The AUSTRALIAN MUSEUM MAGAZINE

EDITED BY C. ANDERSON, M.A., D.Sc.

Our Feathered Friends - - - *J. R. Kinghorn*

Prize Essay—A Visit to the Australian Museum

Museums of the Past - - - *Tom Iredale*

A Day in the Life of the Sand Bubbler Crab *F. A. McNeill*

Bronze and Ivory Figures from Burmah - *W. W. Thorpe*

Stoats and Weasels - - - *Allan R. McCulloch*

The Dodd Collection - - *Anthony Musgrave*

Fishes and the Movies - - *Allan R. McCulloch*

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THE AUSTRALIAN MUSEUM

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VOL. II., NO. 3. CONTENTS JULY-SEPT., 1924

THESE ARE BUT A FEW OF THOUSANDS OF BIG-EYES (APOGON NORFOLCENSIS) WHICH FOREGATHER IN CORAL POOLS AT LORD HOWE ISLAND—*Allan R. McCulloch* ... ... *Frontispiece*

EDITORIAL 75

NOTES AND NEWS 76

OUR FEATHERED FRIENDS, OR BIRDS IN RELATION TO AGRICULTURE— *J. R. Kinghorn* 77

PRIZE ESSAY—A VISIT TO THE AUSTRALIAN MUSEUM ... 83

MUSEUMS OF THE PAST—*Tom Iredale* 88

A DAY IN THE LIFE OF THE SAND BUBBLER CRAB—*F. A. McNeill* 94

A MEANS TOWARDS AN END—*F. A. McNeill* 97

STOATS AND WEASELS—*Allan R. McCulloch* 98

BRONZE AND IVORY FIGURES FROM BURMAH—*W. W. Thorpe*... 99

THE DODD COLLECTION: A LIBERAL EDUCATION IN ENTOMOLOGY—*Anthony Musgrave* 100

THE MUD-SUCKING PLATYPUS—*Harry Burrell* 101

POPULAR LECTURES 102

FISHES AND THE MOVIES—*Allan R. McCulloch* 103

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Viewed from the side, as in an aquarium, fishes appear much more beautiful under water than when seen from above. These are but a few of thousands of Big-Eyes (Apogon norfolcensis) which foregather in coral pools at Lord Howe Island. Though ordinarily regarded as pests, these were studied with intense interest by fishermen who discovered in them unsuspected charms revealed by this unfamiliar aspect.

[Photo.—*A. R. McCulloch.*

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VOL. II., NO. 3. JULY-SEPTEMBER, 1924

Editorial

UPON more than one occasion we have deplored the fact that there is not one museum within the Commonwealth sufficiently well endowed to employ a collector or to put one in the field for more than a limited period. We have instanced the positions of museums elsewhere fortunate enough to be able to send abroad expeditions to obtain representatives of the fauna of other continents, and in this State it has been our pleasure to extend hospitality to such upon several occasions within recent years. How long is the position of local institutions to remain thus ? There is much that we are anxious to do and that we could do had we the necessary funds. Though this be a state supported institution we feel justified in looking to private benefactors also for assistance. It is to the liberality of the private individual that many of these expeditions from overseas museums to the Commonwealth owed their origin. Some of these donors—and not all are millionaires—have for years past generously put a collector in the field, with the result that various national collections have been considerably increased and the cause of science materially advanced.

To these expeditions is to be added yet another from the United States—one to the Northern Territory. It is proposed to take a section of the country, a section as yet totally untouched, to make an intensive study of it and to work it thoroughly. To this no exception can be taken for it is provided that all types must be deposited in Australia. Yet our impotence to go and do likewise is galling, and it is accentuated by the undignified means through which Australian collections are enriched ; this is *our* country and Australian museums should be in a position to take the lead in field-work. We have all witnessed the gradual restriction of areas frequented by our fauna and it has been repeatedly pointed out that many forms of wild life are fast disappearing. Much publicity has been afforded visiting expeditions, yet it has not been possible for Australian museums to emulate the example of similar institutions abroad. With the exception of the Elder and Horn expeditions conducted in the 'nineties, due to the generosity of those whose names they bore, and some little sporadic work since, it has not been possible to attempt anything upon a scale commensurate with the importance of the subject. The need for local institutions to get into the field was never more urgent than now.

Notes and News.

The vacancy on the Board of Trustees caused by the resignation of Professor W. A. Haswell has been filled by the election of Launcelot Harrison, B.Sc., B.A., Professor of Zoology in the University of Sydney. Professor Harrison is well known for his researches on the Mallophaga, a family of insects parasitic mainly on birds, and is an authority on the monotremes, the curious reptilian mammals which are found only in Australia. During the war Captain Harrison was on service in Mesopotamia.

Mr. W. T. Wells, A.I.A.V., recently appointed Secretary to this Museum, took over his new duties in June. Mr. Wells brings with him considerable commercial and administrative experience which should prove of value to this Museum in its ever increasing activities. Formerly he was associated with the Water Conservation and Irrigation Commission, later as manager of the State Bakery, and the Royal Commission on the Coal Mining Industry. At the time of his appointment he was attached to the Rural Industries Board, Department of Agriculture.

Professor Sir Edgeworth David, K.B.E., C.M.G., D.S.O., F.R.S., who is engaged in writing a work on the geology of Australia, finds that his time is so fully occupied that he is compelled to resign from the Board of Trustees. Sir Edgeworth has been a trustee since 1891 and his wide scientific knowledge and ready counsel will be greated missed by his colleagues. Fortunately we shall still be able to avail ourselves of his advice and help, for, with characteristic generosity he has offered to assist in anyway in which his services can be of value.

Mr. Harald Tanner, Consul for Finland, has presented a series of current coins of Finland for our numismatical collection.

Mr. J. H. L. Waterhouse, of the British Solomons, called recently, accompanied by two native boys who were much interested in the ethnological galleries.

Among recent visitors to the Museum may be noted Mr. H. Sefton Jones, whose interests are chiefly ethnographical and who is one of the few Englishmen privileged to visit the locality where the famous *Pithecanthropus erectus*, the "Erect Man-Ape of Java," was discovered; the celebrated Arctic explorer and scientist Dr. Vilhjalmur Stefansson; Rev. F. J. Kirschbaum of Marienberg, Sepik River, New Guinea, a well-known authority on the natives of Melanesia.

By the death on June 14th of Mr. John Vernon, the Australian Museum has lost a keen and devoted trustee, one who had taken a great interest in all matters connected with the institution, particularly in movements tending to popularise it. His association with the Museum was a long one—over twenty years—and his ready counsel in business matters was frequently availed of.

Benton S. Lucas, formerly artificer of this Museum, passed away on June 14th at the age of seventy-one. He had been associated with this Museum for over forty years, retiring a few years ago upon a well-earned pension. He was an artificer in the truest sense of the term. His ingenuity and resource in contriving fitments for exhibits was amazing, and he was able to turn his hand to most crafts. To his family we extend our sincere sympathy.

Several Museum windows facing College Street have been broken by lads throwing stones during the past few months. An appeal is made to the public for assistance in combating this annoyance. The windows are not only costly to replace but there is the added risk of injury to exhibits and onlookers within.

Mr. J. T. Collins, K.C., a Trustee of the Public Library, Museums and National Art Gallery of Victoria, recently visited this Museum and was much interested in the institution and its various activities.

Our Feathered Friends, or Birds in Relation to Agriculture.

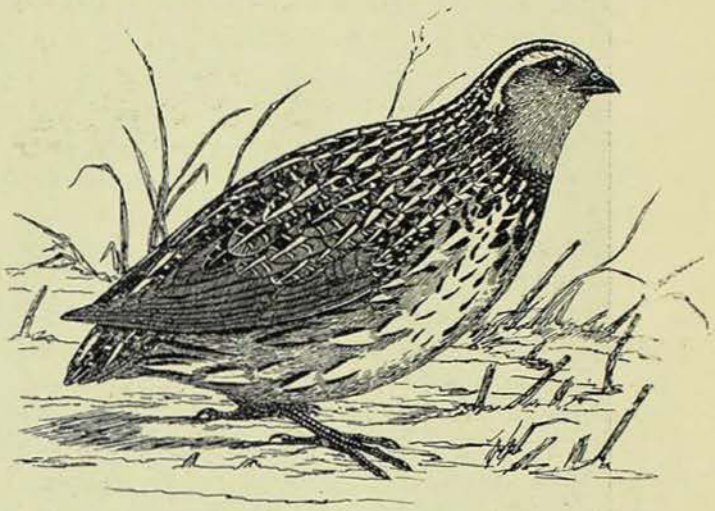
By J. R. Kinghorn, C.M.Z.S.

THAT birds are one of man's most valuable and yet least valued possessions is a fact which is recognised by the comparatively few people who study them. Man generally considers himself to be the lord of the earth, but in this he certainly makes a very big mistake, for insects are the dominant power. Whilst a number are beneficial, many are carriers of disease which affect him either directly or through his products, and as others destroy his works, it will be realised that they are his greatest enemy. There are many scientists who are working untiringly in an endeavour to find some reliable mechanical or chemical insect exterminator; but, while we wait for such an invention to be perfected, we are apt to overlook the fact that certain species of birds will do the work thoroughly if we give them the chance by encouraging them.

Birds, because of their insectivorous diet, form the greatest army that nature can muster in her endeavour to keep insects from becoming plagues. At times, when the balance of nature is temporarily upset, insect plagues may eventuate, and then birds and man become allies in the great fight against them. Unfortunately man soon forgets the work the birds have done for him, and he fails to give them the protection necessary for their welfare and his own.

Australia is blessed with over eight hundred species of birds, and only about thirty or forty might be considered to be in some way or other destructive; nevertheless, I would like to add that all of our birds have some economic value. Among our smaller and better known feathered friends are willy wagtails, blue wrens, tomtits, jacky winters, yellow robins, wood swallows, and thickheads, the latter are sometimes known in the western districts of New South Wales as thrushes. All these are most valuable in the garden, the orchard, or the open forest, where they wage continual war on the smaller insects, many of which are highly destructive to man.

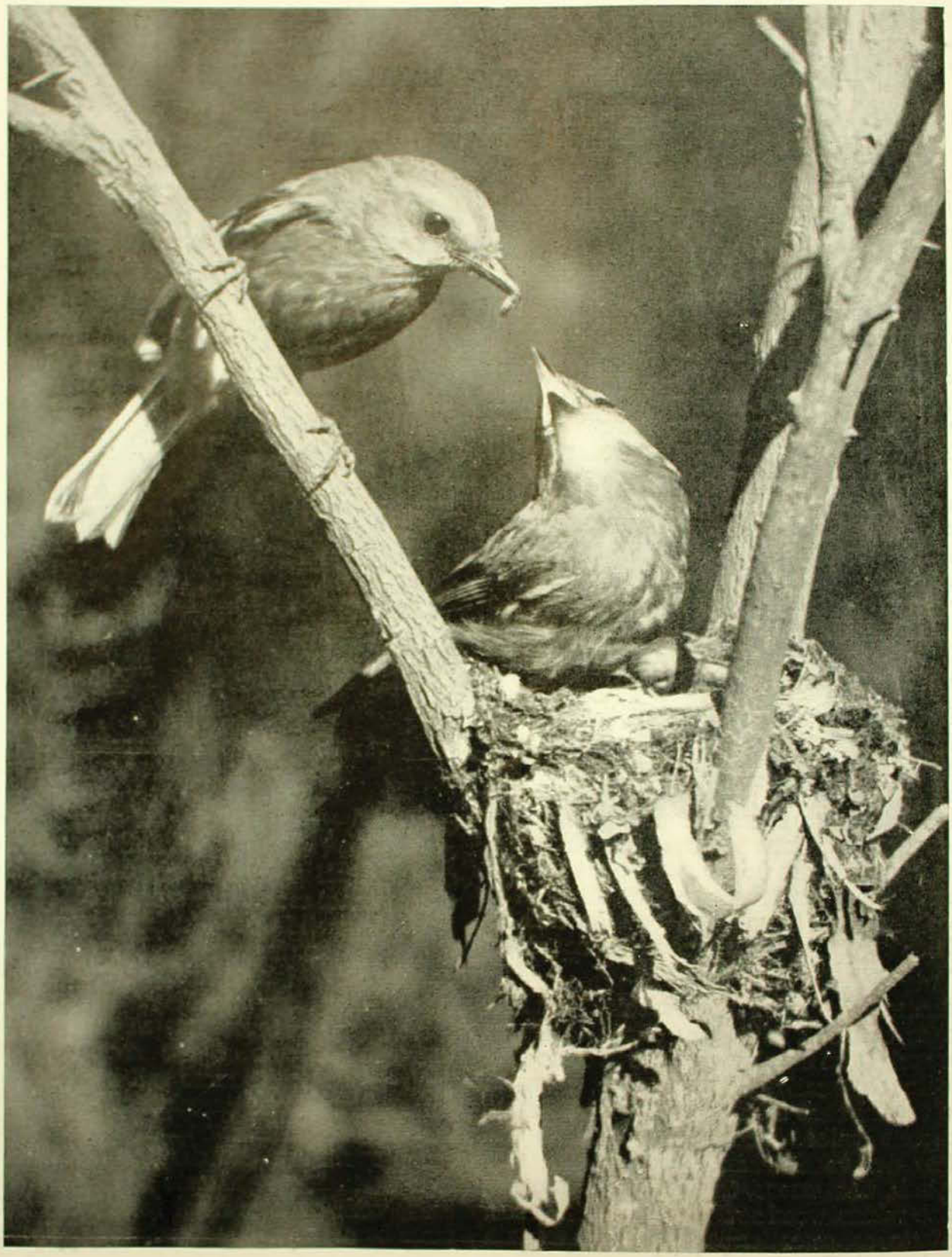
The quail is one of our game birds and therefore, a reserve food supply, but it is also a great weed and insect destroyer, and contrary to popular ideas, grain is seldom eaten by them. In California it has been



The Stubble Quail, Coturnix pectoralis

[*Neville Cayley*, del.

estimated, on examination of stomach contents, that one quail eats half an ounce of seed and half an ounce of insect diet per day; this does not sound very much, but it means that 100 quail in any district would destroy nearly six hundred lbs. of insects and six hundred lbs. of weed seeds during the open season, say March to July. In Australia, there is much controversy as to what constitutes the food of the stubble quail; zoologists and the more reliable observers assert that it eats insects and weed seed, and very occasionally fallen grain; while many sportsmen and shooters declare that it is destructive, and eats more grain than seed, with an occasional insect, the latter more by accident than by choice. We must remember that quail are ground birds and can eat only fallen grain, during or after harvesting — a very short season indeed. The rest of the year it must find other food. I have lately examined the stomachs of over



A Male Yellow Robin, Eopsaltris australis, feeding his mate whilst she sits on the edge of her nest in order to protect a newly hatched young bird. Yellow Robins are highly useful insectivorous birds.

[Photo.—*Mrs. R. T. Littlejohns.*

twenty stubble quail from grass, lucerne and stubble land, and found that the crops and stomachs contained grasshoppers, other insects, weed and thistle seed with an occasional grass seed[1] — and, to my astonishment, no grain whatever.

The blue crane is a destroyer of grasshoppers and crayfish (yabbies) which have the habit of boring into the banks of irrigation canals; and ducks are of value because of the great numbers of water insects which they eat, among which are millions of mosquito larvae.

Female Silver-eye, Zosterops lateralis, on nest. [Photo.—*R. T. Littlejohns.*

Rosellas and white cockatoos are known to be highly destructive, yet even these birds can do some good when they turn their attention to weed and thistle seeds. The black cockatoo, on the other hand, having an entirely insectivorous diet, is most useful in the forest areas, where it wages war on the many beetles and borers which would otherwise destroy most of our timber.

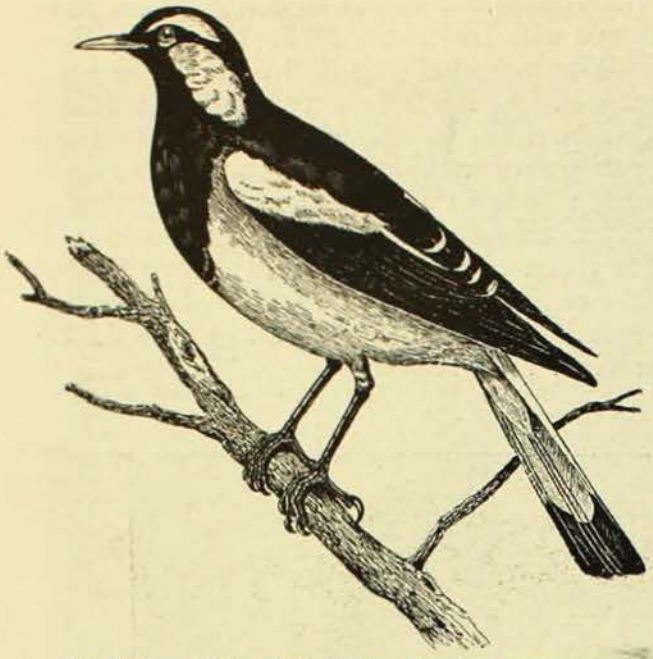
The peewee and magpie are two of the most valuable ground feeding birds we have, and they are a great asset to the farmer, inasmuch as they have a special liking for wireworms and cut worms, which, if left alone, would multiply to such enormous numbers that crops would be absoultely destroyed, and even grass or weeds would not be able to grow.

The silver-eye is insectivorous as well as frugivorous. There is no doubt that it plays havoc with fruit, but, during the season when fruit is not available, it lives entirely upon insects. It is really a valuable bird in the garden, field, and forest, where it destroys myriads of aphids, scale, and other such pests; but in fruit districts it is valuable only during the season when the bloom is on the trees. The cuckoos and cuckoo shrikes are entirely insectivorous, and therefore deserve full protection for the valuable services they render.

Starlings and sparrows are noted for the damage they do in this country. They not only destroy fruit and grain, but drive away many of our useful insectivorous birds. Individually both birds have many good points, especially the starling, as it often turns its attention to root worms, and it is only when it moves about in large flocks that it becomes destructive. Swallows have been described as the light cavalry of the bird army, but I should prefer to call them the air force. They work continually from dawn to dark, ever on the move, missing no opportunity to destroy insect enemies which have been driven out of the scrub lands by other birds. They are the natural enemy of the weevil, and should be encouraged to live about the farm in large numbers.

Crows and ravens, although undoubtedly destructive in sheep country, have much to be said in their favour. They are great

[1] I am indebted to Mr. E. Cheel, Assistant Government Botanist, for identification of various seeds.



The Peewee or Magpie Lark, Grallina cyanoleuca, is, perhaps, the most valuable ground-feeding bird in Australia.

[*Neville Cayley*, del.

scavengers, being carrion eaters, and therefore destroy possible breeding grounds for that enemy of the sheep-man, the blowfly. They do both harm and good, and should not be killed through prejudice, but should be carefully observed and protected or destroyed as necessary in the districts in which they abound.

The same remarks might apply to the hawks and eagles. Because one may steal a chicken once or twice in its lifetime, the whole family is forever condemned. The natural food of hawks comprises rats, mice, young rabbits, and birds; seldom do they attack man's property, yet they are continually persecuted. Some friends of mine informed me that they had shot two hundred eagles on their property in a year because they carried off fowls and lambs. I pointed out that one fowl was a small feed for one eagle, and that it would take well over thirty thousand fowls or five thousand lambs to feed two hundred eagles for a year, but as only a comparatively few lambs and fowls had disappeared, the eagles must have been playing havoc with the rabbits and hares. Eagles live and thrive in mountainous districts where fowls and lambs are quite unknown, and they should receive the same consideration as crows and ravens, though it must be admitted that they are far worse than hawks, many of which are highly beneficial. A leading American biologist has said that "the people who are only too ready to cry out for the destruction of these valuable birds should be the first to ask for their protection."

While most birds work by day there are also many which hunt at night, foremost among them being the owls, a family comprising many species, all of which are very destructive to mice, which would otherwise overrun the fields. An Australian zoologist, Mr. A. M. Lea, carried out some investigations relating to the food of the barn owl. He estimated that two pellets were thrown up each day equalling seven hundred and thirty per year; he, therefore, examined seven hundred and thirty pellets from one locality and found that they contained remains of one thousand four hundred and seven mice, one hundred and forty three rats, five rabbits, three hundred and seventy-five sparrows, twenty-three starlings, twenty-five other birds, four lizards, one hundred and seventy

The Tawny Frogmouth, or Podargus, Podargus strigoides, a highly useful nocturnal bird.

[*Neville Cayley*, del.

White Eye-browed Wood Swallow, Artamus superciliosus, on nest.
[Photo—*R. T. Littlejohns.*

four frogs, twenty-three night moths, fifty crickets, and twenty-nine other inseets. This will afford the reader some idea as to the value of these birds.

The podargus, or frogmouth (perhaps more generally known as the morepork), is insectivorous, and, being a nocturnal bird, it carries on the work started in the daytime by the diurnal birds, mainly against cicadas and night flying moths.

Wood swallows or blue martins, by reason of their gregarious habits, are highly useful in helping to check plagues. I recollect a plague of caterpillars which visited Bathurst about 1903, attracting thousands of wood swallows, which quickly checked it. As a caterpillar eats about twice its weight in food per day, an army of them would in a short time destroy hundreds, or even thousands, of acres of grass lands and vegetable gardens.

It is at such times that nature kindly takes a hand and sends the birds to our aid, but we are often only too ready to sit back and let " our feathered friends " do all the work. In respect to the protection of birds, I might say that we owe the main features of our Birds and Animals Protection Act to scientists and naturalists who knew the great value of our fauna, and it was passed by the government in the interests of the country. Unfortunately—and mainly through ignorance —many people do not respect the clauses of the act. Birds are ruthlessly slaughtered, their eggs collected, and their breeding interfered with. If half the energy that is expended in collecting the eggs of protected birds were devoted to collecting the eggs of sparrows and starlings, it should only be a matter of a few seasons before a very appreciable reduction in the numbers of these pests would result and incalculable benefit to the country would follow.

Children who want to study nature spoil their efforts and good intention by collecting eggs. The notebook and the camera are not only the most interesting but the most instructive and useful articles through which a full insight into the life and habits of birds can be gained.

We must remember that nature is wonderfully and delicately balanced. If we reduce

White-shafted, or Grey, Fantail, Rhipidura flabellifera, on nest.
[Photo.—*R. T. Littlejohns.*

her numbers in one direction, the inevitable result will be increased multiplication in another. Thus if we continue to destroy our valuable insect-eating birds, we must be prepared to bear the brunt of attacks of hordes of insect pests, with disastrous results to ourselves. We must not allow ourselves to be carried away by sentiment or prejudice, but must be guided by facts which are the result of scientific investigation.

We have no right to act selfishly in faunal matters, as the fauna does not belong to us individually or collectively ; it belongs to the country. Our Australian birds are both beautiful and useful. They are the greatest national asset which our country possesses, a fact which is only too often overlooked. Birds and other animals are here for our enjoyment and use, but we are apt to forget that we hold them in trust, and should consider them a heritage to be handed down to future generations. If some people persist in destroying as they do now, our fauna is doomed to extinction, and there will come a day when many of our most valuable species will be exterminated. Then our folly will rebound with terrific force, having such terrible results as may end in widespread disaster. The agriculturist and other primary producers would find their work impossible without the aid of birds, so let us protect and encourage them ; they are our true friends and allies.

Mr. Willi Fels, a prominent citizen of Dunedin, New Zealand, who has taken a deep practical interest in the ethnography of the Maori and has supported the ethnological section of the Otago Museum on a generous scale, has returned from a visit to Europe. During his stay in Sydney he spent portion of several days examining our collections.

Prize Essay Competition.

Some months ago Mr. George A. Taylor (Editor of *Building*) generously presented a prize of five guineas to be awarded for the best essay by a pupil of a New South Wales school, the subject being "A visit to the Australian Museum." The object of this was to arouse a healthy interest in the juvenile minds towards the Museum and its contents.

That the object was achieved was evidenced by the number of pupils equipped with pencil and pad visiting the galleries. Whilst the number of essays received was not as high as one would have wished, yet as they were the best from numerous schools no doubt many entered for the prize.

The essay by Miss Noreen Walker, aged thirteen and a half years, a pupil of the Burwood Domestic Science School was, after careful consideration, adjudged the best and the prize was accordingly awarded to her. Illustrations have been added to the essay depicting the various large group exhibits referred to.

Thanks are due to Mr. Taylor for his public-spirited action.—EDITOR.

A Visit to the Australian Museum.

BY NOREEN WALKER.

THE very word "Museum" conjures up before the inward eye a vision of stuffed animals, birds, eastern mummies and aboriginal effigies.

Surely no person could examine each section of the building during one brief afternoon, and not come away thinking in a dazed manner, that he had been transported, as on a magic carpet, to some mystic paradise, where everything he ever desired to see was to be found.

On every side are items so intensely interesting that it is made difficult for one to decide which portion most appeals to him.

To the lover of our Australian animals the room containing these specimens will prove most fascinating. Here in glass cases, beautifully arranged, are to be found the timid, gentle-eyed wallaby and kangaroo, with their soft black noses and little paws. Opossums swing realistically by their furry tails, from the boughs of gum-trees of every description. The platypus, that strange mixture of mammal, bird, and reptile is discovered by a miniature water-course, edged with the soft, muddy banks in which these animals burrow to lay their white eggs.

In the centre of this room stands the model of a very tall kangaroo, of a type thought to have lived in our country years ago, when the aboriginals first took up their abode in this sunny southern land of ours. It is strange to think that "once upon a time" such large animals leapt from rock to rock on our hills, and lashed the white sands of our desert with their gigantic tails.

As one passes from this room, a case containing very large, ugly seals is seen, and, but that the day was warm, one would shiver at the sight of the icicles and snow here displayed. A little farther on, in apparent comfort, stand the polar bears of Greenland, neighboured by their brown and black cousins from other parts of the world. Many another group of wild foreign animals is passed before one reaches Room 4, where the skeletons of various animals are to be found.

From a vision of gleaming bones, one passes on to room after room, each so interesting in its own way, that the hours, on swift silver feet, glide past one by one.

The wonderful bird-room is famous for its beautifully arranged specimens, with their glowing plumage and bright eyes. Among the birds, a very striking study of an eagle's nest high up in a gumtree is presented. The eagle, poised on the edge, holds a rabbit suspended over the nest in which several eaglets lie with opened mouths, impatiently awaiting their meal.

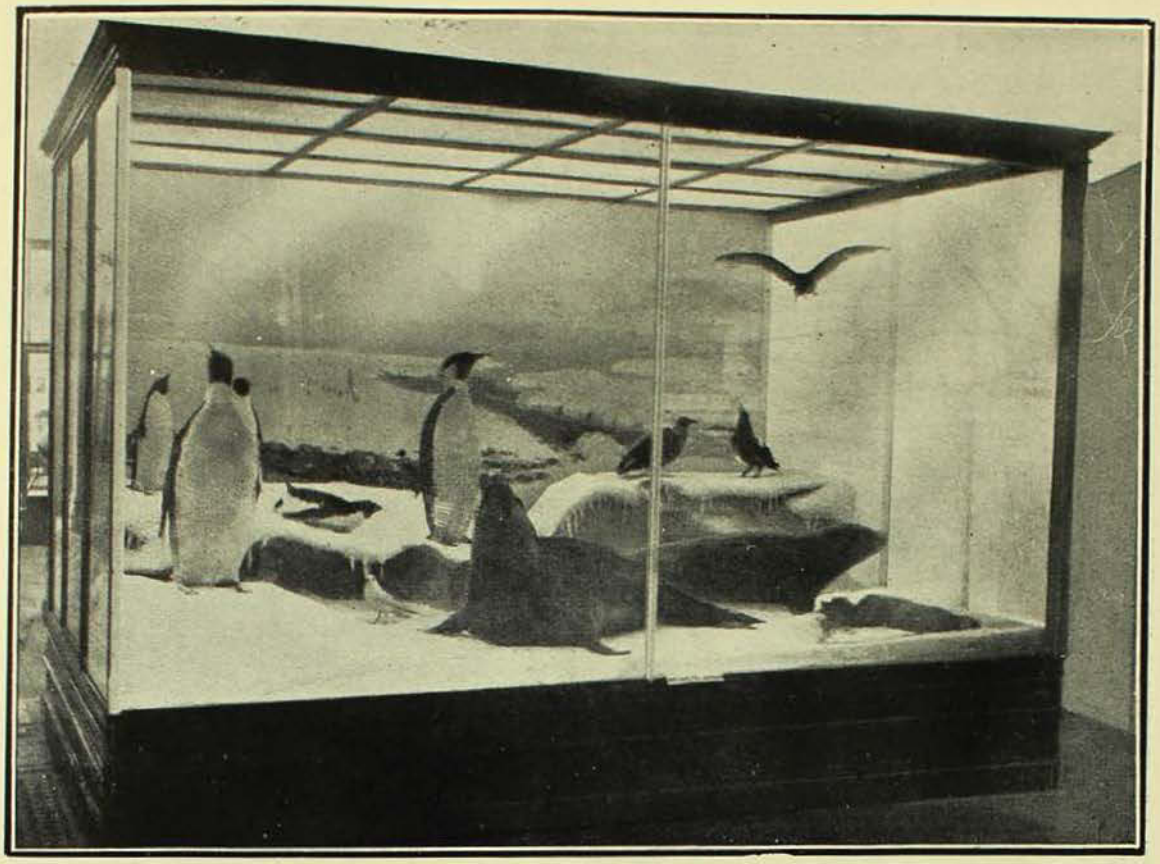
A beautiful sight displayed in this room, is a case of humming birds, whose tiny, perfect feathers reflect the light in a hundred different tantalizing colours. It would be impossible to decide what colour anyone of these small birds is, for one moment a deep, rich peacock blue will shimmer and glow, only to change the next instant to a vivid emerald green, or rich, warm, orange.

Australian birds are well represented by a large room full of cases containing the feathered songsters of bushland and plain. Here among trees and bushes, shine the gay feathers of king parrots, parrakeets and others of our brightly coloured birds. By miniature imitation pools stand the birds which make their homes at the brink of our

ADMIRALTY ISLETS GROUP.

The Admiralty Islets, Lord Howe Island. Here Wideawake Terns, Gannets, Mutton Birds, Noddies, and Blue-billies crowd together to nest and rear their young.

[Photo.—*G. C. Clutton.*



ANTARCTIC GROUP.

Dwellers of the Antarctic Continent. These mammals and birds were brought from the Antarctic by Sir Ernest Shackleton and Sir Douglas Mawson. Whilst the Arctic region carries a large population of many birds and such animals as bears, musk-oxen and foxes, the Antarctic is a waste of ice and snow. Over an expense of thousands of miles there is neither sight nor sound of any living thing, and only the beach is enlivened by the beasts and birds that gain a living from the sea.

[Photo.—*G. C. Clutton.*

laughing streams. The beautiful flamingo is here, standing on one long aristocratic leg, preening its glowing feathers.

When one passes reluctantly from this beautiful spot, it is to be transported to a world of minerals, precious stones and other specimens, dear to the heart of the geologist. This section runs like a balcony round a long, oblong room, and, upon gazing down, one sees a bright square of light in the section below.

Having descended the curiously formed stairway, we discover this square to be a large case, like a shop-window against the wall. Within is portrayed Lord Howe Island, with its grey rugged rocks, the homes of thousands of sea-birds which frequent the cliffs overhanging the snow-capped combers of the coast. The background, a fine sea-scape, with pale blue sky overhead, harmonises beautifully with the grey and white and black of the sea-birds.

Another beautiful section of the Museum, and one which would take hours to inspect in detail, is that containing butterflies, moths, and other insects. It is well-nigh impossible to give even an incomplete description of the beauties of that room. Butterflies, those wonderfully formed insects, with their delicately veined velvety wings, and small black bodies, are displayed in perfect condition, in long, flat cases always kept covered. The wonderful colouring of the fine, powdered wings, seems to have been selected by a master hand, from the rainbow-bridge which spans this world with light and beauty. Some of the moths, in their furry beauty, resemble flowers veiled in mist, with their little points of light and colour dimly shining through. This room, with its wondrous beauty and colour, makes one feel intensely sorry for the hundreds of human beings for whom the world is one long, black night.

One of the most interesting and popular scenes at the Museum, is the recently added Hawaiian group, which occupies a central position in the building. The subject, which

HAWAIIAN GROUP.

Hawaii was first peopled by Polynesians, a race distinguished from others of the Pacific Ocean by reason of brown skin, straight hair and great stature. They spread across the ocean to Tahiti, Samoa and New Zealand. Excelling in navigation and warfare they were still enlarging their dominions when European invasion interrupted native history. Yet since they knew neither the arts of writing, nor of working in clay or metal they were equal in culture only to the neolithic people who lived in Europe 5,000 years ago.

[Photo.—*G. C. Clutton.*

is a Hawaiian family, is displayed life size in natural, native surroundings. The whole family is at work, and a very interesting study of the island cloth and food has been made. The group consists of four figures. An old woman is seated on the ground before a long, flattened log of wood. In her hand is a sort of wooden mallet about nine inches long, with a rounded head and a pointed handle, with which she is beating out long narrow strips of bark from the paper mulberry tree. A girl with long black hair is bringing in a large gourd, stained red and yellow, water to be poured upon the white bark at intervals, to hasten the softening processes. The father of the family, a sturdy giant, is seated on a stone, bending over a long heavy " poi " board, slightly hollowed in the centre to hold the taro, which is being pounded into native porridge. A boy is also engaged in this work, and beats the food into a thick, dough-like mass with the assistance of a round heavy mallet.

The Hawaiians are noted for their great stature, dark brown skin, straight thick hair and broad flat noses. The modelling of each figure is so excellent, that the group appears most realistic, while the expressions on the dark faces, with their thick lips and dark beady eyes, are so life-like, that one expects the arms or legs to move, and the lips to speak at any moment. Each smallest detail in the appearance and attitudes of the models has been so carefully imitated that even the wrinkled old hands and face of the woman are faithfully shown in their natural condition. A piece of the native cloth such as she is making, is the sole dress of the woman, being wrapped round the body from the waist to the knees. The girl, who is dressed similarly, is gazing intently upon the basin she carries, and is stepping carefully for fear of spilling its contents. Both the man and boy, intent upon their work, are fine specimens of this tall and strong race with their short black hair, and thoughtfu

unsmiling faces. Altogether, with its background of native matting, the scene forms a striking and a vividly realistic picture, which seldom fails to hold the fascinated onlooker for a long time.

Suspended from the ceiling of this room, is the "Tomako," or great head-hunting canoe, a structure which, no doubt, has figured in the dreams of many an imaginative small boy or girl who has been taken to the stairway and lifted up, so as to see the interior of the great canoe. Picturesque and enthralling, this canoe, forty-six feet in length, would glide through the shining waters of the island lagoon, rearing a proud, beplumed head nine and a half feet into the air. Fixed to the cutwater is a wooden figure-head or tutelar deity, whose duty it was to keep watch for shoals and reefs, and to warn the natives of the approaching enemy.

Those dark islanders certainly knew how to use, to their best advantage, the ornamental articles provided by a lavish nature. The bow of this canoe is wonderfully ornamented with shell sections taken from the giant clam, which inhabits the southern seas. Natica shells and inlaid pearl decorate the prow in weird and fantastic designs, making the large construction gay, and, to the native mind, beautiful. The high prow and stern are for protective purposes against arrows and other missiles of warfare, while the occupants are landing or retreating. Small wooden figures and feathered plumes surmounting the prow and stern tend to heighten the gorgeous effect of the canoe.

These vessels were made in an advanced manner by the islanders, who built in sections, bevelling the edges of the planks, then sewing them together with "rattan," which is split cane, and caulking the seams thus made with a mixture of "tita" resin prepared from the fruit of a native plant, and red ochreous earth, which tends to make the canoe water-tight, and thus suitable for its purpose. Accommodation in the shape of half-log slabs lashed to the sides of the canoe is provided for twenty-two rowers. Another interesting portion of the outfit consists of the nineteen paddles, whose oval blades and carved handles excite great attention.

The grand old canoe, with all its crude yet impressive ornamentation, excites one to great admiration, and stirs half-stifled longings to be off on an adventure, where such sights as the "tomako" with a crew of the dark savage men of yore is to be seen.

From there one passes on to view the other countless specimens, which, together with the attractive manner in which they are set out, make our Sydney Museum the foremost in Australia.

One cannot help smiling at the thought of the scatter which would ensue if the breath of life were to pass through and arouse throughout the building to movement and sound the hundred of animals, skeletons, and the grotesquely grinning Egyptian mummies within the building. How quickly the dignified public would turn and run with these apparitions at its heels, leaving behind it for ever, the beautiful and ancient relics of our wonderful Museum.

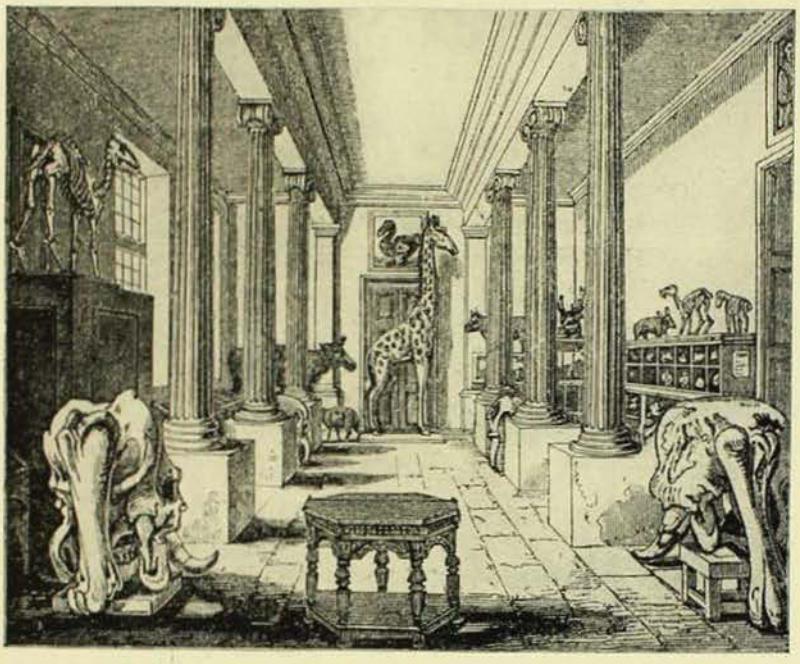
The January-February issue of *Natural History*, the journal of the American Museum, is of special interest to Australians, for it contains several interesting articles dealing with the natural history of our continent. Dr. William K. Gregory contributes "Australia, the Land of Living Fossils," and Mr. H. C. Raven writes on "Glimpses of Mammalian Life in Australia and Tasmania." Mr. R. T. Littlejohns writes of the birds and Mr. Charles Barrett of the reptiles. Mr. A. S. Le Souef has a short article on the vanishing wild life of Australia, and Mr. Charles Hedley, of this Museum, contributes an account of the Great Barrier Reef.

The London Missionary Society held an exhibition in the Town Hall from 28th to 31st May. By permission of the Trustees a collection of native objects from Papua and Polynesia was lent. The General Secretary writes: "your exhibit excited great interest from those who were present, and did much to give completeness to the representation of South Sea work of the London Missionary Society. I desire also to express our very hearty thanks to your Mr. Thorpe for the valuable service so courteously and generously rendered to us in connection with the matter."

Museums of the Past.

By Tom Iredale.

THE rapid growth of the natural history museum in the English-speaking world in the early years of last century is almost entirely due to the impetus given by Cook's voyages of discovery. When Captain Cook accepted the leadership of the expedition to observe the transit of Venus, he was undoubtedly ambitious of discovery but probably little anticipated the results of his voyages. The Linnean age had just blossomed, but it might never have borne fruit had it not been for the achievements of Cook's companions, including a pupil of Linne. Joseph Banks, a man of wealth, young and enthusiastic, obtained permission to accompany Cook, and selected as his mentor a very learned scientist, Dr. Carl Solander, a favourite student of Linne. Banks also had with him a staff of artists, who made paintings on the spot of the specimens obtained. Although Banks and Solander were mainly interested in botany, they made huge zoological collections, and, as Banks paid all the expenses of himself and his staff, all the collections were his private property, which upon his return he freely gave to private individuals who were fully appreciative of their value. The British Museum was practically a new institution and being a novelty, it had to compete with private collections, a stage long since passed as herein shown.



Interior of the Ashmolean Museum. Note the Dodo, behind the giraffe, the only specimen known to have been in a British collection.

The earliest natural science museum to be formed in England was that established by John Tradescant. Although Tradescant died about 1638, nearly three hundred years ago, his name is kept alive in the plant *Tradescantia*, a very common pot plant.

Tradescant's Ark, as his Museum was nicknamed, passed to his son, who left it to a friend, Elias Ashmole, about 1662. While the Tradescants had formed a strictly natural history museum, Ashmole added medals, coins, books, and all kinds of curios, forming a more general collection, which became known as the Ashmolean Museum, and in 1682, Ashmole presented it to the University of Oxford. Tradescant's Collection will always be remembered on account of the possession of the only mounted specimen of the Dodo known in England, and of which, unfortunately, only the head and one leg are now preserved. To the Ashmolean Museum Reinhold Forster presented a number of curios secured in New Zealand and the Sandwich Islands during Cook's second voyage, but he was not responsible for "Sewing instruments from Port Jackson, used by the natives 2,000 miles inland." The articles sewn were probably brought into town daily by the natives.

Thoresby of York attempted to emulate Ashmole with a collection, but he was weak on the natural history side, a most valued possession being the *leaf of a pineapple*. Grew's collection, left to Gresham College, and of which a catalogue was published, is

of little interest to us, nor is Courtin's (later Charleton), but these lead us up to Sloane.

Sir Hans Sloane was a very famous London physician who accumulated a very large collection of natural history and other objects, with as large a number of books and drawings. The idea of a National Museum somehow developed in his brain, and in his will he suggested that his collection should be kept together for the use of the public, and offered it to the Government for that purpose, on condition that the sum of twenty thousand pounds should be paid to his estate. He stated that at least fifty thousand pounds had been expended by him upon the collection. Strange to say, Sloane's bequest was accepted and in the year of his death, 1753, the British Museum was constituted by Parliament.

The inventory of the Sloane Museum shows that about 50,000 books, prints and drawings were included, some 25,000 coins and medals, another 25,000 specimens of natural history, and 9,000 mineralogical specimens. As noted above, the British Museum had several private competitors, but as an instance of its growth it may be mentioned that the collection of birds, eggs, and nests, which in 1753 aggregated 1,172 specimens was in 1906 estimated by Sharpe to comprise over 400,000.

The chief private competitor alluded to was Sir Ashton Lever, a Lancashire gentleman who had a mania for collecting. He was a wealthy man, but with reckless prodigality he bought everything that was offered, so that about the year 1775 he had acquired a collection that surpassed that in the British Museum, but financially he was bankrupt. It was suggested that the exhibition of his collection in London would recoup the expense of removal and perhaps remove all his financial troubles. This suggestion was acted upon, and the collection was brought to London and housed in Leicester Square (a strange place to-day for such an exhibition). For the next five years the receipts exceeded anticipations and the collection was even increased. Consequent upon his success, Sir Ashton did not retrench, and the novelty having worn off, and his means being insufficient to secure new attractions to retain the fickle favour of the public, his resources were once more brought to a low ebb. He was compelled to realise upon his Museum, and, by special Act of Parliament, was allowed to do this by a lottery. The lottery was a financial success but Sir Ashton did not live long after his loss, for apparently he was entirely wrapped up in his Museum. The lot fell in 1785 to Mr. Parkinson, a dentist, who thus became proprietor of the finest museum in Britain. Parkinson resolved to continue the exhibition, but unwisely removed it to the corner of Blackfriars Bridge, a somewhat inaccessible spot in those days. Here, however, it lingered for twenty years, when Parkinson disposed of the whole of the contents by public auction, the sale lasting thirty days.

This museum is of special interest to Australians, as Banks gave many of his most valuable objects to Lever, who may have been a close personal friend. Parkinson proposed to advertise the collection by publishing catalogues and accounts of the rarities in his museum, and a quarto volume entitled " Museum Leverianum " was issued in parts between 1791 and 1796, the subject matter being written up by G. Shaw, Assistant Keeper of the British Museum. Coloured plates were given of Australian mammals and birds, such as the Ground Parrot, the Rosella, and the Diamond Sparrow. A complete catalogue was also attempted, but only the two first parts were issued, so that we know of the contents only from the sale catalogue. However, all through the literature of the next twenty years references to the rarities of the Leverian Museum appear, and it was regarded as a calamity that it had been dispersed, as most of the objects went to the continent. Thus, with regard to the birds, Lever had become possessed of most of the specimens sent home by Governor Phillip and his companions. The White Gallinule of Lord Howe Island now extinct is represented by a single specimen in the Royal Museum in Vienna, purchased at the sale of the Leverian Museum.

Banks apparently never made a famous collection such as this, but specialised more on the botanical results of his trip and depended upon his paintings. Thus he employed three artists when was he on the first of Cook's voyages, and secured the paintings made on the other two voyages. All these paintings are now preserved in the British Museum and include many Australian birds. Parkinson, one of the artists on the first voyage, made a pencil sketch of the black Cockatoo, now known as the Banksian Cockatoo. He died shortly afterwards and

A Perspective View of the Grand Saloon & Gallery at the Museum, late Sir Ashton Lever's, Surry end of Black Fryer's Bridge.

the sketch was never completed. G. Forster, artist on the second voyage, was on the ship that did not touch Australia, but when Furneaux's vessel, which had called at Adventure Bay, Tasmania, reached New Zealand, with its consort, Forster painted two birds they had secured, namely the White Hawk and the Crested Penguin. Ellis was the painter attached to the third voyage, and he painted the Green Rosella, the Hooded Dottrel, the Small-billed Cuckoo-Shrike, and the Superb Warbler (Blue Wren), when the ship he was on called at Adventure Bay, Tasmania. If the specimens from which these paintings were made were brought back to England, they probably passed into the Leverian Museum through the hands of Sir Joseph Banks.

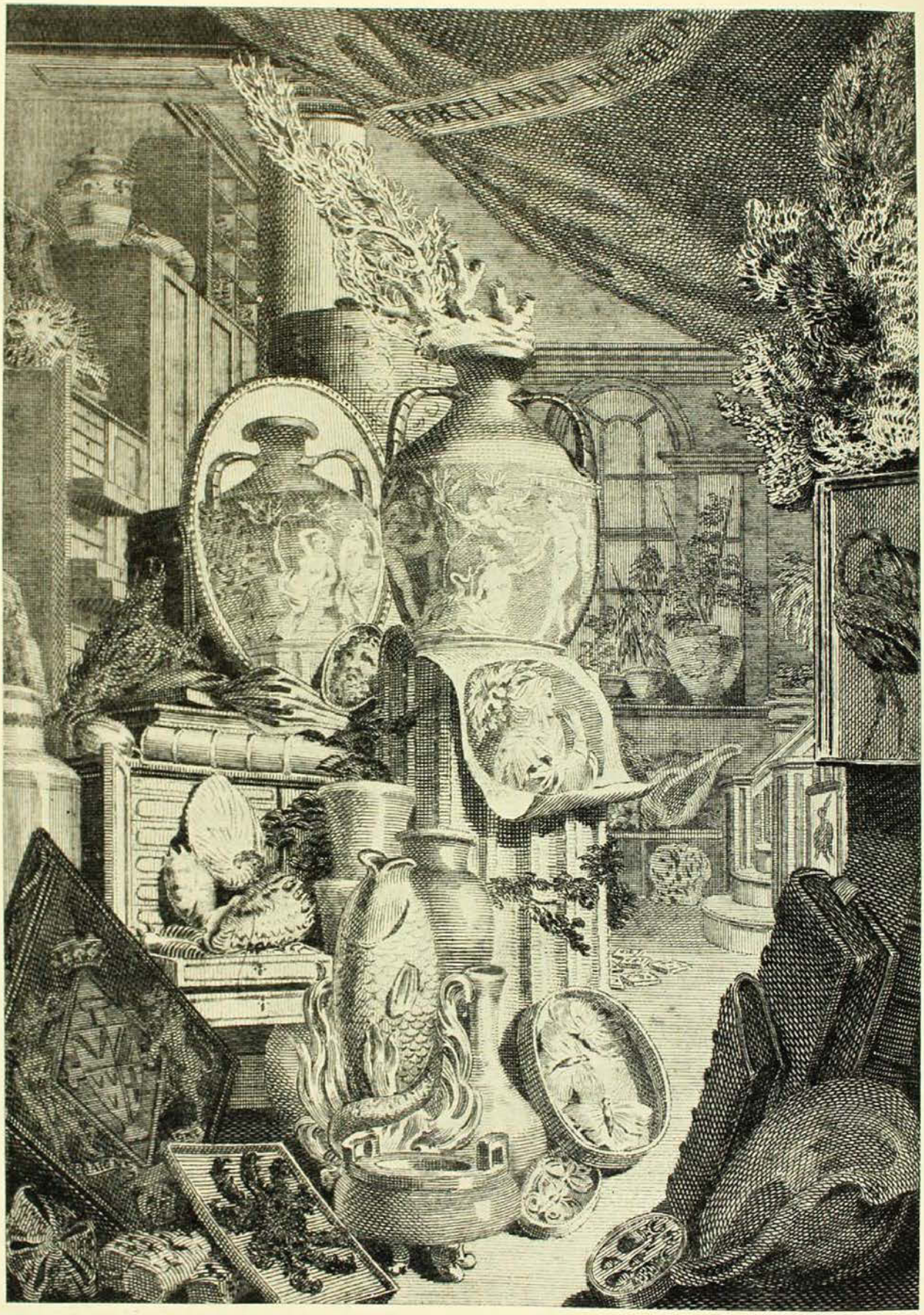
Simultaneously with the formation of the Leverian Museum, another important collection was made by the Duchess of Portland. This great lady bestowed her care more upon the smaller objects, shells being her especial favourites, but many *objets d'art* were included, the most famous item becoming immortalised as the Portland Vase. The majority of the smaller things from our shores collected by Banks and his companions fell to her share, especially as Solander was employed by her in cataloguing her collection. Solander unfortunately died early, and the Duchess did not long survive, the collection being then dispersed by public auction in 1786. All through the sale catalogue, our only record of the Duchess' wonderful collection, shells from New South Wales are marked " Rare " and " Extremely Rare," which of course they would be, since all the specimens in Europe had been brought back by Solander and his companions on the one voyage. Lot No. 4155 consisted of " the most celebrated antique Vase, or Sepulchral Urn, from the Barberini cabinet, at Rome. It is the identical urn which contained the ashes of the Roman Emperor, Alexander Severus, and his mother Mammea, which was deposited in the earth about the year 235 after Christ, and was dug up by order of Pope Barberine, named Urban VIII., between the years 1623 and 1644. The materials of which it is composed emulate an onyx, the ground a rich transparent dark amethystine colour, and the snowy figures which adorn it are in bas-relief, of workmanship above all encomium, and such as cannot but excite in us the highest idea of the arts of the ancients. Its dimensions are 9 inches and 3 quarters high, and 21 inches and 3 quarters in circumference."

This was bought at the sale for 980 guineas, on account of the Duke of Portland. An even more eventful career awaited it. In 1810 the Duke deposited it in the British Museum, where it was shown with pride as one of the most exquisite pieces of workmanship in existence, till in 1845 a lunatic named William Lloyd smashed it with a stone. A highly skilled workman was employed to restore it, and he did the work so well that not a piece is missing. It is now preserved in a special case.

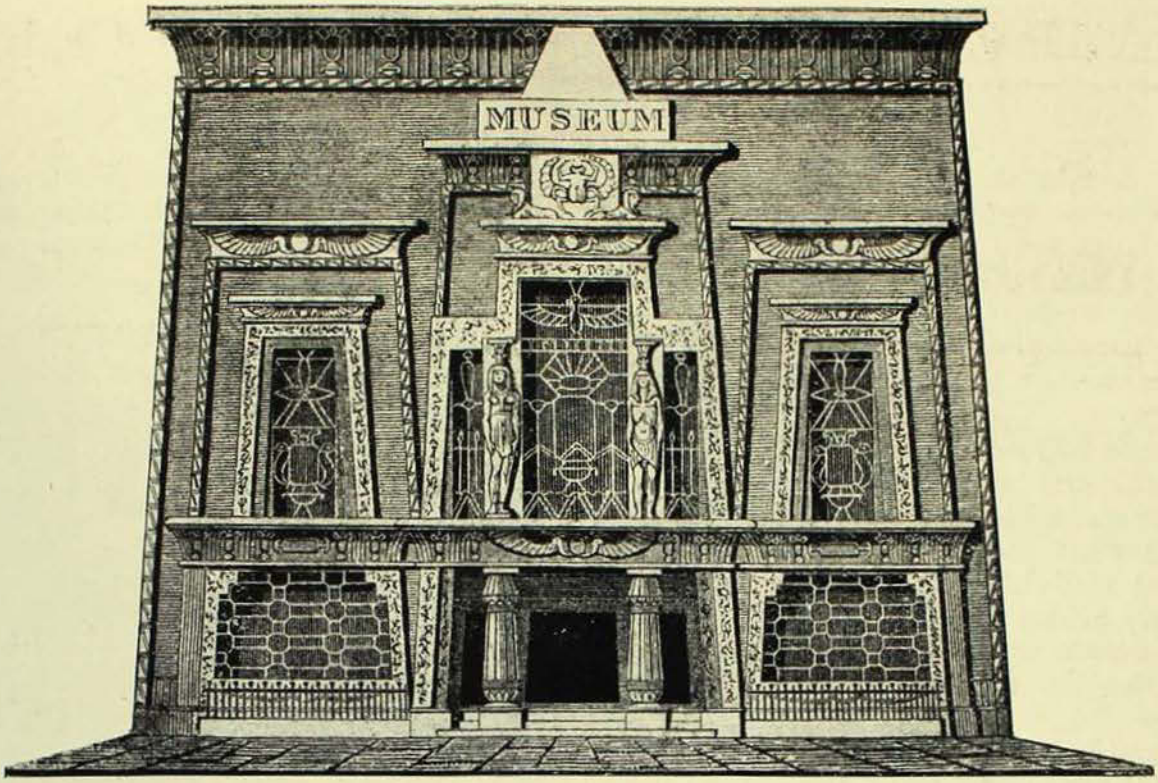
About the time of the decline of the Leverian Museum in London, a museum was started in Liverpool by a goldsmith named Bullock, and at the sale of the Leverian Museum in London, he bought many rarities. In 1809, he brought his museum to London, and, profiting by Parkinson's experience, established it in Piccadilly. But the interest in such things was passing away and it lasted only ten years, when Bullock followed Parkinson's example and sold the contents by public auction, the sale lasting twenty-six days. Bullock had many novelties from Australia, such as the Porcupine Ant-eater and the Platypus, while there was listed a Lesser Emeu, which cannot now be traced ; apparently it was either the King Island or Kangaroo Island species, probably the former. A number of birds collected by Captain Flinders on the north coast of Australia were also in Bullock's collection.

Only one more collection need here be mentioned, *viz.*, Tunstall's. This was a collection of British birds made about 1770, which was purchased by Allan and became the basis of the Newcastle (England) Museum, still in existence. Fox published an account of this in 1827 and therein figured the Wombat giving a long account of its presentation by Governor Hunter.

Concerning the Duck-billed Platypus, Fox wrote : " This anomalous quadruped was also received from Governor Hunter at the same time (1798) and along with the Wombat," with an explanation : " Governor Hunter married Miss Kent, whose brother, Lieut. W. Kent, R.N., took him out to Port Jackson. Their Uncle, Mr. Bartholomew Kent, of Newcastle, proposed Governor Hunter and Lieut. Kent as honorary members of the Philosophical Society of Newcastle in 1795,"



The Portland Museum. The famous Portland Vase occupies the central position in the illustration.



Bullock's Museum, Piccadilly.

hence these rare gifts in 1798, the wombat being one of the first lot sent to England. Another interesting bird is the Blue-headed and -bellied Parrot which is referred to as "A native of New South Wales, in New Holland, and are very numerous in Botany Bay. This bird was brought to England by Sir Joseph Banks, who gave it to Mr. Tunstall, and informed him that it belonged to the unfortunate *Tupia*, a native of Otaheite, who died at Batavia, on his way to England. P. Brown, in his Illustrations of Zoology, has given a beautiful plate of this bird." This plate was published in 1776 and is, I believe, the first illustration of an Australian bird.

When the Government of New South Wales decided to discontinue the trawling industry, the Australian Museum was deprived of a valued agency for deep sea collecting. Private enterprise has since commenced to exploit our fishing grounds, and the manager of the New State Fish and Ice Company, Mr. C. W. Mulvey, has not only given us every facility for collecting, but has been enthusiastic enough to collect and present to this institution marine specimens of great value.

The opportunity is now taken to thank Mr. Mulvey for his kindness, which has enabled us to benefit materially through the activities of the trawling fleet.

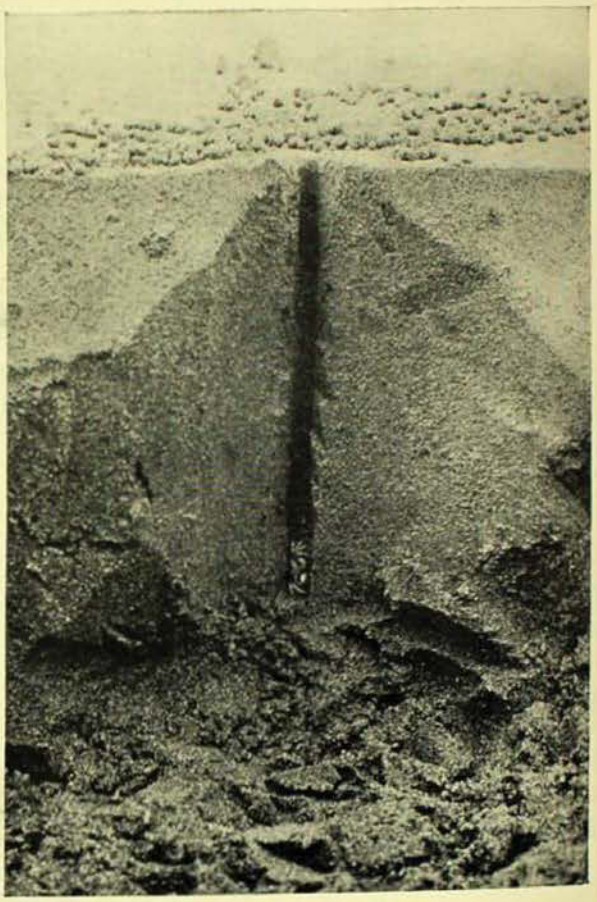
A Day in the Life of the Sand Bubbler Crab.

By F. A. McNeill.

ON certain sheltered beaches along the eastern Australian coastline, large areas of flat sand are sometimes seen to be covered with millions of tiny pellets. These are the work of thousands of tiny crabs (*Scopimera inflata*) and one may study the manner of their production with the greatest interest.

As the tide recedes, and before the beach becomes firm and dry, each hardy little worker makes his way to the surface, scrambling upward through the wet and loosely packed sand beneath which he has rested securely hidden from his enemies during the several hours of high water. First devoting his attention to the improvement of his burrow, he excavates it afresh, removing comparatively large and irregularly shaped loads of sand in his arms, and casting them in all directions around the entrance to his home. The burrow, which may be from three or four to about fifteen inches deep, is excavated in the form of a clean cylindrical bore through the upper layers of firm sand until the more watery and loose sand is encountered below. This moisture is necessary to enable the crab to keep its gills damp and functional.

When the burrow is complete, the crab is ready to enjoy the fruitful part of his labours, and to feed upon the minute animalculae and plant life contained in the sand. In feeding, he moves sideways from the mouth of his burrow and scoops out a narrow trench with his capable little nippers. The excavated sand is then passed into the lower portion of his capacious mouth-jaws, where it is carefully sieved for its contained food-particles. It is then expelled from their upper portion and so manipulated as to form a rounded pellet. Upon reaching a definite size, the pellet is passed backwards and deposited on the beach behind the crab, which simultaneously moves on a pace outwards from its burrow. In this way a feeding trench is formed, nine to eighteen inches in length. Feeding goes on at such a pace that a pellet is formed about every fifteen seconds, and in due course several similar trenches are excavated. As these are approximately straight, it follows that the pellets are arranged in irregular rows behind them, and the whole assumes a striking radial arrangement.

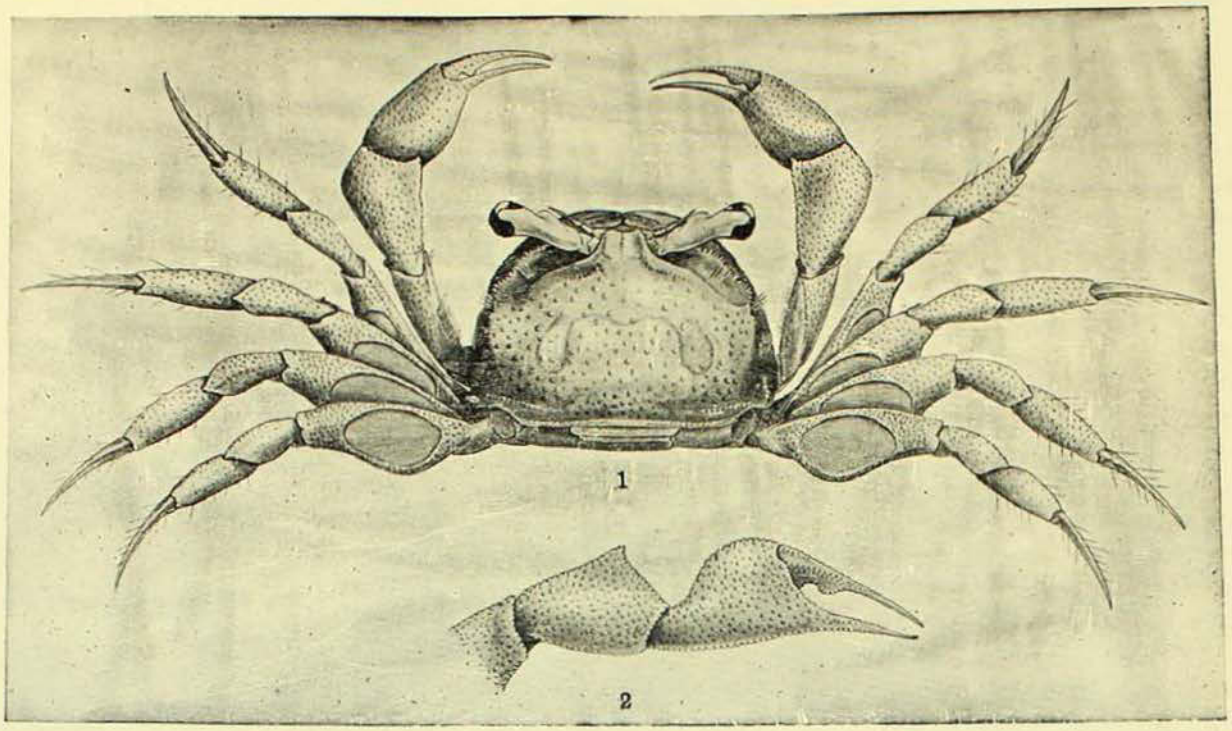


A section of the burrow of the Sand Bubbler Crab. The burrow penetrates the firm dry sand to the moist sand below, depth about twelve inches. The crab is shown at the base, whilst some pellets are scattered about the entrance on the flat of the beach.

[Photo.—*H. Furst.*

There are often thousands of crabs simultaneously feeding upon the same stretch of beach, and it can be readily understood how extensive areas are soon covered with thousands of tiny pellets. In favourable localities, the crabs often feed so close together that individuality is lost, for the pattern of their work becomes almost indiscernible in an inextricable maze of food-trenches and scattered pellets.

The crab feeds on the surface of the beach in the glaring sun, and is apparently in no way incommoded by the direct rays falling

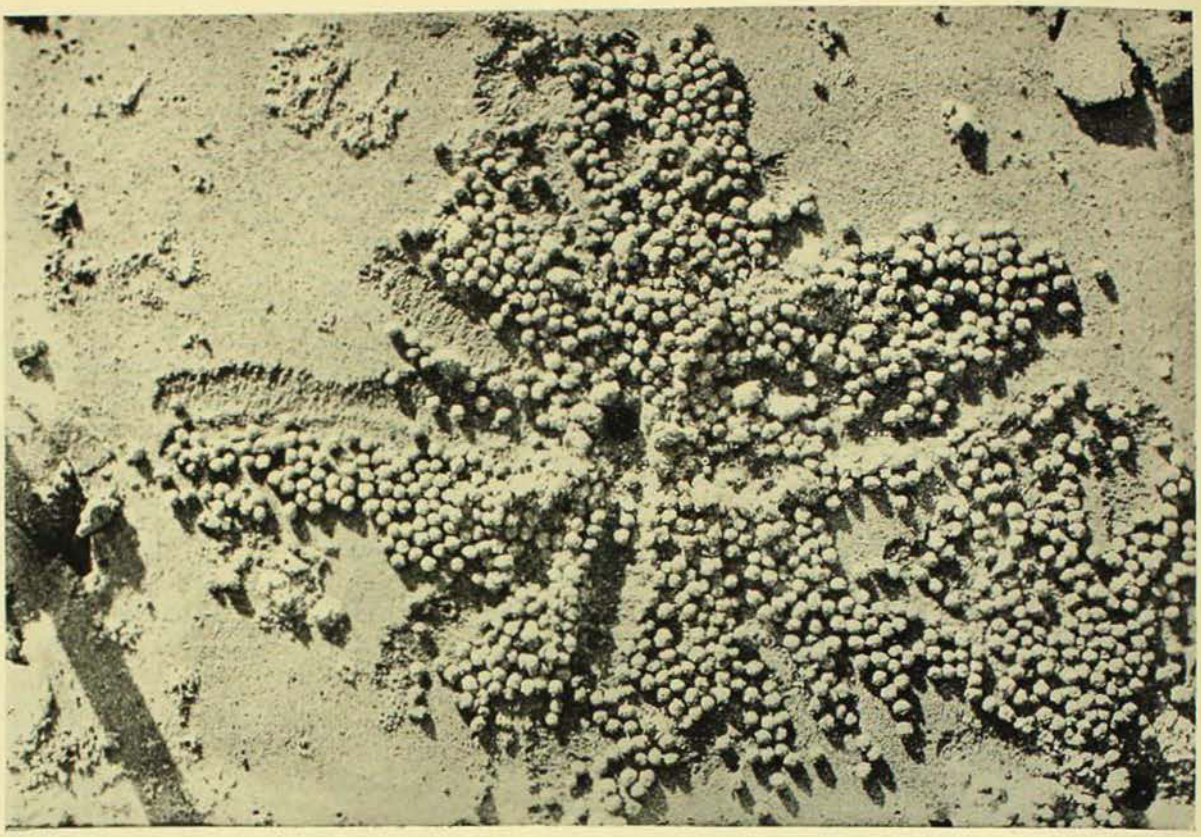


An enlarged illustration of the Sand Bubbler Crab (1). This particular specimen measured about three-eighths of an inch across the body, though larger ones measuring to half an inch may be found. Note the needlelike terminal joints of the legs for securing a firm grip upon the sand, and the delicate fingers of the chelae or nippers (2) which enable their owner to extract the tiny food particles from the sand grains.

[*J. R. Kinghorn*, del.

A corner of the beach at Fingal Bay, near Port Stephens, New South Wales, showing a few isolated burrows of the Sand Bubbler Crab. At this locality the crabs were particularly plentiful in January, 1920. The bay is well protected from the heavy sea waves, the sand is clean and the water crystal clear — three factors particularly favourable for the occurrence of the crabs.

[Photo.—*H. Furst*



Burrow and pellets of the Sand Bubbler Crab, showing the radiating trenches excavated for food and the sifted pellets arranged behind them. The large and irregularly shaped sand pellets are those carried out by the crab whilst excavating its burrow.

[Photo.—*H. Furst.*

upon its upraised and staring glassy eyes. Likewise the heavy contrast met with on coming out on to the sunny beach from the dark cool depths of its burrow seems in no way to affect its excellent vision. It is extremely shy and fleet and retires to the depths of its burrow upon the least alarm. A wind-blown leaf or a butterfly flying overhead is sufficient to scare all the crabs from the beach in the neighbourhood. This perhaps accounts for the shortness of the food-trenches, the crabs being too shy to venture far afield from their safe retreat. The little creature can be observed feeding only when perfect quiet is maintained, and the slightest indication of one's presence keeps it watchfully at the entrance to the mouth of its burrow.

Recently Mr. F. McNeill, Department of Marine Invertebrates, paid an official visit to Shellharbour, on the lower New South Wales coast. The trip has resulted in the acquisition of many rare and beautiful forms of marine life from a locality which proves to be peculiarly rich from a collector's point of view. Mr. McNeill was particularly interested in the occurrence of certain species of tropical crabs, the young of which have obviously been borne south on the breast of the warm Notonectian or south flowing current, which comes close inshore at this time of the year. The discovery is an important one, and reveals some extraordinary distributional features which are to form the subject of a report in course of preparation. It is hoped that similar trips to the locality will be embarked upon from time to time, for it is only by this means that the necessary field knowledge essential to Museum work is accumulated.

A Means Towards an End.

By Frank A. McNeill.

THE word *pidgin* is a Chinese corruption of *business*, and is best known in the expression " pidgin English " used for inter-communication between Europeans and people with a limited knowledge of the English language such as uneducated Chinese, Malays, and Pacific Islanders. By most it is regarded as an imperfect mode of conversation which consists principally of " savvys," " you like 'em " and " no like 'em." It is surprising to all unfamiliar with it to discover that instructions or information can be conveyed in great detail in " pidgin English," and that set rules are employed which vary only slightly throughout the broad region in which the language is the chief means of communication between whites and the natives.

The following letter addressed by Mr. N. S. Heffernan to one of his native employees in the Solomon Islands is a splendid example of this little known tongue. It instructs the boy to collect various specimens for the Australian Museum, and is the outcome of a pleasant hour of conversation when Mr. Heffernan visited this institution recently to present certain valuable additions to our collection.

Sydney, May 1, 1924.

To Walter Notere,
Senior District Headman,
Ysabel Island, British Solomons.

Dear Walter Notere,

Friend belong me along Sydney Museum him want something along you.

One big fellow bottle he go along Capt. Macquarie. Walter, you take this fellow bottle and you go along this big fellow hole along Mufu, and you make him boy belong you catch him fifty small fellow flying fox. This one where him he stop all the time along this fellow hole—all same smoke. He no one kind, some fellow he different. No matter, take him altogether. You kill him finish. Take him pocket knife, you make one small fellow too much hole along belly, pull him out guts. Pull out guts finish, throw him flying fox inside bottle, no more.

Alright Walter, flying fox finish, you take him bottle along Furona, and you tell altogether Mary belong you catch him altogether crab where he stop along stone along reef, and altogether crab where he stop inside sand along reef ; all kind, no matter, big one, small one, all same.

Now you hear my talk good fellow Walter, and *Sais ami Sais ami.*

This fellow master all along Sydney him want altogether something too much. Tell Mona look him out some fellow snake too. Altogether this something suppose you put him inside bottle along with something medicine, he no savvy rotten.

Your friend,
(Signed) N. S. Heffernan.

Look nother side.

(N. B. — The following postscripts were written on the other side of the original letter.)

Now Walter, this bottle he full up, finish. Give him along Capt. Macquarie.

Snakes—belly along him, take him pocket knife, break him guts all same fish, and make guts come out altogether. No cut him snake big fellow too much Walter, little bit, no more.

No fill him bottle too much, might be altogether something he stink.

The person to whom this letter is addressed is a man of importance in his own country, holding authority directly under the white officials over the natives. He is a Solomon Islander, educated at Norfolk Island, and has been trained in reading and writing. It is peculiar that his accomplishments are confined to the " pidgin English " exemplified above, but it must be understood that Walter Notere, in his capacity of District Headman, spends his life in contact with a people amongst whom pure English is not understood, and for this reason is never used, even by the whites when addressing them. It is often difficult for the uninitiated to interpret the true meaning of this jargon, and its flexibility seems to be inexhaustible. The simple native ideas and roundabout phraseology are accommodated in a maze of words often too complicated to be readily understood. In addition, many English words are often made use of in a sense which is very different to that of their ordinary meaning, and it requires much association with the ways of the native populations before one becomes an adept at " pidgin English."

The following is a literal interpretation of the letter above :—

Dear Walter Notere,

A friend of mine in the Sydney Museum wants you to get something for him.

A large receptacle is being sent to Capt. Macquarie which I wish you to secure and take along to the big cave on Mufu [Point]. Make your boys catch fifty of the small bats inhabiting this particular cave, and which appear as smoke [when congregating in great

numbers at dusk]. There are several kinds occurring here, but you may take them indiscriminately. You are to kill them and then with a pocket knife make a very small incision along the abdomen and remove the entrails. After this, place the bats in the receptacle of preservative, nothing else.

Having secured the bats, you are to take the bottle along to Furona and tell your wives to collect some crabs from among the stones along the reef, together with some others which bury themselves in the sand near the reef ; secure all kinds irrespective of size.

Now that you know what is wanted Walter, hurry on with the work.

This master in Sydney wants quite a lot of things, so tell Mona to look out some snakes for him. Put all these in the receptacle of preservative, and they will not putrify.

Postscripts.—

When the receptacle is full give it to Capt. Macquarie.

Snakes.—Cut the belly with a pocket knife in the same manner as you would a fish, and remove all the entrails. Do not make too big an incision, a little one, that's all.

Don't overfill the receptacle, or everything may decompose.

Stoats and Weasels.

By Allan R. McCulloch.

Press notices appearing from time to time disclose that would-be authorities consider the advisability of liberating European Stoats and Weasels in the hope that they will wage war upon the rabbits in this country.

SHALL we never learn ? Is the bitter experience gained from the introduction of rabbits, foxes, thistles, prickly pear, lantana, and a thousand other pests, into this land of ours, to be forgotten while some foolish experimenters add stoats and weasels to the list ? In Europe, where those valuable fur animals include bunny in their bill of fare, there are squirrels and shrews and numbers of other small animals, as well as birds, each of which has learnt, through long association of several thousand years or so, to keep a watchful eye upon the lithe form of Mr. Weasel. But, in Australia, his swift and sudden attacks are unknown. Our native cats cause a shiver to run down the spines of small birds as they sit huddled among the branches at night, and rats seek the shelter of their burrows when this spotted terror comes within their vision. Our tabby cat has deserted the hearth in many parts of the continent and reverted to the wild state of its ancestors to take toll of more native birds and animals than can well be spared, even though the bag not rarely includes a bunny or two. But the activities of both the introduced and native cats are as those of the eight-times slower movement pictures one sees at the movies compared to the speed of a stoat or of a weasel. With a few thousand of the latter liberated into this State, we could say farewell to all the smaller native birds and mammals as are left. Unused to such marauders in their domain, they would readily fall victims to these capable slayers. But would the stoats and weasels materially affect the pests as expected ? Most certainly not while other prey is so much more easily obtained. The lessons learnt by the ancestors of our rabbits on the other side has not been forgotten by their descendants, and they bolt at the first intimation of the presence of either a stoat or a weasel, leaving the unenlightened native animals to their fate.

There is not a single insect-eating bird or animal in Australia to be spared, while those of the smaller species that are vegetarians are each doing their bit to preserve the balance of Nature, which foolish man is ever striving to upset. So let us preserve them at all costs and, whatever else we may do, let us prevent the introduction of the weasel and the stoat which may so easily become additions to our awesome list of introduced pests.

Bronze and Ivory Figures from Burmah.

By William W. Thorpe.

Brig.-General Reuter E. Roth, C.M.G., D.S.O., V.D., M.R.C.S.E., a former trustee of this Museum, has on many occasions enriched our collections by donations of objects of ethnological interest and value, acts for which we owe him much thanks. His many visits to the East have presented opportunities of acquiring exhibits of more than ordinary value. During a recent trip to Burmah he obtained several interesting statuettes, fine examples of the handiwork of the Burmese, which are now exhibited—three of these are illustrated.

One, a bronze figure, represents a Burmese woman in the act of personal ablution, without disrobing. The ladies of Burmah are amongst the most modest of their sex. This acute sense of propriety is religious in its origin. The Burmese believe that they are guarded and influenced by twelve spirits, six of whom are benign, and six malevolent. Disrobing entirely therefore, in public or in private, would be an offence to the good spirits, a belief shared by both sexes. The figure depicts the lady in the act of pouring water from a bowl over the body, while still clothed in the cylindrical *loongie*, a woven silk garment. After the bath is completed, a dry garment is thrown over the head and the wet wrapper dropped to the feet. Often the *loongie* is washed with soap while on the body and discarded in the same manner after a clean garment has been made secure.

The other bronze figure depicts a man adorned with the most elaborate silk garments and personal ornaments. The head dress is typically Eastern, and the whole attire is that chosen for state occasions, or periods of festivity and dancing.

A pair of small ivory figures, wearing loin cloths and turbans, is cut from a single tusk and mounted on a circular teak base. They are engaged in delicately balancing basket balls of woven bamboo on heel, toe, and shoulder. This is one of the many actions connected with *shin loan*, the national game of Burmah, in which the hands are not engaged at all. From an artistic point of view the pose of both figures is admirable, and the work is a fine example of Eastern art.

Statuettes from Burmah, described in this article and exhibited in the Ethnological Gallery, Oriental Section, of the Australian Museum.

[Photo—*G. C. Clutton.*

The Dodd Collection: A Liberal Education in Entomology.

By Anthony Musgrave, F.E.S.

SYDNEY was recently privileged in having the opportunity of inspecting a large portion of the splendid collection of North Queensland insects which has been amassed as a result of many years of labour by Mr. F. P. Dodd.

For about forty years Mr. Dodd has assumed the rôle of collector of insects and much of that time has been spent in North Queensland, first at Townsville and later at Kuranda near Cairns where he now resides. It was upon such insect novelties that he could obtain from the scrubs that Mr. Dodd depended for his livelihood, for rich collectors and scientific institutions were eager to secure material from this little known locality. During the course of years his reputation as a collector and observer became world wide, and scientific literature is rich in the specific name of *doddi*, tributes to his zeal as a collector. But not only as a gleaner of new species is Mr. Dodd famed, for he has published many entertaining articles in the journals of scientific societies throwing much light on the habits of the insects he has collected.

As visitors to Kuranda always call at his house to inspect his collection he was seized with the idea of exhibiting a portion of it in the large towns and cities of the Commonwealth, making a nominal charge for the purpose of viewing it.

For some little time this collection was on view in S. James' Hall, and here one could see over eighty cases containing about 15,000 specimens and comprising all groups of insects from the sluggish stick insect to the versatile and ubiquitous ant. The collection, which was primarily intended to interest and educate the man in the street, was arranged to display to their best advantage the colour, size and shape of the insects. Specimens usually exhibited in museums are often the result of captures in the field and for that reason they are less likely, particularly the butterflies and moths, to be sound in wing and limb compared with those specimens which have been bred. Mr. Dodd's specimens of these groups are, for the most part, bred examples and these, combined with the beautiful setting for which his specimens are renowned, showed these insects at their best. For this reason the magnificent green and black bird's wing butterflies, *Troides priamus*, and the brilliant blue swallow tail butterfly, *Papilio ulysses*, rarely failed to elicit exclamations of delight from visitors, while among this carnival of colour bizarre forms of insect life provided an element of comedy. To enumerate a fraction of the charming things to be seen in the collection is far beyond the scope of this article, but a brief account of an extremely interesting instance of mimicry which appealed to the writer is here given. During 1917 Mr. Dodd visited Papua on a collecting trip accompanied by his son, Mr. W. D. Dodd, and here they secured specimens of the well known Papuan day-flying moth, *Nyctalemon orontes*, a large blue and black insect with swallow tails and scalloped hind-wings which they found mimicked by a swallow-tail butterfly, *Papilio laglaizei*, the colouration on the upper surface of the wings being very similar in appearance in both insects. How they first made this discovery is best given in Mr. Dodd's own words as they appeared in *The Victorian Naturalist* for 1919. "We several times saw *Nyctalemon orontes*, and were puzzled more than once with its flight, the movements appearing quicker than usual with this well-known day-flying moth; but, obtaining some gregarious caterpillars, they duly pupated as Papilios do, so we wondered what we should get in a butterfly. It was a surprise to find that we were rearing *Papilio laglaizei*, an almost perfect mimic of the moth; then we understood the differences in flight, for sometimes we, knowing nothing of the butterfly, had very naturally taken specimens of it for the moth. The deception above is almost perfect, but the under side is

widely different in the hind wing; however, like the moth the mimic keeps its wings flatly spread when at rest."

In spite of many other extremely interesting and educational examples of insect lore, as well as the amazing beauty of the insects themselves, the response from the public was, unfortunately, not commensurate with the outlay necessary to hire and equip a hall for the display of so large a collection. True it is, that in the Insect Gallery of this Museum we have a large collection always on view which contains many forms to be seen in the Dodd collection, but the opportunity of seeing so large and rich a collection from a given locality and through the endeavours of one man rarely falls to the lot of the average individual, and those who neglected the golden chance of seeing the insects have lost it for ever. Mr. Dodd is a man advanced in years, and, tired of the profitless occupation of displaying his collections to an apathetic public, he proposes to dismantle it and offer it for sale.

The Mud-Sucking Platypus: A Brief History.

By Harry Burrell.

Mr. Burrell, who is widely known as one of the foremost field naturalists in Australia, has for years made a close study of the platypus and its habits. In the following verses he has summarized the salient characters of this strange survival from the geologic past.—Editor.

O ! thou prehistoric link,
Kin to beaver, rooster, skink,
Duck, mole, adder, monkey, fox,
Palaeozoic paradox !

Beak of shoveller, spur of fowl;
Cheek of monkey (pocket jowl);
Trowel of beaver, gait of skink;
Dope of adder, foxy stink;

Mode of digging *à la* mole,
Fur much richer on the whole;
Feet palmated, ditto paws;
Latter webbed beyond the claws.

Swimming, diving, most expert,
Wary, nervous, cute, alert.
Food—aquatic creatures (small),
Sediment, and mud with all.

Ear and eye-lids all in one;
Young have true teeth, adults none;
Snarls like cheeky pups at play;
Bites like gander when at bay.

Adult female spurless quite;
Teatless udder—contents white;
Egg producing, capsules soft;
One to three, but two more oft.

Epipubic bones support
Dimpled abdomen; in short,
In that slight depression she
Incubates her progeny.

Warmth increased for eggs and young
By her tail, well underslung;
Snugly cuddled to her breast,
Mother nature does the rest.

Day-old youngsters in the nude,
Beakless, sightless, contour crude;
Sleep essential, rapid growth,
Spurs project in sexes both.

Mother's duties never done;
Father's (when not flirting)—none;
Hail ! O paradox supreme,
Prehistoric Monotreme !

Popular Lectures.

THE popular scientific lectures conducted by this museum prove a great attraction. These lectures are illustrated by lantern slides and specimens and show the wealth of things contained in the collections. Brief reports of lectures delivered since our last issue appeared are given here :—

On May 8th, Mr. T. C. Roughley, Economic Zoologist of the Technological Museum, delivered a lecture on the Oyster in the Australian Museum lecture hall. After a brief introductory sketch of the history and occurrence of the oyster in other countries, and its history in Australia from early times, Mr. Roughley then described its internal anatomy, reproduction and life-history, followed by an interesting discourse on its cultivation and pests in the waters of New South Wales. Finally a few facts and figures were given of the industry generally. The lecture was illustrated with numerous lantern slides, from photographs taken by the lecturer.

A lecture dealing with " Fishes and Things " was delivered by Mr. Allan R. McCulloch on Thursday, 12th June. A modicum of good fortune combined with lots of hard labour has enabled the lecturer to see many queer things which are known to most of us only through books, and the slides thrown upon the screen were photographs made by him during various trips around the South Seas. Unless he be possessed of a small aquarium the average citizen knows very little of the wonderful colouring and graceful movements of fishes under water. By coloured slides and a short length of cinema film the lecturer portrayed a few of their little known charms. The " things " included bêche-de-mer, crabs, anemones, and other quaint associates of fishes upon a coral reef.

Professor L. Harrison on June 18th discoursed on the Platypus—a mammal which has been the centre of controversy since its discovery over a century ago. Governor Hunter, in charge of the Colony, when apprised of the discovery of the animal, at first thought some deception was being practised upon him but further discoveries removed his doubts. Considerable discussion regarding its zoological position has raged for years, but it is now definitely known that the platypus is a mammal which not only lays eggs but suckles its young when hatched. It occurs throughout Eastern Australia from Cape York to Tasmania and its secretive habits and extreme timidity render observation difficult. The lecture was illustrated with a fine series of slides showing details of its burrowing, nesting, and other extraordinary habits. Particular mention was made of the invaluable field work performed by Mr. Harry Burrell.

Lectures yet to be delivered are as follows, time of delivery, 8 p.m. :—

July 10th.—Lord Howe Island, the Madeira of the Pacific. A. Musgrave, F.E.S.

August 14th.—Nests of some Australian Birds. J. R. Kinghorn, C.M.Z.S.

September 11th.—Nature the Master Sculptor. T. Hodge Smith.

October 9th.—The Beginnings of Life. E. A. Briggs, B.Sc.

October 23rd.—To be announced later.

November 13th.—Non-Marsupial Mammals of Australia. E. le G. Troughton.

December 11th.—Evolution of the Horse. W. S. Dun.

Whilst this series reaches the metropolitan resident, the Museum is not neglectful of its country supporters. For their benefit the Extension Lecture scheme has been founded. Lectures, exactly similar to those given here, are delivered in suitable country centres, and have been conducted with great success. All that is asked is that a local committee will undertake to provide a hall and lantern, attend to advertising and generally do what is necessary to make the lectures successful. No fee is asked for the lecturer's services, and the Museum defrays his travelling expenses. The lectures at present available are mentioned here :—

A. Musgrave, F.E.S.—Ants and Ant Communities. Spiders : their Structure and Habits. A Naturalist on the Nepean River.

J. R. Kinghorn, C.M.Z.S.—Value of Birds to Man. Australian Reptiles. Snakes and Snake Venom. Some Nests of Australian Birds. A Ramble on the Sea Shore.

T. Hodge Smith.—The Romance of Gold Mining in New South Wales. The Formation of the Blue Mountains and the Coastal Plain. The Geology of the Sydney District. Nature, the Master Sculptor. Meteorites.

A. F. Bassett Hull.—Australian Sea Birds. Beautiful Australian Birds. Useful Australian Birds. Birds of Australia.

F. L. Grutzmacher.—Life in our Ponds and Creeks. Common Insects of the Bush. A Sea Shore Ramble.

A. H. Chisholm.—The Sport of Bird Study.

W. S. Dun.—Evolution of the Horse.

During the past quarter lectures have been delivered on alternate Tuesdays to over two thousand children attending the public schools. The lectures, like those of the evening series, are illustrated by lantern slides and exhibits and are prepared in a manner suitable for the juvenile mind. For details of this scheme teachers are requested to communicate with their inspectors, who will make the necessary arrangements for attendance.

Fishes and the Movies.

By Allan R. McCulloch.

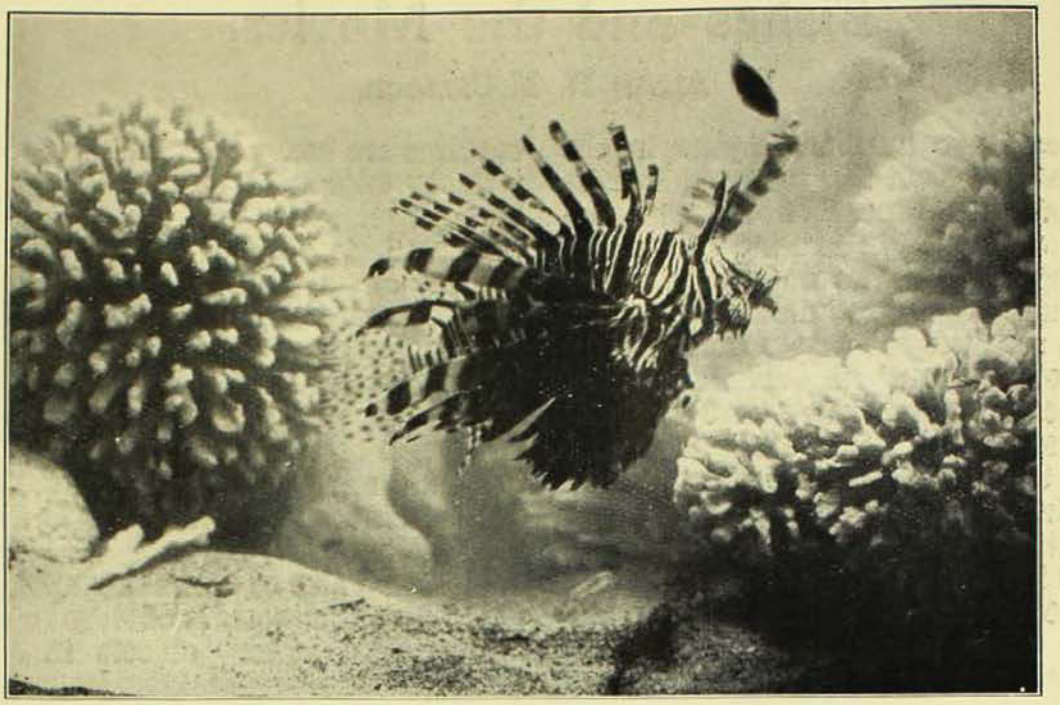
FIFTY years ago a photographer in the field was beset with so many difficulties that only the most enthusiastic experimenters succeeded in making pictures of outdoor subjects. In the days of the wet plate the photographer required a dark tent in which to sensitise his plates immediately before exposure, and his chemicals and weighty accessories were such that a wheelbarrow or a small cart was necessary to carry his gear to the locality selected for picture making. Mr. W. H. Hargraves, a Trustee of this institution, recently showed us fine examples of his work and gave an illuminating account of the difficulties and labour involved in their production. The prints were of large size, and had all that rare quality characteristic of the old wet plate process.

The modern amateur, with a film kodak collapsing into a small space, may produce negatives of first-class quality with no more knowledge than is required for the selection of the picture and judgment of light values, and offers a wonderful contrast to the photographer of fifty years ago, overburdened as he was with impedimenta and chemical technicalities. The tourist preserves pictorial records of his travels, the stay-at-home makes records of his progeny in their developmental stages, and the naturalist picturises a few of the ever varying settings he finds to interest him on nature's stage.

These latter pictures serve as illustrations for magazine articles, and convey in a glance more than can be told in pages of text, though they are but momentary incidents in the lives of the subject they portray. They also make lantern slides which enliven lectures, especially if tinted with colours as near to those of nature as possible. But, at best, they show a few of the endless changes which animals and plants undergo, and need more or less descriptive matter woven around them before they assume their full interest.

Cinematographic pictures, on the other hand, showing animals in motion, largely explain themselves, and provide brief peeps into the ways of living of various beasts, which are vastly more interesting than still pictures of the same subjects. But cinema cameras are heavy and need to be set upon weighty tripods to ensure rigidity, because the magnification of the pictures, when projected, is so great that even a slight rocking of the machine appears as a violent and disconcerting commotion when the film is projected upon the screen. Further, the heavy cost of film places cinematography beyond the scope of most amateurs, and when all those of developing and printing the positive are added to the expenses incurred in securing the negatives, it becomes prohibitive.

Yet the value of cinematographic pictures for teaching purposes is obvious to everyone, and natural history objects in particular make fascinating subjects for lecture purposes. The greater number of nature studies so photographed are based upon land animals, the difficulties of under-water photography being such as to greatly restrict its application to anything other than that which will thrive in aquaria. Saville Kent, author of a monumental work on the Great Barrier Reef of Queensland, was the most notable photographer of coral and other animals upon a reef, and his book is still the standard work dealing with this subject. He published many photos of reefs left exposed by the tide, showing coral gardens of infinite beauty and variety, and likewise studies of echini, giant anemones and holothurians, etc., which were posed for portraiture in bath tubs or in shallow pools. His pictures of fishes showed only dead specimens, because the cinema had not been thought of in his day, and their graceful evolutions when swimming, together with a thousand other interesting activities, could be recorded photographically only by those to whom aquaria were available. Wonderful as Kent's pictures are, he doubtless deplored his inability to illustrate subjects with greater realism, and some of his work exhibits an effort towards producing "stage" effects. Such are apt to produce wrong impressions, however, as occurs in his picture entitled "A desperate Melée," in his entertaining book *The Naturalist in Australia*, page 242. His subjects, commonly known as Army Crabs, *Mycteris*, were evidently placed in an arena



Butterfly Cod (Pterois volitans). A fish of evil reputation but extraordinary beauty. Having numerous spines endowed with venom-glands, it is accorded proper respect by its neighbours, before whom it flaunts its greatly enlarged and gorgeously coloured fins. [Photo.—*A. R. McCulloch.*

represented by a soup-plate, and their confusion in such unfamiliar surroundings led to the impression that they were fighting vigorously, as befits their vernacular name. Those who are familiar with these curious little crustaceans, however, will know that their movements in vast armies have no aggressive purpose, and struggles between individuals are doubtless limited to gentlemen crabs battling for their lady-loves, or because of other sources of quarrel, as occurs in every group of animals, humans included.

Colour photography was impracticable in the 'eighties when Kent was in the field, but he later became an enthusiastic experimenter in three-colour work, and while making pictures of some exhibits in this Museum, showed me some wonderfully accurate results. In this he was again restricted to "stills" and relied largely upon dead specimens for his subjects. He left Sydney with the intention of making colour photographs of fishes and corals on his well-beloved Queensland reefs, but with what success will never be known, for he died before returning to England.

Colour cinematography is now becoming practicable, and soon it will be possible to illustrate lectures with movies showing both the form and colour of the brilliant tints of fishes, and their many other brightly-hued associates of a coral reef.

A desire to increase the interest of recent lectures in the Museum hall caused me to make cinematographic pictures of fishes and other things of natural history interest at Lord Howe Island. The camera, tripod, spare film-boxes and other appurtenances which I used, weighed in all about 70 pounds. Its transport to scenes of operation, often over exceedingly rough country, was a matter of great difficulty, and taxed the good temper of several friends who assisted me, and without whose willing co-operation, I should have been unable to do anything. Over the roughest of mountain tracks, stepping from boulder to boulder, climbing upon steep cliff-faces in search of nesting sea-birds, through dense forests where tangled vines caught and held the load, or out in a cranky dinghy to reach the coral reef, my awkward gear was carried with never a word of complaint, and I hereby extend sincere thanks to all those friends whose cheerful help enabled me to carry out this self-appointed task.

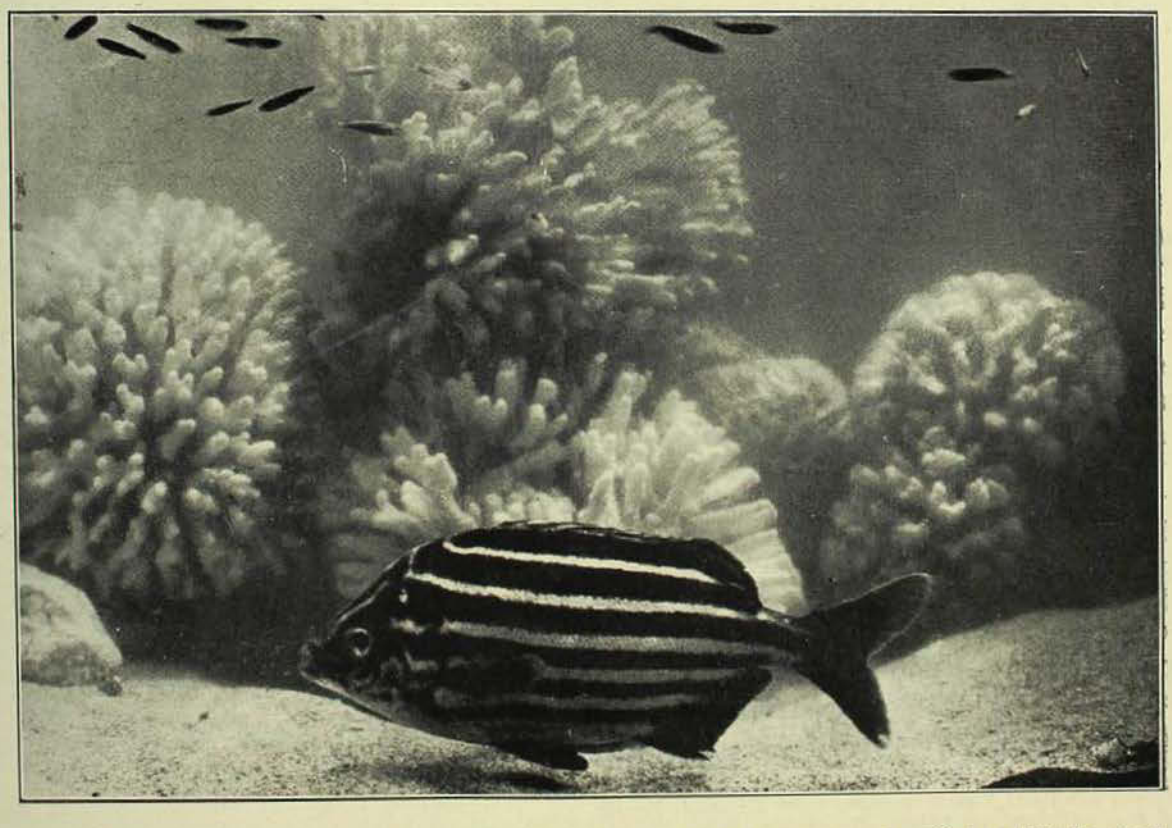
Pictures of sea-birds nesting close together in hundreds of thousands were secured with

comparative ease, and other natural history subjects were filmed by one means or another. The difficulties of photographing fishes under water, either free or more or less confined, are obvious, however, and when their idiosyncrasies are to be recorded by the cinematograph the photographer's troubles become almost insuperable. The fish perhaps moves when the machine is out of action, or remains studiously still when it is required to be active, and hides so successfully that special tricks have to be adopted to bring it within range of the camera. The photographer, of course, must be hidden and innumerable camouflages must be invented to delude the subject of the picture into the belief that its safest position is immediately in front of the lens. With one fish such difficulties are bad enough, but when a small school is being pictured, patience and a readiness to seize upon the slightest advantage must be maintained.

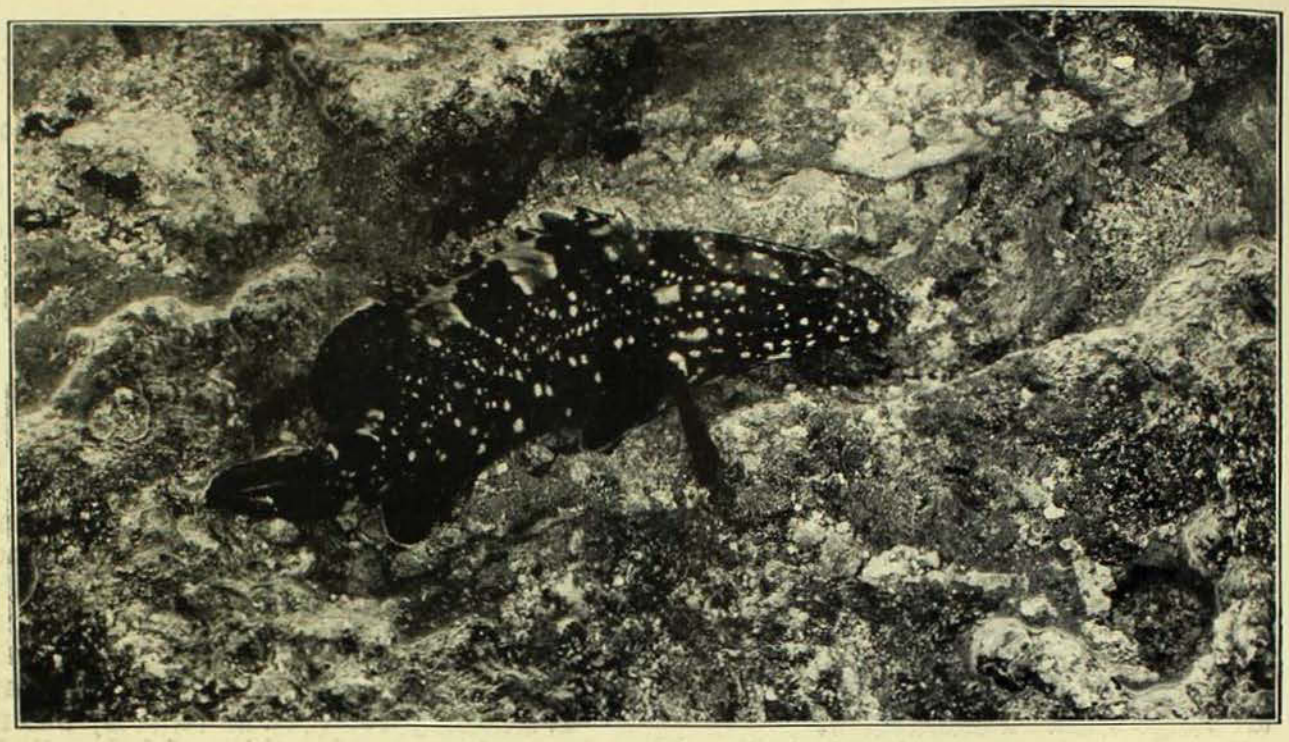
Because my lecture dealt principally with fishes, I devoted a large portion of my time to securing both still photographs and movies of whatever varieties were available. The accompanying illustrations, together with nearly two thousand feet of cinematographic film pictures, were obtained, under varying conditions. Experience gained while in Papua with that most experienced of photographers, Captain Frank Hurley, enabled me to eliminate many initial errors, while the ever-willing help of Mr. R. Baxter of Lord Howe Island and his boys, overcame such others as presented themselves.

The frontispiece illustrates a number of Big-eyes (*Apogon norfolcensis*) moving together among the coral. This species is abundant in holes in the reef, and thousands may be seen together if one dives into the deeper pools with eyes protected by swimming glasses. Their semi-translucent bodies and iridescent stripes through the eye render them of rare beauty, but it was not until they could be observed under water from the same point of view as that of their fellow fishes that my island friends discovered their charm.

A Butterfly Cod (*Pterois volitans*) was my star performer and a thing of indescribable beauty. For what purpose nature should evolve a creature so ornate is beyond my understanding. Its zebra-like body, striped with bars varying from scarlet to brown



Leather Jacket (Atypichthys latus). Striped with black and yellow, and swimming rapidly in small schools, this species is difficult to photograph even when it can be inveigled within range of the camera. [Photo.—*A. R. McCulloch.*



Black Rock Cod (Epinephelus damelli). Almost black, with creamy spots, this fish relies upon its colouration to camouflage it when beneath the shelter of a boulder on the reef, but is obtrusively conspicuous when the shelter is removed. [Photo.—*A. R. McCulloch.*

upon a creamy ground-colour is further bedecked with orange tentacles, and every fin is as greatly enlarged and ornamented as the tail of a peacock. The filmy membrane of the exaggerated dorsal and pectoral rays is not united with its neighbours as in most other fishes, but each forms a feather-like structure which is gorgeously banded and variegated with brilliant colours. Its more serviceable tail, soft dorsal and anal fins are ornately spotted, but the huge ventrals are purplish or greenish violet with staring white spots, which clearly serve to warn off prospective enemies. For this fish has numerous venom-glands connected with its spines, as in all the other members of its family (Scorpaenidae), which apparently, so effectively protect it against attack that it flaunts its plumes before the gaze of the fish-world. I have long known the Butterfly Cod, or Red Fire Fish as it is often called, from museum specimens, but was enthralled by its beauty when the one here illustrated first made its appearance from beneath a shelving rock. Though assistance was plentiful, I had little hope of securing it, and was agreeably surprised to find that it could be captured in a hand-net without difficulty. It was obviously flustered by the sticks with which we had driven it unceremoniously from its hiding-place, and its demeanour showed clearly that it was accustomed to much greater respect than we accorded it. When the specimen was carried joyfully to an improvised aquarium, my friends and I gazed upon it from the side for the first time, and were fascinated by its amazing beauty. We dallied so greatly admiring its slow evolutions and trailing fins, that the light of the late afternoon became too weak to permit of its portraiture, and it had to be kept alive in a bird-cage, sunken in the lagoon, until the following day.

A more active but scarcely less striking fish for picture purposes is the local Leather-jacket (*Atypichthys*) which associates in schools with the Big-eyes in holes in the lagoon. It is brilliantly striped with black and yellow, and a small number gathered together are fine subjects for the cinematograph. But all my efforts to picturise more than one at a time failed, the others disappearing out of range whenever an individual came within the limited sphere of the camera.

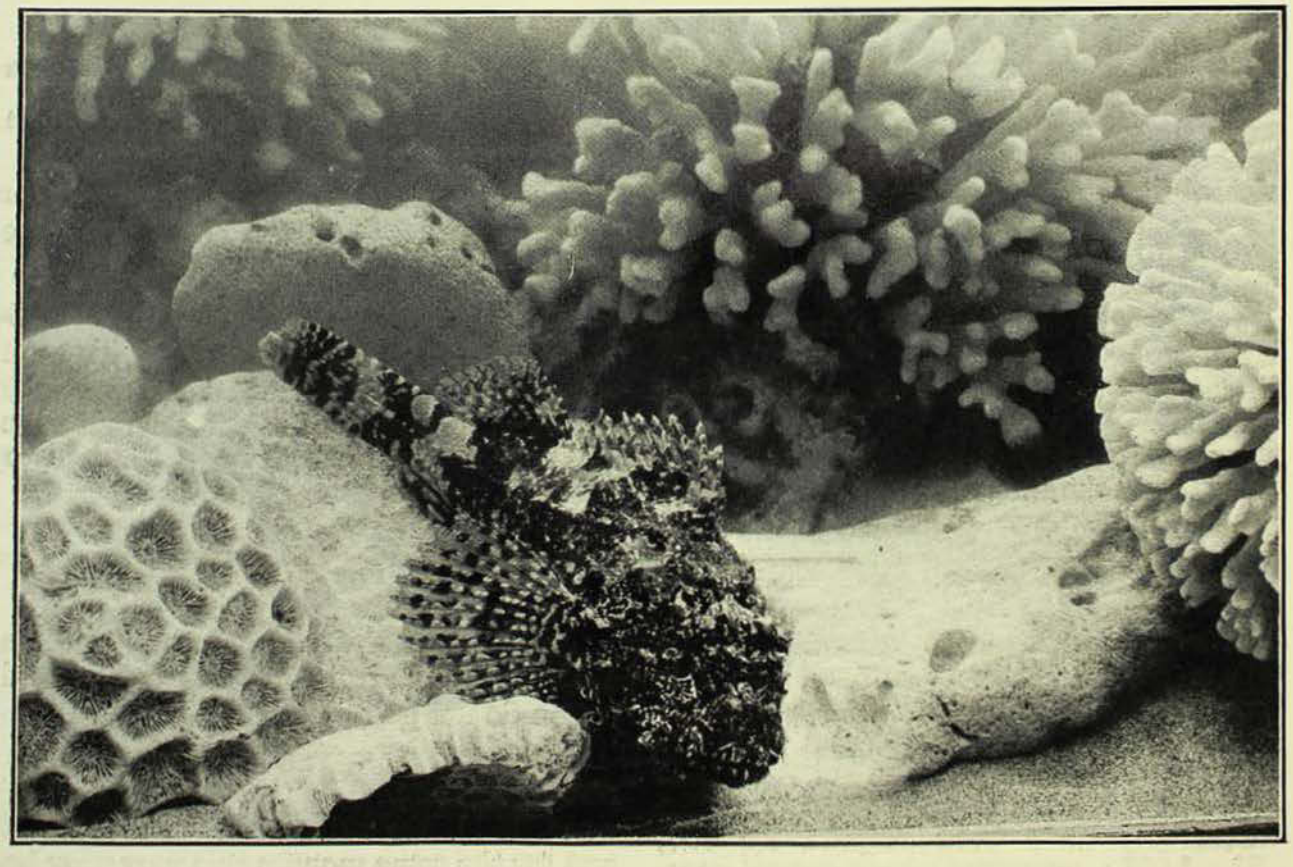
An accompanying figure shows a Black Rock-Cod (*Epinephelus damelli*) as exposed in a shallow pool on the reef at low tide,

when a neighbouring rock was suddenly overturned.

Most reef fishes exhibit ample proof of their intimate knowledge of their environment, and so sure was this unfortunate victim of its total inability to escape from the shallow depression in which it had hidden to await the inflow of the tide, that it lay without movement, hoping that its variegated colouring would hide it. Conspicuous as this was when suddenly exposed to glaring sunlight, one had no difficulty in recognizing the protective value of its colouring when the fish lay concealed beneath a coral boulder. The deep blacks, tinged with green, and irregularly mottled with creamy spots, doubtless resembled the dark shadows and bright lights which filtered through the interstices of its shelter. This helpless fish offered nothing to make a movie picture, however, so it was photographed as a " still " and left in peace.

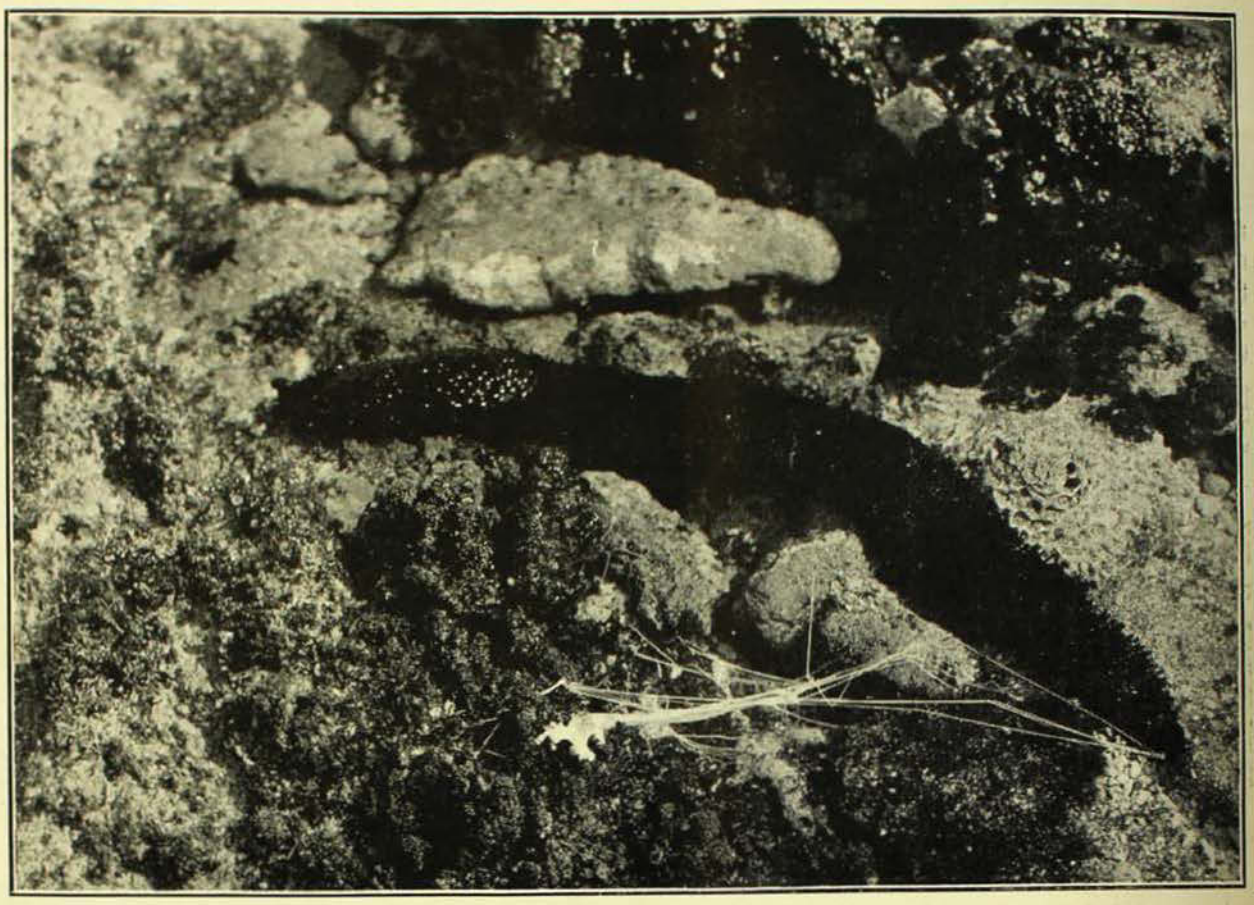
Almost equally difficult was a so-called Red Rock-Cod (*Scorpaena cooki*), a species without kinship to the afore-mentioned, but a member of the same family as the Butterfly Cod. Its movements consisted of quick darts from one position to another between which it remained quiescent. This species prefers weed-covered rocks and crannies in the reef to hide in, with which its variegated colouring harmonises better than with the dead corals on which it is shown in the accompanying illustration. But since beggars cannot be choosers, I had perforce to picturise it as opportunity offered.

The so-called Cotton-fish or Bêche-de-mer illustrated in the last figure is a fish in name only, being a soft slug-like creature of the order Holothuridea. These creatures move slowly over the sand in pools upon the reefs, engulfing so much of it as they can with the finger-like tentacles surrounding their mouth, to sort out its contained food particles within their digestive system. The camera and the photographer causes the slow moving beast no fear, but if it be handled, its flexible body contracts, and streamers of white and exceedingly sticky threads are ejected from the tail end. These cling firmly to everything



Photographed upon bleached corals, this Red Rock Cod (Scorpaena cooki) is unable to conceal itself, but when lying quiescent among weed-covered stones, its variegated colours render it almost invisible.

[Photo.—*A. R. McCulloch.*



When rolled over or otherwise disturbed, the Cotton-fish, or Beche-de-Mer (Holothurea fusco-cinerea) ejects sticky white threads, which apparently serve as anchor lines, and enable it to recover its position.

[Photo.—*A. R. McCulloch.*

with which they come in contact, and should they touch one's hands, adhere so firmly that they are quite troublesome to dispose of. Their purpose is not altogether apparent, but they would seem to serve as anchor lines, enabling the beast to recover itself when dislodged by a wave or any other cause. This belief is supported by the fact that the threads are either partly withdrawn or shed when the animal is safely re-ensconced.

Together with many others, the accompanying pictures and the cinema film were important features of my recent lectures in the Museum hall. They obviously sustained the interest of my audiences which were composed of both school children and adults, and amply proved their value as an educational factor in lectures on natural history subjects.

Elsewhere in this issue reference is made to the popular lectures delivered at this Museum and the attraction they prove to the "man of the street" for whom they are intended. For the first three months of the years 1922, 1923, and the current year the attendances have been respectively 787, 1,238, 1,057; unfortunately on several occasions the attendance has been limited by inclement weather.

These figures are a conclusive proof that the institution and its efforts towards education do not go unheeded.

The increase in visitors to the galleries is also interesting. For the period January to June, 1923, the attendances were 108,708, and for the same months this year they have advanced to 148,556 — a difference of approximately 40,000.