The Tasmanian Naturalist

THE JOURNAL OF THE

Tasmanian Field Naturalists' Club

New Series—Vol. I. APRIL, 1926. No. V.

An Overland Excursion to Port Davey.

(By L. H. Livingstone.)

On Christmas morning, 1924, a party of three, consisting of Messrs. Tom King, Hedley Keogh and myself, entrained at Hobart for Fitzgerald, the jumping-off place of our long-projected trip through South-Western Tasmania. We packed fourteen days' supplies, our meal list and general equipment list being the result of many hours' careful consideration to ensure our carrying all necessaries and no needless gear.

Our general equipment was composed of one 10ft. by 8ft. tent fly, one blanket and one waterproof sheet each, one tomahawk, two billies, one frying pan, one candle, and one packet of matches each, a length of fine rope each, a D.B. shot gun and belt of cartridges (which we hardly used), one mug, plate, knife, fork and spoon each, small towel and soap, and one spare pair of socks each. Hedley Keogh took an abundant supply of films for his camera, Tom King armed himself with a revolver and a huge note-book, in which he entered a faithful record of all items of interest on the trip; while I was equipped with an aneroid barometer, prismatic compass, map, and field book.

Each man's food pack was composed of two 2lb. tin loaves, 4lbs. self-raising flour, 4 tins of bully beef, camp pie, etc., 4lbs. ship's biscuits, 2lbs. sugar, ½lb. salt, 3lbs. dried fruit, 2lbs. Creamoata, 1½lbs. bacon, 2 tins unsweetened milk, 1½lbs. cheese, and two large cakes of chocolate, 2lbs. dripping, 1lb. split peas, 1 bottle Bovril, and ½lb. tea. A total of thirty pounds of food in all, the total weight of each pack being about 60lbs. to 65lbs. in all.

Having had Christmas dinner in the train, at Fitzgerald we got a pack horse to take our swags as far as Mayne's, six miles from the station, where we had a billy of tea, and harnessed ourselves for the bush track. The track wound uphill for the first mile, and as we did not feel very energetic with such a start, we contented ourselves with camping above the bank of Fourteen Mile Creek for our first night, in a beautiful glade of ferns, myrtle, sassafras and high gums.

We arose next morning at 4.15, and got under way at 6.45, traversing a long forested shoulder of Mt. Mueller, with occasional patches of fairly open button grass and cutting grass and tea-tree. We passed the two branches of the East Styx in mid morning, and arrived at the West Styx at dinner time. After about 1½ miles we traversed creeks which unite to form the Weld River, the 12 mile hut being situated on the banks of one of them. At the hut we met two incoming prospectors, Messrs. R. J. and Sid. Stacey, who gave us cheering information as to the condition of the Port Davey track lower down. Leaving the myrtle scrub, we passed into open country, and came to the Port Davey and South Gordon tracks junction. We followed the latter, turning south-west, and camped above a creek about 1½ miles from the junction, after doing 12 miles for the day.

The third day we progressed along the foothills of Mt. Bowes, through alternations of open button grass and tea-tree and dense belts of myrtle country. About 9 o'clock we entered Bowes Gorge, a steep rocky defile, at the beginning of which we shot a big tiger snake. It was here that we gained our first view of blandfordia on the track, but this flower was much more frequent lower down. Rising to 2350 feet, we then dropped down 300 feet, and rose again to 2300 feet in a saddle of another spur of Mount Bowes, and as we began to descend we caught our first glimpse of Lake Pedder, a large sheet of blue lapping the foot of the rocky wall of the Frankland Range. We cleared the scrub-covered slopes of Bowes by noon, and descended to a button grass plain.

While the billy boiled we gazed at the panorama spread before us. We were overlooking a vast basin, ringed in by mountains, whose masses were fashioned in almost endless variety. Mount Anne was close up on our half left, its majestic centre peak and its long western spur being visible. Through a gap between two high ridges of the spur we glimpsed a high peak in the Arthur Range, while south of us loomed up the fantastic Franklands. Westwards showed up the Sentinel, while a few miles beyond the plains to the north-west was Mt. Wedge with its long, timber-clad slopes and domed-topped summit.

In the afternoon we crossed three miles of plains, passing over two big tributaries of the Huon River, and by sunset we were rounding the western spur of Mt. Anne, which we had first sighted at noon. We camped near the 12 mile peg (from the Junction), on a little mountain torrent rushing down from the wild crags above us. About 200 yards to our right lay the timber-fringed course of the Huon River, which took its rise in the foothills of Mt. Wedge and Mt. Bowes.

Overnight the rain greeted us, and became our constant companion south of here, only leaving us when we passed this camp on our return journey. On our fourth morning a walk of ten minutes brought us to the banks of the Huon River, about forty feet wide here, spanned by a log. Its depth was about ten feet. We straddled the log one at a time with pack on back, moving forward a few inches at a time. In half an hour we were all safely across, and soon we entered a mile stretch of myrtle, sassafras and horizontal, the track sidling along a steep bank, and being further encumbered by a large number of fallen trees, we had a difficult task in getting over them with our heavy packs. Eventually we emerged on to the Huon Plains. Here we found very few traces of the track, about four-fifths of the old original guide-stakes having rotted away. We mostly struck straight across country, through boggy and treacherous ground. Through the misty rain we steered for a hastily outlined high rugged mountain mass, standing in isolation amid the plain. As we got close to the foot of it the sun broke through for a few minutes, and we enjoyed a wonderful view of the weird peaks of the Franklands stretching away into the western distance. On the Isolated Mountain in front of us the rocks glittered with a multitude of colours in the bright sunlight. Our way, we discovered, lay to the west of the Isolated Mountain, as we came to call it, and on rounding it another stretch of plains came into view; really a continuation of the Huon Plains we were now on. The Huon River was curving its way in a semi-circle round the symmetrical Scott's Peak, being joined by a branch stream from Lake Edgar, a little distance to our left. A few more miles of striding over the plains found us at one o'clock on the banks of a large stream flowing from behind the Frankland Range, which was now side on to us. Here, after a battle with the pouring rain, we succeeded in getting a fire going, and steamed over it while the billy boiled. Leaving this stream (Pebbly Creek) after lunch, a mile or so brought us to another large stream, and passed a very rugged pyramidal mass, which we took to be Mt. Giblin, charted as the end peak of the Frankland Range. The mysterious recesses of the long valleys running up into the ramparts of the Franklands captured our imagination, and we determined that at some future date we should spend a few days in exploring this end of the Franklands in closer detail.

Pushing onwards across the Plains to the southward, about four o'clock we came to the beginning of a series of long, low, bare ridges, beyond which we could see the walls of the Arthur Range. Mount Anne now lay to our north-east, about twelve miles distant, while south of its long spurs stretched the bleak, bare ridges of Mt. Weld. After a couple of miles of these low ridges, bare, with occasional patches of button grass and a few quartzite outcrops, we got into a narrow belt of very dense scrub, where the track disappeared from beneath our feet, and for about half an hour we tried to pick it up again, but being unsuccessful we decided to pitch camp for the night. Where we lost the track was an old peppermint gum, on whose face was a carved inscription, "B. Harrison, January 14, '99," and below this was an older one still, "E. Fletcher, January 23, 1883." After a long hunt for a level site to sleep on, we found and started to clear one right on the track, only to be attacked and driven out by an army of leeches, and we had to retire to a position right on top of a bleak open flat, where the wind whistled through our fly all night, and we passed a wet and comfortless night. In the morning, while the two others cooked breakfast, I reconnoitred ahead, and found the track where we had lost it in the bad light last evening. On setting out this morning (December 29) the track became very badly defined, winding round many little hills and knobs, and diving down into gullies when we least expected it to. As we could gain very little idea of where the track lay, we saved time by spreading out laterally till one man found the track, when we all converged on it again. Frequently we were lured into thinking we saw the track a few hundred yards ahead, only to find on reaching our objective that it was a quartzite outcrop. A minor consolation in this type of country was afforded by our being able to admire the very pretty clusters of bland fordia relieving the drab monotony of the sparsely clad landscape.

We had climbed a big button brass hill on a false scent, when we saw well to our half-left a hut on a plain beyond another big stream, about half a mile distant. After a spell we descended the hill, and made a bee line for the hut, which we reached at 10 a.m., having done only three miles this morning in three hours 20 minutes. Once on our way across these hills a party of black cockatoo flew screaming toward us, and perched on a dry gum not twenty yards away, and gave us the opportunity of admiring their black and gold wings.

The Arthur Hut lies at an altitude of 700 feet on the Arthur Plains, about half a mile from the foothills of the fantastic, multi-peaked Arthur Range, which from here stretch south-eastward for over 20 miles. This Range is composed of Archean rocks, single huge boulders being scattered both about the plains and on the slopes and summits of the Range. Vertical slate outcrops occur along the foothills and on the track, but quartzite predominates. We counted thirteen gorges hacked in the face of the Arthurs in about four miles. The day was foggy, and we could not judge whether the highest peaks were accessible.

The Arthur Hut was in fairly good condition, well roofed with pine, but the chimney has been burnt out, and the door had disappeared, probably for firewood, which was not too plentiful. About fifty or sixty names adorned the walls of the hut, mostly of old prospectors, dating back as far as the nineties. Empty tins and a large quantity of gelignite packets were scattered about the floor of the hut.

A notice board outside the hut proclaims as follows:—"Distances from Gordon Junction—14 miles from Tyenna —No. 1 hut, $\frac{3}{4}$ mile, No. 2 $26\frac{1}{2}$ miles, Port Davey $55\frac{1}{2}$ miles." It should be explained that the Junction is really 14 miles from Farrow's, late Rumney's, which was the point where the mileage commenced. This farm is $4\frac{1}{2}$ miles from Fitzgerald Station, so that this Arthur Hut is about 45 miles from Fitzgerald. The No. 1 hut referred to has now collapsed, but the 12 Miles Hut on the South Gordon track, built in 1920, is much more conveniently situated, as it can be reached by good walking from Fitzgerald in seven hours. From the Arthur Hut a track from Huonville junctions with the Port Davey track, and traverses the Arthur Plains; it was well defined where it left the hut.

When we left the hut we traversed the foothills of the Arthurs westwards along a quartzite strewn track, but after about a mile we again lost time by getting into a thick tangle of bauera and tea-tree, in which the track was obliterated. After we found the track beyond this belt we stopped for lunch beside a small creek, disgusted with only $4\frac{1}{2}$ miles for our day's battling. Amid light showers we continued along the Arthur Plains, and crossed a button grass buttress of the mountains with frequent outcrops of pink and white quartz. Along this part of the track we came across a perfectly made grindstone about 2 feet in diameter and $3\frac{1}{2}$ inches thick. We gradually rose on the Huon-Crossing Divide to 1000 feet, passing on our way a little wooden cross beneath a trickling waterfall. We surmised that some unfortunate had been laid to rest here, and the utter loneliness of the wind-swept places helped us to realise our isolation in a vast and lifeless wilderness. Near the end of the long serrated wall of the Arthurs we encountered a peculiarly shaped rocky eminence, a realistic image carved by Nature of an old, old man, with head, shoulders and breast, looking into the eternal silence of the West.

About four o'clock we came to the Crossing River, its banks guarded by formidable walls of bauera, which completely covered the track. Heaving our packs off, we hurled our bodies against the bauera and rolled about till we tunnelled an approach to the stream. Returning for our packs, we again shoved our way through about 100 yards of this matted wall of vegetation, and waded knee deep through the stream to battle through another twenty yards of bauera on the other bank.

As we had taken 1½ hours to get clear of the Crossing River, we proceeded only about half a mile further, through yet another bauera-fringed stream, before pitching camp for the night on a stony bank, facing a timber-clad, rocky unnamed mountain next the Arthurs. We had come less than nine miles this day, being continually in difficulties.

Next morning we arose prepared for a big day, and moved off, walking till half-past nine, when we halted to take photos and sketches of the new panorama. We were now heading south-west, and a vista of unnamed mountains lay around us. The Crossing River flowed south on our right, and disappeared through a gorge between two mountains, a high plateau ending in a sugar-loaf to the north, with a long razor back quartzite mountain for its southern wall. East of us lay the many domed mountain under whose north side we had camped. This rocky mass we referred to as the Multidome, to distinguish it from its southern neighbour, Single Dome, which, though not very high, presents a very picturesque aspect with its glistening white rocks and regular steep sides.

Pushing on into the unknown, we climbed a ridge on the shoulder of the Quartzite Razorback, and after a couple of hours passed over the Crossing Spring Divide, halting for dinner on the first big creek flowing into the Spring River, which rose somewhere in the vicinity of Single Dome. After dinner we lengthened our stride over some stretches of good track till we reached the top of another divide, where the aneroid registered 650 feet above sea level. This divide marked a sharp difference in the vegetation.

In the northern portion of the Spring Valley were fairly frequent patches of timber, both along the river course and extending up the lower slopes of the mountains, but to the south the landscape was devoid of trees, presenting a bare and desolate aspect as far as the eye could see, only a jumble of barren little hills in endless succession, walled in by long ranges of mournful mountains on either side, while the Spring River twisted its narrow way through a rocky gorge below us.

The track was good for a couple of miles along the south ridge of the divide, but eventually the route baffled us after we reached an old prospect camp near a large stream, the track petering out from beneath our feet. Eventually one of us picked up the track again about a quarter of a mile to the eastward, but from here on we were continually in trouble, the track showing up but rarely, all the guide stakes having vanished. After doing 15 miles for the day, we camped near a trickle of water on a desolate open ridge which, after a cheerless night of rain and howling wind, Hedley Keogh dubbed Cyclone Flat.

We awoke at 4 a.m., and ate a handful of ships' biscuits as we sat huddled up in the blankets. Though the wind had dropped, heavy showers were still falling. As we had seen a peg with three nicks in it yesterday about half a mile back, we thought perhaps we were within three miles of Port Davey, with perhaps a hut at our journey's end. Acting under this sad delusion we decided to have breakfast on arrival at Port Davey, so we set out at 5.30 a.m., cold but determined to put in a good finish. However, more trouble lay in store for us, numerous creeks had to be crossed, every one of them guarded by formidable stretches of bauera, which hampered us considerably, so as we felt weak we gladly halted at 9 o'clock for breakfast. Pushing on again after ten we made war on the bauera for four more hours, topping many little hills, expecting to see Port Davey from each in turn, but it was after two o'clock when we rounded a bare hillside and saw a sheet of water before us. By 2.30 we had come opposite the inlet where the Spring River enters the Port, and here we thankfully dropped our swags and sank to the ground. After a spell two of the party prepared dinner, while the third reconnoitred ahead to look for any signs of a hut, but the condition of the track was so bad with bauera that after crawling on hands and knees we thereafter gave it a wide berth, and kept to the open hill tops.

Port Davey itself presented a very picturesque sight. Its shores were heavily wooded for about thirty yards, numerous islets dotted the water expanse, and several graceful black swan swam at leisure on the calm waters of a little bay. On the east side of the Spring Estuary rose a long rocky wall, culminating in a white peak (Mount Rugby), to the south of which a narrow inlet leads to the landlocked Bathurst Harbour.

The view was so good that we decided to climb Mount Berry the following day before attempting the return journey. The trip from Fitzgerald had occupied just six days. Early on New Year's morning, 1925, the party struck out for Mount Berry with aneroid, map, compass and camera. Crossing the foothills we climbed a cliff face to the north of a scrubby gorge separating us from a round, steep, bare eminence. Once above the cliffs we had good going on button grass, passing above the round spur at 1200 feet until we came to the top of another rocky ridge at 1840 feet.

The mountain side was dotted with purple spider orchids and some blandfordia. Our camera man got busy here, while I decided to climb the summit, another 200 feet, for the purpose of taking some compass bearings from the highest point. It proved to be a mass of huge conglomerate boulders, between which grew thick pockets of scrub. These boulders had crevasses between them varying in depth from 10 to 40 feet, and it was very difficult to advance from one rock to another. At times it was impossible to go over the top of the rocks, and I was forced to go underneath them wherever I could find room for my body. Eventually I crawled up into daylight once more, abreast of the highest rock on the mountain, and sat on a flat rock with my compass and note-book. By the aneroid the height of Mt. Berry registered 2055 feet, as compared with the trig. height mapped as 2132 feet.

It was a dull day with a very short sea horizon. However, I could see Cox Bight, while the course of the Davey River showed up well to the westward and north-west. Inland were a jumble of unknown ranges to the north and north-west, while to the north-eastern horizon was dominated by the long wall of the Arthurs. The Multidome stood out well to the northward, while far to the east was discernible one of Hartz summits. Picton was hidden behind a high crag towering out of the Arthurs. Owing to a sudden fog coming up from the south further observations were impossible, so I was forced to descend. Through the dense fog I had to feel my way foot by foot for forty minutes till safe ground was reached once more, after a piece of bauera for once befriended me by saving me a 20ft. fall down an unseen crevasse. Glad to leave Mt. Berry behind me, I steered back to camp, where the other two had returned and boiled the billy.

We decided to go back as quickly as possible, as our food would only last five more days, but on the return journey we had several advantages, lighter swags, a knowledge of the track, and the satisfaction of having reached our objective. Leaving Port Davey (Long Bay) at 2.30 p.m. on New Year's Day, we returned to our Cyclone Flat Camp by 8 that evening, in fairly fine weather.

On January 2 we set off at a good pace in continuous rain once more, and we put 10 more miles behind us before halting for lunch near the headwaters of Spring River. Firewood in all this Spring and Crossing River country was very scarce, and on this occasion it was 1½ hours before our fire defied the pouring rain. Pushing on again at 2 o'clock we strode out till the Crossing River was reached, and we found to our joy that it had not yet risen with the day's rainfall.

After a spell we waded the river, and pushing through the bauera once more we struck out for the Arthur Hut, over five miles distant. About half-way along the Arthur foothills we saw a rainbow arched over the two ends of one of the unnamed mountains, making a beautiful scene. The rainbow seemed to us to be only a couple of hundred yards away. When we finally reached the Arthur Hut at 8 o'clock, having been for thirteen hours on the track, we appreciated the reward of our 20 miles walk in the form of a night's good shelter in this land of eternal rain.

Next morning we slept in at late as 6, and did not get under way till 9, as we spent a while enjoying the close view of the Arthurs, and taking photos. The next three miles took us almost as long going back as coming down, to our surprise, as even now we could not keep the track. Passing the scene of our misery at Windy Ridge Camp, we emerged on to the Huon Plains, where we found the stream flowing from Mt. Giblin (called by us Flooded Creek), previously knee deep, but now neck deep after rain. After an hour's search for a crossing we discovered three gum saplings growing together in mid stream, and a wall of bauera on our bank. Making a platform of bauera toward the gums, we sprang to the first sapling, then twisted our way, clung to the others in turn, and hauled ourselves and our gear to the other side.

Crossing the wet, soggy Huon Plains, we passed over the Huon Log by moonlight, reaching our Mt. Anne Camp at 9 o'clock in the rain. An uncomfortable night was passed here amid icy blasts blowing on us from the mountain tops, and we were very tired next day as we walked the Plains. On these Plains we stopped to gaze at a big wedge-tailed eagle swooping about the ramparts of Mt. Anne at a great height.

Passing through the saddle of Bowes on Sunday afternoon, we came to the Junction at 5.30 p.m., whence a couple more miles brought us to the 12 miles Hut on the slopes of Mt. Mueller, where we turned in and made ourselves comfortable.

The last day, January 5, we rose at half-past three, breakfasted, and pushed off by half-past five, and walked 16 miles into Fitzgerald, catching the Hobart train with only a few minutes to spare. We had returned from Port Davey to Fitzgerald in 96 hours, of which 43 were actual walking time, and we had 20 hours' sleep.

The soil throughout the route is very poor, after Bowes only two small beds of timber are passed through—one just over the Huon Crossing and the other a small bed 23½ miles from the Junction. The landscape after leaving the Arthur Hut is bleak and mournful; trees are scarce except those fringing the Crossing and Spring Rivers, and the country's one rich promise appears to lie in its hidden mineral wealth. We noticed the absence of small birds, except at Port Davey only a few cockatoo, jays and parrots, an odd hawk and two eagles being sighted. Only three kangaroo and a couple of badger were seen, while flower life was represented by blandfordia, waratah, laurel, and bauera flowers, and at Port Davey a fair quantity of purple spider orchids.

Although this region is an inhospitable wilderness, yet this South-Western corner of Tasmania has a fascination and charm peculiarly its own, and to all those bush lovers who have yielded once to its lure, a still small voice is ever whispering, and the Spirit beckons back insistently to those with the Wanderlust again to the Great South-West.

Outlines of Tasmanian Geology.

SECTION 19 (Continued).

MINERALOGY.

Although the characteristic external form of minerals taught by crystalography is an uncertain guide to the student in the determination of the mineral species, the molecular structure is apparent through other physical characters. These are particularly useful as they can be often ascertained without elaborate equipment, and are applicable in the field. They all depend on crystalographic structure and are as follows:—

1. Characters Depending on Cohesion and Elasticity.

(a) Cleavage—the tendency of a mineral to break in certain definite directions parallel to some possible face of the crystal. The method of cleavage gives an indication of the crystalographic system.

(b) Gliding Planes—similarly are the directions in which a mineral parts in response to pressure, as opposed to a blow which gives us the cleavage.

(c) Percussion figures and etching figures are the distinctive marks produced respectively by a blow and by a solvent, the effect on different minerals depending on structure.

(d) Fracture is the term used to describe the surface produced by breaking the mineral in any direction other than the cleavage. It may be (i.) conchoidal or a series of curved cavities; (ii.) even; (iii.) uneven; (iv.) hackley, or sharp and jagged like broken iron.

(e) Hardness is the resistance that a smooth surface offers to abrasion. A scale is adopted ranging from H-1 to H-10, according to the following simple tests: 1 has a greasy feel, 2 can be scratched with the finger nail, 3 can be cut with a knife, 4 can be easily scratched with a knife, 5 can be scratched with some difficulty, 6 can only be scratched with a file, 7 can be scratched with a file but will scratch glass, 8 and 9 cannot be scratched except with diamond, 10 diamond.

(f) Tenacity indicates the behavior of the mineral when an attempt is made to cut it, and is classified according to the following simple tests: (i.) Brittle—the parts separate in powder; (ii.) sectile—can be cut with a knife, but pulverise under a blow; (iii.) malleable—can be cut but will flatten under a blow; (iv.) flexible—will bend and remain bent when an attempt is made to cut it.

(g) Elasticity—the resistance it offers to change of shape and its tendency to return to the original shape when the pressure is removed. Elaborate apparatus is necessary to measure elasticity.

2. Characters Depending on Specific Gravity or Relative Density.

The specific gravity of a substance is the ratio of its density to that of water, or in other words, the weight of the body divided by the weight of an equal volume of water. Weight alone is immaterial as this largely depends on quantity, but the specific gravity is the relation between the weight of one mineral and the weight of a similar volume of another mineral. By using water as the common standard (S.G.-1) the relative weight of a mineral can be determined, and can be compared with another mineral without reduction to a common volume. The following gives some idea of relative specific gravity:—Platinum (c.p.) 21-22; osmiridium, 19-21; gold (c.p.), 19; iron, 7; diamond, 3.5; quartz, 2.6.

3. Characters Depending on Light.

(a) Degree of Transparency—this may be (i.) transparent, the outline of an object being seen through the mineral; (ii.) semi-transparent, a less degree than (i.); (iii.) translucent, light can be seen but not an object; (iv.) semi-translucent, a less degree than (iii.); (v.) opaque—no light is transmitted even in very thin sections.

(b) Color—Color in general depends on the wave length of light reaching the eye. The color of a mineral depends on its power of selective absorption of light waves reflected by it, which in turn depends on its physical structure. Color, however, is one of the least certain characters, and it must be borne in mind that color alone means nothing. At most it can only be a guide.

(c) Streak—the color of the power of a mineral as obtained by scratching the surface with a knife or rubbing it on an unglazed porcelain surface. This is a much more reliable indication than the color of the untouched surface.

(d) Luster (so usually spelt in geological works)—This depends on the nature of the crystal faces exposed on a broken surface of the mineral, and may be (i.) metallic as in the metals, or (ii.) non-metallic, which includes (a) adamantine (e.g., diamond), (b) vitreous (e.g., glass), (c) resinous (e.g., opal), (d) greasy (e.g., greasy glass), (e) pearly (e.g., pearl), (f) silky (e.g., asbestos).

(e) Play of colors shown by a succession of prismatic colors when the mineral is turned (e.g., in diamond and opal).

Further series of color effects are observable when thin sections of a mineral are examined under polarised light. To do this an extremely thin section is cut (1/5000 to 1/10,000 of a mm) and examined under a special type of microscope which divides the rays of light until only certain rays with waves moving in certain fixed directions are used. By this means a great variety of characters are ascertained dependant on the interference of the atomic structure to the passage of the light waves. This is the most useful method of determining the mineral species. By it chemical composition and crystalographic form can be discovered. No two minerals allow the light through in the same way. Some split the rays up into different colors; others only allow them through when the mineral is in a certain position, and as there are a great number of variations in these their difference can be accurately measured; others again give distinctive figures of light and shade. However, as expensive apparatus and much practice is required in determining the species by this method, an account is beyond the scope of this work.

4. Characters Depending on Chemical Composition.

Chemistry divides matter into 83 elements, which are substances that cannot be decomposed or subdivided by any known method of analysis. Minerals consist either of these elements in a free state or of definite compounds of them formed in accordance with chemical laws. Of all the known elements only twelve play an important part in the composition of the rocks of the globe. This chemical composition is the ultimate test in determining the species of the mineral, and forms the scheme under which minerals are classified. As has been explained, chemical composition is governed by atomic structure which also imparts the characters referred to before there is a definite relation between composition and physical characteristics, either of which having been determined the mineral can be identified and the other can be ascertained from a recognised description; but for safety all methods of determination must be used to check each other.

Composition is determined by analysis, but this usually requires much equipment and a high technical skill. Further, if the mineral occurs in a rock, it is difficult to separate it from other minerals. Thus a rock may consist of minerals A, B, and C. Say A consists of elements z, y and x in proportions 6, 3 and 1., B consists of elements x and w in proportions 4 to 5, and C consists of elements z, w and v in proportions 1, 2 and 4. An analysis of the rock will only give 7z, 3y, 5x, 7w, and 4v. This may be arranged to give a great variety of mineral species. The separation of minerals for analysis is often very difficult. Again, materials of similar composition often have such different characters depending usually on mode of origin that they must be grouped as different minerals. To give an example:—

Pure carbon—isometric, cleavage highly perfect, fracture conchoidal; brittle H-10, G-3.5, luster adamantine, color white, transparent—diamond.

Pure carbon—rhombohedral, scaly—cleavage perfect, flexible, greasy, H-1—2, G-2, luster metallic, color black, opaque, a conductor of electricity—graphite ("lead" of lead pencils).

(Note the way a mineral is usually described.)

Mineral Classes.

Mineral species are divided into eight classes, depending on composition, and these are subdivided into groups. The classes are:—1. Native elements—those few elements which occur free in nature. (2) Sulphides, selenides, tellurides, arsenides, antimonides—the minerals formed by compositions with sulphur, tellurium, arsenic, antimony, in which group most of the important ores are found. 3. The sulpho-salts—a further group compounded with the last mentioned elements under different chemical laws. 4. Haloids—compounds with the elements chloride, bromide, iodine, and flourine, also including many important ores. 5. Oxides—minerals compounded with oxygen and including some important ores and some important rock forming minerals. 6. Oxygen-salts—those compounded with the various oxygen acids and including most of the important rock-forming minerals, 7. Salts of organic acids—a small group of four rare minerals formed under different chemical laws from other groups. 8. Hydro-carbon compounds——these are not strictly minerals, but highly complex chemical mixtures; they include many important substances such as coal, oil shale, and oil.

Within each class minerals may be subdivided into metals—those compounded with elements possessing the characteristics of a perfect metal such as malleability, metallic luster conductivity. Semi-metals—those compounded with elements possesing these characteristics in a less perfect degree, and non-metals. For our purpose we will classify minerals into A. Comercially valuable minerals; B. Important rock-forming minerals; and C. Rarer minerals.

"A" COMMERCIALLY VALUABLE MINERALS.

Native Elements.

Carbon (C), sulphur (S.), and selenium (Se) are the only non-metal elements that occur free in nature. Carbon occurs as diamond and graphite. Several small but true diamonds were found in some tributaries of the Pieman and three of these form specimen No. 1 of the Petterd collection in the Tasmanian Museum. Graphite, a form usually associated with metamorphic rocks, and usually formed from metamorphism of carbonaceous deposits is found in the mines of Zeehan and Dundas, but not in commercial quantities. Sulphur is rare in Tasmania, and hitherto has only been found in the Bischoff mine.

Of the semi-metals several free elements occur. Arsenic (As) has been found in the lower levels at Bischoff. Antimony (Sb), in radiating patches 1in. in diameter at the British-Zeehan mine, bismuth (Bi) is plentiful at Mt. Ramsay and has been found in the Mt. Read and other tin mines. Tellurium (Te), an important alloy for steel, has not yet been found in Tasmania, nor has tantalum (Ta).

The metals form the most important group of this class. They are all important ores when found in commercial quantities. The elements so found are:—Gold (Au), a widely distributed rock found in quartz veins at Beaconsfield, Lefroy, Mathinna, and other places throughout Western and Northern Tasmania in metasomatic lodes, with other ores at Mt. Lyell and in alkali igneous rocks at Cygfield, and the New Golden Gate Mine at Mathinna were amongst the most famous gold producers in Australia. Silver (Ag), a rare mineral in Tasmania, found in thin treads in some of the silver-lead lodes of Zeehan and Dundas. The Magnet and Hercules mines have yielded some fine specimens. Copper (Cu), also rare, found at Mt. Lyell in patches up to 80lbs. Lead (Pb), very rare, two specimens being found at South Nevada and Comet mines, Dundas. It has also been reported at Cygnet. Platinum (Pt), has not been reported in Tasmania, but its allied element, osmiridium (Os Ir) occurs throughout the serpentine rocks of the Savage, Wilson and Whyte rivers in the Pieman district, and in the serpentine and New River valleys on the South-West. It is mined alluvially, and reached in 1919 the remarkable price of £52 an oz. (as against gold £4 5s an oz.). Its chief use is as an alloy for gold especially in the manufacture of fountain pen nibs. Tasmania is at present the only supplier for the world's market. Iron (Fe) has not been reported in Tasmania, but three occurrences of siderite or meteoric iron have been recorded, one each from Blue Tier, on the East Coast, the Castray River, and the Lefroy goldfield. Gold, platinium, and osmiridium usually occur free, and form the chief ores of these metals.

2: The Sulphide Class.

This includes the most important ones, and these are all of the sub-class of metals, there being no non-metals in the class, and the semi-metals being unimportant. Galena (lead sulphide Pbs.) is the common lead ore, and is widely distributed through western Tasmania. It was the mines working this mineral that made Zeehan once the third largest town in Tasmania. Argentite (silver sulphide Ag 2S), the common silver ore, is not common here, but for one occurrence. The Lyell Bonanza yielded 850 tons of ore, and brought £105,000. Mt. Lyell was at the time a worked-out gold mine, with only mule track communication with Strahan. This shoot was assayed at 45oz. of gold to the ton—a very payable proposition—but in addition contained 8765 ozs of silver; in fact, nearly 50 per cent. silver. From its proceeds, Mt. Lyell constructed their railway, and without it Queenstown would perhaps not have existed today.

Sphalerite (or blend, zinc sulphide Zn S), the common zinc ore occurring through the Zeehan, Dundas, and Rosebery fields, usually associated with galena and now being worked by the Electrolytic Zinc Company at Rosebery. Bornite (sulphide of copper and iron Cu5 Fe S4, the peacock copper ore), and chalcopyrite (sulphide of copper and iron Cu Fe S2, the yellow copper ore), are the important copper ores and the ores worked at Mt. Lyell. Pyrite (iron disulphide Fe S2), one of the most widely distributed of minerals, occurring in many igneous rocks, also common in coal. It occurs in most mineral veins, and was largely worked at Lyell for fluxes for pyritic smelting, the residues of which are manufactured into sulphuric acid and superphosphates at the Lyell works in Melbourne.

3: Sulpho Salts.

The only minerals of this class sufficiently important to warrant notice here are Zinkenite (sulphantimoniate of lead, orthorhombic form Pb Sb2 S4), found in the Magnet mine; Jamesonite (sulphantimoniate of lead, monoclinic form Pb2 Sb2 S5), found through Bischoff, Dundas, and Zeehan fields, both useful lead and antimony ores; and Tetrahedrite (sulphantimoniate of copper or fahl or grey copper ore Cu 8 Sb2 S7), found at Curtain Davis, Mt. Read, and Mt. Lyell mines.

4: Haloids.

This class contains a few minerals, and these are rare and unimportant. The best-known is Halite (or rock salt, sodium chloride Na Cl), found in Tasmania in the salt pans of Mona Vale and other places in the Ross-Tunbridge area, which yield a pure salt which would be commercially valuable if salt were not so cheap to import. Flurite (calcium flouride Ca F2), an important rock-forming mineral, but not yet recorded from Tasmania.

5. Oxides.

Most of the metals that compound with sulphur to form the sulphides will also compound with oxygen to form oxides. Often the sulphur of an original sulphide will be leached out by weathering processes of the minerals in a lode near the surface, and will be replaced by oxygen. The oxide zone so formed yields the most valuable ores, especially as oxides are much easier to treat than sulphides. The most spectacular crystals usually come from the oxide zone. Oxides do not all originate in this way, but are often found as original minerals. Important ores of this class are:—Cuprite (copper oxide or red copper ore, Cu, O2) occurs at Mt. Lyell, and on the Scamander River. Zincite (zinc oxide, ZnO), only occurs at the Feazlewood Mine. **Neither of these is** net. The Tasmanian mine at Beaconsan important ore. The important iron ores occur in this class. The most valuable of these are:—Hematite (iron sesquioxide red iron ore, Fe2, O3). This is the most important iron ore. It formed the famous Iron Blow, which is now the open-cut at Lyell, and occurs in considerable deposits on the Blythe River, at Hampshire Hills and Zeehan. Ilmenite (titanic iron ore, black iron ore, Fe Ti O3) occurs on King Island and on the Arthur Lakes. Magnetite (magnetic iron ore, FeO, Fe2, O2), occurs with hematite in the oron deposits of the West Coast. Limonite (yellow iron ore, 2Fe2, O3, 3H2 O) occurs in places as a secondary mineral, Geothite (blood red iron ore, Fe O (OH) occurs with other iron ores on the West Coast, also in the Dial Range and the Blythe River.

The most important tin ore, cassiderite (tin dioxide Sn O2) also falls into this class. One of the most famous occurrences in the world is the great Queen Dyke, the richest portion of the Bischoff Mine. It also occurs plentifully throughout the West Coast, notably at Heemskirk, Renison Bell, Stanley River, at various places on the Pieman, and also at the head of the South Esk. Other important ores are rutile (titanium dioxide, Ti O2), a source of titanium found at Hamilton-on-Forth. Manganite (manganese sesquioxide Mn O) (OH) a source of manganese occurs at Hampshire Hills both of which are useful as alloys in manufacture of steel and bronze.

6. Oxygen Salts.

The important ores of this class are carbonate compounds. Cerussite (lead carbonite, Pb CO3, white lead ore), one of the prettiest of crystals of long, slender white feathers. It occurs in many of the mines of the Zeehan-Dundas field, notably the Magnet Mine. Malachite (green copper carbonate Cu CO3, Cu) (OH2) a rare but handsome mineral occurring sparingly among the copper mines of the West Coast, also on Scamander River. Acurite (blue copper carbonate 2 Cu CO3 Cu) (OH) 2), a rare mineral occuring at various places on the West Coast.

Amongst the silicates are several of the important gem stones, the following being the most important:— Lasurite (lapis-lazuli, a silicate of alumina, soda and sulphur), much prized as an ornament, but hitherto not recorded from Tasmania. Garnet (silicate of various bases) found frequently throughout the West Coast, especially round Port Davey, also on Cape Barren Island and at Mt. Claude. Zircon (silicate of zerconium. Zr Si O4) found abundantly on the Forth River, on Flinders Island, on the Blythe River, and the Meredith Range. Topas, a silicate of alumina, and flurine (AlF) 2 Si O4), found on Flinders Island, at Moorina, on the Weld River, and in other places. Another important mineral is monazite (a phosphate of the cerium metals), used for incandescent gas mantles, and found in small quantities in many tin mines.

Wolframite (Fe, Mn), WO4) and scheelite (Ca WO4), important tungsten ores found on King Island, and on Ben Lomond, and useful as alloys, also came in this class.

7.—Salts of Organic Acids do not yield important minerals.

8—Hydrocarbon compounds, although yielding the commercially valuable coal and oil, will be considered rock-forming minerals.

"B" IMPORTANT ROCK FORMING MINERALS.

The minerals occurring in the classes —1, native elements; 2, sulphide class; 3 sulpho-salts; and 4, haloids, although many of them are amongst our great sources of natural wealth, do not occur in great masses. They are essentially rare. The minerals which go to make up the rocks of the crust of the earth—the common minerals are mostly included under the heading (6) Oxygen-Salts.

There is one important rock constituent in the class of 5, oxides, that is the oxide of silicon. The mineral form is known as quartz, which is a group of different forms with similar composition (Si O2)—(a) Phenocrystalline or vitreous varieties. Quartz or rock crystal, the well known glassy hexagonal pyramid crystals. Amethyst, a clear purple or violet colored variety. Cairngorm stone, smoky yellow to dark brown in color. (b) Cryptocrystalline varieties: Chalcedony, a white, gray or blue waxy colored stone; cornelian, a red chalcedony; agate, a variegated chalcedony; onyx, resembling agate, but in layers of different colors; flint, allied to chalcedony, but of a darker color. Of these (Z) varieties quartz is the only important rock-forming mineral, and enters into the composition of acid igneous rocks. It is an important constituent of granite, also of some sandstones and mudstones.

6. Oxygen Salts.

A. Carbonates.—1 Calcite (calcium carbonate, Ca CO3). This is the great lime-producing rock. It occurs in crystals in veins, which are used for optical work, but its most important occurrences are in beds as limestone, lithograhphic stone, marble, and chalk. The great limestone deposits of Chudleigh, Mole Creek, Florentine, Ida Bay, Gordon River, Maria Island, Granton, etc., largely consist of this mineral.

2. Dolomite (carbonate of calcium and magnesium (Ca M9 CO3—magnesium limestone). This is rare in Tasmania. It has been reported from Mount Claude, Mount Pelion, and Dundas.

B. Silicates.—1. Felspar Group: The most important rock-building mineral and a nearly universal constitutent of rocks. (Note, felspar, strictly speaking, is not a mineral, but a group or family). (a) Monoclinic felspars.

Orthoclase (silicate of aluminium and potassium K Al Si3 O8). (b)Triclinic felspars.

Microline (similarly K Al S13 OS).

Anorthoclase (soda-potash silicate of aluminium (Na K) (Al Se3 O8). (c) Albite—Anorthite series or plagioclase felspars.

Albite (silicate of aluminium and sodium Na Al Si3 O8 or Ab).

Oligloclase (Ab3 An1).

Andesine (Ab An).

Labradorite (Ab1 An3).

Anorthite (silicate of aluminium and calcium, Ca 3l2 S12 O8 or An).

Rock classification depends on the felspar present. Therefore it will be better to reserve details of occurrence until we reach the section on petrology. Orthoclase is the base of granite rocks. It occurs massive on the Mersey, near Gad's Hill, and as the form sanidine in the alkaline rocks at Port Cygnet. Microcline is frequently found in Tasmanian granite, and is abundant in the granite at St. Mary's Pass. Anorthoclase occurs in the Port Cygnet alkali series. Albite occurs in compact masses on the Heazlewood River, and as crystals in the Port Cygnet rocks. Oligoclase is common in the dolerites (diabase) and basalts which cover a great part of Tasmania. Andesine also occurs through the basaltic group of rocks, and has been reported from the Cygnet alkalis. Labradorite is the base of the dolerites and basalts, the commonest rocks in Tasmania. Anorthite is also common in the dolerites and basalts.

2. Pyroxene group.

(a) Orthorhombic section.

Enstatite (silicate of magnesium M9 Si 03).

Hypersthene (silicate of magnesium and iron (Fe M9) Si 03.

(b) Monodinic section.

Hypersthene (silicate of magnsium, calcium, etc.)

(i) Non-aluminous.

Diopside (calcium-magnesium pyroxene Ca M9 (Si O3) 2.

(ii) Aluminous.

Augite (Aluminous pyroxene Ca M9 Si2 O6.

These are only the more important varieties. Enstatite occurs abundantly on the Huskisson River, and at Parsons Hood and Magnet Range. Hyphesthene occurs with enstatite at those localities, also in graniite at St. Mary's Pass and on the Forth River and at Dundas. Pyroxines, particularly augite are second constituent of the dolerites and felspars, and probably the second most important rock forming mineral.

3. Amphibole group.

The most important rock forming mineral in this group is Hornblende (Ca (M9 Fe) 3 Si O3) 4 with Na and al). It occurs in many places through the West Coast mining fields. The Cygnet rocks yield a rare soda variety.

Hydrous Silicates.

4. Zeolite group.

A group of rocks analogous to the felspars and are often a hydrated felspar. They are found as re-crystallised products of decomposed felspars running as white veins through the basalts and dolerites. Of this large group chabazite ((Ca Na2) Al2 Si4 O12 6H2O) has frequently been recorded. A vein of this mineral caused great trouble at the Great Lake Dam.

Mica Group.

(i) Muscovite (potassium mica H2 Kal3 (Si O4) 3).

(ii) Paragonite (sodium mica H2 Na al3 (Si O4) 3).

(iii) Lapidolite (lithium mica).

(iv) Zinnwaldite (lithium iron mica.)

(vi) Phloganite (magnesium mica).

vi) Phloganite (magnesium mica.)

Muscovite or common white mica is common in the granite rocks particularly on Flinders Island. Paragonite has not been reported in Tasmania. A small dyke of lepedolite occurs at Mt. Ramsay. Zinnwaldite is the characteristic white mica of the tin bearing granites and is abundant throughout the North East tin fields and in the Heemskirk granites. Biotite is the third constituent of the ordinary granite, and is a common rock forming mineral in some other rocks. Phlogophite occurs in granite of Hampshire Hills and Heemskirk. The mineral sericite is a form of muscovte with a higher proportion of water. It is common in many metamorphic rocks and occurs at Mr. Lyell, Mr. Read, Hamilton on Forth and many other localities.

6. Serpentine and talc group.

Serpentine is a hydrated silicate of magnesia (H4 Mg3 Si2 O9). It occurs in large rock masses formed from peridotites. It is common in many places through the western portion of Tasmania. Talc (acid metacilicate of magnesium H2 M93 (Si O3) 4) occurs in places throughout the western mining fields especially near the junctions of the Arthur and Hellyer Rivers, and at Bischoff, Beaconsfield and other places.

7. Kaolin division.

Kaolinite (hydrated silicate of aluminium H4 Al2 Si2 O9) occurs on Flinders Island, at Middlesex and at several localities on the North East Coast.

The remaining important rock constituents fall in class:

8. Hydrocarbon Compounds.

(i.) Amber—Fossil vegetable resin. Not hitherto found in Tasmania.

(ii.) Tasmanite — Latrobe oil shale. It consists of microscopic fossil spore cases of a highly resinous nature. These yield oil on distillation. The mineral is unique in that sulphur has replaced the usual oxygen compound of this class. It is only found in Tasmania.

(iii.) Petroleum — mineral oil — not hitherto found in Tasmania.

(iv.) Asphaltum—mineral pitch—also not found here.

(v.) Coal.

(a) Anthracite (93-95 per cent. carbon.

(b) Sub-anthracite (90-93 per cent. carbon.

(c) Humites. (a) Non-caking humic (70-90 per cent. carbon); (b) caking humic (75-90 per cent. carbon); (c) gas making humic (78-80 per cent. carbon).

(d) Humic Keroginites (60-80 per cent. carbon).

(e) Keroginites (volatile hydro-carbons in excess of fixed carbon).

(f) Sub humic (60-75 per cent. carbon).

(vi.) Lignites—Brown coal.

"C" RARER MINERAL TYPES.

Dana's "Text Book of Mineralogy" describes over 3,200 mineral species. The large majority of these are very rare and do not contribute materially to the construction of the earth. It is clearly impossible to refer to these here and it will be readily seen that few have the liesure to assimilate this mass of detail No one can work at mineralogy without a guiding reference book at his elbow.

(The writer acknowledges his indebtedness to W. F. Petterd's "Minerals of Tasmania" for much of the information in this article).

A. N. Lewis

Some Tasmanian Naturalists.

RONALD CAMPBELL GUNN.

(By J. Reynolds).

After the departure of Robert Brown nearly twenty-five years were to elapse before naturalists were to follow his foot steps. The members of the small communities on the banks of the Derwent and Tamar were too absorbed in the exacting labors of pioneering to give anything but the most practical attention to the animals, plants and rocks around them. Game they needed for food, wood and stone for shelter. How these could be obtained most readily was the only question concerning them worthy of consideration. In the case of the fauna, this state of affairs was most unfortunate. One species, the Tasmanian emu, was totally exterminated. So wholesale was the slaughter that only three or four skins have been preserved.

Early Exploration.

Nevertheless, the early settlers were performing very useful services. They opened up the country between Hobart and Launceston. The more adventurous spirits went out into the ranges and round the coasts exploring. Kelly in 1815 in an open boat circumnavigated the island His was the first party to see the forbidding shores of Port Davey, and the first to cross the bar and sail on the broad waters of Macquarie Harbor. Another adventurer, Jorgenson, performed a task which even today is not without perils. He crossed the island from the Derwent to Emu Bay by way of the lake country. Hellyer some years later explored the northern and western fringe of the central plateau. Others, now forgotten, pushed their way into the bush and climbed mountains to see what was hidden behind the green walls. All this exploration was most useful for the new generation of naturalists. The settled districts were examined with comparative ease, whilst the remote districts were rendered more accessible. In the early thirties several men endowed with great talents for scientific investigation came to reside in the colony. They all made notable contributions to knowledge which were recognised in Europe and America. In this group there was no abler man than Ronald Campbell Gunn, the patriarch of Tasmanian botany.

Gunn was born at Cape Town on April 4, 1808. His father was an officer in the force that held that post which recently passed into British hands. As a small boy he was present when the French were finally rooted out of Mauritius. He accompanied his father's regiment to the West Indies, where it seems he entertained the idea of following the paternal profession. We next hear of his arrival in Tasmania, 1829, and of his appointment as superintendent of convicts in the north. We are not aware exactly when he received his instruction in the principles of science, but very soon after his arrival he commenced his botanical labors.

It appears that his first detailed examination was devoted to the flora of the Circular Head district. From there he crossed Bass Strait on an expedition to the eastern coast of Victoria. Port Phillip and Westernport were visited. He made a careful comparison of the flora on each side of the Strait. Next we hear of Gunn as private secretary to Governor Franklin, a post he did not hold for a lengthy period. He accompanied Sir John and Lady Franklin on the expedition to the south coast, so vividly described by Lady Franklin in her letters. After leaving the Governor's service in 1841, he took charge of a large estate in the capacity of manager. This gave him that leisure which is so necessary for undertaking prolonged expeditions. During the next twenty years he visited almost every part of the island that it was humanly possible to reach. He managed to cut his way through the dense scrub on the western shore of the Tamar to the Asbestos Range. Another long expedition took him to Flinders and the other Strait islands. He saw Lake St. Clair and Lake Echo very soon after their discovery before any of the great bush fires had done their destructive work. Other expeditions took him to various portions of the east coast, Macquarie Harbor, and the forbidding country through which the Franklin River has cut its gorges.

Valuable Botanical Research.

These expeditions were not made for the sake of mere curiosity, but for the acquisition of a comprehensive knowledge of Tasmanian flora. As well as the heavy packs necessary for such undertakings, Gunn took with him specimen boxes, notebooks, and other botanical impedimenta. His work came to be recognised and valued by the leaders of botanical science. Hooker, one of the foremost British botanists of his day, who visited Tasmania in this period, has left a high tribute to Gunn's labors. He says:—

"There are few Tasmanian plants that Mr. Gunn has not seen alive, noted their habits in a living state, collected large suites of specimens with singular tact and judgment. These are transmitted to England in perfect preservation, and are accompanied with notes that display a remarkable power of observation, and a faculty for seizing important characters in their physiogomy, such as few experienced botanists possess."

Those two venerable British scientific bodies, the Royal Society and the Linnean Society, recognising the merits of his work, elected him to their most privileged position of Fellow. Gunn's extensive collection of Tasmanian plants was, unfortunately, allowed to gc out of the State by a misguided Government. Over fifty species of plants commemorate his name. Two among these are easily remembered; one is the small peppermint gum which grows high up on our mountain ranges, known to botanists as Eucalyptus gunnii. The other, Fagus gunnii, that small deciduous bush which sheds its bright green leaves, but not its prickles, each winter, and is the sole survivor of the ancient flora of the island. The genus has been named Gunnia in his honor.

We have seen the esteem with which scientists of seventy years ago held Ronald Gunn. His fame has in no way diminished by the passage of time. When we know he found Tasmanian botany where Robert Brown left it, and gave to us very nearly its present state, we realise his claim for honorable remembrance. "He was," as Mr. Maiden says, "the most eminent botanist of Tasmania."

FRANCOIS PERON.

The achievements of the naturalists who accompanied the D'Entrecasteux Expedition by no means satisfied the curiosity of French savants in the Australian continent. Labillardiere's work, although mainly botanical, clearly showed that a virgin field awaited enquirers in every province of natural history. The members of the Institute felt that another expedition was desirable for the advancement of knowledge, and the honor of France. But how were a body of savants to finance a costly expedition to the other side of the world? Fortunately the means were at hand. The star of Napoleon was in the ascendant. The first consul had returned victorious from the second Italian campaign. He was known to be deeply interested in certain branches of resaerch. He had dined with Cuvier, and discussed planetary movements with Laplace. Therefore to the First Consul a committee of the institute repaired. They found him keen and sympathetic. Their request was very soon granted. France desperately needed all her ships for the coming maritime struggle with England, but somehow two ships were set aside for the expedition. These two vessels, Le Geographe and Le Naturaliste were placed under the command of Captain Nicholas Baudin. The scientiffic staff was large, covering many branches of enquiry. Two astronomers, two hydrographers, three botanists, five artists, five gardeners, and five zoologists all fully equipped embarked on the two ships. Our chief interest is in Francois Peron, who was by far the most outstanding of these men. Fortunately we are better acquainted with the personality and the work of this man than any of the earlier naturalists who visited the island.

Francois Peron was born at the small French town of Cerilly, in 1775. Being left fatherless at an early age, the priest of his native place undertook to educate him for the priesthood. The Revolution changed the quiet course of life to which he seemed destined. With thousands of other enthusiastic young men he left his home to join the Republican armies which were to save France and the principles of the Revolution. In an engagement with the Prussians he had the double misfortune to loose an eye, and be taken a prisoner.

In captivity, he spent his whole time studying and reading. On obtaining his release, he returned to France, and was fortunate enough to gain admission to the School of Medicine at Paris. There he came under the inspiring influence of the master biologist of the age, Georges Cuvier Peron spent his time most advantageously As well as completing his prescribed course he became a keen student of biology and comparative anatomy.

The master, Cuvier, had already attained an eminent position in the field of biological science. He was developing the study of the fossil remains of extinct animals into the science of paleontology. The student Peron became thoroughly imbued with the principles of the master. On hearing that an expedition was about to sail for Australia, Peron begged to be allowed to accompany it in order to specially study the native races of the lands to be visited. The request was granted, and at the last moment Peron joined the expedition, which sailed from Havre in October, 1800.

No great efforts were made to reach the destination within even a moderate time for those days. Over 18 months after leaving France the 2 ships came in sight of the south coast of Australia. Nearly three months were spent examining the bays and inlets of the south-eastern coast, many earlier errors were corrected. The boat expeditions which carried out these explorations afforded Peron valuable opportunities for his special study of the native races. Whilst Labillardiere had made observations under similar conditions, he lacked that special training that Peron possessed. As well as valuable observations regarding the Tasmanian aboriginal race, he has left us several delightful accounts of his meetings with them on the shores of D'Entrecasteaux Channel. The following is his account of one of these events:—

"We had scarcely put foot upon the shore, when two natives made their appearance upon the peak of a neighboring hill. In response to signs of friendship that we made to them, one of them leapt, or, rather, climbed, from the height of a rock, and was in the midst of us in the twinkling of an eye. He was a young man of twenty-two or twenty-four years of age, generally of strong build, having no other physical fault than the extreme slenderness of his legs or arms that is characteristic of his race. He had nothing ferocious or forbidding about his expression; his eyes were lively and intelligent, his manner expressed at once good feeling and surprise. M. Freycinet having embraced him, I did the same; but the air of indifference with which he received this evidence of our interest, it was easy to perceive that this kind of reception had no significance to him. What appeared to affect him more was the whiteness of our skin. Wishing to assure himself, doubtless, if our bodies were the same color all over, he lifted successively our waistcoats and our shirts; and his astonishment manifested itself in loud cries of surprise, and above all, in an extremely rapid stamping of the feet."

"But our boat appeared to interest him even more than our persons; and after he had examined us for some minutes he sprang into it. There, without troubling himself at all about the sailors whom he found in it, he appeared as if absorbed in his examination of the novelty. The thickness of the planks, the curves, the rudder, the oars, the masts, the sails—all these he observed with that silent and profound attention which are the unquestionable signs of which formed part of the provisions of a deep interest and a reflective admiration. Just then one of the boatmen, wishing to increase his surprise, handed him a glass bottle filled with arack, our search party. The shining glass at first evoked a cry of astonishment from the savage, who took the bottle and examined it for some moments. But soon, his curiosity returning to the boat, he threw the bottle into the sea, without appearing to have any other intention than that of getting rid of an object to which he was indifferent; and at once resumed his examination. Neither the cries of the sailor, who was concerned with the loss of the bottle of arack, nor the promptness of one of his comrades to jump into the water to recover it, appeared to concern him. He made various attempts to push the boat free, but the mooring rope which held it fast making his efforts futile, he was constrained to abandon them, and returned to us, after having given us the most striking example we had ever had of attention and reflection among savage peoples!"

Peron also came into contact with a party of aboriginal women on Bruny Island. He did not find them in any way attractive, their faces being smeared with charcoal and fish oil. The ladies evidently held the same opinion of him, for it was not until the naturalist had submitted to having his face smeared with charcoal that he became in any way interesting to them.

"We appeared then to be a great subject of admiration for these women; they seemed to regard us with a tender satisfaction."

Whilst Peron was chiefly concerned with the native races, he assisted in the collecting and describing of specimens of fish and birds. The southern fur seal (Eutaria cineaea), which the expeditions found in great numbers on the islets round the coasts, was first described, and named by him. The expedition, which set out with so many high hopes, was dogged by misfortune, due to the fury of the elements, and the perversity of its commander. Much valuable work was lost, and on arriving back in France the survivors had great difficulty in getting recognition for their work. As the commander had died at Mauritius, the work of writing the history of the expedition fell on Peron, which he lived only to partially finish.

Unfortunately for science, and particularly anthropology, Peron died at the age when most men do their best work. His training in the school of Cuvier was broad and thorough; his ability and power of application considerable, and his experience gained during the course of the long voyage made him unequalled for pursuing successfully those studies that Nature had designed him to pursue.