

The
AUSTRALIAN
MUSEUM
MAGAZINE

Vol. X. No. 10

Price—TWO SHILLINGS



Painted Cup Moth.

THE AUSTRALIAN MUSEUM

HYDE PARK, SYDNEY

BOARD OF TRUSTEES

PRESIDENT:

H. B. MATHEWS, B.A.

CROWN TRUSTEE:

H. B. MATHEWS, B.A.

OFFICIAL TRUSTEES:

THE HON. THE CHIEF JUSTICE.
THE HON. THE PRESIDENT OF THE LEGISLATIVE COUNCIL.
THE HON. THE COLONIAL SECRETARY.
THE HON. THE ATTORNEY GENERAL.
THE HON. THE COLONIAL TREASURER.
THE HON. THE SECRETARY FOR PUBLIC WORKS.
THE HON. THE MINISTER OF PUBLIC INSTRUCTION.
THE AUDITOR-GENERAL.
THE PRESIDENT OF THE NEW SOUTH WALES MEDICAL BOARD.
THE SURVEYOR-GENERAL AND CHIEF SURVEYOR.
THE CROWN SOLICITOR.

ELECTIVE TRUSTEES:

PROF. A. N. St. G. BURKITT, M.B., B.Sc.
FRANK B. SPENCER.
O. G. VICKERY, B.E., M.I.E. (Aust.).
WALLACE C. WURTH, C.M.G., LL.B.
PROF. A. P. ELKIN, M.A., Ph.D.
F. McDOWELL.

R. J. NOBLE, M.Sc., B.Sc. (Agr.), Ph.D.
E. J. KENNY, M.Aust. I.M.M.
F. L. S. BELL, M.A., F.R.A.I.
FRANK W. HILL.
G. A. JOHNSON.
PROF. P. D. F. MURRAY, M.A., D.Sc.

DIRECTOR:

A. B. WALKOM, D.Sc.

Assistant to the Director:

J. R. KINGHORN, C.M.Z.S.

SCIENTIFIC STAFF:

Birds, Reptiles and Amphibians: J. R. KINGHORN, C.M.Z.S., Curator; J. A. KEAST, B.Sc., Assistant Curator.
Mammals and Skeletons: E. Le G. TROUGHTON, F.R.Z.S., C.M.Z.S., Curator.
Fishes: G. P. WHITLEY, F.R.Z.S., Curator.
Insects and Arachnids: A. MUSGRAVE, F.R.Z.S., F.R.E.S., Curator; K. C. McKEOWN, F.R.Z.S., Assistant Curator.
Molluscs: JOYCE ALLAN, F.R.Z.S., Curator; D. F. McMICHAEL, B.Sc., Assistant Curator.
Crustacea and Other Groups: F. A. McNEILL, Curator; ELIZABETH C. POPE, M.Sc., Assistant Curator.
Minerals and Rocks: R. O. CHALMERS, A.S.T.C., Curator; J. F. LOVERING, B.Sc., Assistant Curator.
Fossils: H. O. FLETCHER, Curator.
Anthropology: F. D. McCARTHY, Dip.Anthr., Curator.

LIBRARY AND PUBLICATIONS:

JASMINE M. McKECHNIE, B.A.

DEPARTMENT OF PREPARATION:

J. KINGSLEY.

HONORARY SCIENTIFIC STAFF:

Zoologists.

Asst. Prof. E. A. BRIGGS, D.Sc.
H. LEIGHTON KESTEVEN, D.Sc., M.D.
MELBOURNE WARD, F.R.Z.S., F.Z.S.
TOM IREDALE.

Entomologist.

T. H. GUTHRIE.

Ornithologist.

K. A. HINDWOOD, C.F.A.O.U., F.R.Z.S.

Archaeologist.

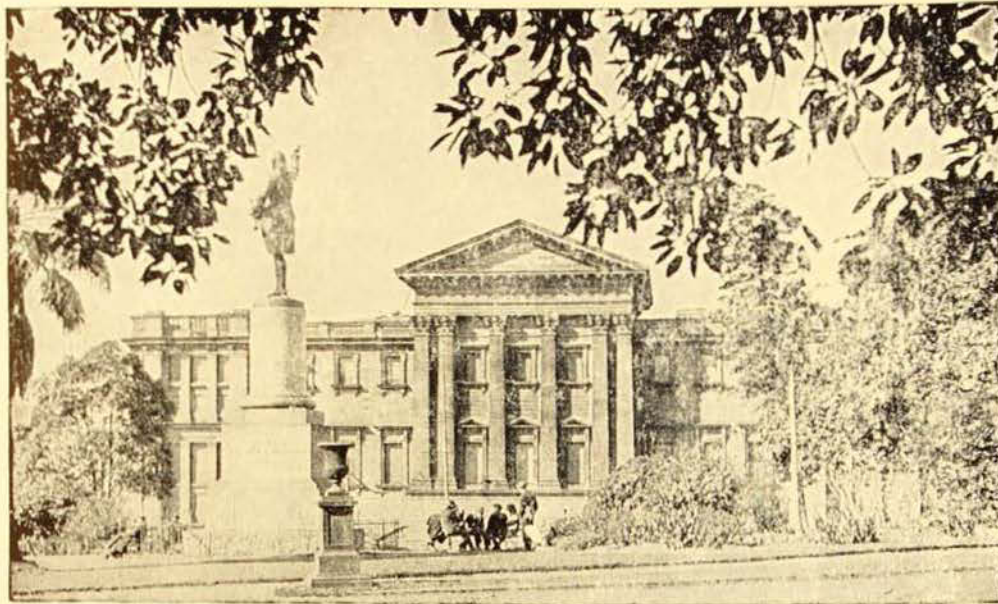
Prof. J. L. SHELLSHEAR, M.B., Ch.M.

Numismatist.

G. C. HEYDE, A.S.T.C., F.R.N.S.

Philatelist.

FRANK W. HILL.

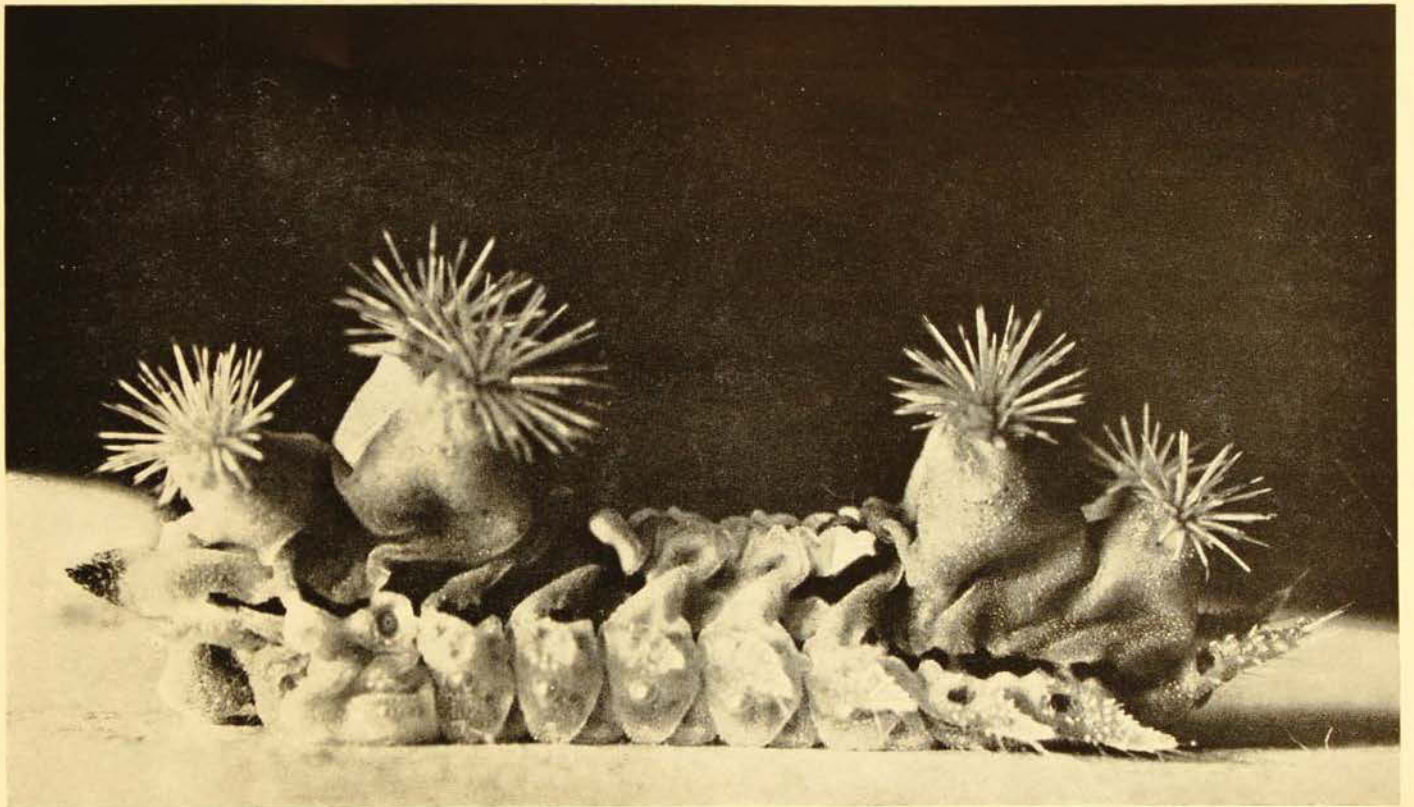


THE AUSTRALIAN MUSEUM MAGAZINE

CUP MOTH LARVA	<i>Frontispiece</i>
MUSEUM EXPEDITION TO CENTRAL AND NORTH-WEST AUSTRALIA	309
THE COMMON NAMES OF FISHES— <i>Gilbert Whitley</i>	310
AUSTRALIAN INSECTS, XLVI—COLEOPTERA, 23—MALACHIIDAE AND DASYTIDAE <i>Keith C. McKeown</i>	316
A NOTE ON SOLDIER BEETLES— <i>Keith C. McKeown</i>	318
FOLKLORE OF THE COCONUT— <i>Melbourne Ward, F.R.Z.S., F.Z.S.</i>	319
THE LARGEST SAND DUNES IN THE WORLD— <i>J. F. Lovering, B.Sc.</i>	322
CINEMA SCREENINGS, 1952	325
BREAST-PLATES: THE BLACKFELLOWS' REWARD— <i>Frederick D. McCarthy</i>	327
POPULAR LECTURE SYLLABUS, 1952	331
BEACHCOMBER'S HARVEST— <i>Elizabeth C. Pope, M.Sc.</i>	332
AMATEUR LAPIDARIES— <i>R. O. Chalmers</i>	338
REVIEWS	339

(*Photography, unless otherwise stated, is by Howard Hughes.*)

● OUR FRONT COVER. This illustration shows two larvae of the common or Painted Cup Moth, *Doratifera vulnerans* Lewin, a member of the family Limacodidae. This species is often found feeding upon the foliage of gum trees and saplings during the spring and summer months. When ready to pupate the larva forms a cup which it attaches to a branch or twig, as shown in the illustration, and which it provides with a lid. Later it pupates inside the cup and when ready to emerge as the adult moth the lid is pushed out and the egg-shaped cup remains. A photograph of a single larva appears as the Frontispiece on the next page.



Single larva of the common or Painted Cup Moth, *Doratifera vulnerans* Lewin. Many cup moth larvae are provided with rosettes of retractile spines which are folded down when the caterpillar is at rest, but if the insect is disturbed the spines are thrust out as depicted. Should they enter the skin they set up an irritation. These cup moth larvae are frequently encountered by persons gathering gum tips in the bush. Mention of them is made in the AUSTRALIAN MUSEUM MAGAZINE, X (8), December, 1951, p. 254.

THE AUSTRALIAN MUSEUM MAGAZINE

Published by the Australian Museum - - - - - College Street, Sydney

Editor: A. B. Walkom, D.Sc.

Annual Subscription, Post Free, 8/6

VOL. X, No. 10.

June 15, 1952.

Museum Expedition to Central and North-West Australia

THANKS to a very generous donation, and willing co-operation of a number of commercial organisations, the Trustees were able to despatch a Museum Expedition to Central and North-west Australia. The main object of the expedition is to collect fossils from rocks of Permian age in the Daly River district of Northern Territory. The fossil fauna of these rocks is an important one for the palaeontologist, and the last collections were made, nearly half a century ago, by the late H. Y. L. Brown and were described by the late Robert Etheridge.

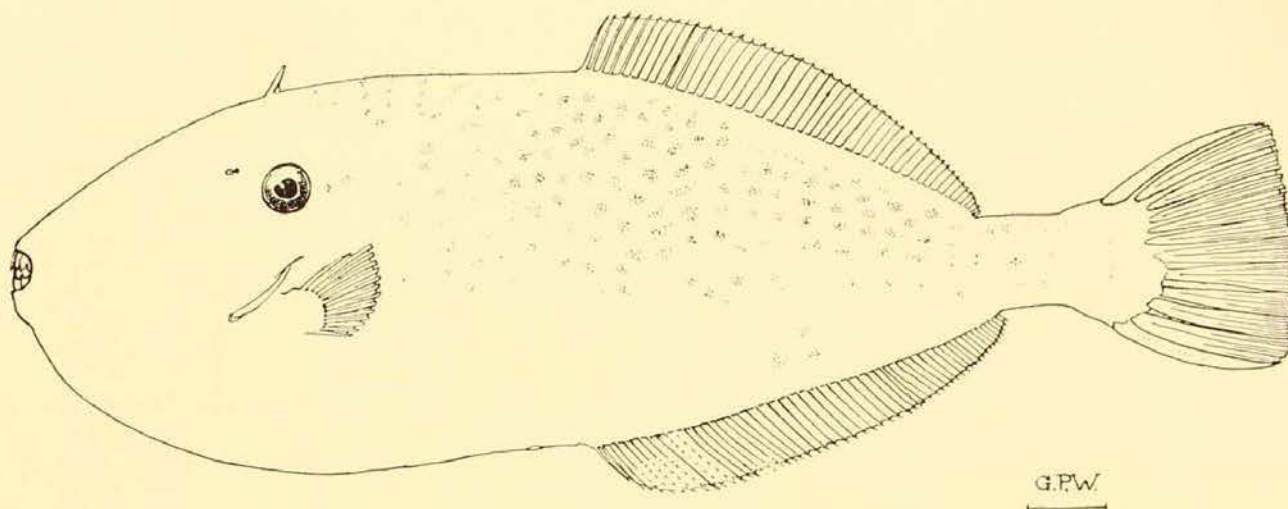
In addition to the fossil collecting, zoological collections will be made wherever opportunity offers along the route, and it is expected that this will result in many important additions to the collections of the Museum.

The expedition left Sydney on 7th April in two trucks and is travelling to Darwin via Broken Hill, Port Augusta, Alice Springs, Tanami, and Wyndham. The return from Darwin to Sydney will be via

Camooweal, Cloncurry, and Cairns, and thence south by the coastal route. It will travel some 11,000 miles and be absent about four months.

The party is led by Mr. H. O. Fletcher, Curator of Fossils at the Museum, and with him are Messrs. E. O. Rayner, of the Geological Survey of N.S.W., and J. A. Keast, Assistant-Curator of Birds and Reptiles, together with Messrs. R. Mackay and N. Camps, of the preparatorial staff of the Museum. They arrived at Tanami on 15th May, and at the time of writing (22nd May) should be in the vicinity of Wyndham.

This is the most extensive expedition sent out by the Museum, and the thanks of Trustees and Staff—indeed of everyone interested at all in natural history—are extended to those who made the expedition possible. It is confidently felt that the additions to the State collections and the subsequent contributions to scientific knowledge resulting from research on the collections made by the Expedition will amply justify the assistance that has been so freely given.



The name Leatherjacket was brought by Cook's sailors from the West Indies. There are about sixty distinct Australian species, the one shown here (*Aleuterus monoceros*) was washed ashore at Maroubra after an easterly gale and is related to a West Indian counterpart.

G.P.W. del.

The Common Names of Fishes

By GILBERT WHITLEY

"... You have the air of a natural-historian
As though you were accustomed to handling birds'
eggs,

Or tadpoles, or putting labels on moths. You see?
The genius of dumb things, that they are
nameless."

Christopher Fry, *A Phoenix Too Frequent*.

HOW did our fishes acquire their common names? Their scientific names, of course, were bestowed by generations of naturalists according to a system laid down by Linnaeus nearly two centuries ago, but their everyday names are often much older. Obviously the vast majority are English terms and therefore descended from Old or Middle English, Latin or Greek, but some are very curious indeed, as if distorted echoes down the corridors of time from early European, Sanskrit, Hebrew, Phrygian or other ancient tongues.

From Arabic comes Albacore, meaning the young camel, heifer or pig. Portuguese gives us Groper, or garupa, perhaps from an American native word, just as Barracouta or Barracuda came from Carib

through Spanish. Spanish, too, are Anchovy, Bonito, Mariposa and Tuna. Carp, Nurse, and Shark are old Germanic words. From French we have Bream, Demoiselle, Gudgeon, Gurnard, Jack, Mackerel and Turbot. Flounder and Torsk are Scandinavian; Marlin and Snook are Dutch; Wrasse is Welsh and Porbeagle Cornish. Originally Hebrew were the names we use for Samson Fish, Jewfish, and Moses Perch. Tailor and Stingaree are as much American as Australian. And the etymology of some, even names as well-known as Pilchard, is uncertain.

The Australian aborigines had their names for fishes, of course, and still have in the more remote places, and some of these, even though tribes which invented them have become extinct or have "lost their tongues", are currently used in everyday speech. I need only mention the following: Barramundi and Burrumundi, Callop, Congolli, Luderick, Mia Mia, Morwong, Nannygai, Tallegalane, Tarwhine, Teraglin, Tupong, Turrum, Wirrah, Wobbegong and Wollomai. Perhaps also Mado,

Maray, and Cowanyoung, Bullrout and Fortescue, which may be corrupted aboriginal names, still used by Australian fishermen. Many other native names lie embalmed in published vocabularies or have died out unrecorded.

Apart from some Maori words (Hapuku, Mako, Kahawai, Terakihi), certain native names from other races have been adopted in Australia and, although they may sound aboriginal, such names as Wahoo, Ballahoo, Palu and Opan come from far-distant shores—Guiana, the West Indies and Polynesia.

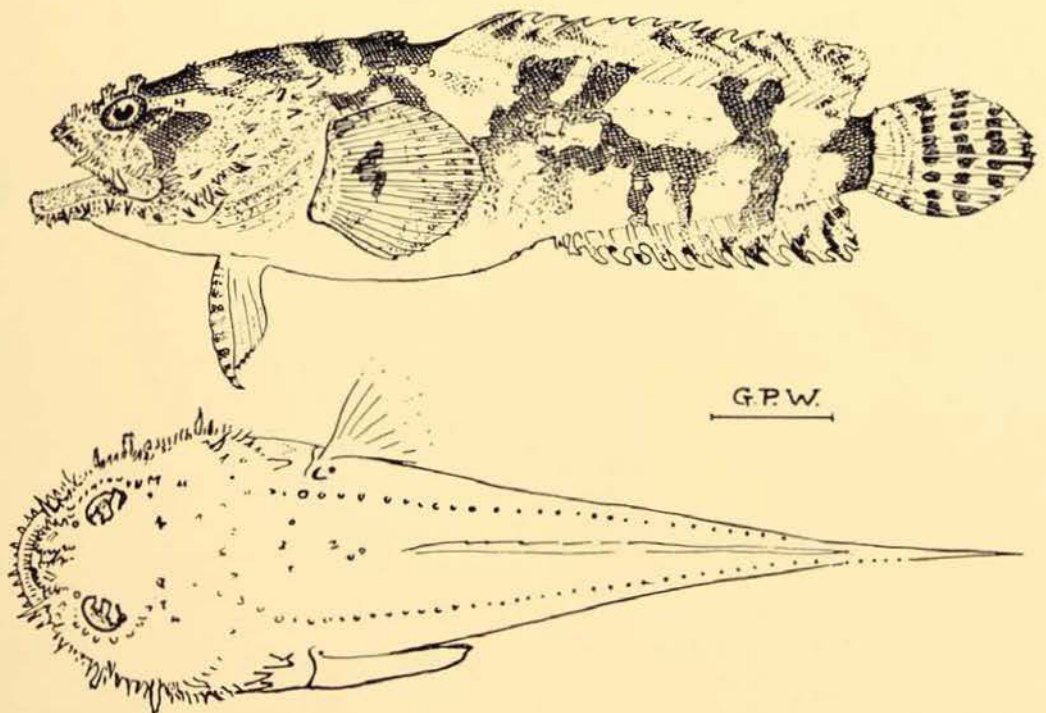
The early sailors—Dampier, Cook, and the first settlers—not only brought English names for our fishes from the motherland but also from the West Indies (Leather-jacket and Snapper) and the Spanish Main (Barracouta, variously spelt). The published accounts of Tasman, Tench, Collins and others mention the fish they caught long ago, but some of their names (Light Horseman, Five Fingers, etc.) are now obsolete.

In the 19th century the "currency lads and lasses" had coined new words, or perhaps corrupted some old aboriginal ones, for the novel antipodean fishes. The following is a selection of what are apparently "colonial" or Aussie names: Balmainer, Barber, Beardie, Butchers, Dingo Fish, Fiddler Ray, Flake (for fillets of shark), Government Bream, Gummy, Hardyhead,

Herring-cale, Jollytail, Jumping Joey, Maori (from the "tattooed" cheeks), Mouth Almighty, Nikkie Long Cod, Palmer, Poddy Mullet, Policemen, Roughy, Snotgall Trevalla, Spinefoot, Stranger, Sweep, Sweetlips, Trevally (originally from *caballus*, a horse), and Whaler Shark. There are also some slang words, and worse, used by fishermen, but they are outside the scope of *The Australian Museum Magazine*.

Who invented the extraordinary commercial names of various trepang or bêche-de-mer? And can entomologists or etymologists now trace the derivation of the rich vocabulary which children use to distinguish the various cicadas? Probably more than one person contributed towards the queer sequence of names for the stages of the Snapper—Cockney, Red Bream, Red Fish, Squire, School and Old Man Snapper¹. Is the Long Tom named after a piece of artillery or a gold-miner's cradle? It is a long, slender fish and so may have earned its name of its own right. Skipjack are fishes that leap, but a skipjack was also the wishbone of a bird to which elastic had been attached to make it hop about like a lively doll.

¹ See E. E. Morris, *Austral English*, 1898, under the now obsolete terms Cock-schnapper and Count-fish. The correct spelling is Snapper not Schnapper. It is probably the Light Horseman of Tench (1789).



Frogfish is easily explained. It looks rather like a frog in the water and even croaks like one. This species is *Batrachomoculus broadbenti* from Queensland.

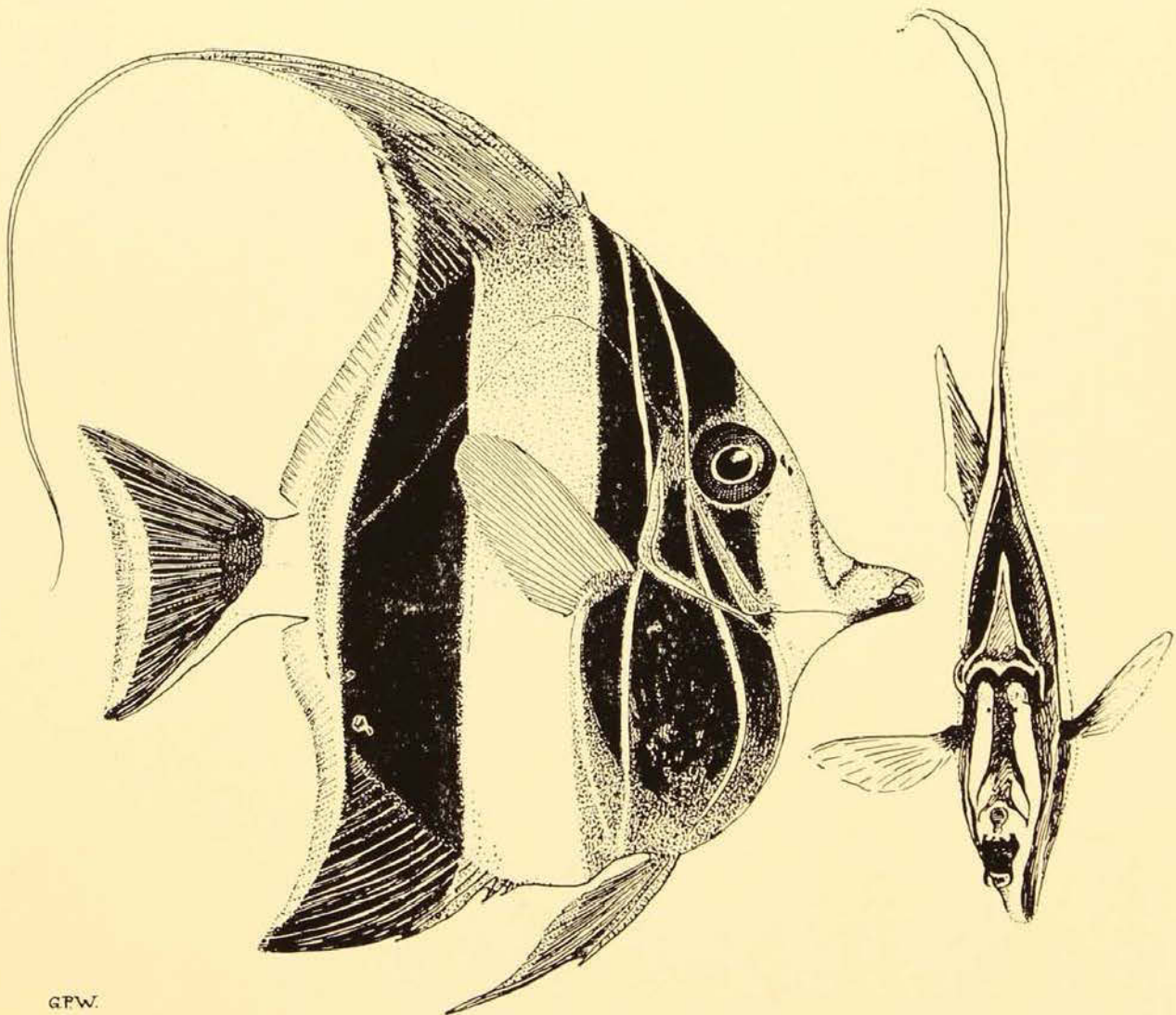
G.P.W. del.

Many of the "colonial" names are not in the standard dictionaries and to trace their origins and first usages would be fascinating to an etymologist. Some may be found in early newspapers and periodicals such as the *Sydney Mail*, in the long-shelved Reports of Royal Commissions and in the books and papers on our fishes from those of the "founders of Australian fish science"² (especially E. S. Hill, Castelnau, Tenison-Woods, Ramsay, Macleay, Ogilby) down to living authors. The Rev. J. E. Tenison-Woods (*Fish and Fisheries of N.S.W.*, 1882, p. 182) gave the first "Index of Local Names" and Professor E. E. Morris's "Austral English" (1898) is the first dictionary on historical principles of our Australian vernaculars.

²See THE AUSTRALIAN MUSEUM MAGAZINE, ix, 7, 1948, p. 242.

Ogilby (*The Commercial Fishes and Fisheries of Queensland*, 1915, p. 25) bestowed a series of military and naval names upon some Queensland fishes, so that we have, in addition to Grenadiers, Fusiliers and Hussars³, such members of the Emperor genus (*Lethrinus*) as the Duke, Admiral, Warrior and Lancer: finally, as a Parthian shot, Ogilby said, "I have christened this fine species the adjutant, because the only gentleman of that rank, with whom I was connected in a military sense, had a most praiseworthy posterior development, and Alleyne and Macleay's synonymic title *L. laticaudis* fits them both to a nicety." Thus new names are born. The Government Bream gained its title from the broadarrow brand on the side of young fish. Humbugs are named after the black and white striped

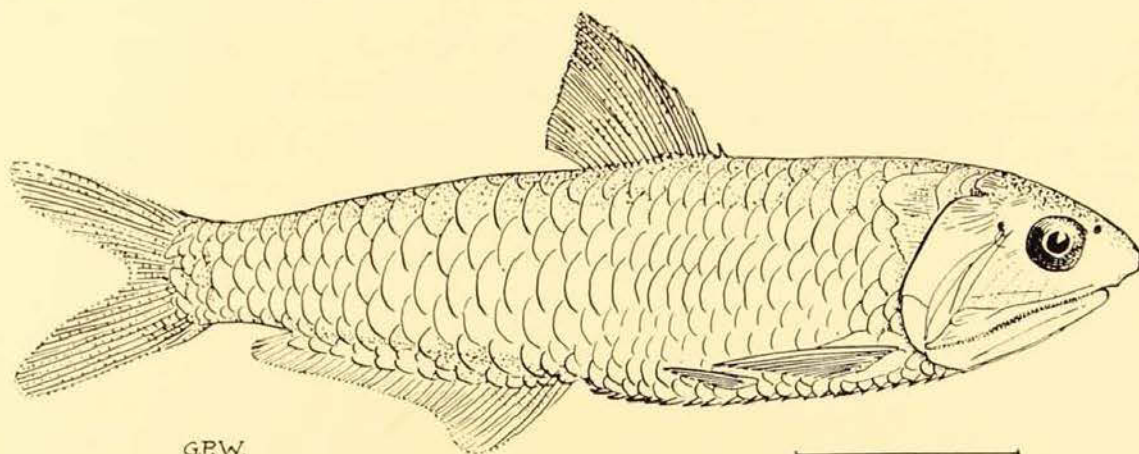
³From Hungarian and Old Serbian, related to corsair!



G.P.W.

A Moorish Idon (*Zanclus cornutus*) from Queensland; also front view of a living Hawaiian specimen. It does not live in Moorish waters but was revered by natives of the Moluccas.

G.P.W. del.



G.P.W.

This Anchovy (*Thrissina nasuta*) came from the Norman River, Gulf of Carpentaria, but its common name comes to us from Spanish.

G.P.W. del.

confectionery which they resemble. The Leadenall (*Auxis*) because of the "lead-pencil" grey shading of this Frigate Mackerel. Axe-handles are thin, usually diseased, Barracouta. A handsome black and gold-ringed marine perch is known as the Balmainer because it carries the colours of the Balmain (New South Wales) Rugby football team. When the trawlers caught marketable quantities of the snaky-looking King Barracouta (*Rexea*), the fishermen coined the term Barraconda for the fish, perhaps a telescoping of barracouta and anaconda. The aboriginal word Burramundi was soon debased to Barramundi, through word-contagion (etymologists call it the law of Hobson-Jobson) with Barracouta—originally the West Indian barracuda. Children in Western Australia lure to their hooks the greedy little large-mouthed *Apogon ruppelli* which they call Gobbleguts, a name quite distinct from gobbledegook or jargon, which is, fortunately, absent from the christening of fishes. A False Scorpion Fish (*Centrogenys*), which has tricked several ichthyologists into regarding it as a new kind of scorpion fish when it is really a percoid, I have termed the Pons Asinorum.

Proper names have a dignity of their own: Murray Cod, Macquarie Perch, Derwent Smelt, Port Jackson Shark, Thetis Fish, named after a ship, and even Sergeant Baker, whose name commemorates some rubicund member of the First Fleet, not otherwise immortalized; but dignity is discarded by the Pieman Jollytail, a delightful name for a troutlet native to

the Pieman River, in Tasmania, albeit the original pieman was a cannibal convict⁴. Some of the early Van Diemenslanders invented striking names: one fish, with sharp-edged cheek bones, was termed the Barber and the man who gave it its scientific name perpetuated the idea, so that it is still *Caesioperca rasor*. It seems a pity, though, that the Pig-faced Lady of Mrs. Meredith's "Tasmanian Friends and Foes" has been superseded by the more prosaic Boarfish. Generally scientists bestow ponderous or colourless popular names, the choice of the people is often better, but sometimes a scientific name is transcribed into English and adopted: Ceratodus, Atherines, Fierasfer, and Gobies, or a long one like *Belonepterygion* becomes Bella.

A few names seem to call for special mention:

Dolphin.—This name is used for a fish (*Coryphaena*) as well as for a mammal. William Beebe wrote: ". . . I shall hereafter call the fish *Dolfin*, and the mammal *Dolphin*—thereby alleviating at least optical if not oral or aural confusion." The ancient name dolphin has been variously spelt through the centuries, and applied to very distinct objects.

Halibut means a holy flatfish, because it was mainly eaten on holy days.

⁴ T. Dunbabin in J. Moore-Robinson's *Record of Tasmanian Nomenclature*, 1911, p. 68.

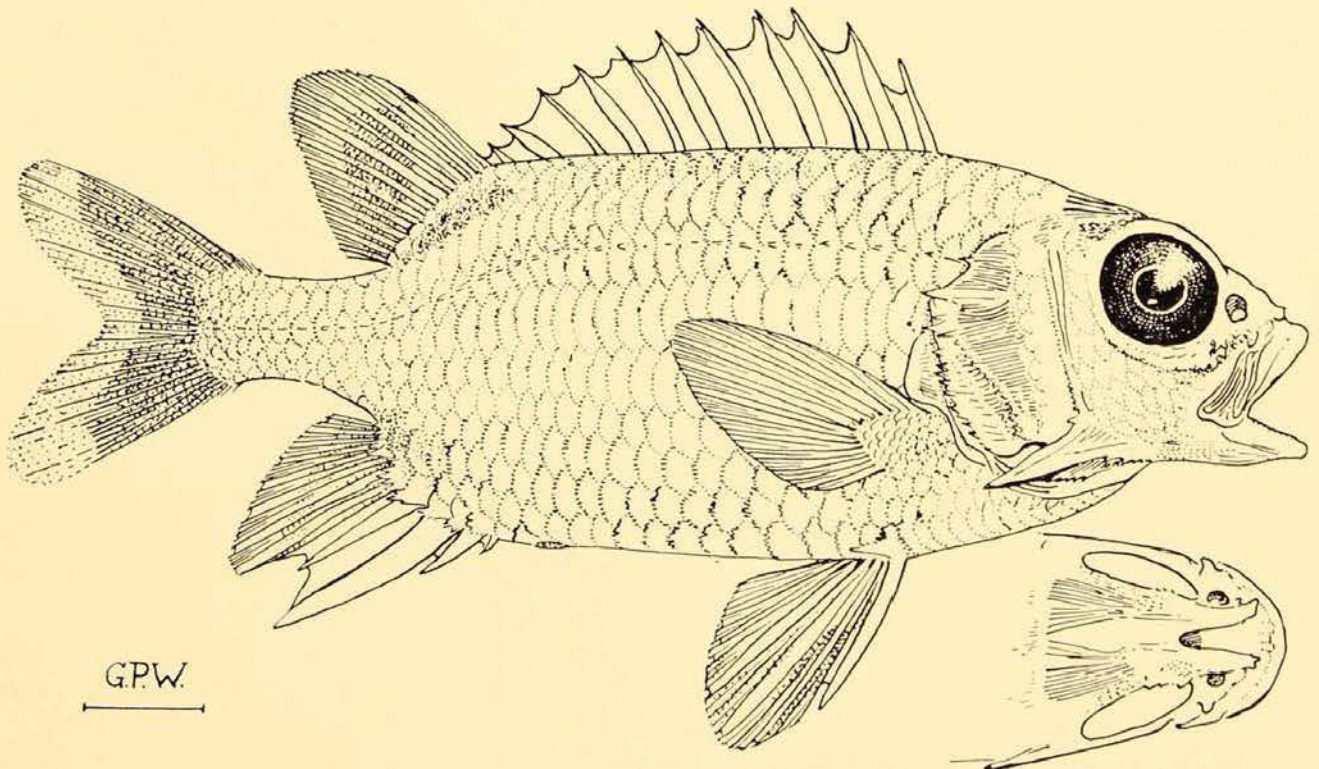
Jackass Fish.—The term Jackass in Australia connotes the Kookaburra, *Dacelo novaeguineae*, but in England and America refers to a Donkey. Thus the term Jackass Fish, applied to one of our Morwongs, doubtless originated from the dark shoulder stripes, like those of a donkey, on the grey ground-colour. Since about 1935, some retail fishmongers labelled its fillets as Sea Bream, a piece of chicanery which has received too much official sanction.

John Dory has suffered much at the hands of those who would explain his name. The French phrase *jaune dorée*, golden yellow, has been suggested as one source, but Gunther (*Study of Fishes*, 1880, p. 451) regarded it as a corruption of the Gascon *Jau*, a cock, plus *dorée*, "so that the entire name means Gilt-Cock. Indeed in some other localities of Southern Europe it bears the name of *Gallo*," or rooster, from the crest of comb-like dorsal spines. However, such explanations are dismissed as ingenious trifling by the authoritative Oxford English Dictionary, which shows that the fish was known as a Dory for 300 years before the addition of John to its name, possibly through a popular song, printed in 1609, concerning

the career of one John Dory, captain of a French privateer.

The *Moorish Idol* is not found in Morocco, so why *Moorish Idol*? Renard, in 1754, illustrated this curious fish under the Dutch and French names "Moorse Afgodt. l'Idole des Paiens", and a better translation would be Native Idol, the term moor or blackamoor in an old sense meaning a negro or native of India or the Indies rather than strictly a Moroccan. Renard was writing of natives of what is now Indonesia when he said, "when these poor folk see it in their nets, they drop to their knees and put it back in the sea with devout songs and extraordinary postures." The name Moorish Idol has been copied in fish books as slavishly as the natives' genuflected and paid their marks of respect for it. The French called it *Tranchoir* or *Zanclus*, a trencher or platter, from its shape; it was also known as Sea Heron and by various native names.

Nannygai.—This is the modern spelling of the word, which seems to have come from a longer aboriginal phrase. Oliver (*Industrial Progress of New South Wales*, 1871, p. 785) quotes *Moora nennigai*, apparently soon altered to *Mura ngin a*



A Squirrel Fish (*Holocentrus* sp.) from Queensland. The long anal spines (lower left) and the spikes on the head are like cobblers' awls, hence (see article) the name Squirrel Fish.

G.P.W. del.

gai or Mother nan a di (E. S. Hill, *Sydney Mail*, March 18, 1871, p. 89), the nannagai, nannegai, etcetera of later authors.

Squirrel Fish.—This is a member of a family of brilliant rosy or burnished or striped fishes. I do not know why they are called Squirrels unless their anal spines, which are long, strong and pointed, suggest a cobbler's awl, a cobbler having once been termed a squirrel. There seems no connection with the fascinating little mammal whose name is derived from Greek words referring to the shade provided by its bushy tail. The early colonists of America invented the name Squirrel Fish for one of their species; others have been given native or Spanish names meaning soldiers, matadors, cardinals, red men and even Christian singers!

Returning to Australia, and our names, confusion inevitably arose, firstly when Australian fishes were called Whiting, Salmon, Bream, and so on, when they were not related to their English namesakes, and later when terms such as Cod, Jewfish, Kingfish, Yellowtail, etc., were loosely applied to different fishes in our various States. No wonder that the Rev. J. G. Wood—in his biography of Charles Waterton—remarked, "In Australia, the nomenclature of the colonists looks like zoology gone mad." Much more recently our South African friend, K. H. Barnard, has added, "British and Continental ichthyologists are rather conservative in the matter of names, the Americans a little less so; and the Australians are distinctly nationalistic, maintaining that their fishes are different from anyone else's fishes and deserve to have their own special names." A plea for more uniformity in the vernacular names of our fishes was made in 1911 by Mr. D. G. Stead, but the most encouraging step was taken in 1947 at an interstate conference of fisheries officials in Sydney, when the names

of about forty common Australian food-fishes were standardized⁵. Two years before, the North Queensland Naturalists' Club published a useful list of "Marketable Fish of the Cairns Area," stabilising the names of many tropical species. There are still occasions when fish are misnamed in fish-shops but the vigilance of health authorities succeeds in preventing many intentional frauds as, for example, when inferior fish or fillets are labelled with the names of choicer species. Sometimes a switch of names is made deliberately, even by people who should know better, for example, a recent book calls the Red or Kumu Gurnard the Latchet, in spite of the fact that the Cocky Gurnard (*Pterygotrigla*) had been called Latchet—originally an old Grimsby fish-market word, by the way—for many years.

I have been unable to identify a few odd fish names. Cad and Sennet are Queensland fishes, the former from the Burnett River. The Lug may not be a true fish at all; it hails from Victoria. The Puddinba (corrupted to Pudding-ball) is a mullet-like fish of Queensland. Any reader catching one of these is invited to present his cad, lug, pudding-ball, or what-have-you to the Australian Museum, so that the scientific name can be associated with the ordinary one.

There are really not enough names to go round, and new ones have to be invented when required. With the arrival of New Australian migrants, a fresh batch of European terms is being injected into the language, but the day is probably distant when we shall have standard, suitable, names for most of the 2,200 different species of Australian fishes.

⁵ Vernacular names of plants were stabilised by a guild of gardeners about 1724 because patrons purchased under another name a plant they already possessed, and denounced the unfortunate nurserymen as Knaves and Blockheads (Blunt, *Art of Botanical Illustration*, 1950, pp. 133-134).

Australian Insects, XLVI

Coleoptera, 23.—Malachiidae and Dasytidae.

By KEITH C. McKEOWN

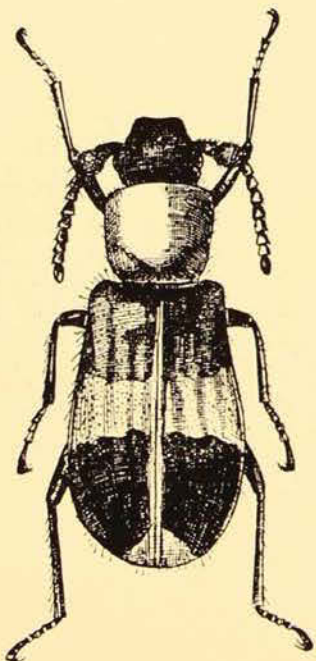
THE beetle families Malachiidae and Dasytidae, like the Lampyridae, Lycidae and Telephoridae, have been subject to considerable difference of opinion among experts concerning their correct scientific position in the order and the naming of the families. The name Melyridae is as often found in the text-books as Malachiidae. Tillyard uses the first of these names, and includes the genus *Dasytes* in the family; many workers, however, raise this genus to the rank of a family, the Dasytidae, of which the Melyrinae becomes a sub-family. Tillyard considered that the two families discussed in this article were closely related to the Lampyridae, or fire-flies; Imms considered them to be related to the Cantharidae, or blister beetles—but his Cantharidae also included the Lycidae, Lampyridae and Telephoridae. In the face of such disagreement, the classification adopted here may well be as correct and convenient as any other; it follows that used by M. Pic and J. Greiner, in the *Coleopterorum Catalogus* (Junk), published in 1937.

Many of the insects included in the Malachiidae are small beetles of rather stout form and superficially somewhat resembling the common Chrysomelid pest, the Pumpkin Beetle (*Aulacophora hilaris*), but the colours of the Malachiids are richer and with metallic tints; others are elongate and slender and frequently of rich metallic blues and greens. The venation of the hind-wings differs from that of all other families: the abdomen has five visible segments, and protrusible vesicles are present on the sides of the thorax and abdomen, but their purpose is not known. In *Laius* the elytra conceal the abdomen; in other genera they are greatly abbreviated and the greater part of the abdomen is exposed when viewed from above. Their integument is generally soft.

Some two hundred and fifty species of Malachiids have been described from Australia; these are included in seven genera, *Carpurus* Er., *Neocarpurus* Lea, *Helcogaster* Boh., *Balanophorus* Mael., *Malachius* Fab., and *Laius* Guér.

Nothing is known of the life-history and immature forms of any of the Australian species, nor is any information available concerning these details in overseas forms—except that the larvae of *Malachius* are said to resemble those of *Cantharis*.

In *Laius* certain members are vegetarian in their diet and one species, at least, is of economic importance. On the scanty evidence available some species in other genera appear to be carnivorous; others are possibly scavengers. Until more exact information is available, however, no more definite statement on the nature of their food is possible. These speculations are supported by the evidence of overseas observers, who claim that some are "predaceous upon wood-boring larvae, whereas



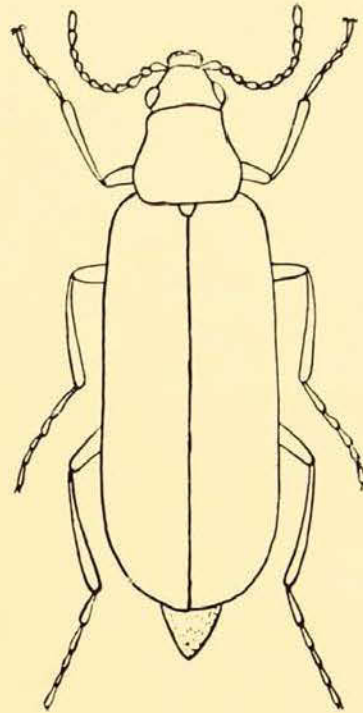
A typical Malachiid beetle (*Laius bellulus*), banded with blue and yellow.

After McKeown.

others subsist upon soft-bodied insects and other small animals living in protected places. Some species are considered to be scavengers, feeding upon dead insects." (C. P. Clausen.) *Laius femoralis* Blkb., in its adult stage, attacks rice while the grains are still soft and in the "milk" and "dough" states, eating out the contents and leaving only the empty husks still attached to the plant. It is a serious pest on the Murrumbidgee Irrigation Areas, New South Wales, and its depredations in the crops are by no means inconsiderable. Owing to the nature of the cultural methods necessary in rice growing, the control of such a pest presents very considerable difficulties. The beetles also attack both ripe and green pome and stone fruits while still on the trees. It is probable that its native host-plant is a sedge (*Cyperus*.)

In the genera *Carphurus*, *Neocarphurus*, *Helcogaster* and *Balanophorus* the insects are slender and with very soft integument; the wing-covers or elytra are greatly abbreviated leaving the greater portion of the abdomen exposed. In general appearance they resemble small Telephorids, which they also resemble in their bright and often metallic coloration. In *Hypattalus* and *Laius* the elytra cover the abdomen, and in *Laius* the integument is, in comparison with that of other members of the family, stout. The males in *Laius* have the pedicel of the antennae almost completely hidden by the greatly swollen and distorted third segment. This seems to attain its greatest development in *L. nodicornis* Blkb., and *L. tarsalis* Lea. The antennae in *Balanophorus* are beautifully branched and comb-like (flabellate) in the male. In this genus, also, both sexes bear a comb-like structure on the first segment of each fore tarsus (foot); its purpose is, however, obscure. The structure of the Malachiidae and the purpose of the apparent abnormalities is deserving of detailed study.

The largest member of the genus *Laius* is *L. major* Blkb., found in north-west Australia, which measures 7/16ths of an inch in length, and is orange-coloured with a black basal spot and a black crescent-shaped sub-apical mark on each elytron. *Laius femoralis* Blkb., mentioned above as a pest



A New Zealand member of the family Dasytidae (*Dasytes anacharis*), typical of this group.

After Tillyard.

of rice, is banded basally and apically with rich metallic blue on a ground of orange; it measures 10 mm. in length. This insect has a wide distribution in Australia. Apart from its larger size, this species is very close to *L. cinctus* Redt. With the exception of a few species, as *L. purpureipennis* Lea and *L. alleni* Lea which are wholly metallic blue, the black, or blue, and yellow coloration described is basically typical of the majority of species of *Laius*.

Carphurus cyanopterus Boh., measures up to 12 mm. long in the female, with the male considerably smaller; the thorax is orange-yellow, the elytra deep metallic blue, and the exposed abdomen black. It is one of the largest members of the slender genera, although *Balanophorus mastersi* Macl. is close to it in size, with the thorax and basal portion of the parti-coloured elytra yellow, while apex and abdomen are black. The species of *Helcogaster* although generally similar in coloration to their larger relatives measure little more than 4 mm. long. *Hypattalus* is more like *Laius* in form, with the elytra unicolorous and the thorax yellow.

The family Dasytidae includes two sub-families, the Melyrinae and the Dasytinae. The latter contains the only Australian members of the group, thirteen species of

which are placed in the genus *Dasytes*. They are small unicolorous blackish insects, somewhat resembling *Laius* in form and measuring about 3 mm. in length, or

smaller. On account of their small size and dull appearance, they usually escape notice, and there will almost certainly prove to be more species than the figure suggests.

A Note on Soldier Beetles

By KEITH C. McKEOWN

SINCE the account of these beetles in the series "Australian Insects" (AUSTRALIAN MUSEUM MAGAZINE, x, 9, March, 1952) was written, further information concerning the invasion of Sydney suburbs and other localities has come to hand, and a great deal of interest has been aroused by their appearance.

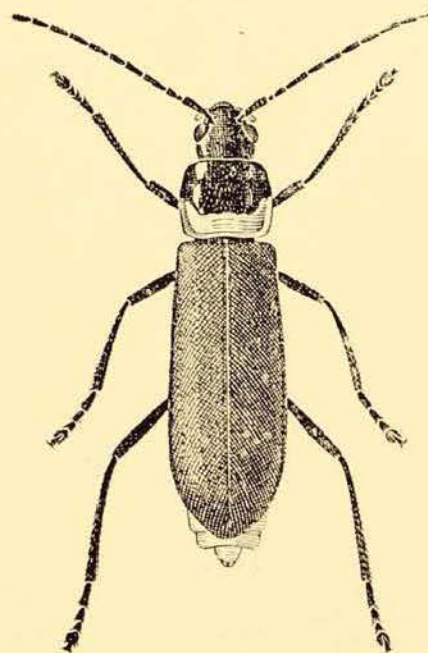
As previously reported, the Soldier Beetles (*Telephorus pulchellus*) had been extremely plentiful in the bush and in gardens in the Northern Suburbs, swarming in incredible numbers upon the vegetation. This invasion continued throughout the period from November, 1951, to January, 1952. Although the insects were still present in these areas in March, 1952, they were apparently in reduced numbers, and had largely ceased to attract popular notice.

On 22nd March, 1952, I noticed a few of these insects flying about in Rusheutter's Bay Park, and on the morning of the 24th reports were received that an invasion of the insects was in full force in coastal areas to the south of Sydney. So thick and fast did these reports come in that four were received within ten minutes, and inquiries continued throughout the day.

The beetles were massed in gardens at Bondi Heights where, it was reported by *The Sydney Morning Herald*: "Since Saturday occupants of homes there have had to keep their doors and windows closed while they brushed away the beetles which swarmed under the eaves, around windows and on brick walls.

"In places they were wriggling masses, inches deep. Buckets of them have been swept up and tipped over the cliff into the sea."

At Dover Heights they were said to be so densely massed that they were breaking down the stems of flowers in the gardens. In some areas the first sign of the invasion was when swarms of the insects flew down the streets "with a loud buzzing noise", and surrounded passers-by and busy housewives with a whirling cloud. Large swarms of the beetles were encountered by the minesweeper H.M.N.Z.S. *Kiwi* as she entered the harbour. By mid-day on the 24th stragglers were to be observed flying about the city parks.



The Soldier Beetle, *Telephorus pulchellus*.

After E. H. Zeck.

Cronulla was the most southerly area from which the beetles were reported. Here Mr. Reg. E. Jones described how on the 16-18th March, they had swarmed upon potato and oak-tree foliage in particular, but millions were congregated upon buffalo-grass and hydrangea bushes. They have been recorded as far west as Cowra, New South Wales.

It was reported in one instance that the beetles "might have damaged potato

foliage", and in another it was claimed that they had destroyed the blossoms on bloodwood trees. In the latter case the weight of the massed insects might have caused some injury to the delicate blooms—but in neither instance was confirmation forthcoming. There seems no reason to suppose that the insects are other than carnivorous with, perhaps, a little nectar to vary their diet.

Folklore of the Coconut

By MELBOURNE WARD, F.R.Z.S., F.Z.S.

THE Ocean, restless and heaving, carries an amazing number of voyagers on its blue surface, not only creatures which are its own children but also flotsam and jetsam swept by strong seas from islands and continental shores. Logs and branches of trees suddenly appear as the ship rolls along over the endless waves and the sight of a bobbing coconut far away from its place of origin conjures up visions of placid green lagoons fringed with gracefully bending palms, like a group of figures awaiting the music which would sweep them into some strange dance, their tousled heads of leaves hanging over the mirror-surface of placid waters. Whence came the coconut, to what land do we owe its origin? Ask of the winds that toss the flying crest of the waves, or the foraging gannets as they circle round the bobbing brown nut so far from shore, or better still enter into the world of folklore among the brown men who live on the shores of the palm girt islands. Their age-old ideas may give a clue and, even if the quest end in stalemate, at least the experience in the world of south sea imagination will more than repay the effort necessary.

Firstly then let us visit Fiji and here we find native poets referring to the coconut as "The water that trembles in the breeze."

In many islands of the Pacific at the birth of a child a coconut is planted and the number of joints in the stem will denote the number of years promised to the newly born. The ancient Polynesian voyagers made a primitive sextant from the hard shell of a coconut in the form of a cup with holes bored a measured distance below the rim. Having partially filled it with water, the voyager held the cup before his face and peered through one of the holes tilting the cup until the water spilled out through the opposite hole and he could see a particular star seated on the rim of the cup.

In the south seas generally, and Polynesia in particular, the coconut was used for divining purposes. Probably the reason lay in its alleged origin, it being said to have originated from the head of a man, the marks on it giving it a remote resemblance to a human head. And this may also account for the belief in Micronesia that, although people move about incessantly under palms and the nuts are constantly dropping, they purposely never strike a person on the head.

In New Guinea the sorceresses used the coconut shell to concoct their magic medicines, and I have one such in my collection. It is strangely carved and supplied with rattles to aid in the efficacy of the potion. According to the Tami Islands on the north side of New Guinea, the coconut originated when a very successful fisherman, with a special secret method of catching his fish, was spied upon by his wives. They were shocked to find that he actually dipped his head into the sea so that the fish would crowd around it. His wives cried him shame and so he sat with his head resting on his knees and disappeared into the earth and from that spot where he sat grew the first coconut palm.

On the island of Dobu they believed in a spirit coconut tree and as each new arrival reaches the portals of the other world, a coconut falls from the Palm, a different variety of nut falling according to the Totem of the entrant to the spirit world. There is a well-known list of such varieties and their totem allocations for the purpose. In Samoa, a coconut tree grew near the Entrance to Puluotu, or World of Spirits, and this tree was commonly called the Tree of the Watcher; should a spirit strike against it, it had to go back into the body for another term of worldly existence and the natives rejoiced at his return from the gates of Death saying, "He has come back from the Tree of the Watcher."

The myth of the coconut derived from an eel lover is found commonly throughout the South Seas but has not appeared in Hawaii. At Tahiti there are two versions. In one, Hina, whose gods are sun and moon, is married to a chief who has an eel body. She flees to the god Maui for help. He baits his fishhook, the eel swallows it, Maui cuts up the body and gives the head to Hina to take home and plant. Hina forgets and puts the head down while she bathes at Pani and the head sprouts into a coconut. Her daughter carries the head to the Tuamotu group at Taka-Coro in the Atoll of Ana whence the plant spreads.

The second version tells of Taitua, who bathes in the stream Ieohu in the depths of Vaiai. She plays there with an eel. It pursues her and she runs away. A trap is made for it and the eel is caught. At night it tells her in a dream to bury the head and from this springs the coconut tree.

On the island of Upolu in the Samoan group there was a village called Laloata, meaning "under the Shade", which had its origin as follows. . . . Pai and his wife lived there and had a daughter called Sina. The woman went down to the sea one day to fetch salt water for cooking purposes; a small sea eel stuck to her water bottle and she took it home as a plaything for her child Sina to feed and keep in a cup. The eel grew, and then they excavated a well for it. One day Pai and his wife returned from some plantation work and found Sina crying because the eel had bitten her. They concluded that it must have become the incarnation of some cruel god and determined to go away from the place.

Away the three went eastward but, on looking around, there was the eel out of the water and following them. Then said the father to his wife and Sina: "You make your escape, and I will remain here and raise mountains to keep it back." Sina and her mother went on ahead, but on looking back, there was the eel again still rustling after them. Then the mother said to her daughter: "You make your escape alone, and I will remain here, raise mountains and intercept the creature." Sina went on alone but the eel still followed as before. As she passed through the villages the people called her in to rest and have a bit of food, and once and again she offered to do so on condition that they would try and deliver her from the pursuing eel. When they heard that, and saw the creature, they said: "Oh, no, you had better pass on; we are afraid of that thing."

Sina gave it up, thought escape was impossible, turned around and made for her home again. As she passed through one of the villages to the east of Apea the people called the attention of their chief

to the young woman passing, and an eel following her. He told them to call her in to have something to drink. She said she would gladly do so if they would only get rid of the eel. The chief called out to her, "Yes, come in, we can do that". She went into the house, and the eel remained outside. The chief gave orders to get ready a cup of ava for the strangers, and quietly whispered to the young men to go off to the bush and bring all the poisonous things they could lay their hands on to mix with it. Soon the bowl was brought in, and the ava declared ready to be passed around. "Give the first cup to the stranger outside," said the chief to the young men; and out went one of them to the eel, with a cup which was at once eagerly drunk. But immediately the creature called to Sina to go outside, and when Sina went out it said to her: "Sina, I am dying. Let us part in peace. When you hear that they have cooked me, you ask the head as your share. Then take it and bury it near the stone wall, and it will grow up into a coconut tree for you. In the nuts you will see my eyes and mouth and so we shall be able to look at each other face to face still. The leaves of the tree will be shade for you, and you can plait them into mats, and make a fan also to fan yourself."

After saying this the creature died. It was soon in the oven, and when served up by and by Sina begged the head, took it home with her and put it under the ground near the stone well. It grew up to be a coconut tree and she got her leaves, and mats and fans and nuts marked with the eyes and mouth of her departed eel, which she could still kiss and hence the origin alike of the name of the village, Laloata, and of the introduction of coconuts.

In Tonga the heroine's name is Hina and much the same tale is found. Further off in Nangaia, a young woman named Inamoe-aitu, which means "with a god lover," is wooed by the eel Tuna. It sends a flood and floats to her home, bids her cut its head off and plant it, whence comes the coconut. The variant from Tuamotas tells of Tuna living in a lake Vaihiria on Tahiti. Hina is his wife. Maui abducts her, Tuna

follows, is destroyed by Maui and from his head springs the coconut palm.

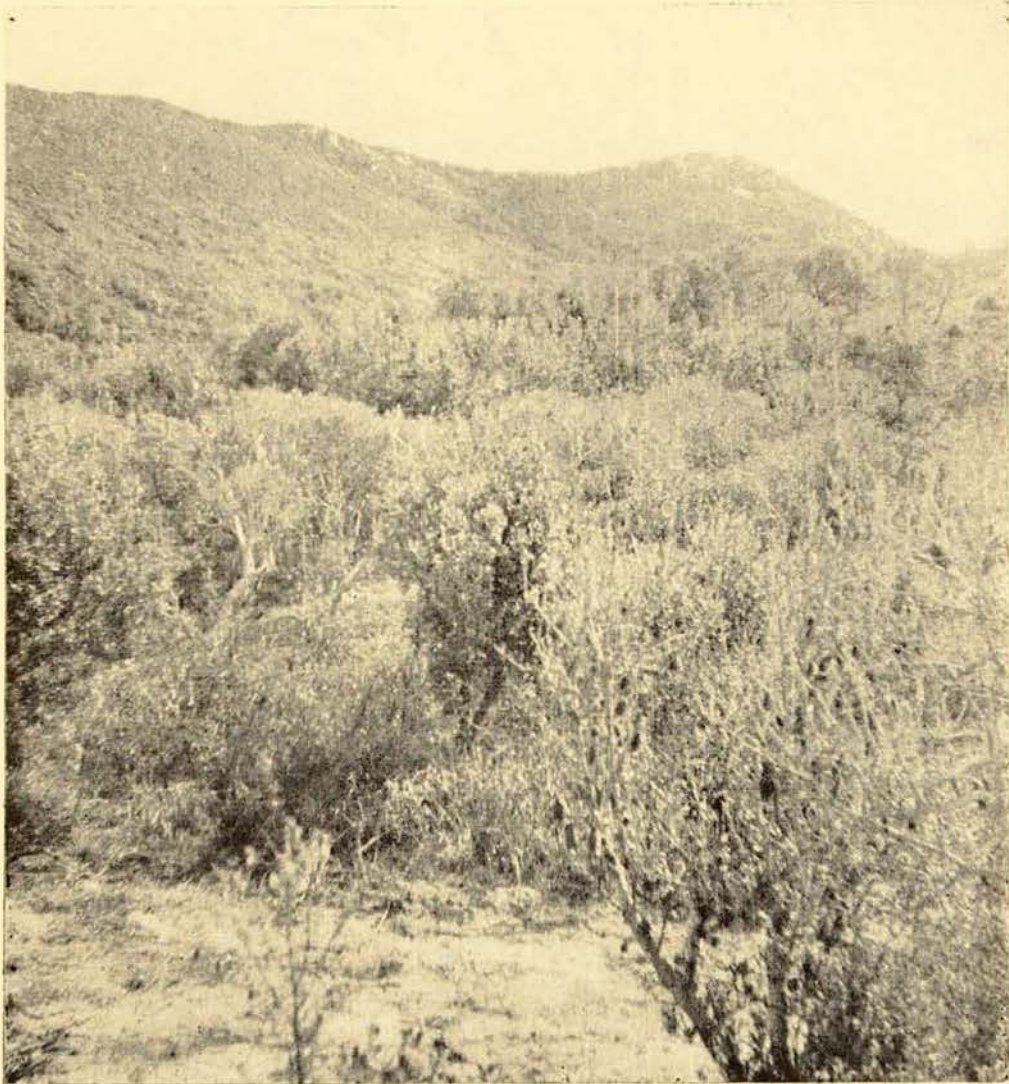
In Pakahina on the other hand, Tehu, son of Tetahoa and Teahui, six generations ago brought the first coconut to that island from Tahiti or one of the western islands in the boat named Kagau.

From the island of Pukapuka the following legend has been collected. The wife longs for a certain strange fish and the husband brings many kinds none of which is the right one. Finally by uttering a charm he hooks Tuna the eel who tells him to plant its head and give the body only to his wife. From the head grows the coconut tree which bears two coconuts on the top branch, three on the next branch, four on the next, and so on. The husband tosses the nuts in the air to each of the islands in the eastern and western Pacific but forgets Pukapuka in the middle. So a hard, dry nut is left and it is hard to grow nuts on Pukapuka.

Nearer home in our own Torres Strait the coconuts were said to have been placed on the islands by chance when the New Guinea giant Si flew from island to island. While a portion of this legend does not directly concern the coconut it is of interest to anyone who may go out to the outlying islands of Murray and Darnley. An outstanding feature on the reef flats at both islands are extraordinary rows of stone walls built in such a way as to form traps to catch fish which may cruise over the walls on a falling tide to find themselves suddenly caught in the compounds of stones. The origin of the traps is shrouded in the past but it is said that they were made by two heroes, Abob and Koss, whose mother was kidnapped by the giant Si, responsible also for coconuts.

The Indian Ocean region had its own special nut which, although not a true coconut, yet was known as the double coconut or coco-de-mer.

And so where did the coconut come from? Ask the silver and blue flying fish as they flash with iridescent wind-rustled wings, from the steep walls of waves. Or the clouds advancing across the vault of the heavens to sink far off over the edge of the tumultuous ocean world. These and many other voyagers may know. I know not.



Brush-covered dunes, North Stradbroke Island.

The Largest Sand Dunes in the World

By J. F. LOVERING, B.Sc.*

"The largest sand dunes in the world? They would be in the Sahara desert. No, wait a minute! They are sure to be in America somewhere—in one of their deserts," says the man on the quiz programme. But he is wrong. The largest sand dunes in the world form the great sand-range islands off the Queensland coast immediately east of Brisbane. Moreton and Stradbroke Islands are the largest and together they form Moreton Bay.

Stradbroke is 35 miles long and divided into two islands, North and South, by a channel, while Moreton is 25 miles long.

The sand-ranges have been formed by the gusty south-east winds piling up sand dunes to immense peaks more than 800 feet and up to 900 feet high—the largest dunes in the world. But to-day they are "senile" and no longer grow, their peaceful old age assured by the protecting covering of shrubs, grasses and stunted trees.

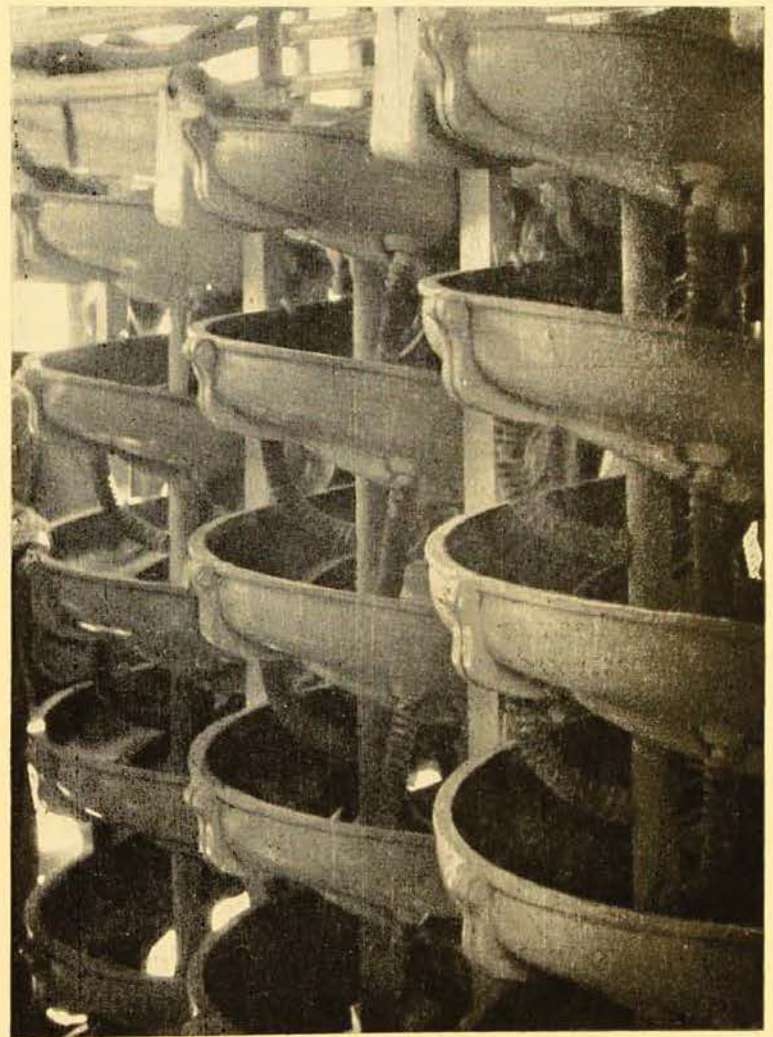
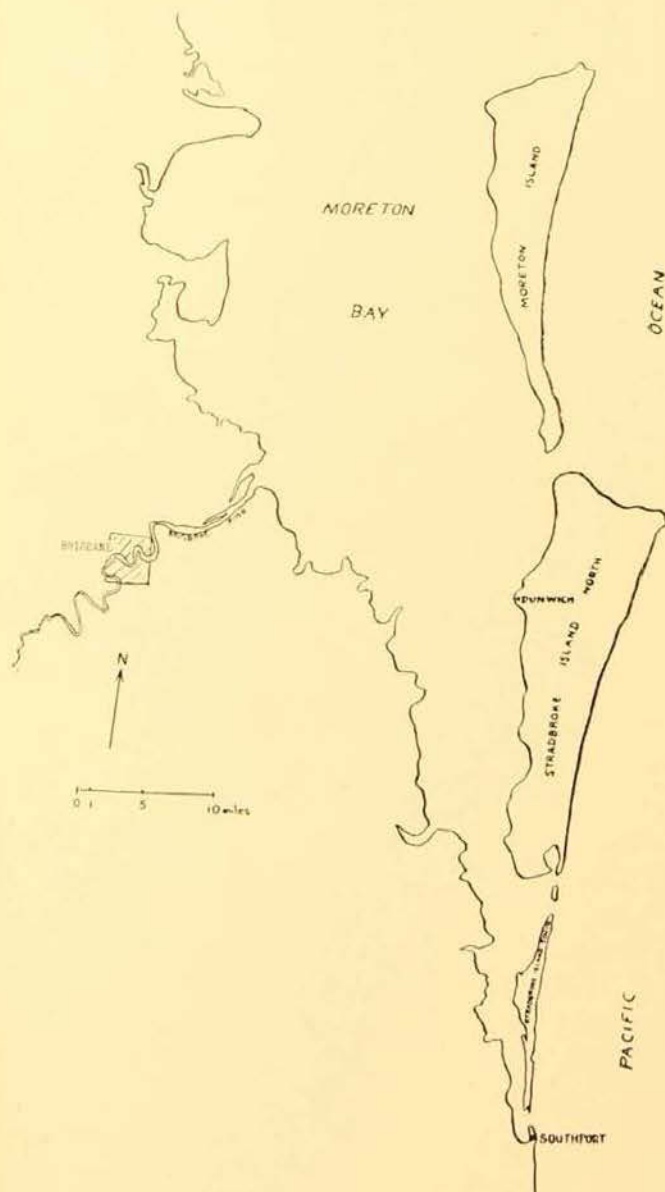
* Photographs by author.

Fresh water lakes fill hollows between dunes and give a sense of calm where once the turbulent winds built mountains.

The islands were prominent in the history of the settlement of Queensland, but to-day their chief claim to fame is the deposits on North Stradbroke Island in particular, of economically valuable minerals in the sands of the dunes. Along with other deposits of the south coast of Queensland, the "heavy" minerals ilmenite (iron titanium oxide), rutile (titanium oxide) and zircon (zirconium silicate) have been naturally concentrated in black seams in the white quartz sand by the action of waves and wind.

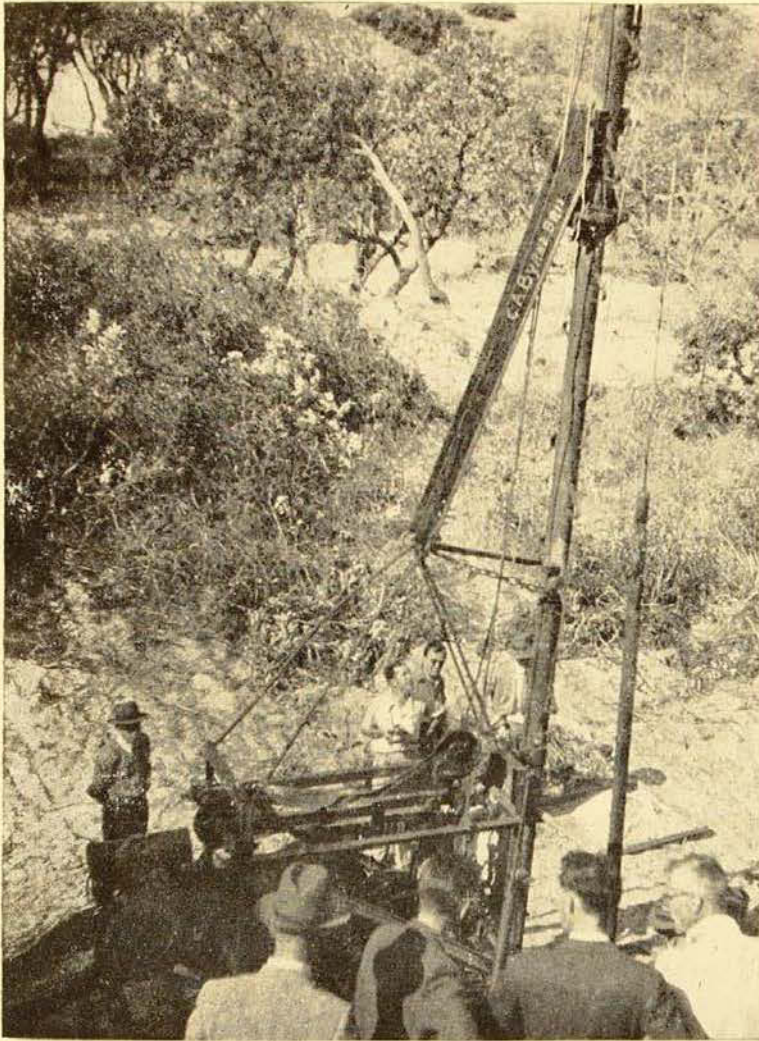
The seams are usually themselves banded with an overall thickness of about 3 feet and are quarried in shallow open

cuts by bulldozers. The natural concentrates contain much quartz sand when quarried, and are therefore sent to a plant for further concentration. At present this process is usually carried out on Wilfley tables which are vibrating tables with shallow parallel grooves over which water flows. The action of the vibrating table is to concentrate the heavy minerals at one end and allow the lighter quartz sand grains to be carried away by the water at the other end. A better method now being used employs the Humphrey's spirals which is delightfully simple in operation and has no moving parts. The natural concentrates are allowed to move down an arrangement of semi-circular section cast-iron spirals by gravitational



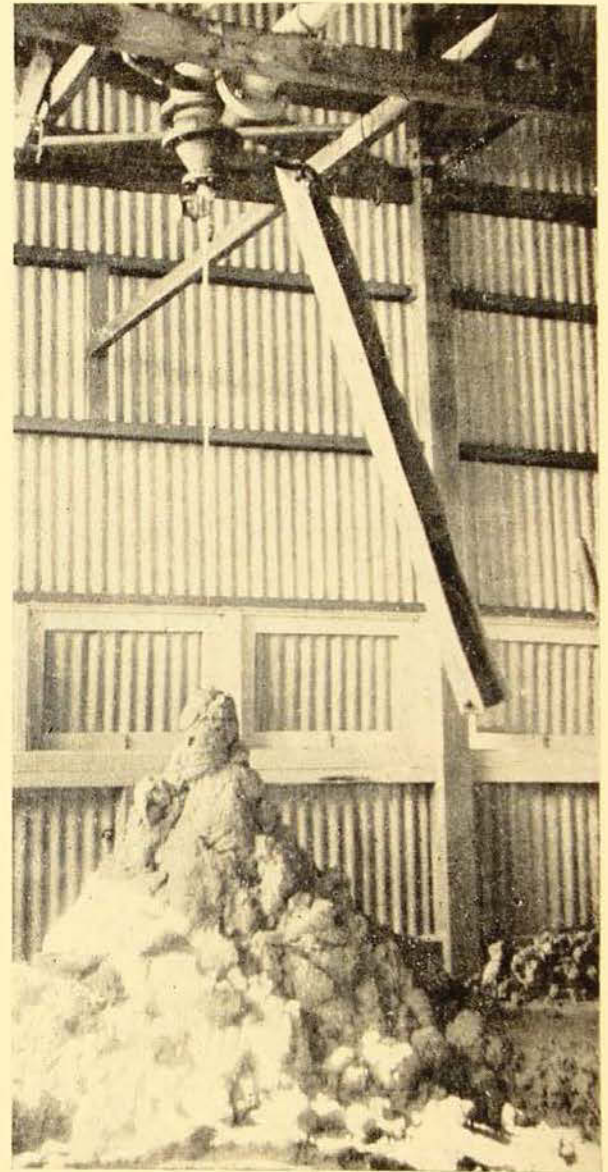
Above—A Battery of Humphrey's Spirals.

Left—Sketch Map of Moreton and Stradbroke Islands.



Left—Boring Apparatus—prospecting for new deposits.

Below—Piling the concentrate from the cyclone de-waterer.



force. Water is added from the inner edge of the spiral, and as the grains move down the lighter ones of quartz move to the outer edge and are periodically trapped by holes in the base and so removed while the heavier grains of ilmenite, rutile and zircon keep to the inner edge and, as they progress down the spiral, the separation approaches completeness. These concentrates are now associated with a lot of water and are passed through a cyclone de-waterer which removes the water and returns it to the concentrators while the relatively water-free concentrate drops down and piles itself in conical stacks from which it is removed and dried in rotary kilns.

The now dried concentrate is passed through magnetic separators of first low and then high intensity to remove any strongly magnetic iron oxide grains and the weakly magnetic ilmenite grains respectively. The rutile-zircon rich product is

then passed through electrostatic separators charged at a very high voltage. The grains of rutile and zircon are attracted to oppositely charged plates and a separation into high-grade products results. Careful regulation of the processes gives rutile concentrates of 98 per cent. plus titanium dioxide and zircon concentrates of 99 per cent. plus zircon.

The products are sent to consumers—rutile becoming a white paint pigment or glaze or even a source of the metal titanium

now coming into greater use. Zircon is most useful as a glaze and refractory material, but is also a source of the new metal zirconium. The ilmenite of these deposits has a small chromium content which hinders its use as a white pigment. At present only a small quantity can be sold and most of the ilmenite concentrates are dumped.

But the work does not finish here. The insatiable appetites of the bulldozers will soon exhaust the seams on the east side of the island which are being worked at present, and a programme of prospecting is being carried out all over the island in

the search for new deposits. As the seams are buried boring apparatus is used and samples of the sand are taken as the bore penetrates the dunes. The excavations are not being left to mar the almost perfect rounded symmetry of the island, perhaps its most impressive feature. They will be backfilled and the surface planted with the quick-growing vine "pigsface" to hold the sand till the slower-growing grasses spread and consolidate the surface. Man has at last recognized his responsibility to nature. The ugly word "exploitation" with all its implications has no place here. It is more a reaping of the harvest of the waves and wind.

Cinema Screenings, 1952

A further series of half-hour cinema screenings has been arranged for 1952 by the Australian Museum. They will take place in the Museum Lecture Hall at 1.15 p.m. on the first and third Wednesday of each month, admission free. This has been made possible through the courtesy of the film libraries of the Canadian Government, the United States Consulate, the French Consulate and the N.S.W. Films Council.

Further information about the undermentioned and forthcoming programmes may be obtained at the Museum.

June 18: "Grand Canyon" (Colour).

July 2: "Life of Pasteur" (B. & W.).

July 16: "Eskimo Hunters" (B. & W.); "As Old as the Hills" (Colour); "Chant Populaire No. 1" (Short musical).

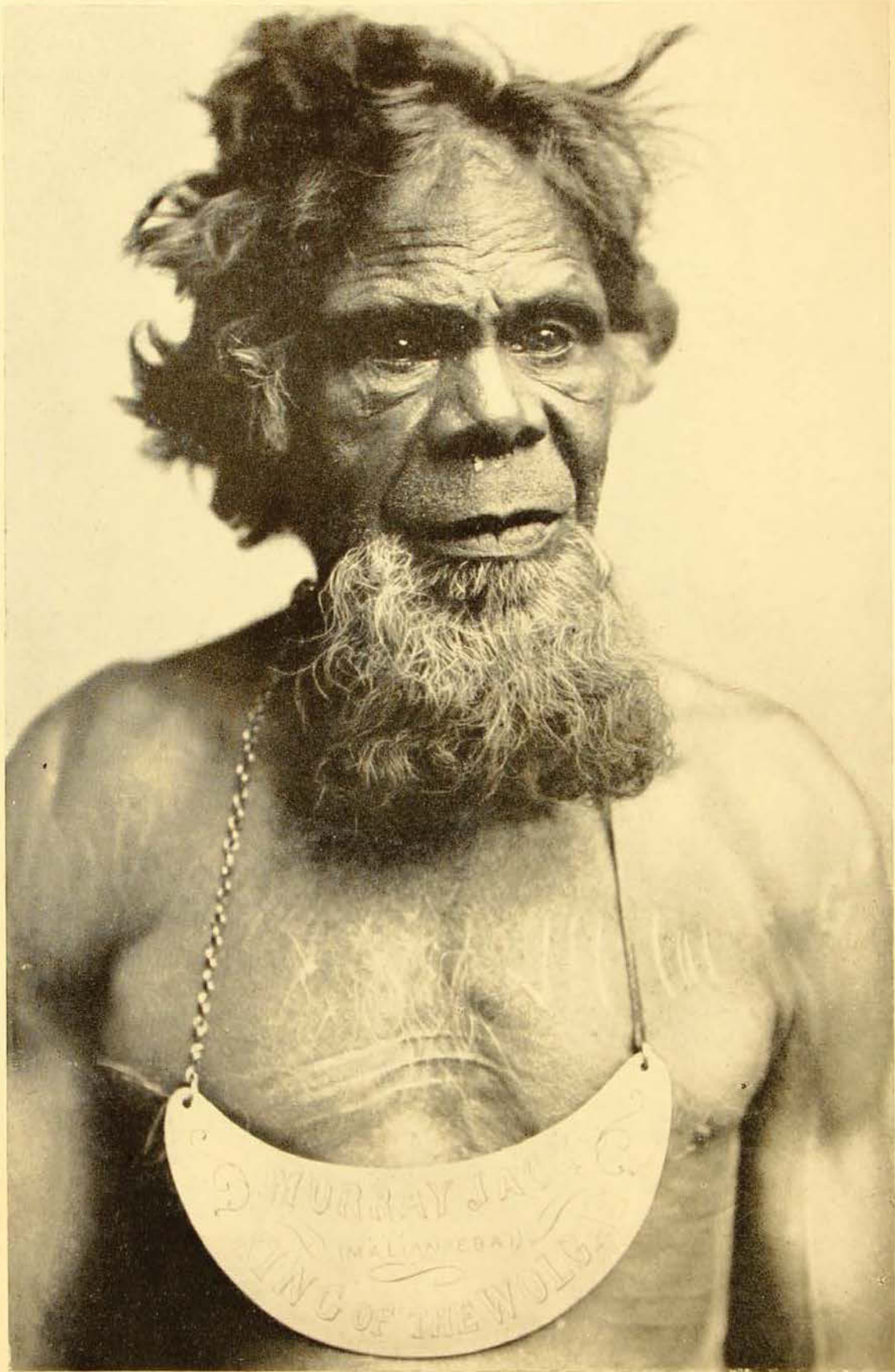
August 6: "Birds of Canada No. 5" (Colour); "Birds of Canada No. 6" (Colour); "Toronto Symphony No. 2" (Musical).

August 20: "Desert Nomads" (B. & W.); "Come to the Fair" (Short musical).

September 3: "Realm of the Wild" (Colour); "A City Sings" (Short musical).

September 17: "In the Beginning"; "250 Million Years Ago" (Colour).

October 1: "Pygmies of Africa" (B. & W.); "Birds of the Seashore" (Colour); "Children's Concert", Pt. 1 (Short musical).



Breast-plates were usually worn on a chain of some sort as shown in this photograph. The Wolgal Tribe, of which Murray Jack was "King", comes from the south-east of New South Wales.

Photography by courtesy of Tyrrell's Pty. Ltd.

Breast-plates: The Blackfellows' Reward

By FREDERICK D. McCARTHY

IN December, 1816, Governor Macquarie instituted an annual feast at Parramatta to which were invited all of the native tribes who were in contact with the white settlements, and any others who cared to attend. This function was carried on until January, 1830, in Governor Darling's time, but natives still gathered at the Field of Mars, where it had been held, for some years afterwards. Native groups came from near and far to this feast; there were 179 in 1816, over 300 in 1821, and between 160 and 214 in 1826. They came from the Sydney coastal area to the east, Bathurst in the west, Newcastle in the north, and from far down the south coast, perhaps from further afield. The Governor conferred with the appointed representatives of the groups during the feast, and as a symbol of their authority and status he gave each one of them a brass breast-plate or gorget. They were also given to other natives for their loyalty and services to the military and government officers. He thus initiated a custom among the white people that spread all over Australia; they found in these breast-plates a convenient way of recognizing the loyalty and faithful services, or of establishing the position of whoever appeared to them to be the highest in rank, of natives on cattle and sheep stations, government reserves, and mission stations.

The issue of many of these plates carried with it the fictitious title of chief, duke, prince, king or queen. There are, of course, no hereditary chiefs in aboriginal society, nor does an aristocracy or a kingship exist among them. There are individuals, both in undisturbed aboriginal groups and those in contact with the whites, who assert themselves as natural leaders because of their

age and wisdom, strength of character, their knowledge of medicine and magic, or by their great fighting qualities, but their position is not inherited generation after generation. Thus an award of this kind to some men, particularly those without the necessary status who became spokesmen for their groups with the whites, no doubt caused some bitterness and strife among their people. On the cattle and sheep stations many a faithful old stockman was rewarded with such a trophy; native constables were also similarly rewarded, as were native guides by explorers and leaders of expeditions. Only one known to me, a silver one given to Jacky Jacky, was issued for heroism. A tragic aspect of the contact between the whites and the natives in Australia is revealed by the plates given, as many of them were, to the last living member of a tribe—they thus represent the final act in the struggle for survival of our native tribes in those localities. There is no record of what the natives thought of these plates, but the possession of one of these shining yellow ornaments, an acknowledgment of the status of an individual, even if it were artificial, no doubt gave these trophies considerable value in aboriginal groups in contact with the whites.

The plates were issued by local committees and councils, station owners, missionaries, and others. One was presented to a native on Eley Station, in the Northern Territory, by His Royal Highness the Duke of Edinburgh.

Early this year Sir William Dixon presented the following collection of twenty-two of these plates to the Museum:

Billy Dolly, Chief of Carriwong Creek;
Billy Griffith, King, Waradgery, 1866;
Billy of Breeza; Bluey, King of Glenariff,

made by Lasseter and Co. Ltd., Sydney, and found near Louth on the Darling River in 1894; Balderoy, Duke of Wallandroo; Cockabundy, Chief of Jerricknora; Cockabundy, Chief of Ta'wong, found at Mummulgum, north coast of New South Wales; Husky, 1885; Jackabone; Jemmy Abigail, Chief of the Braidwood Tribe; Jemmy Vincent, King of Dogingorogaran; Jackie, King of Balgaraling; Jerro, Chief of Narreto; Jerry, Overseer of Woolshed; King Jetto, Wallumbi; Joe Timbrey, Chief of the Five Islands; Kitten, Chief of the Sydney Tribe; Moororar, of Namuteh; Neddy, King of Windorah; Neil, King of Mount Harris, the gift of Robert Martin, Junr.; Oombelang Watson, Missionary, Stockman, Wellington Valley; Robert, King of Tatala—now Angledool Station, found in 1880.

The Australian Museum also possesses the following examples:

Bill Wyoming, Brisbane Water; Billy, King of Ena; Bum-Balie, Chief of Whalan; Frederick, King of Gouboulion, from Chas. Lawson—(Bathurst district).

The Mitchell Library possesses the following series:

Billy, King of Myrtle Creek; Billy, King of Nanima; Cora Gooseberry Freeman Bun-

garee, Queen of Sydney and Botany; Jacky Cumbo Texas; Jacky Jacky, Constable, King of Toolooby; James Piper, Thomas Piper's Constable; John, Chief of Burrooa; King Tommy Grinnon, Chief of the Muringo Tribe; Nemmit 1825—Chief of the Sutton Forest Tribe; A Reward for merit to Charley of Tullungunnully.

In Mr. Mel Ward's Gallery of Natural History, Medlow Bath, are four others:

King Peter of Boulia, 8. 7. 07; Jacob Icely, Special Constable—issued in 1863 by Thomas Icely, J.P., of Coombring, Carcoar, N.S.W., when Jacob Icely was sworn in as a special Constable; Prince Henry of Duchess; Jacky Jacky.

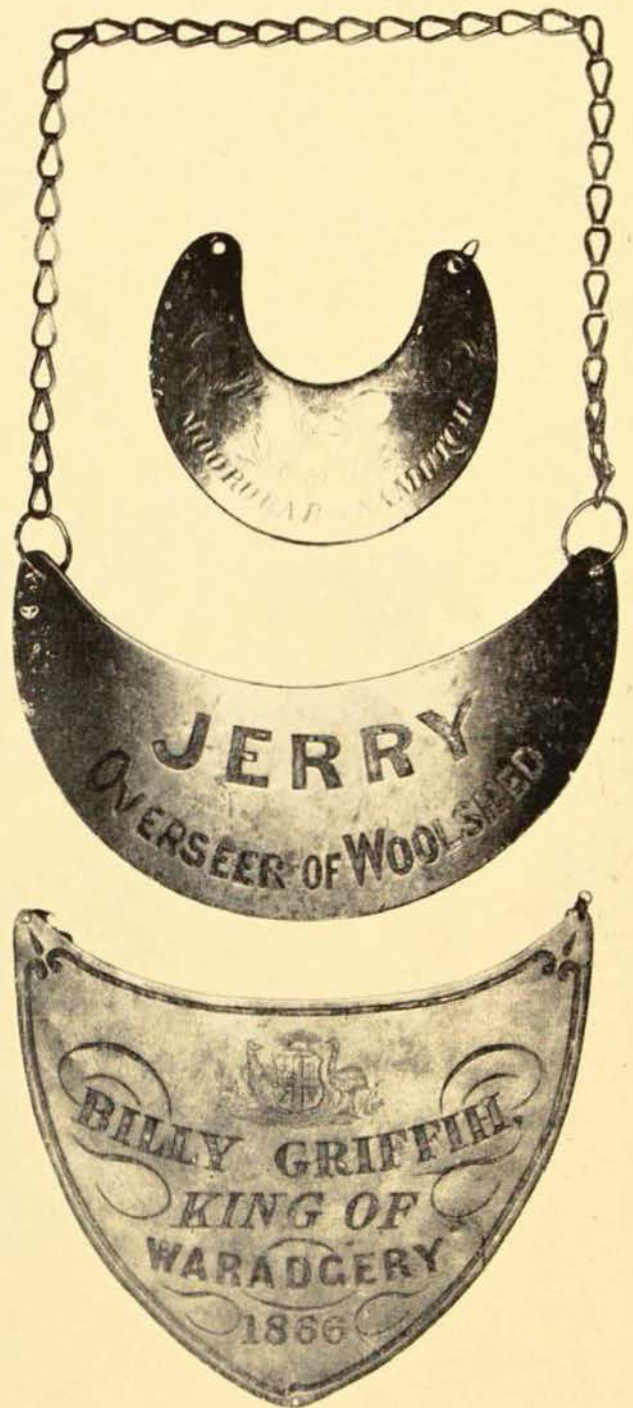
Sir Thomas Mitchell met a native, wearing a plate inscribed "Billy Hawthorne," on the Lachlan River in 1836; he decorated one of his native assistants, named Piper, with a plate styled "Conqueror of the Interior", remarking that it was "surely a sufficient passport for him among those most likely to read it, the good people of Bathurst." Another interesting one, of which the Museum possesses a photograph, was given to "Pickering, King of the Pigeon House Tribe"; the Pigeon House is a mountain near Milton which Captain



Cook used as a land-mark during his voyage along the south coast of New South Wales in 1770. One man became Prince Henry of Duchess when Jimmy King of the Kalkadoon tribe died on Busby Park Station in the Mt. Isa district of western central Queensland; the latter's son renounced the title, but Big Harry asked the manager of the station to make him king—the manager pointed out that as he had no country he was ineligible for the title so he was made Prince Henry of Duchess, a mining town in the district. He died on Moonah Creek.

The plates vary in size and shape. Gooseberry's is the smallest, being a very thin one only $3\frac{1}{2}$ inches long and 2 inches deep; the majority are from $4\frac{1}{4}$ to 7 inches long and $2\frac{1}{2}$ to $4\frac{3}{4}$ inches deep. The brass is up to one-eighth of an inch thick, and the heaviest one weighs $1\frac{1}{2}$ lb. The shape of the majority is a crescent of various kinds from long and narrow to short and deep, there is one circular plate (that of Bill Wyoming of Brisbane Water) and one large triangular specimen (that of Billy Griffith of Waradgery). The lettering is frequently in large capitals, deeply incised, often combined with a script in various ways. A border is seldom present.

Although some are plain most of them are crudely decorated with an emu in one top corner and a kangaroo in the other one, both standing in long grass or beside a grass-tree; above the lettering several of this type display in addition, a radiate diamond design, one bears the Australian coat-of-arms, and another one a native armed with a spear and boomerang. A spray of leaves on each side is engraved on several examples, and one is decorated with a fish. Perhaps the most ornate one has a native holding a spear and boomerang in one top corner, a woman holding a digging-stick, and a child, in the other corner, with the emu and kangaroo together above the lettering. Only one bears the maker's name, that of Lasseter and Co. Ltd., Sydney. They were apparently cut out of a sheet of brass by hand, and the shining yellow crescent against their dark skins no doubt appealed to the natives' sense of colour.



On the great majority of the plates the inscriptions do not include the date, and the locality is not mentioned on some of the others. Many of them bear station names, such as Balgaraling, Burrooa, Dogingorogaran, Jerricknora, Namuteh, Nanima, Narretty, Talwong, Toolooby, Tullungunully, Wallandroo, and Wallumbi; some specify towns and other localities such as Braidwood, Breeza, Carriwong Creek, Five Islands, Mount Harris, Myrtle Creek,



Pigeon House Mountain, Sutton Forest, Sydney, and Wellington Valley, in New South Wales, Boulia and Duchess in Queensland; and a few mention the tribe, such as Muringo, and Waradgery (in southern New South Wales).

The names of the individuals commemorated are interesting and unusual. Native names include Balderoy, Bum-Balie, Cockabundy (on two), Nemmit; nicknames such as Husky and Bluey, arising from a personal characteristic, although the source of Bluey in an aboriginal is difficult to explain unless he had a bluish sheen in his hair or skin; corruptions of European names such as Jerro and Jetto for Jerry, and Jemmy for Jimmy; European names;

and also a combination of native and European names such as Oombejang Watson, Joe Timbrey, Jaeky Cumbo and Tommy Grinnon.

The condition of many of these plates indicates that they have had considerable use, some being discoloured and bent, and the lettering is almost worn out on several of them due no doubt to handling by their owners and his friends. In doing this, they perpetuated the important custom of their people of fondling sacred objects and rubbing them on their body as the sacred songs connected with them were chanted and the individual absorbed the spiritual essence of his ancestors embodied in these symbols. The incised designs on the stone

and wooden Tjuringa of Central Australia are worn down in this manner. A number of the plates, however, are highly polished and in beautiful condition, evidently due to their having been given to old men so that they were not in the possession of the natives for many years.

It is possible that the lives of many of the natives so honoured by the gift or award of a breast-plate are recorded in various country newspapers, but for other recipients the plates now form the only memento. Gooseberry, designated queen of Sydney to South Head, on one plate, and Cora Gooseberry Freeman Bungaree, Queen of Sydney and Botany, on another one, was a well known native woman in Sydney for many years whose

husband was the equally famous "King" Bungaree; she was interrogated about native customs by George French Angas, and in 1846 she and her husband, with Jacky Jacky, Rickety Dick, and a few others, were the only natives in the city. They camped in the Domain, and the men often gave exhibitions of boomerang throwing in Hyde Park. Jacky Jacky accompanied J. E. B. Kennedy's expedition of 1848 which set out to find a road up Cape York—of the five men led by Kennedy during the final part of the trip the leader and three others were killed by the natives but Jacky Jacky escaped to a ship awaiting the party at Port Albany. A very beautiful silver plate, in the possession of Mr. Mel Ward, was awarded to Jacky Jacky for his loyalty and heroism.

THE AUSTRALIAN MUSEUM



POPULAR LECTURE SYLLABUS, 1952

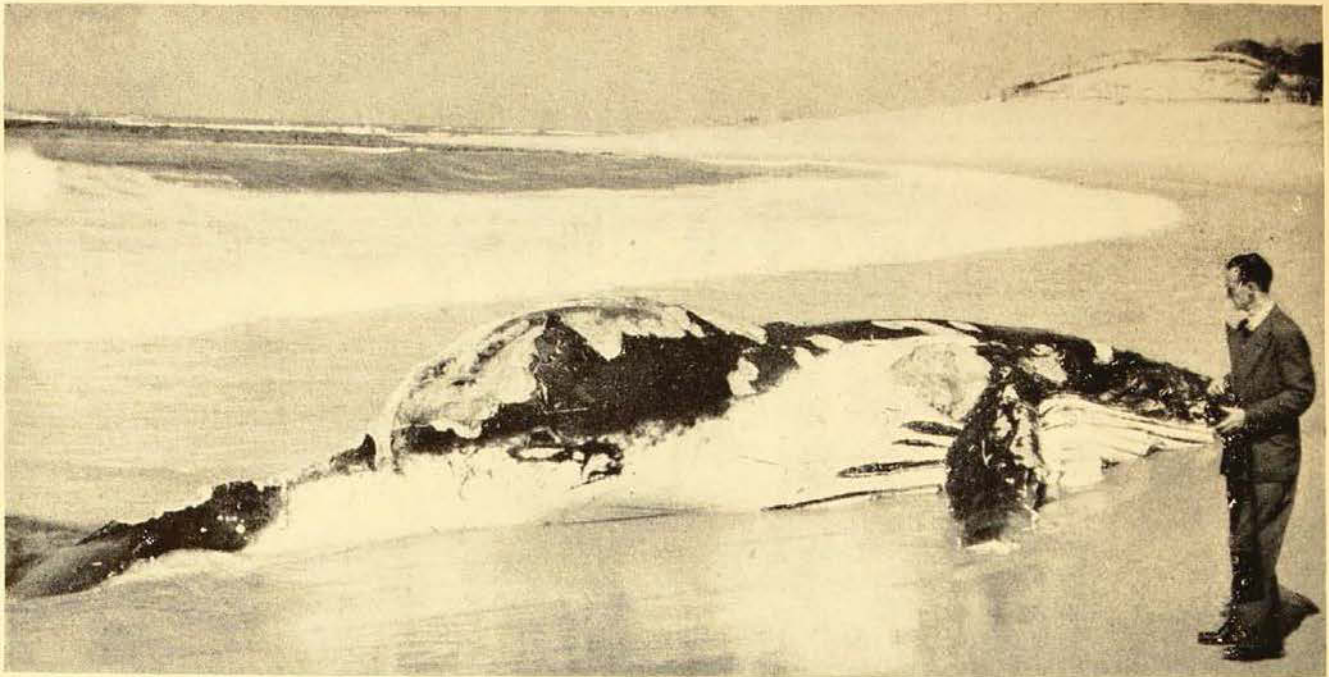
<i>Date</i>	<i>Subject</i>	<i>Lecturer</i>
June 26	" Colour, Light and Sound in the Under-water World "	Miss E. C. Pope, M.Sc.
July 10	" Ancient Science "	Melbourne Ward, F.R.Z.S., F.Z.S.
July 24	" By-ways in Insect Life "	K. C. McKeown, F.R.Z.S.
Aug. 7	" Minerals in Industry "	H. F. Whitworth, M.Sc.
Aug. 28	" Mosquitoes and Disease in Australia "	D. J. Lee, B.Sc.
Sept. 11	" Broken Hill "	R. O. Chalmers, A.S.T.C.
Sept. 25	" Arnhem Land Film "	Prof. A. P. Elkin, M.A., Ph.D.
Oct. 9	" Snakes and Snake Bite "	J. R. Kinghorn, C.M.Z.S.
Oct. 23	" Museum Expedition to North-West Australia "	H. O. Fletcher.



DOORS, 7.30 P.M. ADMISSION FREE LECTURES, 8 P.M.



THE LECTURES ARE USUALLY ILLUSTRATED BY FILMS OR LANTERN SLIDES



Young calf Humpback Whale which was stranded in 1949 at Toowoomb Bay, near the Entrance, Tuggerah Lakes, causing embarrassment to local residents as it decayed.

Beachcombers' Harvest

By ELIZABETH C. POPE, M.Sc.

BEACHCOMBING isn't always a paying occupation, but it is always an interesting one. What with the rubbish thrown over by passing ships and the waste from the sea itself, added to which is the debris brought down by rivers, especially in flood-time, almost anything may be expected to wash up on the beaches. And almost everything does, at one time or another.

Most of the surf beaches in Sydney's metropolitan area are harrowed and raked every day by council employees who may be regarded as professional beachcombers. Their harvest includes lots of coins, glare-glasses and car keys dropped by careless bathers and even dentures which have been lost in the surf. So rewards for lost property help to make this kind of beachcombing a paying occupation. On such beaches little is left on the sand to attract

the casual wanderer, and it is only on beaches which are more or less left in their natural state that beachcombing can really begin to be fun.

An almost endless list of strange objects, found among the wreck that is strewn above the high tide-line on our beaches, could be compiled. When the Hawkesbury River was flooded, a few years ago, the sands from Palm Beach in the north, south to Dee Why were dotted with large melons which were in such a good state of preservation that people used them for jam-making. At the same time, tools with wooden handles which had helped to buoy them up were picked up on beaches just to the north of Broken Bay, along with such household articles as chairs and kitchen canisters. At such times beachcombing is not only exciting but also can be profitable.

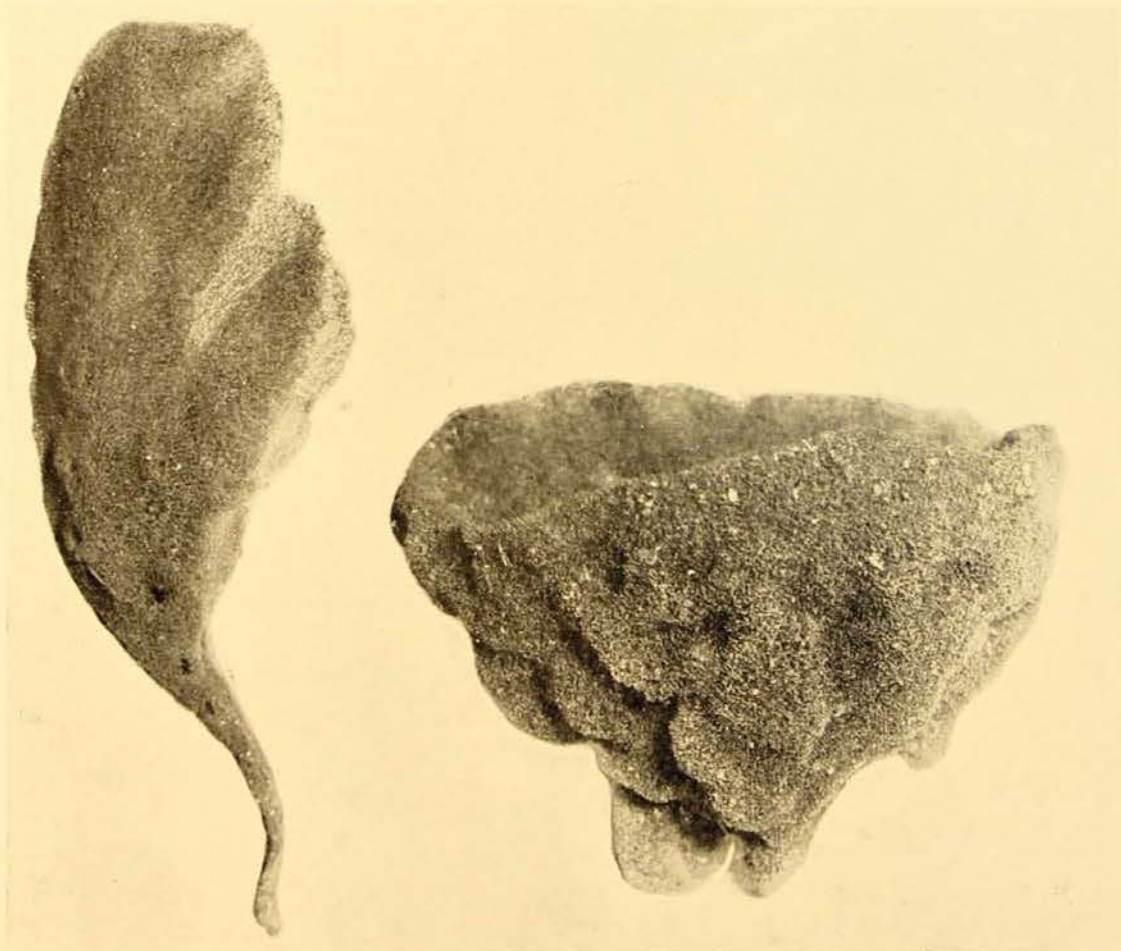
Generally, however, man-made objects are in the minority among the driftwood and wrack on the beaches, and it is the remains of sea animals or plants that attract our attention as we search the tide lines on the beach. For the marine naturalist the surf beach, after a storm, is a splendid hunting ground, for organisms which live well below the lowest levels that can be reached during low tides are often cast up and left stranded on the sand by the receding waters. All the thrills of a marine dredging expedition can be enjoyed with very little trouble and at no expense. Many animals and seaweeds from deeper coastal waters were first found in this way either stranded on the sand or among the tangled masses of kelp that pile up after an "onshore blow".

Some of the strange and very beautiful creatures which pass their lives floating among the plankton in offshore waters may be accidentally beached when winds from the east blow them ashore. Many of these

have already been described in previous articles in this magazine*, so they will not be mentioned here. Instead, therefore, of dealing with these creatures which are generally picked up near the water's edge while still reasonably fresh, it is proposed to describe some of the flotsam and jetsam found near the top of the beach—often above the level usually reached by high spring tides. Here the ocean leaves its signature on the sands in the form of irregular wavy lines formed of driftwood, dried seaweed wrack, cuttle "bones", shells, remains of other animals that have been battered by the waves and bleached by the sun and all the other types of rubbish which are inseparable from beaches the world over.

Who knows, the next time we search among the flotsam we may find a piece of valuable ambergris. This hope must be

* See articles—G. P. Whitley, Stranded Seafarers, AUSTRALIAN MUSEUM MAGAZINE, II, 7; E. C. Pope, Hitch-Hikers of the Sea, AUSTRALIAN MUSEUM MAGAZINE, IX, 9.



Two of the many varieties of horny Thorecta sponges that appear regularly among beach wrack. Left *Thorecta marginalis* and right *T. tenuis*.

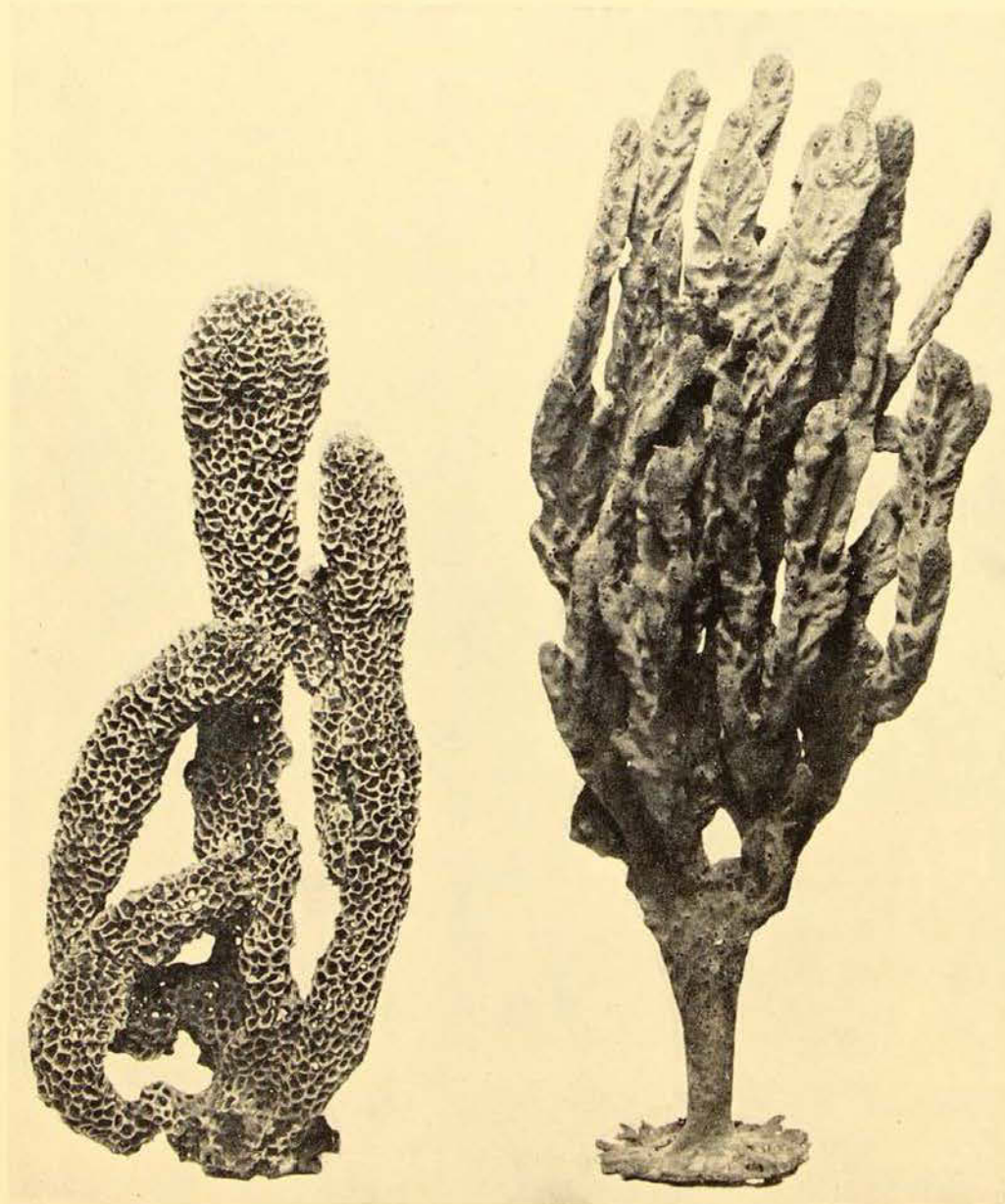
in the back of the minds of many people as they pick over the rubbish on beaches, for the Museum is often besieged with inquiries about this strange product from whales. Almost every month someone hopefully submits a lump of decaying fat or sponge to ask "Could it be Ambergris?" Apparently anything that smells highly enough is considered to be almost certainly a lump of the precious stuff.

Even if we cannot find a sealed bottle with a message in it, in the best adventure story style, we may find a bottle, like the one illustrated on p. 337, covered by a mass of stalked barnacles and a fur of tiny hydroid zoophytes which look so dainty and interesting when examined under a microscope. They appear so plant-like and yet are so essentially animal in their way of life. The barnacles on this particular

bottle have used it as a raft, but there is one species, *Lepas fascicularis*, that can make its own raft by exuding a membranous tissue which becomes frothy and filled with gases, and this structure buoys up the barnacle and enables it to float by itself.

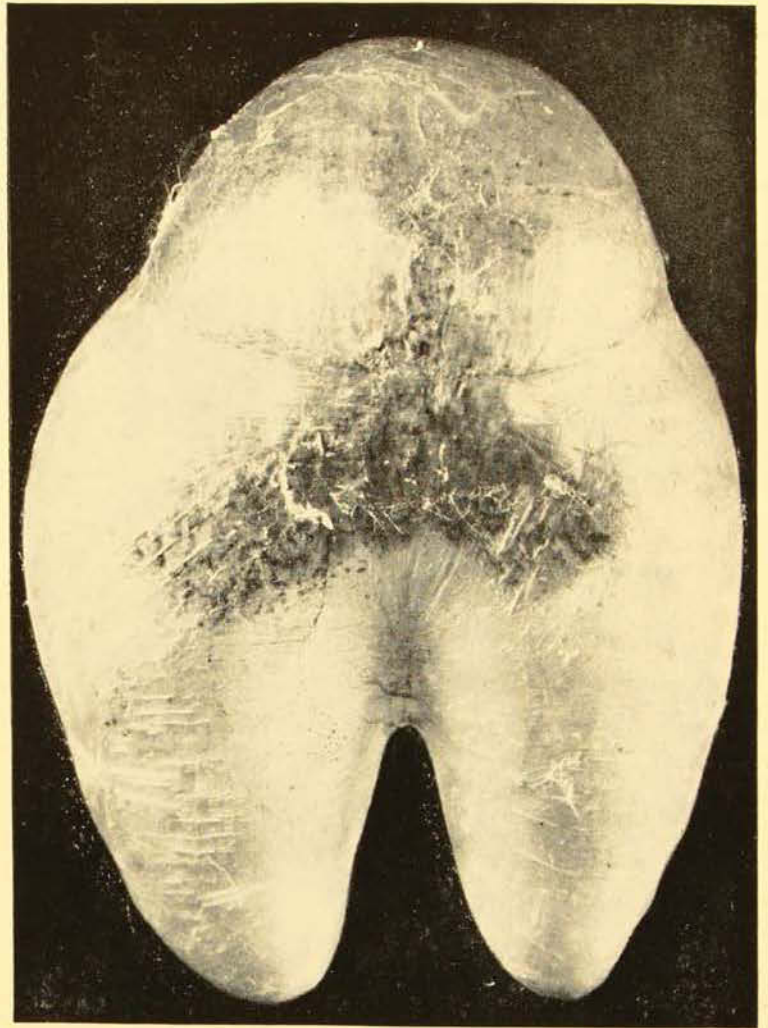
Sponges of many kinds are often found among beach rubbish and their great variety and beauty of shape attract attention, though their almost uniformly drab shades are less pleasing. When it is remembered that the sponges generally found on beaches are merely the skeletons of the animals that constructed them, the sameness of their colour can be understood.

Probably the most distinctive sponge skeleton found on local surf beaches is that of *Aulena gigantea* (var. *intermedia*)



Two fairly common sponge skeletons found by beachcombers. Left *Aulena gigantea* and right *Pachychalina elegans*.

Dried, inflated swim-bladder of a Porcupine fish, of the genus, *Diodon*—a piece of flotsam frequently brought to the Museum for identification.



the surface of which is marked by larger holes which impart a honeycomb-like appearance to it. As seen in the accompanying photograph, this sponge has long, finger-like processes arising from a flat base portion by which it is attached to the rocks when alive.

Another sponge that has a tree-like shape and is often found still bearing traces of the brick red colour it must have shown when alive, is *Pachychalina communis*. The illustration of it shows its flat, widespread attachment from which the main "trunk" and "branches" spring. By far the commonest sponge skeletons, however, are the stiffish, dark brown ones of the various species of the genus, *Thorecta*. Typical of this kind of sponge are the two shown in the photograph—*Thorecta tenuis*, which has a shape somewhat like a small kitchen bowl, and *Thorecta marginalis*, which is more delicately constructed and looks a bit like a miniature loofah. Some other kinds of *Thorecta* which are very common are like giant wineglasses, small

thick fans or even large Puff-balls with tufts on their tops. It is impossible to list even the commonest sponge types that appear among the local beach drift, but it is almost invariably true that any so found are too harsh and scratchy or so non-absorbent or even too easily broken up to be of any practical use. They are mere curiosities.

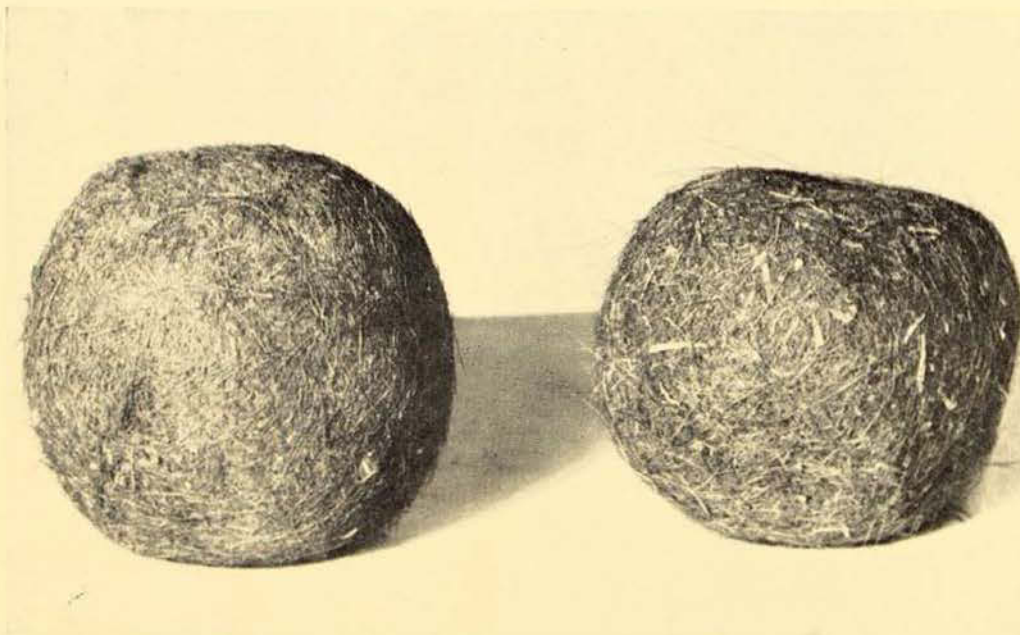
Another curiosity sometimes found on local beaches but more common on the sands of St. Vincent and Spencer Gulfs in South Australia are spherical balls of matted fibre—sometimes erroneously thought to be hair-balls from the stomachs of animals. The fibre comes from the Strapweed, *Posidonia australis* that almost covers the muddy bottom of estuaries, in the shallows just below the low water level of low spring tides. The smaller plant *Zostera* (well-known as Dugong or Eel grass) grows like a turf on the intertidal mudflats and is familiar to most people but the much larger *Posidonia* blades, which grow just out to sea from the *Zostera*, are less well known. When the blades of the

Posidonia die and their flesh decays away, the fibre is left and may often be seen matted about the bases of plants as one drifts over the beds in a boat. When storms occur to disturb the waters over the *Posidonia* beds, the fibre is loosened, moved about and gradually rolled into balls which are bowled along by the waves and sometimes are cast up on the sands.

Generally these balls are smallish in size (like golf or tennis balls) but sometimes after extra bad and prolonged storms, they keep adding to themselves like snowballs and they may reach quite large sizes. There is photographic evidence (*Wild Life Magazine*, December, 1948) of *Posidonia* balls which are as big as or bigger than basket balls. Fibre masses of this size are not taken on the New South Wales coast and even the small ones are rare enough to mystify most of the people who find them. There is a high percentage of cellulose in *Posidonia*—but, up to date, no

one illustrated here comes from a Porcupine Fish of the genus *Diodon*. Shaped like a gigantic double-rooted tooth, the walls of this bladder are made up of layer on layer of criss-crossing fibres, reminiscent of the tissue of which the lens of the eye is composed.

Swim-bladders are not found in sharks and rays but in bony fish and lie below the backbone and above the food canal. Their primary function seems to be to act as a hydrostatic organ. When the bladder is deflated the fish's body becomes heavier and the fish can sink to a lower level in the sea. Conversely when more gas is secreted into the bladder the fish becomes more buoyant and can rise to a higher level. But other and quite fascinating functions are attributed to this organ. In some of the species of fish that produce sounds, for example the Mulloway or Jewfish, the swim-bladder may act as a sound-making organ when vibrated by special drumming muscles and



Balls of fibre from the Strap-weed, *Posidonia*, which appear occasionally among the rubbish on estuarine beaches.

cheap and efficient method has been found of extracting the fibre and so its use in industry is still very limited.

Dried and gas-filled swim bladders of fishes are often seen among the drift above high tide mark and often puzzle their finders who bring them to the Museum for identification and comment. The particular

the peculiar noise thus produced may be heard as much as 6 feet above the surface of the sea, even when the fish is at a depth of 60 feet. It is also believed that fish like the Mulloway which produce drumming noises must be able to hear one another—more especially so, since drumming is chiefly indulged in by the males and is intensified in the breeding season. In this

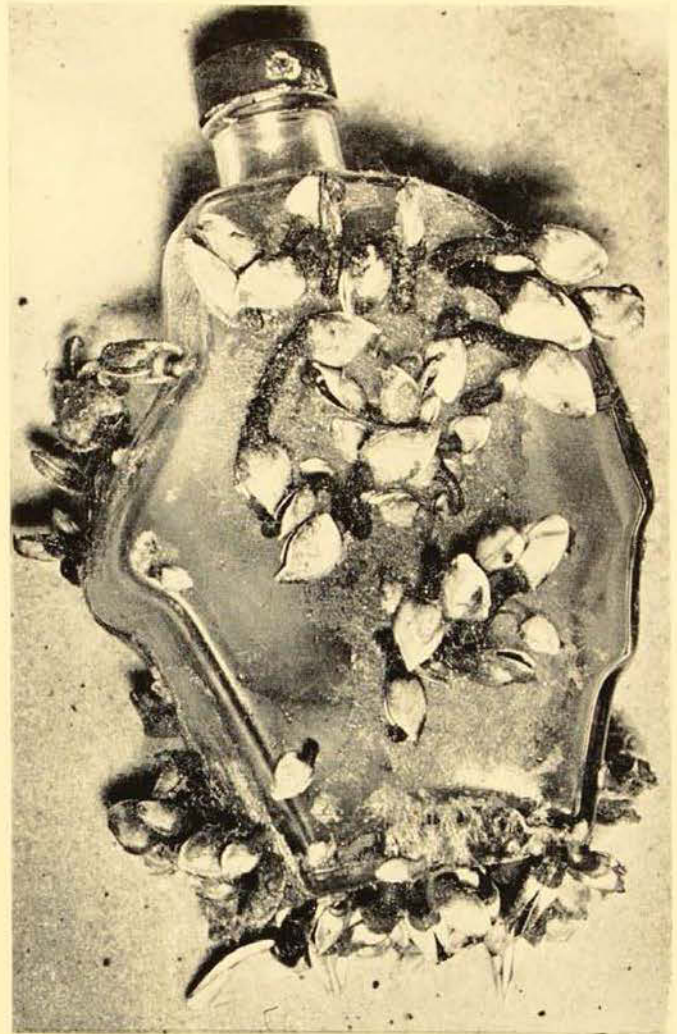
case the swim-bladder is believed to serve as a primitive sort of hydrophone to pick up the vibrations against the fishes' sides made by the sound waves.

It has been observed in a number of species that the swim-bladder is connected by a series of small bones to that part of the ear where a primitive sense of hearing would be lodged. For this reason the hydrophone theory of fish hearing seems reasonable, even though it has also been proved that some fish can pick up and respond to low frequency sound waves per medium of that peculiar sense organ which lies just near the skin—the lateral line. Most of the research on this subject is not, as yet, completed and is the outcome of research into under-water sound which became necessary during World War II when Asdic was so extensively used.

Why the swim-bladders of the Porcupine Fish should outnumber those of all other types of fish in the flotsam and jetsam has not been explained. They are evidently of a tougher construction than most and almost indestructible. Other floats that may be seen in beach rubbish are those of blue-bottle jellyfish which are too well known in this part of the world to need description. Also seen, at times in great numbers, are heaps of small papery plant bladders about the size and shape of large olives. If they are freshly cast up they may be brown in colour but the sunlight fades them to a light yellow or even white. These floats come from the large brown alga called *Phyllospora comosa* and serve in the living plant to buoy up the fronds and float them apart in the seawater.

Some forms of flotsam that strand themselves on beaches near human settlements can be not only embarrassing but also frightful nuisances to local councils to whom the residents complain in their wrath. While nobody minds a dead bird or two and attributes any smell they may impart to the breeze as part and parcel of the "ozone" which is associated with sea breezes, a decaying whale is a different state of affairs. After a few days something has to be done about it!

Every now and then a whale becomes stranded like the one which chose to come



Goose barnacles and small, fur-like hydroids attached to a stranded bottle, cast up during a storm.

ashore at Toowoomb Bay, near Tuggerah Lakes Entrance, choosing a time in 1949 when a political party was holding a school for its members at that very place. However, the size of this particular whale was small as it was only a calf which had been born in tropical seas, to the north, and was on its way south to the Antarctic for its summer fishing when the accident occurred.

From this short account it may be seen that beachcombing has much of the attraction and thrill of an old-time search for buried treasure and probably one stands an equal chance of getting rich thereby. My own personal hope when I search the tide lines is to stumble on one of the bottles used by oceanographical survey ships to determine currents, with a message inside telling one where to return the contained card and what information is required. So far I have met with no luck but I once

found a tagged fish and that has raised my hopes of finding a drift-bottle. Judging by the number of queries at the Museum most people look for ambergris. Whatever

it is, most of us, when walking along a beach, search for something and, whether we find it or not, will go on beachcombing whenever we visit a promising beach.

Amateur Lapidaries

By R. O. CHALMERS

THE tremendous amateur interest in mineral collecting in the United States of America has never had a counterpart in Australia. One of the most popular branches of the subject in the United States is the collecting, cutting and polishing of gemstones and ornamental stones. Thousands of amateur lapidaries, usually organised in clubs, enthusiastically pursue this interest, but so far only a few have come to light in this country.

The most suitable material is chaledony, a form of quartz that occurs in numerous varieties named differently according to colour and pattern. These include agate, onyx, carnelian, chrysoprase and jasper. Silicified or petrified wood is another variety much favoured by the lapidary. Lapidary work is, of course, a highly skilled occupation, but very attractive results can be achieved by amateurs using simple machinery. The usual procedure is to smooth a surface of the specimen to be polished on a carborundum wheel, and then to carry through a succession of operations on wooden and felt wheels using various abrasives, concluding with a final polish on a felt wheel fed by putty powder, a very fine abrasive. If a diamond wheel, known as a slitter, is available then relatively thin slices can be cut and the maximum amount of material obtained from the rough specimen. With more experience and ingenuity the amateur can produce durable and attractive objects such as pen-holders, ash-trays, book-ends and even spheres, beads and cameos.

Some two years ago an amateur lapidary, Mr. H. W. B. Baker, visited this Museum. He came from San Diego, California, which is well endowed with gem and ornamental stones. San Diego, though not a large city,

apparently abounds in amateur mineralogists and lapidaries, "rockhounds" as they are familiarly called. Since his return he has sent the Museum some large polished slabs of agate and a pair of very fine polished book-ends made from silicified wood obtained near the Canon Diablo Meteorite Crater, in Arizona. The size of these objects indicates that the polishing must have been done on wheels larger than those generally used by professionals in Australia. The workmanship is good judged by any standards.

Within recent months lapidary equipment has been installed in the Museum and already a start has been made polishing material from local sources. The skill of the lapidary has thus brought out the latent beauty of rich, red jasper from the Abercrombie River and the Clarence River, agate from Boggabri and Drake, and deep green chrysoprase from Rockhampton, just to name a few examples. Plentiful sources of such material are already known in Australia and much more would be revealed if interest in lapidary work as a hobby became as marked here as in the United States, even allowing for differences in population. A logical and worthwhile development of such activity would be the much more difficult art of cutting and polishing faceted transparent gemstones, but it is not my purpose to deal with that branch of the subject at present. Lapidary work in general is a fascinating hobby that would become popular in any country once the possibilities were realised, provided that relatively cheap machinery were readily available and that tuition could easily be obtained. There are no age limits. In America many high schools have courses in lapidary work and night classes for adults are also held.

Reviews

THE SCRUB-TYPHUS AND SCRUB-ITCH MITES (Trombiculidae; Acarina) of the Asiatic-Pacific Region. By H. Womersley. *Records of the South Australian Museum*, vol. x, part 1 (text), March, 1952, pp. 1-435, 2 text-figs.; and *op. cit.*, part 2 (plates), pp. 437-673 (118 pls.). Hassell Press, Adelaide, £3 3s. 0d.

The appearance of this large work, dealing with the systematics of the Trombiculidae—scrub-itch mites—is one that will be welcomed by students of this minute-sized but highly important group of animals.

For some years Mr. Womersley, Entomologist to the South Australian Museum has studied the taxonomy of this, and other families of mites, and the present work represents a culmination of his studies based upon collections of Trombiculid mites from various localities in the Asiatic-Pacific region, and in which he describes and figures those forms known from this large area. As the author shows in his preface, these Trombiculid mites are, in the larval state, external parasites of vertebrates and even invertebrates. Many may occur on two or more kinds of animals and also attack man.

A number of species have long been known to produce an "itch" in man from their bites, and the Harvest mite of Europe and Great Britain *Trombicula (Neotrombicula) autumnalis* (Shaw), has long been known as an itch mite and is mentioned in the present work. In those Asiatic countries where the mites have been known for centuries, they have long been suspected as the carriers of a typhus-like disease in man. Now they are known to be the vectors of the "scrub-typhus" disease of Malaya, New Guinea and Queensland, and, with the "tsutsugamushi" or "river fever" of Japan, China, and other places, have been studied by scientific folk. During the last war the Army Medical Corps of Great Britain, the United States of America, and Australia, gave much attention to this group of mites. As a result of the researches of these teams of workers two species are now definitely regarded as carriers of the organism of this disease: these are *Trombicula (Leptotrombidium) akamushi* (Brumpt) and *T. (L.) deliensis* (Walch). It is suggested that many of the species which at present are only known to cause an itch in man may eventually prove to be carriers of the disease from the primary host.

Many of these mites are known only from the 6-legged larval state, but in other species the full life history involving the larger 8-legged nymphs and adults is known. It will be appreciated, therefore, that the study of this group of mites is beset with difficulties: firstly, from the minute size of

the mites themselves and, secondly, from the taxonomic complications which arise when larvae, nymphs or adults are described under different names, as well as the difficulty in correlating the various stages of a species. For it is during the immature larval stage that the mites are of such importance from a medical viewpoint as carriers of disease, and Mr. Womersley writes: "Because of their importance as vectors of scrub-typhus and tsutsugamushi fever, our knowledge of the larval species of the Trombiculidae during recent years has increased tremendously. On the other hand, relatively little is known of the respective adults and only in a small proportion of species have the stages been correlated."

Before the appearance of the above work, the Linnean Society of New South Wales had accepted for publication a lengthy paper by Dr. Carl E. M. Gunther, Field Medical Officer, Bulolo Gold Dredging Ltd., Bulolo, Territory of Papua-New Guinea, entitled, "A Check List of the Trombiculid Larvae of Asia and Australasia". This, however, is a non-descriptive work, which is now going through the press, and should soon appear in the *Proceedings of the Linnean Society of New South Wales*. I have been permitted to see this paper in proof form, and, while it is to be regretted that geographical isolation has precluded Dr. Gunther from seeing many of the conclusions arrived at by Mr. Womersley in his *magnum opus*, nevertheless he has prepared a check-list and bibliography which should be of service to workers in this important branch of Zoology. Dr. Gunther has studied these mites in the field for some years, his first paper appearing in the *Medical Journal of Australia* in 1938, and he has also contributed papers to the *Proceedings of the Linnean Society of New South Wales*. His experiences as a medical officer in New Guinea and other countries where scrub-typhus disease is endemic, enhance the value of his contributions. During the last war he was a prisoner of war in Malaya, but he has since returned to New Guinea to carry on the work which he was obliged to drop on the outbreak of hostilities with Japan.

A. MUSGRAVE.

THE BIRDS OF THE MALAY PENINSULA, SINGAPORE AND PENANG. An account of all the Malayan species, with a note of their occurrence in Sumatra, Borneo, and Java and a list of the birds of these islands. By A. G. Glenister, F.Z.S., M.B.O.U. With 78 birds in colour and monochrome by Elizabeth M. E. Glenister, and 74 text illustrations and photographs by the Author. xiv and 282 pp. Oxford University Press, London. 1951.

This is an excellent field guide, in which technical terms have been reduced to a minimum, and colour plates, text figures and short but adequate descriptions make bird observing and identification easier and more interesting.

There are several new features, such as a table relating to colour parts and patches; another of bird calls and sounds; and a third calling attention to noticeable habits of species or families. The status of each bird, such as rare, common or intro-

duced, and the habitat—marshland, mountain, et cetera, is indicated by a letter or letters preceding the name, so that the observer can get an overall picture at a glance.

Naturally in Australia there is no opportunity to test in the field a book of Malayan birds but it is one that is highly recommended to all who may be interested in ornithology.

J. R. KINGHORN.

A Beginner's Guide to South African Shells

By K. H. BARNARD.

A BEGINNER'S GUIDE TO SOUTH AFRICAN SHELLS. By K. H. Barnard, D.Sc., F.L.S. Pp. ii-215, 5 coloured plates, 33 black and white line plates, 46 text figures. 8vo. Maskew Miller Limited, Cape Town.

This is a charming little handbook, which provides a speedy and authentic reference work for the student interested in Conchology, and in particular, that of South Africa and the Indo-Pacific region. The author, who is well known as the Director of the South African Museum, Cape Town, admits he was forced into preparing this handbook because of the many and continual requests for some such popular book, such as has similarly occurred in Australia until the demand was recently met. His readers should be well satisfied as into its comparatively small space he has crowded, in a very simple and readable manner, all the "whys and wherefores" a beginner would want to know about shells and their molluscan animals. The book is wonderfully well illustrated by Dr. Barnard himself, the beautiful colour plates and excellent line drawings being of the high standard that scientists have always recognised in his work. He has given a picture, or description of every kind of shell one is likely to find in South Africa (more than 500 species are figured), the commoner ones being in most cases chosen for illustration, and these act as a ready guide for the other unfigured ones in the family concerned. The book is obviously designed for those who prefer to do their own collecting, which is surely one of the most satisfactory sides of the study of conchology, rather than for those who buy their specimens. Thus the various chapters cover such items as structure, terminology, hints on collecting and preservation, relationships and habits as well as descriptive matter relative to the families and their species.

This is definitely not only a beginner's guide. It will be most useful to the advanced student of

conchology as well as the scientific worker. The chapter on the currents flowing around South Africa, and, in contrast to the cold Benguella current of the west coast of South Africa, the effect that the warm Mozambique Current of the eastern shores has in the distribution of many species throughout the Indo-Pacific, makes fascinating reading to the reader interested in geographical distributions and ecological problems. Students will, therefore, meet many old friends of the Indo-Pacific and Australia in its pages, a point this reviewer is glad to see emphasised, since the common relationship of species of South Africa and the Indo-Pacific is a relationship she has always supported, even at the risk of being regarded as a "lumper". Dr. Barnard has even been able to include in the limited space available to him, a short account of fossil shells, and a chapter on Lamp Shells (Brachiopods, ancient types of shell-like invertebrates).

As usually happens, there are a few editorial slips, such as the reversed illustrations of the cake urchin on page ii (introduced to show that they are *not* shells) and in the Coloured Plate C, figures 5 and 5A are reversed. These, however, do not detract at all from the book. In dealing with the squid *Spirula*, information is now available that the small disc-like organ at its posterior end is not a sucking disc or similar structure, but is an effective little light organ which the squid can flash on and off.

It is anticipated that this charming little handbook, which all serious conchologists will be glad to add to their library, will soon be available in Australia. Our copy was sent to the Museum from the South African Museum, as between "Two Institutions founded on British Culture and by British Enterprise".

JOYCE ALLAN.