys were contentedly smoking in front of their fire, a little way off; the camp fires of two men, droving cattle, lighted up the trunks of a few old *Giddea* trees that stood out weirdly against the darkness that enveloped everything. Away in the distance we could hear the tinkling of our horse-bells, telling us that they were contentedly feeding, now that the flies had left them in peace for a few hours. Save for this and the occasional plaintive call of a curlew flying overhead, there was perfect silence.

Two more days' travel brought us to the Alberga River. The last time I had crossed, immediately after a heavy rain, there was actually running water in its bed, which is very broad and shallow and broken up by sand-banks into several straggling streams, but now it was quite dry and its different branches were only indicated by clumps and lines of *Giddea* trees. In our lighter buckboard we crossed without mishap, though it was heavy going, but a mile on, one of the boys rode up and told us that *Chance* was stuck in the Alberga, so we sent back our two strongest horses. With their help the wagon was pulled through, and late in the afternoon we camped on a little flat by the side of the Stevenson, in which, fortunately, there was a good water-hole and on the banks of which there was plenty of grass for the horses. On one side of the flat there was rising ground on which were the remains of the old Macumba cattle station, which was now quite deserted and falling into ruins. The droughts of two or three previous seasons,

when the river was dry and all feed had withered away on the flats and sand-hills and upland stony plains, had led to its abandonment. We were expecting four more horses that we had previously bought and were to meet us on the track, but they had not come and we began to feel anxious as to whether those that we had were sufficient to pull us through the heavy sand country along the Stevenson. Not only this, but the flies were an indescribable pest, both to us and to the horses, some of whose eyes were bitten and had running sores. By bad luck, Chance got both eyes "bunged" and could scarcely see to drive, but he struggled on bravely with the help of half an eye. A "bung eye" is most uncomfortable. All of a sudden you feel a sharp prick and then your eyelids, both of them, begin to swell out and your cheek gets puffy. This goes on until you cannot open your eye. Fortunately, you do not often get both "bunged" completely at the same time: if you do, there is nothing for it but to wait till the swelling goes down, which takes a day or two.

A mile and a half on from Macumba we got into some very heavy sand along the Stevenson Valley and the wagon came to a standstill. By good luck, a drover came along the track and, with the help of fresh horses, it was dragged out on to a flat and there we camped. There was nothing for it but to wait patiently, for a day or two, until the extra horses came that we had purchased and were following us up on the track. There was a good water-hole close by and plenty of grass, and, had it not been for the flies, our camp would have been quite pleasant. By good luck also a few old natives turned up, so we persuaded them to camp close by, which was very easily arranged with the aid of flour and tobacco. At first the enforced delay was decidedly irritating, but it turned out to be a good thing, because it gave me the chance of experimenting with our phonograph. This had been given to us by Dr. Angus Johnson

in Adelaide. It was an Edison and, after a good deal of persuasion, we managed to get the natives, who were naturally frightened of the machine, to sing near enough to the trumpet to catch their voices. The result was some fairly good records of corroboree songs—the first that had ever been taken. The natives very seldom show any special surprise at anything that the white man does or possesses. They simply think that the white man's magic is stronger than their own. In fact I have only four times seen them show real astonishment. One was when, right out in the desert region of the Centre near Lake Amadeus, a small party of us, riding through the bush, suddenly came upon a camp of men and women who had never seen a man or a horse. They were too terrified even to run away, and when we dismounted and the fearsome animal came in two, they lay down on the ground and cried with fright. The second time was when one of us, quite innocently, lighted a match by rubbing it on his person. That even a white man could produce fire from his body in such a simple way filled them with envious admiration. A third, at a much later date, was when, far away in the Northern Territory, near the Gulf of Carpentaria, the natives for the first time saw a motor-car. They could understand a wagon moving when it was pulled along by horses, but one whose insides made its wheels move, without any help from outside, was more than they could grasp and, when they saw it, they fled away, terrified, and climbed the nearest gum trees to get out of its way. The fourth time was this one in our camp on the Stevenson River. The machine had a "reproducer" and, when they heard their own voices and the corroboree songs coming out of it, they were not only alarmed but completely mystified and thought that, as they told us, there was a "debil debil" in the box that had seized upon their voices, when they went down the trumpet to him, and

only let them go again when we asked him to do so. Fortunately they had confidence in us and our power to control the "debil debil," whom we had caught and shut up safely in the box, and bring to nought any evil designs that he might have upon them. It would have been very interesting to hear the accounts that they spread abroad amongst their friends of this new kind of white man's magic.

After two days' waiting, our fresh horses came and, with their help, we ploughed our way along the Stevenson Valley on to the upland stony plains and, from the top of a rise, saw a long line of telegraph poles, streaking away in a straight line northwards to the Charlotte Waters telegraph station. Day after day, on all the open plain country that we crossed, we saw a constant series of mirages, but this was the most remarkable of them all. I often tried to photograph one, but all that I could get on the plate was a line of light along the distant horizon that gave no idea of the scene. I have tried in a sketch to give just a little—but only a very little—suggestion of what this particular mirage looked like (Fig. 194). Under ordinary conditions it was just possible to detect the station buildings as little specks in the far distance, but from where we stood we saw what appeared to be a great shimmering lake with the little station buildings glorified into almost a mystic city, hanging in the air, and a line of huge poles and lofty trees, all reflected in the water beneath them. It was a burning hot, still day—so hot that we could not touch with comfort any metal part of the wagon and, as we drove on, the lake disappeared from view, the city resolved itself into a little building with two or three outhouses and the tall trees into small scrubs.

I have already described Charlotte Waters. It stands on the northern side of a wide, open plain. This was the third time that I had been there, and I was very glad once more to meet my old friend Byrne, with whom I had been

working five years ago, that time amongst the animals, after the heavy rainfall of 1896.

Here and there were a few small "crab-holes," as they are called (Fig. 194), on the stony plains, and the water-hole on the Coghlin, with a few overhanging gum trees, half a mile away to the north of the station, still held a fair supply of muddy yellow water, but, otherwise, everything was dry and parched. By the side of the water-hole, the natives attached to the station had built a few little huts out of old boxes and kerosene tins. The heat and smell inside these were overpowering—the daily temperature was anything up to 150° F. in the sun and 110° F. in the shade. I put my head into one and found five dogs, a cat, a lubra and a piccaninny, all of them apparently quite comfortable and content, the two latter hard at work eating a little bulb that they call Irriakura. It looks like a very diminutive crocus bulb and tastes somewhat like a filbert. These natives are employed as "general helps" at the station. Three of the women take charge of the goats, of which there is a herd numbering about 400. In many out-back parts they are invaluable as supplying both milk and meat, because they are very hardy and will thrive under conditions more or less impossible for cattle. Early in the morning they are taken out, miles away across the plain, to where they can feed, and at night-time are brought back to a fenced yard near to the station, partly to keep them together and partly to prevent the wild dogs, or dingoes, from chasing and killing them under the cover of darkness. When evening comes on, you can see them, far away, returning to their fold, because of the dust they raise that looks like a golden cloud in the sunset. There is one old lubra who, as kitchen-maid and assistant to the cook, occupies a much superior position to the others. She weighs just over fifteen stone and wears only a "one-piece" garment with a belt round it, so that you can



B.S. del.

FIG. 194.—DISTANT VIEW OF CHARLOTTE WATERS TELEGRAPH STATION IN A MIRAGE.



B.S. del.

FIG. 195.—“CHARLOTTE.”

form a fair estimate of the real size of her waist, which is colossal. Her name is Charlotte—after the station (Fig. 195). Usually she wears a small hat, the remnant of an old “bowler,” and a veil, the latter partly for ornament and partly to keep the flies off, and is seldom without a pipe in her mouth. She is as good-natured as she is stout and can do anything from peeling potatoes, when there are any to peel, to driving a team of bullocks, which implies the possession of a strenuous vocabulary learned from and peculiar to European drovers.

There was a native camp out in the scrub, about a mile away from the station, containing some thirty or forty men and women, who had come in to perform a rain ceremony. The men had brought with them eight long, wooden slabs, shaped like huge bull-roarers and ornamented with lines and concentric circles of dots of white pipe clay. These were carried on the head, fixed into conical helmets made of twigs bound round and round with human hair string, and the way in which they balanced the unwieldy slabs on their heads, while dancing or rather prancing backwards and forwards, was really remarkable (Fig. 196). This rain dance gave us the opportunity of experimenting with the cinematograph. It was a Warwick machine and, if not actually the first, was amongst the earliest cinematographs to be used in Australia. It was certainly the first used amongst the aboriginals. A diagram showed how to fix the film in the machine, so as to make it run round, but no instructions had been sent out as to what rate to turn the handle, so I had to make a guess at this. The focussing glass was, of necessity, small and you could only get a sideways and not a direct view of it, but, after a little practice with a blank spool, I felt equal to a first attempt in real life. This was in 1901; the quarter of a century that has elapsed since then has seen considerable improvements in cinematography that have made it, if not a

simpler, at all events a more certain method. We had no idea what the rain ceremony was going to be like, so that all that I could do was to stand the machine on one side of the ceremonial ground, which was simply an open space in the scrub, focus for about the centre of it and hope for the best. The lens allowed for a fair depth of focus, but the field of action covered by the natives was large and I had not, as in more recent machines, a handle to turn, making it possible to follow up the actors if they moved about very much from side to side of the ceremonial ground. When the performers came on to the ground I was ready for them, and started grinding away as steadily as I could at the handle, though, at first, the temptation was great to vary the rate of turning to suit the rapid or slow movements of the performers. To be a successful cinematographer, with the machine that I used in these early days, you had to suppress your feelings, and rise or fall to the mentality of an experienced barrel-organ grinder, who, I then realised, must train him or herself to become utterly oblivious of what, I think, is called tempo, if he or she is to be a success. The chief difficulty was that the performers every now and then ran off the ground into the surrounding scrub, returning at uncertain intervals of time, so that now and again, in the expectation of their suddenly reappearing, and fearful of missing anything of importance, I ground on and on, securing a record of a good deal of monotonous scenery but very little ceremony.

One of the "songs" sung, of which we were able, later on, to secure a phonographic record, was very interesting. The words seemed to consist of only two simple refrains repeated time after time as follows: The first was

"Dad á Da dá,
Dad á Da dá,
Dad á Da dá,
Da káta kái,"



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FIG. 196.—DECORATIONS USED DURING A RAIN DANCE OR CORROBBOREE AT CHARLOTTE WATERS.



DR. KEITH WARD.

FIG. 197.—CROSSING THE SAND DUNES.

repeated three times. Then, on a higher note, came the second

“Ded ó,
Ded ó,
Ded ó,
Da Káta kái.”

This was only sung once, and again the refrain “Dad á” was taken up, and so on without variation, to the accompaniment of clanging boomerangs that kept time to the music. Emphasis was laid on the á, the ó and Káta kái, one clang of the boomerangs corresponding to each of the two first and one to each of the two latter—but every now and then the call of the plover, or Pil-pilpa, was heard. It was a very good example of sympathetic magic. The call of the bird is often heard before the fall of rain, so that the native naturally thinks there is a close connection between the two and that, if he imitates the former, the latter is sure to follow.

The wax cylinders that we had to use were so large—they were between five and six inches in diameter—that I was afraid to risk carrying them further north, not only because of the heat, but because of the risk of travel on camel-back, which was the only means of transport, so I thought it safer to use them all whilst we were in camp at Charlotte Waters, pack them up and send them south from there, so as to avoid as much travel on camel-back as possible. As it was, eight out of thirty-six, despite careful packing, were cracked and spoilt during transit.

From Charlotte Waters we travelled on north, first of all along the Finke Valley to Yellow Cliff and Crown Point, then along the eastern bank of the Finke to Horse-shoe Bend, or Engurdina, where we were expecting to find three or four more horses awaiting us. We had arranged for them to be brought here because, immediately to the north of the Bend, we had to get across the very heavy Depot sand-hills.

Not far from the track, just before we began the steep descent into the Finke Valley, there were several heaps of stone that had evidently attracted the attention of the natives, who had piled them carefully together and kept them clear of weeds. Tradition relates that in the Alchera, the far past mythic times, a grass-seed woman lived here. She had a son, and the men of Engurdina decided to take him away to a distant place called Urapuncha—the hill of fire—in the Western Macdonnell Ranges, to perform the ceremony of initiation there. The boy was fair in colour and the men of Urapuncha took a great fancy to him and determined to try to keep him. After much talk, they persuaded the Engurdina men to leave him behind and take one of their youths back with them in exchange. The mother constantly sat on the top of the hill above the river, watching for their return, and at last she saw them coming back over the sand-hills. Even far away she knew that the boy with them was not her own son and was very angry, but, according to custom, she went out to meet them, carrying water, because the sand-hill country was very hot and dry. Into the water, however, she had put some *arungquilta*, that is, evil magic, though, of course, the men knew nothing of this and, being very thirsty, drank it up, with the result that at once they all became ill, vomiting forth all their insides, and so died miserably. The heap of stones now represent what they brought forth, and natives passing by used to throw new ones on the heap and keep it clear of weeds. The boy did not die at once, but crawled away on hands and knees down to the river valley and died there, a stone arising to mark the spot. A fire lighted at this stone has the effect of making the sand so hot that it is uncomfortable to walk on, and in this way it is easy to annoy any one of your enemies who happens to be travelling, because the fire, in the form of *arungquilta*, will pass out of the stone and can travel long



B.S. del.

FIG. 198.—DESERT OAKS LOOKING LIKE FUNERAL PLUMES AMONGST THE SAND DUNES.



B.S.

FIG. 199.—GIANT "WHITE-WASH" GUM TREE.

distances. On the other hand, fires lighted on the larger heaps of stones make it comfortably warm in cold weather. The woman lived on alone and, being strong in magic, the stone that arose to mark her death place is now full of *arungquila*, which can be made to go into the body of anyone whom it is desired to injure, and burn him up by merely rubbing it and, at the same time, muttering a request to the magic to go forth.

By good fortune our fresh horses came into the Bend and so we started off, leaving the Finke to the west of our track, and were soon in the thick of the sand-hills. It was a case of simply ploughing our way up the gradual southern slope of a huge dune, then across its dome, often strongly ripple-marked like sand on the seashore, and then down its short steep northern face (Fig. 197). Steep though it was, the sand was so soft that the horses had to pull hard going downhill. From the top of each hill nothing was to be seen except an endless series of great billows of sand, sometimes golden, sometimes rich indian-red in colour. Of course there was no water: nothing grew on the dunes themselves, except a few old Cassia and Acacia shrubs, tussocks of porcupine grass and, here and there, a Desert Oak. The flats between the hills were, however, usually covered with the latter (Fig. 198). It was exactly the same country that we had, years ago, crossed on the way to Chambers Pillar. On the flats between the dunes the going was easier for the horses, but it took Gillen and myself, with our lighter buckboard, just seven hours to do less than fourteen miles, and we were relieved to get into our camp at a place called the Depot, on the northern margin of the sand-hills, where we came out in the valley of the Hugh on its course down to the north, just before it junctions with the Finke, which here turns almost due west. Chance, with the wagon, came in three hours later, and we sent the boys with the horses

to a water-hole in the bed of the Hugh about a mile away from the track.

The place receives its name because, when the overland telegraph line was being built, a big depot was made here, where stores of everything were kept for the use of the construction party. Why such a forsaken, dreary hole was chosen for a depot, when not far away was the much pleasanter country of the Hugh Valley, it is difficult to understand. It must have been a busy, if very dreary and comfortless place, during the building of the line: now there is no trace of anything except the remains of a well full of foul water.

All next day we were travelling due north along the Hugh Valley, which is simply a wide, open plain across which the river meanders from side to side, amongst flats and sand-hills. It was a rough and tiring day for the horses because we had to cross the river eight times. Its bed is simply a bed of soft sand that must sometimes be nearly a hundred yards broad. If only it contained water—but there was not a drop anywhere—it would be a wonderful sight, because, in all this part of its course, it is bordered with magnificent gums whose huge white trunks and wide-spread branches, carrying masses of foliage, slant and arch across the river, often meeting overhead in the narrower, but still broad, parts of the stream.

What made travelling more difficult was the fact that, owing to a recent flood, the old crossings had mostly been washed away, so that it was by no means easy to negotiate the banks, which were often ten feet high and very steep. We saw one place where the mail coach, that had travelled down just before we came up, must have simply jumped down an almost straight-up bank, five feet high. How the driver and horses had managed to avoid an upset and a crash it was difficult to see, but it takes a good deal to baffle an experienced Central Australian bush mailman.



DR. KEITH WARD.

FIG. 200.—“ WHITE-WASH ” GUM TREES ON THE FERGUSSON RANGE
SHOWING THE CHARACTERISTIC BOLE AT THE BASE OF THE TRUNK.



B.S.

FIG. 201.—SAPLING DESERT-OAK AND "WHITE-WASH" GUM TREE.

Profiting by his experience, we avoided the old crossing and found a place a little way off, where the bank was not quite so perpendicular. It was just as much as the horses could do to pull the buckboard up, but they did it somehow and, by good management, Chance, with his team and the wagon, managed later on to climb the bank at the same place. We were thankful to have only one more crossing left, and camped on a flat in a great bend of the river amongst the white gums (Fig. 199).

We were gradually getting into higher country and the nights began to get a little cooler, much to our relief, because it meant some respite from the plague of flies that had tormented us. At 6 a.m. the thermometer was down to 47° F., so that we could eat our breakfast in peace. This consisted usually of a cup of hot soup, made out of what was called pea-sausage, with a chunk of really good damper. The sausage was a hard, compressed mixture of various ingredients, meat and vegetables, which when pounded up and mixed with boiling water made a most excellent kind of glorified pea-soup.

It was early morning when we crossed the Hugh River for the last time and passed out of its broad valley, which now trended away north-westwards, on to an upland plain, from which we could see, in the far distance, the Ooraminna Ranges, forming as yet only a long dark, purple line on the horizon. On the track we met four native women walking along with *pitchis* full of seed on their heads. They must have walked a long way and were very tired and thirsty, and came and begged some water from us, as there was none to be had within six miles. One old woman drank a quart straight off. We gave them as much as, and really more than, we could spare; not by any means all they could have drunk, but we had only brought a small supply with us, enough for a day, because Gillen and myself were

camping away from water and from Chance, who was following us up with the wagon.

We toiled on for two days more, walking all the way over sand-hill country, with long weary miles of porcupine grass and flats covered with gaunt old Desert Oaks. Now and again there were a few beautiful white-stemmed, or white-wash, gum trees. This special kind (*Eucalyptus terminalis*) is especially abundant in this part of the Centre and, curiously, seems to grow equally well clinging to the sides of the lofty quartzite Ranges or on the sandy flats. Their trunks and stems are intensely white, standing out vividly against the blue sky, the deep red rocks or dull-coloured scrub. Their leaves form dense masses of foliage of much richer green colour than in the case of other gums. The bush men call them White-wash gums for the simple reason that their trunks and boughs are coated with a fine pure white powder that rubs off; indeed the natives actually rub their fur string head-bands on the trunk to whiten them. Those especially that grow on the Ranges have always a remarkable swollen bole at the base of the trunk that can be seen from a long way off and gives a very characteristic appearance to the tree (Fig. 200). Young White-wash gums and Desert Oaks, growing side by side, as they sometimes do on the Ooraminna flats, form as strong a contrast to one another as would a larch and a silver birch (Fig. 201).

This was our last day's travel across the Lower Steppe lands. It had been one of the few dull days that we had had, with a thin, grey haze over everything that made the young Desert Oaks look more than ever like huge funeral plumes, but at sunset the haze cleared away, and as we got to the top of the last sand-ridge we saw the Ooraminna hills, still some miles ahead of us, with their jagged outlines all bathed in rich red and purple colour, while even the sombre oaks and Mulgas had caught a golden glow.



B.S.

FIG. 202.—THE "PINCH" AT OORAMINNA.



B.S.

FIG. 203.—OORAMINNA WATER POOL.



B.S.

FIG. 204.—TOWNSHIP OF STUART.

This only lasted for a few minutes, then darkness came on quickly and we could see nothing but the Mulga scrub close by, lighted up by our big camp fires. Everything was perfectly silent, save for one solitary mopoke which could not even get a mate to answer its doleful call.

An hour or two's drive next morning brought us to the Edith Range, through which we had to pass to reach the water-hole at Ooraminna, because our horses had had a dry camp and this was the last chance of giving them a drink before reaching Alice Springs. The track was terribly rough. In order to make one by which horses and camels can enter the Ranges, as there is no natural gap in this part, a kind of rough road had been blasted in the rocks, forming what is locally called "The Pinch," and it deserves its name much better than the photograph shows (Fig. 202). In reality it forms a kind of rough, rock ladder up which the horses stumble as best they can. Beyond this we found ourselves in a jumble of very rocky hills amongst which the track turned in and out in all directions, at one time amidst great upstanding rocks known as Hell Gates, until we came out on to a plain to the north of the Ranges and, after another eight miles' drive, turned back into them to reach the Ooraminna Rock-hole (Fig. 203). We camped at the entrance to a defile, a quarter of a mile away from it, but the horses knew where it was, and when unharnessed, did not wait to be driven in, in fact they were in such a hurry that they wanted to take the buckboard with them. The water pool lies to one side of a kind of amphitheatre amongst the limestone rocks, completely shut in except at one point where a winding valley runs out southwards. Above the pool, and overhanging it, so as to form a shallow cave, the rocks form a little cliff about twelve feet high, which, together with a gum tree and a few native figs, shelter it from the sun. A creek comes down from a broad open valley above it, the

water tumbling in the rain season down the cliff face. In ordinary seasons the main pool, which is not more than thirty feet long by twenty broad, can be relied on, but in drought it is not permanent, and then there is a long waterless stage of fifty miles between Alice Springs and the nearest water-hole on the south. Travelling cattle, camels and horses have access to it, so that the water is almost always fouled and unfit for human drinking.

Some natives from Alice Springs came in while we were there, and amongst them four piccaninnies, one minute enough to be carried about by its mother in a *pitchi*. They had been out in the bush collecting food and the women were, as usual, carrying large *pitchis* full of grass seed. They were very glad to see us, and more still to get tucker and tobacco. A great chunk of bread and jam for each of them made the three piccaninnies absolutely happy for the time being, and they enjoyed the evening in camp just as much as we did. As it was not yet named, the youngest, with the cordial consent of its parents, was called after myself to celebrate our meeting. And here it may be remarked that in Central Australia the possession by any native of a particular name, such as Smith or Jones, is not by any means an infallibly strict and reliable guide to actual parentage.

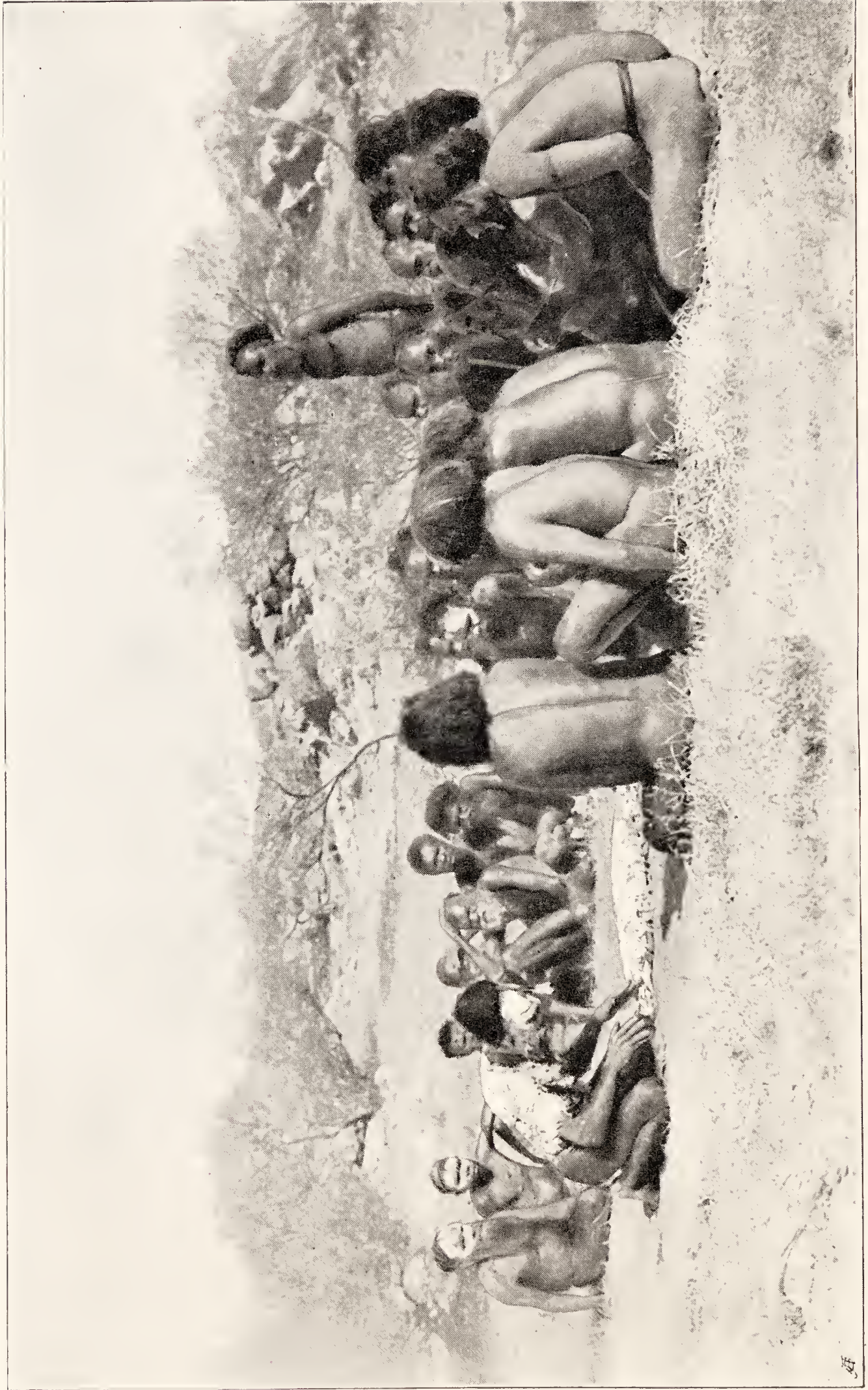
It was a great relief to be at last amongst real mountains instead of the everlasting flat-topped hills further south. We camped in the valley above the main water-hole. Fortunately there was a little water in the small rock pool above the main one. It was very green and rather slimy but was quite right when boiled, so that we could drink it in the shape of tea. We turned in early. It was a distinctly cool night, and the dew was so heavy that it soaked through our sail-cloth sheets that we wrapped round us as we slept on the ground.

Ooraminna is derived from two words, *ura* meaning



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FIG. 205.—WELCOMING DEPUTATION OF ARUNTA MEN.



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FIG. 206.—CEREMONY OF UDNIRRINGITA (A GRUB) TOTEM, ARUNTA TRIBE.

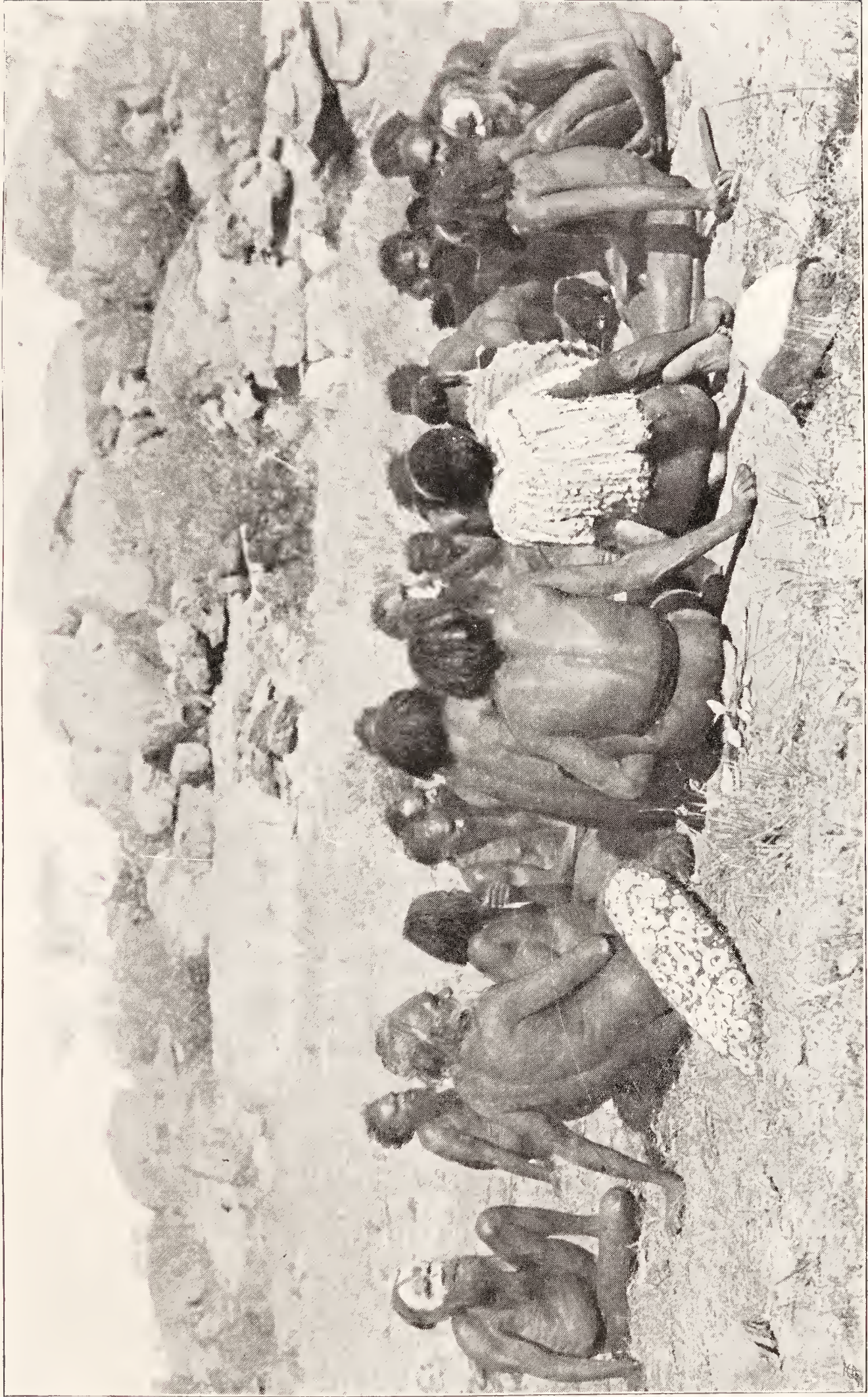
fire, and *minna*, food, but we could not find out what the name really signifies. There are a few rock drawings on the walls of the cave and a number of remains of circles of small stones on the hills round the little amphitheatre in which the water-hole lies. In old times it was the central camp of a group of *Unjiamba*, or Hakea flower, people, where they performed their sacred ceremonies, but they have long since passed away, and now anyone may visit it and even women camp there. They have also left traces of them behind in the form of numberless chipped flakes, strewn around the higher parts of all the quartzite ridges bounding the upper valley.

After a day's spell at the water-hole, we crossed some low ranges and, from the top of the last of them, looked down on to the Emily Plains, stretching right away for miles to the north (Fig. 204), until they came up against the foot of the great Macdonnell Ranges, rising east and west and broken through at three points by very distinct gaps, the Heavitree, Emily and Jessie cutting across them from north to south. Behind the southernmost ridge, at its eastern end, the great red mass of Mt. Undoolya, with gigantic precipices, seemed to tower above the lower ranges. We drove on all morning across the plains, on which numbers of red kangaroos were quietly feeding, halted for an hour amongst the big iron-wood acacias (*A. salicina*) and white gums that border the River Todd, and then ploughed our way through the dry sandy bed of the latter, where it passes through the Heavitree Gap, and on across the plain to the north of it on which the little township of Stuart is placed. A mile or two still further north we saw, once more, the Alice Springs telegraph station, which had been Gillen's home for long years, and made our camp on the old Engwura ground. When we had lived amongst the natives there, five years ago, in 1896, a thick scrub and lines of gum trees, bordering the Todd, concealed it from

view. Now it was open ground. Drought had completely killed off the scrub and only a few of the old gums remained.

After fixing up our camp, we went on to the telegraph station and were glad to be able to renew acquaintance with three or four of the old officers who still remained, Messrs. Besley, Squires and Jago. They had been there when Gillen was in charge, so that we were amongst friends. Mr. Bradshaw, who had succeeded Mr. Gillen as head of the station, was away on leave down south, but Mrs. Bradshaw gave us a warm welcome to the station and did everything possible to help us. She kindly placed a room at our disposal which, with the aid of red turkey-twill that we carried with us for the purpose, was easily made into a dark room, which made it possible to develop our plates instead of having to send them down country. As a precaution against loss or breakage *en route*, I took a print of each. Though, at night-time, when the developing was usually done, it was moderately cool, that is compared with the heat of the day, still it was often warm enough to "frill" the plates, because there was, of course, no means of cooling the water artificially. We had decided to take plates rather than films, thinking them to be the safer of the two in the hot Central climate.

The natives had heard that we were coming up and were on the look-out for us. The morning after our arrival a deputation of eight of the older men solemnly marched into our camp (Fig. 205). Without saying a word, they sat down a little way from where we were unpacking our stores and arranging things. They were all old friends, amongst whom we had worked during the Engwura, indeed Gillen had been known to some of them for more than twenty years, and they solemnly bade us welcome once more to their country. They were naturally much interested in our stores and quite ready to share in them at



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FIG. 207.—GROUP OF MEN DISCUSSING MATTERS AT THE CLOSE OF A CEREMONY OF THE UDNIRRINGITA TOTEM, ARUNTA TRIBE.



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FIG. 208.—OLD MEN EXPLAINING TOTEMIC MATTERS TO A YOUNG MAN AT THE CLOSE OF A TOTEMIC CEREMONY.

At the same time a decorated shield used during the ceremony is being pressed against his stomach by the man sitting opposite to him.

once. Of course we gave them some flour, tea, pipes and tobacco in return for their courteous welcome, but not too much, indicating that further supplies would be available in payment for work done in the way of collecting, or for things that we wanted, such as boomerangs, spears, shields and spear-throwers. They went back to their camps with the news of our ideas on the subject of disposing of supplies of food and other things they desired, in return for what we wanted. The result was that we soon had all manner of things brought in, from a common beetle or butterfly, hopelessly squashed in the tight grasp of a piccaninny's little fist, to a big fighting boomerang four or five feet long. In those days genuine weapons and implements, not made for sale as they are now, were fairly abundant. Prices were not excessive and everything was paid for in "trade," the bush natives having then fortunately no use for money. A stick of black-twist tobacco, value about a penny-halfpenny, would easily buy a boomerang; the owner of a good shield readily parted with it for a pipe that cost sixpence, while the broad smile of pleasure on a little piccaninny's face was quite enough payment for the few sweets that it got in return for the useless fragment of a beetle. Those days are long past, and I have often regretted that difficulties of transport made it impossible to procure more examples than we were able to do, because iron has now wholly superseded stone. However, I got a good many things and there is now, at all events one Australian tribe—the Arunta—of whose culture, as represented by the various articles and objects that they use in daily life and ceremonies, a more or less complete series is preserved.

There was plenty of work to be done amongst the natives, a good many of whom were camped amongst the hills close by. The men were performing some of their sacred ceremonies, the most interesting of which were

concerned with three of their totemic groups, the sun, witchetty grub and eagle-hawk. They were, in general features, exactly the same as those of which we had seen so many at the Engwura in 1896, but they gave me the chance of securing cinematograph records. The sun ceremony was concerned with an old tradition, according to which the sun was originally a woman who had gone up into the sky. She now goes across every day from east to west and then hurries back round the other side of the world, in the dark, and gets up in the same place in the morning. The mother's mother of the man who now acted the sun part was the reincarnation of the original woman. In the ceremony (Figs. 168, 169) a small disc was used, made of grass stalks and shaped like a bun, about eight inches in diameter and three in thickness. It was covered with white bird's down and, on one side, had radiating lines of red down that were supposed to represent the rays of the sun. There was the usual dancing round two decorated men and, after the ceremony, the bun was pressed against the stomachs of the older men to soothe their feelings. In the witchetty grub ceremony the old head-man of the totem group at Emily Gap performed. He was decorated with lines of down and was supposed to represent a celebrated old ancestor who lived in the Alchera. The only thing he did was to keep bending down over a shield, ornamented on one side with wavy lines that represented the walking about of the grubs in ancient times (Fig. 206). On the other, a number of large circles represented the shrubs on which the grubs fed and smaller ones the eggs laid by the adult insect. The old man was supposed to be trying to induce the insect to lay eggs, so that the natives, who are very fond of them, could have plenty to feed upon (Fig. 207). He himself, being a witchetty grub, would not eat them, except just a little at one special time. The head-man of every totem group must, once every year, perform



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FIG. 209.—CEREMONY OF THE EAGLE-HAWK TOTEM.



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FIG. 210.—ATNINGA OR AVENGING PARTY, WEARING THE ILKUNTA, APPROACHING THE CEREMONIAL GROUND, ARUNTA TRIBE.

a special ceremony to bring about the increase of his totem animal or plant. The natives firmly believe, that by magic they can make animals breed and plants grow. The ceremony is always held a little while before the usual breeding time: if the animals increase, then of course it is the man's magic who has made them do so; if not, his failure is put down to the strong counter-magic of some evilly disposed enemy. When the animal has increased in numbers, men who do not belong to that particular totem bring a supply of it into the camp and offer it to the head-man, who eats just a little of it and then hands the rest back to the others, telling them that he has made it for them and that they may now eat it. The natives say that the Inkata, that is, the head-man of each group, must eat a little of his totem so as to have some of it inside him, or else he would lose his power over it and could not make it increase. A kangaroo man does not eat kangaroos, but makes them for emu and other men to eat, and, in the same way, an emu man does not himself eat emu, but makes it for kangaroo and other men to eat. When the ceremony was over its meaning was explained to the son of the head-man, to whom it will descend on the death of his father (Fig. 208).

The eagle-hawk ceremony was quite picturesque. There were two performers, both decorated as usual with bird's down and one of them wearing a heavy cross-shaped ornament on his head, fixed into a helmet made of twigs bound round with hair string. Each of them was at first posed, crouching down on a shield so that they faced one another. Then they jumped off and began hopping round and round one another. They were supposed to be quarrelling about a piece of food that one man held in his teeth, and, after prancing about for some time, flapping their arms like wings beating the air, the second man managed to seize the food in his mouth and the ceremony was over (Fig.

209). The other men squatted down to one side, watching them with interest and all the time singing and beating time with boomerangs.

I ran a hundred feet of film through the cinematograph, but, to my disgust, found, on opening the box in the dark-room, that the greater part of it had somehow slipped off the cogs and had simply wound itself up inside the camera, out of which it sprang and spread in long coils on the floor as soon as the lid was opened. Fortunately I had stuffed up all chinks in the room with red turkey twill, excepting small ones in the roof that could not be got at and only admitted a very dim light. After more than an hour's tedious work I unravelled the coils and rewound the film, which, luckily, was not much the worse for the mishap.

The heat was so great and dry that, after the camera had been exposed and used for some time, the wood began to shrink and slight cracks made their appearance. It needed constant watching, and stuffing the cracks up with black worsted and porcupine-grass resin, to keep the machine light-proof. I decided that it would be wiser to use up the films, of which we had 3000 feet, before leaving the Macdonnell Ranges, from which they could easily be sent down to Melbourne to be developed and kept safe. When we got away from Alice Springs, it would take months before they could reach the south, and, meanwhile, they would be exposed for a long time to the damp heat of the northern coastal regions. It was the first attempt made to secure cinematograph records of native ceremonies: some of the negatives were quite good, others indifferent. The greatest difficulty in regard to photography in Central Australia is the extremely fine dust that seems to be able to penetrate everything, even the specially made shutters and slides of cameras. I kept the insides of the cameras and slides greased with vaseline, but even this was not wholly successful.



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FIG. 211.—ATINGA PARTY PERFORMING A BOOMERANG DANCE, ARUNTA TRIBE.



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FIG. 212.—RUBBING THE THIGHS OF THE MEN WHO ARE TAKING PART IN THE ATNINGA, ARUNTA TRIBE.

One evening in their camp by the Todd River, about a mile away from ours, we saw their fires blazing brightly and heard the natives singing loudly. They were evidently excited about something, and we found them engaged in preparing a number of little whittled sticks called Inkulta. These are made out of a straight rod, from a foot to eighteen inches long. The native holds this in one hand and, with a sharp stone chip in the other, makes a series of close-set, little curled flakes, that remain attached to it and run spirally down its length. We found out that they were getting ready to start away on an avenging expedition, which they call *Atninga*, having discovered, to their satisfaction, that a man living in a camp of men of the Ilpirra tribe, about a hundred miles away to the north, was guilty of killing, by evil magic, an Arunta man who had died a year ago. About ten o'clock next morning we heard a loud shouting that announced the fact that the avenging party was coming up from the camp. The men came dancing along with high-knee action, like a continuous goose-step in the form of a square, yelling and brandishing their spears (Fig. 210). One man, who was the brother of the dead man whose death they were going to avenge, led the party and, every now and then, rushed wildly round it, yelling aloud and pretending to hurl his spear at an imaginary enemy. The idea was to work them all up into a state of anger. I kept dodging round to get a snapshot of him, but he was too quick for me and, after a short time, the men sat down in the middle of the sandy bed of the Todd, sticking their spears upright in the ground. Every man carried a shield and boomerangs and wore two of the flaked sticks, one projecting from each side of his forehead band. A large tuft of eagle-hawk feathers was tucked into the waist girdle, in the small of his back. Some of them, but not all, had painted their thighs with lines of white pipe clay. After a short pause, during

which they remained silent, other men came up and joined them and then the whole party formed into a square, climbed a small rise on one side of the river and came down on to a small flat, close by amongst the hills, dancing with high-knee action. First of all they rushed up and down, carrying only their shields in front of them, wheeled round in a body at each end of the flat, stopping every now and then to yell "Wha! Wha!" After a pause they laid their shields on the ground. Every man then took hold of a boomerang, holding it behind his neck with both hands (Fig. 211). Bending forward, they again rushed in a body up and down, stopping every now and then to crouch down, while they yelled "Wha! Wha!" Finally, laying their boomerangs down, the men took their spears and, with these held aloft, rushed backwards and forwards, led on by the dead man's brother. By this time they were getting into a state of great excitement. They all sat down and then, after a short pause, the men who were going on the expedition rose and had their thighs rubbed by the older men who were staying at home, the idea being to make them lithe and active. On an expedition like this, a number of hair-string girdles called *Kuru-urkna* are carried. Though they look like the ordinary ones they are very special ones indeed, and are made from the hair cut from the head of a dead man, so that they are looked upon as being especially associated with him and his spirit, which is called *Kuruna*; in fact a man carrying one of these is supposed to be endowed with all the strength of the dead man, which naturally makes him doubly powerful and much dreaded in a fight. The leader carried the *Kuru-urkna*, made from his brother's hair, and, in turn, went round to each man who was going with the party and placed one end on his body and the other in his mouth (Fig. 212). This was supposed to make him burn with rage and thirst for revenge. Then followed a rather



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FIG. 213.—ATNINGA, ARUNTA TRIBE.

Dance of the men who are actually to take part in the killing.



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FIG. 215.—ATNINGA.

The men who are to take part in the killing lying prostrate on the ground.
They are supposed to be lying on the man whom they have killed.

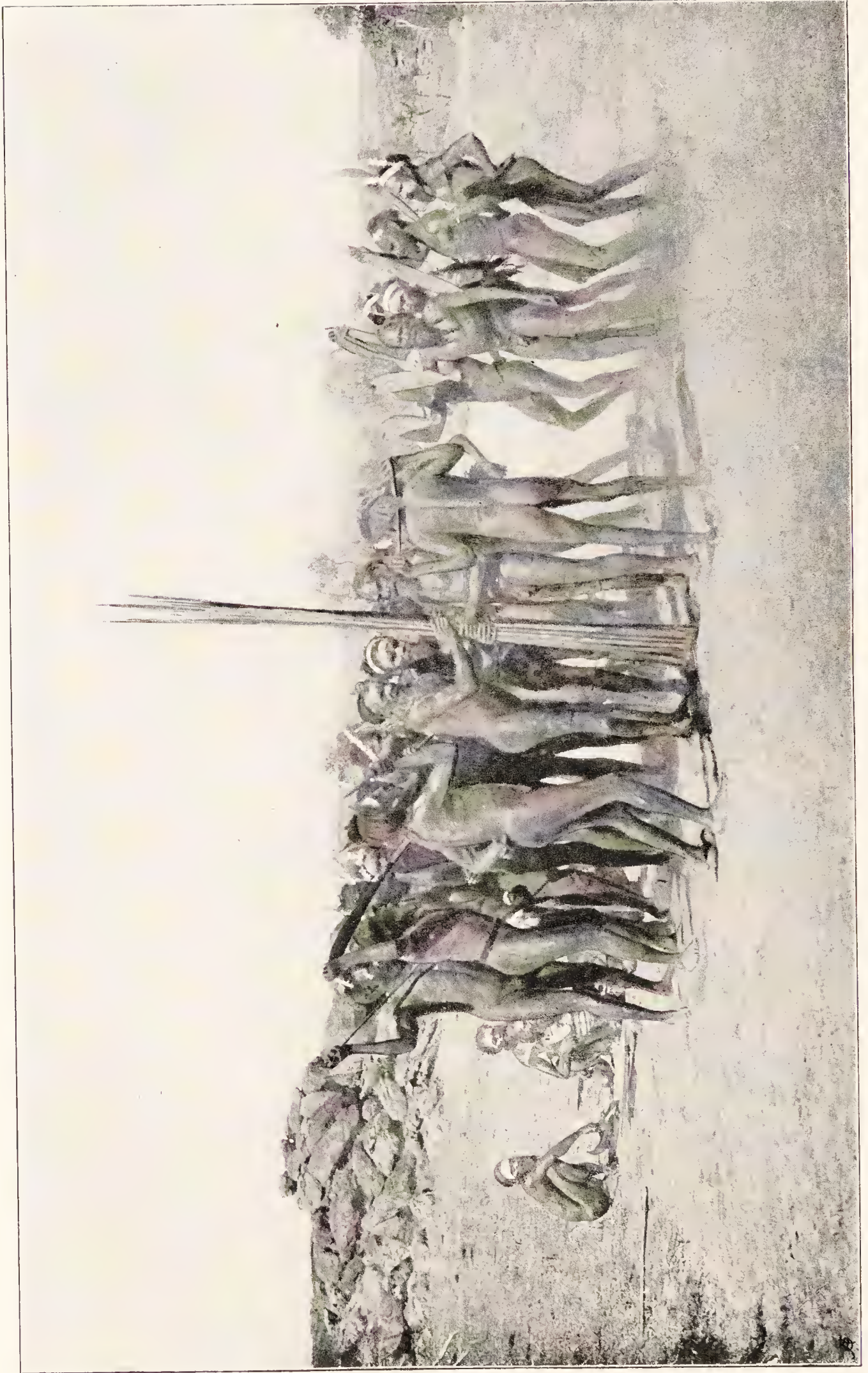


FIG. 214.—ATNINGA PARTY DANCING ROUND THE SPEARS WHICH ARE TO BE USED.

gruesome ceremony. The men opened veins and spurtled one another's thighs with blood. This was supposed both to strengthen them and, at the same time, bind them closely together and render anything like treachery impossible. If, at a time like this, there is any man amongst them who happens to belong to the same camp or country as their victim, they will force him to drink blood, whether he likes it or not. Having once done this, he is bound not to aid his friends by giving them warning of the coming of the avenging party. Meanwhile, a man had been selected to represent, for the time being, the one whom they are going out to kill. First of all, the men who were going to do the actual killing danced round with their hands behind their heads (Fig. 213). All the spears were then bundled together and held upright by two or three of the older men, who rattled them vigorously, while the others danced round (Fig. 214). All of a sudden the spears were let go, the supposed victim fell down on the ground to one side as if killed, and all the other men who were going to do the actual killing tumbled down on him (Fig. 215). This was supposed both to represent his being speared and also to make quite sure that he really would be speared later on. By this time they were all worked up into a state of great excitement and valiant courage, and at once, taking their spears, boomerangs and shields, started off, just as they were, carrying no food with them and wearing only their hair girdles, forehead bands and flaked sticks. There were twenty-eight of them altogether and they went off northwards in the very best of spirits, just as if they were starting on a pleasure trip.

All this took place on May 12th and, though we were anxious to press on to the north and get amongst fresh tribes, we determined to see the matter through and await the return of the *Atninga*. One day after they had gone I was puzzled by seeing two weird, white-looking objects in

the women's camp and, on going near to investigate, found that they were two old women who were in deep mourning and had therefore plastered themselves all over, from head to foot, with white pipe clay. Naturally, as they were stark naked, they stood out in strong contrast to all and everything around them and looked hideous in the extreme. Every now and then they broke out into a loud wail. This special form of mourning for the dead is carried out by the women only. Anyone who has lived for long near a native camp, in the wilder parts of Australia, knows well the uncanny sound of the weird death-wail, coming from the women's camp, often in the dead of the night, when all else is perfectly silent. As day after day passed by, and there was no news of the avenging party, the natives began to feel a little anxious and watchers were stationed on a hill close by that commanded a distant view of the Todd Valley, through which they would have to travel on their return. It was not until the 21st, nine days after their departure, that news was brought into camp that they could be seen, far away in the distance. Even then there was some anxiety, because, if the victim and his friends got news of what is in store for them, they may lie in ambush and surprise the avenging party, so that, instead of the victim being killed, the tables may be turned and the party return minus one or two in number. However, on this occasion all was well, which was known from the fact that, when they came closer, it was seen that the men were painted black with charcoal and wore little green-leafed twigs hanging down over their foreheads and inserted into the hole through the nose, a sure sign that they had killed someone. They came up the bed of the river in the form of a square, each man holding his spear upright in one hand and a shield in the other, at the same time prancing along with the usual high-knee action. One of the old women, who was in deep mourning, and therefore

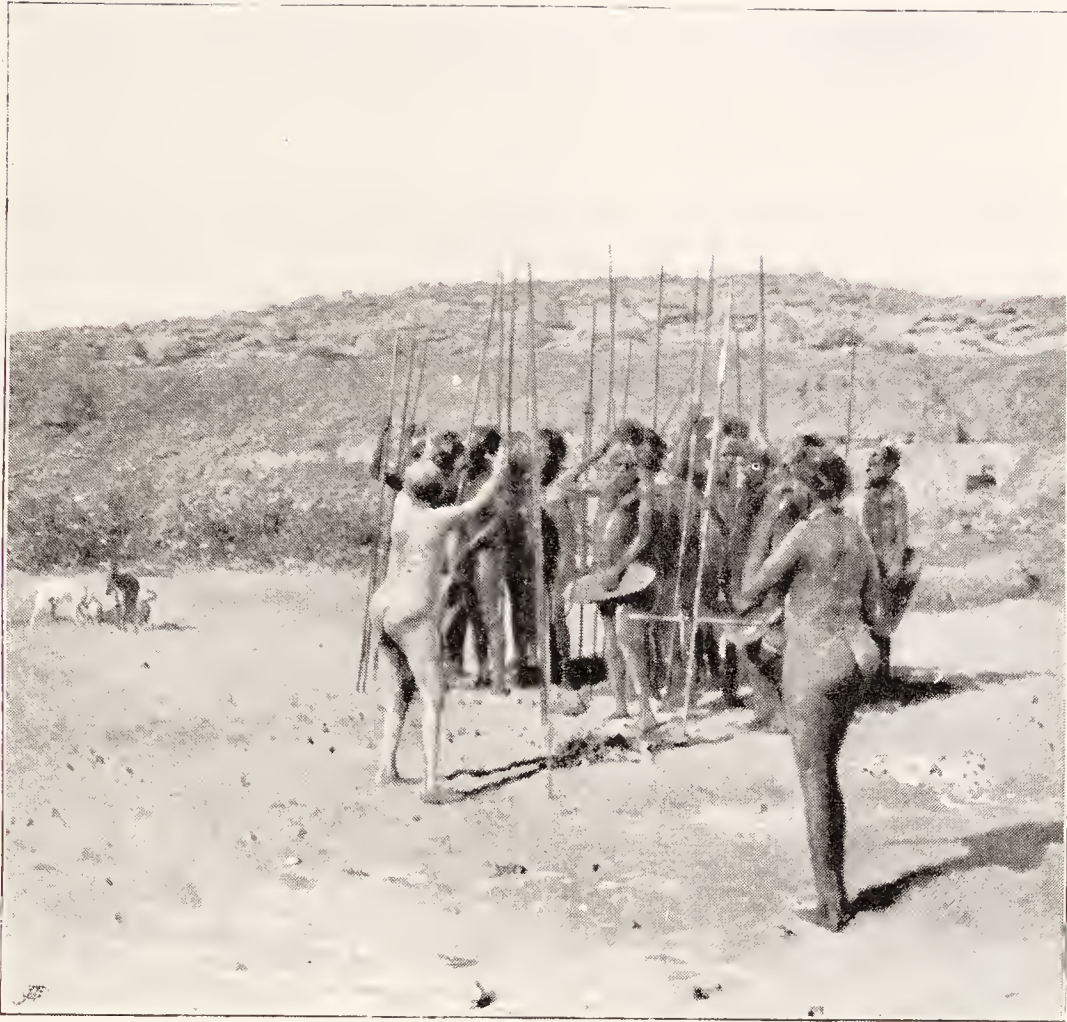


FIG. 216.—RETURN OF THE ATNINGA, ARUNTA TRIBE.
Old woman haranguing the men.



FIG. 216B.—ATNINGA, ARUNTA TRIBE.
Man testing the shields.

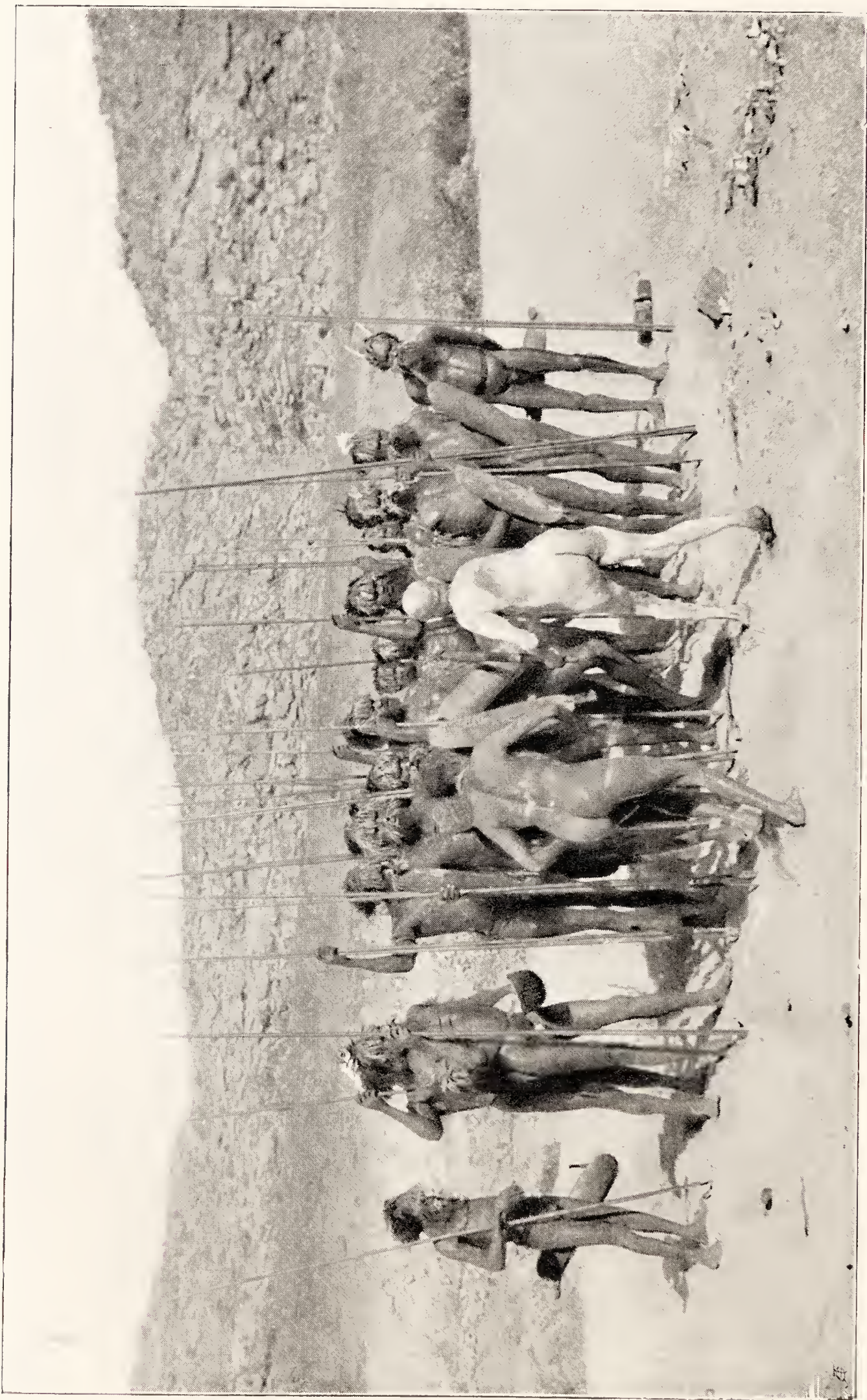


FIG. 216A.—ATNINGA, ARUNTA TRIBE.

Women testing the shields of the men who have taken part in the killing. The woman on the right being in deep mourning is daubed all over with pipe clay.

daubed all over with white pipe clay, met them a little way off and, with a fighting club in her hand, went through a series of grotesque, prancing movements in front of them, while they stood perfectly silent (Fig. 216). After a minute or two they started again and then came to a final halt in the bed of the creek. Meanwhile, all the members of the camp, men, women and children, had gathered together and stood to one side, not far away. Once more the old woman pranced about, expostulating with them and saying, "What do you all want to go and kill our friend for? I will hit your shields; if the sound is good you are safe; if it is bad, the men of another country will kill you." Then, without speaking a word, the men who had actually done the spearing, and are called *Immirinja*, came forward and stood in the front line, each man with his spear resting on the ground and his shield held with its convex side outwards. A younger woman came up and joined the older one, and then both of them struck every shield with a fighting club (Fig. 216a). This ceremony, called *Ulquita tuma* (*ulquita*, shield; *tuma*, strike), is regarded as very important and everyone stood listening to hear what the sound was like. The spirit of the dead man is supposed to follow the party up, in the form of a little bird, called *Chichurkna*, which is watching its opportunity to injure the men by evil magic. If the shield gives out a firm sound, all is well, but if a hollow one, then the owner is under some evil influence and will not live long. There was much anxiety shown when one man's shield gave out what was thought to be a bad sound, but he was told to hold it differently and then, fortunately to everybody's relief, it gave out the right one. The men who had done the spearing, that is, the *Immirinja* men, then sat down, while the others, called *Alknarinika*, or onlookers (*alkna* means eye), joined the group of those who had remained at home, recounting to them what had happened on the expedition.

In this part the bed of the stream was fully a hundred yards broad and, after a short pause of about fifteen minutes, the *Immirinja* men arose and, in twos and threes, each man holding his shield aloft, ran round in a wide semicircle to where an old man had stationed himself, in the middle of the broad sand bed of the creek, and had their shields tested by him (Fig. 216*b*). For another hour they sat silently by themselves and then each man went quietly to his own camp and the serious part of the *Atninga* was over. For many days, however, after this they must be very careful, because the *Chichurkna* bird hovers over the camp, trying to harm them. Its cry is like that of a little child, and when once they have heard it they are safe, because it cannot then hurt them. Every man paints himself with black, so that he cannot be so easily seen, and at night-time wears the tail tips (*alpita*) of the rabbit-bandicoot, because, as this is an animal that is wide awake at night, it naturally keeps its wearer alert and watchful, so that he will hear the *Chichurkna* if it should come near. Also he must be especially careful not to allow the bird to see his right arm while he is asleep or else it will be paralysed—a belief associated with the fact that this is the one with which he threw the spear.

Needless to say, the valiant deeds of the party did not suffer in the recital; but on this occasion it was not easy to make much of the exploit, which had consisted, not in killing the man whom they went in search of, but his father, an old man whom they had come across when he was alone in the scrub, some distance from his camp. The son had heard of their coming and had, discreetly, cleared away to a distant part of the country, but the spearing of the old man seemed right to them, at least they excused themselves by saying that he knew his son had “gone Kurdaitcha” and had not prevented him from doing so. It is only a question of time before a return *Atninga* will be

organised to visit the Alice Springs group and then, probably, the old man's death will be avenged. In this way, year after year, an endless vendetta is maintained amongst these tribes, though, fortunately, it often happens that there is more noise than bloodshed.

CHAPTER XIV

ALICE SPRINGS TO BARROW CREEK.

IT was now the end of May and we were getting well on into the winter, when the climate of the Centre is perfect—one long succession of bright, hot, cloudless days and cold nights. The station at Alice Springs is built by the side of the Todd River amongst a jumble of gneissic ranges of no great height immediately to the north of the most northern of the great quartzite ridges of the Macdonnell Ranges. It lies right on the northern boundary of the Higher Steppe lands, at an elevation of about 2300 feet. Every morning, just before sunrise, the thermometer was down to below freezing point, often between 27° and 23° F., but by noon it had risen to 130° in the sun or even higher still.

There were, of course, a good many natives camped round both the telegraph station and the little township of Stuart that lies about three miles to the south of the former, and we were constantly in and out of their camps. Every morning the women and children used to come into the station enclosure and sit all day long around their little fires, smoking and talking, unless they felt inclined to go out into the scrub in search of seeds and small animals. They were clothed in a motley array of clothes, usually the remains of a "one-piece" garment of some kind distributed to them once or twice a year. The Government, in those days, sent up to the stations along the overland telegraph line, stores of tea, sugar, flour and tobacco, and a certain number of dresses or dress pieces for the women, and

trousers and shirts for the men. These stores were under the charge of the head officer of the station.¹ The food was distributed amongst the older women who were unable to work, women with young children and the really old men, everyone receiving a weekly ration of about two pounds of flour, a quarter of a pound of sugar, mixed with a small handful of tea, and half a stick of tobacco. These did not last very long when once they got into camp, where everything was communal. This communal system means that a lazy loafer scores at the expense of his hard-working comrades. The women and men employed about the station received a regular and ample supply of food, clothes and tobacco. On the outlying runs the conditions were much the same, only, of course, the supplies to the natives came out of private stores, and every now and then a bullock would be slaughtered for the use of the blacks living in the camps that are always made near a white man's settlement, however small it may be. A white man, employing a boy, always provides him with trousers and shirt, probably a coat and hat, together with a knife, quart pot, pipe and tobacco, though it is rather annoying to find, sometimes, that a boy to whom you have given a new shirt turns up next day with a filthy, ragged, ancient one, merely explaining cheerfully, in answer to your expostulation, that "another one blackfellow been like em that one shirt, me been give it him, longa this one." This probably means that, by bad luck, he has stumbled up against some actual or potential father-in-law, to whom he is bound by custom to give anything that the old man takes a fancy to.

¹ When Mr. Gillen and myself were working at Alice Springs in 1896, the little police station was only a log hut, on the southern side of the Heavitree Gap. At a later period, new and substantial quarters for the police officers, who are really responsible for looking after the Aborigines, were erected in the township of Stuart, and the distribution of stores was placed in the hands of the police. The chief officer, Sergeant Stott, now acts virtually as Protector of Aborigines for Central Australia under the Commonwealth Government.

The ordinary bushman is not aware of this custom and is apt to feel upset when it is put into practice at his expense.

The children are usually stark naked, even in mid-winter, and were always running around playing, and never far away from us when there was any suspicion of a distribution of tucker or sweets. The lucky possessor of any garment discarded by a white child is a proud person. We had one piccaninny who was always running about our camp and was especially pleased with himself, and much envied by his less fortunate comrades (Fig. 217). He had picked up an old jelly mould, or something of the kind, that just fitted on the top of his head, and wore this by way of a hat. Being made of bright tin it set off his tangled black locks of hair to advantage. He had also secured a child's cast-off frock that, at one time, had been smocked but now consisted largely of holes, through which his black skin shone. I caught him one day squatting in a quiet corner with two or three other piccaninnies, looking the picture of perfect contentment and happiness personified. He had managed to wheedle from the station cook, with whom, as with all others, he was a privileged person, a jam tin full of hot dripping, into which he and his guests were busy dipping their fingers, no other suitable means of conveyance to their mouths being available. The smocked frock served to remove what little superfluous grease was left on his fingers; his frockless friends, following the simple but convenient example of their elders, used their hair for the purpose. It was often a marvel how boys, who owned any, managed to keep their remnants of clothes hanging on, but they were very proud of them; the more tattered they became, the greater was the ingenuity shown to preserve and make the most of them (Fig. 218). Once on, no garment was ever removed, day or night, until the fragments could hang on no longer and it fell off, bit by bit.



B.S. *del.*

FIG. 217.—AN ALICE SPRINGS STATION PICCANINNY.



FIG. 219.—TELEGRAPH LINE PASSING THROUGH THE MULGA SCRUB.



B.S.



B.S.



B.S.

FIG. 218.—YOUNG ARUNTA BOYS.

Even then odd shreds were wound together to make an armlet, as can be seen on this little boy.

We had realised, whilst travelling from Oodnadatta to Alice Springs, that the express wagon that had been used for the cartage of our heavy stores was by no means capable either of carrying them all or of standing the wear and tear of the heavy track that we had to traverse across the continent. At Alice Springs we were fortunate enough to find a stray wagon that had been used for carting stores from the head of the railway line. It was just what we needed, so we were glad to secure it, and transferred to it all our heavy material, retaining on the buckboard only our personal outfit, photographic material and one collecting tin. We had now eighteen horses, which allowed of a team of eight for the wagon, two pairs for the buckboard and others for packing and riding. Chance was busy shoeing them and arranging the heavy loads. We arranged to send down south, to the head of the railway, the collection of native implements, cinematograph, phonograph and everything that we did not want to carry through to the far north with us, because, when once we left Alice Springs, we should be out of touch with mails or means of carriage other than our own team. By dint of utilising all manner of bits of wood and stray board, Chance, who was never at a loss when it was a case of making the most of any material available, contrived to fashion cases that held all our collections. As some of the spears and sacred objects were more than ten feet long the task was not an easy one. The packages had to be so secure that they could withstand the severe jolting of a journey of four hundred miles on camel-back, with its daily loading and unloading, transference to the railway for seven hundred miles and, after this, steamer from Adelaide to Melbourne. However, thanks to his ingenuity, it was successfully done and they all reached Melbourne in safety months before we did. Not a single

one of them was smashed or indeed injured in any way.

We started Chance and the wagon on two days ahead of us. It was fairly heavily loaded and his departure was viewed with sorrow by the natives, who had profited largely by its stores of tobacco, knives and hatchets. Some of the men, even at the risk of leaving wives and families behind them, would gladly have accompanied us, if we had given them the slightest encouragement. On our part we were sorry to leave them. For many years past we had known them well and we realised that, great as was the change that had taken place in the tribe between the year 1896, in which the Engwura was held, and the time of our present visit, changes in the future would be more rapid, until the time came when the once large and powerful Arunta tribe would be represented by a degraded remnant, exactly as has happened in the case of tribe after tribe elsewhere in Australia. The rapidity with which a tribe undergoes degeneration, as soon as it comes in contact with civilisation, is astonishing. Disease plays havoc with its numbers; old customs are rapidly forsaken, or modified out of recognition, and beliefs that have been firmly held for ages past are quietly dropped, partly because they meet with the contempt and ridicule of the white man and partly because the young men soon learn that they are not altogether worthy of credence. Even in 1901, the condition of the Arunta tribe was very different from what it was six years earlier, and the "rush" to the Arltunga gold-field, in 1902, practically completed its demoralisation. Not one of the old men represented in Figs. 164 and 205, with whom Gillen and myself were closely associated during the carrying on of the Engwura, is, I regret to say, now alive. With them passed away the leaders of, at least, the northern and central divisions of the tribe and there is no one to succeed them. When I was last at Alice Springs, in 1926,

not a single member of the old local witchetty grub people, man, woman or child, remained alive.

It was nearly mid-winter—a most delightful time in the Macdonnell Ranges—and we could have stayed on at Alice Springs with pleasure. However, we had to press northwards, for we were not yet half-way across the continent, and so, early on May 25th, we said good-bye to our friends at the telegraph station. Mr. McFeat, the acting officer in charge, had given us every assistance that he possibly could; in fact we received the greatest kindness from every member of the staff, and not least from Mrs. Bradshaw, who was living in this far-away spot with her husband and children. The station quarters are picturesquely situated and comfortable, and the life there has its attractions for a man, but to a woman it must often be a good deal more than trying and terribly monotonous. It sounds well enough to say that a mail runs through from Oodnadatta once every fortnight, taking ten days over the journey—it used, when Mrs. Gillen was there, to run only once in six weeks—but this ten days of traverse of unoccupied wilds, with water-holes often few and far between, would try the nerves of most women, and the ten days often lengthened out considerably in times of drought, when horses could not run and the mail had to be carried on camels. Nowadays things have changed completely and motor-cars can run through from the rail-head in two days, regardless of dry seasons.

Leaving the telegraph station, we turned to the north and were soon in the midst of a jumble of hills that form the northern part of the Macdonnell Ranges. Though they are now much lower in height and more insignificant than the present main range lying to the south of them, they represent an ancient lofty ridge, long since denuded but still forming the line of watershed (Map. 2). The track zigzags in and out amongst the gneissic hills, and travelling

was slow and tedious and also a severe test of the strength of our buckboard. Two or three times we thought it must upset, when the wheels on the near side were going over boulders and those on the off side were slipping down a smooth rock surface, but the boulders were our salvation. Fortunately we were only carrying a light load—just what we wanted for two or three days—and, after several hours, we got over the worst part and, just before sunset, reached a little outlying cattle station called Bond Springs. The little station then consisted of a one-roomed, thatched hut, inhabited by two white men, with a few small outbuildings, and was the last habitation we should see between Alice Springs and Barrow Creek. An examination of the buckboard showed that we had come through with only two bolts snapped, for which slight amount of damage we were thankful.

This was our last night amongst the Ranges. Early next morning we started off and, after two or three miles of winding in and out amongst the hills, crossed a saddle and saw below us the great Burt Plains, stretching away to the north. To east and west of us the Macdonnell Ranges extended as far as we could see, sweeping round towards the north-east to join the Strangway Ranges, the outline of whose higher peaks we could dimly discern far away on the horizon. The hills dipped abruptly beneath the plain that stretched monotonously to the northern horizon.

Looking ahead across the country that we had to traverse, there was absolutely nothing to be seen but an endless sea of dreary Mulga scrub, but it was a relief to be safely out of the hills. We had now passed from the Lake Eyre into the Lake Woods Basin, the southern boundary of which is the line of watershed in the Macdonnell Ranges. The elevation of this watershed, thirty miles north of Alice Springs, is approximately 3000 feet; that of the very southern margin of the Burt Plains, where we passed down on to them from

the hills, is 2000 feet. From here the land falls away very gradually towards the north. At Barrow Creek, 140 miles from Alice Springs, it is 1700 feet above sea level, and we had before us the prospect of crossing this practically level plain, whose surface is only broken by a few isolated hills. The telegraph line was away to the west, and all day long we drove on through the Mulga scrub. It was terribly desolate, with scarcely even a bird to be seen, and we dodged in and out amongst the scrub until, just before sunset, we crossed the sandy bed of a dry creek and came on to a bleak, open plain, across which in the distance we saw the telegraph line and found Chance camped close to it, beside the Burt Well. This is one of the series of wells that have been sunk at intervals along the telegraph line, in order to render it possible to cross the centre of the continent, where there is no surface water except just during the rain season. If it were not for these wells it would be practically impossible to take horses across the country during the greater part of the year. Each well has a strong palisade round it, to keep horses and stray cattle out, and there is a kind of grid that closes down over the opening, so that no wild dogs or smaller animals can fall in, as they certainly would do if it were not for this precaution. Careless travellers, now and then, leave the well open, and then you are almost certain to find the water foul with the decaying body of a dingo. Chance was to wait for us at the Burt Well with special instructions to have a plum duff ready. When we came into camp we found this boiling away in an old kerosene tin and, better still, a wild turkey was cooking in the camp oven, so we had a luxurious evening meal and settled down for the night in front of a blazing fire. On the stations you feed almost entirely on beef—hot beef, cold beef, fresh beef, salt beef, corned beef, spiced beef—with perhaps a leg of goat by way of change every now and then. A leg of young goat is really just as good as a leg of lamb

—at least it is in the Australian bush. Fortunately there is no difficulty in getting wood when you are camped in Mulga scrub, which is a decided blessing, because, in the winter-time, it is bitterly cold on these Central plains when the sun has set. All night long a biting south-east wind blows and the thermometer almost always goes down below freezing point.

We were up early next morning and not long in dressing. Some of the horses had strayed and upset our plans, so it was nearly 9 a.m. when Gillen and I started, leaving Chance to come on with the wagon when the boy brought the stragglers in. About half a mile from camp we struck the telegraph line and, for a weary twenty-four miles, followed along by its side, through a cutting two chains wide in the Mulga scrub (Fig. 219). The track was thickly strewn with stumps of Mulga trees that had been cut down so that the scrub should not interfere with the telegraph poles that streaked away, north and south, in a bee-line from one horizon to the other. There was not a sign of animal life, except ant-hills of a very curious form. Mile after mile the ground was strewn with them, sometimes almost as thickly as if they were gravestones in an old churchyard. Each of them consisted of a flat slab of red earth with the broad sides facing east and west and the thin ends north and south, wherefore the special kind of ant that makes them is known as the meridian ant (Fig. 220). There were simply thousands and thousands of them, and they gave the country the appearance of a vast graveyard. In the more northern parts of Australia they are larger. Here the usual size was about five feet high, perhaps five or six inches in thickness from east to west, and three or four feet in width from north to south.

After travelling twenty-four miles we came to Connor's Well and camped, building a break of boughs to keep the cold wind off at night (Fig. 221). At 8 a.m. next morning



B.S. *del.*

FIG. 220.—MERIDIAN ANT-HILLS.



FIG. 221.—CAMP AT CONNOR'S WELL.



B.S.

FIG. 222.—OUR WAGON TEAM.

it was 29° F. behind our shelter and, as we had to wait for the wagon, we allowed the sun to warm things up a little and did not turn out of our rugs till 8.30 a.m., which was our record late hour, because we were usually up before sunrise. We always, of course, slept in the open and every morning, as we travelled across these wide plains, where we could often see from one horizon to the other, the dawn was heralded, quite an hour before sunrise, by a faint cone of zodiacal light, stretching upward into the eastern sky.

Connor's Well was about as uninteresting a spot as could be imagined. There was nothing but thin Mulga scrub with very scanty herbage on the ground—just enough to give the horses a poor feed. Of animal life we saw only one or two kites, a solitary emu, that came and had a good look at us and then made off, and a flock of little chestnut-eared finches twittering all day long round the trough into which we drew water for our horses. At night the dingoes howled around, but at a respectful distance from our camp fires. We waited patiently all day long. Every now and then I climbed a telegraph pole to get a view across the country, but there was no sign of Chance and the wagon (Fig. 222), and we were just turning in at nine o'clock when we heard a distant rumbling. There was no lack of timber, so we lighted a great fire that could be seen miles away, to cheer Chance on his way and show him where we were camped. He came in safely, later on, but minus two of the horses that had wandered off in search of water and the boy had not been able to find.

Next morning before sunrise the boy went off again, on horseback, after them. We left a supply of food for him, hidden away safely where he could find it, in case any hungry natives should pass by and appropriate it. After filling the trough, so that there would be a supply of water ready for the two horses when he returned, we started off northwards and soon reached a series of low hills known as

Hann's Range. Just in the middle of them there was a "native well," or rather the remains of one. It was now merely represented by the remains of a hole dug in the sand. The water here evidently trickles along underground, in the bed of a creek that is quite dry on the surface. At this spot it had been blocked by a mass of rock, so that it accumulated and could be tapped by digging. Unfortunately a white man, who had not had much experience, thought that he could improve on the native plan by enlarging the hole, and set to work to do so by means of a plug of dynamite. He certainly succeeded in making the hole bigger but, at the same time, he shattered the rock, with the result that nothing was left to dam the water back, and now the little "well" is useless and the stumps that he put round it alone remain as evidence of his misguided efforts.

We passed through a narrow defile amongst the hills, dotted over with native pines that formed a welcome change after the dreary Mulga scrub. After a short day's march we soon passed out on to the plains again and camped at another Government well. The wagon followed us in after a few hours, and we filled our large tank, because ahead of us we had to traverse thirty miles of country with no water for the horses except such as we could carry. All next day the track was very bad with Mulga stumps and ant-hills, amongst which we had to dodge in and out. The country was as desolate as it could be. Even porcupine grass could hardly grow and, for miles, there was not a sign of a shrub. After very slowly traversing twelve miles of this country, we came once more into the Mulga scrub and camped late in the afternoon. Chance with the wagon came on slowly. Fortunately, it was nearly full moon so that he could travel after sunset, and we lighted a big fire. It was eight o'clock when he came into camp. We gave the horses a good drink and close-hobbled them to prevent them from making back during the night to the last well.

An hour later, to our great relief, the boy came in with the missing two horses. He had had three days of real hard work. On the first he was up at daybreak, tracking the horses, for at least fifteen miles, on foot and then bringing them back into camp, he himself riding one bare-back, after which he came with the wagon into our next camp. The next morning he was out again before sunrise and, during the two days, he not only followed back the tracks of the two missing horses over very difficult country, where there was not a drop of water, and found them, but he also followed us up and brought them into camp, only an hour after the arrival of the wagon. It was a masterly piece of tracking, because he had nothing whatever to guide him except the foot-marks of the horses, and he had not only to follow them up on the hard ground but also to distinguish, amongst the twenty that formed our team, the special two that he was in search of and the particular spot at which they had strayed away from the others. Whilst tracking them he had ridden over at least sixty miles of wild, desolate country, and when he came into camp he was dead beat and could scarcely stand up. After a good meal and a plentiful supply of tobacco he soon recovered and the last thing we heard, after turning in for the night, was the merry laughter of the two boys as they recounted their mutual experiences. The night was cold and we had a blazing fire near our feet to keep us warm, but the boys as usual had three small ones, one between them and one on each side.

The next day we had to travel thirty-two miles before reaching our camping ground at Ryan's Well, where there was then no sign of habitation. This does not sound much, but it took us from nine in the morning till half-past five in the afternoon, while Chance and the wagon took two days to cover the distance. The country was somewhat more interesting than before, with low ranges all round us and good grass. A few miles north of Ryan's Well we

came across the first bean tree (*Erythrina vespertilio*). This is its southern limit along the telegraph line in Central Australia. It grows to a height of twenty or thirty feet; its foliage is dense and light green in colour. In spring-time it is covered with orange-coloured flowers, the fruit being a large pod, containing bright red beans, about half an inch long, that are much used for making ornaments. They are always bored through by a fire-stick, no other method being ever employed, and are strung together to form long strands that the women wear coiled round their necks and arms and across their breasts and backs. Their warm, brilliant colour stands out in strong and very pleasing contrast to the dark chocolate colour of the women's skin.



FIG. 223.—CENTRAL MOUNT STUART.
Distant view of the Range.

The trunk of the tree may be a yard in diameter and its wood is of the greatest service to the natives. It is so soft, and so easily worked, that the natives have no difficulty in chopping out blocks of it with their stone tomahawks and then, with the aid of a sharp-edged flint, fashioning them into shields and wooden bowls. They manufacture both of these in large numbers and trade them away down south, where the bean tree does not grow.

At one spot we crossed a low range and, far away on the northern horizon, could just see the outlines of Central Mount Stuart, which marks the very centre of the continent (Fig. 223). Away to the east we could see another hill, once very appropriately called Mt. Lonely, but now Mt. Winnecke. Its native name is *Irritcha puncha*, which means Eagle-hawk hill, and is associated with an old legend according to which two eagle-hawk men, or men-birds, lived there in the Alchera with a lot of young eagle-hawks.



F.J.G.

FIG. 223A.—CENTRAL MOUNT STUART. FROM HANSON CREEK.



B.S. del.

FIG. 224.—CAMP AT NIGHT ON THE OVERLAND TRACK.

They fed on wallabies, and one day one of the men choked himself with a bone which stuck cross-wise in his throat so that he died. The other man and the young ones flew round about for some days, but finally they all died and went into the ground. Their spirit parts remained, haunting the spot, and now they are continuously being reincarnated in the form of eagle-hawk men and women.

A thirty-two-miles stage brought us to our next camping-place on the Woodforde Creek. There was no trace of surface water, but, in the sandy bed just under the bank where it was overhung by a great white gum tree, there was what is called a soakage, that is, a spot at which, by digging down a short distance, water can be obtained. Our black boy set to work with a shovel and soon scooped out a hole into which water gradually trickled, until there was enough to supply ourselves and the horses, of which we had twelve with us, the other eight forming the wagon team. Our camps were very simple ones (Fig. 224). We made a little break of boughs to shield us from the wind, which was still very cold at night-time, laid our blankets down on the leeward side of it and made one or two large fires that kept us warm and lighted up the scrub all round us.

We halted for a day's rest, as there was good feed for the horses, and also to allow Chance to catch us up. He came into camp at noon, so, as we had some spare time, he made a plum duff that was most excellent. Two days later we camped by the Hanson Creek, close to the foot of Central Mount Stuart, which owes its name, first, to the fact that it marks the very centre of the continent, and, second, to its having been discovered by McDouall Stuart during the first of his expeditions (Map 3).

In his account of this,¹ a sketch is reproduced which, like most of those in his book, is rather fanciful, and I expected to see a much more imposing mountain than the reality

¹ "Explorations in Australia," 1864, p. 165.

turned out to be. It is really a group of hills, the highest point of which is 2500 feet above sea-level, but only 800 feet above the plains from which they rise (Fig. 223). On the summit of the highest hill, Stuart, the first white man to penetrate the lonely scrub in the centre of the continent, built a cairn of stones, beneath which he placed a bottle containing papers, and above which he left the Union Jack flying. The meaning of the latter must have been a mystery to the natives and, in course of time, it was blown away but, fortunately, they left the cairn untouched, probably because they thought it was associated with some powerful kind of magic and were too frightened to interfere with it. Many years later, when the route for the overland telegraph line was being surveyed, the papers were discovered and sent down to Adelaide. It was here, in 1872, that the northern and southern sections of the line, which had been built separately, were linked together and, for the first time, Adelaide, Melbourne and Sydney were placed in telegraphic communication with the Old World. In those days the line consisted of a single iron wire, carried on wooden poles, and for many years Australia depended on this one single wire, merely a thread, stretching right across the continent, for all intercourse by telegraph with the outside world. In 1900, the wooden poles, that were liable to destruction by white ants, were replaced by iron ones, a copper wire was added and the quadruplex system installed. We celebrated our arrival in the very centre of the continent by a sumptuous meal consisting of roast wild turkey, scientifically known as *Eupodotis australis*, cooked in the camp oven, followed by one of Chance's best plum duffs, and it was not long before we turned in for the night.

We left camp at 9.10 a.m., which was very late for us, but two of our buggy horses had strayed. The time of leaving camp is always entered precisely in the journal, but I do not suppose that any one of our watches was correct.

For once in a way we never saw the telegraph line all day and there was nothing but the monotonous Mulga scrub, with not even a bird about, except an occasional crow. At noon a strong west wind sprang up, bringing with it plenty of dust and a host of flies. Early in the afternoon we camped once more by Hanson Creek and had again to make a soakage in the sandy bed, into which the water rose, giving us what we wanted. It had a decidedly gummy flavour and was not exactly clear, but in this part, water is water and is welcome, whatever be its colour or flavour, and tea at least hides the colour, even if you get a mixed sensation when drinking it. I wandered down the creek and, in places where the water must have lain for some time, found large patches of sundew plants (*Drosera sp.*), and was glad to see that their leaves were thickly covered with flies that they had caught with their sticky secretion. It was the only spot in which I came across the sundew; how it got there it is difficult to understand, because one always associates it with moisture and cooler parts, and I never found it anywhere else within a hundred miles of the Hanson. There were some beautiful cockatoo parrots flying about, but no other birds except little finches that flocked into the well when we drew water, and a few miserable crows who cawed at us all day long. They had brown eyes like those in the Macdonnell Ranges, whilst all further south, in the Stevenson River country, they had white eyes. Late in the afternoon we had a slight shower of rain and the air was very heavy and oppressive. Till late on in the evening the flies remained, crawling lazily over us after we had settled down for the night. As a general rule they cease from troubling after sunset, when the mosquitoes start operations. Chance, who seemed peculiarly liable to them, got another "bung eye," but nothing interfered with his good-humour. He inquired, with a smile, whether the sight of the beef, poking out above the scum of the gummy

water, in which it was simmering in a bucket in front of the fire, did not make our mouths water. About ten o'clock a heavy wind sprang up which, though it was warm and uncomfortable, at least blew the flies away. We were not sorry when dawn appeared, and we started off for the Foster Range, that we could see rising above the scrub away to the north. Early in the afternoon we camped at its base, by the side of a good water-hole in the Stirling Creek. To our disappointment we had not met with a single native since leaving Alice Springs. There were plenty of traces of them round the water-hole, in which, again, we met with mussels, crabs and crayfish, on which, judging from the remains strewn around, they had been feeding. Digging in the ground around the margin of the pool, I found a frog (*Notaden bennetti*), commonly known as the "catholic toad" because of a peculiar cross-shaped, light-coloured mark on its back. It had also taken on the habit of swelling out its body to tide over a dry season. The next day we rode slowly in the early morning up the southern face of the Foster Range, which consisted of a series of flat-topped hills, quite bleak and bare save for tussocks of porcupine grass and a few Mulgas and Hakeas. It was mid-winter, and the south-east wind was blowing bitterly cold, but we enjoyed it, partly because it was fresh and bracing, but more still because it meant that for a time we were free from flies. Looking southwards from the top of the hills we could see, far away, Central Mount Stuart, standing out clearly above the great plain. To the north we looked across another plain, hemmed in by great, flat-topped hills, cut through here and there by valleys, formed by streams that ran in ancient days. The hills are made of granite rock that forms their main mass, and are capped by horizontal sandstone and grit that wears away so as to leave a bold escarpment, often rising straight above the more gradual slope of the granite rock. There was one curious, somewhat pyramidal-



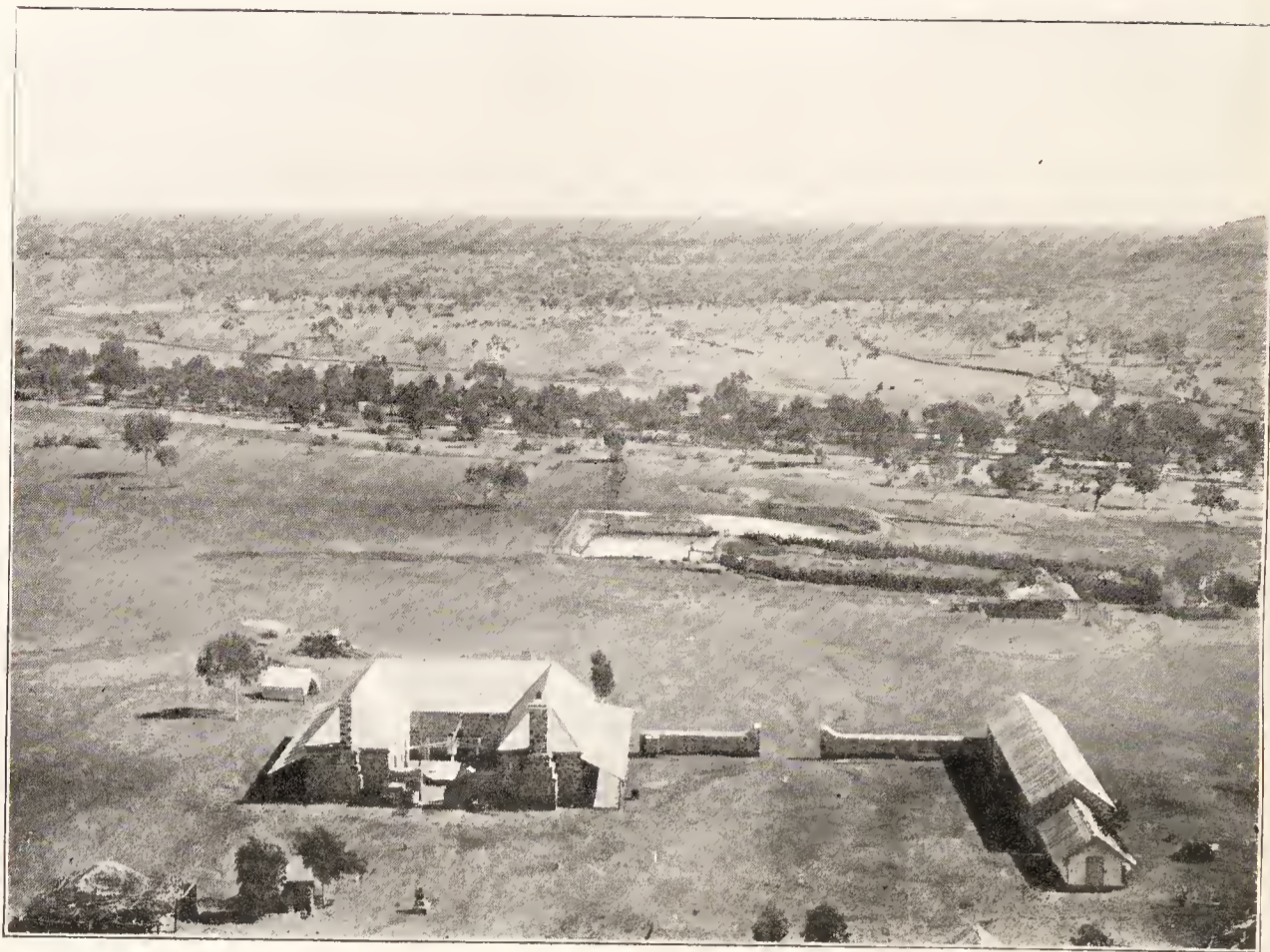
B.S.

FIG. 225.—BARROW CREEK STATION, WITH THE SCARPED HILLS BEHIND.



B.S.

FIG. 226.—BARROW CREEK STATION.



B.S.

FIG. 227.—BARROW CREEK STATION.

The photograph is taken looking south from the hill behind the station. When it was attacked the officers were seated in front where a small tree can be seen, and had to run round to the back to enter the courtyard. The natives were grouped in the position occupied by the rain gauge on the left of the foreground.



B.S.

FIG. 228.—ROCKY GORGE, IMMEDIATELY BEHIND BARROW CREEK STATION, IN WHICH THE NATIVES SECRETED THEMSELVES BEFORE ATTACKING THE STATION.

shaped hill, standing out boldly by itself in the middle of the plain.

The descent was rather a sharp one, the track very rough and rocky with a nasty, sudden turn in the middle of it, over which it would be an easy matter to capsize and roll two hundred feet down into the valley beneath. However, we negotiated it safely, as did also the wagon, to our relief, some hours later, and we were soon at Barrow Creek Station, where we were warmly welcomed by our old friend Mr. Scott, officer in charge (Figs. 225, 226, 227). We made our camp close to the station, and found to our satisfaction that a number of natives, who had heard of our coming, were in camp not far away and that other parties were expected shortly.

When we arrived, everything was as dry and parched as the Centre usually is, but, very soon after our arrival, the clouds, that had been threatening for days, thickened and the rain came down in torrents. The hills were hidden in mist, and for hours we heard the welcome sound of rain, beating heavily on the roof of the station. After a time there was a thin, white line of water trickling down the creek, which gradually broadened until the whole bed was full. This only lasted for a few hours and then it rapidly dried up. All that remained next morning were a few pools of water amongst the gum and bean trees bordering its course. Two days later everything was as dry as usual. I had hoped that the rain would bring large numbers of animals out of their retreat, as it generally does in these dry regions, but it did not do so, and it was only too evident that the long drought had been disastrous to all kinds of animal life.

CHAPTER XV

BARROW CREEK AND THE KAITISHA AND UNMATCHERA TRIBES

BARROW CREEK was our central station amongst the Kaitisha and we were very soon at work amongst the natives, who sent out messengers to bring in as many of the tribe as could be gathered together. The day after our arrival we opened up our stores of knives, tomahawks, looking-glasses, beads, necklets and pipes, and invited a deputation of natives to see them, with the result that they at once returned to their camps and spread amongst the others news of what they had seen. In a short time we were busy bartering our goods in exchange for native things; a stick of tobacco or a single-bladed knife readily purchased a shield, spear or *pitchi*. Half a stick was quite enough for a boomerang or a whole bunch of neck or arm ringlets.

Knives and hatchets were most in request, but these were only given in exchange for something really good, or to secure the good-will of some old man whose sympathy we wanted to enlist. There was one old man amongst them who was evidently much looked up to by the others, so we attached him to our staff and invested him with the dignity of a pair of trousers and shirt, much to the envy of his fellow-tribesmen and to his own satisfaction, which was considerably increased when he found that the emoluments of his office included three meals daily and a liberal supply of tobacco. He has one name, in this case Tungulla, by which he is commonly known but, like every other native in these tribes, he has also a secret or sacred name,

known only to the old men of his own particular totem group, that is, to the old grass-seed men, and this is *Arabinia-urungwinia*. Fortunately this may only be uttered during the performance of very special ceremonies.

The station itself lies at the foot of the scarped hills that we had seen from the Foster Range. The main buildings were in the form of a square, enclosing a central courtyard on to which the rooms opened, except at one side where there was only a high wall with folding gates that, in early days, were always closed at night-time for the sake of safety (Fig. 227). The windows had iron bars and shutters, and at intervals there were small loopholes in the walls for firing through if necessary, because in early days the natives were liable to be troublesome.

The station was opened in 1872, when the northern and southern sections of the line were joined together at this spot. In 1874 it was the scene of a murderous attack by the natives, amongst whom was our friend Tungulla—then a middle-aged man, probably about thirty years old. At the time in question there was no idea of immediate danger from the blacks. They had always been kindly treated by the officers of the station and in no way interfered with. In the quiet summer's evening the seven white men, then living at the station, were seated in the open, under the verandah on the side away from the entrance to the courtyard, listening to one of their number playing a violin. Foolishly, as it turned out, not one of them was armed and they did not notice that, by twos and threes, the blacks were coming down from a gorge (Fig. 228), just behind the station, in which they had been hiding, dragging their spears, as the natives will do, between their toes on the ground, so as to give the appearance of being unarmed. A score or more of them were collected close to the entrance to the courtyard, hidden from view of the white men by the corner of the station building, before the officers

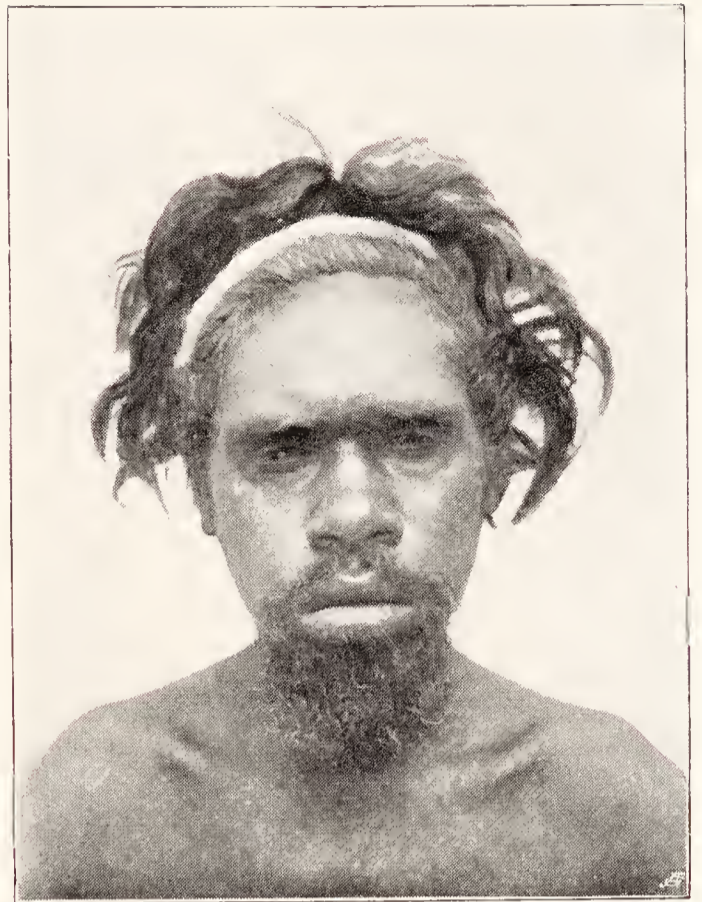
had the slightest idea of their perilous position. Indeed the first intimation that they had of any danger was a sudden yell from the natives, followed by a shower of spears. They could do nothing but make a sudden rush for the courtyard gate, amidst the spears and boomerangs hurled at them at close quarters. Fortunately one friendly black boy, employed about the station, was in a small outhouse close by and, seizing his revolver, he at once fired on the natives. This served to disconcert them slightly, but, even so, it was wonderful that any of the men reached the yard in safety. The station-master fell, mortally wounded, just inside the gates, the cook fell dead with a spear through his chest, while one of the assistants tripped over a stone and was speared through the leg. As soon as they were in the gates they were closed, leaving the friendly black boy outside. After firing his revolver he ran round to the front of the station and, by good luck, was dragged in through one of the loopholes that, fortunately for him, was larger than the rest. Once inside, with arms at hand, they were safe and the natives discreetly retired out of gunshot. Everything that was possible was done, with the limited means at their disposal, to save the life of the station-master, but one of the barbed spears had pierced his chest and his recovery was hopeless. He was, however, able to speak along the line to his wife, who was called to the General Post Office in Adelaide as soon as the news was wired down. There, in the crowded and busy operating room, with scores of machines ticking out their news to and from all parts of the world, she "spoke" to her husband as he lay dying in the lonely, far-away Barrow Creek Station, in which the silence was broken only by the ticking of the one machine as the last messages passed to and fro.

Very fortunately it did not occur to the natives to destroy the line, and no sooner was everything made safe for the time being than word of what had happened was sent



B.S.

FIG. 229.—MAN OF THE KAITISHA TRIBE. Showing the curly nature of the hair.



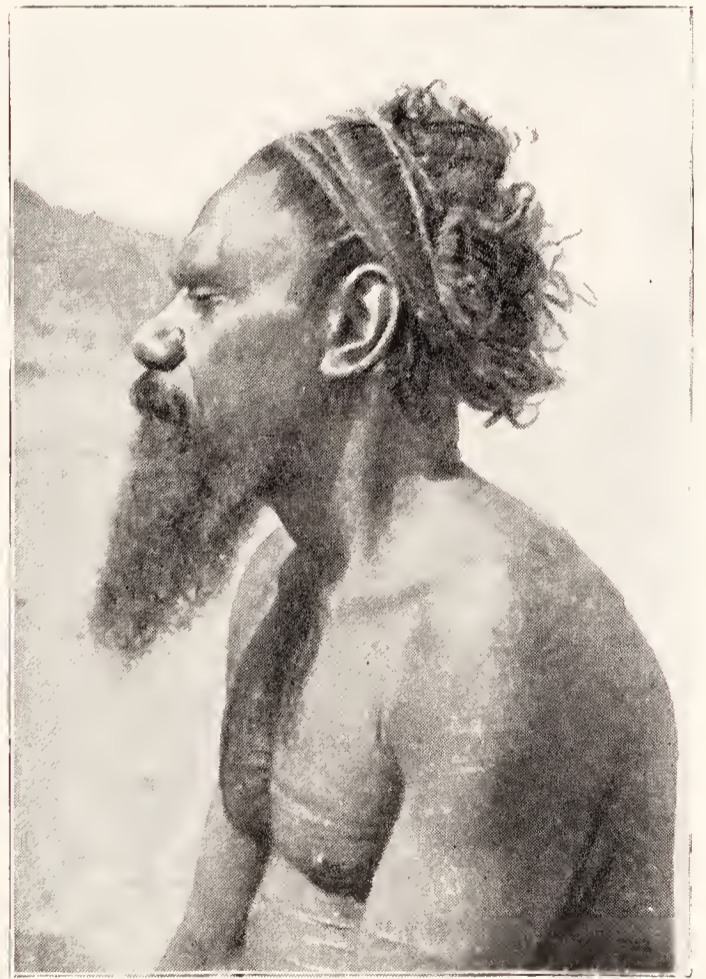
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FIG. 230.—YOUNG MAN OF THE UNMATCHERA TRIBE, FULL FACE.



B.S.

FIG. 230A.—YOUNG MAN OF THE UNMATCHERA TRIBE, SIDE FACE.



B.S.

FIG. 231.—MAN OF THE UNMATCHERA TRIBE.



B.S.

FIG. 232.—TWO YOUNG BOYS, KAITISHA TRIBE.



B.S.

FIG. 233.—TWO YOUNG GIRLS, KAITISHA TRIBE.

along it, and then, from Tennant Creek in the north to Alice Springs in the south, the few white men who could be spared rode with all haste to Barrow Creek. One can imagine their feelings as they urged their horses on, day and night. Meanwhile the natives had retired to the far side of the creek, where their fires could be seen amongst the scrub, not far away. The two men were buried by their comrades close to the station, one of the five who were left pacing backwards and forwards with loaded rifle, between the small party round the grave and the natives who were watching them from the creek, while the Burial Service was being read.

It was not long before help came—one party from the north riding one hundred and twenty miles in less than twenty-four hours, a wonderful feat for both men and horses over country such as they had to cross—and then, when the station was made safe, they rode out all over the surrounding country and the natives had such a lesson that they never again attempted an attack. This was the only occasion on which the natives behaved treacherously to the white men connected with the telegraph line. It is quite possible that, in those early days of intercourse with strangers, they mistook forbearance and kindness for a sign of weakness, but they found out their mistake and, from that day to this, the telegraph officials in Central Australia have had no trouble with the natives, indeed, the latter soon came to regard the former as their friends. At the present day the courtyard at Barrow Creek is open day and night. The loopholes in the walls remain, but they serve only for ventilation.

The old man Tungulla, whom we had attached to our staff, was well advanced in years and mild in manners, but in the early days, he had been looked upon as a great warrior and told us how, after the attack on the station, in which he had taken part, he was seen and chased by the

avenging party and just managed to save his life by creeping into a crevice in the rocks, in which, hidden from view by tussocks of porcupine grass, he lay shivering with fear as the white men passed by within a few yards of him. It was twenty-five years since this happened, and we were glad for our sakes that the old man rascal had not been shot, though he richly deserved it. He turned out to be a storehouse of native lore and knew all there was to be known about his people.

At Barrow Creek we came in contact with two tribes, the Kaitisha and Unmatchera. Both of them are small ones, especially the latter, and both of them are, in their physical features, organisation and customs, closely allied to the Arunta. The Unmatchera dialect is very similar to that of the Arunta, indeed it is doubtful if it be really a distinct tribe or a northern group of the Arunta, with certain local peculiarities due to its contact with the Kaitisha. The latter is a distinct tribe with a dialect different from that of the Unmatchera and Arunta, and still more different from that of the Warramunga, with whom it is in contact on the north. The Arunta, Unmatchera, Kaitisha and Ilpira can be grouped together to form one large "nation," occupying all the country from the Macumba River in the south to Bonney Creek in the north, a distance of approximately six hundred and seventy miles, or more than twice as far as from London to Gretna Green.

Whilst they agree generally in physical features with the Arunta, in some cases the beard, whiskers and moustache of Unmatchera men were much less developed and the hairs finer than in the typical Arunta men, as in Figs. 230, 230 A. On the other hand, the man in Fig. 231 might be an Arunta. The children and women were indistinguishable from the Arunta, and in the old women (Fig. 237 and 238) the prognathism was very strongly marked.

The head-man of the rain totem showed us one of his



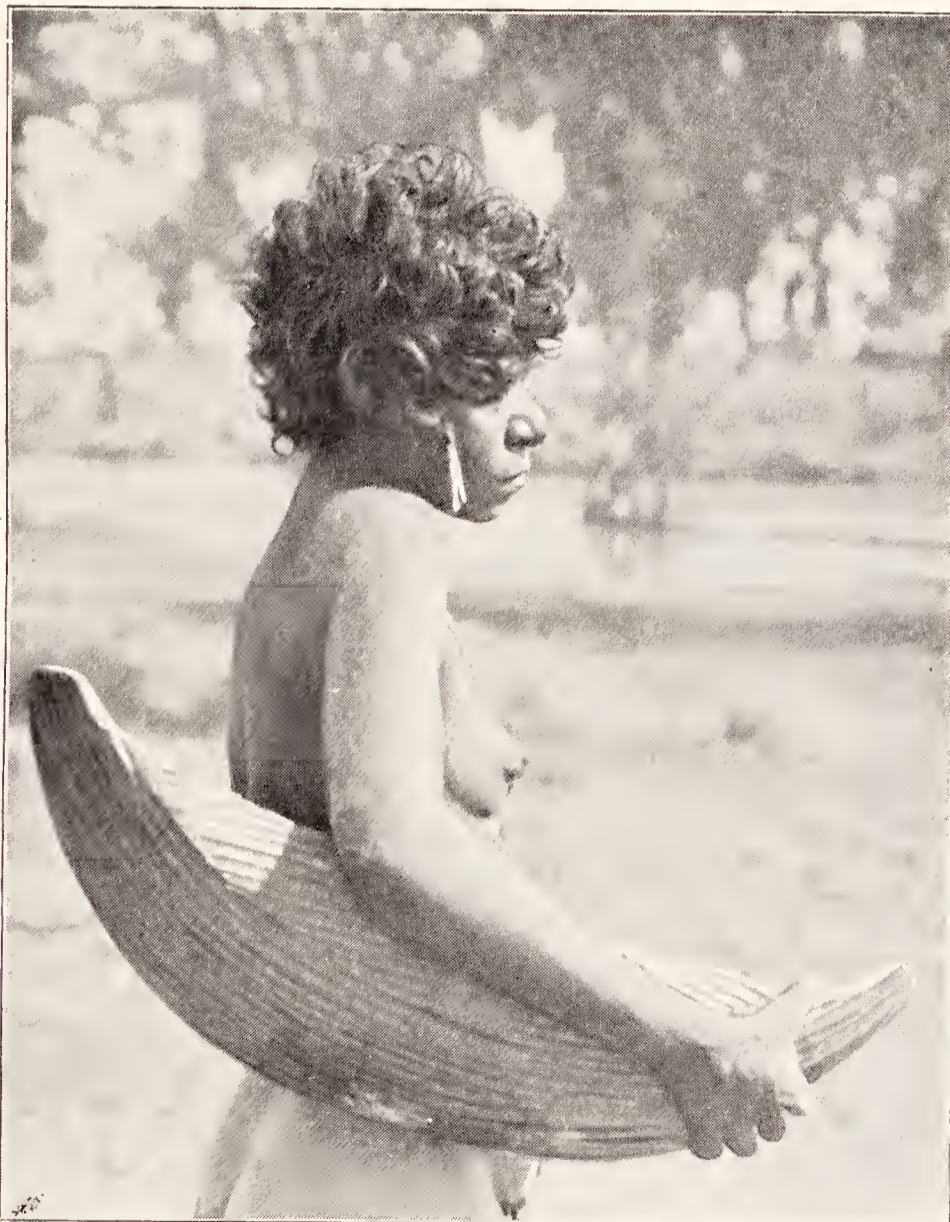
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FIG. 234.—YOUNG WOMAN WEARING HEAD-
BANDS, KAITISHA TRIBE.



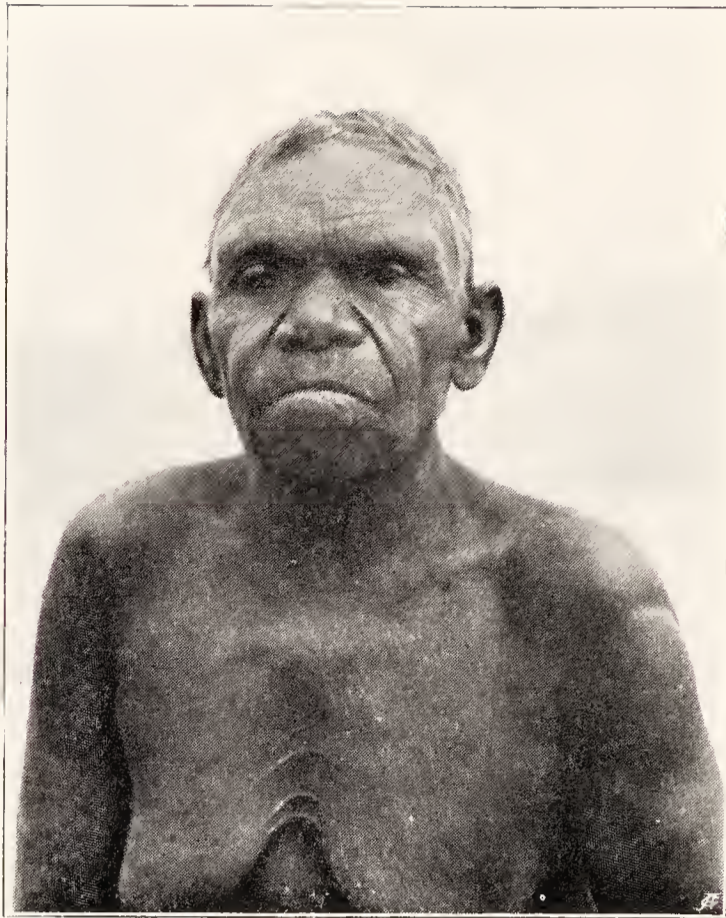
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FIG. 235.—YOUNG WOMAN, KAITISHA
TRIBE.

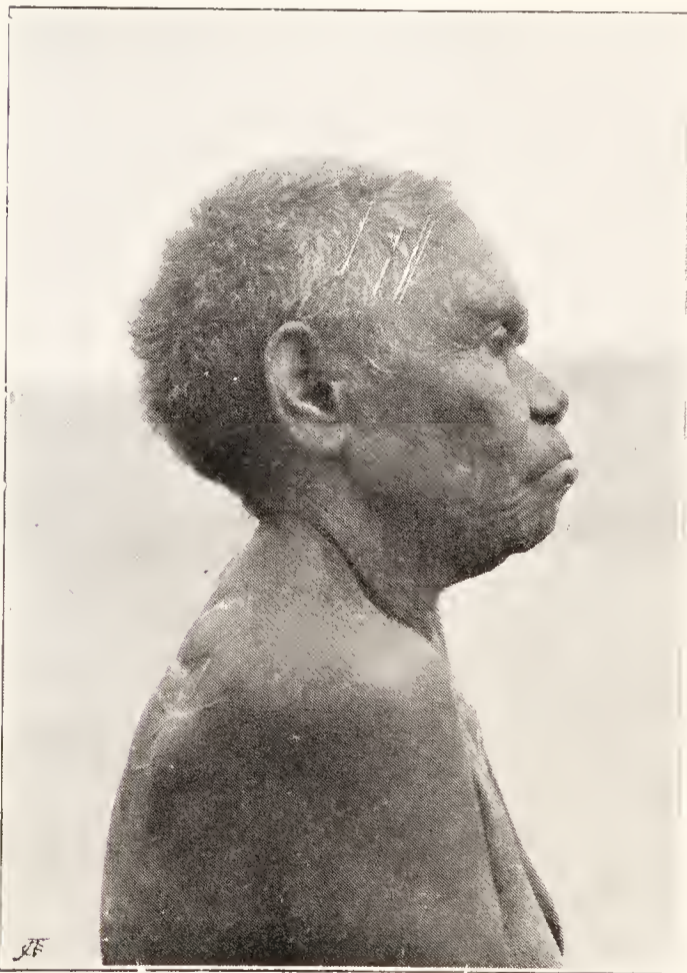


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FIG. 236.—WOMAN CARRYING PITCHI, SIDE FACE,
KAITISHA TRIBE.



B.S.
FIG. 237.—ELDERLY WOMAN, FULL FACE,
KAITISHA TRIBE.



B.S.
FIG. 238.—ELDERLY WOMAN, SIDE FACE,
KAITISHA TRIBE.

ceremonies in which a Nurtunja was used. We had often seen this in the Arunta ceremonies, but amongst the Kaitisha it is not used so much, and in the tribes further north it is quite unknown—indeed this was the last time that we saw it used. The rain man was, of course, supposed to be responsible for the water supply, and, as Barrow Creek lies in the very heart of the continent, where the rainfall is very precarious and uncertain, he was a man of considerable importance. He was not particularly friendly to the white man, and a year or two before our visit, during a long drought, he told the natives that he did not intend to allow any more to fall until drought had killed off all the white men and their cattle, so that the blacks could have the country to themselves once more. It did not seem to occur to him that if the white men were killed off, the natives would also have a bad time. He either relented, or else something that he had not calculated upon happened, because a heavy rain fell soon afterwards, so that neither the white men nor their cattle perished—in fact it was the old men and women amongst the natives who suffered most, many of them who were within reach of the telegraph station owing their lives to the kindness of the white men. When, however, the rain did come he took all the credit for it.

The same rain man told us the history of his old ancestor in the Alchera. He arose in the form of a little black-fellow, of course at a water-hole. At first, like very young piccaninnies at the present day, he was reddish in colour but, as he lay out in the sunshine, he turned black. By some means he split into two, so that there was an elder and a younger brother. Gradually they grew into big men and then started off on their wanderings, the full account of which, told with the most minute and wearisome details, occupied the whole of one afternoon in the relating. At the end of their journey they mounted a hill—one of those in the Foster Range, that we could see from our camp,

which now forms the gathering ground for the Barrow Creek—sat down and gravely stroked their whiskers like old men do now. Out of them came two euros (kangaroos). This is why the rain men now wear euro teeth as an ornament hanging down over their ears, because henceforth the euros were the friends and mates of the rain men. Once more they stroked their whiskers and floods of water came out of them and spread over the country far and wide, though they were careful not to let the water go out of their sight as they sat on the hill-top. As night came on they drew it all back, setting it free once more in the morning. At last they died on the hill-top, but, before this, they cut off their whiskers, from which the clouds sprang, and rose up into the sky. From the clouds the rainbow arose, and now it is the latter that is always trying to prevent the water from falling. These, and many other things, the old man told us, entering into the most minute details with keen relish and interest.

Tungulla was the head of the grass-seed totem and he showed us one of his ceremonies. He had his body decorated with a broad band of red down, edged with white, that ran right over his head and down his back and chest (Fig. 239). This represented uncooked seed, while red, circular patches of down, edged with white, on his chest and back, stood for cooked seed, or rather the flat cakes made out of this. In all important points the ceremonies (Fig. 240) were closely similar to those of the Arunta, but there was no running round and round shouting "Wha! Wha!" and each ceremony was brought to a very characteristic close by the men who stood close around the performers placing their hands on the latter (Fig. 241).

When questioning Tungulla we always used to have one of our boys with us to help us. Tungulla knew a good deal of the Arunta dialect and Jim, or Erlikilliaka, to give him his native name, knew a good deal of Kaitisha. Our



B.S.

FIG. 239.—DECORATION OF PERFORMER IN CEREMONY OF A GRASS-SEED TOTEM, KAITISHA TRIBE.



P.S.

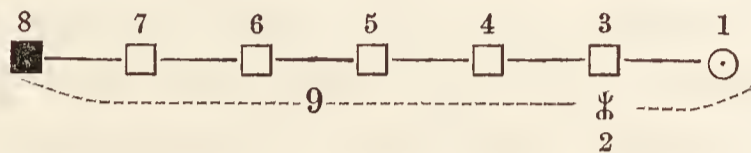
FIG. 240.—PERFORMANCE OF A CEREMONY OF THE EMU TOTEM KAITISHA TRIBE.



B.S.

FIG. 241.—METHOD OF BRINGING A SACRED CEREMONY TO A CLOSE, KAITISHA TRIBE.

boy was immensely proud to help us and, as he noticed that we always took notes, thought it was the proper thing for him to do also. Though he could not write a word, he always had a paper and pencil which he begged from us, and on which he made marks that much impressed Tungulla. His "notes" consisted of hieroglyphics such as the following, which, apart from the numbers, is a copy of one of them :



1 represents a water-hole where a man, 2, came into existence in the Alchera; 3 is a big gum tree that arose to mark the spot close to the water-hole. One day the man walked from the hole to 3, looked back and said, "I can see the water, it is 'close up' yet"; then he walked on to 4, 5, 6, 7 in succession, each square representing a halting-place at which he made the same remark. At 7 he said, "That water long way off now"; then he walked on to 8, much further away, and there he died. The black square represents a tree that arose to mark the spot, and in which his spirit now lives, though it often goes back to the original water-hole along the track marked 9. The narrative, reduced to this concise form, sounds very commonplace, but each such narrative, though it may only recount how an old man walked over the country and finally died, occupies a long time in the telling and is accompanied by much pantomimic representation of the actions of the old man—peering back with his hand shading his eyes to see if the water-hole were visible, or sitting down, breathing heavily, after his hard trudge over the country.

One day we were asking Tungulla questions about magic in connection with some pointing-sticks called *Atnilinga* that he had given us. After a good deal of persuasion we induced him to show us how they were used. Our

boy, Erlikilliaka, not anxious to take any risk, promptly retired to what he regarded as a safe distance, which was out of sight, and then Tungulla bent forward till his head was level with his knees and began to jerk the stick, time after time, backwards between his legs, mumbling all the time a fierce incantation: "Ya ya il perta: ya pa il kari; ya kurti wali; yung wenti kari; ya pa alkari." When he had finished, the excitement, aided probably by a rush of blood to his head, evidently made him feel dizzy and he declared that the evil magic had gone into him and that he felt, as he looked, very bad. It took some time to calm him down, but at length we assured him that in our medicine chest we had a plentiful supply of powerful magic that could effectually counteract the influence of evil magic, far more potent than any that the pointing-stick contained and that he need have no fear. Magic is a very real thing to the savage. It was only after considerable persuasion that the old man had consented to show how the poison-stick was used. When once he had started, he entered into the spirit of the thing, firmly believing, of course, that he was projecting the evil with which the stick was charged, and therefore, when the performance was over and he felt dizzy, he naturally concluded that it had entered himself. As soon as he had recovered somewhat we sent him away to his camp, where the magic of a good meal and a comfortable smoke completed the cure.

One day we were talking to Tungulla about the comet which had been visible while we were at Alice Springs, and he gravely assured us, without a sign of a smile, that he had driven it away by means of his sacred stones. So long as it was visible he used to go out every night by himself, because no ordinary mortal might see the stones, and then he drew them out of his body and threw them at the comet, with the result that, after much hard work, he succeeded in driving it away. When they had done their work the

stones returned to his body. The natives firmly believed that this happened. They thought that the tail was an enormous bundle of spears that some evil power wished to throw at them, and that the comet and its spears only went away because our friend was stronger in magic power than it was.

With the aid of Mr. Scott, the officer in charge of the station, and his second in command, Mr. Middleton, I spent a good deal of time collecting various animals. For two or three years previously the season had been excessively dry, with the result that all kinds of animals had suffered severely. There were plenty of Port Lincoln parrots to be had, and, though they are not very rare, they were in such good plumage that I skinned a few of them. The general colour of their bodies is green, with a bluish tail and wings and a bright yellow ring round the neck. Their colour seemed to be brighter in this northern than in the southern part of the country. There was also a little kingfisher—very much like the one that frequents English streams—but it has been able, somehow, to accommodate itself to this dry, arid country, where it only sees running water at long intervals and then only for a few hours at a time. The best bird, however, was a rather insignificant-looking little *Xerophila*, with a body no bigger than that of a sparrow. Its back was cinnamon-coloured, with darker wings and tail and a white breast crossed by a black band. It had been found for the first time, six years ago, on the Horn Expedition, in the Macdonnell Ranges, when we only got three specimens, and I was glad to come across it again, because it is confined to very limited areas in the more or less inaccessible parts of Central Australia. It was by no means plentiful and was flying about in companies of twos and threes.

The old women, who, except for large animals like kangaroos and emus, that I did not want, are the best

collectors, used to bring their captures into the telegraph station late in the afternoon, carried, as usual, in all kinds of things that could serve as receptacles—old jam tins, pickle bottles, discarded socks, coat sleeves or trouser legs—and empty their contents out on the verandah. Their transference to collecting tins and bottles was a source of never-ending interest to the women and children, but, as usual, after the first day or two, I had to intimate to the collectors that I did not want more than a certain number of the common things and that they had no market value.

It was noticeable at Barrow Creek, just as at Alice Springs, amongst the Arunta, that some, but only some, of the men and women had a front tooth knocked out. The natives, of course, have a myth to explain it, but it is a very lame one. Tungulla told us that in the Alchera two snakes came into existence at a water-hole. After a time, but for no special reason, the younger one suggested that each of them should pull out one of his teeth. They did so and then sat down and looked at one another and remarked that they looked very well with their teeth out. After a time they died, and then it occurred to some black-fellows living in the neighbourhood, who were very frightened of the snakes, that it would be a good thing to imitate them, so they decided to do so. Since then many of their descendants have done the same, though it is by no means obligatory. The women also have been allowed to adopt the custom, which seems to show that it has now no special significance.

We were anxious to see the operation and, as there were two girls of suitable age, the elder women readily fell in with our suggestion that it would be a good thing to knock their teeth out. We went one morning to a secluded place in the creek, where the sand was soft for the patient to lie on. A hole was made, just big enough for the girl's head to lie in—this was always done in the Alchera, so of



B.S.

FIG. 242.—KNOCKING OUT GIRL'S TOOTH, KAITISHA TRIBE.



B.S.

FIG. 243.—KNOCKING OUT MAN'S TOOTH, KAITISHA TRIBE.



B.S. del.

FIG. 244.—ULPAILIURKNA, AN UNMATCHERA MAN.

course it was necessary to do it now (Fig. 242). First of all the gum was loosened by pressure with a pointed stick. This done, the point of the stick was placed on the tooth, and after two or three hard knocks with a stone it came out. The operator then handed the tooth to the girl and took hold of her arms from behind. After the two had danced about, quaintly, for a minute she released the arms of the girl, who then threw the tooth away, as far as she could, in the direction in which her mother was supposed to have lived in the Alchera. I searched hard for that tooth afterwards but could never find it. At a later time we saw two men's teeth knocked out. The operation was performed by old Tungulla (Fig. 243). Having selected the tooth, he put the pointed end of the stick on it, and with a blow of the stone the operation was successfully done, save that, in one case, instead of the whole tooth coming out he smashed it in half and a second blow was necessary. The man did not seem to mind this at all, and old Tungulla was quite cheerful and much quicker than the lady operator. As it was not etiquette for the two men to watch each other, one squatted down behind a bush while his friend was being operated upon. When it was over they both stood up and threw the tooth away in the direction of their mother's camp in the Alchera.

Amongst the natives who had come in while we were at Barrow Creek was an elderly man who attracted us at once by his quaint costume, of which he was evidently quite proud. He wore the tattered remnants of an ancient pyjama coat that he had picked up somewhere, and his general appearance was somewhat like that in the sketch, so that he stood out prominently amongst the others in camp, almost all of whom were stark naked. His proudest possession was an extraordinary hat of considerable size, without which we never saw him, day or night. It had an enormously wide brim with a rounded conical crown,

and had been made for and presented to him by a friendly white man who employed him to look after horses on a small outlying cattle run, where he lived alone with his faithful retainer. It was most ingeniously made of a framework of fencing wire, over which calico was stretched and, when the wind blew, was kept in place by a string that passed under his broad nose (Fig. 244).

We found out that he was regarded as a learned and highly qualified medicine man, who had once had a large practice amongst the members of his tribe, the Unmatchera, which, always a small one, was now nearly wiped out, partly by drought and partly by the fact that they had, years ago, been what is called "dispersed," after having attacked one or two white men whose intrusion into their country they resented, with results unfortunate to themselves. We attached him to our staff and found him most useful in conjunction with Tungulla. His name was Ulpailiurkna. A lot more natives belonging to the Kaitisha came in to see us from the north-west. They were a wild-looking lot, but very keen on securing supplies of tobacco, flour and tomahawks. Tea and sugar they did not seem to care for. I rather think that, in the case of the latter, it was because they knew nothing about it and so were suspicious of magic. They brought with them stores of shields and *pitchis* of excellent manufacture and boomerangs. They were not quite without guile, bringing in only a certain number of things at a time, evidently under the impression that a limited supply would enhance values. As soon as one lot was eaten up and smoke failed, then a deputation came in with some more things, but, to their evident surprise, our price always remained the same. The most interesting new things, from an ethnological point of view, that we secured were a few little cigar-shaped objects about six inches long, each of which had a strand of human hair string at one end and, usually, a tuft of owl feathers

at the other. They were called *Akuntilia*, and contained little locks of hair that had been cut from the head of a dead man and then wrapped round with hair string, coated with white pipe clay, yellow or red ochre, and painted with rings, or dots, of charcoal or red ochre (Plate VIII, Figs. 6, 7, 8). They are regarded as full of magic power and are carried by men who go out on avenging expeditions. Another very curious object that I saw two or three girls wearing under their armlets was a little thing shaped like an *Akuntilia*, but containing a lock of hair cut from the head of the man to whom they had been promised as wives. It served as a kind of reminder to them and a hint to other men, and was really very much the same thing as an engagement ring amongst ourselves. (Plate VIII. Fig. 2.)

CHAPTER XVI

BARROW CREEK TO TENNANT CREEK

WE had not originally intended to spend very long at Barrow Creek, but when we settled down there to work amongst the Kaitisha tribe, and more especially when we came across old Ulpailiurkna, the Unmatchera man, we found that there was plenty for us to do and the time slipped by rapidly.

It was just four months after leaving Adelaide when we packed up and started off to the north, to traverse the hundred and forty miles that lie between Barrow Creek and Tennant Creek. Ulpailiurkna had already gone back to the Stirling Creek, and poor old Tungulla was very sorry for himself when the time came for him to be retired from the staff. He was a fine old savage and we were very sorry to leave him behind, but he would have been of no use to us amongst the Warramunga, the next tribe that we should touch. He looked quite doleful while he was having, rather than enjoying, his last meal and smoke by the camp fire. However, we rewarded him liberally and, when times are bad, the food supply small and tobacco an absolutely unobtainable luxury, his thoughts will often go back sorrowfully to the time he spent with us.

It was a brilliant winter's morning when we said good-bye to our friend Mr. Scott and started off once more by the side of the telegraph line. First of all we had to pass out of the flat on which the station lies, between a succession of hills, each crowned with a steep, almost perpendicular escarpment of hard sandstone (Fig. 245), and then, once



B.S. del.

FIG. 245.—TRACK OUT OF BARROW CREEK.



B.S. del.

FIG. 246.—CHILD'S TREE GRAVE
The body is placed in a *pitchi*.



B.S.

FIG. 247.—THE OVERLAND TELEGRAPH LINE, SHOWING THE CUTTING MADE THROUGH THE MULGA SCRUB.



F.J.G.

FIG. 248.—DAVENPORT RANGE.

The view is taken from a low hill on the east side of the valley, across which can be seen the rounded masses of granite flanking the low range on the west. Two large granite boulders are seen in the foreground.

more, found ourselves in the arid, open country typical of the Centre. Just a little way beyond the station was what looked at first like a great eagle-hawk's nest, but on closer approach it was seen to be a mass of boughs and twigs on which was laid a *pitchi* (Fig. 246) containing the bones of a child. We were now coming into the region of tree burial. There was nothing to be seen save a clear-cut line, streaking away to the horizon, through low Mulga scrub and Mallee gum trees (Fig. 247). Everything was as monotonous as possible. The only colours in the landscape were the whitish-yellow of the withered grass, the pale green scrub and the blue of the cloudless sky. We had again sent Chance on ahead of us with the wagon, and Gillen and myself were travelling with as light a load as possible. Our provisions were of the simplest—bread, meat and jam—just enough to carry us on until we overtook the wagon, so that our meals did not cost us much trouble. In this part of the world, where the sun shines down hotly all day long and any slight shade is welcome, nothing is more pleasant and refreshing than a quiet smoke with a quart pot of tea, and our most enjoyable times were those when we got into camp and, over our last evening smoke and quart pot, discussed what we had done and what we hoped to do.

The first morning out of Barrow Creek we were up long before sunrise and had finished our breakfast—a piece of steak grilled on the hot coals, with a very amateur gridiron—and started off just as the sun rose. The track was very heavy, with thick sand, and we made slow progress. At midday we saw a dark speck three or four miles away on the horizon, by the side of the telegraph line. When it came nearer we made out that it was a buggy with two white men, one of whom was Dr. White, the Bishop of Carpentaria. When we met we stopped and had a midday meal together. The Bishop was perfectly at home in the

rough life and was thoroughly enjoying his trip across his diocese, which is certainly one of the largest and probably most sparsely populated of any in the British Dominions. Like his famous ancestor, White of Selborne, he was keenly interested in natural.

There was considerable perturbation of mind amongst the scattered white inhabitants of Central Australia when the news spread down the line that the Bishop was coming. Never before had so high a dignitary of any Church penetrated the Central wilds. The idea that a real, live Bishop should think it his duty to face the inconveniences, not to say the chances of hardship, attendant on crossing the great waste lands of his diocese, to see for himself and make himself known to the errant members of his far-flung flock, filled them with mingled feelings, on the one hand of regard and respect, on the other of regret, and even dismay, for forgetfulness of matters of ritual that had long since passed out of memory. Many were the heart-searchings and earnest inquiries amongst the old hands as to the proper method of procedure during the service that the Bishop announced his intention of holding at one of the overland stations. In the station there were two rooms opening into one another. One of them was occupied by the Bishop, and in the other the congregation of eight men, who, by strenuous effort, extending over many scores of miles, had been gathered in for the occasion, waited nervously for him to appear. When he did so, in full canonicals, the audience, long unaccustomed to such a sight, not knowing what to do, fell upon its knees. Fortunately there was one man who had a faint recollection of what was right and proper to be done. He immediately rose to the occasion and took charge of the proceedings. I wonder if the Bishop noticed the sound of "Husht, Husht," quietly uttered at critical moments. Possibly he was not acquainted with the signal that is given by its rider to a

camel to make it kneel down or rise on its legs, and therefore did not realise that the procedure of adopting the erect or the kneeling posture by his congregation was governed by the whispering of the magic word "Husht." Fortunately all passed off well, and there was no man amongst the little audience who would not gladly have done anything he could to help the Bishop.

Where we met was just about as far from civilisation as could be and, after an hour's spell, we parted, the Bishop going south and we north.

After thirty-three miles of about as uninteresting and desolate country as can well be imagined, with nothing but dead scrub and porcupine grass, we reached the Wicklyffe Creek, where things were a little better and there was a good supply of grass for our horses. The last thing we heard, after turning into our rugs on the ground, by the side of our camp fire, was the pleasant tinkling of the horse bells, which showed us that they were contentedly browsing and not likely to wander far away during the night.

During the early part of the next day the country was very monotonous, but, after our midday halt, we could see ahead of us the low line of the Davenport Ranges. We had to cross and recross the beds of two or three creeks that were very rough and rocky. They came down from the Ranges and only ran for a short distance across the plain. The Range consists of a granite core, overlain by sandstone that reaches a height of 1600 feet. After traversing two or three miles of jumbled hills, we came into a broad, open valley that had evidently been formed by the wearing away of the sandstone (Fig. 248). The valley was traversed by the bed of a dry, meandering creek, the remnant of a stream that must have hollowed out the valley originally, denuding the sandstone and leaving bare the granite. The hills on each side were flanked by round

masses of granite, some of which also stood out on the floor of the valley. Many of them were surmounted by rounded, sometimes almost completely spherical-shaped boulders of gigantic size, poised so precariously that it looked as if a strong wind would topple them over (Fig. 249). Every now and again, one rolls down and splits up, and then the huge fragments weather away until, once more, their edges are rounded off. These poised rocks are known as the "devil's marbles."

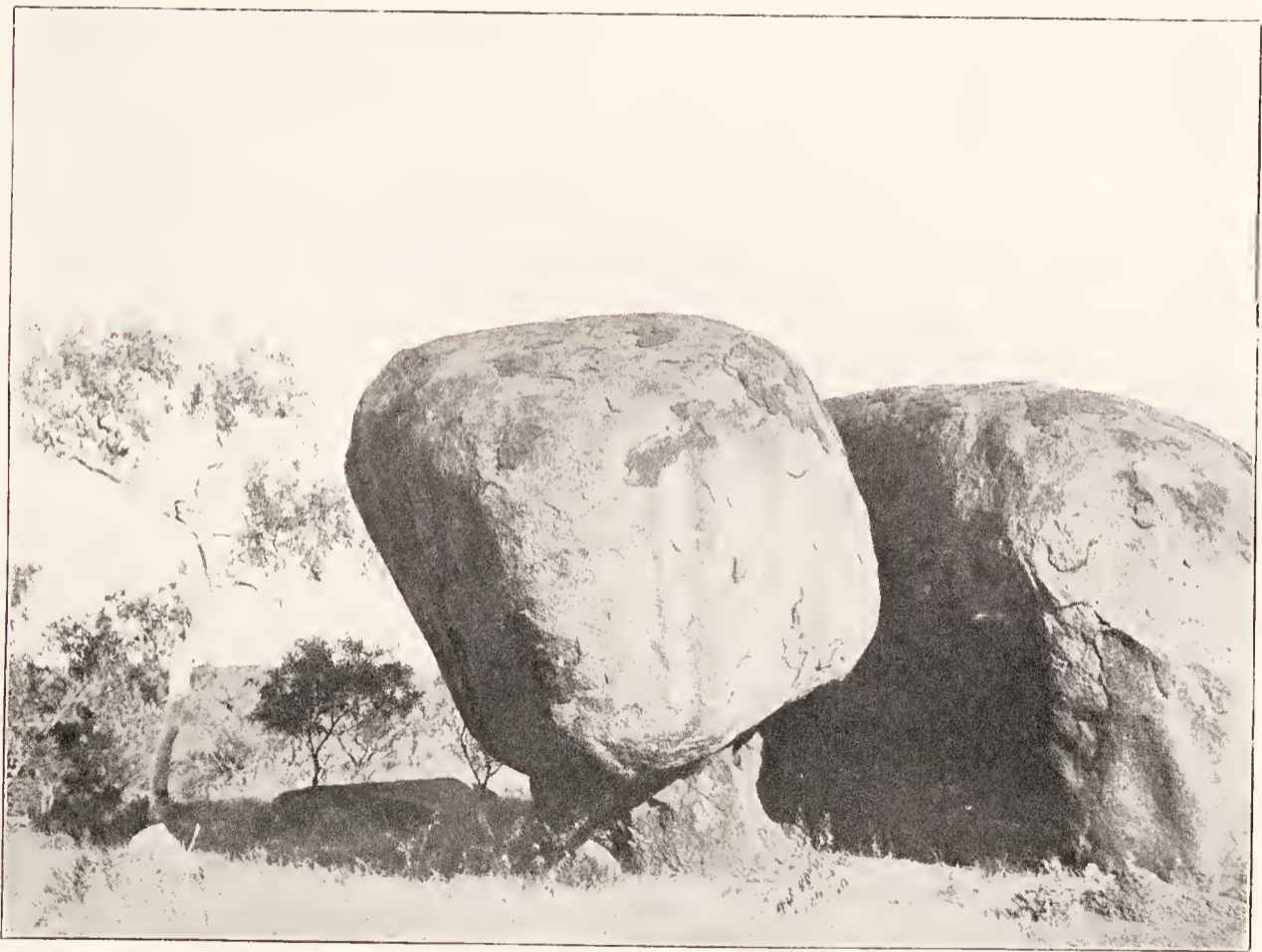
The sun was just setting when we reached our camp and found Chance there with the wagon and two plum duffs hanging on a tree. He had annexed three natives to show him where the waters were, as it is very easy to miss the scattered water-holes in this part of the country. We had a very comfortable camp amongst some bean trees and, after a very sumptuous meal on plum duff and beefsteak—the remnant of our supply brought on from Barrow Creek—we turned in for the night. Our camp that night consisted of three white men and five natives. Our own two boys, being Arunta, did not camp with the other three, who were myals, that is, wild blacks who could not speak a word of even pidgin English. Our two little terriers did not like them at all. They were splendid watch-dogs and had a deep-rooted dislike to strange animals, human or otherwise, and always had their eyes on the strangers, who could not move about without our knowing all about it. They were very anxious to please and be useful, and we communicated with them mainly by means of smiles and gestures. If water were wanted we just got a bucket, smiled and pointed towards the water-hole. They smiled in return, went off and came back with the bucket full, and smiled still more when they received a supply of flour and meat.

Next morning we breakfasted before sunrise, and at 7.30 a.m. were on the track. It was about as bad as it



B.S. *del.*

FIG. 250.—TRAVELLING THROUGH THE LONG GRASS.



B.S.

FIG. 249.—THE DEVIL'S "MARBLES," DAVENPORT RANGE.
The sandstone hills are seen in the background.



B.S.

FIG. 251.—ANT-HILLS AT TENNANT CREEK.

could be, with thick, heavy sand, and was overgrown, for the most part, by spear-grass, six or eight feet high, that hid everything, so that every now and then we bumped up against hidden ant-hills and Mulga stumps. As we went on it grew thicker and thicker, until from the buckboard we could see only the heads of the pack-horses and of the black boys, bobbing up and down above the top of the grass (Fig. 250). As the whole place was studded with ant-hills, driving was not pleasant and very slow and tedious. The sun was very hot, shining straight down on us, and there was not a breath of air, so that we were glad, after a few miles, to get out into an open space. One place was as thick with ant-hills as a graveyard with tombstones and, for some unknown reason, had been christened "Little Edinburgh." On the evening of the second day we camped at a Government well. As soon as ever we had drawn water and filled the trough for the horses, hundreds of little diamond sparrows came twittering in from all directions. How they exist during the often long intervals when there are no chance travellers to fill the water trough it is difficult to understand. They were quite tame and perched in crowds on the edge of the trough, while we stood and watched them enjoying themselves. Then up flew some lovely galahs, with beautiful pink heads and breasts and grey wings.

We had intended using the water, but luckily for us we had a little left in our canteens, because the supply here smelt very strongly of dead rats and was suspiciously full of hairs. However, the black boys did not seem to mind it, though we were glad to make our tea of purer water.

Next morning we were up before sunrise and travelled on over the usual uninteresting country, dodging ant-hills all the way, with nothing to see but stunted scrub, the telegraph line and the horizon, until late in the afternoon we reached the telegraph station at Tennant Creek—the

most forlorn and hopeless-looking place imaginable. Our first view of it gave one the impression of a hut or two built amongst ant-hills (Fig. 251). This was to be our centre for at least two months whilst working amongst the Warramunga tribe, and we were warmly welcomed by Mr. Squire, who was acting as officer in charge during the absence of Mr. Field, who, however, returned from the south soon after our arrival. Both of them were old friends, and I am not likely to forget the time we spent with them at Tennant Creek, and the help they gave us with our work. Alas! since those days Scott at Barrow Creek and Field at Tennant Creek have both passed away. The natives had been expecting us and a good many were already in camp, but, as soon as we arrived, messengers went out to summon those who had not come in, as they were preparing for a series of ceremonies. During the three years previous to our visit there had been a severe drought that had made it practically impossible for any large number to meet together, because both food and water were scarce, but most fortunately for us the drought had now broken. Heavy rains had fallen, the water-holes were full, and for the first time for some years they were able to gather together and perform their ceremonies.

The telegraph station was decidedly primitive. It consisted of two stone buildings. The main one, the total length of which was about forty feet, contained three rooms: a central one that served as operating and dining-room, and on each side of this a small bedroom for the two officers. The other contained a kitchen and a cook's room. Between the side walls and the roof there was a space left all round with metal supports for the rafters, so that the white ants could not attack them. The space also served to admit fresh air and clouds of dust. The partition between the rooms did not go up to the roof, and one of the first things I did was to fix up, with the help of Mr.

Squire, a dark-room for developing photographs. Between the roof and the partition we slung a tarpaulin, and then, by using yards and yards of turkey red that we had previously sent up, thinking it might be wanted for this purpose, as well as for decorating the bodies of the lubras, we stuffed up all the space between the roof and the walls, covered the windows and sundry cracks, and then, with rugs over the doors, were furnished with a fairly efficient dark-room apart from the water supply. Every drop of water used had to be carried from a well in the bed of a creek a quarter of a mile away. The heat was sometimes stifling and it was often difficult to keep the films from frilling completely off the plates, but it was no use waiting for a cool day, or even night, and the only way of getting even tolerably cool water was by exposing it in canvas water bags in the shade.

The creek, from which the station takes its name, is a small watercourse about a quarter of a mile away, perfectly dry except just when rain falls. It is bordered, as usual, with gum trees, but, except for these, there is no vegetation save miserable stunted scrub—odd bushes scattered at intervals over a dry, arid plain. Immediately around the station there is nothing except, on one side, a bare stretch of sandy soil between it and the creek, and, on the other, an extraordinary number of red ant-hills (Fig. 251). The creek, bordered with gum trees, runs in a wide, curving line from the east round to the south, with the main camp of the natives on the opposite side, shielded from view. Across the creek also, but further away to the east, was the ceremonial ground, the gum trees, owing to the curving of the creek, completely hiding it from the view of both the station and the main camp.

Months previously we had sent up a large supply of stores by camel team to await us at Tennant Creek, and when Chance came in with the wagon, and such stores as

remained on it, after our dealings with the natives at our camps at Charlotte Waters, Alice Springs and Barrow Creek, we gathered together everything that we had and took stock, because we had to keep in reserve enough stores of all kinds to carry us through to the far north. The natives, of course, were immensely impressed with our wealth, and at once began to bring things in, in exchange for pipes, tobacco, shirts, turkey red, and, what the men, as everywhere, coveted most, tomahawks. There were a few large ones amongst the latter that roused the envy of everyone and were reserved for very special occasions. Amongst other things we had some dolls that immensely amused the lubras and piccaninnies, who had never seen any before and, at first, could not make out what they were. When they recognised them, they shook with laughter. Very few of them had any acquaintance with a looking-glass and were completely puzzled by it, looking behind to see where the face was concealed that they saw in the glass. When they were convinced that it was their own they were mystified, and looked upon the glass as a kind of uncanny, magical thing that they were a little frightened of. Curiosity, however, overcame their fear, and every now and then an old man would bring a stone knife or a specially good *pitchi*, whispering, "Me want to see em self," and went off happy in the possession of the magic glass.

CHAPTER XVII

LIFE IN THE WARRAMUNGA CAMP

WE spent two months amongst the Warramunga and got to know and also to like them. So far as physique is concerned, they strike one as being superior to either the Arunta or Kaitisha. In height there is a decided difference. The average of fifteen Warramunga men was 173·8 cm., the tallest measuring 180 cm. On the other hand, the average height of twenty-six Arunta men was 166·3 cm. In the case of the women, the average height of thirteen Warramunga lubras was 162 cm., and that of the same number of the Arunta was 155·5 cm. Amongst the Arunta women only two measured over 160 cm., but of the Warramunga only four measured less. This difference in size is not to be accounted for by the difference in the natural surroundings of the two tribes, so far as food and water supply is concerned. As a matter of fact, in the large area occupied by the Macdonnell Ranges in the Arunta country, there is very rarely any lack of food and water, whilst the greater part of the Warramunga country is very dry and more liable to drought, with its consequent scarcity of food.

The striking feature of the personal appearance of the Warramunga men, as compared with that of the Arunta and Kaitisha, is that not only do they pull out their hairs on the forehead, but they do the same with those on the upper lip. At first we thought that they must adopt some method of shaving with a sharp stone, but this is not so. The process must be a very painful one, as every hair is

pulled out separately. Several times I came across an old man lying down in camp with a younger man sitting beside him, busily engaged in pulling out the old man's hair (Fig. 252). The figures will serve to give a good idea of the physical appearance of the Warramunga men and women at different ages (Figs. 253-265). The old women (Fig. 265) are especially hideous. The contrast between their appearance in youth and old age is very striking. The older they grow, the more prominent and massive become the overhanging eyebrows, giving rise to the appearance of a strongly receding forehead. The lips thicken and the mouth seems to grow forwards, emphasising the prognathism that is much less, in fact sometimes scarcely, noticeable in a girl or young woman. Their hair is always cut very close, and almost every really old woman has a very hard scar down the middle of her scalp, the result of, first of all, cutting it open with the sharpened end of a heavy fighting club and then searing the wound with a fire-stick during mourning ceremonies.

Not far away from the station, by the side of the creek, there was a vegetable garden. Granted water, anything will grow in the Centre, and, with plenty of black boys and lubras to pump water twice a day from a well by the side of the creek, the station cook, who had charge of the garden, had no difficulty in providing a really wonderful supply of fresh vegetables. The cauliflowers, lettuces the size of small cabbages, with great, tender, white hearts, parsnips and tomatoes that he grew would have made a Chinese gardener down south turn green with envy. We had seen no such things since leaving Crown Point Station on the Finke and were tempted to become vegetarians. The garden did not seem to inspire the natives with a desire to cultivate anything for themselves, in fact they seemed quite content with their crude loaves, made from pounded grass seed, eaten raw or baked in the ashes, and yams, of which apparently there



B.S.

FIG. 252.—AN OLD MAN LYING DOWN AND A YOUNGER MAN PULLING OUT THE HAIRS ON HIS CHEEK, WARRAMUNGA TRIBE.



B.S.

FIG. 253.—CHILD RUNNING, SHOWING THE TOES TURNED OUTWARDS, WARRAMUNGA TRIBE.



B.S.

FIG. 254.—TWO CHILDREN, WARRAMUNGA TRIBE.

was no lack. They were, however, very keen to secure the white man's flour. Some of our supplies of this, by the time that they had reached Tennant Creek and lain there for a month or two, were rich in weevils, but this seemed to make no difference to the natives.

Fortunately for us, our visit to the Warramunga had taken place during a comparatively good season, when it was possible for a large number of them to gather together. News of our coming had been sent on ahead from Barrow Creek and, when we arrived at Tennant Creek, we met with a warm welcome, not perhaps entirely disinterested. It also chanced, most fortunately for us, to be a time when, owing to the season, upon the nature of which much depends, they were gathered together to perform some special sacred ceremonies, so that we were able to study them under the most favourable conditions. There were altogether at least two hundred natives in camp. The ceremonial ground was placed on one side of the creek, bordered by a belt of gum trees and scrub that acted as a screen and effectively prevented the performers from being seen by women and children in the main camp.

The scenery around the camp was very uninteresting. Away in the distance there was a low range of hills, but otherwise, except just along the banks of the creek, the country was flat, sparsely covered with very poor, thin scrub or dotted over thickly with ant-hills. Though it was not a drought season, it was all so dry while we were there that one could not help wondering what the natives found to live upon, but, despite the dryness, there were plenty of yams underground, if you knew where to dig for them; grass seeds of different kinds were abundant in parts and, now and then, kangaroos and emus could be caught and, always, snakes and lizards and sundry smaller animals, so that the native larder was, in reality, always well stocked, that is, from an aboriginal point of view.

The day after we got there the men were, for some reason, performing a wind ceremony, the object of which was to make the wind blow. There was no very evident need for the ceremony, because, at this time of the year, scarcely a day passes without a few strong and very disagreeable gusts sweeping across the plains. However, they firmly believe that they can make it blow or make it stop just as they like. At one time, while they were decorating themselves, the gusts were very unpleasant, and one of the other men told a wind man to make it stop. Accordingly he shouted out to the wind, and in a minute there was a lull, and no one doubted that this was due to the power of the wind man. Next day it blew harder than ever, of course as the result of the ceremony, and we had a violent dust storm. Away in the distance, across the plain, we could see what looked like a heavy cloud of dark fog. Rapidly it bore down on us. The trees and scrub bent before the wind, and very soon everything, the station included (Fig. 266), was enveloped in a whirling mass of dust, so that, at last, we could only see anything, that was more than a few yards away from us, in dim outline. Gradually the storm passed away, and then everything inside and outside was covered with a thick coating of dust. The telegraph machines have to be covered over with wooden boxes made for the purpose of protecting them during storms. Under these conditions life is not altogether pleasant, and it was no easy matter to keep our materials, more especially those concerned with our photographic work, in good order. The fine dust penetrated everywhere and, as it swept along the ground, banked itself up against everything that came in its way, just like snow driven before the wind. At times a whirlwind swept across the plain, twirling the sand round and round and carrying it up in the form of a great column, reaching up into the air for perhaps two hundred feet. The column was so high that we could always see it a long way



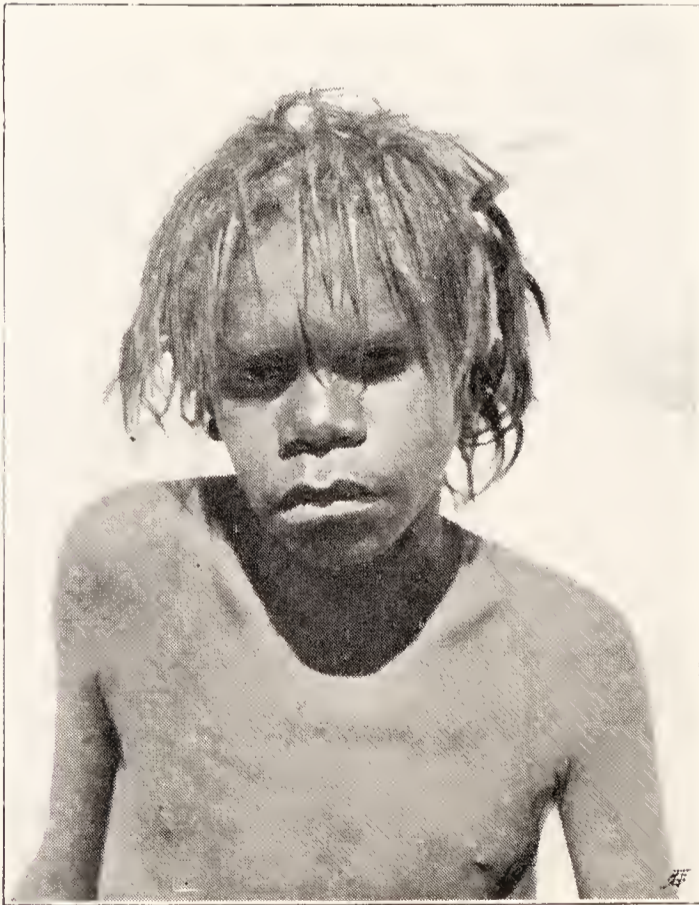
B.S.

FIG. 255.—TWO WARRAMUNGA BOYS.



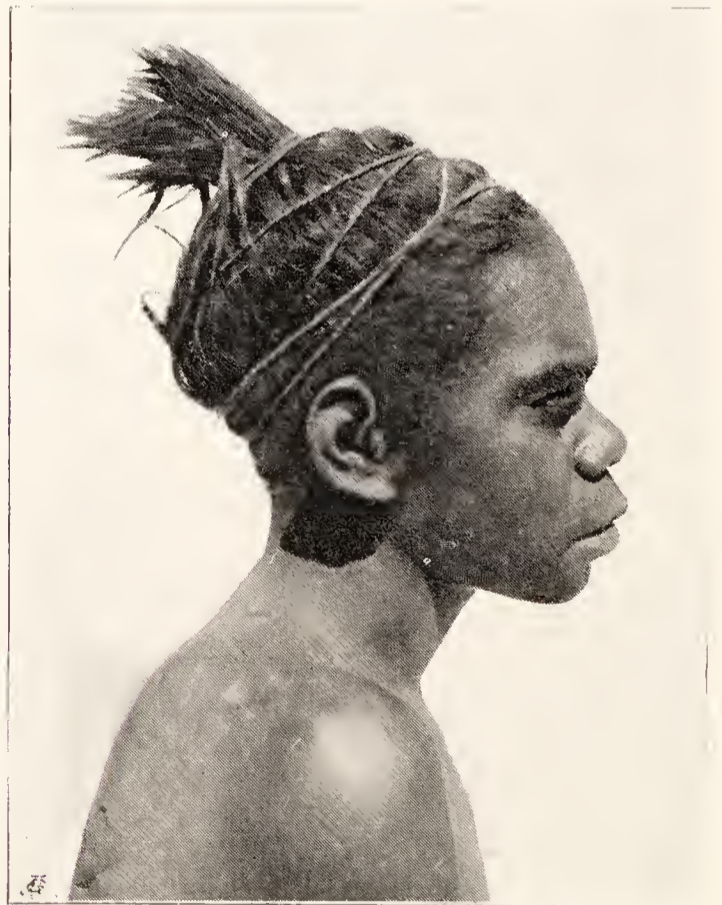
B.S.

FIG. 256.—MAKING HAIR-STRING WITH A SPINDLE. WORGAI MAN.



B.S.

FIG. 257.—YOUTH PASSING THROUGH THE INITIATION CEREMONIES, WARRAMUNGA TRIBE.



B.S.

FIG. 258.—YOUTH PASSING THROUGH THE INITIATION CEREMONIES, SHOWING THE METHOD OF TYING THE HAIR UP, WARRAMUNGA TRIBE.

off (Fig. 380). If it came in the direction of the camp there was a great commotion, the natives, especially the women and children, yelling at the top of their voices and rushing away as fast as their legs could carry them, so as to get out of its road and avoid the evil spirit that lives in the middle of it. Occasionally, one of them would strike the camp, scattering the Mia-mias and their contents in all directions. Not only do the women fear the spirit but, very often, spirit children are carried along by the whirlwind and enter them, if the dust column chances to strike their camp while they are there.

When not engaged in preparing for or performing ceremonies, life went on in the usual way. The men, if they felt so disposed, went out hunting. The women and children were scattered about in search of grass seed and smaller animals such as lizards and snakes. If food was abundant, the men spent hour after hour squatting on the ground at their common camp and the women did the same at theirs. At every large permanent camp, just as amongst the Arunta, there are two such spots, one for the men, the other for the women, that may be regarded as primitive forms of club-houses.

There was plenty of variety in the life in the native camp at Tennant Creek, quite apart from the performance of ceremonies, and we were constantly coming across something new and interesting. The weather was very trying and it seemed to affect even the natives. One morning, when the wind was blowing hot and strong, with clouds of sand sweeping across the plain, we came upon a man sitting by the side of his Mia-mia, looking disconsolate and miserable. He was wearing three head-rings (Fig. 267) that are characteristic of women, and was evidently suffering from what white men call a headache. We found that the head-rings belonged to his wife, and that he was wearing them under the belief that the pain in his head, due to the

entry into it of some kind of Arungquilta, or evil magic, would transfer itself to them and that he could then throw them away and be free from it. I went to see him again an hour or two later, and found him quite cheerful. He had recovered from his headache, which, or rather the Arungquilta causing it, had been successfully transferred to the head-rings, and had been thrown away with them amongst the bushes surrounding the camp. Next day I found that his wife had searched for and found them in the bushes. The Arungquilta had departed and she was again wearing them. Late one evening we heard a great noise in the camp and, on inquiring, found that one of the lubras had been doing something of which her husband did not approve, and, by way of correction, he was chastising her with a fire-stick. It was useless for us to interfere, and all that we could do was to give one of the older women some oil with which to dress the burns. In all probability the old woman drank this herself and "sang" the wounds, that were already anointed with grease and pipe clay. Next day we saw the patient, who was quite cheerful, despite a few ugly burns on her legs. The natives, men and women alike, are so accustomed to cutting themselves that they do not seem to think much of wounds that would disable an ordinary white woman for a month or two.

On another evening we saw a big fire lighted in the main camp and, going down to investigate matters, found a number of men standing round, jabbering at the top of their voices and some of them holding on to a boy who was in a terrible fright. They told us that they were giving him a fright, which they certainly were, judging by the series of piercing yells to which he was giving vent. It turned out that it was all really what they called "monkey yabber," that is, they did not mean to do anything serious and were only pretending—though it was a very good pretence—to be in earnest. The boy had done something against



B.S.

FIG. 259.—WARRAMUNGA MAN.



B.S.

FIG. 260.—WARRAMUNGA MAN SHOWING THE NASAL SEPTUM BROKEN THROUGH.



B.S.

FIG. 261.—YOUNG GIRL, WARRAMUNGA TRIBE.



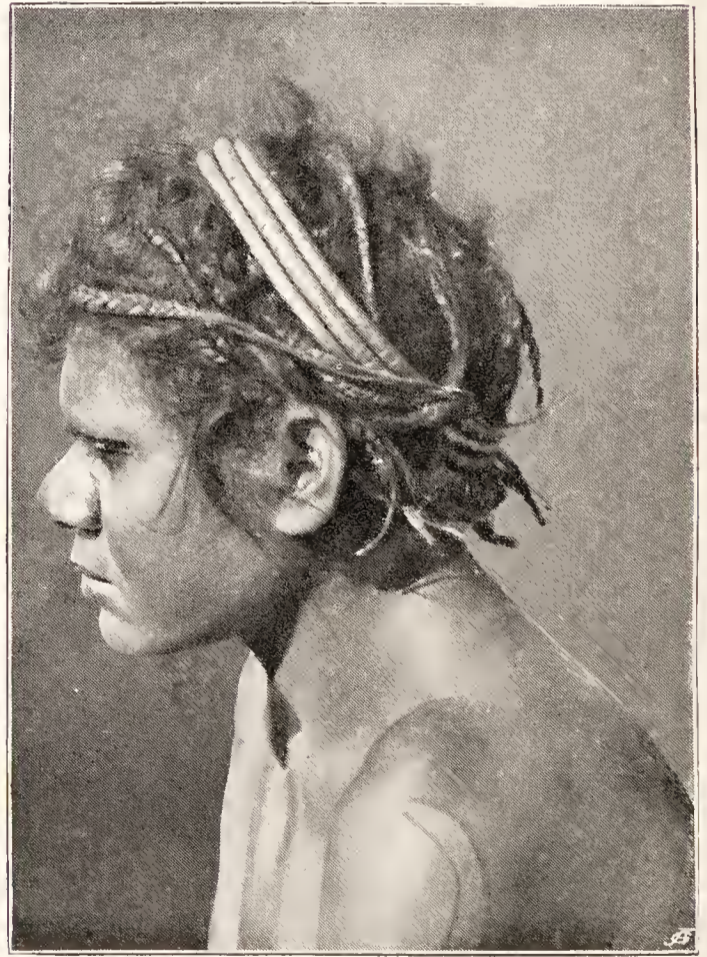
F.J.G.

FIG. 264.—YOUNG WOMAN, WARRAMUNGA TRIBE.



B.S.

FIG. 262.—YOUNG WOMAN WEARING HEAD- AND NECK-BANDS, WARRAMUNGA TRIBE.



B.S.

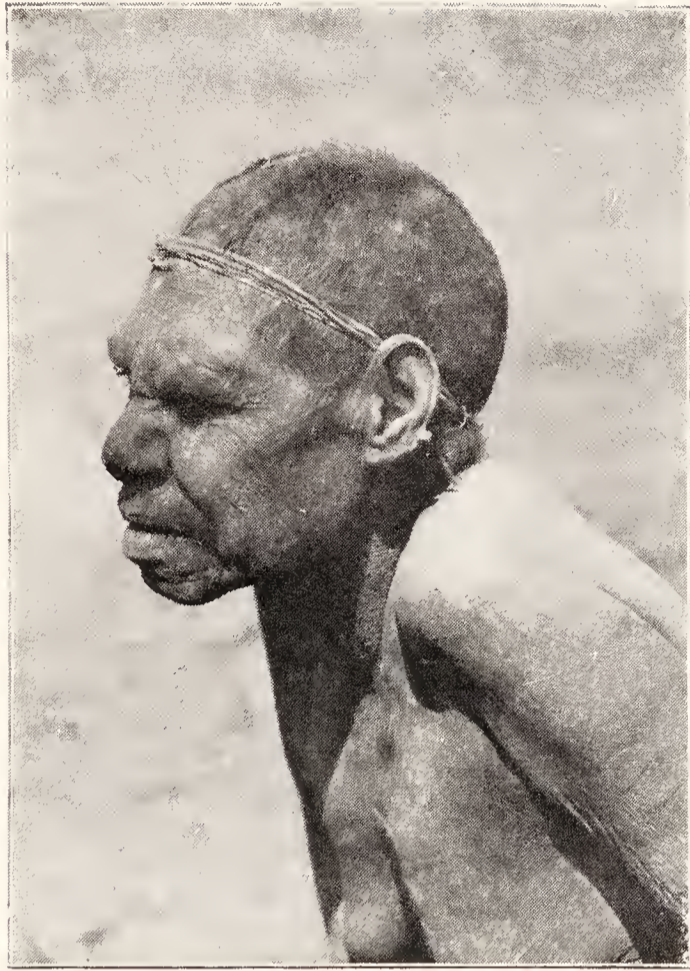
FIG. 263.—YOUNG WOMAN WITH HAIR PLAITED AND WEARING HEAD-BANDS, WARRAMUNGA TRIBE.

tribal law, so one or two of the older men talked the matter over and decided to teach him a lesson. Accordingly, they made a hot fire, caught him and dragged him to it, telling him that they were going to roast him. The boy had no idea but that they were thoroughly in earnest and, judging by his yells when they held him close to the fire, he bitterly regretted his misdeeds. After giving him a great fright, they set to work and, for half an hour, lectured him on tribal law in general and the particular one he had broken in great detail. When they were a little tired, and he was thoroughly dazed and repentant, they let him go, and it is not likely that he will repeat the offence.

As a general rule the natives were quite friendly to one another, but every now and then quarrels arose, and for a time the harmony of camp life was seriously disturbed. On the afternoon of the day on which, in the early hours of the morning, some special ceremonies had come to an end, and when we thought that everybody was too tired out to do anything—we ourselves had been up all night with the natives—a great disturbance arose, quite suddenly, in the camp. I was taking advantage of what seemed like a lull in the proceedings to develop some photographs, but, as soon as we heard the noise, we went down to the camp, where all the natives were assembled, in a state of great excitement. What the original cause of the quarrel was we could not find out—probably it was some very trivial matter—but, within a few minutes, every man, woman and child was on the ground. The excitement was so great that we thought it discreet to stand on one side and watch matters from a safe and disinterested point of view. It was a very ludicrous sight. One man would suddenly, apparently for no special reason, begin to yell and prance round, then two or three others would follow suit, brandishing spears and boomerangs (Fig. 268). Then other men came and hung on to their arms. Every now and again a

man would succeed in letting a spear or boomerang fly, but it was easily warded off with a shield. The women then began prancing about and yelling at the top of their voices. As soon as any particular man was attacked, up rushed all his female relatives with their fighting clubs, and danced round and round him to prevent him from being hurt. This was not with any idea that his opponents would hesitate, from a feeling of chivalry, to attack him lest they should hurt a woman, because the Australian has no such feelings in regard to women; it was merely a matter of custom. Things got fast and furious, and anyone would have thought, from the noise, that at least half a dozen men had been seriously damaged, and yet no one was hurt, except some of the old women who deliberately poked the ends of their yam-sticks into the top of their heads, which is a way they have when they get excited. Some of the men, meanwhile, had run back to their camps for their stone knives, and rushed on to the ground yelling and brandishing them about, and we thought, time after time, that a serious fight must take place. The main mass of men and women were grouped together, while anyone who felt inclined to take an active part in the discussion ran out, howling and prancing about to his heart's content, no one paying any special heed to anyone else, but each one trying to attract the attention of the onlookers. It was a ludicrous sight, and the way in which they kept up the appearance of fury, without anyone being hurt, was remarkable. After about two hours the noise began to grow less and, one by one, the men and women dropped out of the crowd and went back to their own camps; but it was quite four hours before all was quiet, and during the evening there was an unwonted silence in all the camps; everyone was thoroughly tired out.

Not far from the main camp there was a pool of water, by the side of which the ceremony of knocking out young



B.S.

FIG. 265.—OLD WOMAN, SHOWING SCAR
ON THE CENTRE OF THE SCALP, WARRA-
MUNGA TRIBE.



B.S. *del.*

FIG. 266.—TENNANT CREEK STATION IN A DUST STORM.



B.S.

FIG. 267.—MAN WEARING WOMAN'S HEAD-RINGS AS A MAGIC CURE FOR HEADACHE, WARRAMUNGA TRIBE.

women's teeth was performed. Fortunately we were able to see this. The pool was about a quarter of a mile away from the ceremonial ground where the men were performing, so the women had to walk a long way round, lest they should by chance see the men preparing for a sacred ceremony. When we reached the water-hole, we found about thirty women and children gathered together. They had lighted a fire, because the water was cool and the air, for once, chilly.

Four of them, who were to be operated upon, went into the pool two by two (Figs. 269, 270). First of all they filled their mouths with water, spitting it out after a short time. Then they threw water over their heads and, having done this, came on to the bank, where the other women were watching and waiting for them. Each one, as soon as she had come out, lay down on some leafy twigs. One young woman then pushed the gum back from the tooth with a small piece of bone (Fig. 271), and another, immediately afterwards, knocked it out with a pointed stick that she struck smartly with a stone. She was an excellent dentist and, except in one case, the tooth came out with the first blow. As soon as the operation was over, the patient put a small pad of heated gum leaves in her mouth, which was supposed to ease the pain. They also say that the cold water numbs the gum and prevents them from feeling the blow very much.

I was wondering what would be done with the tooth. In the Kaitisha it is thrown away in the direction of the mother's ancestral camp. In the Warramunga its fate is a curious one. If it be a woman's tooth, as it was on this occasion, it is taken back to the camp, where it is pounded up between two stones, mixed with a little meat of some kind and then eaten by the girl's actual mother, or, if the latter be not available, by a tribal mother. If it be a man's tooth its fate is still more curious. It is pounded up and must be

eaten by his mother-in-law—which perhaps is the strangest use for a mother-in-law that any Australian tribe has devised.

Of course they have to account in some way for the knocking out of teeth, and they say that in the Alchera it was one of the big bats, commonly called “flying-foxes,” that did this. This “flying-fox,” who was also a man, was rather an important person and full of guile as well as wisdom. One day, during his travels, he saw two lubras who attracted him, so he thought he would like to have them as wives. They were in camp, along with a number of other women, and, before the “flying-fox” was seen by them, he changed himself into a dog. He snarled at all the other lubras but wagged his tail when the two younger ones spoke to him, so they took him out with them when they went hunting wallabies. He went on ahead and drove the wallabies into holes where the lubras could catch them. When they came up, they found a man instead of a dog, and could not understand it. The man then asked them to come with him to his country, but they said, “No, we won’t.” However, this did not matter, because the man simply took his spear-thrower and, twining their hair in it, threw them ahead of him and then flew after them. During his travels, for some unknown reason, he stopped twice to knock out front teeth, and ever since then the natives have done the same, because they say it makes them look better. This “flying-fox” was evidently a great man, because he taught the Warramunga people to make stone axes, the Tjingilli flaked stone knives, and the people further north, barbed spears.

The natives were very anxious that we should see everything, which sometimes resulted in our spending a good many uncomfortable hours watching rather dreary performances of no special interest; but, of course, we never let them know this, as otherwise we might have missed something of importance. One morning, when we were



B.S. *del.*

FIG. 268.—A FIGHT IN CAMP.



B.S.

FIG. 269.—TOOTH-KNOCKING-OUT CEREMONIES: WOMAN POURING WATER OVER HER HEAD, WARRAMUNGA TRIBE.



W.B.

FIG. 270.—TOOTH-KNOCKING-OUT CEREMONIES : WOMEN DRINKING WATER,
WARRAMUNGA TRIBE.

peacefully slumbering, one of our special friends woke us at 3 a.m., saying that a most important ceremony was being enacted. It was decidedly chilly, so we took our rugs with us, and stumbling along in the dark, reached the ceremonial ground, where the men were clustered round a few small fires. We found that a ceremony was in progress, the object of which was to secure an increase in the numbers of white cockatoos. At that time of the day I did not feel personally inclined to take any special interest in white cockatoos, but it was evidently a very serious matter to the natives. The ceremony was a very simple one. It consisted in one old man, and later on his son, standing up and crying out, without more than a few minutes' cessation, "Hak-hak, ha-ha-ak, ha-ha-ak." It certainly was a very excellent imitation of the peculiarly disagreeable, harsh call of a white cockatoo, but after hours of repetition it grew monotonous. The performance started at 3 a.m. and ended at 7 a.m. At its close the old leader—the head-man of the white cockatoo totem—had subsided on the ground with only a few faint squeaks left in him, while his younger companion was not much better. As for us, after the first hour we wrapped our rugs round us and lay down on the ground, wishing that every white cockatoo in the country was shot and stuffed. At 7 a.m. the performance came to a close with a ceremony in which a man of the totem wore a small ornament on his head, covered with cockatoo down, that was supposed to represent the bird. After this it was certain that all the white cockatoos in the land would begin to lay eggs.

There were many little bits of by-play in connection with these ceremonies. One day while some fifteen men were preparing for a snake ceremony, rubbing one another with grease and charcoal and red ochre, one of the older men got up and, without saying a word to anyone, went off to his camp. We thought nothing of it until about a quarter of an hour later, when we were astonished to see him returning,

looking very savage and armed with six boomerangs, a fighting club and a knife. Without any warning he began brandishing the boomerangs about, prancing and yelling all the time. Thinking that, in the circumstances, discretion was the better part of valour, we moved out of the firing line to a position of safety from which we could watch things without danger, because the man seemed to have lost all control over himself. On inquiry, it turned out that this particular man had the right to rub grease and red ochre on one of the performers, but that someone else had usurped his place and privilege. Amongst natives, precedence counts for much, and the old man could not remain passive under what he considered to be an insult to his dignity. For about ten minutes he was like a raging tornado, everyone else remaining wonderfully calm and unconcerned. As no one seemed to take any notice of him, I went and talked to him and, after a while, he gradually quieted down and, for some reason, probably because he thought I sympathised with him, presented me with a greasy fur-string necklet that he was wearing. Then he went and took his place amongst the men, squatting down with his arm around the neck of the very man whom a few minutes before he seemed prepared and anxious to kill.

On another occasion, while a number of men were busy decorating one another, we saw a quaint little ceremony that puzzled us considerably until its meaning was explained. Without any apparent warning of what he intended to do, though as a matter of fact there had been a previous consultation, one man (A) rose up, cut a small lock of hair from the whiskers of another man (B), and presented it to a third man (C), who placed it beneath his arm-band. The meaning of this was that the second man (B), whose hair was cut, would present the third man (C), to whom the hair was given, with a wife, who would be the sister of the man (A) by whom the hair was cut. In the Warramunga tribe, one

of the most important relationships is that of Gammona, the equivalent of mother's brother amongst ourselves, that is, maternal uncle. He it is who has the main say in the allotment of his sister's daughter to any man to whom she is eligible as wife, that is, belongs to the section of the tribe from which her husband must come. In this instance B was the brother of the mother of A, and had the power of allotting A's sister as wife to C, who, of course, belonged to the right section. It is no uncommon thing amongst these tribes to see men carrying locks of hair about. They are tied up in little cigar-shaped parcels, made of paper bark, tied round with hair string and decorated with simple dot and line designs, in pipe clay and ochre. At a later time, often many years after, because a girl is often betrothed before she is born, the lock of hair is given to and carried by her, just as it is in the Kaitisha, serving as a sign, both to her and to others, that she is promised to a special man, and as a kind of magic charm to defend her against the advances of other men.

The ceremonies connected with hair are very numerous. In some Australian tribes the greatest care is taken to prevent anyone from becoming possessed of even the slightest lock of hair cut from the head of any other individual, under the idea that the possessor of the hair would be able to injure, by magic, the man from whom it had been cut. In the tribes inhabiting Central Australia there is no such belief, and practically every individual at some time or other of his, or her, life possesses hair that has been cut from the head of someone else.

After the mourning ceremonies in the Warramunga tribe, a number of the men had their hair close cropped, and I was much struck with the curious appearance of their scalps. Instead of being smooth they were thrown into regular folds, looking just as if a rope were coiled about under the skin. The explanation of this is that, often for months together, the hair is tied up very tightly with fur

string in such a way that the movable skin of the scalp is pressed into a comparatively small compass on the crown of the head, and, as it were, "sets" in rolls. All the men's scalps that I examined were like this; the women's were quite different, in fact normal, save for the central scar on those of the older ones. It is not the women's duty to tie their hair up.

One of the things that struck us most while wandering round the Warramunga camps was the fact that so many of the women were under a ban of silence. Many times, when we spoke to a woman, she signified by putting her finger to her lips that she was not allowed to speak. If four men, each of them belonging to a different section of the tribe, happened to die within a short time of one another, there would not be a single woman in the whole camp who would be able to utter a word. They did not seem to mind it in the least, and those who were under the ban of silence chattered away gaily on their fingers. Without making any sound, except that of laughing, they easily communicated with one another by means of their remarkable system of gesture language. Their conversation deals with matters of a concrete rather than an abstract nature, and it is simply wonderful to watch the way in which they can use this gesture language to explain their simple ideas and wants to one another, in preference, often, to speaking.

Some form of sign or gesture language is found amongst all Australian tribes, but it appears to be most strongly developed in Central Australia. One or two of the earlier explorers, attempting to communicate with the natives, found that signs made by themselves seemed to be appreciated by the former, and immediately concluded that they had amongst them a series of Masonic signs of world-wide significance. There is no evidence whatever of this; what really happened was that, by accident, they had hit on one or two signs used by the natives, who naturally expressed



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FIG. 271.—TOOTH-KNOCKING-OUT CEREMONIES : FORCING THE GUM BACK, WARRAMUNGA TRIBE.



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FIG. 272A.—RELEASING A WOMAN FROM THE BAN OF SILENCE,
WARRAMUNGA TRIBE.

their surprise and immediately became friendly. This sign language is entirely distinct from what is commonly known as the deaf and dumb language, in which the fingers are used to denote the letters of the alphabet. They have no idea of written signs corresponding to sounds. Each sign, or gesture, as used by the aboriginals, consists in holding the hand, or hands and fingers, in a definite position, which is often also associated with the movement of the hands and fingers, or both, and each gesture conveys a definite meaning, indicating some idea or object. In many cases the same signs are used over wide areas, and amongst different tribes, so that, to a certain extent, they enable members of tribes speaking different dialects to communicate with one another. They also make it possible for natives to communicate with one another when too far apart to distinguish voices, or when they do not want to be heard, but perhaps their chief use is to allow of individuals, who are under a ban of silence, in accordance with some tribal custom, to "speak" to one another.

The signs that are illustrated here (Fig. 272) are only a few out of very many that were shown to me by an old Purula man amongst the Arunta, but they are fundamentally similar to those used by all Central Australian tribes. A native can place his fingers in positions and move them either together or singly in a way that is very difficult for an ordinary white man to imitate, so that all I could do was to sketch them in the main position. Sometimes the hand is held still, but usually the idea is expressed by a combination of position and movement. In some cases the signs are closely similar, but the natives seem to distinguish between them easily, and are often also helped by reason of the particular circumstances under which they are used.

(1) Who are you?—The first finger is extended, the thumb and other fingers are crooked in on the palm and the



FIGURE 272. GESTURE LANGUAGE.

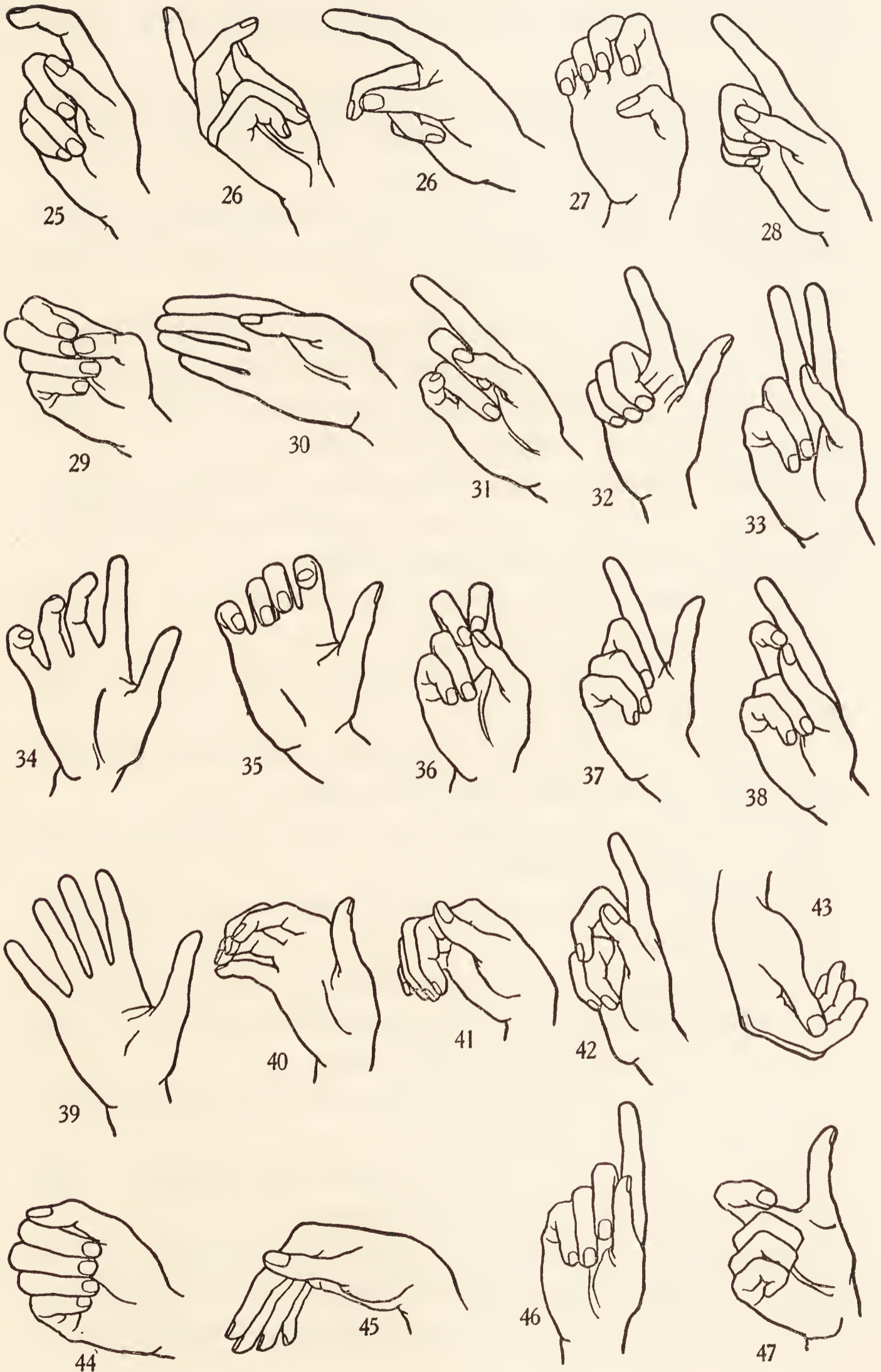


FIGURE 273. GESTURE LANGUAGE.

hand is moved about with a wave-like motion from side to side.

(2) What do you want to know?—The thumb and fingers are loosely crooked over the palm; the hand and forearm are moved backwards and forwards.

(3 and 4) What is your *Unda* (section)?—The fingers and thumb are first crooked over the palm, then the thumb is moved up and down on the fingers.

(5) What is your *Knanja* (totem)?—The first finger is bent over so that its tip and that of the extended thumb are close together; the three other fingers are crooked over the palm. The hand is rotated on the wrist.

One or other of the following signs are used in reply to the signs (3) and (4) to indicate the section of the tribe to which the particular individual belongs.

(6) Panunga.—Both arms are extended and the left wrist is clasped by the right hand.

(7) Purula.—The right hand with fingers closed is held against the left cheek.

(8) Uknaria.—The left hand bent over the wrist with fingers distended is held under the beard.

(9) Ungalla.—The right arm is bent so that the hand lies on the right shoulder.

(10) Bultara.—The right arm is bent so that the hand clasps the breast.

(11) Appungerta.—The right arm is bent so that the hand, with fingers and thumb distended, lies open on the right side of the body below the breast.

(12) Kumara.—The right arm is bent upward with the hand clasping the right cheek.

(13) Umbitchana.—Both arms are bent upwards with the hands clasping the sides of the face.

In reply to the question, "What is your totem?" the sign for the animal or material object is given. There is a distinct sign for all of the important ones, certainly for all

that give their names to totems. A few of them are as follows :

(14) Udnirringita (witchetty grub).—The fingers are loosely pressed on the palm, the thumb lying on the first finger.

(15) Irriakura (bulb of *Cyperus rotundus*).—The thumb and fingers are distended and the hand is moved round in a circle.

(16) Achilpa (wild cat).—The thumb and two first fingers are held upright, the fourth finger is crooked on the palm with the third one over it. The hand is moved up and down.

(17) Kwatcha (water).—The fingers are crooked over the palm, the thumb resting on the first finger. The hand is rotated on the wrist.

(18) Ura (fire).—The fingers and thumb are bunched together with their tips touching. The hand is moved slightly on the wrist.

(19) Arura (large kangaroo).—The thumb and fingers are crooked over the palm and the tip of the thumb is held on the nail of the third finger.

(20) Arunga (euro).—The two first fingers are distended, the third and fourth are crooked over the palm, and the tip of the thumb is held on the nail of the third finger.

(21) Echunpa (large Parentie lizard).—The hand is held open ; a slight rotatory movement on the wrist.

(22) Ereninna (carpet snake).—The thumb and first finger are extended, the other three fingers are kept close together and moved up and down on the palm.

(23) Gnoilya (wild dog).—The thumb and first finger are extended, the three other fingers are crooked over the palm. The hand is rotated on the wrist.

(24) Erlia (emu).—The four fingers are bent over the palm ; the thumb is bent with its tip touching the first and second fingers. The hand is held horizontally and moved up and down on the wrist.

(25) Perta (a stone or hill).—The first finger is extended ; the other three are bent over the palm with the thumb lying on the second. The hand is moved from side to side as if the fingers were following the outline of a flat ridge.

(26) The sun.—The first finger is loosely extended ; the third and fourth are crooked over the palm ; the tips of the second finger and thumb are in contact. The hand is held horizontally and the thumb and second finger are flicked.

(27) The moon.—The thumb and first finger are held so as to outline part of a circle with an opening outwards ; the other three fingers are bent over the palm.

(28) Gum tree.—The hand is held upright with the first finger extended. The other three fingers are bent over the palm, the thumb resting on the second and base of the first. The hand is moved straight up and down.

(29) Inkulpa (Pituri).—The hand is loosely closed with the tip of the thumb pressing against the tips of the first three fingers as if holding something.

(30) Urinya (wind).—The thumb and fingers are loosely extended. The hand is held horizontally and moved round and round on the wrist.

They can also express by means of signs not only an object itself, but the nature of the object, as in (31) Muddy water, no good.—The first and fourth fingers are extended ; the second and third bent over the palm ; the thumb is placed on the second finger.

Definite statements and suggestions can also be expressed by signs as in the following :

(32) Blackfellows are coming up.—The first finger and thumb are extended ; the other three fingers are bent over so that their tips touch the palm. The hand is at first held still and then rotated on the wrist.

(33) I see him, or I see a man.—The first and second fingers are extended ; the third and fourth are bent over the palm ; the thumb is bent but does not touch the fingers.

(34) Men are coming up to fight.—The thumb and first finger are extended; the other three fingers are slightly crooked. The arm is slightly moved sideways and the hand rotated on the wrist.

(35) Men coming up are friendly.—The thumb is extended; the four fingers are crooked. No movement.

(36) Order to sit down.—The thumb and first two fingers are bunched together so that their tips are in contact; the two other fingers are bent over the palms. The hand is moved on the wrist with a jerk.

(37) Have you caught game?—The thumb and first finger are extended; the other three are bent over the palm.

(38) Yes, got some.—The first finger is extended; the second finger is crooked so that its tip touches that of the thumb. The appearance is given of holding something in the hand.

(39) No, not got any.—The open hand is held upwards and rotated on the wrist.

(40) Beckoning anyone to come up.—The right arm is extended towards the person with the thumb extended, and the fingers bunched together and bent over the palm, which is turned outwards. The hand is then moved with a series of sweeping downward movements, at each one of which the hand is drawn in towards the body. The movement is practically the reverse of that employed by white men to beckon anyone to come up.

(41) Go away.—The hand is held with the back uppermost and the fingers bent downwards; it is then opened out on the wrist with the palm away from the body and moved slightly forwards as if pushing something away.

(42) I have found a honey-bag.—The first finger and thumb are extended; the second finger is bent half-way over, the third and fourth completely. The hand is held still while the thumb and first and second fingers are flicked.

(43) I am hungry.—The arm is held down and the

thumb and fingers are held so as to form a kind of scoop. The hand and arm are moved as if scooping something into the stomach.

(44) I am thirsty.—The hand is closed with the thumb resting on the first finger. It is held in front of the face, but not close up, and rotated on the wrist.

(45) I have found water.—The hand is held and moved first of all as in 44. Then it is held horizontally and opened out downwards and moved as if the fingers were following the course of a creek.

(46) I am going away for one night.—The first finger is extended, the other three fingers and thumb are closed over the palm; the hand is moved away from the body with the palm outward. If for two nights, two fingers are extended; if more than four, the fingers are all extended and the hand is moved backwards and forwards.

(47) To-day.—The thumb is extended, the first finger bent but not closed; the other three fingers tightly closed on the palm.

As a general rule the women are released from the ban of silence imposed on them when a death has taken place, within a few months or at most a year. One day, wandering about the camp at Tennant Creek, I saw a little ceremony that consisted in a man holding out his hand for a woman to bite while he turned his head away from her (Fig. 272A). In this simple way the woman was released from the ban, but she had to present the man with an offering of food. Occasionally the women prefer to remain under the ban for a long time, and, amongst the Warramunga, there was one old woman who from choice had not spoken a word for twenty-five years (Fig. 265). That was in 1901; she was very ancient and decrepit when we saw her last, and long before this she must have gone to her grave without uttering a word. The ban of silence, however, does not, unfortunately, preclude a woman from wailing, and night after

night we used to hear the wild wailing of the women for their dead. The spirit of the dead person is supposed to haunt the old camping ground and to be gratified if it sees and hears that its old companions are properly performing the mourning ceremonies. Not only is the spirit supposed to be hovering around, but the time that immediately follows upon a death in the camp is one during which the natives are very excited and very imaginative. They have a very firm belief in the existence of evil beings, commonly known as Kurdaitcha, who are supposed to prowl around with the object of killing their enemies by means of magic. One evening we were quietly writing up our notes in our Warramunga Camp when suddenly we heard two shots fired. A death had occurred only a short time before and, as usual, there was a strange feeling of tension in the camp, because it is just at a time such as this that the natives are nervously apprehensive of any strange sight or sound, seen or supposed to be seen or heard, at night. One of our boys had been aiming with his revolver at what he declared was a Kurdaitcha, whom he had seen creeping up to the camp under the cover of darkness. The noise set the whole camp in motion. I rather think that the boy wanted to draw attention to himself and magnify his own importance. He was quite trustworthy and, being amongst natives who were strangers to him, we had given him a revolver, with instructions not to use it except in a case of emergency, and this was evidently an occasion which he thought he might turn to his own advantage. Within a minute a dozen men rushed up, armed to the teeth with boomerangs and spears. Our boy of course was the great figure-head for the moment, which was probably exactly what he wished for. Under his leadership, with a courage inspired by numbers and, perhaps still more, by the knowledge that their leader had a revolver, which even the most powerful Kurdaitcha was scarcely likely to possess, they set out in pursuit of the enemy.

Twice we heard shots away in the distance and two hours later the gallant party returned and described how they had seen no fewer than four Kurdaitchas and had succeeded in driving them away. The supposed Kurdaitchas were probably white-ant hills, but the natives went to rest fully convinced that they had saved the camp, ourselves included, from an attack which, but for their valour, would undoubtedly have had most serious results; anyhow, the prestige of our boy was firmly established amongst them.

CHAPTER XVIII

FIRE CEREMONY OF THE WARRAMUNGA

ONE of the most grotesque and, at the same time, picturesque ceremonies that we saw amongst the Warramunga was an extraordinary performance, or rather a series of ceremonies, the climax of which consisted in a kind of ordeal by fire. It was quite different from the one associated with the Engwura of the Arunta, that forms part of the initiation ceremonies through which every man must pass. In certain respects, indeed, it seems to be very much in the nature of a primitive kind of saturnalia.

In the Warramunga, the two moieties of the tribe called respectively Uluuru and Kingilli, each of which comprises approximately half the tribe, are very clearly defined, and the fact of the existence of these two moieties is very much in evidence during the performance of any important ceremony. The Uluuru have their fire ceremony, the Kingilli have theirs, and the men of the moiety to which it does not belong make all preparations for the performance of it by those to whom it does belong. The one that we saw belonged to the Uluuru.

One evening we heard sounds of laughter, singing and shouting going on at a spot not far away from the main camp on the near side of the creek which, with its border of scrub and gum trees, hid the former from the ceremonial ground. It was quite dark, but, as soon as we reached the camp, where many fires were burning brightly, we saw at once that something out of the common was taking place. Men of all sections were gathered indiscriminately round

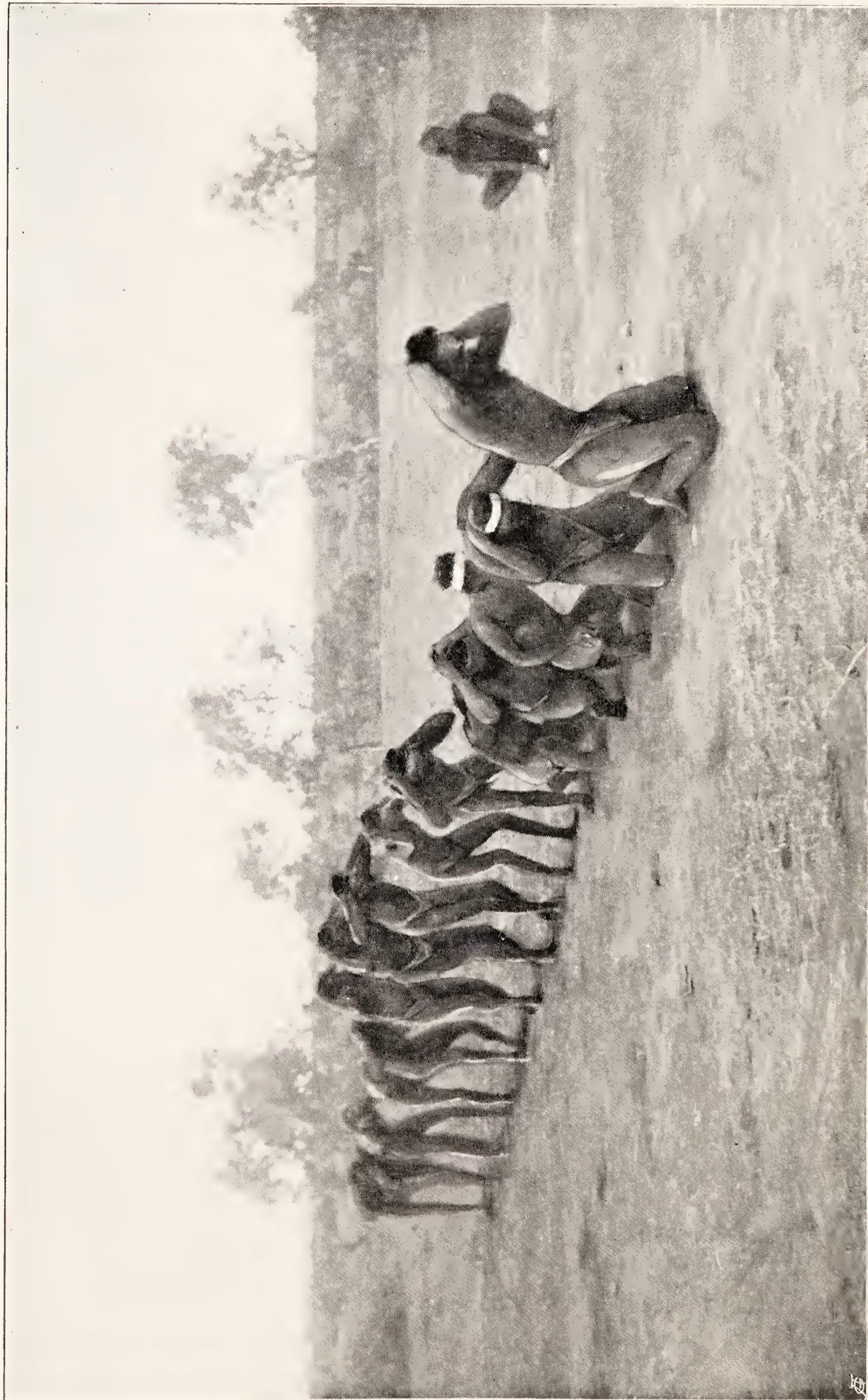
the fires. Every now and then two or three of them, flourishing spears, shields and boomerangs, rushed madly round and round, yelling at the top of their voices, whilst all the time they threw their bodies into the most grotesque attitudes. Then someone, perhaps even a young and recently initiated youth, would make a sneering, insulting remark to an old man or steal away a weapon belonging to another. One young man actually snatched food away from an old man—a most unheard-of thing in ordinary life—and ran off with it. Everything seemed to be topsy-turvy, but whatever was done was treated by everyone as a source of merriment and, time after time, with a sudden yell a man would spring from the ground, followed immediately by others, and then they would all dance, first to one side and then to the other (Fig. 273), evidently intent on making themselves look as grotesque as possible. Of course there were only men at the central camp, but the women and children were not more than a couple of hundred yards away and were taking their share in the performance. The men continually shouted out to the women, who, in reply, came out from their Mia-mias, or bush shelters, dancing and singing in the light of the fires that were burning brightly all round, so that everything that both the men and the women did could be seen clearly. This went on till nearly midnight, when the women and children retired and the men lay down by the side of their fires on the bank of the creek.

Very early next morning, long before sunrise, the men were up and at once began to paint themselves with lines of yellow ochre. A little later the women grouped themselves, dancing or rather swaying their bodies about backwards and forwards, with a bending movement of the hips and knees, moving their hands as if to invite the men to come on. The men formed in single file, all except two of them, who went to one side, beating the ground with shields, while the others



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FIG. 273.—GROTESQUE DANCE AT THE FIRE CEREMONY.



B. S.

FIG. 274.—FIRE CEREMONY. PROCESSION OF MEN ALTERNATELY KNEELING AND WALKING ALONG.

advanced in a single line, every man with hands clasped behind his head. One after the other they knelt down and, swaying from side to side, waddled on towards the women, with a curious rhythmic movement (Fig. 274). The front men rose to their feet before those in the hinder part of the fantastic procession were on their knees, producing a wave-like effect along the line of bodies. The sun rose while the procession was moving along, throwing long, weird shadows across the bare, sandy soil. When close to the women, all the men rose and came on, bending their bodies and swaying them from side to side with exaggerated high-knee action. Suddenly, wheeling round, they turned, passed by in front of the women, and ran back to their camp (Fig. 275). An hour later the camps were deserted, save for a few old men and women. Everyone had gone into the scrub miles away, the men in one direction, the women in another.

The two illustrations give a faint, but only a very faint, idea of this curious ceremony. The only chance of photographing such a scene is by means of snap-shots, which are not easy to take, either late in the afternoon or at early dawn, at one or other of which times many of their most picturesque ceremonies are performed. I had to trust to luck and take one of these two photographs (Fig. 274) immediately before sunrise, when there was neither light nor shadow, and the other, as the long-drawn-out shadows indicate, immediately after. The sun was just rising above the horizon while the procession was in progress. On their return, a week later, the singing and banter went on for hours at a stretch every evening. During the daytime the Kingilli were busy making huge torches called *Wanmanmirri*. Twelve gum-tree saplings were cut down, each of them providing a straight pole from twelve to fifteen feet in length. They were brought into a camp on the other side of the creek, so that the Uluuru men could not see the Kingilli men at work

on them. Large numbers of leafy gum twigs were tied tightly round, until each was enclosed in a mass of foliage about eighteen inches in diameter. They were propped upright in the scrub and, in the dry air, very soon formed masses of highly inflammable material.

The two last days of the ceremony were full of very picturesque and, at times, exciting incidents. On the first, a special pole, called Wintari, twenty feet in length, was prepared, again by the Kingilli men, in the bed of the creek and, after being red-ochred all over, a bunch of green gum twigs was tied to the top. The women were driven far away from their camp and, while they were out in the scrub, the pole was fixed upright in the ground, half-way between the men's and the women's camps. The men spent all the afternoon decorating themselves in the bed of the creek, some having cross bands of black edged with white, and others yellow, vertical bands on their back and chest. The women, hidden from view in another part of the creek, were ornamenting themselves with yellow bands. When all was ready they were summoned and approached the pole, dancing and swaying about in the usual way (Fig. 276). First of all, they clustered round it and two or three of them tried to climb it, but could not do so and slid down, amidst the laughter of the others. While they were doing this, the men came up from the creek in single file, the women, as soon as they saw them, withdrawing a little way from the pole, still dancing and singing. The men came on alternately standing up and waddling along on their knees, while one or two of the older men stood to one side of the procession, keeping time by beating shields on the ground. Slowly they all waddled round it, and, as soon as the last man had passed by and the men had returned to their camps, the women ran away. The sun was just setting when this performance came to an end, and, when night came on, the singing and grotesque dancing were wilder than ever.



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FIG. 275.—FIRE CEREMONY, WARRAMUNGA TRIBE.

The men dancing in single file towards the women, one of whom being in mourning is daubed over with white pipe clay.



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FIG. 276.—FIRE CEREMONY.

Women dancing in front of the *Wintari* pole.



B.S.

FIG. 277.—FIRE CEREMONY.

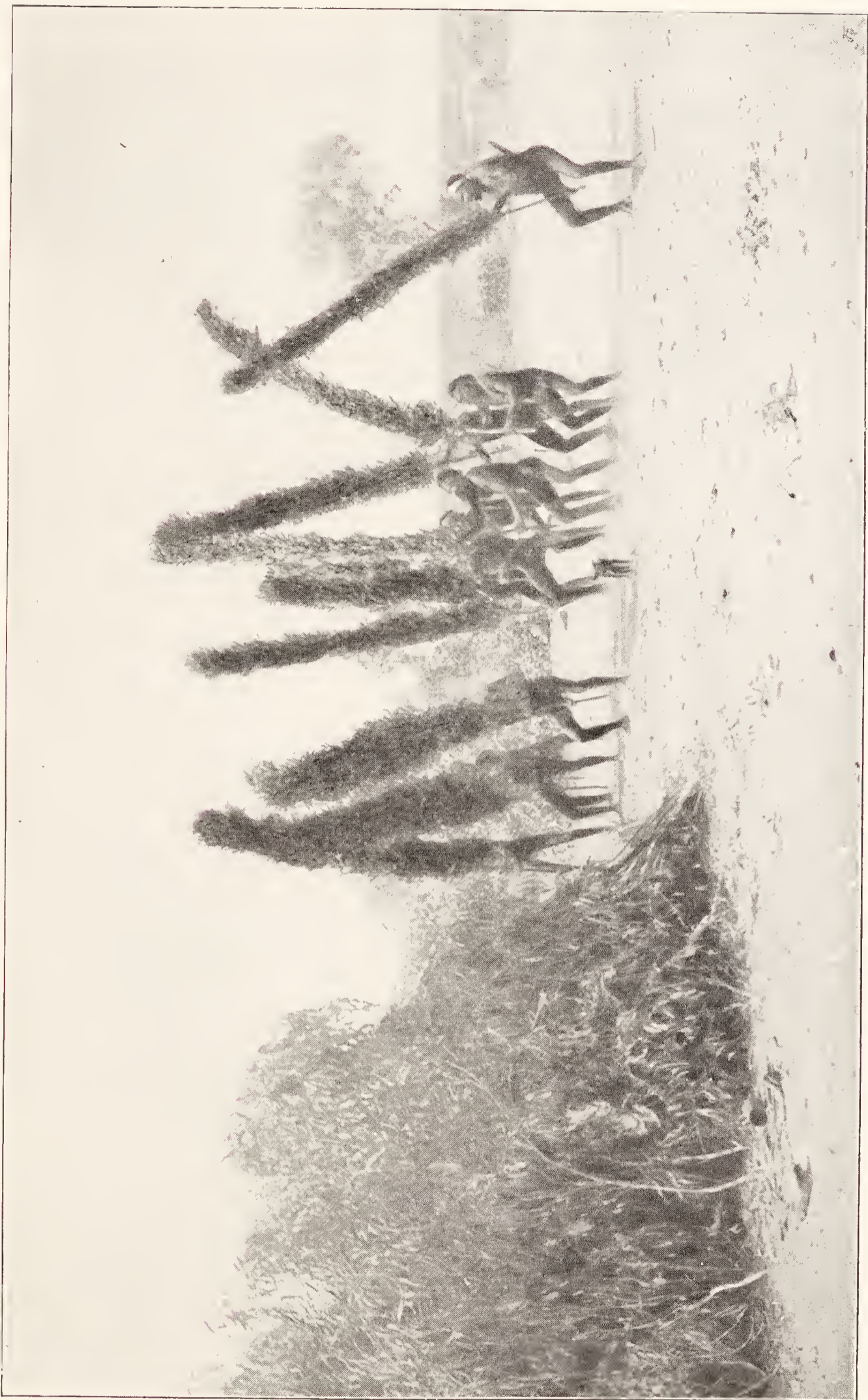
Men dancing and jeering at others who are shut up in the bough wurley.

Very early next morning, a large bough wurley was made big enough to hold twenty or thirty men, and into this the Uluuru men went, accompanied by a few of the Kingilli, and for hours, packed closely together, they kept up a continuous singing, to the accompaniment of the beating of boomerangs. The other Kingilli simply lounged about outside. We went, or rather looked, inside every now and then, to see what was going on, but the air within the wurley, on which the sun shone hotly, was simply stifling and the peculiar smell of the aborigines, all of them well greased, hot and excited, was so remarkably strong and pungent that we were thankful to be able to remain outside in the open air and, at the same time, see all that was going on. The natives, however, did not seem to mind the stifling heat, and the singing, that referred simply to the progress of the fire ceremony, and the carrying of the *Wanmanmirri* across the country from the far north-east, went on hour after hour without ceasing. After some time the few Kingilli men within the wurley began to decorate five of the Uluuru who were to take a special part in the performance. Whilst this was in progress, the other Kingilli men, every now and then, came and danced wildly in front of the entrance, jeering and poking fun at the Uluuru men within the wurley (Fig. 277). Later on in the morning the torches were brought up from the creek, and then twelve Kingilli men took hold of them and danced about in front of the opening so that the men within could see them, first facing it and then turning their backs to it, yelling as they did so (Figs. 278, 279). Each torch was at least twelve feet long and of considerable weight, and it was astonishing how the men could hold them upright, jump into the air for a foot or two and prance about with them. The women, meanwhile, had run up a rough bough shelter, quite a quarter of a mile away from the camp. At four o'clock in the afternoon, all except the decorated men came out of the wurley and went

to the creek, where they provided themselves with heavy slabs of gum-tree bark, armed with which they made a wide circle round the camp, driving the women along the flat until they fled for protection into their shelter, against which the men viciously hurled their slabs of bark. The younger women were terrified, but only one was damaged and, when all the bark had been thrown, the men ran back to their camp, where they remained singing until about eight o'clock, when the fire ceremony began in real earnest.

Fires were lighted and the torches brought up and placed on one side of the wurley, out of which the decorated men came and, at first, sat in the shade. After the usual capering and yelling had gone on for some time, the decorated men came up and, taking bunches of lighted twigs, stuck them together, scattering burning embers over themselves and all the other men who crowded round them. Meanwhile, three recently initiated youths had been brought up and placed lying on the ground with their heads covered, so that they could see nothing until they were suddenly roused by the old men and told to watch the performers, who now paid them special attention in the way of burning embers. When this was over, a procession was formed, headed by the decorated men, who waddled along on their knees, swaying from side to side, and followed by all the men, who were shouting at the top of their voices "Oh! Oh! Oh! Prr! Prr!" until, with a final "Prr! Prr!" they all fell down in a dense heap, the performers in the centre.

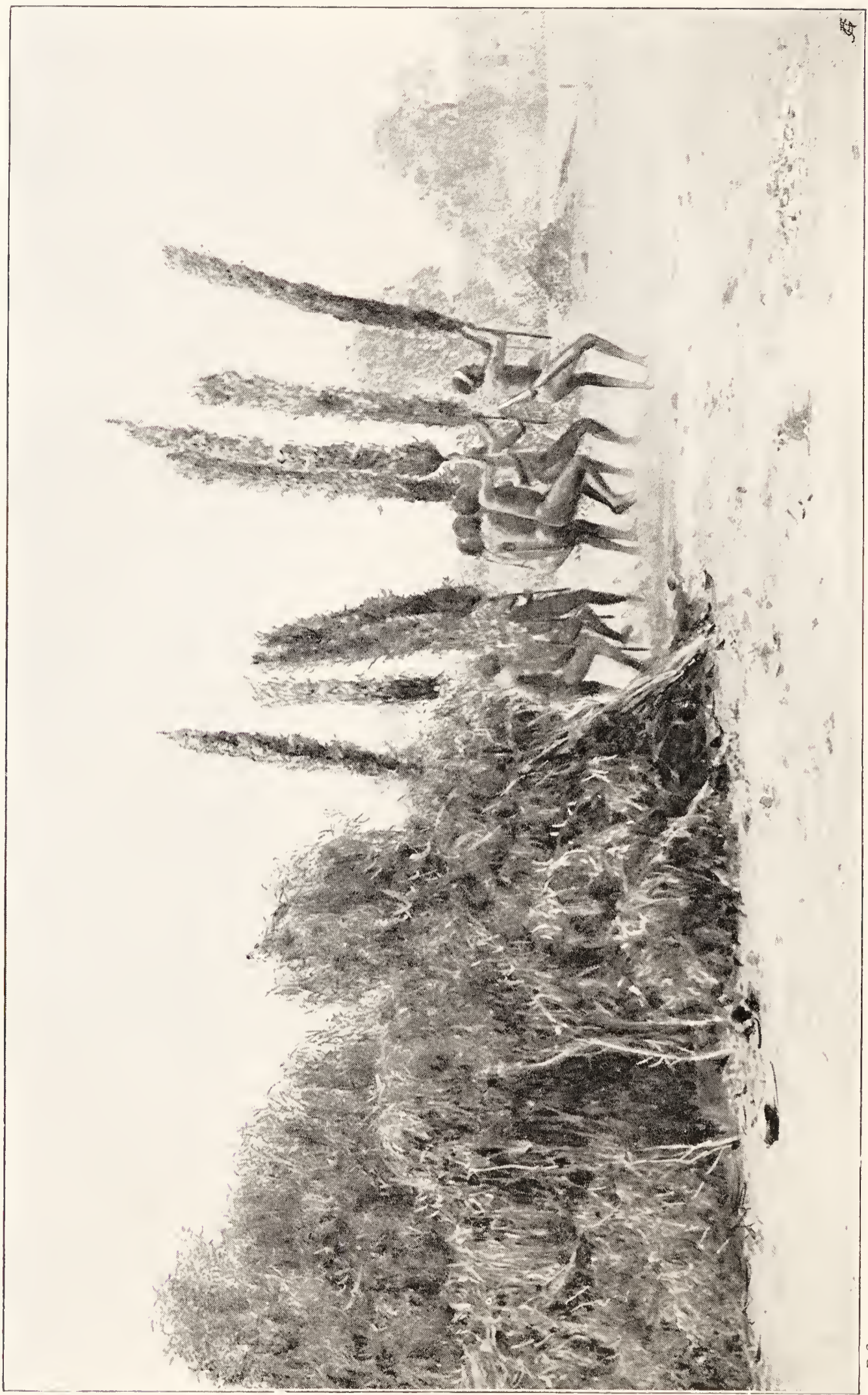
By this time the women and children had gathered round the *Wintari* pole, about a hundred yards away, where they could see at least a great amount of what was taking place, though of course not very distinctly. For an hour nothing special happened. The Kingilli men then took branches of gum-tree twigs, in the form of double bundles, that they tied, some on to their thighs, others into their waist girdles in the small of the back. Each man seized a boomerang,



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FIG. 278.—FIRE CEREMONY, WARRAMUNGA TRIBE.

Men with torches dancing in front of the wurley, in which the other men are seated singing and preparing for a sacred ceremony.



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FIG. 279.—FIRE CEREMONY.

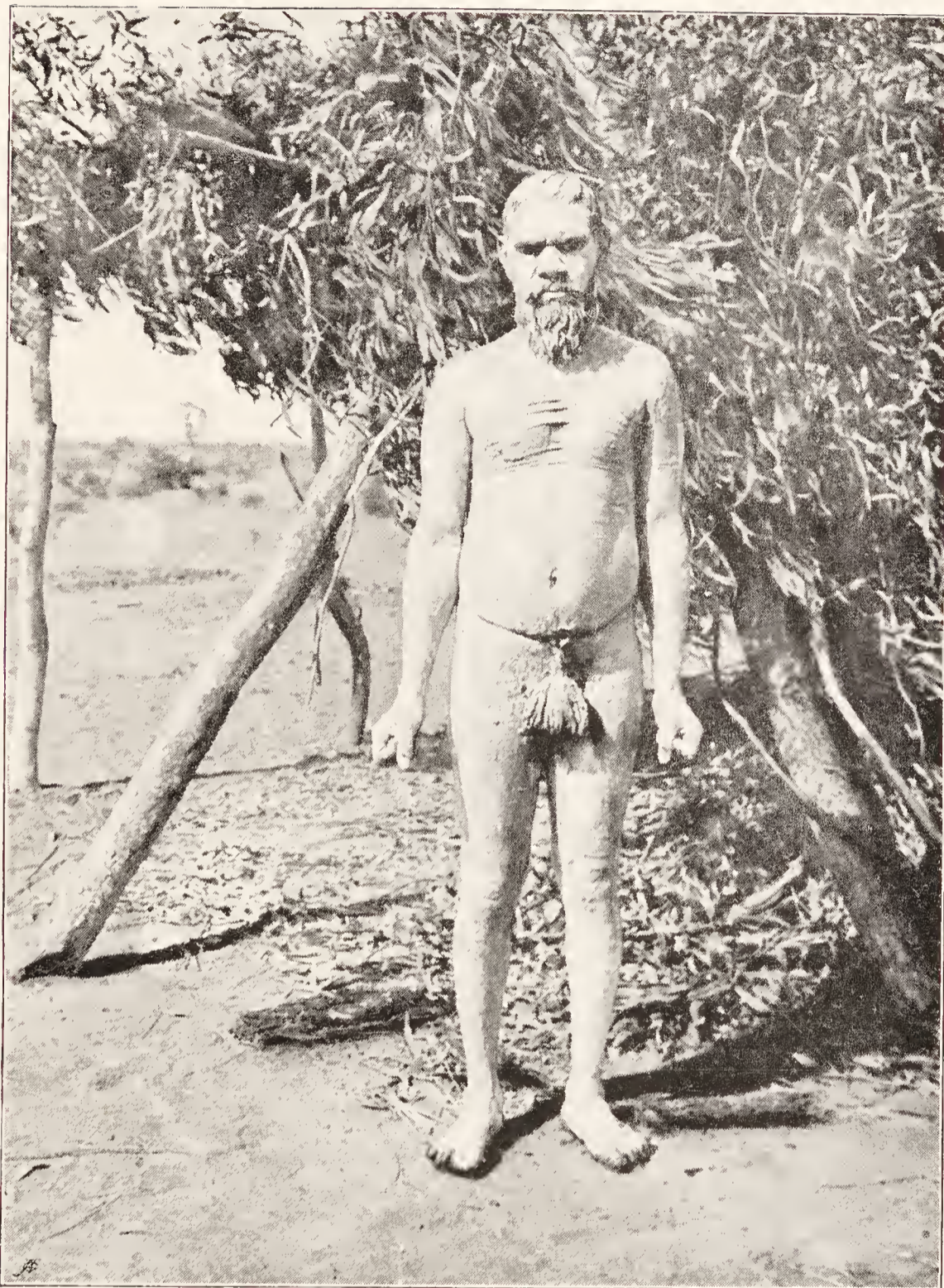
Men with torches dancing with their backs turned to the wurley.

shield or club and, falling into single file, began a grotesque dance, every man moving his body as though it worked on a swivel in his hip-joint. Suddenly the line turned and closely encircled the Uluuru men. There was just light enough to see the men by, but you could have heard them a mile away. At a given signal, they all tore off the twigs and heaped them on the fires, that for a time gave out a brilliant light, while the men danced and yelled like maniacs.

When the fires had burned down and it was comparatively dark again, a circle of twelve holes was made in the ground round the Uluuru men, and the great torches were fixed upright in them. The excitement grew more and more intense as the Kingilli danced and yelled at the Uluuru, who sat closely huddled together within the circle of leaf-covered poles. The torches were then removed to one side and preparations made for the real serious business in which they were to be used. The special men who were to carry them, some of them Kingilli, others Uluuru, retired to various spots, each of them accompanied by a few friends. A large supply of mud and pipe clay had been brought on to the ceremonial ground, and each of the twelve men was now daubed all over, literally from the crown of his head to the sole of his feet, first with red mud and then with white pipe clay, until they looked like hideously grotesque, half-modelled human beings, dripping with white mud (Fig. 280). When all was ready, the torches were handed to them. Fires were made and the ends of the torches thrust into them until they were all well alight. The performance began with one of the men charging full tilt, holding his lighted torch as if it were a bayonet, driving the blazing end into a group of natives, in the centre of which stood a man with whom, some time ago, he had had a serious quarrel. Warded off with clubs and spear-throwers, the torch glanced upwards. This was the signal for a general *mêlée*. Every torch was now blazing brilliantly; the men were leaping and prancing

about, yelling madly; the dozen blazing torches came crashing down, time after time, on the heads and bodies of all and any who happened to be near them, scattering burning embers all around (Fig. 281). The air was full of falling sparks and the weird, whitened bodies of the combatants were alight with burning twigs and leaves that stuck to the damp mud. The smoke, the blazing torches, the showers of sparks falling in all directions and the mass of howling, dancing men, with their bodies grotesquely bedaubed, formed a scene that was little short of fiendish.

To one side stood all the men, women and children in camp, the lubras, wailing and moaning and burning themselves with lighted twigs under the impression, so they said, that by doing this they would prevent the men from seriously hurting themselves. At length the torches were dashed upon the ground and their fires extinguished. The men who had been carrying them retired to one side with their friends and scraped the mud and embers off their bodies. It was now nearly midnight and for a time there was comparative quiet, so Gillen and myself curled up on the ground in our rugs and, with the beating of boomerangs for a lullaby, had a short rest for an hour, when the noise began again. The torches were relighted, but this time no attempt was made to strike anyone with them. They were merely lifted up, waved about in the air and dashed down on the ground, time after time, until everything was burnt. When this was over the men gathered round the fires singing. As soon as ever the faintest light was seen in the eastern sky, the decorated men crept quietly towards the *Wintari* pole, around which the women were gathered, most of them having lain down there on the ground for the night. The men remained there, crouching down quietly. The women pretended not to know that the men were there, though the elder ones, who had been through the ceremony before, knew what was taking place,



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FIG. 280.—FIRE CEREMONY, WARRAMUNGA TRIBE.
Man daubed over with mud and pipe clay.



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FIG. 281.—FIRE CEREMONY OF THE WARRAMUNGA TRIBE. NIGHT SCENE.

The bodies of the men carrying the blazing torches are plastered over with mud and white pipe clay.

and probably all of them took care to have a good look at the performers, as it was one of the very rare occasions on which they had the chance of seeing any of the men decorated for a sacred ceremony. Just before sunrise the other men in camp ceased singing, rose from beside their fires and, taking pieces of lighted bark, threw them in the direction of the women and children. Then they rushed across to where the decorated men were hiding and led them to the pole, round which the women were now standing. The younger ones at once ran away to their camps, only about ten of the older ones remaining. The decorated men huddled together low down on the ground, while the women, each of them carrying a little wooden trough with stones in it, danced round and round, jingling the stones all the time. In a few minutes, just before the sun rose, they stopped; the women ran away to their camp, the men came back to theirs and this extraordinary fire ceremony was over. It was not possible to find out exactly what it all meant: the natives were vague on the matter, but, so far as we could gather, the actual fire ceremony, the torch fight, seemed to be regarded as a kind of "clearing" ceremony. Men who had, or thought they had, a cause of serious quarrel with one another could vent their anger by attacking each other with the torches.

The Kingilli made all preparations for and took charge of the whole proceedings, but there was no such thing as the members of the moieties being formed into two parties for fighting purposes. So far as we could find out, there was only one definite case in which one special man attacked another special one. The fundamental idea seemed to be that of putting an end, generally, to all feelings of enmity or revenge for past wrongs, actual or imagined, and, as it were, starting afresh with a "clean slate." Whatever else it was or was not, it was extremely wild and picturesque from start to finish.



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