

The Tasmanian Naturalist

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November, 1927.

The Tasmanian Field Naturalists' Club.

The twenty-third annual meeting was held at the Royal Society's Rooms on September 15th, 1927. Dr. W. L. Crowther presided over a good attendance.

Specimens.—Mr. N. Oldham sent along a curious specimen of Huon Pine, and Mr. Rodway gave an interesting description as to the age, etc., of the tree from which it was taken. Dr. Crowther exhibited a most valuable and rare work by the British Admiralty, illustrated by Foster, of Cook's Last Voyage.

Twenty-third Annual Report—Session 1926-27.

The Committee has the honour to present the following annual report of the Tasmanian Field Naturalists' Club.

The work of the Club has been carried on in a satisfactory manner, and the following is a brief resume of the meetings held:—

1926.

September 16.—Annual meeting, election of officers, Chairman's address.

October 14.—Illustrated lecture, "Some Tasmanian Timbers," by J. C. Breaden.

November 18.—Illustrated lecture, "The Struggle for Life on the Sea Shore," by E. E. Unwin, M.Sc.

1927.

February 17.—Illustrated lecture on the National Park, by C. Lord, F.L.S.

March 24.—Lectures by junior members—

"On a Trip to Dodge's Ferry," by A. Hewer.

"On the Friendliness of Wrens," by M. Hurburg.

"On a Trip to Swansea," by P. Whitehouse.

"On the Old Derwent Lake," by G. Norman.

"On Exhibit of Rocks from South Arm," by R. Packman.

"On Exhibit of Tasmanian Aboriginals," by — Smith.

"On Some Specimens from Eaglehawk Neck," by — Harbottle.

May 12.—Lecture, "The Sanctuary," by R. Hall.

June 16.—Illustrated lecture, "The West Coast Camping Grounds and the Stone Implements of the Tasmanian Aborigines," by R. W. Legge.

July 14.—Lecture, "The History of the World," by A. N. Lewis, M.C., LL.M.

August 11.—Lecture, "The Life History of the Frog," by Professor T. T. Flynn, D.Sc.

The balance sheet as tabled showed that a small credit balance, viz., £10/7/1, remained to the credit of the club in the Hobart Savings Bank.

Meetings.

The meetings have been well attended during the past session, and the Committee desires to draw particular attention to the large number of junior members, particularly those from the Hutchins School, who have attended the meetings. Further, the junior members have taken a keen interest in the work of the Club, and have displayed and explained exhibits at various meetings.

Excursions.

Owing mainly to the fact that the Royal Visit took place at Easter time, the usual Easter Camp was not held this year.

During the coming year it is hoped to arrange a number of excursions in order to cater more particularly for the junior members of the Club. Competent leaders have already been arranged for in regard to certain excursions.

Publications.

"The Tasmanian Naturalist" has been issued to members during the year as funds permitted. An improvement was made in the setting of the type in the form of a journal. Members generally are asked to assist by forwarding suitable articles for inclusion in the Club's publication.

Conservation of Native Fauna.

The keen interest in our native fauna has been maintained, and it is pleasing to note the increased interest being shown in this matter. Two particularly pleasing incidents in this matter, showing how public interest is being aroused concerning this matter might be mentioned. The Swansea Council invited the assistance of the Club in regard to the better protection of the swans on the East Coast, and the Oatlands Council in regard to having Lake Dulverton proclaimed a sanctuary. A deputation approached the Honourable the Attorney-General in regard to Lake Dulverton, but most unfortunately he could not see his way clear to proclaim the Lake a sanctuary. In view of what

has been done in regard to sanctuaries in other places, and the great part they play in relation to the conservation of the wild life, the Club cannot afford to let the matter rest, and it will be necessary to take further steps in this regard.

Sanctuaries Generally.

It was brought under the notice of the Committee that the Club might ask private landholders to have their properties declared sanctuaries, and this matter is under consideration; but owing to the Ministerial decision in regard to Lake Dulverton, unexpected difficulties may have to be overcome before the very desirable object of other sanctuaries can be obtained. There is ample evidence to show that the majority of the so-called Tasmanian sanctuaries are not areas in which the native fauna is secure against the many agencies of destruction at present at work. This is a matter to which the incoming Committee will need to devote their attention during the coming session.

Destruction of the Platypus.

The Platypus, which is the emblem of the Tasmanian Field Naturalists' Club, is of unique scientific interest, and a totally protected animal. Unfortunately, certain of the Salmon and Freshwater Fisheries Commissioners have recently commenced an agitation for the destruction of the Platypus in certain areas. Whilst recognising fully the enthusiasm of the anglers concerned, your Committee feels that these gentlemen have allowed their enthusiasm for one form of life to outweigh their judgment as regards the inter-relationship of all forms of life in the Balance of Nature. The Committee desires the support of all members in order to retain the present system of the total protection of the Platypus, as Tasmania's position to-day in regard to her native fauna is by no means an enviable one, and the destruction of the Platypus would make even the present position infinitely worse.

Science Meeting.

Your Committee desires to draw the attention of members to the fact that the Australasian Association for the Advancement of Science will be meeting in Hobart next January. Tasmanian scientific institutions and Tasmanian Naturalists generally will be placed largely in the position of hosts on this occasion, and the Committee hopes that all members of the Tasmanian Field Naturalists' Club will do their best to further the work of the Congress, and to assist as far as possible in making the stay of visiting scientists and naturalists in the island a pleasant and profitable one.

New Aspects of the Third Voyage of Captain Cook, 1776-1780.

By W. L. Crowther, D.S.O., M.B.

CHAIRMAN'S ADDRESS, 1926-27.

Introduction.

The historian in Australia turns in his researches to two institutions: the Mitchell Library, of Sydney, and the Alexander Turnbull Library, of Wellington, N.Z. The latter has recently issued in its Bulletin No. 2 a reprint of Zimmermann's third voyage of Captain Cook, 1776-1780.

This voyage, the principal object of which was to discover a passage back to Europe extending either in an easterly or westerly direction from Behrings Straits, had as its outstanding event the death of Captain Cook.

Zimmermann, the author of the book under consideration, was a German, who signed as a common sailor on the "Discovery."

On his return (and after evidently much thought) he decided to publish a short account of his travels, relying on his memory and some data he had jotted down in a note book.

It must be remembered that H.M. Government alone had the right to publish an account of the voyage, and that a long delay of four years ensued before the official record was made public.

There would be naturally an intense desire for details of the voyage and of the death of the great navigator, and Zimmermann possibly saw a good opportunity to earn some notoriety, and make a considerable profit for himself. At any rate he put his scruples behind him (as related in the introduction to his work), and in 1781 it was printed at Mannheim, Germany.

George III. of England was also Elector of Hanover, and pressure must have been brought to bear on the Elector of the Palatinate, for the issue was promptly suppressed.

The remaining copies are of an extreme rarity, although the two libraries mentioned have each one, and a good translation is now available for the first time.

In this translation we see this great navigator as he appeared to the able seaman and ratings generally, and that is its great value.

It does not throw any new light on the scientific discoveries which are dealt with in detail in the official account, but we do

see from it how Captain Cook appeared from day to day on the long monotonous voyage, to the men whom he commanded.

We know how sickness of his ships was reduced to a minimum, and scurvy (the greatest menace) unknown—this book will tell of the measures he took to improve the diet and hygiene of his ships' companies.

I have in this short paper selected certain passages for reproduction, and as it is intended for Tasmanians commences with the account of the visit of the "Discovery" to Adventure Bay.

"On 26th January, 1777, we arrived at the southernmost part of New Holland, the so-called Van Diemen's Land,* and cast anchor in a convenient harbour at about $42\frac{1}{2}$ degrees south latitude and 150 east longitude.

"As there were several good springs here and a plentiful supply of wood, preparations were made to provision the ships with both.

"Very soon seven of the native inhabitants appeared in the shore and began to play with the bungs which were lying on the water-barrels; then they turned the barrels over and rolled them to and fro, without, however, disturbing us in our work in the least.

"From the bush where we were collecting our supplies we could hear the laughter and the cries of joy; we ran in alarm to the boats, in which we had left our guns, and the sub-lieutenant, Mr. Hume, a Scotchman, fired off a gun over the heads of the natives. The latter, who had shown no fear when we came out of the bush, and who quietly continued their games, upon hearing the shot, set up a pitiful cry, struck their heads with the palms of their hands, and hurried away into the forest.

"Captain Cook was very angry at this careless act, because, in spite of every effort, he had been unable, on his former voyages, to get into friendly terms with the natives on the whole of the coast of New Holland, nor had he observed any inhabitants on this coast of Van Diemen's Land with which we are now concerned.

"The same day, Cook, with some of the men, went a good distance inland, and was fortunate enough to bring about 9 of the natives back with him. He made them presents of mirrors, white shirts, bead necklaces, and some medals of His Majesty King George III. of Great Britain, and this produced such a good

*"The so-called Van Diemen's Land." Cook took this to be a peninsula, which is why Zimmermann calls it the southernmost part of New Holland (Australia).

that the following day forty-nine native men and women came to us of their own accord. Some of these also received presents, but, like their companions of the previous day, could not be persuaded to come aboard our ships.

“The skins of these people are of a very dark brown colour; they have short woolley hair, and, as Captain Cook informed us, resemble very closely the inhabitants of the coast of New Holland. They go about quite naked, neither men nor women wearing so much as a loin-cloth. The women carry their babies slung on their backs in a skin, and take them with them wherever they go. They have a fine dialect, but none of us, not even O-mai, could understand a word of their language. They are not very well built, and amongst them we noticed a much-crippled and hunchbacked man, who, besides this deformity, marked himself out from his companions by having fiery red woolley hair. This man, however, judging from the respectful bearing of the other natives towards him, seemed to be one of their chiefs. None of the natives appeared to carry weapons of any kind, and we therefore concluded that they were good, inoffensive people. Captain Cook repeatedly remarked upon the difference between these people and the unsociable and wild inhabitants of the coast of New Holland.

“So far as we were able to discover in the short time we were there, their food consisted of mussels, oysters, and various kinds of fish, as well as of roots of all descriptions. There were no traces of either agriculture or of fruit-trees; and we came upon no huts; when we gave them bread they took it, but immediately threw it away.

“On the approach of the cold winter months of June, July and August, these people would appear, like the Tartar, to change their place of abode, and move farther north. This conjecture seems to be rendered the more conclusive by the fact that Captain Cook had never before met with any of the inhabitants along this coast. I was unable to discover anything regarding their religion and customs, as we left these shores for New Zealand on the fourth day.”

The narrative gives much of interest of the doings of the ships' companies among the islands of the Pacific and the N.W. Coast of America, which I must pass over as space is limited.

After the death of Captain Cook, Zimmermann proceeds to estimate his character, and this is of much interest and value, and I quote him in part:

“Captain Cook was a tall, handsome, strong, but somewhat spare man. His hair was dark brown, his expression somewhat stern, and his shoulders bent. He began life as a common sailor,

but worked his way up until he became one of the most famous navigators. He was exceedingly strict, and so hasty tempered that the least contradiction on the part of an officer or sailor made him very angry. He was inexorable regarding the ships' regulations and the punishments connected with them—so much so, indeed, that if, when we were amongst the natives, anything was stolen from us by them the man on watch at the time was severely punished for his neglect.

“Probably no sea-officer has ever had such an extensive command over the officers serving under him as Captain Cook. No officer ever presumed to contradict him. When at table with his officers he frequently sat without saying a word. He was, in fact, very reserved. In small matters the common sailors were more severely disciplined than the officers, but at times he was exceedingly affable to the crew.

“He never mentioned religion, and would have no priests on his ships; and, although he seldom celebrated the Sabbath, he was a just and upright man in all his dealings. He never swore, not even when in a rage.

“He was scrupulously clean, and the example which he set in this direction had to be followed by every man on board. It was a regulation that every member of the crew should put on clean clothes every Sunday.

“Moderation was one of his chief virtues. Throughout the entire voyage no one ever saw him drunk. It was never permitted to the sailors to save up their brandy for several days and then get drunk, and if it happened at any time that a man was too drunk to carry out his duties he was severely punished.

“He ate very sparingly—much more so than any other sea officer. His food consisted mainly of pickled cabbage, with a piece of salt meat, and a few peas. He rarely had more than two, or at most three, dishes.

“On Saturdays he was usually more affable than at other times, and on that day he frequently drank an extra glass of punch, pledging a toast to all beautiful women.

“Fearlessness was his most outstanding characteristic. On the unknown coast of America the ships ran on foggy nights under full sail, and the Captain slept peacefully the while. But, on the other hand, when no one else had a suspicion of danger he often came up on deck and changed the course of the ship because land was near. This was so pronounced that every one believed he had some secret source of foreknowing and avoiding danger. At least I can say with certainty that such occasions were frequent when he alone was sensible of the existence of land; and he was always right.

“One of his regulations which was particularly praiseworthy was the organisation of the ship’s police, especially in respect to the health of the crew. Being of the opinion that idleness is the greatest enemy to health, he was at pains to provide the men with constant employment, and when there was nothing particular to be done he had something pulled down and fixed up again, or sea-manoeuvres were carried out, so that the crews were kept occupied. All jobs had to be done before they were actually needed, and each branch of the ship’s trades had to keep a good supply of tools on hand. It is to this continual occupation, combined with moderate living, that I ascribe the fact that the health of the crews was excellent throughout. Every week the whole ship was thoroughly washed, and fumigated with powder, and daily, unless the weather was stormy, the hammocks had to be brought up on deck; they were only taken below at sunset. Captain Cook continually warned us against the excessive eating of meat, and was always willing to provide us with flour for the preparation of other dishes instead of meat. Three times a week pickled cabbage formed part of our rations; of this the English became very fond after we Germans had taught them how to prepare it. Twice a week we had soup made from meat stock, to which peas were added.

“Whenever we landed on an island a party was at once sent out to gather green stuff, and this was cooked in our soup; if, however, there was no vegetation on the island, then the nets were thrown out so that we might have a fresh supply of fish, and the amount of meat in our rations be reduced. But if it were possible to buy fresh food, this was his first care. Owing to these wise precautions, not a single member of the crew ever suffered from scrofula.

“Whenever any member of the crew took ill one of his companions was told off as his sick-nurse, and Captain Cook kept himself well informed as to the sick man’s progress; he sent a doctor to attend to him, and in every way took upon himself the duties of a father. If fresh food was available, it was set aside for the patient, and every day he was given some of the aforementioned meat-stock soup, and also wine and tea, which Captain Cook kept by him for this special purpose. We had with us excellent doctors and surgeons; as a proof of their skill. I may mention that they cured a broken arm and a broken leg in eight weeks; and that the two men who were the sufferers—Woodfield and Wacker—were completely restored: this was a remarkable feat for a surgeon at sea.

“The universal consternation caused by the death of our Commodore is the highest praise which could possibly have been given him. Every one on the ships was silent and depressed;

we all felt that we had lost a father, and it will readily be seen from this narrative that after Cook's death the spirit of discovery, the decision, and the indomitable courage, were gone."

Conclusion.

Much of the greatest interest has had to be omitted, but the value of the work has been shown. It and "The Voyage of the Endeavour," by Professor G. Arnold Wood, should be meat and drink for every normal Australian child. It would be very difficult to overrate their interest and attraction. Surely such books might be included in the curriculum of our schools?

I must acknowledge my gratitude to Professor Ernest Scott for my first intimation as to the work from which I have quoted. My remarks follow the lines of an article of his published some months ago in the Melbourne "Argus."

Outlines of Tasmanian Geology

(Continued)

SECTION 23.

ORE DEPOSITS.

This chapter may be well concluded with a few remarks on the more valuable of our rock types. It must, however, always be borne in mind that there is nothing unusual in an ore deposit or occurrence of coal or other economically valuable rock. They are only types of rock which have some particular value of themselves or from the uses to which they may be put, and both in structure and mode of occurrence, and also in origin they conform to the same general principles as do any other types of rocks.

Mining is chiefly a question of costs and different types of rock have to possess a certain standard of purity to make it pay to mine them. Many other considerations also affect the question. But these problems do not confront the geologist. He considers an ore deposit solely from the question of content, origin and nature and leaves the question of costs to the miner. Thus, to a geologist a lode of pure ore is in the same category as one with the smallest trace of ore, provided the mode of origin is the same. There exists every possible variation and most frequently there is no ore in the formation at all. This makes no difference to the geological classification of types of deposit and the enunciating of general rules applicable to all occurrences.

An ore may be defined as a mineral either being or, from which there may be extracted by a suitable and economically possible process, some metal or allied substance. We have seen, under the heading of Mineralogy, what mineral species these ores may belong to and their several characteristics. The following table may be of use when reading accounts of mining fields

Metal	Commonest Ores	Composition of Ores
Aluminium	Corundum	Aluminium + oxygen
	Bauxite	Aluminium + oxygen + water
Antimony	Stibnite	Antimony + sulphur
Arsenic	Arsenopyrite	Iron + Arsenic + sulphur
Cadmium	Greenockite	Cadmium + sulphur
Chromium	Chromite	Iron + chromium + oxygen
Copper	Chalcocite	Copper + sulphur
	Bornite	Copper + iron + sulphur
	Chalcopyrite	Ditto
	Cuprite	Copper + oxygen
Gold	Native Gold	Pure gold + alloys of gold group
Iron	Pyrite	Iron + sulphur
	Pyrrhotite	Ditto
	Hematite	Iron + oxygen
	Magnetite	Ditto
	Limonite	Iron + oxygen + water
	Siderite	Iron + carbon + oxygen
Lead	Galena	Lead + sulphur
Mercury	Cinnabar	Mercury + sulphur
Molybdenum	Molybdenite	Molybdenum + sulphur
Nickel	Millerite	Nickel + sulphur
	Niccolite	Nickel + Antimony
Platinum	Native Platinum	Pure Platinum
Silver	Argentite	Silver + Sulphur
	Ceargyrite	Silver + chlorine
	Galena	Often some silver with lead and sulphur
Tin	Cassiterite	Tin + oxygen
	Stannite	Tin + copper + iron + antimony + sulphur
Zinc	Sphalite	Zinc + sulphur

Origin of Ore Deposits.

As the elements we know as metals, and which possess, in their different degrees the useful characteristics of malleability, do occur, they must be part of the make up of our globe, and as they are so rare they must bear a very small proportion to that of the other elements present. We may therefore postulate that in normal rocks they are present, but in minute quantities and diffused very widely through the mass. In such a condition costs prohibits their being won commercially and it is only when the metallic constituents of a very considerable mass of rock become concentrated into a small, easily worked and relatively pure accumulation that a payable ore deposit is found.

Therefore we must commence with the occurrence of the appropriate elements in some portion of the world's crust. There is no doubt that the interior of the earth is made up of an increasing proportion of the heavier elements. Some consider that there exist layers highly impregnated with metals in descending order according to increasing specific gravity. This is not proved, however, and there are weighty arguments against it. For our purpose we may start with an intrusion of magma from any of the causes described before, which magma contains metallic elements.

We have traced the process of magmatic differentiation. That process is the basis of the formation of commercial ores. In an undifferentiated basic magma the important elements are usually too finely diffused to be won commercially and it is only in the very completely differentiated rocks, granite, grandiorite, syenite, and diorite on the one end of the scale and picrite and peridotite on the other that we may expect, as a general rule, to find ores. For the same reasons it is only in the fully crystalized members of these families that the ores have been able to concentrate into crystals or grains of appreciable size. The processes of crystalization and of differentiation have the further result of permitting the various elements to combine as mineral species.

We have seen that the most important ores are comprised under the groups of the Sulphides, Oxides and Native Elements. We have also seen in another portion of this work that the common rocks are made up of silicate minerals. Now, a sulphide mineral will not combine in a mixture with a silicate, while, in most cases, an oxide or a native element will. Therefore very early in the process of differentiation the sulphides will separate out from the other minerals. In such condition they are especially liable to be absorbed by water, gases and other mineralizers accompanying the magma and to be carried by these away from the silicate minerals and often into sur-

rounding rocks. Also, during differentiation, the heavier native elements will tend to sink and thus concentrate in the ultra-basic zones.

In this way we commonly find that the sulphide minerals, originally accessories of the magma, have passed out into surrounding rocks and that such ores are rare as a part of an igneous rock, that the gold group and platinum-iron group are common minor accessories of ultra-basic igneous rocks, and that oxides, particularly tin and iron oxides, are frequently found as a constituent of a completely differentiated plutonic igneous rock—most commonly granite.

The consolidation (crystalization) of the magma expells the water constituents and other lighter minerals as gases. These are superheated to a very considerable temperature and in that state possess the ability to dissolve various minerals. The sulphides are particularly susceptible to this action. Silica, calcite, fluorite and other minerals are so to a less degree. The gases pass upward through fissures, cracks, etc. in the overlying rocks, often dissolving minerals from the rocks passed through. The effect of this dissolution often affects the solution so that it becomes saturated with one or more of the minerals which it carries and so deposits this mineral. At other times the solution passes upwards into cooler rocks until the temperature drops to a point at which it can no longer dissolve some of its mineral contents, and it then deposits them.

The process may continue along the same fissure for a long while during the period of differentiation. The gases may therefore draw off different mineralogical products at different stages of differentiation. Each product will be acted upon differently by the alteration of the solution by further absorption of minerals and by decreasing temperature. In this way a mineral vein may contain a series of different minerals deposited at different times. This difference may be shown in horizontal banding, the earlier deposits being found on the outside of the vein and the later ones gradually blocking up the fissure, or the difference may be apparent in a vertical arrangement the nature of the ore changing with depth. As the rules of mineral deposition are well known the laws of paragenesis, or the times at which under varying differences of the composition of the mineral solutions and differences of temperatures different minerals will be deposited, give a valuable guide to what may be expected in depth from the discovery of a certain mineralogical content of a surface outcrop.

Form of Ore Deposits.

Ore-bodies, originating in the way described above may be classified according to their form, as follows:—

1. Deposits of Volcanic Origin.

Deposits, chiefly of sulphur and borax, and rarely of gypsum, sometimes accumulate round fumeroles of active volcanoes as sublimates. Such deposits sometimes attain sufficient size to be worked commercially. Only those of relatively recent origin can persist.

2. Stockwork ore-bodies.

This is the name applied to a mass of rock traversed by a large number of small veins of ore that mutually intersect one another, but are each too small to be worked independently. The veins seldom possess clear walls, but merge into the country rock, which is often impregnated with mineral matter to a less extent. Frequently the veins are barren except at their intersection. These ore bodies are frequently of large extent but the proportion of ore won to rock removed is so small that they must be classed as low grade propositions, and can only be worked economically when they can be quarried as an open cut. This is one of the commonest forms of ore bodies, and adopted by all sulphide ores. It is often an accompaniment as an outer zone of richer forms. It is to be found on many of the mining fields of the West Coast.

3. Contact Ore Bodies.

Contact deposits originate from emanations of metaliferous gases, etc., which have been driven off from the magna, but which have been trapped by the surrounding rocks. They are always an accompaniment of an igneous intrusion, and are usually found well away from the igneous rock towards the outer limit of the metamorphic zone, but never outside this. They usually adopt the form either of stockwork bodies or of replacement bodies, and apart from their definite mode of origin they possess no special form to distinguish them.

4. Replacement Ore Bodies.

In most cases the ore body has replaced the country rock. The ascending solution has dissolved the whole of some constituents of the rock through which it has passed, and has carried them away, but in so doing it has affected the saturation point of the mixture sufficiently to cause the deposition of this particular ore we now find. The replacement zone usually follows certain well defined zones of fracture or crush connected with either an igneous intrusion or regional deforming movements. The commonest occurrence is at the fault junction between a hard and a soft rock, the latter of which has been crushed against the former. The solutions have ascended the fault fracture, and have invaded the crush zone. Often the

material of the crush zone has been replaced grain by grain, so that the stratified or other original structure is accurately preserved. It is often apparent that a small quantity of material or one particular mineral or the cement is dissolved first and is replaced by a little ore. The process is continued with increasing power until the replacement ore body is of considerable size and purity.

Some of the largest and most important ore bodies in the world are found in this form. And the most important ores which are so formed are the pyritic (copper and iron pyrites with their associated minerals). The Rio Tinto copper lode in Spain, the Broken Hill galena lode in New South Wales and the Mount Lyell copper ore body in Tasmania are amongst the best known examples.

(To be Continued.)

A Trip to the Moulting Lagoon.

BY A CLUB MEMBER.

Having listened to an excellent address by Mr. M. S. Sharland on bird life at the Moulting Lagoon, my wife and I determined that this interesting locality should be selected for our next holiday excursion. With an affection for our feathered friends, this outing formed the playground for joyful anticipation, and it was with light hearts that we found ourselves packed up on a Sunday morning ready for the road. Our little car looked like a travelling circus with its impedimenta strapped on every available space, and the springs showed that we had a maximum load up.

Travelling via Brighton, Tea Tree and Richmond, by noon we had reached the Prosser River, and as the beach at Orford is seldom without great interest for the bird lover, we decided to spend the night there and explore the bar and beach. A number of herons were paddling up sand worms, while the gulls were everywhere in scores. The next morning the parrots came down to the honeysuckle clump where we were camped, and greeted us with their cheery chatter. The friendly little wrens hopped about us, picking up the crumbs we scattered for them. We should have liked to have stayed longer, but having in mind all that we were out to see we packed our tent and baggage and again started on the road.

It would be wrong to pass on without saying at least something of the beauty of the Prosser River and its surroundings. We will never forget our first glimpse on that particular morn-

ing of the portion so aptly named Paradise. Wonderful sunshine, blue water, trees, and golden wattle making a picture that would need a more able pen than mine to describe.

Passing Triabunna, and continuing along the coast line it was not long before the Hazard Mountains were in view. What a wonderful sight they present with Coles Bay away to the north of them. The weather was ideal, and we feel that we were particularly favoured. In spite of this my wife breaks the spell with a reminder of the day we passed the Lemon Rock on the other side. Many of our club mates will remember this too.

Reaching Swansea well equipped with a letter of introduction from the Commissioner of Police to his off-sider at Swansea, thanks to our worthy secretary, we were taken over to Mr. Shaw at Red Banks, from whom we received permission to camp on his property at the Meredith River. The camp sight was just perfection. It had at some time been a sand blow which had again become grassed over. Thanks to the gorse it was banked on three sides with sand hills, and the other side was sheltered by trees so nicely that although it blew very hard we were not troubled to keep our tent well pitched.

We tried the fishing for a day, and came to the conclusion that all fishermen are pretty good at tale spinning, and decided to make a start next morning for the Lagoon round the nine-mile beach. This walk, although a very heavy one, is really one of the best we have undertaken. The bar being closed at the mouth of the Meredith, we experienced no trouble in getting across the patch of quicksand at the mouth, but strangely enough had we delayed our trip until the next day we could not have crossed the river. A high tide opened the mouth, which was running twelve to eighteen inches deep the next morning. Continuing along the beach for some six or seven miles we crossed the sand hills, and struck inland for about a mile. This brought us into a scrubby bit of country covered with small wattles, and as there had at some time been a fire through we soon became covered in black streaks. However, we were not very long before we heard the cheery chirp of the hull frogs, and realised that our destination was near at hand. Going up a small rise we saw that we were all but on the edge of the lagoon, so continued on for about 10 minutes, when we came into the rush country round the edge. Swans were everywhere, but in no case could we get near enough to get any pictures, but were amply rewarded by coming across a number of mountain ducks nesting in the rushes.

After boiling our billy we set out on the return journey, determined the next day to take the car and go round via Cranbrook and the Swan River to the other side of the Lagoon. Fortunately for us, our good friend the trooper sent us word that he was going out to the Lagoon to look over the nests next

day, so we were just set. Next morning about 8 o'clock he arrived in his car with his dog Spider. At the latter we looked askance as we were afraid of what might happen when he got amongst the nests. We were soon to find out our mistake, for Spider never disgraced himself, but seemed to take a great interest in his master's work. Arriving at the Lagoon there were hundreds of swans just off shore. It was very evident from their close proximity that they had not been disturbed for at least some days, and every little tuft of reeds, like small islands, had a bird sitting on her nest. Hundreds of mothers with their little broods were gently paddling about, while in some cases as we approached, a hasty exit would be made by the old birds, while the little ones scrambled into the water after them. On one headland we counted sixteen nests within a radius of a few yards. These contained on an average six eggs or equivalent little ones. What a happy morning and what a happy sight. How the Naturalist longed to see that spot proclaimed a sanctuary for these wonderful birds and their little ones who would all too soon become the sport of men and guns.

Jumping from clump to clump we found hundreds of nests, and quickly used our films. This was most unfortunate for the lady of the party, missing her footing, was hauled out of black slime by the trooper, who promptly fell over, we think, from embarrassment. We scraped her down as best we could, and returned to the car for lunch. The wind had blown over the billy containing the milk, but we voted the tea first rate, grilled our chops over a fire of dry sticks, and commenced our journey back. We are now longing for the next holiday to come, when we shall return to renew acquaintance with our feathered friends.



The Nest.



Just Out.