

The Tasmanian Naturalist

Annual Charge 40 cents

Supplement to the Bulletin of the Tasmanian Field Naturalists' Club

No. 19, NOVEMBER 1969

Registered at G. P. O. Hobart, Tasmania, for transmission by post as a periodical
Editor - D. G. Thomas

THE VARIED VOLCANOES OF GREAT LAKE F. L. Sutherland

THE Central Plateau, with many other parts of Tasmania, witnessed volcanic paroxysms during the recent geological past. The drought of 1967-8 lowered the level of Great Lake by about 40 feet and provided excellent exposures of eroded volcanic centres in the lake floor. The lavas and explosive fragmental beds of these volcanoes show interesting structures typical of eruptions into water. Their detailed mapping and examination by the writer has elucidated much of the volcanic history of the area.

The volcanic succession from oldest to youngest exposed at Great Lake consists of mineralised broken entrail lavas, bedded glassy fragmental explosive deposits, unmineralised broken entrail lavas, and flows and feeder dykes of massive lavas. Old lake and river clays and gravels are preserved under a massive flow extending from Tods Corner to Shannon Lagoon.

The broken entrail lavas are successive flows of twisted, branching lava tubes with chilled glassy cooling crusts, and these are broken up and embedded in a glassy fragmentary matrix at the base and top of each flow. The lavas form rough flow beds dipping out from the volcanic centres and reach over 200 feet thick. The unmineralised series show empty gas cavities and fragments are held only by a clay cement. The cement and fillings in the mineralised lavas show whitish minerals in striking contrast to the dark lava, and these include species such as chabazite, phillipsite, apophyllite, calcite, nontronite clay and the rare tacharanite. The mineralised lavas are found along the Ouse River and are thought to represent older eruptions in a former westward extension of Great Lake.

The bedded glassy fragmental explosive deposits over 40 feet thick underlie the broken entrail lavas and massive basalts. They are generally fine grained, but contain some coarse beds with large lava fragments and pieces of country rock. Current ripple bedding, slump, loading and sliding deformational structures are present and the deposits resemble those formed as volcanoes are emerging out of shallow water.

The massive lavas cap the fragmental explosive beds and broken entrail lavas, and also occur alone inland away from the Great Lake depression. They are typical open-air lavas that erupt on land surfaces, and presumably did not enter the Great Lake waters. Flows range from 30 to 200 feet thick and form lava piles containing up to 4 flows and 300 feet thick. Some show riddled gas-holed tops and columnar cooling joints. A swarm of small feeder dykes occur on Reynolds Island, and presumably many of the other flows issued from such structures. A fine grained explosive ash bed with pieces of petrified banksia wood intervenes below the top flow on Liaweene Hill.

The lava successions at Great Lake greatly resemble some of those in Iceland formed as volcanic cones rose out of melt water lakes, and we can picture a series of such cones erupting in and rising out of Great Lake, possibly to heights of several hundred feet. About 20 volcanic centres were active at Great Lake and many of these were aligned along intersecting fissures, coalescing in places to form elongate fissure volcanoes. The eruptions appear to represent some of the youngest in Tasmania and may have included outbursts during the ice age between one million and 25,000 years ago.

HAIRY CICADAS WHICH DO NOT SING

Alison Green

AN unusual insect, presented to the Tasmanian Museum by Sir Henry Somerset, has drawn attention to an interesting species. The specimen, which was collected in the Leven Gorge by Mr. N. Sullivan of Burnie, is a Hairy Cicada Tettigarcta tomentosa White.

T. tomentosa is readily distinguished from other cicadas found in Tasmania by the dense covering of hair on its body and by its relatively small head. With a body length of 30 mm. (more than one inch) and a wingspan of 77 mm. (about three inches) it is also larger than most of the other Tasmanian species, only the Black Cicada or "red-eye" Psaltoda moerens Germar being greater in size. In colour the Hairy Cicada is reddish-brown with dark brown markings; the fore-wings are tinted reddish-brown while the hind-wings remain clear.

T. tomentosa is restricted to Tasmania where it usually occurs at higher altitudes, although some specimens have been found near sea level. Another hairy cicada Tettigarcta crinita Distant is known from high country in Victoria and N. S. W. These two species stand apart from all others in both physical features and habits.

The noise made by typical cicadas is a familiar sound in summer. The "singers" are the males and their "songs", which differ according to the species, are intended to attract the voiceless females. Sound is produced by the rapid vibration of a pair of membranes set in the lower surface of the body, behind the third pair of legs. In the hairy cicadas traces of these sound-producing structures are present in both males and females, but they are not functional so that neither sex can sing. Also, while most cicadas favour sunshine, the hairy forms are nocturnal, hiding under the bark of trees in the daytime and emerging to fly at dusk.

Thus the silent, night-flying, hairy cicada provides an unexpected contrast to its noisy, sun-loving relatives.

WHITE-FRONTED TERN STERNA STRIATA IN TASMANIA

L. E. Wall

On 4 September 1969 I made my first acquaintance with this bird - at West Ulverstone.

A flock of terns was resting on a shingle bank towards the north-western end of the beach, and consisted of about thirty Crested Terns and six others which were easily distinguished as belonging to another species. I was able to get within thirty yards of them before the whole flock took flight, and the following description was taken :-

Length, about four inches shorter than Crested Terns

Upper surface of body and wings, light grey.

Under surface, white. Tail, deeply forked.

Rump, whitish. Legs, reddish-brown.

Crown of head, black (in some birds mottled with white).

Forehead, white. Bill, black and thin and about as long as the head.

Gape, red.

As indicated above, there was some variation on the crowns of individuals, but in all cases the black extended forward to the eye at the side of the head. All birds had a narrow line of dark-grey mottling along the folded wing, indicating immaturity.

There seem to be only two published records of the White-fronted Tern in Tasmanian waters in the last fifty years - one at Bruni Island in 1945 and the other at Orford in 1948 (Ref. "The Emu", vol. 48, p. 325). However, J. R. Napier has informed me that he has seen one at Cat Island in the Furneaux Group and D. G. Thomas has also seen one at Cape Portland, both in recent years. R. H. Green has commented in a letter dated 15 September 1969: "White-fronted Terns seem to be present on the north coast each winter. I saw one or two with Crested Terns at Kelso last Thursday".

My own observations indicate that the species appears very rarely in the southern parts of the State although its regular appearance in the Bass Strait area is confirmed by frequent sightings during winter months on the Victorian Coast, outlined by J. L. McKean ("The Emu", vol. 60, p. 262).

A NOTE ON THE OCCURRENCE OF THE MOTTLED PETREL IN TASMANIA

A. P. Andrews

A beach-washed specimen collected by the Animals and Birds Protection Board at Low Rocky Point on the west coast and forwarded to the Museum has been determined by Mr. Keith Hindwood as the Mottled Petrel *Pterodroma inexpectata*.

Sharland (1958) lists the species as a probable visitor to Tasmania, the only finding recorded being by G. M. Mathews at Circular Head. Alexander (1955) gives the distribution as the Pacific Ocean, New Zealand and the islands south of New Zealand. It has been recorded from the North Atlantic in Alaska by Matthews and Iredale (1921).

The specimen which is badly damaged and dried out has been placed in the Museum collections (Reg. no. B3326) for future reference.

I am indebted to Mr. K. A. Hindwood of Sydney, who determined the species.

References:

- Alexander, W. B. (1955). *Birds of the Ocean*. Putman, London. p. 42.
 Matthews, G. M. and Iredale T. (1921). *A Manual of the Birds of Australia*, Vol. 1, p. 34. Witherby, London.
 Sharland, M. (1958). *Tasmanian Birds*. Angus & Robertson, Sydney, p. 29.

BIRD NOTES

The following observations have been reported at meetings of R. A. O. U. and B. O. C. members in Hobart during the last two years:

At Maria Island in January 1968 a Leaden Flycatcher was found nesting for the first time in Tasmania. A Common Sandpiper, a Sacred Kingfisher and a Little Falcon were seen, and Forty-spotted Pardalotes were found to be common.

Five Whimbrels at Lauderdale (formerly Ralph's Bay Neck) on 4/3/'68.

Two Wood Ducks at Lemont, 24/12/'67.

About 100 Greenfinches at Mortimer Bay (within the Derwent Estuary), 7/7/'68.

A Magpie Lark at Rostrevor, June 1968.

A Grey-backed Storm Petrel at Eddystone Pt., June 1968.

9 Pacific Gulls at Meadowbank Dam, September 1968.

Grey Plover and Whimbrel at South Arm, 26/1/'69.

Albino Wood-Swallow at Nugent, March 1969.

Albino Little Raven, at Forcett, March 1969.

Marsh Sandpiper at Flinders Island, Feb./March 1969.

Two Cattle Egrets at Bridgewater, 13/4/'69.

Eleven Knots at Sorell, 19/7/'69 (first winter record - Ed.).

Little Egret at Little Swanport, 5/7/'69.

- L. E. Wall

VARIANT PLUMAGE IN TURNSTONE - A Turnstone *Arenaria interpres* with abnormal plumage characteristics was present at Anson's Bay on the east coast of Tasmania on 18 January, 1969. The colouring of the head, nape, throat, breast and the soft parts was typical of the species in winter plumage. The rest of the body, apart from a few dark streaks in the folded wings, was white. The bird was with other individuals of the same species and its behaviour was normal in all respects.

The Turnstone has a very restricted distribution in Tasmania, being confined to areas where there are rocky reefs. It occurs at Circular Head, Kelso, Low Head and Cape Portland on the north coast and at the entrance to Anson's Bay on the east coast. Flocks of up to 50 individuals may be seen at these places during the Northern Hemisphere winter. Elsewhere it is only an uncommon straggler.

- D. G. Thomas

COLONISATION OF ISLANDS : The finding of a small shrimp-like crustacean on the wing of a Chestnut Teal raises the much debated question about the modes of dispersal of animals and plants. It is very difficult to see, for example, how some kinds of animals and plants ever cross large expanses of salt water to colonise remote islands, or main land masses far from their point of origin. Wind dispersal, animals surviving on floating logs and birds carrying freshwater or terrestrial animals have all been considered. Some of the pseudoscorpions mentioned in the previous issue are known to take rides on other animals (a mode of travel known as phoresy) and the formation of the island Surtsey, by submarine volcanic activity, off Iceland in 1963, has provided a natural laboratory to study colonisation of a newly formed piece of land.

The efforts of the Surtsey Research Society will provide much information about the modes of immigration of colonising animals and plants and make the isolated records of snails, shrimps and other small animals more meaningful in the study of bio-geography.

- A. J. Dartnall

DR. SERVENTY ON CONSERVATION : The A. C. F. Newsletter for April summarises an address given by Dr. Serventy on "Habitat Preservation - the Basis of Fauna Conservation", in which he examines the popular feeling that fauna conservation is mostly about devising ways to stop people killing animals, a belief current since the days when Gould pleaded for protection for the Emu. Dr. Serventy points out that, though from time to time Emus, Silvereyes and other species including Wedge-tailed Eagles (since 1928 bonuses have been paid on the beaks of some 150,000 of these) have been singled out for mass destruction as pests, most species can make up for loss of individuals in a few breeding seasons where their habitat is intact, as in the examples above. With some important listed exceptions, man's deliberate influence on nature is insignificant compared with his indirect effects, which lead to destruction of habitat. Thus the essence of fauna protection policy should in general be habitat preservation.

SOME RECENT ARTICLES: There is an increasing number of journals that include articles on Tasmania. Below is a selection of articles that have appeared so far in 1969. This is not a complete list and it is hoped that members will draw the editor's attention to any omission so that they can be included in further issues.

A second Red-crowned Pigeon in Tasmania, R. H. Green, *Emu* 68(4), 284.

Peregrine Falcon as a probable migrant, M. S. R. Sharland, *Emu* 68(4), 285.

Whistling Kite in Tasmania, L. E. Wall & R. H. Green, *Emu* 69(1), 49.

A field key to Tasmanian sea stars. A. J. Dartnall, *Tas-Fish. Res.*

3(1), 1-6.

A systematic list of the fishes collected in Tasmanian waters by the Unitaka Maru in January 1968. A. J. Harrison & E. O. G. Scott, *Tas. Fish. Res.*

3(1), 7-11.

20 Sea Shells - an illustrated guide to the "Top Twenty" common shells, published by the Tasmanian Museum.

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TASMANIAN FIELD NATURALISTS CLUB

Principal Office Bearers

President : Mrs. T. L. Stephens, 25 Hazell Street, Blackmans Bay 7152
 Secretary : Miss M. L. Westbrook, 6 Richardson Avenue, Dynnyrne 7005
 Treasurer : Mr. L. E. Wall, 63 Elphinstone Road, North Hobart 7000