THE TASMANIAN NATURALIST

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NATURE STUDY CAMP, 1947.

Adventure Bay, Bruny Island.

By Michael Sharland.

THERE will be pleasant memories of the 1947 Easter camp of the Tasmanian Field Naturalists' Club, held at Adventure Bay, Bruny Island. The weather was ideal and matched the natural beauties of this historic bay where so many different navigators landed before the settlement of Tasmania. The varied fields of activity helped materially in stimulating interest in the club and advancing its object of wild life conservation. All the members co-operated to make the outing a success and the general organisation left little to be desired.

If beach life was not plentiful—for which calm weather was to blame—and wildflowers were not at their best, at least there was a good showing of birds, both of land and water, and quite a substantial "list" was compiled.

Twice previously, Adventure Bay had been selected as a site for club camps, but as these were as far back as 1921 and 1922, there were not many members who had seen its charms before; to the majority, in fact, it was quite new, and so all the excursions were full of interest.

"Boobies and gulls, and cormorants, and sternæ from the neighbouring rocks in countless legions flew round our ships and mingled their piercing screams with the roaring of the angered waves. A long file of white mozzled dolphins, with many others of the cetaceous tribe, performed their evolutions around us."

So wrote Peron, the naturalist with Admiral Baudin, whose ships *Le Geographe* and *Le Naturaliste*, arrived off Bruny Island on January 13, 1802.

Today, boobies (gannets), gulls, cormorants, and sternæ (terns) are still to be seen off the southern coast of Bruny Island, but not in "legions" as were noted by Peron and other early naturalists who visited these shores.

Although the sight of dolphins feeding a little distance from the land also is still common, the "many others of the cetaceous tribe" (whales) are indeed rare visitors. Occasionally, groups of southern whales migrating, may be observed passing the impressive headlands on their way across Storm Bay, but the resident whales which afforded such handsome profits to those who operated shore stations have long since disappeared.

Members of the Tasmanian Field Naturalists' Club in camp at Adventure Bay, Bruny Island, Easter, 1947. The Governor of Tasmania (Admiral Sir Hugh Binney) and Lady Binney are in the centre (lower) beside the President (Mr. M. S. R. Sharland).

J. Levis, photo.

Dutch, French, and British ships sighted Bruny Island or put into Adventure Bay, and some of them brought naturalists who collected the first specimens of plants, shells, and animals to be made known to science from this land far to the south.

An animal "of very odd form," described by Capt. Bligh, was a Porcupine *(Tachyglossus setosus)*. Other creatures included example of the White Goshawk *(Astur novæhollandiæ)*, the known to the outside world, and on the beach parties found the beautiful Trigonia shell, known in other countries only in the form of a fossil. Adventure Bay yielded type specimens of plants for the priceless Banks collection.

ADVENTURE BAY is not only steeped in history; it is also blessed with unspoiled scenic beauty. Fluted Cape overshadows its southern extremity, and the bold headland of Cape Frederick Henry its northern end. Each of the capes has an island at its foot. Penguin Island obviously has been carved from the foot of Fluted Cape, and the curious pyramid of rock off the point of Cape Frederick Henry undoubtedly was once part of the mainland.

The beauty of the beach at East Cove, the site of the camp, was enhanced by the flocks of Silver Gulls *(Larus novæhollandiæ)* that seemed to spend all their time feeding on animal refuse cast up by the waves—minute marine life that was in abundant supply. Occasionally, the birds moved to small indentations in the rocky shore beyond the beach, and on overcast days, when the sea assumed the tones of a leaden sky, they served to highlight the smooth grey waters.

Larger birds, with white bodies and black flight feathers, patrolling the deeper water, were Gannets *(Sula serrator)*, and frequently one or two among their number were observed to dive—always a fascinating sight. Large White-Breasted Cormorants *(Phalacrocorax fuscescens)* rested on old jetties and the rock platforms at the bases of cliffs in the intervals of fishing. Small Penguins *(Eudyptula minor)* were at times surprised sunning themselves and preening their feathers in quiet places on the rocks.

About the camp itself were several land birds noted for their confidence in the presence of so many humans, the Green Rosella *(Platycercus caledonicus)* being especially tame, since one could approach them closely before they flew from the low branches of the flowering honeysuckle trees that protected the tents from the northern winds. From a variety of honey-eaters, thrushes, and wattle birds there was some semblance of a "dawn chorus" before the sun appeared above the top of the cape, although the breeding season, which also is the chief vocal season, was long past.

TWO excursions—one to the coastal cliffs and the other to a hill behind the bay—were highlights of the outdoor activities of the camp.

Guided by Mr. T. Dorloff, a large party climbed the precipitous point of Cape Connella, where the rocks drop for 1,000ft. sheer to the water, and from which there is a comprehensive view over the delightful "bay of islands" and along the south-eastern coast of Bruny Island towards Tasman Head.

Another day a party climbed to the top of the saddle between the east and west of the island, and revelled in what is believed to

be the best view yielded from any point of the island, extending east to Tasman Island and west into the haze of the mountains on the mainland. As this eminence evidently had no name, they christened it "Mt. Propsting," after one of the elder members of the club, who also made the ascent.

Bruny Island contains much country, south from Adventure Bay, which is still exceedingly rough and heavily timbered in spite of fires and saw milling, and few visitors would penetrate this region without an expert guide. A heavy rainfall evidently assures rapid rejuvenation of burnt areas, and as parties walked along a saw mill tram track they saw how deep and dense the forest really was. Ferns and matted scrub concealed rocks and fallen timber, but many good specimens of gum trees were scattered through the area.

The gullies held native berries in profusion. One of the party fashioned for herself a headdress of blue climbing berries — the berries of Labillardiere, the botanist who accompanied the French in search of their lost navigator, La Perouse. Everything one touched at Adventure Bay seemed to be associated in some way with its early history.

THE campers sought to perpetuate the names of some of the early navigators by selecting suitable designations for tent lanes and associated features. Hence, there was to be found a row of tents named "D'Entrecasteaux Drive," another, "Bligh's Breadfruit Boulevard," another, "Cook's Gulch," and a cluster of three tents on a rise was called "The Furneaux Group." The entrance to a bower beneath some spreading Banksia trees, where the Widdicombes' family tent was ensconced, was given the name, "Tasman's Arch."

A last-minute inspiration by members of the advance party to have these features named before the main party arrived on Thursday night, and the fact that the signs had to be painted and erected late in the evening, were given as excuses for the hurried phonetic spelling of some of the names. Thus, notices bore the words, "Dontreecastowe Drive," and "Ferno Groop." The occupants of one tent in the "Ferno Groop," named their temporary home, "Babel Island," which is actually the name of one of the islands in the Furneaux Group, and the headquarters of the mutton-bird industry.

There was a singular aptness also in the name of Lady Binney's spaniel which accompanied her and the Governor (Admiral Sir Hugh Binney) on a visit to the camp on Good Friday. "Matthew Flinders" (the dog) received a flattering reception and consumed a substantial plate of left-overs from the official dinner.

The Governor and Lady Binney were welcomed by the president (Mr. M. S. R. Sharland), Mrs. C. H. Elliott, and members of the committee. One of the members—Col. C. H. Elliott—being unable through indisposition to attend the camp for its duration, acted as Hon. A.D.C. to the Governor for the day. Visitors for the dinner included Dr. E. A. Elliott, the club's first secretary, and Mr. J. Levis, the "official" photographer.

After an allotment was made for depreciation of equipment and an allocation transferred to the tent replacement fund, the camp yielded a profit of approximately £15, which will be devoted chiefly to the club's publication fund.

Always the heaviest item, transport this year cost in the vicinity of £60. The heavy camping gear had to be transported by lorry from store to Brooke Street pier and then taken by boat to Alonnah, whence it was transported overland by lorry to Adventure Bay. The main body of campers travelled by motor buses from Hobart to Middleton, then by ferry to Simpson's Bay, and by motor-car and bus to Adventure Bay. Special ferry and car services were provided for the Vice-Regal party.

Thanks are given for services rendered by the proprietors of Grant's Channel Bus Services, Hobart, Mr. D. L. Kaden for transport on Bruny Island, Mr. T. Dorloff for labour and the supply of commodities at the camp and his leadership on an excursion to Cape Connella; to the National Fitness Council for loan of tents. A special tribute is paid to Mr. Harold F. Sargison for his efficient organisation of the camp.

Those who attended the camp were:—

Messrs. M. S. R. Sharland, Harold F. Sargison, R. C. Harvey, E. W. Cruickshank, W. Ingles, G. L. Propsting, B. H. Edgell, E. C. Forsyth, K. Aves, T. J. N. Johnson, C. B. Widdicombe, A. Brownell, C. Elliott, D. Sargison, A. M. Hewer, L. D. Crawford, F. D. Green, Prof. C. S. King.

Mesdames C. H. Elliott, Brownell, Johnson, Widdicombe, Murray.

Sister Widdicombe, Misses Andrews, Westbrook, J. Somerville, E. Connah, C. H. Mosey, K. Brownell, J. Murray, M. Murray, K. Helms, M. Hope, H. Taylor, J. Butler, G. Butler, K. Headlam, P. Batt, J. Dobbie, G. Morris, M. Scott, M. Cruickshank, M. Elliott, E. Sharland, S. Sargison, H. Robb, R. Featherstone, M. Ingles, M. Pitt, J. King, P. McDougall, E. Widdicombe.

Masters B. Lattin, D. Widdicombe, J., R., and G. Brownell.

Cooks: Mr. and Mrs. Brinsmead; assistant, Mr. G. Miller.

TASMANIAN FIELD NATURALISTS' CLUB.

(Founded 1904.)

MEETINGS are held at the Royal Society's room, Tasmanian Museum, Hobart, on the third Thursday in each month, except December and January. The annual meeting is held in February.

Annual subscription: Adults 5/-; juniors (under 18) 2/6.

Anyone interested in Nature Study is welcomed to membership.

Application for election should be made to the Hon. Secretary, c/o Sargison's, Jeweller, 21 Elizabeth St., Hobart, or direct to the Secretary (Mr. H. G. Vaughan) on meeting nights. Subscriptions may be paid to Mr. H. F. Sargison, 21 Elizabeth St., or to Secretary.

Lectures, field outings, and nature study camps, are the chief activities of the Club.

CLUB BADGE.—Members are reminded that the club badge is available; price 4/6. The emblem of the club, a platypus, is the chief figure in the attractive design.

FOR SALE: *A Guide to Collecting and Preserving Plants, Shells, Seaweeds, Insects, etc.* Useful to all members. Price 3d. A club publication.

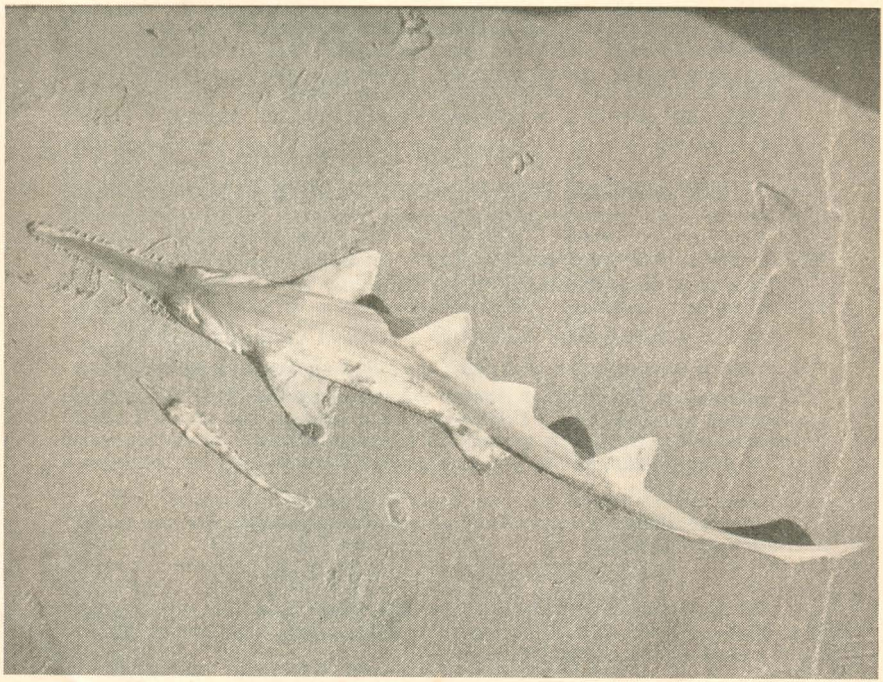
SHARKS AND SALPS.

By J. Somerville.

MEMBERS who attended the 1946 camp at Safety Cove were interested when at Adventure Bay tunicates were again to be seen, even though the number was comparatively small.

Small specimens of *Pyrosoma atlanticum* were obtainable, as well as the salp, *Iasus zonaria* (vide *The Tasmanian Naturalist*, New Series, vol. I, 1946). Though the solitary "nurse" stage was not seen, the aggregate individuals showed a wider range in development than those obtained at Safety Cove. Groups of these at an early stage were collected by Misses Cruickshank and Scott, whilst cast up on the beach were chains, 12-14 inches long, of individuals on the verge of separation.

Washed ashore also was the Southern Saw Shark *(Pristiophorus nudipinnis*, Gunther), and a fine photograph was taken by Mr. Hewer. It was a splendid specimen with its long blade-like snout, armed on each edge with a set of teeth (the saw). Another distinctive character is the pair of long filaments or feelers which protrude from the under surface of the saw, a short distance in front of each nostril.



Southern Saw Shark and young, found at East Cove, Adventure Bay.
A. M. Hewer, photo.

In these sharks, the young are born alive and the stages from egg to fœtus are passed through within the uterus. On examination, this specimen was found to contain one fœtus, partly emerged, and four, well developed, lying within the uterine chamber. Each was attached to the yolk sac, which was greatly reduced owing to the absorption of the contents by the growing fœtus. The characteristic feelers (barbels) and snout were strongly marked but the teeth of the saw, still quite soft, were directed backwards and closely folded against the blade, thus providing against injury to the delicate membranes of the mother. Fine outgrowths (villi) on the walls of the uterus formed a dense covering, indicating that maternal secretions bathe the embryos and assist in their nourishment.

G. P. Whitley recorded and sketched embryo and fœtus of the Common Saw Shark (vide *Fishes of Australia*, Pt. I., p. 155). The Southern Saw Shark fœtus differs as follows:—(a) fins free or nearly free from scales, (b) fewer teeth in the upper jaw, and (c) in the position of the barbel.

The measurements of fœtus and yolk sac were as follows:—(Fractions distinguished by /).

Length of fœtus.	Yolk sac (flask-shaped).
(1)—10 3/8 inches.	3/4 in. long, 3/8 in. dia.
(2)—10 inches.	½ in. long, 1/8 in. dia.
(3)—9 3/4 inches.	1 in. long, ¼ in. dia.
(4)—9 3/4 inches.	1 1/8 in. long, ½ inch dia.
(5)—9½ inches.	1 1/8 in. long, 9/16 in. dia .

Tip of saw to barbel—No. (1) 1 7/16 in.; (2) 1 7/16 in.; (3) 1 3/8 in.; (4) 1 3/8 in.; and (5) 1 3/8 in.

Barbel to nostril—(1) 5/8 in.; (2) 5/8 in.; (3) 5/8 in.; (4) 5/8 in.; (5) 9/16 in.

Nostril to first gill slit—(1) 1 1/8 in.; (2) 1 1/8 in.; (3) 1 1/8 in.; (4) 1 1/8 in.; (5) 1 1/16 in.

Nostril to last gill slit—(1) 1 9/16 in.; (2) 1 9/16 in.; (3) 1 9/16 in.; (4) 1 9/16 in.; (5) 1 7/16 in.

Emergence of fœtus No. 1 was evidently not a normal birth, though from the size of the yolk sac in each specimen this event must have been imminent.

In *Fishes of Australia*, p. 155, a uterine egg is figured, but as no indication of size is given, comparison is not possible. The ovaries of *P. nudipinnis* contained eight large ova, 9/16 in. dia., together with a number of follicles, the largest being about the size of a small pea. It may be assumed, therefore, that the eight large ova when discharged from the ovaries and fertilized represent next season's brood. No data are available in regard to the early embryonic development of this species.

GHOST-MOTHS—HEPIALIDAE.

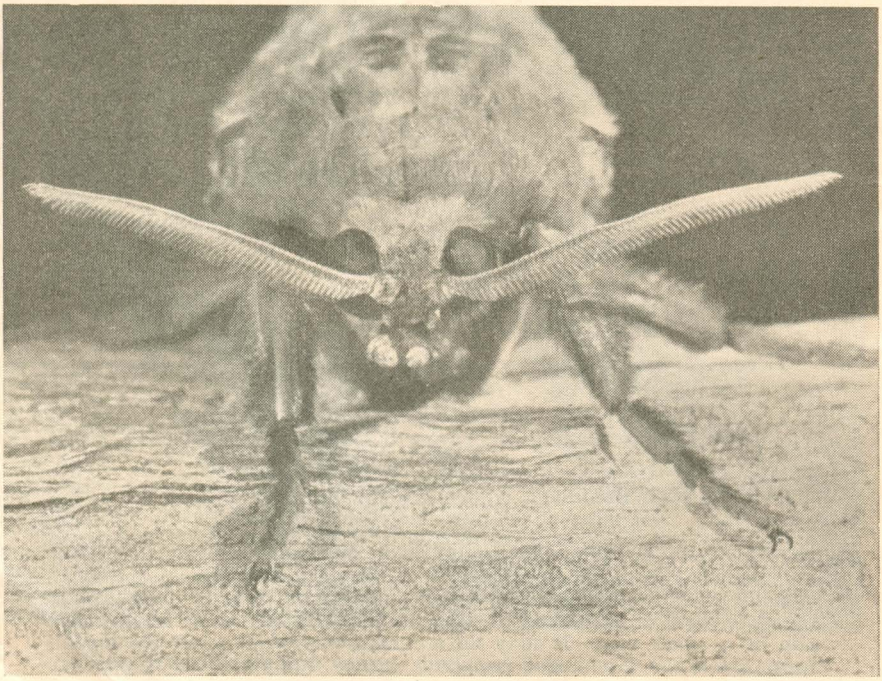
By D. Colbron Pearse.

WALKING along Huon Road one lovely Summer day I saw what I thought was an injured bird fluttering over the ground towards the roadside, but upon closer inspection it proved to be a large dark brown female Ghost-Moth *(Trictena labyrinthica)*.

It was a good specimen and therefore went into my killing jar, and now rests with others in my collection; it was seven and a half inches across the wing span. The male of *T. labyrinthica* is notable for the three rows of pectinations on its antennæ.

Tasmania possesses several species of these primitive Hepialids, and as they fly readily towards a light they are easy to catch. Last January there was a fine specimen resting on an electric light pole at Sandy Bay, but too high up to be caught.

Ghost-Moths belong to the sub-order HOMONEURA, the word meaning "similar veined," the veins of both fore and hind wings being almost exactly alike. Two other families are included in this sub-order, the MICROPTERYGIDÆ and the MNESARCHÆIDÆ, the Micros are found in Australia, the other family in New Zealand. Unlike the Hepialids, which have imperfect mouth



Ghost-Moth *(Trictena)* showing well developed antennæ.

M. Sharland, photo.

parts, the Micros are provided with specialised mandibles for grinding pollen and spores; they are, as their name suggests, very small moths.

The popular name "Ghost" is derived from the fact that the white male of the English species *Hepialus humuli,* Linne is often seen fluttering along the hedgerows at dusk reminding one of some supernatural being. Owing to their rapid flight the Ghost-Moths are also known as "Swifts." There are 230 known species of Hepialids throughout the world, 36 being found in Australia. They include some of the largest and finest of moths, but the majority are sombre-coloured.

The imago or perfect insect has a very short life, two or three days at the most, due to the previously mentioned fact that it has no means of feeding. Ghost-Moths are of great economic importance, the larvæ of many species being subterranean grass-grubs (ONCOPERA) tunnelling among the grass roots and damaging lawns and pastures; others tunnel in the main roots of large trees, and some feed in the branches of wattles, eucalypts, and fruit trees. *Trictena* does much harm to eucalypts in this way.

The species *Charagia splendens* (Apple Moth) is a handsome insect, the male having green and silver wings, while the female is green, brown, and pink. The grass-grubs or "Corbie-grubs" are the worst pest we have in Tasmania. The moths are greyish or yellowish-brown in colour, and are not easily seen. When the males emerge from the burrows in the ground during the day they rest until dusk when they fly rapidly a few inches above the grass looking for the females which remain on the ground.

The eggs are laid in groups under tussocks or in some cases they are broadcast while the female is flying. It takes eight or nine weeks for the eggs to hatch, provided the soil is not too dry.

It is usually in April that the eggs hatch, and after a few days the small larvæ make shallow burrows over which they spin a silken mat incorporating particles of soil and leaves so as to camouflage their hideout. During the early stages they live in colonies, but by June the burrows are more scattered and are about two inches deep. Each week the depth of the burrows increases until in September and October they may be from six to 18 inches deep, according to the nature of the soil. Each burrow is closely lined with strong webbing which can be extracted in one piece. Pupation takes place in the burrows, no cocoon being formed. The moths emerge during November, December, and early January to start the life cycle over again.

The well known "vegetable-caterpillar" is a grass-grub of the genus PORINA or PIELUS, while in the ground the larva is attacked by a slender clubbed fungus *(Cordyceps)* which grows vertically from its head and finally "fossilises" its whole body. All the Hepialids are damp loving insects and cannot withstand long droughts.

Mr. N. B. Tindale, who has made a study of these moths, says "they are confined generally to regions with a relatively constant all the year rainfall, ranging from 30 to 150 inches," but there is one notable exception to this rule; the large species, *Trictena argentata,* which not only lives within the constant rainfall areas but also in such arid regions as those of Central Australia, the

Victorian Desert, and other dry parts. The larvæ of this species burrow very deeply, sometimes as deep as 5 ft., in in order to reach sufficient moisture to keep themselves from drying up. The moth emerges at dusk during the first Winter rains, and the female scatters her eggs over the ground beneath the red gums, dying in the early hours of the morning, or she may survive to finish her egg-laying on the following night.

Aboriginals appreciate both moths and larvæ as food, catching the moths by lighting fires to attract them, and by digging for the larvæ. Mr. Tindale was given one of the grubs to eat, and said it "tasted like warm cream or the baked skin on roasted pork, and was quite delicious."

However true this may be, we prefer to collect them only for scientific reasons, and there is much yet to be learnt about these archaic lepidoptera.

PUBLICATION FUND.—Members are asked to contribute towards the cost of publishing *The Tasmanian Naturalist*, which now circulates to all Australian States, New Zealand, the U.S.A., and England. Donors, during the past 12 months.—Mr. H. K. Aves, Miss P. Batt, Mr. L. D. Crawford, Mr. E. W. Cruickshank, Mr. B. H. Edgell, Mr. F. Fixel, Mr. K. A. Hindwood, Mrs. C. T. Harrison, Mr. T. Johnson, Miss M. Marshall, Mr. M. S. R. Sharland, Mr. and Mrs. G. Weymouth, "Anonymous" (5/-), "Anonymous" (2/-).

ANNUAL SUBSCRIPTION: Members are informed that club subscriptions for the current year are now due.

LIBRARIAN.—Mr. R. C. Harvey, Richardson Ave., Dynnyrne, has agreed to act as librarian for the Club. He will be in charge of the cataloguing of all publications and exchanges. Mr. Harvey is anxious to obtain back numbers of "The Naturalist," particularly copies of the early issues. Members who can spare their copies are asked to pass them to him. They will be housed in a central office and be available to members.

FIELD OUTINGS.—Several enjoyable and profitable field outings were conducted by the Club in 1946. The whole of one Saturday a month is usually devoted to these excursions. They are being resumed this year. Leaders are sought.

EASTER CAMP, 1948.—Suggestions about possible sites for the Easter camp next year will be appreciated by the committee. In considering sites, special attention should be given to the question of water supplies and accessibility for transport.

TASMANIAN PINES.

By F. A. Peterson.

THE PINES are some of our most interesting flora, as some species appear to be remnants of a by-gone age. Most of the pines are confined to the West and South-West of Tasmania with areas of high elevation and heavy rainfall.

HUON PINE *(Dacrydium franklinii)* is one of our most important conifers and may grow to be 1,000 years old. It is found on the banks of streams or in the very wet gullies of Western Tasmania. It is a tall, much-branched tree and grows up to 100 ft. The thick, keeled leaves are spirally arranged. The wood is of splendid quality, with a straight, fine, even grain, sometimes showing "bird's eye" figuring. It is easy to work, bends well, and has a strong characteristic smell. The oil is extracted and has many uses, whilst the timber is especially valued for boat-building, cabinet work, sinks, troughs, etc.

Athrotaxis.—The genus is purely Tasmanian and is represented by three species:—

(a) KING WILLIAM PINE *(Athrotaxis selaginoides)* is the largest, and grows up to 150 ft. It is named from first having been observed on the King William Range. It is a large erect tree, generally unbranched for three-quarters of its height. Usually it is at its best about 2,000 ft., since at higher altitudes it becomes dwarfed. The leaves are up to ½ inch long, narrow, acute, stiff, and slightly incurved. The cones are ¾ in. in diameter, with loose scales. The tree is very slow growing, taking up to 800 years to reach maturity. The wood is dense and red when freshly cut, but on exposure fades to pink. It has a straight fine even grain, is easy to work, and very durable. It is used for cabinet work, pattern-making, joinery, oars, sculls, etc. It is commonly known as "King Billy Pine."

(b) PENCIL PINE *(Athrotaxis cupressoides)* is a much smaller tree, growing to about 70 ft. It is of erect habit, having many branches arranged in clusters. A grove of Pencil Pines alone is to be seen on the north-east side of Lake Belcher, and around most mountain lakes. The leaves are closely appressed to the stem and are obtuse. The cones are ¼ in. in diameter and spherical. The timber is of light weight with broad annular rings. It is almost identical with King William Pine, but when freshly cut has the smell of a newly-cut good quality pencil. Owing to the small size, it is very little used commercially.

(c) *Athrotaxis laxifolia.* This species does not appear to have a common name. It presents characters intermediate between the King William and Pencil Pine and is not common, occurring as isolated trees and not in groves (as *cupressoides)* or forests (as *selaginoides).* There are some in National Park, at Cradle Mt., in Pine Valley, and at Adamson's Peak. The main difference is in the leaves which are looser than in Pencil Pine, being acute, less appressed, whilst the cone is slightly larger. It has no commercial importance.

CELERY TOP PINE *(Phyllocladus rhomboidalis)*. This is an erect tree with rather regular spreading, or depressed branches and it grows to about 60 ft. The leaves are minute scales, their function being performed by the flattened stems, called phylloclades after which the genus is named. The timber is very durable, straight, fine and even grained, varying in colour from white to pale straw. Its greatest virtue is that it shrinks very little and so is used for floorings, fittings, joinery, and tanks. It is common in forests in the wetter parts of the island.

CHESHUNT PINE *(Diselma archeri)*. This is a shrub growing to about 12 ft. and fairly common in South-West Tasmania in wet places at 3,000 ft. or above. The minute leaves are closely overlapping in four rows, and are thick, keeled, and obtuse. The wood has no commercial value, but a little is used for making souvenirs.

DWARF PINE *(Pherosphæra hookeriana)*. This is a densely branched shrub, restricted in its distribution to the alpine regions of Tasmania. It grows to about 6 ft. The leaves are overlapping, spirally arranged and closely appressed. It is a common shrub at National Park. It resembles *Dieselma* in habit but may readily be distinguished by the different leaf arrangement.

CREEPING PINE *(Microcachrys tetragona)* is on its own in the highlands of Tasmania. The leaves are in four rows but it may be distinguished from *Diselma* by its habit, colour, and cones. The cone is bright red, formed by many spirally arranged fleshy scales. This was discovered by Sir Joseph Hooker in 1845. He said: "This is surely one of the most remarkable of conifers, and is in other respects one of the most interesting, being extremely rare in its native country and presenting the unique character in the order of bearing a fleshy brilliant-coloured cone." It can hardly be said to be rare as it occurs on most mountain tops of the south-west above 3,500 ft.

OYSTER BAY PINE *(Callitris tasmanica)*. This tree grows on the East Coast. It is a small tree about 40 ft. high and much branched near the base. The cones, which are in clusters, are nearly globular and about ¾ in. in diameter. As distinct from our other pines, it will grow in moderately sandy soil and in dry situations. The timber is pale yellow and durable with a characteristic pine smell. It is used for posts, telegraph poles, and frames.

CYPRESS PINE *(Callitris oblonga)*. This is a shapely bush with slender branches, rarely attaining 25 ft. and occurring in the valley of the South Esk. The cones are more elongated than in *Callitris tasmanica*.

ANTARCTIC EXPEDITION.—The Tasmanian Field Naturalists' Club has made representations for the adequate protection of animal life on Macquarie Island. A Commonwealth Antarctic Expedition is being planned for the Summer, and arrangements are being made for one of the Club's members, Mr. N. Laird, to accompany the expedition on behalf of the Tasmanian Government.

AUTUMN ORCHIDS.

By J. Somerville.

HERE and there on the dolerite ridges around East Cove at Adventure Bay were fine clumps of the Tailed Greenhood *(Pterostylis pedoglossa*, Fitz.), one of the most attractive of the genus.

The basal rosette of four or five leaves which we associate with Greenhoods is, in this species, fairly loose owing to the length of the leaf-stalk. One or two green bracts occur on the flower stem and each flower carries three long tails. Two tails from the lower sepals point upwards, whilst the third is formed by the slender tapering point of the hood. Occasionally this graceful orchid is seen in fern gullies growing on the trunks of the tree fern, *Dicksonia antarctica.*

In March and April, around the Waterworks, the Tiny Greenhood *(Pterostylis parviflora*, R. Br.) is fairly common. The leaves have withered and only the slender stem is to be seen, each stem bearing 1-6 tiny green flowers, spaced well apart.

On dry hills near Boyer, the Ruddy-hood *(Pterostylis pusilla*, Rogers) was collected in April. The stem is about three inches high and carries several flowers, each with a distinctive hood ending abruptly with a tiny recurved point. Hood and lips are tipped with red-brown.

During Winter and early Spring, the slender Mosquito Orchid *(Acianthus exsertus*, R. Br.) is very common at the Waterworks, Austin's Ferry, Bellerive, Kingston, etc., but it is not unusual to collect a few in May and even April. Several were gathered at Adventure Bay on April 7. The single heart-shaped leaf, reddish beneath, is distinctive, as are the small, insect-like reddish flowers.

Autumn Wings *(Eriochilus cucullatus*, Reich. f.) with its dainty pink flowers, usually one but sometimes two or three, is well known. It is common in most bush areas around Hobart, and was just as plentiful at Adventure Bay.

Among the rushes on the river swamps near New Norfolk we must go for the beautiful marsh orchid, Lady's Tresses *(Spiranthes sinensis*, Ames). The leaves may be mistaken for rib-grass but any one would recognise immediately the graceful spike of numerous small pink flowers. The stalk often has one or more twists, somewhat like a loosely twisted curl, hence the popular name.

Near the Cascades, and also at the Waterworks, the Autumn Bird Orchid *(Chiloglottis reflexa*, Druce) may be gathered. The greenish flower has reddish markings, and a very narrow tongue. Although colonies of plants can be seen, only a few will show flowers.

The red-brown Cockatoo or Duck Orchid *(Caleana major*, R. Br.), which resembles a flying duck, is a general favourite and was plentiful in peaty heaths near Hobart throughout February, March, and April.

THE GANNET ON PEDRA BRANCA.

By Michael Sharland.

AN element of doubt invariably crept into reports that the Gannet *(Sula serrator)* had a nesting colony on the isolated rock of Pedra Branca, about 20 miles south of the entrance to D'Entrecasteaux Channel. This was because no one, as far as could be gathered, had ever landed there. Fishermen had reported seeing many of the birds perched on the whitened crags, 100 ft. or more above the sea, and everything pointed to its being a breeding station, but actual proof was lacking.

The matter has now been determined beyond doubt, for Mr. A. Palfreyman, of Hobart, visited the rock on April 6, this year, and reported having seen some thousands of Gannets and numbers of young ones on ledges high on its eastern face.

Perfect weather favoured the landing—the first on record—and the precipitous sides of the rock, rising to about 200 ft., were climbed without difficulty. Large deposits of guano on the eastern face, which had solidified into rock form, indicated that the breeding station was of considerable age. The nesting sites were on ledges all at a high elevation, and the young birds, fully grown, were to be distinguished from their parents only by little tufts of white down on the crown of the head and other parts of the body.

There was no vegetation on this wave-swept rock; the predominant life was birds, but many seals also were seen on the lower ledges and they swept out to sea as the party landed.

Mr. Palfreyman also noted a number of lizards, but unfortunately he did not collect any specimens. He described these as being unlike any other lizard he has seen, some 9 in. long and fat. The puzzle is—on what do they live?

The only other known Tasmanian breeding station of the Australian Gannet is Cat Island, in the Furneaux Group, a small island off the coast of Flinders Island and a sanctuary under the Animals and Birds Protection Act.

Pedra Branca was named by Tasman on November 29, 1642, owing to its likeness to a similar rock off the coast of China. Furneaux renamed this and the adjacent rocks the Swilly Isles, but this designation has lapsed.

The rock, visible on clear days from some points on the mainland and from South Bruny, is only one of several outposts off the coast of Southern Tasmania, and we know comparatively little of what birds breed there. The Mewstone is believed to be the breeding station of the Shy Albatross *(Diomedea cauta)*. Different kinds of petrels probably also inhabit this and adjacent islands. The area is dangerous for sailing craft, and yachtsmen and others usually give the rocks a wide berth.

BIRDS OF SOUTH BRUNY.

By Hirondelle Mosey.

LUNAWANNA was my starting point, and from here I made excursions in all directions, usually finding something to add to my list of birds, which reached 51 in number before I left.

In the local bush were Green Rosellas, Butcher Birds, Grey Thrushes, Blue Wrens, and their families; Scarlet, Flame, and Dusky Robins; Thornbills, both Brown and Yellow-tailed, in great numbers. Another bird very common here was the Yellow Wattle-bird, whose primitive cry was often heard.

It was interesting to notice the difference in the call of the "Black Magpies" *(Strepera arguta)* when bad weather was coming. They ceased their usual cry of "killock" or "kerlink," and one of their number would fly to a favourite perch in a gum tree, and pointing his beak to the skies, he would give a thin mournful call—very like the weak miaow of a pitiful kitten—and quite unlike any of the usual fair-weather calls. Often I watched him when he gave this call, which is regarded locally as an unfailing sign of approaching bad weather. Certainly every time I heard him his predictions were fulfilled.

Daniel's Bay was usually full of Silver Gulls, and often amongst them were Fairy Terns—very much the same colouring, but the terns wore black silk caps, and their shape was more slender and stream-lined. Pacific Gulls liked this bay, too. One day a White-breasted Sea Eagle flew overhead, and a Black Cormorant skimmed across the bay. There were numbers of Spur-winged Plover in the fields and on wet beaches.

Honeyeaters were plentiful and were met on all walks, New Holland, Crescent, Yellow-throated, Black-headed, and Spinebill. Only one party of Strong-billed Honeyeaters was seen, and that was when going up the tram lines leading from Lunawanna to the top of Mt. Propsting (since named). On this track was a pair of Ground Thrushes, and one allowed me close enough to see clearly his crescent markings from which he gets his name "lunulata" (little moons). Olive and Golden Whistlers were common. In this district, too, were a flock of conversational "Black Jays" *(Strepera fuliginosa)*.

An expedition to Cloudy Bay was an exciting adventure. On the headlands I saw my first Tawny-crowned Honeyeaters and heard their distinctive pipings.

The way led through a plantation of young pines and a number of Black Cockatoos were using these as resting posts, one bird to each tree, and that one as near the top as it could get. We watched, fascinated by their lumbering flight as they changed perches, the young trees swaying as the large birds alighted.

Near Cloudy Bay Lagoon were Black-fronted Dotterels. Not to be forgotten is their rapid flight, darting to and fro over the heath. Sometimes a pair would alight on the track ahead, and one had a better chance to study the gleaming white chest and thick black band through eye and across the breast.

At last we reached Cloudy Bay, where the scenery is glorius. The firm sand stretched deep from the towering sand-banks behind the beach down to the breakers, which have an uninterrupted journey from the South Pole! The bay is guarded on both sides by precipitous headlands.

Another expedition was to Adventure Bay Neck. We climbed the hummocks, and sitting there, could hear the domestic squabbles of the Fairy Penguins living within. There were two or three Gannets diving into the bay, and on the beach were Pied Oyster-catcher and Hooded Dotterel.

A walk to Alonnah added a Fan-tailed Cuckoo to the bird list, and many White-breasted Cormorants were in the bay.

In the opposite direction, Little Taylor's Bay was full of birds. The tide was out, and several Oyster-catcher, both Pied and Sooty, were feeding. So were White-fronted Herons, Sharp-tailed Sand-pipers, and flocks of Red-capped Dotterel.

Leaving the road and reaching the heath-covered headland we flushed a pair of Painted Quail. Pipits were everywhere, and from a bush a Striated Field Wren sang a sweet, strong song. A family of Tawny-crowned Honeyeaters went by, and near the top of the rise a Skylark rose from the heath and went singing high into the air.

The longest walk was to South Bruny Lighthouse. In the light bush were more Fire-tail Finches than I'd ever before seen on one day. Every hundred yards or so another would dart across the path and disappear behind the bushes. A pair of Tree Martins made constant visits to a hole high in a gum-tree, where evidently a hungry family was installed. Another Field Wren was seen here, too, his striped body disappearing through a bush. Spotted Pardalotes were numerous. I am not sure of the next one, but I thought I saw a Forty-spotted Pardalote in a sapling. There seemed to be no spots or white stripes on the head, but the white spots in wings were clear.

The lighthouse track leads through bush, across three beaches, on the Channel side of Bruny, and the last few miles are undulating heathland and *Blandfordia* country. This is the happy hunting ground of Tawny-crowned Honeyeaters, flocks of which were seen and heard in several places. One is arrested by their ventriloquial pipings.

The lighthouse stands high on a headland and from the top one gets an extensive view of broken coastline, the Channel, and the estuaries of Southport, Dover, and Huon, and all the islands. The mountains on the mainland showed clearly—La Perouse, Adamson's Peak, and Hartz Mountains—a very grand sight.

At the foot of the lighthouse and just off shore is a small island, only to be reached at very low tide. We got across and climbed the steep sides and found the burrows of the Fairy Penguin and Short-tailed Shearwater (Mutton-birds).

NESTING SITE OF MASKED OWL.

By Michael Sharland.

BIRD OBSERVERS have always been puzzled about the lack of information concerning the nesting site of the Tasmanian Masked Owl *(Tyto castanops)*. It is the only Tasmanian bush bird the eggs of which have not been described.

Although relatively common and well dispersed, the bird has concealed its nesting places from human eyes and even the most ardent of egg-collectors have failed to track these down. Does it normally breed in a hollow tree, a stump, a hole in the ground, or a cave?

Some light on the mystery has been provided recently by Mr. H. E. Johnson, an observer living at Dromedary, about 15 miles from Hobart, on the northern side of the River Derwent. As the observation constitutes important "ornithological history," I shall give his letter in full:—

> "The bird builds, or rather lays its eggs, in a hollow limb of a tree. It has to be a large opening as the wing span is so big and the birds cannot manage a small hole. A pair of Owls had a nest on my place and I got one of the young ones. This had either been pushed out of the hollow for want of room, or had fallen before it could fly. We had it for some time, but it never became tame.
>
> "The nest was in an ugly old white gum tree. The tree blew down last month, and I also found it had been the home of some Flying Squirrels for ages." (Date of letter, January 15, 1947.)

Mr. Johnson's observation is the first to be placed on record relating to the nesting site of the Owl. It seems curious, that, in spite of the great amount of timber felling which has proceeded throughout Tasmania for more than a century, a nest has never been found in a fallen tree. This has given rise to the belief that the bird normally breeds in caves or deep rock cavities, or in rabbit burrows, though no rabbit trapper has ever reported having round a nest underground.

Occasionally an Owl is caught in a rabbit trap. More often, however, dead birds are picked up on roadways after having been killed by either striking telegraph wires or being hit by motor traffic.

I found an uninjured bird near the middle of a shallow lagoon at Granton some years ago. Its feathers were saturated and it was unable to fly. It was caught and taken to the shore, and after the sun had dried its plumage, it flew away. Possibly, it had been seeking the young of Chestnut-breasted Teal *(Querquedula castanea)* or Native Hen *(Tribonyx mortierii)*, which are reared about the lagoon.

The only breeding record I have of the Masked Owl relates to a pair kept in a large enclosure in a private zoo at Launceston. In December, 1943, this pair brought out two young ones, much to the surprise of the keeper, who did not suspect they were breeding. The eggs apparently had been laid and incubated beneath a clump of dead branches and some boards in a corner of the enclosure.

FLIGHT OF MUTTON-BIRDS.

By K. A. Hindwood (Sydney).

IT DOES not often fall to the lot of the bird-observer on land to witness the great southerly flight of Mutton-birds along the eastern Australian coast each year, but now and then such movements do come under notice and they are always spectacular.

While visiting Currarong, on the northern headland of Jervis Bay, New South Wales, in 1946, I was fortunate in being able to watch what I considered to be millions of these birds moving south. From November 9 to November 16 the dark-plumaged birds were passing.

Just after daylight one morning we had the glasses on them and there was a constant stream going south, without any apparent pause for feeding. This went on all day and the birds were still in evidence at nightfall. Probably they continued to pass south all night as on previous and subsequent nights.

There seemed to be an urgency about their flight, and I assume they were the tail end of the vast numbers that move down the east coast from early September until late November. Presumably, they were the Short-tailed Shearwater, or Mutton-bird *(Puffinus tenuirostris)*, but identification was not possible without specimens. However, numbers of this species are washed up on beaches at this time of the year, and it is fairly safe to say they were *P. tenuirostris*.

The impression gained from these birds at Jervis Bay was that they were in a great hurry to reach Bass Strait, where the species breeds extensively. Apparently their "homing" instinct was then at its greatest development, and they were not even stopping to feed.

NOTES ON THE RICHEAS.

By C. G. Elliott.

THE HEATH family, the Epacridaceæ, has its centre of development in Australia, where it forms one of the chief components of the typically Australian flora. The Epacrids are closely related to the Ericas of South Africa. It is interesting to note that another family well developed in Australia, the Proteaceæ, to which waratah and the Hakeas belong, also occurs in South Africa, though no genera are common to both areas.

The answer to this distributional problem is to be sought in the climatic changes during past ages. In the middle Tertiary period the climate throughout the world was much more uniform than it is today, and the vegetation more uniform as a result. Fossil Eucalypts and Proteaceæ are recorded from Europe. They were at that time minor grops among the dominant flora of trees akin to beeches, elms, and oaks, whose remains are likewise contained in the Miocene sediments of Tasmania. The climatic conditions which subsequently prevailed in Australia favoured the expansion of the Eucalypts, which were specially well adapted to the new environment. Similar conditions in South Africa and Australia favoured the development of plants like the Ericas and Epacrids and the Proteas, though owing to geographical separation a different but related flora evolved in each area.

Of all the heaths, the Richeas are perhaps the most remarkable and interesting. The genus is characterised by having the petals united into a cap which falls off, exposing the stamens. Also, the leaves have bases expanded into sheaths encircling the stem, and when the leaves fall ring-like scars are left.

The first Richea was described by Robert Brown. There are nine species, eight of which are confined to Tasmania, while the ninth, *R. continentis*, occurring on the Mainland, was formerly included in *R. gunnii*.

R. procera F. v. M., is the only one not strictly a mountain plant. It is common on the lower slopes of Mt. Wellington where it extends to an altitude just below the Springs. It looks rather like

R. sprengelioides F. v. M., which, however, is a mountain-top form, and whose leaves, at any rate in the Lake St. Clair district, are shorter, blunter, and less curved. The technical distinction lies in the anthers. This species is one of the commonest components of our mountain shrubberies. It resembles another heath, *Sprengelia*, after which it is called, which has the same sheathing leaves but does not show leaf scars as does the Richea. *Sprengelia*, of course, does not have the deciduous corolla* of the Richeas.

R. acerosa F. v. M., somewhat resembles *R. sprengelioides*, yet looks different, being a taller and more compact bush, whose leaves are narrower and straighter. I have found it on the plains west of the Great Lake, on Mt. Rufus, and on the way to Lake Marion.

R. scoparia Hook. This forms large bushes up to 6 ft. high which are serious obstacles to walking on mountains. Its sharp spikes are too well known to all. Like *R. sprengelioides* it is one of the commonest mountain plants, both in forests and on the plateaus. The leaves are an inch or more in length, well curved back and persistent for some years. Leaf scars are not evident as the bark peels off. In flower about January, it is the most spectacular of all, bearing spikes of brilliant colour—white, cream, pink, red, yellow, orange. The corolla is about 1/3 in. long.

R. gunnii Hook., may be confused with the last, growing in *Sphagnum*. Generally, however, the bushier habit of *scoparia* makes them distinguishable. In *R. gunnii* the leaves fall off from the older stems leaving conspicuous leaf scars. The corolla is about 1/10 in. long, generally white, and the flowering period about a month later than the other species. There is a lot of it in the plain at Pine Valley.

R. milligani F. v. M., is one of the plants named after Dr. Milligan, whom Mr. Sharland wrote about in *The Mercury* recently. It is one of the most beautiful of the genus. The leaves are straight and about 1½ in. long. The flowers are in reflexed heads and have beautiful pale yellow corollas, which when they fall display long straight slender stamens. I have seen it in the Denison Range and near Lake Belton, National Park. It flowers about Christmas.

R. dracophylla R. Br., is the tallest of the Richeas found on Mt. Wellington where it occurs below the Organ Pipes, growing to a height of 12 ft. It does not seem to be common farther west, but I have found it near Lake Marion and on the slopes of Mt. Mawson.

* The term corolla denotes all the petals considered together.

R. pandanifolia Hook., is the well known "Pandani," a slender, rarely-branched tree up to 30 ft. high, with leaves 6 ft. long, having a saw-like edge. It is famed for its incendiary properties, being very good tinder in the wettest weather. This property is also well developed in *R. scoparia.* The flowering shoots of the Pandani are quite short, and arise among the leaves just below the crown. They are generally pink or white, with corollas 1/10 in. long. The finest specimens I have seen are in the King Billy forest in Pine Valley. It is, however, by no means confined to forests. There are groups on the open plain in Pine Valley, and dwarf ones occur unexpectedly in high exposed places like K-col. It occurs at National Park, but not on Mt. Wellington.

Tasmanian Field Naturalists' Club.

Annual Report for 1946.

The following report for 1946, presented at the annual meeting of the Club in February, 1947, was prepared by the Hon. Secretary-Treasurer, Mr. H. G. Vaughan:—

Membership of the Club has almost doubled, and now numbers 101 financial members, against 54 in the preceding year.

It is with regret that we record the deaths during the year of Messrs. G. W. Knight and W. Cunningham.

Nine monthly meetings were held, at which the approximate average attendance was 80.

Lecturers assisting at these meetings were:—Messrs. Sharland (2), Levis, Thwaites, Couchman, Wolnizer, Brett, Angel, and Professor Carey, and we are grateful for their help. Subjects dealt with were:—West Coast and its Bird Life, Tasmanian Lake Country, Social Behaviour of Insects, South-West Tasmania, Tasmanian Eucalypts, Tasmanian Butterflies, Caverneering, and documentary films on "Living off the Land."

The Easter camp was held at Safety Cove in April, and the ordinary meeting was not held during that month. The camp, thanks to Mr. Sargison's excellent organisation, and the valuable assistance of the advance party, was most successful and was honoured by an informal visit from Sir Hugh and Lady Binney.

Field outings were held monthly from July to November, and were well attended. Miss Somerville, Mr. Sharland, and Mr. Cruickshank acted as leaders. Saturday morning museum classes, conducted by Miss Somerville, have been a valuable contribution.

During the year, the publication of *The Tasmanian Naturalist* was revived, and Vol. I. of New Series was issued and very favourably received.

The statement of receipts and expenditure indicates that revenue exceeded expenditure by £26/10/4, and the year closed with a balance in hand of £56/15/11.