PROCEEDINGS

OF THE

Royal Zoological Society

OF

NEW SOUTH WALES

FOR THE YEARS 1968-69

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(Free to all Members and Associates)

SYDNEY

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ROYAL ZOOLOGICAL SOCIETY OF NEW SOUTH WALES

Established 1879

Registered under the Companies Act, 1961.

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His Excellency the Governor of New South Wales, Sir Arthur Roden Cutler, V.C., K.C.M.G., C.B.E., Kt.St.J.

Vice-Patron:

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PROCEEDINGS
OF THE
ROYAL ZOOLOGICAL SOCIETY OF NEW SOUTH WALES
FOR THE YEARS 1968-69 (Published 1970)

EIGHTY-NINTH ANNUAL MEETING OF THE ROYAL ZOOLOGICAL SOCIETY OF NEW SOUTH WALES

The eighty-ninth annual meeting of the Society was held at Taronga Zoo, Mosman, on 20th September, 1969, and attended by about 240 members, associates and their friends. The President (Mr. H. J. de S. Disney) occupied the Chair and welcomed guests, members and visitors and read the Annual Report (see below), which was adopted.

A ballot resulted in the election of the six retiring councillors.

The Honorary Treasurer's Report and Balance Sheet were read and adopted.

Mr. G. P. Whitley introduced the Guest Speaker, Mr. John Mann, F.R.Z.S., who addressed the meeting on "The role of the Alan Fletcher Research Station in the entomological control of weeds" (see page 7). Mr. C. N. Smithers moved a hearty vote of thanks to Mr. Mann which was carried by acclamation.

Mr. Mann was presented with his diploma of Fellowship by the President.

EIGHTY-NINTH ANNUAL REPORT (1968-69)

Ladies and Gentlemen,

I stand before you again charged with the duty of disclosing the Annual Report, this time as President of your Society.

Membership

At the end of the Society's financial year on 30th June, 1969, membership consisted of:

1 Endowment Member
2 Associate Benefactors
7 Honorary Members
58 Life Members
591 Ordinary Members
16 Life Associate Members
4 Honorary Associates
86 Associate Members
50 Junior Members
Giving a total of 815.

Losses sustained by the Society during the year were 14 members by resignation, 10 by death and 27 were removed from the registrar under Article 8. The final result was an increase of 79 members, which showed that your Society continued to grow steadily, as I reported a similar increase of 77 members last year.

Deaths

It is sad to report that deaths recorded during the year included: Mr. Frank A. McNeill, a Fellow of the Society, who will be sadly

missed by many. His obituary is in the current *Australian Zoologist,* with a list of his published work.

Miss Barbara B. Dew, who was well known for the help she was always ready to give other members and particularly the Juniors. Her obituary and list of publications appeared in the last number of the *Proceedings.*

And just recently, Mr. Roscoe Gannon, well known to many members of this Society and other natural history societies. Mr. K. A. Hindwood kindly represented the Society at his funeral. His obituary notice appears below.

New Associates

Although really relating to this year and not the year being reported on, I feel I should mention that a successful cocktail party was held jointly with the Trustees of the Zoo here on 22nd July, 1969 to launch the new class of Associate Members as a zoo supporter group, it is progressing very fast and we already have well over 1,000 members.

Council

Twelve council meetings were held during the year with an average attendance of 12 councillors per meeting. However the average attendance number does not give a true picture as several months lapse between nomination of a candidate and the approval of council.

Dr. J. C. Yaldwyn returned to New Zealand; during his time as a councillor and president he worked very hard for the Society.

Mr. Max Gregg and Mr. J. M. Campbell resigned from the council during the year. Mr. Gregg had for quite a number of years prepared the Syllabus of the lectures and meetings of the various sections.

The new councillors elected to fill these vacancies were Professor J. H. Prince, Dr. D. D. Francois, and Dr. E. S. Robinson.

Delegates

The following acted as delegates or representatives of the Society.

Mr. C. N. Smithers, Regional councillor for the Australian Entomological Society.

Mr. J. Smail on the Myall Lakes Committee.

Mr. L. Haines on the Dee Why Lagoon Conservation and Development Committee.

Mrs. Harford and Mr. Smail were delegates to the Nature Conservation Council of N.S.W's. Natural Areas Seminar, and they were also our representatives on the Save Colong Caves organization.

Several councillors attended the Australian Conservation Foundation Symposium on "Future of the Great Barrier Reef".

The President and Secretary attended an evening to honour Mr. Alan A. Strom.

Fellow

It gives me great pleasure to announce that our Guest of Honour and speaker today, Mr. John Mann, who is Director of the Biological Section of the Alan Fletcher Research Station, Department of Lands, Queensland was elected a Fellow of the Society in November, 1968 for his entomological work, particularly in the control of Prickly Pear and other introduced weed pests by insects. Later I will have the pleasure on behalf of the Society of presenting him with his certificate of Fellowship. See Plate I.

Donations

During the year the Society gave financial assistance to The National Parks Association of N.S.W. for the Myall Lakes, Dee Why Lagoon Conservation & Development Committee and Save Colong Caves Committee.

Sections

It is gratifying to report section activity has increased. In October 1968, the Aviculture Section re-started its meetings after a lapse of several years. The meetings are well attended and the Syllabus shows

many interesting lectures have been planned. Early in 1969 both the Herpetology and the Marine Biological sections began holding lectures again. We hope that they make good progress in the future and that their meetings are well supported.

Taronga Park Trust Committee

Several meetings were held between the representatives of the Taronga Park Trust, who were represented by Mr. Stack, Mr. Strahan and Mr. Hallstrom and the Society, represented by Dr. Yaldwyn, Mrs. Harford and Mr. Smail, to draw up a new agreement, a draft of which was approved by council on 6th August. The President, Mr. J. Disney, and Mr. C. Smithers, were elected to this committee in November, 1968.

Publications

During the year under review the following have appeared:

The *Proceedings* 1967/68 was printed on April 24th, 1969. The *Australian Zoologist* Vol. XV Part 1, appeared August 12th, 1968.

I wish to thank again our Honorary Editor, Mr. Gilbert Whitley, for the immense amount of work he does for us as editor.

Public Lectures

A series of public lectures to widen the field of public interest in the Society was begun by Mr. Strahan in the Australian Museum on 3rd June, 1969, with a lecture "Has Evolution Come to an End". Two further lectures will be held in August and October. The August one has been given by Dr. J. R. Simons on "Sharks That Fly", and the October one on 30th October is "Finding a Mate in the Dark" by Professor J. H. Prince.

Thanks

I wish to thank the Director and Trustees of the Australian Museum for the use of the lecture hall and other rooms, when more than one section has been meeting on the same night. Also for help with posters for the public lectures and in other ways.

I wish to thank the Taronga Park Trust and the Director of the Zoo for the offer of education room facilities and duplicating facilities, for allowing us to hold our meeting here today and for the new closer association between the Society and the Zoo.

On behalf of the council I thank all members, section officers and office bearers for all their work on behalf of the Society.

Finally special thanks to Mrs. Doreen Johnston who comes in every alternate week to do the office typing.

H. J. de S. DISNEY, *President.*
20th September, 1969.

OFFICE-BEARERS FOR 1969-70

Elected following the 89th Annual General Meeting of the Society on 20th September, 1969.

President: Mr. J. M. Smail.

Vice-Presidents: Mr. H. J. de S. Disney, Dr. D. Francois, Mr. R. Strahan and Dr. F. H. Talbot.

Honorary Secretary: Mrs. L. Z. Harford.

Assistant Honorary Secretaries: Mrs. O. Wills and Mrs. P. Johnson.

Honorary Treasurer: Mr. F. McCamley.

Assistant Honorary Treasurer: Mrs. K. McCamley.

Honorary Editor: Mr. G. P. Whitley.

Honorary Librarian: Mrs. M. Wray.

Honorary Solicitor: Mr. J. J. Francis.

Honorary Auditors: Messrs. Peat, Marwick, Mitchell and Company.

ROYAL ZOOLOGICAL SOCIETY OF NEW SOUTH WALES

BALANCE SHEET AS AT 30th JUNE, 1969

1968				1968			
	GENERAL FUND—				FIXED ASSETS:-		
3,533	Balance at 1st July, 1968	3,093		1,279	Furniture and Equipment—cost	1,279	
	Less Deficiency transferred from Revenue			1,213	*Less* Provision for Depreciation	1,279	
440	Account	1,070		66			
3,093			2,023	1,018	Library—at cost	1,018	
				1,000	Paintings—at valuation	1,000	
1,500	PUBLICATION RESERVE		1,500	2,084			2,018
	BUILDING FUND—				INVESTMENTS:-		
3,678	Balance at 1st July, 1968	3,903			Commonwealth Treasury Bonds—at cost:-		
225	*Add* Income Received during year	247		320	4¾% 1969	320	
3,903			4,150		(Market Value 30th June, 1969—$324; 1968—$324)		
				1,000	Special "O" Series due 1st April, 1975	1,000	
8,496	TOTAL FUNDS:		7,673		Australian Guarantee Corporation Limited—		
				1,000	5% Debentures matured 23rd October, 1968	—	
	CURRENT LIABILITIES:-			2,320			1,320
	Subscriptions in Advance:-				BUILDING FUND INVESTMENTS:-		
108	Full Members	687			Australian Guarantee Corporation Liimted:-		
—	Associate and Junior Members	14			Debentures:-		
—	Associates	2		1,400	7% due 30th June, 1970	1,400	
			703		(Market Value 30th June, 1969—$1,372; 1968—$1,358)		
236	Accrued Expenditure	554		1,000	5% matured 23rd October, 1968	—	
344			1,257	—	6% due 30th June, 1971	400	
					(Market Value 30th June, 1969—$392)		
				—	6½% due 30th September, 1971	1,000	
					(Market Value 30th June, 1969—$983)		
				400	Deposit at Call	—	
				1,055	Commonwealth Savings Bank of Australia—Hurstville	1,320	
				3,855			4,120
					CURRENT ASSETS:-		
				400	Publications on Hand—at Secretary's Valuation	600	
					Commonwealth Savings Bank of Australia—Hurstville:-		
				180	Main Account	820	
				—	No. 2 Account	87	
					Less owing to Taronga Zoological Park Trust	58	
				—			29
				1	Cash in Hand		23
				581			1,472
$8,840			$8,930	$8,840			$8,930

ROYAL ZOOLOGICAL SOCIETY OF NEW SOUTH WALES

PUBLICATION ACCOUNT FOR THE YEAR ENDED 30th JUNE, 1969

1968			1968		
1,000	Publications on Hand (at Valuation) 1st July, 1968	400	223	Sales of Publications	400
	Printing Costs:-		200	Government Grant	200
1,091	"Zoologist"	2,232	223	Donations Received	93
620	"Proceedings"	900	400	Publications on Hand (at Secretary's Valuation) 30th June, 1969	600
			1,665	Deficiency transferred to Revenue Account	2,239
$2,711		$3,532	$2,711		$3,532

BUILDING FUND INCOME ACCOUNT FOR THE YEAR ENDED 30th JUNE, 1969

225	Transfer to Building Fund	247	—	Donations Received	6
				Interest Received:-	
			192	Investments	198
			33	Bank	43
					241
$ 225		$ 247	$ 225		$ 247

REVENUE ACCOUNT FOR THE YEAR ENDED 30th JUNE, 1969

1,665	Publication Deficiency	2,239		Subscriptions Received:-		
31	Donations and Subscriptions	130	63	Life Members	147	
26	Electricity and Telephone	22	2,302	Full Members	2,430	
45	General Expenses	71	141	Associate and Junior Members	106	
18	Insurance	18	—	Associates	80	
828	Printing, Stationery and Stamps	1,261		*Less* Transfer to Taronga Zoological		
417	Rent Paid	—	—	Park Trust	54	
	Reprinting Costs—Memorandum, Articles of				26	
—	Association and Rules	87				2,709
128	Provision for Depreciation	66	182	Interest		94
			30	Premium on Redemption of Commonwealth Treasury Bonds—Special "D" Series		—
			—	Sundry Income		21
			440	Deficiency transferred against Accumulated Funds		1,070
$3,158		$3,894	$3,158			$3,894

DECLARATION BY THE SECRETARY

I, Leone Harford, being the Secretary of the Royal Zoological Society of New South Wales, do solemnly and sincerely declare that to the best of my knowledge and belief, the accompanying balance sheet and revenue account are correct, and I make this solemn declaration conscientiously believing the same to be true and by virtue of the provisions of the Oaths Act, 1900, as amended.

DECLARED at Sydney this 10th day of September, 1969
before me: D. LOVEJOY, J.P., *Justice of the Peace.* L. HARFORD.

STATEMENT BY DIRECTORS

In the opinion of the Council of the Royal Zoological Society of New South Wales, the accompanying balance sheet is drawn up so as to exhibit a true and fair view of the state of affairs of the Society as at 30th June, 1969 and the accompanying revenue account is drawn up so as to give a true and fair view of the results of the business of the Society for the year then ended.
DATED at Sydney, this 10th day of September, 1969.

SIGNED ON BEHALF OF THE COUNCIL
G. P. WHITLEY
C. N. SMITHERS
Vice Presidents.

AUDITORS' REPORT TO THE MEMBERS

The accompanying balance sheet and revenue account of the Royal Zoological Society of New South Wales are, in our opinion, properly drawn up in accordance with the provisions of the Companies Act, 1961, as amended, and so as to give a true and fair view of the state of the Society's affairs as at 30th June, 1969 and of its results for the year then ended.

The accounting and other records (including registers) of the company examined by us were, in our opinion, properly kept in accordance with the provisions of the said Act.
SYDNEY, 10th September, 1969.

PEAT, MARWICK, MITCHELL & CO.,
Chartered Accountants.
Registered under the Public Accountants
Registration Act, 1945, as amended.

THE ROLE OF THE ALAN FLETCHER RESEARCH STATION IN THE ENTOMOLOGICAL CONTROL OF WEEDS

by JOHN MANN

(Plates I-II)

The economy of the State of Queensland, if not all other States of the Commonwealth of Australia, is influenced most significantly by rural production. In Queensland there are more than 60 plant species which, because of their recognised noxious capacities, have been declared under the provisions of the Land Acts and the Stock Routes and Rural Lands Protection Acts. In addition, there are other plants which, for practical and economic reasons have not been so declared.

In 1920, The Commonwealth Prickly Pear Board was constituted and for almost 20 years carried on a work in the biological control of prickly pear unprecedented in the realm of weed control. When this Board terminated towards the end of 1939 The Biological Section of the Queensland Department of Lands was created taking over the facilities and some of the staff of the Board. From that time the Biological Section has continued to play a major part in the protection of the rural lands of the State in experimenting to determine the best and most economical means of destroying weeds and in attempting to eradicate potentially dangerous weed invaders before they obtained a firm grip in any district.

In recent years the Section has been provided with a modern building, The Alan Fletcher Research Station, with Entomological and Chemical Laboratories and all of the ancillary equipment to facilitate research into weed control. It is the only authority in Queensland engaged full time on weed control research, and its functions fall into three main groups:-

(a) Biological Control of established weeds;
(b) Chemical Control of established weeds;
(c) Attempted eradication of new and potentially dangerous weeds before their spread reaches pest proportions.

The Biological Control of Established Weeds

The term Biological Control is used with different meanings and hence it is hardly possible to describe it in terms that would satisfy every one. It is difficult to define the limits of Natural and Biological Control.

Applied biological control is the use of one organism to control by attack or competition another organism which in some area has become a pest to man.

At the Sherwood Laboratory, biological control is restricted to the use of introduced insects to control or suppress, not necessarily eradicate, plant species which have become pests in certain situations and under certain circumstances and is more properly termed Entomological Control. This work requires exploration and basic studies of the host and its natural enemies in the country of origin as the first step and involves research into:-

Taxonomy
Biology
Physiology
Ecology
Behaviour
Culture methods

of the promising insects.

Then follows:—

Testing for host restriction and host preference.
Collection
Importation
Quarantine
Re-Testing
Mass Breeding
Liberation in the field
Field studies and evaluation.

The Prickly Pear Destruction Campaign

In 1839, a cactus with a bright yellow flower grown in a pot at Scone in New South Wales was destined to attract world-wide attention and became the subject of an almost unique attempt to control a weed by biological means. Prior to this in Hawaii in 1902 insects had been imported from Mexico for the control of Lantana. However, this was not on the same scale as the prickly pear effort, the intensity and scope of which was without parallel anywhere in the world. In 1914 a few insects found by A. Koebele in Mexico were introduced from Hawaii to Australia for Lantana control but it was the success of the campaign against the prickly pear that gave impetus to later entomological control efforts.

After the discovery of America, the growing of cacti as pot plants became popular in many countries because of the curious nature of the plants' growth and the beauty of their flowers. It seems logical to assume that species of cacti, growing close to the ports of call of boats plying between the Americas and Australia, would be collected by the sailors. The common pest pear *Opuntia* sp. *"inermis"*, grew near Galveston, Texas, United States of America, the spiny pest pear *Opuntia* sp. *"stricta"* near the Chilean port of Valparaiso and Tiger pear, *O. aurantiaca* at Montevideo in Uruguay.

This Scone pot plant developed and spread until, in 1910, the situation was becoming desperate and New South Wales and Queensland had on their hands the world's most formidable weed pest.

To think that any plant could overrun such a vast area of valuable grazing and farming land, by this time 50 million acres, in the space of 70 years is beyond comprehension; that this plant invader should have been brought under control in the space of a few years mainly by one species of introduced insect, is a phenomenal success story that has no parallel in the biological experimental records of any country in the world. The plant had taken into its grip 60 million acres of land before its advance was halted.

Prickly pears have become pests in other warm countries of the world but nowhere did they reach such proportions as in Australia where 29 species naturalised and nine of these became pests of major importance.

The plant invasion was met with knives, spades, mattocks, ploughs, gases and plant poisons and a variety of mechanical devices but in spite of every effort it continued to advance; by 1916 it was estimated to be increasing at the rate of one million acres a year.

In 1901, the Queensland Government offered a reward of $10,000 for the discovery of an effective method of destroying prickly pear; this was increased to $20,000 in 1907. Over 600 schemes were submitted and investigated by the Queensland Department of Lands.

In 1910, prickly pear was declared a noxious weed in the "Local Authorities Act". It was on 11th May, 1911 however, that the first really definite action was taken. The Queensland Government constituted

the "Queensland Board of Advice on Prickly Pear Destruction". This was followed by the appointment of the Queensland Prickly Pear Travelling Commission who spent nearly two years visiting almost every country of the world where cacti were either indigenous or naturalised. This Commission in 1914 recommended that some of the natural enemies they had observed to be important factors in holding prickly pear in check in the Americas, should be introduced into Australia. They had already sent over two species of cochineal, *Dactylopius ceylonicus* Green and *D. greenii* Cockerell from India, Ceylon and South Africa and *Cactoblastis cactorum* Berg from Buenos Aires (Argentina).

In June 1912, the Queensland Department of Lands reserved 645 acres of land at Dulacca, which was densely infested with prickly pear. Here Dr. Jean White-Haney carried out her experiments until June 1916, and ascertained, among other things, that Arsenic Pentoxide was the most effective pear-destroying specific. Here also she carried out the first experiments with the cochineal insect *Dactylopius ceylonicus* and reared it on the drooping tree pear *Opuntia monacantha*. It was Dr. Jean White-Haney's success with this insect that gave force to the movement to pursue the biological control effort.

However, the first World War was in its second year, chemicals were unobtainable, money and human energies were diverted to the war effort and man-power could not be spared for the biological work.

In December 1919, official and scientific energies were mobilised and "The Commonwealth Prickly Pear Board" was formed and financed by the Commonwealth, New South Wales and Queensland Governments. This independent body had full control of the staff they recruited and finances and directed all of the investigational activities.

A central laboratory was established at Sherwood, Brisbane, January 1922, and Field Stations were opened at Westwood in Central Queensland, Chinchilla in Southern Queensland and at Biniguy in north-west New South Wales.

In its original concept of the campaign, the Board aimed at establishing a complex of several insect enemies which, by their combined efforts, might accomplish a marked degree of control. They did not foresee, nor could they have ever hoped that, by 1928, they would alter their original policy because of the widespread and spectacular destruction caused by *Cactoblastis cactorum*.

Entomologists visited most of the larger prickly pear regions of North and South America and the West Indies. The first shipment of insects was made from San Francisco in March 1921. Sixty-seven shipments, involving over half a million individual insects, representing 52 species were sent during the period of the Board's activity. There were tremendous difficulties involved in this work in these early days which have practically all been eliminated by fast air transport today. The shipboard journey alone occupied eight to ten weeks.

Towards the end of 1939, it was decided that the Board's original objectives had been fulfilled, the prickly pear had, in the main, been brought under control and that any further work could be left in the hands of the two States.

If one were to consider the prickly pear destroying insects introduced, pride of place would be given to *Cactoblastis cactorum* and the cochineals.

Cactoblastis cactorum has been described in most eulogistic terms by various writers. At Boonarga, in Queensland, a hall has been erected by enthusiastic settlers to commemorate the millions of insects that lived to achieve a spectacular victory over the world's greatest

plant scourge and then quietly died leaving behind a few of their number to carry on the glorious name.

Larvae of this insect were first brought to Brisbane in 1913 by the Prickly Pear Travelling Commission but they were not reared. Had they been successfully reared at this time the prickly pear might have been brought under control 15 years earlier.

Mr. A. P. Dodd collected larvae at Concordia (Argentina) in January 1925, and took them to Buenos Aires. Eggs to a total of 3,000 were later despatched by him to Brisbane where they were received in May, 1925. These were successfully reared to maturity in quarantine by J. Mann for a return of 100,605 eggs. These eggs were divided between Sherwood and Chinchilla and the second generation yielded 2,539,506 eggs. From here the story is complete, millions of eggs were obtained and distributed throughout the prickly pear territory. The vast area of pear was destroyed in 10 years and by 1940 virtually complete control had been brought about.

Cochineal insects caused considerable destruction to various Opuntias particularly *O. aurantiaca* over vast areas and continue today to exercise a control on seedling development which is incalculable.

In the words of P. Pease, at that time Minister for Lands in Queensland, "it is astonishing to realise the great transformation that has taken place in Queensland over the vast area which was once regarded as irretrievably lost to prickly pear. The success that has attended the responsible authorities charged with the conduct of the campaign is truly phenomenal and stands as a shining example of combined scientific and administrative accomplishment. It is doubtful whether the historical records of any country could reveal a biological experiment anywhere approaching the magnitude of this".

Research on Other Major Weeds

Lantana camara L. originally introduced, we believe, from tropical America is a serious pest of coastal New South Wales and Queensland. The first biological control attempts in Australia were made with this weed in 1914 when four insects were introduced from Hawaii by the Queensland Department of Agriculture. Investigations were resumed in 1953-54, when J. Mann joined an entomologist from Hawaii to study the insect enemies in North, Central and South America. Three foliage feeding Lepidoptera *Diastema tigris* Guén, *Catabena esula* Druce, and *Syngamia haemorrhoidalis* Guén were introduced in 1956-57. Recent surveys have revealed the presence of the latter two insects in most Lantana areas but due to the attack of native parasites, the population has not built up to effective numbers. Further work was carried out in Hawaii and a coleopterous stem borer, *Plagiohammus spinipennis* Thoms and two hispid leaf miners, *Octotoma scabripennis* Guérin and *Uroplata girardi* Pic have been imported and released. The stem borer is now being reared on an artificial diet medium developed by Dr. K. L. S. Harley and one of our officers, B. Willson; the first time such work has been carried out on a large scale with an insect of this size. Over 50,000 of the two leaf miners have been released throughout the Lantana territory of Queensland and there is widespread establishment; *Uroplata* in one place in North Queensland is causing significant damage.

Crofton weed, *Eupatorium adenophorum* Spreng, a perennial from Mexico which had assumed pest proportions on the north coast of New South Wales and the south-east corner of Queensland was next to receive attention. A stem gall fly, *Procecidochares utilis* Stone, from Mexico was imported and released throughout Queensland and New South Wales. This insect is now established throughout the Crofton weed areas of

both States and has contributed to the progressive control of this plant.

Noogoora burr, *Xanthium pungens* Waller is probably the most widespread and serious weed in Queensland. Insect enemies in North America and India were studied by our officers. In 1930-40, a seed fly *Euaresta aequalis* Loew was introduced and liberated. Between 1933-39, the weevils, *Baris callida* Casey, *B. interstitialis* Say and *Cylindrocopturus adspersus* LeC and the longicorns *Dectes brevisetosus,* Casey, *D. spinosus* Say and *Ataxia hubbardi* Fish were introduced and tested. In 1962-63, *Mecas saturnina* LeC and *Nupserha antennata* Gahan were collected by J. Mann in U.S.A. and India respectively for controlled release in Queensland. *Mecas* has been released in five areas and *Nupserha* in 17 places but establishment has been prejudiced by extremely dry conditions since liberations were first commenced. However the insects are established in several localities.

Over the last three years, attention has been given to insects attacking Groundsel Bush, *Baccharis halimifolia* a very abundant weed of the north coast of New South Wales and the coastal areas of Queensland. Tests have been carried out with several insects collected by our officers and six of these have now been introduced for later liberations: two gall midges, *Rhopalomyia californica* Felt and *Cecidomyia* sp.; one leaf webbing caterpillar, *Aristotelia* sp.; one tip moth *Phalonia* sp.; one plume moth borer, *Oidaematophorus* sp. and one leaf beetle, *Trirhabda baccharidis* Web.

The economic benefits from the destruction of noxious plants almost defy calculation. It would be realistic to assume that, had prickly pear not been brought under control the millions of acres of the fertile Brigalow belt would today have been an inpenetrable mass of pear—a place of ill abode for man or beast. The world's population is increasing, the people must be fed, the land available must be used to full advantage, therefore we cannot afford to grow weeds.

The possibility of biological control of our major weeds has gripped the imagination of landholders in Australia and there is now constant pressure to carry out further investigations. It must be remembered however, that a biological control attempt involves a great deal of time-consuming work with no certainty of success.

OBITUARY

GILBERT ROSCOE GANNON

(Plate III)

Much regret was felt in zoological circles when it was learned that Gilbert Roscoe Gannon had died, in the Royal North Shore Hospital, North Sydney, on 9th September, 1969. He was verging on 79 years, having been born on 2nd November, 1890.

Ros Gannon was a country lad, and it may fairly be said that he always retained the spirit of his birthplace, the township of Nathalia in Victoria. At an early age he entered the Postal Department, and as he advanced in the service he underwent various transfers, the last of which brought him to Sydney. At the time of his retirement he was a supervising technician in the telephonic section. Along the years there had been steady development of an interest in birdlife acquired in the picturesque Broken River country (Nathalia is in the north-east of Victoria), and this attraction swelled under the impetus of both birds and birdmen frequenting the sandstone and shale areas of the Sydney region.

In 1929, Gannon joined the Royal Australasian Ornithologists' Union, and later he became also a devoted supporter of the Royal Zoological Society of New South Wales and the Gould League of Bird Lovers. His first contribution to *The Emu,* in July 1930, was quite notable, being one of the initial discussions of the remarkable habit of the Satin Bowerbird in "painting" the inside walls of its arbour. Later contributions to the same journal, though not numerous and mainly brief, were all worthy, indicating as they did sound observation and shrewd reflection. His chief work in kind, however, was his final one, namely a paper entitled "Distribution of the Australian Honeyeaters" (*Emu,* 62, pp. 145-66). This sonsiderable work, embodying much research, is by way of being a standard article of its nature.

The aesthetic aspect of ornithology had always appealed to Ros Gannon and therefore it was not surprising that in recent years he allowed himself the luxury of writing verse about such feathered artists as the Lyrebird and the Heathwren. And, in August of 1968, he assembled these and other verses into a booklet, which was issued under the title *Mixed Poetry.* A pleasant little publication, it remains as a tangible memory of a good companion.

Certainly Gannon was a good companion. He was also a plucky fellow. A few years ago, when returning home from a zoological meeting, he met with an accident that caused a hip to break and put him into hospital for several months. But, when able to get about again, he insisted on resuming his trips to, in particular, the forests of Doonside, and there, although hampered, he contrived to get through fences and walk fair distances. And if he knocked up and had to stay by the car, he continued looking about him, so that, more than once, he "routed" the rest of us by finding nests that we had overlooked.

Very unfortunately, the weakened legs gave trouble again more recently, and as another break occurred further hospital treatment became necessary; and this time the slight frame did not recover.

Mrs. Gannon survives her husband, but she too has been in serious ill-health during recent years. There were no children.

—A. H. CHISHOLM

REPORTS OF SECTIONS

Avicultural Section Annual Report, 1968-69

On 28th November, 1968, this Section re-opened and the following office-bearers were elected:

Chairman: Mr. Bruce Read.
Vice-Chairmen: Mr. Eric Brown and Mr. John Wedderburn.
Secretary-Treasurer: Mrs. Mary Wray.
Assistant Secretary: Mr. Clive McAuley.

Several interesting meetings were held during the year, amongst them a lecture by Mrs. G. Stoney on "Worming Birds", followed by a practical demonstration on birds supplied by members. In February, two films on loan from Mr. Philip Ware, co-director of the Ornamental Pheasant Trust in Norfolk, were greatly enjoyed. "Pheasants to Formosa" gave a fascinating account of the return of the rare Swinhoe Pheasant (*Lophura swinhoei*) to the forests of Formosa. A pleasant visit to Taronga Park with members and their families took place on the 30th March. Mrs. Harford introduced us to the head bird-keeper, Mr. Clayton, who took the party on a tour of the aviaries. After the inspection, Mr. R. Strahan welcomed members and spoke at some length to us of his future plans for the bird section. Our Avicultural Section was given permission to work on two aviaries. Subsequently these were planted with grasses and shrubs and stocked with birds donated by members. Several weekend working parties have since been held and it is very heartening to the Section to see their knowledge being utilized in this way.

It is very pleasing that this Section has bene able to restart with such an enthusiastic following.

—MARY WRAY, Hon. Secretary.

Conchological Section Annual Report, 1968-69

Attendance at monthly meetings during the year fell from an average of 35 to 31 and members are again asked actively to seek new members.

Lectures during the year were well received. The family Muricidae was presented by Mr. N. Coleman, Brachiopoda by Miss G. Thornley and "*Architectonica* of Eastern Australia" by Mr. T. Garrad. Dr. W. Ponder lectured on "A New Approach to the Higher Classification of the Order Neogastropoda", Dr. D. F. McMichael on "Conservation and Shell Collecting in New Zealand" and Miss E. Pope on "Tropical Starfish and Their Relatives". Mr. C. White presented a colour movie on living Cypraeidae, Strombidae and Conidae and Miss Julie Booth of Fairfax Island, Queensland, gave an interesting talk on coral growth and regrowth after the coral had been attacked by the crown-of-thorns starfish, *Acanthaster planci*. The remaining lectures, given by the Hon. Secretary, were titled "The Sea" and "Identification of Some Australian Shells by Colour Slides."

The Christmas function was once again a resounding success due to the efforts of the ladies responsible, to whom thanks are extended. The party was preceded by short films on palaeontology and microscopic plankton.

During the year, field excursions were made to Currarong, Long Reef, Shark Island and Reef Beach. Individual members collected from venues extending from Orpheus Island to the south coast of New South Wales.

Rare shells that were displayed during the year included *Cypraea guttata, Cypraea marginata* (Western Australian and South Australian forms) and *Conus adamsoni* (= *rhododendrum*).

Thanks are extended to lecturers, the Chairman and members who helped to make the year a success and who supplemented lectures with colour slides of nudibranchs, Cypraeidae and other molluscs, etc. On behalf of all, I extend sincere thanks to the Trustees of the Australian Museum, to the Director, Dr. F. Talbot, and other members of the Museum staff who, once again, have given assistance to this Section during the past twelve months.

—N. S. GOMERSALL, Hon. Secretary.

Herpetological Section Annual Report, 1968-69

Whilst the Herpetological Section has not yet held a formal meeting, we are confident of a good attendance at our inaugural meeting to be held on 24th July, 1969. Dr. W. Dawbin of the University of Sydney, is to lecture on the Tuatara. A field trip will take place in late August or early September to the Nymagee-Cobar district of New South Wales.

We hope to submit a report next year that will please those who have been of so much help to us in founding this new Section.

—G. A. SETTLE, Hon. Secretary.

Ornithological Section Annual Report, 1968-69

Regular monthly meetings of this section held in conjunction with the Royal Australasian Ornithologists' Union (N.S.W. Branch), were enthusiastically attended by members and visitors, average monthly attendance being 74.

Meetings were addressed by members and visitors on invitation, on various subjects, as follows:

"Bushfires and their effect on bird populations" by Messrs H. Battam and H. J. de S. Disney.

"Montague Island" by Mr. K. A. Hindwood.

"Bushfire Control" by Mr. R. Watchhorn.

"Some lesser known birds of Queensland" by Mr. A. R. McGill.

"Enjoying Ornithology" by Mr. G. Dibley.

In addition series of colour slides and films were screened by eminent photographers, Messrs. N. Chaffer, E. McNamara and J. Purnell. Two film nights and two members' nights were also held.

Organised field excursions, held monthly in conjunction with the Gould League of N.S.W., and led by reliable ornithologists, were well attended. On these excursions, to various areas in the Sydney-Wollongong-Newcastle-Blue Mountains Region, many interesting records of different bird species were made.

Most members indulge in general bird observation, and many interesting observations were reported at monthly meetings, notable among these being: A Mallee Fowl at Round Hill Nature Reserve, Southern Black Backed Gulls breeding on Tom Thumb Islands, a beach washed specimen of a White Chinned Petrel being the third Australian record for this species, an Australian Dotterel at Long Reef, the first New South Wales record of a White Capped Noddy, near Terrigal in March, 1969, the first County of Cumberland record of a White Quilled Pygmy Goose, at Longneck Swamp in June, 1969, and a Buller's Albatross off Sydney Heads.

In addition White Terns were reported to have attempted to breed on Lord Howe Island, and a large influx of Crimson Chats into Central and South Western New South Wales was recorded.

—H. BATTAM, Hon. Secretary.

Junior Section Fourth Annual Report

The Junior Section has completed its fourth successful year, successful because it shows an increase in attendance per lecture and in the number of new Juniors enrolled in the Society. The year's most significant happening was the acceptance of two Juniors into the Full Membership category.

School examinations, particularly in the middle of the year have a great influence on the attendance at meetings, this is a situation we understand and take into account, but a little difficult to explain to some of our lecturers.

Our greatest need at this time is for a good all-round naturalist who is willing to organise and lead field days. It would need to be a person interested in the progress of our keen young Natural History students and also in the important role that zoology and conservation will play in the future of this country.

—Mrs. L. HARFORD

THE "WATLING" DRAWINGS, WITH INCIDENTAL NOTES ON THE "LAMBERT" AND THE "LATHAM" DRAWINGS

by K. A. HINDWOOD

(Plates IV-VII)

The collection of drawings known as the "Watling" set is of considerable historical interest, having been assembled during the first years of settlement at Sydney Cove, Port Jackson, New South Wales, between the years 1788 and 1794. The series originally comprised 512 drawings of aborigines, native implements, mammals, birds, insects, fish, plants, reptiles and scenes, most of which are in watercolour, though a few are in either wash or pencil. Some of the paintings are now missing from the set. A resumé of the subjects of 407 paintings was given by Whitley (1938), the birds in the volume are mounted on folios numbered 105 to 295, sometimes with more than one drawing on a page.

The drawings are bound in a single volume and are housed in the Zoological Library of the British Museum (Natural History) which Institution acquired them from James Lee of Kensington in 1902. Lee was a great grandson of James Lee (1715-1795) of Hammersmith, a well-known nurseryman and botanist of his day. When offering the collection to the British Museum the great grandson stated that the artist was sent out to the Colony ". . . with a view to publishing a work on the subject; but owing to his death this was never done & the portfolio has remained in the family ever since" (1938, p. 49).

James Lee's statement does not accord with the known facts and seems to have been based on family tradition. The evidence indicates that the drawings were assembled from various sources by Surgeon-General John White who arrived with the First Fleet in January, 1788. Many of them have descriptive notes on the sheets and in a number of instances the handwriting is that of John White.

Several artists are represented in the series but only Thomas Watling signed his work, hence the name "Watling" drawings. Watling's signature, or his initials, appear on some 124 of the existing paintings (birds 77; mammals 3; fishes 7; reptiles 7; shells 8; insects 4; aborigines 13 and views 5). The identity of the other artists is not known, as is the case also with many of the paintings in contemporary sets of natural history drawings. It is obvious, from an examination of such sets as the "Sydney", "Raper" and "Hunter" collections that one artist often copied the work of another and, in some instances, even made copies of his own work.

Soon after the founding of the Colony in 1788, specimens and drawings of botanical and zoological subjects were being sent to England. In Phillip's *Voyage* (1789, p. 167) we read:- "Such is the account of the birds of which drawings or specimens have been obtained from Port Jackson or from Norfolk Island". In a letter dated from Sydney, December 3, 1791, Phillip wrote to Sir Joseph Banks and said, ". . . I shall esteem it as a favour if the drawing of that tree & which I send you, in the box with the seeds, is copied by one of the best artists in town [London], framed, & sent with my comp'ts to Lady Eliz. Luttrill. I wish it to be finished in the best manner possible & my Agent O. Standert of the Navy Office, has orders to pay the expense"; and further "You will see the skin of a Mul-go-a, or Black Swan, which I have sent to Mr. Pitt[1], it is as far as I know the only skin of the

[1] Presumably William Pitt, First Lord of the Treasury and Chancellor of the Exchequer.

kind which has been well preserved, although four or five of these birds have been killed. It is in spirits with a young Ma-rai-ong . . . and I send you a drawing of the War-ret-tah . . . I am getting drawings of all the plants & animals, they are all done correctly & about two hundred are finished" (Banks Papers, MSS., 1789-1796, vol. 18, Mitchell Library, Sydney). In another letter to Banks from Sydney, dated April 2, 1792, Phillip wrote:- "I continue to procure drawings of all the shrubs & plants but the variety is so great that it will be a long time before drawings of the whole can be collected" (Letters and Will, Capt. A. Phillip, MSS., Mitchell Library, Sydney).

Philip Gidley King, writing from Norfolk Island on March 3, 1793, informed Banks that he was sending ". . . a small box with 21 drawings". King, later to become the third Governor of New South Wales, was, at the time, in charge of the convict settlement at Norfolk Island. William Paterson also sent paintings to Banks and when writing to him from Sydney on May 23, 1793 remarked ". . . I have taken great pains in drawing some of them" [plants] (Banks Papers, MSS., 1789-1796, vol. 18, Mitchell Library, Sydney).

It is interesting to speculate on the identity of the artists whose paintings are unsigned. An examination of their work shows that they were often skilled delineators of a wide range of natural history subjects. One of these obscure painters may have been David Burton, a botanist, surveyor and professional gardener, who reached Sydney in September, 1791 as Superintendent of Convicts. Less than a year later he accidentally shot himself in the arm while on an expedition to the Nepean River and died from his wounds on May 20, 1792.

At the sale of Burton's effects, an inventory of which is among the Banks Papers in the Mitchell Library, Surgeon-General John White bought a chip box containing colours, a marble stone for preparing colours, a drawing book with about half a quire of paper, another book "½ wrote", and some pencils, all for 8/-. It is reasonable to suppose that Burton, a botanist with artists' materials in his possession, would have at least painted flowers, if not birds and mammals. It would also seem that White himself, from his purchase of Burton's colours, may have done some of these early unsigned paintings. However, the only evidence of White's ability as an artist is the signed vignette, a view of Port Jackson, that embellishes the title-page of his book (1790).

Many of these early drawings seem to have been made at the request of interested officials for scientists and natural history dilettanti in England; though, with such men as George Raper and John Hunter, the reason appears to have been one of personal pleasure and the satisfaction of recording pictorially the scenery, interesting happenings, the aborigines and the strange animals and plants—the "non-descript productions" then so-called—of the new Settlement and of other places. In some cases it is obvious from existing correspondence that specimens and drawings were sent to England to gratify people of position and influence.

The "Lambert" drawings, which will be discussed in more detail later, appear to have been copied from the Watling series and, at one time or another, both sets were examined by Dr. John Latham. Latham (1740-1837) was a versatile and industrious English ornithologist who seems to have had copies made of any bird drawings that passed through his hands. It has been suggested by F. C. Sawyer (1949, p. 178) that it was from these copies, now known as the "Latham" drawings, rather than from the originals, that Latham drew up the descriptions published in the *Second Supplement* to his *General Synopsis of Birds* and its Latin equivalent the *Supplementum Indicis Ornithologici* (1801), and also in

his *General History of Birds* (1821-1828). The illustrations of Australian birds appearing in these works are based largely on the Watling and the Lambert drawings.

The "Latham" series comprises 888 watercolour drawings of birds and were assembled from various sources by John Latham. The collection was acquired from Mrs. E. Wickham of Chester. It is known that Latham spent the latter years of his long life in Winchester at the residence of his son-in-law, W. N. Wickham, and the drawings apparently remained in the possession of the Wickham family until purchased by the Zoological Department of the British Museum (Natural History) in November, 1920 (1949, p. 178).

Apart from his own slender volume, *Letters from an Exile at Botany Bay to His Aunt in Dumfries,* published in 1794 at Penrith, Cumberland, England, much has been written about Thomas Watling and his drawings, quite a few of which have been reproduced both in colour and in monochrome in books and journals, and even used on calendars.

The literature dealing with the Watling paintings is, at times, confusing and not all the problems associated with them have yet been elucidated. An excellent summary of the circumstances associated with the set is given by Rex and Thea Rienits in their book *Early Artists of Australia* (1963, p. 75).

On March 11, 1797, less than two years after he had returned to England, John White sent to A. B. Lambert[2] a manuscript journal of his experiences in New South Wales and, presumably also, remarks on the natural history of the Colony, together with some, if not all, of the Watling drawings in the hope that publication of the material could be arranged.

White's letter, which is in the Manuscripts Department of the British Museum, reads:-

> My Dear Sir,
>
> Herewith you will receive a large rude Manuscript, just as it was taken from my common place book by a young man who was my Hospital Clerke, which my present situation prevents me being able to throw into any kind of form, or even to copy fairly so as to make it legible or understood.
>
> It contains many remarks as well as the progress made in the Colony, which probably you may be able to hit upon some plan of getting put into shape not expensive & still worthy of being given to the World. This you must take with you, many pages of it were written when Hunger was very pressing, & may cast some reflection on Government from the distress of the moment: all that part I wish to suppress as well as many remarks not very favourable to the Settlement as I now trust from change of men (I mean Governors) measures will be pursued that will very soon make it in a great degree independent of the mother country. I am just about to set off for the Royal William at Portsmouth, where I shall at all times rejoice to hear from you.
>
> I am
>
> Saturday — My Dear Sir,
> 11th March — Yours most Sincerely
> 1797. — John White

[2] Aylmer Bourke Lambert (1761-1842) was an original member of the Linnean Society of London and its Vice-President for nearly fifty years. Sir Joseph Banks and other eminent naturalists were among his friends and his herbarium, containing some 30,000 specimens, was freely available to contemporary botanists. Many of his contributions to botanical and zoological subjects were published in the *Transactions of the Linnean Society* (see *Dictionary of National Biography,* vol. 32, 1892, p. 6-7).

> I wish you would recommend to me what is best to be done with the drawings, for to have them all engraved would be so expensive that I could never carry such a work into execution.
>
> Aylmer B. Lambert Esqr.
> 26 Lower Grosvenor Street

Earlier, White had sent to his friend Thomas Wilson in England the manuscript for a book dealing with the voyage of the First Fleet to Australia and the activities and the natural history of the new Settlement at Sydney Cove. The material was prepared for publication, probably by Wilson, and issued in 1790 under the title *Journal of a Voyage to New South Wales*. The success of this book, which subsequently appeared in German, Swedish and French editions, may have induced White to seek the issue of a second volume dealing with the history and the natural history of the Colony, as indicated by his letter to Lambert. Nothing came of the project.

When Lambert died in 1842, included in his library were three volumes of unsigned drawings mainly of New South Wales birds. All of these drawings are without annotations and most of them are copies of those in the Watling series and it seems that they were made while that collection was in Lambert's possession. The "Lambert" series consist of 215 drawings of birds, 10 of mammals and a view of Norfolk Island. At least 193 of the bird drawings are obviously based on Watling paintings: the remainder, 22 in all, may also have been copied from the 25 drawings (a couple of which were duplicates of species) now missing from the Watling set, but, of course, comparison is not now possible.

Lambert lent his drawings to Latham who returned them in January 1800 as shown by a letter preserved in the set. Whether Latham also examined the Watling drawings at this time is questionable though it has been stated that such was the case, mainly because some of the notes given by Latham in his *Second Supplement* to the *General Synopsis of Birds* (1801) are the same or similar to information appearing on the Watling drawings. However, such data could have come from another, but an associated, source. Some of the information given, as far as is known, only on the Watling paintings was not used by Latham until much later and then in his *General History of Birds* (1821-1828).

Following Lambert's death in 1842 the three volumes of drawings now known as the "Lambert" series were acquired by the 13th Earl of Derby and are still preserved in the library at Knowsley, Prescot, Lancashire.

Reverting to the Watling drawings it is known that they were in White's possession until March, 1797 at which time he sent them, either in part or whole, to Lambert who appears to have had copies made from most of the bird species represented in the set. It is not known when White disposed of his drawings but it has been suggested (1949, p. 176) by F. C. Sawyer that the "drawings of Mr. Francillon" to which Latham makes frequent reference in his *General History of Birds* were, in fact, the Watling drawings which Francillon may have acquired from White. John Francillon was a London silversmith and an enthusiastic collector of natural history paintings. His collections were dispersed in 1818.

How the Lee family obtained the Watling drawings is unknown. Certainly they were not in their possession in 1797 at which time the elder James Lee had been dead for some years; so the statement, by James Lee the great gandson, to the British Museum authorities in 1902 to the effect that they had been in the possession of the family since his great grandfather commissioned them has no foundation.

With the Watling paintings is a list of the bird species, together with the following notation (not in the handwriting of Dr. Latham), "This Catalogue was wrote by Dr. Latham, author of the 'General Synopsis of Birds' ", and the drawings seem to have been arranged to agree with the sequence of species given in the *Second Supplement* of that work. Perhaps this fact indicates that Latham examined and catalogued the drawings after the publication of his *Second Supplement* in 1801.

In 1906, R. Bowdler Sharpe reported (1906, p. 108) on the Watling drawings, identifying as far as he was able the many species represented in the series. Sharpe gave most of the field notes and other data written on the sheets. A number of the paintings could not be identified as Australian birds or, indeed, species from other parts of the world. Some of these indeterminable paintings were discussed by Gregory M. Mathews who reproduced colour facsimilies in the *Austral Avian Record* (1915, p. 25; 1918, p. 139; 1922, p. 22).

Subsequently, from 1930 to the present time, I corresponded with Mathews and others in England on various problems associated with the Watling and the Lambert drawings; also, over the years, I have personally discussed both sets with Tom Iredale who had thoroughly examined them when he was Mathews' amanuensis during the production of the *Birds of Australia.*

Recently the Mitchell Library, Sydney, obtained from the British Museum photographic negatives of the Watling drawings and from these negatives black and white prints have been made of all the birds depicted, and also of some of the other subjects in the series. The photographs have been very useful in checking some of Sharpe's identifications and in clearing up a few other matters of importance. In those cases where it was found that the black-and-white photographs were unsatisfactory for the identification of some of the species then 35 mm. colour transparencies were kindly made available by the British Museum authorities, and in several instances these were of assistance in specific determinations. Nevertheless, there are still 37 drawings which at present remain indeterminable despite the investigations of several workers over a period of many years. The numbers of these "problem" paintings are here listed: 13, 14, 15, 29, 30, 91, 106, 111, 113, 114, 125, 136, 137, 138, 142, 144, 148, 151, 153, 155, 158, 159, 160, 161, 162, 179, 180, 181, 191, 200, 206, 207, 208, 213, 214, 215, 270.

Aboriginal names are given on 72 of the bird drawings. Such names, of course, represent the English interpretations of the Native language and are of interest historically. The same species is sometimes given two quite distinct names and it seems that these differences were tribal, even within the limited area of country then known to Phillip and his men.[3]

Phillip wrote to Banks on December 3, 1791 and said:- "It was a matter of great surprise to me when I first arrived in this Country, to find that the words used by the natives when you was here [in 1770, at Botany Bay] were not understood by the present inhabitants, but in my last little journey, I found on the banks of the Hawkesbury, people who made use of several words we could not understand, & it soon appeared that they had a language different from that used by those natives we had hitherto been acquainted with. They did not call the Moon, Yan-re-tah, but Con-do-in . . . ." (Banks Papers, MSS, 1789-1796, vol. 18, Mitchell Library, Sydney.).

Similar instances, among the bird paintings, are:- Irra-won-nang and Dar-rung for the Black-backed Magpie; Birreagal and Poo-book for the Tawny Frogmouth (the latter name is also given, and correctly, to the Boobook Owl and, incorrectly, to the Barn Owl), and Goo-lung-ag-ga

[3] For a discussion on this matter see Tench's *A Complete Account of the Settlement at Port Jackson, in New South Wales,* 1793, p. 123.

and Deroo-gnan for the Red-browed Finch. The supposed native names Karratt and Kurot used for two species of Black Cockatoos rather suggests that the Aborigines have used the English name Parrot for those species. Reference may be made to Sharpe (1906) for all the Native names appearing on the bird drawings.

The number of species represented in the 295 Watling bird drawings is in the region of 150. In some cases there are two or more pictures of the same bird by different artists. The total includes those birds depicted on the missing drawings, the identity of which can be told from Latham's manuscript list accompanying the volume; but it excludes those drawings that cannot be associated with any known bird.

Some of the species, such as the Red-backed Sea-Eagle, the Red Goshawk, the Red-backed Wren and the Pied Goose have not been recorded from anywhere in or near the Sydney district since those early days: others, i.e. the Blue-faced Honeyeater, Red-tailed Black Cockatoo, Pied Oyster-catcher and the Red-necked Avocet are known to be but very rare stragglers at the present time.

The notes accompanying the drawings are of great interest, being, in effect, the first field observations on many of the species depicted. A case in point is the drawing of the Red Goshawk on which appear the following remarks:- "The skin of this bird I found nailed up to a settler's hut. It is the only one of the kind ever seen. The drawing is a faithful copy. The settler who shot it says the iris was brown, and remarked that he never saw any bird fly with such swiftness. Its claws, which were long, small, and sharp when he took it up, it drove quite through the end of his fingers . . ." (drawing No. 11).

Another instance is the descriptive note on the drawing (No. 288) of the Pied Goose:- "This bird is about the size of our native Wild Goose [The writer is here referring to an English goose]. They are generally found in flocks and sometimes perching upon high trees. It has been observed by the man who sometimes shoots these birds that, in opening some of them, but not all, the wind-pipe formed several beautiful circumvolutions on the breast under the skin before it entered the thorax. An officer lately has opened one and confirms the truth of the sportsman's observations. It is called by us the New South Wales Goose, Palmated, instead of being web-footed, because its manner as well as taste and flavour resembles that bird more than any other. The contour or general likeness is here very well observed. I have been informed that at times their note is tuneful and melodious, which appears probable from the conformation of the wind-pipe, if that singular circumstance is true. I have now a man out attending a pond where they most frequent, in hopes of getting one for dissection. They have only lately been observed and shot, principally on a pond near the Hawksburgh [Hawkesbury] River, January 2, 1794. Native name Now-al-gang."

A few years later, in 1798, Latham included the Pied Goose in his paper "An Essay on the Tracheae or Windpipes of various Kinds of Birds" (1798, p. 103), describing the species as new and illustrating the structure of its windpipe. The field notes given by Latham, though condensed, seem to have been based on the same source as, those on the Watling drawing of the species.

Thomas Watling has achieved a certain prominence in the early annals of Australia because of his work as a landscape and natural history painter. He also wrote a book (published in Penrith, England, in 1794) about the Colony and his experiences there and, one hundred and forty years later, one was published about himself and in his home town in Scotland. This book, *Thomas Watling, Limner of Dumfries* (1938) was put out in a limited edition, reprinted for private circulation

from the *Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society* of 1937.

Watling's letters to his aunt in Dumfries, as transcribed in his book, show him to be an intelligent and interesting man, perhaps inclined to self-pity and introspection in his restricted circumstances; but there is no doubt that he was an able artist capable of treating a wide range of subjects in a felicitous style.

Watling was born in Dumfries, Scotland, on September 19, 1762. He was orphaned in infancy and was looked after by his aunt of whom he seems to have been very fond. He was an educated man and apparently well versed in art. At the age of 26 he was charged with forging guinea notes on the Bank of Scotland and one of the exhibits at his trial was an engraved sheet announcing classes for teaching painting. It read:- "Ladies and Gentlemen taught Painting at Watling's Academy: admission per month, One Guinea". This advertisement was probably used as evidence of Watling's skill as an engraver.

Watling denied his guilt but to avoid conviction and possible execution asked to be transported and was sentenced to fourteen years. In July, 1791 he sailed with 410 other convicts in the *Pitt* for New South Wales. He escaped at Capetown but was soon apprehended by the Dutch and later placed on board the *Royal Admiral* which reached Sydney on October 7, 1792. John White, the Surgeon-General, made extensive use of Watling's skill as an artist. In a letter to his aunt, Watling remarks:- "My employment is painting for J.W.—esq., the non-descript productions of the country; and for which, I have the rewards hinted at in the preceding sentence. The performances are, in consequence, such as may be expected from genius in bondage, to a very mercenary sordid person." (1794, p. 20).

White left the Colony in December, 1794 and, with the arrival (for the second time) of Captain John Hunter as Governor, Watling's prospects improved. In the words of Rex Rienits, "Within a year, in September 1796, Watling was given a conditional pardon and on 5 April 1797 it was made absolute. Watling had a son, presumably by a convict woman, and when he left Sydney he took the child with him. From 1801 to 1803 he lived in Calcutta, earning a precarious living as a miniature painter. He returned to Scotland and on 10 January 1806 was tried at Edinburgh for a series of forgeries allegedly committed at Dumfries between November 1804 and March 1805. He was discharged on a verdict of 'not proven'. Later he moved with his son to London where, in indigent circumstances and suffering from cancer of the left breast, he applied to Hunter, now an Admiral, for help and received some assistance from the members of the Royal Academy. Neither the date nor place of his death are known (1967, p. 574).

The present paper is one of a series that have, so far, included the "Raper" (1964), the "Sydney" (1965) and the "Hunter" (1965) drawings, all of which contributions have dealt with the historical backgrounds to the natural history paintings discussed.

Anthropological drawings from the Watling series are mentioned in the *Newsletter* of the Australian Institute of Aboriginal Studies (2 (7), 1968, p. 14). Reproductions of natives, native scenes and of the Black Swan were given by Bernard Smith in his book *European Vision and the South Pacific* (1960), and Axel Poignant reproduced the following subjects in *The Improbable Kangaroo* (1965):- native cats with fowl, Black Swan, jew lizard, a snake and a red ant; others are mentioned in his unpaged text. Mr. G. P. Whitley, who saw the Watling drawings in London in 1937, tells me that the Australian animals were as follows:-

Watling Drawing No.

89. A mammal [native cat], with manuscript note.
90. Lambert drawing I.6. [Native cat]
91. Lambert drawing I.3. Marsupial.
92. Lambert drawing I.9. "Kangaroo rat" [?]
93. Lambert drawing III.8. [Rat]
94. Lambert drawing I.5. [Native cats]
95-96. Flying squirrel.
97. The Pattagorang [Kangaroo].
98. Bag garee [A kangaroo. Phillip has taken home the skin and bones of the head].
99-101. Marsupials.
102-104. Spiny ant-eater, with notes on habits.
105-295. Birds.
296-[304]. Reptiles.
305. [Ventral surface of a male saw-shark, *Pristiophorus cirratus*].
306. Native name Gwee be dung, or Gurooin [The Type of the saw-shark, *Pristiophorus cirratus* (Latham)].
307. Native name Wel-gnoo-roo [Barracouta, *Leionura atun*].
308. Native name Barring ang [Goatfish, probably the type of *Upeneichthys lineatus* (Bloch & Schneider)].
309. "Sydney Cove, N.S.W. Decembr. 1792. Thomas Watling, delt. This very beautiful fish is represented exactly the natural size, but indeed infinitely inferior in colouring; partly owing to the impotency of art when compared with nature; and in part to the distance it was sent us, and the elapsed time ere we received it." [Banana Fish, *Ctenocorissa picta* (Bloch & Schneider).]
310. Native name Karragnorra. T.W. [Unrecognizable, unless it is a conventionalized Wrasse, *Pseudolabrus*.]
311. T. Watling delt. Native name Thorral Ga ne ra. The only Fish of the kind ever seen at Port Jackson since our arrival. [Roundhead, *Paraplesiops bleekeri*.]
312. The Extreme length of this Fish is 2 feet 8 Inches & Breadth 7 Inches. This Fish when first caught was of a most beautifull silver coulour. Native Name Warriwall. [Elephant Fish, *Callorynchus milii*.]
313. Native name Goe in mag gee. [Apparently a very conventionalized Old Wife, *Enoplosus armatus*.]
314. Native name Mannaderang. [A stylised painting, apparently of a Sweep, *Scorpis,* but with red spots on back and fins.]
315. Native name Dea neang. A very common Fish at Port Jackson. T. W—g. [Stripey, *Microcanthus joyceae*.]
316. [Four drawings of fishes.

	Native name.	*Modern identification.*
Top left:	Tag ga	*Chaetodon* sp.
Top right:	Tack-in. marra-dera	*Cristiceps aurantiacus.*
Bottom left:	Dy-e-ne-ang	*Microcanthus joyceae.*
Bottom right:	Ballang-an	Probably juvenile *Usacaranx nobilis*.]

317. [Angler fish, *Phrynelox striatus*. Probably the original of Shaw & Nodder's plate 175.]
318. ". . . supposed to crawl on the sand." [Angler Fish, *Antennarius pictus*. Compare Shaw & Nodder, plate 176.]
"318a". Native name Haan. [A greyish eel with dusky markings, Type of *Gymnothorax scriptus* Bloch & Schneider.]
319-335. New South Wales mollusca. The shell drawings in the Watling series have been treated (1958) by Tom Iredale.
336-348. Insects, etc. One crab.
349-407. [The last]. Botanical subjects.

The Watling drawings of Fishes had been used by Latham who communicated them, or copies of them, to M. E. Bloch in Berlin. Some

were engraved (rather freely) for reproduction in Bloch & Schneider's *Systema Ichthyologiae* (1801); others were copied in Shaw & Nodder's *Naturalists' Miscellany* (1789-1813). A drawing of a Norfolk Island parrot fish was reproduced in *Australian Zoologist* 8, 1937, p. 227, pl. 14, fig. 1.

The "Watling" Bird Drawings.

In the following list of the Watling bird drawings the numbers agree with their sequence in the bound volume. The volume, and number in that volume, of the equivalent Lambert drawing is given in brackets after the corresponding Watling drawing. An asterisk indicates that that particular painting bears Watling's signature or his initials.

1. (1/43). Wedge-tailed Eagle, *Aquila audax.*
* 2. (1/42). Red-backed Sea-eagle, *Haliastur indus.*
3. (1/41). Red-backed Sea-Eagle, *Haliastur indus.*
4. (1/39). Kite, *Elanus* sp. Either the Black-shouldered Kite, *E. notatus,* or the Letter-winged Kite, *E. scriptus,* but most likely the former which is relatively common in the Sydney area whereas the latter is only a very rare straggler. The main difference between the two species is in the under-wing pattern.
5. Kite, *Elanus* sp. (see 4 above).
6. Kite, *Elanus* sp. (see 4 above).
7. Kite, *Elanus* sp. (see 4 above), The drawing shows a bird in an immature plumage state.
8. (1/40). White-breasted Sea-Eagle, *Haliaeetus leucogaster.*
9. (2/95). Winking Owl, *Ninox connivens.*
10. (1/38). Red Goshawk, *Erythrotriorchis radiatus.* See Plate VI, fig. 6, herewith.
11. (3/24). Red Goshawk, *Erythrotriorchis radiatus.*
12. (2/3). Little Falcon, *Falco longipennis.*
13. (2/6). Indeterminable. A bird of prey which, except for the white head and yellow bill, resembles the Red Goshawk; also, some of the plumage characters suggest the Square-tailed Kite.
14. (2/5). Indeterminable. A bird of prey and apparently immature.
15. (3/3). Indeterminable (see 14 above).
16. Missing from volume, is the "Dark Falcon" of Latham's MS list.
17. Missing from volume (see 16 above).
* 18. (2/1). Either Brown Goshawk (*Accipiter fasciatus*) or the Collared Sparrowhawk (*A. cirrocephalus*). The characters separating these two species are not apparent in the drawing.
19. (2/4). Peregrine Falcon, *Falco peregrinus.*
* 20. Grey Goshawk, *Accipiter novaehollandiae.*
21. (2/7). Either Brown Goshawk or the Collared Sparrowhawk (see 18 above).
* 22. Either Brown Goshawk or the Collared Sparrowhawk (see 18 above).
23. Missing from volume, but "Barn Owl", i.e. Barn Owl, *Tyto alba,* of Latham's MS. list.
24. (2/8). Boobook Owl, *Ninox novaeseelandiae.*
25. Barn Owl, *Tyto alba.*
26. (3/23). Grey Butcher-bird, *Cracticus torquatus.*
* 27. (3/32). Grey Butcher-bird, *Cracticus torquatus.* Reproduced in *Austral Avian Record,* vol. 5, 1922, pl. 3.

28. (1/52). Little Cuckoo-Shrike, *Coracina robusta.*
29. (3/20). Indeterminable.
30. (2/35). Indeterminable.
* 31. Eastern Shrike-Tit, *Falcunculus frontatus.*
32. (1/49). Eastern Shrike-Tit, *Falcunculus frontatus.*
33. Eastern Shrike-Tit, *Falcunculus frontatus.*
34. Eastern Shrike-Tit, *Falcunculus frontatus.* Lacks the white patch below the eye but is otherwise a good representation of the species.
* 35. (1/11). Rainbow Lorikeet, *Trichoglossus moluccanus.* Reproduced in Early Artists of Australia (Rienits), 1963, pl. opp. p. 55.
36. (1/27). Rainbow Lorikeet, *Trichoglossus moluccanus.*
* 37. (1/15). Rainbow Lorikeet, *Trichoglossus moluccanus.*
* 38. (1/18). Eastern Rosella, *Platycercus eximius.*
39. Missing from volume, but "Nonpareil Parrot", i.e. Eastern Rosella, according to Latham's MS. list.
40. Missing from volume, but "Small Parrakeet", i.e. Little Lorikeet, *Glossopsitta pusilla,* according to Latham's MS. list.
* 41. (1/25). Little Lorikeet, *Glossopsitta pusilla.*
42. Missing from volume, but "Ground Parrot", i.e. Swamp Parrot, *Pezoporus wallicus,* according to Latham's MS. list.
43. (1/26). Musk Lorikeet, *Glossopsitta concinna.*
44. (1/14). Swift Parrot, *Lathamus discolor.*
45. Missing from volume, but "Pennantian Parrot", i.e. Crimson Rosella, *Platycercus elegans,* according to Latham's MS. list.
46. Missing from volume, but same species as 45 according to Latham's MS. list.
* 47. (1/17). Turquoisine Parrot, *Neophema pulchella.*
* 48. (1/29). King Parrot, *Aprosmictus scapularis,* female.
* 49. (1/31). King Parrot, *Aprosmictus scapularis,* male.
* 50. (1/16). King Parrot, *Aprosmictus scapularis,* immature male.
51. (1/30). King Parrot, *Aprosmictus scapularis,* female.
* 52. (1/19). Yellow-tailed Black Cockatoo, *Calyptorhynchus funereus.*
53. (1/23). Red-tailed Black Cockatoo, *Calyptorhynchus banksii,* (female).
54. (1/20). Red-tailed Black Cockatoo, *Calyptorhynchus banksii,* male.
55. Missing from volume, "Banksian Cockatoo, variety" of Latham's MS. list.
56. (1/22). Yellow-tailed Black Cockatoo, *Calyptorhynchus funereus.*
* 57. (1/46). Channel-billed Cuckoo, *Scythrops novaehollandiae.*
58. (1/53). Little Cuckoo-Shrike, *Coracina robusta,* a plumage phase of the species.
* 59. Cicada-bird, *Edoliisoma tenuirostre,* male.
60. (1/51). Grey Currawong, *Strepera versicolor.*
61. Magpie-Lark, *Grallina cyanoleuca.*
62. (2/20). Magpie-Lark, *Grallina cyanoleuca.*
63. (2/33). Pied Currawong, *Strepera graculina.* The painting incorrectly shows a white throat, but otherwise a good figure of the species.
64. (2/83). Dollar-bird, *Eurystomus orientalis.*
65. (3/25). Pied Currawong, *Strepera graculina.*
66. (2/96). Black-backed Magpie, *Gymnorhina tibicen.*
* 67. (2/15). Olive-backed Oriole, *Oriolus sagittatus.* Reproduced in *Austral Avian Record,* vol. 5, 1922, pl. 2.
68. Black-backed Magpie, *Gymnorhina tibicen.*
69. (1/54). Olive-backed Oriole, *Oriolus sagittatus.*
70. (1/55). Grey Thrush, *Colluricincla harmonica.*
* 71. Brown Song-Lark, *Cinclorhamphus cruralis,* male.
* 72. (1/34). Koel Cuckoo, *Eudynamys orientalis,* female.

73. (1/36). Pheasant Coucal, *Centropus phasianinus.*
74. (2/27). Indeterminable. Reproduced in *Austral Avian Record,* vol. 5, 1922, pl. 7.
75. (2/26). Fantailed Cuckoo, *Cacomantis pyrrhophanus.* Although the figure shows a dark neck-band there can be little doubt, from the tail-pattern, the white on the wing-shoulder and the eye-ring, that it is intended to represent the Fantailed Cuckoo (colour transparency examined). An engraving based on this painting, or a similar one, appears in the *Second Supplement, General Synopsis of Birds,* 1801, pl. 126. In the engraving the neck-band is further exaggerated. Latham's *Cuculus flabelliformis* (ibid, p. 138) is based on either this painting or on Lambert drawing No. 26, vol. 2 which is a copy of Watling No. 75. See Plate V, figs. 3 and 4.
76. (3/22). Golden Bronze-Cuckoo, *Chalcites plagosus.*
77. Laughing Kookaburra, *Dacelo gigas.*
* 78. (2/87). Laughing Kookaburra, *Dacelo gigas.*
79. (2/86). Azure Kingfisher, *Alcyone azurea.*
80. Sacred Kingfisher, *Halcyon sancta.*
* 81. (3/6). Orange-winged Sittella, *Neositta chrysoptera.*
* 82. Orange-winged Sittella, *Neositta chrysoptera.*
* 83. (2/44). Leaden Flycatcher, *Myiagra rubecula,* female.
84. (2/28). Rainbow-bird, *Merops ornatus.*
85. Missing from volume, but "Variegated Bee-eater", i.e. Rainbow-bird, according to Latham's MS. list.
86. (1/37). Red Wattle-bird, *Anthochaera carunculata.*
* 87. Noisy Friar-bird, *Philemon corniculatus.*
88. (2/75). Noisy Friar-bird, *Philemon corniculatus,* immature.
89. Little Wattle-bird, *Anthochaera chrysoptera.*
90. (1/33). Little Wattle-bird, *Anthochaera chrysoptera.*
91. (3/44). Indeterminable
92. (1/35). Regent Honeyeater, *Zanthomiza phrygia.*
* 93. Regent Honeyeater, *Zanthomiza phrygia.*
94. Blue-faced Honeyeater, *Entomyzon cyanotis.*
* 95. (1/57). Blue-faced Honeyeater, *Entomyzon cyanotis.*
* 96. Noisy Miner, *Myzantha melanocephala.*
97. (1/56). Noisy Miner, *Myzantha melanocephala.*
98. (2/64). White-bearded Honeyeater, *Meliornis novaehollandiae.*
99. (2/59). Tawny-crowned Honeyeater, *Gliciphila melanops.*
100. Tawny-crowned Honeyeater, *Gliciphila melanops.*
101. (2/61). Tawny-crowned Honeyeater, *Gliciphila melanops.*
102. (2/80). Eastern Spinebill, *Acanthorhynchus tenuirostris.*
103. Eastern Spinebill, *Acanthorhynchus tenuirostris.*
*104. (2/76). Little Wattle-bird, *Anthochaera chrysoptera.*
105. (2/79). Brown-headed Honeyeater, *Melithreptus brevirostris.* Reproduced in *Austral Avian Record,* vol. 3, No. 2, 1915, pl. 2.
106. (2/72). Indeterminable. Possibly an incorrect drawing of the White-naped Honeyeater, *Melithreptus lunatus.*
*107. (2/69). Scarlet Honeyeater, *Myzomela sanguinolenta,* male.
108. (2/70). Scarlet Honeyeater, *Myzomela sanguinolenta,* male.
109. (2/78). Scarlet Honeyeater, *Myzomela sanguinolenta,* male.
110. (2/66). Silver-eye, *Zosterops* sp. The bill in the drawing is too long for the Silver-eye occurring near Sydney, i.e. *Z. lateralis.* Possibly meant for *Z. tenuirostris* of Norfolk Island but the yellow under-tail-coverts are lacking.
111. (2/58). Indeterminable.
112. (2/71). Crescent Honeyeater, *Phylidonyris pyrrhoptera.*
113. (2/73). Indeterminable.
114. (2/74). Indeterminable.
*115. (2/43). Lewin Honeyeater, *Meliphaga lewini.*

116. Missing from volume, but "Yellow-eared Creeper", i.e. Lewin Honeyeater, according to Latham's MS. list.
117. (2/68). Fuscous Honeyeater, *Meliphaga fusca.*
118. Yellow-faced Honeyeater, *Meliphaga chrysops.*
119. Lewin Honeyeater, *Meliphaga lewini.*
120. Scarlet Honeyeater, *Myzomela sanguinolenta,* immature male.
121. (2/65). Yellow-tufted Honeyeater, *Meliphaga melanops.*
*122. (2/40). Yellow-tufted Honeyeater, *Meliphaga melanops.*
123. (2/67). Restless Flycatcher, *Seisura inquieta.*
124. (2/41). Ground Thrush, *Oreocincla lunulata.*
125. (2/77). Indeterminable.
126. Bell-Miner, *Manorina melanophrys.*
*127. (2/47). Eastern Whipbird, *Psophodes olivaceus.*
*128. Crescent Honeyeater, *Phylidonyris pyrrhoptera.*
129. White-naped Honeyeater, *Melithreptus lunatus.*
130. White-naped Honeyeater, *Melithreptus lunatus.*
131. White-naped Honeyeater, *Melithreptus lunatus.*
*132. Blue-faced Honeyeater, *Entomyzon cyanotis.*
133. (2/60). Yellow-tufted Honeyeater, *Meliphaga melanops.*
*134. (2/46). Yellow-faced Honeyeater, *Meliphaga chrysops.*
*135. (3/45). Tawny-crowned Honeyeater, *Gliciphila melanops.*
136. (2/63). Indeterminable. Possibly meant for a female Golden Whistler, *Pachycephala pectoralis.*
137. Indeterminable.
138. Indeterminable.
*139. (2/45). White-throated Tree-creeper, *Climacteris leucophaea.*
140. (No. 1) (2/53). Golden Whistler, *Pachycephala pectoralis,* male.
140. (No. 2) (1/50). Golden Whistler, *Pachycephala pectoralis,* male.
141. (2/34). Rufous Whistler, *Pachycephala rufiventris,* immature male.
142. Indeterminable.
143. (2/51). Restless Flycatcher, *Seisura inquieta.*
144. (2/38). Indeterminable. Reproduced in *Austral Avian Record,* vol. 5, 1922, pl. 5.
145. Blue-faced Honeyeater, *Entomyzon cyanotis.*
146. (2/36). Blue-faced Honeyeater, *Entomyzon cyanotis.*
147. (2/42). Norfolk Island Blackbird, *Turdus poliocephalus.*
148. (2/50). Indeterminable.
*149. (2/48). Bell-Miner, *Manorina melanophrys.*
*150. (2/49). Restless Flycatcher, *Seisura inquieta.*
151. (2/25). Indeterminable. Reproduced in *Austral Avian Record,* vol. 3, 1918, pl. 6.
152. (2/30). Dusky Wood-Swallow, *Artamus cyanopterus.*
153. (2/18). Indeterminable. Reproduced in *Austral Avian Record,* vol. 5, 1922, pl. 4.
154. (2/32). Eastern Bristle-bird, *Dasyornis brachypterus.*
*155. (3/46). Indeterminable. Possibly meant to represent an immature example of the Narrow-billed Bronze Cuckoo, *Chalcites basalis.*
156. (2/10). Yellow-tufted Honeyeater, *Meliphaga melanops.*
*157. (3/33). Grey Thrush, *Collurincincla harmonica.*
158. Indeterminable. This and the four following paintings are possibly intended for the Grey Thrush.
159. (3/45). Indeterminable.
160. (2/37). Indeterminable.
161. (2/29). Indeterminable.
162. Indeterminable.
163. (2/22). Firetail Finch, *Zonaeginthus bellus.*
164. (2/21). Firetail Finch, *Zonaeginthus bellus.*
*165. (3/18). Spotted-sided Finch, *Zonaeginthus guttatus.*

166. Red-browed Finch, *Aegintha temporalis.*
167. (2/37). Red-browed Finch, *Aegintha temporalis.*
168. Red-browed Finch, *Aegintha temporalis.*
169. Missing from volume, but "Temporal Finch", i.e. Red-browed Finch, according to Latham's MS. list.
*170. (3/36). Scarlet Robin, *Petroica multicolor,* male.
171. (2/54). Rose Robin, *Petroica rosea,* male.
172. (3/29). Scarlet Robin, *Petroica multicolor,* male. Norfolk Island.
173. Scarlet Robin, *Petroica multicolor,* male.
174. (2/17). Scarlet Robin, *Petroica multicolor,* two figures, male and female, on sheet.
175. Yellow Robin, *Eopsaltria australis.*
*176. Rufous Fantail, *Rhipidura rufifrons.*
177. (2/13). Rufous Fantail, *Rhipidura rufifrons.*
178. Missing from volume, but "Rufous-fronted Flycatcher", i.e., Rufous Fantail, according to Latham's MS. list.
179. (2/31). Indeterminable.
180. (2/12). Indeterminable. "Black-cheeked Flycatcher". See Plate VI, fig. 5.
181. (2/14). Indeterminable.
182. (3/35). Yellow Robin, *Eopsaltria australis.*
183. (3/30). Scarlet Robin, *Petroica multicolor,* female. Norfolk Island.
184. (2/11). Emu Wren, *Stipiturus malachurus,* male. Reproduced in *The Emu,* vol. 31, 1931, pl. 23.
*185. Emu Wren, *Stipiturus malachurus,* female. Reproduced in *The Emu,* vol. 31, 1931, pl. 26.
187. (3/38). Red-backed Wren, *Malurus melanocephalus,* male.
188. Red-backed Wren, *Malurus melanocephalus,* male.
*189. (3/43). Flame Robin, *Petroica phoenicea,* male.
*190. (3/14). Hooded Robin, *Petroica cucullata,* male. Reproduced in *Austral Avian Record,* vol. 5, 1922, pl. 1.
191. Indeterminable.
*192. Pipit, *Anthus novaeseelandiae.*
193. (1/44). Pipit, *Anthus novaeseelandiae.*
194. Grey Fantail, *Rhipidura fuliginosa.*
195. Missing from volume, but "Superb Warbler", i.e., Blue Wren, *Malurus cyaneus,* according to Latham's MS. list.
196. (2/9). Speckled Warbler, *Chthonicola sagittata.*
197. Speckled Warbler, *Chthonicola sagittata.*
198. Speckled Warbler, *Chthonicola sagittata.*
199. Missing from volume, but "Rufous-vented Warbler", i.e. Rufous Whistler, *Pachycephala rufiventris,* according to Latham's MS. list.
200. (3/5). Indeterminable.
*201. (3/28). Rose Robin, *Petroica rosea,* female. Sharpe identified this drawing with the Jacky Winter, *Microeca leucophaea,* and the remarks on the sheet about the habits of the bird agree well with that species: however, the white on the wing and the relatively long tail best suit the Rose Robin.
*202. (2/57). Fantailed Cuckoo, *Cacomantis pyrrhophanus.*
*203. (2/56). Yellow Robin, *Eopsaltria australis.*
204. Mistletoe-bird, *Dicaeum hirundinaceum,* male.
205. Mistletoe-bird, *Dicaeum hirundinaceum,* male.
206. (2/16). Indeterminable. Wrongly listed as No. 207 by Sharpe. Possibly intended for female Mistletoe-bird but drawing shows a grey chin and lacks the reddish under-tail-coverts of the species.
207. (3/42). Indeterminable. Wrongly listed as 206 by Sharpe. Possibly an inaccurate drawing of a male Mistletoe-bird. *?Petroica rosea* in Mathews, 1931, List Birds Austr., p. 377.
208. (2/52). Indeterminable.

*209. (3/34). Grey-backed Silvereye, *Zosterops lateralis.* Reproduced in the *Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society,* February, 1937, pl. 4. See also plate 5 for inscription on back of painting.
*210. Grey-backed Silvereye, *Zosterops lateralis.*
211. (2/23). Spotted Pardalote, *Pardalotus punctatus.*
*212. (2/24). Spotted Pardalote, *Pardalotus punctatus,* two figures on the sheet.
213. (3/4). Indeterminable. Possibly an inaccurate drawing of an immature Spotted Pardalote.
214. (3/40). Indeterminable. Possibly intended for a female Mistletoe-bird.
215. (2/39). Indeterminable.
*216. (2/89). Fork-tailed Swift, *Apus pacificus.* Wrongly listed as 217 by Sharpe.
*217. (2/88). Spine-tailed Swift, *Hirundapus caudacutus.* Wrongly listed as 216 by Sharpe.
*218. (1/71). Owlet-Nightjar, *Aegotheles cristatus.*
219. (1/66). Owlet-Nightjar, *Aegotheles cristatus.*
220. (1/67). Tawny Frogmouth, *Podargus strigoides.*
221. (1/68). Tawny Frogmouth, *Podargus strigoides.*
222. (1/69). Tawny Frogmouth, *Podargus strigoides.*
223. (1/70). Owlet-Nightjar, *Aegotheles cristatus.*
224. Missing from volume, but is "Bronze-winged Pigeon" of Latham's MS. list.
225. (1/62). Wonga Pigeon, *Leucosarcia melanoleuca.* This drawing appears to have been based on painting No. 81 in the "Sydney" series both of which bear the date December, 1791. Sharpe gave the year as 1792. In checking the matter for me in 1930, N. B. Kinnear wrote "The date is a little difficult to be quite certain about. I should have read it myself as Dec. 1791, but on looking closer with a glass the last cipher is so made that there is a distinct tail on it which is absent in the first cipher. It looks as if the "1" has been made carelessly and it could be read either way". The final cipher in the date on the Sydney drawing is also not very distinct though it is apparently intended for 1.

This Watling painting, and No. 288 in the bird series, are the only two bearing dates, in the latter case "January 2, 1794". See Plate VII, figs. 7 and 8.
*226. (3/48). Pallid Cuckoo, *Cuculus pallidus.* Reproduced in *Austral Avian Record,* vol. 3, 1915, pl. I.
227. (1/60). Painted Quail, *Turnix varia.*
228. Jabiru, *Xenorhynchus asiaticus.*
229. Missing from volume, but is "New Holland Jabiru", i.e. Jabiru, of Latham's MS. list.
230. (3/15). Brolga, *Grus rubicundus.*
231. Nankeen Night-Heron, *Nycticorax caledonicus,* adult.
*232. (3/31). Nankeen Night-Heron, *Nycticorax caledonicus,* immature.
233. Missing from volume, but "Caledonian Heron", i.e. Nankeen Night-Heron, according to Latham's MS. list.
*234. (3/21). Brown Bittern, *Botaurus poiciloptilus.*
235. (3/2). Brown Bittern, *Botaurus poiciloptilus.*
236. (3/12). Little Bittern, *Ixobrychus minutus.*
237. (2/93). Little Bittern, *Ixobrychus minutus.*
238. (2/85). White-necked Heron, *Ardea pacifica.*
239. (3/17). Eastern Curlew, *Numenius madagascariensis.*
*240. Bar-tailed Godwit, *Limosa lapponica.*
241. (3/1). Japanese Snipe, *Gallinago hardwickii.*
242. (1/61). Spur-winged Plover, *Lobibyx novaehollandiae.*
243. Spur-winged Plover, *Lobibyx novaehollandiae.*

*244. (3/26). Common Sandpiper, *Tringa hypoleucos*. Reproduced in *Austral Avian Record*, vol. 5, 1922, pl. 6.
245. (3/39). Golden Plover, *Pluvialis dominica*.
246. (3/11). Bush Curlew, *Burhinus magnirostris*. Reproduced in *The Literature of Australian Birds* (Whittell), 1954, pl. 12, left hand figure.
247. (2/81). Red-capped Dotterel, *Charadrius ruficapillus*.
248. Missing from volume, but "Golden Plover, var.", according to Latham's MS. list.
*249. (3/27). Black-fronted Dotterel, *Charadrius melanops*.
*250. Black-fronted Dotterel, *Charadrius melanops*.
*251. (2/19). Bush Curlew, *Burhinus magnirostris*.
252. (3/41). Bush Curlew, *Burhinus magnirostris*, as Bridled Plover. See Plate IV, figs. 1 and 2.
*253. (3/16). Double-banded Dotterel, *Charadrius bicinctus*. The figure depicts either an immature or an eclipse-plumaged example of the species. Watling states "This is a water bird, though perched on a stick".
254. Pied Oyster-catcher, *Haematopus ostralegus*.
*255. Pied Oyster-catcher, *Haematopus ostralegus*.
256. (2/82). Marsh Crake, *Porzana pusilla*.
257. (2/84). Spotless Crake, *Porzana tabuensis*. Drawn from a Norfolk Island specimen.
258. White Swamphen, *Porphyrio albus*. Lord Howe Island. Reproduced in *The Emu*, vol. 40, 1940, pl. 4.
259. White Swamphen, *Porphyrio albus*, three figures on sheet. Lord Howe Island. Reproduced in *The Emu*, vol. 40, 1940, pl. 5.
260. (1/65). Eastern Swamphen, *Porphyrio melanotus*.
261. Eastern Swamphen, *Porphyrio melanotus*.
262. Missing from volume, but "Black-jointed Gallinule", i.e. Eastern Swamphen, according to Latham's MS. list.
*263. Little Grebe, *Podiceps novaehollandiae*.
264. Missing from volume, but "New Holland Grebe", i.e. Little Grebe, according to Latham's MS. list.
265. Red-necked Avocet, *Recurvirostras novaehollandiae*.
266. Red-necked Avocet, *Recurvirostras novaehollandiae*.
267. Missing from volume, but "American Avoset", i.e. Red-necked Avocet, according to Latham's MS. list.
268. (1/47). Red-necked Avocet, *Recurvirostras novaehollandiae*. Wrongly listed as No. 267 by Sharpe.
269. (3/8). Black-browed Albatross, *Diomedea melanophrys*.
*270. Indeterminable. Identified as a Crested Tern, *Sterna bergii*, by Sharpe: if it does represent that species it is a very poor figure.
*271. Crested Tern, *Sterna bergii*.
272. Caspian Tern, *Hydroprogne caspia*.
273. Caspian Tern, *Hydroprogne caspia*.
*274. (3/37). Sooty Tern, *Sterna fuscata*.
*275. (2/92). Pacific Gull, *Larus pacificus*. Not a very accurate drawing of what seems to be a plumage phase of the species.
276. Pacific Gull, *Larus pacificus*, adult.
277. (3/19). Silver Gull, *Larus novaehollandiae*.
*278. Silver Gull, *Larus novaehollandiae*.
279. Silver Gull, *Larus novaehollandiae*.
280. (3/13). Wedge-tailed Shearwater, *Puffinus pacificus*. Norfolk Island.
281. (3/9). Brown Headed Petrel, *Pterodroma melanopus*. Norfolk Island.
282. (3/10). Wedge-tailed Shearwater, *Puffinus pacificus*. Norfolk Island.

283. Black Swan, *Cygnus atratus*. Reproduced in *European Vision and the South Pacific* (Smith), 1960, pl. 89; also in *The Improbable Kangaroo* (Poignant), 1965, pl. 89.
284. (3/7). Pied Goose, *Anseranas semipalmata*.
*285. (1/76). Maned Goose, *Chenonetta jubata*, male.
286. (1/75). Maned Goose, *Chenonetta jubata*, male.
287. Missing from volume, but "Hawkesbury Duck", i.e. Maned Goose, according to Latham's MS. list.
*288. (1/74). Pied Goose, *Anseranas semipalmata*. Reproduced in the *Australian Museum Magazine*, vol. 6, 1938, p. 298, and on Plate VII, fig. 8 of this paper.
289. Missing from volume but "Membranaceous Duck", i.e. Pink-eared Duck, *Malacorhynchus membranaceus*, of Latham's MS. list.
290. Missing from volume, but "New Holland Shoveller", i.e. Blue-winged Shoveller, *Anas rhynchotis*, according to Latham's MS. list.
*291. Little Penguin, *Eudyptula minor*.
292. (2/90). Pelican, *Pelecanus conspicillatus*.
293. (2/91). Australian Gannet, *Sula serrator*.
294. Red-tailed Tropic-bird, *Phaethon rubricaudus*, immature.
295. Red-tailed Tropic-bird, *Phaethon rubricaudus*, adult.

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My sincere thanks to the many colleagues who, over the past 40 years, have interested themselves on my behalf in the Watling and the Lambert drawings. I particularly wish to mention the following helpers:- the late Gregory M. Mathews the late Sir Norman Kinnear, the Librarians and staff of the Zoological Library of the British Museum (Natural History) including F. C. Sawyer, Gavin Bridson and Dorothy M. Norman; various Librarians and staff of the Mitchell Library and the Australian Museum Library of Sydney; Tom Iredale and Arnold McGill, of Sydney and Rex Rienits, now of London. Special thanks are extended to the Right Hon. the Earl of Derby for permission to use the "Lambert" drawing and to Miss Suzanne Mourot of the Mitchell Library, for her co-operation in arranging for photographic copies, both in monochrome and in colour, of the Watling series of bird drawings.

I am much indebted to Gilbert P. Whitley who, in 1937, examined the Watling drawings. His notations on the zoological subjects are included in this paper.

The Trustees of the British Museum (Natural History) are thanked for permission to reproduce photographic copies of the Watling drawings.

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HEREWARD LEIGHTON KESTEVEN (1881-1964) AS A CONCHOLOGIST

by GILBERT P. WHITLEY

(Plate VIII)

Do schoolboys still thrill to the deeds of Hereward the Wake, the "Last of the English" as the novelist the Rev. Charles Kingsley called this Saxon patriot who defied William the Conquerer nine centuries ago?" If not from the book, no doubt they do from the television serial. The subject of this article claimed descent from Hereward the Wake and his surname, Kesteven, persists as a place-name in Lincolnshire to this day.

Hereward Leighton Kesteven was born at Levuka, Fiji, the son of a doctor, on 16th January 1881. He came to Sydney as a boy and collected shells. The first of many entries in the Australian Museum's registers referring to his donations (No. C. 3643) was dated 1897, for a *Littorina* (now *Melarapha*) *acutispira* from Sydney. Kesteven himself collected in New South Wales and south Queensland, but he acquired by exchange shells from other Australian States, Borneo, Ceylon, etc. He received South Australian shells from W. T. Bednall, Tasmanian ones from Miss Lodder, and Queensland shells from W. May. In 1901, Kesteven became a volunteer (i.e. unpaid) assistant in the Australian Museum's department of molluscs, he was appointed mechanical assistant in 1902, but resigned in 1904. At the museum, he was trained by Charles Hedley and he quickly plunged into research as well as routine work. He sorted shell-sand, and mounted and labelled thousands of shells for distribution in the galleries and cabinets, inspecting them all carefully, particularly as regards the protoconchs of the gastropods. The history of molluscan protoconchs was convoluted in more than one sense; Kesteven was fascinated by their complexity and sought to bring order into the classification of these tiny apical "monuments" to the early lives of their shells. He also investigated growth-changes and the anatomy of molluscs, described and drew radulae, opercula and shells and compared them with fossil forms and accounts in literature. The studies on protoconchs resulted in a series of papers in the *Quarterly Journal of Microscopical Research* (1905) and in the *Proceedings of the Linnean Society of New South Wales* (from 1901 to 1912). Kesteven also wrote papers on *Purpura, Astralium* and the Rissoidae in the latter *Proceedings,* one on *Fossarina* in the *Records of the Australian Museum* (1902) and an account of the anatomy of *Megalatractus* in the "Thetis" Report (*Australian Museum Memoir,* 1904). The specimens and slides on which his work was based all came to the Australian Museum, Sydney.

At the end of 1902, Kesteven visited Caloundra, Queensland, in the interests of Charles Hedley and the collection made there was presented by the latter to the Australian Museum. No list was published, though one was compiled, 373 species of molluscs being represented (Iredale, 1927, *Australian Zoologist,* 4, p. 331). In 1904, Kesteven collected at the Capricorn Group, Queensland (*Brisbane Courier* newspaper, Nov. 4, 1904, p. 5, also *Gladstone Observer*). About 1904 or 1905, Kesteven received a letter from Tom Iredale (then in New Zealand) about shells. This began a correspondence and friendship of life-long endurance, peppered with good-humoured arguments over points of difference. Their first actual meeting was not until 1924.

After leaving the Australian Museum, Kesteven lectured on chemistry at the Sydney Technical College and he wrote several articles in the early volumes of the *Technical Gazette of New South Wales* besides publishing in 1912 a *Manual of Practical Biochemistry*. He improvised or invented apparatus and, with his versatile mind, obtained brilliant passes in zoology, botany, petrology, geology, physiology, mathematics, physics, chemistry and medicine at the University of Sydney, graduating B.Sc., D.Sc., M.B., Ch.M. and M.D. He practised medicine for many years in country districts in New South Wales and Queensland but always retained a lively interest in natural history. From Charles Hedley, Kesteven had not only learned conchology and a love of nature but how to observe human beings. Consequently he became involved in the problems and health of the poor and working classes and was to write, in "A Doctor's Blueprint for a happier Australia" (an autobiographical sketch in *Talk* (Sydney: Australian Broadcasting Commission), 1 (5), August 1946, p. 76), "I am a Socialist, have been since 40." He felt that national control and pensions would enable people to develop better. Throughout his time as a general practitioner, while he continued his research in comparative anatomy of animals, he developed an interest in economics and politics which led him to stand for Parliament as a Douglas Credit candidate and to write a book on currency control which opened an exchange of letters with John Maynard Keynes. Dr. Kesteven turned to industrial medicine, treating people while they were at work, first in factories, then in Army camps all over Australia during World War II. One of his sons-in-law tells us (J. G. Radford, 1964, *Med. Journ. Austr.*, Oct. 3, 1964, ii, p. 560) that during a depression year his gross cash takings were only £5; patients paid him with fruit, vegetables, or not at all. Once he returned from a bush call with a snake wrapped around the headlights of his car for safe conduct to his laboratory.

Dr. Kesteven's first love was malacology but in later years he branched into studies of the skulls and muscles of the heads of many different vertebrates and the evolutionary and classifactory problems these raised. One of my tasks, years ago, at the Australian Museum was to cut off the heads of unwanted duplicate fishes and preserve them in a tank for periodic transference to Dr. Kesteven for his anatomical researches on fish skulls.

From 1936 to 1940, "Dr. K." was Medical Director of the Goodyear Tyre and Rubber Company, then he became attached to the armament factories of the Lithgow area, and from 1942 to 1946 was associated with the Allied Works Council, travelling extensively in Australia. From 1948 to 1964 he practised in various parts of Queensland. Dr. Kesteven was twice married and had ten children, all with scholastic attainments. He died at Brighton, near Brisbane, in May 1964.

I conclude this sketch of my old friend with a letter from Dr. Hereward Leighton Kesteven to Tom Iredale, dated Maroochydore, Queensland, August 15th 1955, just after Iredale had named the new genus *Herewardia* (type-species, *Rissoa kesteveni* Hedley) in his honour:

Dear Iredale,

I have just received your letter. First I want to thank you for continuing the association with Herewardia. It was a very nice thought.

I have had a small collection of shells picked up at Alexandra Headland, between Maroochydore and Mooloolaba months & months ago. I did so feeling that sooner or later I would find someone who might find them interesting. I send them to you and will

follow with some shell grit from which you may recover small ones of interest.

The medals I was awarded were the Walter Burfitt and the David Syme, both for my work on the comparative anatomy and evolution of the Skull and the muscles of the Head & Neck.

Work in these fields took me right away from the first love of Malacology so that today I fear me I know very few of the shells by name.

It was nice to hear from you. I remember getting my first letter from you away back about 1904 or 5 in which you were unable to accept some of my views on the significance of the form of the neanic apices. I have that letter still, somewhere amongs[t] my papers.

All the best my friend
Write again
Yours
K.

Acknowledgements

I wish to thank Dr. G. L. Kesteven of F.A.O., Mexico; and Mr. Tom Iredale, Honorary Associate, and Dr. Winston Ponder, Curator of Molluscs, Australian Museum, for their help towards the preparation of this article. Books and papers have been consulted in the libraries of the Linnean Society of New South Wales and the Australian Museum and in the Mitchell Library, Sydney.

JOHN ROACH, THE BUDGERIGAR, AND THE UNFORTUNATE OFFICER

by TOM IREDALE & G. P. WHITLEY

Celia Starfield (1961) mentioned that Mrs. Charles Cook, the authoress of the *Comic History of New South Wales* (1877) had exchanged a lock of Queen Pomare's hair for an opossum skin with a naturalist called "Mr. Roche" of Hunter Street, Sydney, many years ago. This would have been John Roach, a former convict, a very early employee of the Australian Museum, a taxidermist and dealer in birds and other animals. He was referred to by a French author, Eugène Delessert, as having a charming parrakeet, called budgerry in his stock in 1845, an early variant on the name budgerigar. A former article of ours, entitled "John Roach and the Budgerigar", which appeared in *Australian Natural History*, 14(3), 1962, pp. 99-102, aroused unexpected interest. As "The Strange Tale of Australia's convict birdman," it was featured in the *Sunday Telegraph* newspaper, Sydney, October 21st. 1962, p. 33, and several readers kindly wrote to point out slight errors or to provide further data. Closer research into manuscripts at the Mitchell Library, Sydney, has also yielded more information, so that this supplementary note seems called for.

John Roach seems to have been a spirited man, although a convict. We referred to Surgeon Stapleton speaking of Roach as the "rascally bird-stuffer" but our reference, though taken from a historical source, should have been to Granville Chetwynd Stapylton, the Assistant-Surveyor to T. L. Mitchell's famous voyage of exploration to Australia Felix in 1836-7, when Roach collected for the Australian Museum. Stapylton was not a surgeon but was a choleric gentleman whose manuscript journal (A.332 in the Mitchell Library) is full of critical remarks on Mitchell, other members of the expedition, and especially John Roach whom he fancied to be insolent to him: "I cannot describe", he wrote, "the antipathy I entertain towards this vagabond." We quote a few from many pages of ravings against Roach, an "unhanged Scoundrell", for whom Stapylton regretted he had not even a pair of handcuffs.

"Heard the bird-stuffer, a most impudent scoundrel, strike my dog last night while on watch which sent poor Smut yelping into my tent. Notwithstanding the hour I damned his eyes well and in the morning blew him up sky high and very loud which has the desired effect of making him look very foolish . . . This damned bird-skinner has been spoiled in Sydney by Mr. Macleay, and is just the sort of free and easy vagabond with a flash shooting jacket on, that I feel especial pleasure in taking down a peg."

"The scoundrel Bird stuffer takes the greatest pains to conceal everything new from my sight. The collection for the Museum is already very extensive."

"I've another Crow to pick with my friend the Bird-stuffer and it will be odd if I don't square accounts with him eventually."
Stapylton complains about M[itchell] on Sept. 23, 1836:

"A complaint to him [Mitchell] on the subject of the insolence of Roach he has the effrontery to call an exhibition of selfishness on my part and of a greater regard for my personal comfort than for the success of the expedition."

"The conduct of Roach being daily most offensive in mimicking me as I stand by my fire and using insulting gestures towards me. I sent

for him . . . His reply was most audacious viz. you are a curious man youl'd swear anything, you often have done, you told Alick things which were false about me. What do I care for you? Major Mitchell has often told you you've nothing to do with me, you are not going to frighten me, are you? Perceiving that I could hardly refrain from knocking him down, but recollecting my unprocted [unprotected?] position I curbed my feelings . . . He went away muttering something most disgusting but I could not hear the precise words he used while he leared back at me with a look of insulting defiance."

"This Bird-stuffer sets me at defiance—my position is an awkward one—If I chain him to a drag I probably quarrel with the chief, which for a few weeks at least had better be deferred—to tolerate his behaviour is an insult to my feelings—Prudence says bear it—it will make your complaint to the Government all the stronger hereafter."

"Grossly insulted again today by the Bird-stuffer. Ordered him to his tent. Swore he had as much right to the ground as I had, that I had no command over him, that he had as many pulls over me as I had over him and that he would make me remember my conduct towards him and a great deal more but I was in such a passion I cannot remember one half of it. Told Muirhead to put him away which was done."

One cannot help feeling that many of Stapylton's grievances may have arisen from an inflated sense of his own self-importance and from the strains and stresses of a long and arduous voyage in totally strange lands. He seemed unable to get along well with anybody and regarded the aborigines as devils incarnate. It is perhaps not surprising that he was speared to death by them a few years later and was buried near the present site of Brisbane.

Granville W. Chetwynd Stapylton had been appointed Assistant Surveyor of Crown Lands in 1828 by the Secretary of State.* After accompanying Mitchell, he was apparently employed as a surveyor at Port Phillip, Victoria, from 1st April 1838, but he came to a bad end. He became drunken and disorderly and was relieved of his duties (T. O'Callaghan, 1919, *Vict. Hist. Mag.* 7(1), January 1919, pp. 10-13). The Chetwynd River in Victoria had been named by Mitchell after him and the County of Stapylton in northern New South Wales probably commemorates him too. A railway station in southern Queensland was named "after G. C. Stapylton, an early surveyor, murdered and partly eaten by blacks in the neighbourhood; two were afterwards hanged for the deed." The position of Stapylton's last camp, near the Logan River, is shown on a map published by the Colonial Office, Downing Street, London (Gt. Britain Colon. Office. *Papers respecting New South Wales*, April 26th 1841, appendix B., p. 11) accompanying a report by S. A. Perry who stated,

"Mr. Assistant-Surveyor Stapylton . . . was occupied on the morning of the 31st. May [1839] writing in front of his tent, while one of his party was preparing his breakfast . . . when the tents were suddenly attacked by some native blacks who had been loitering about them, and the unfortunate officer and one of the men fell victims to the unbridled fury of these savages . . .

"The remains of Mr. Stapylton have been interred at Brisbane town. Some of the supposed accessaries to the murder have been apprehended, and will be brought to justice on their arrival in Sydney."

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* Colonial Secretary of N.S.W. *Returns of the Colony*, 1830 (Archives office of N.S.W.; MS. in the Mitchell Library, 4/261), pp. 67 and 82.

P. A. Gilbert (1941) listed the many vernacular names applied to the Budgerigar (*Melopsittacus undulatus* Shaw), and our article (Iredale & Whitley, 1962) added some more, but still more variants of the aboriginal name can be recorded.

W. S. Wall, in 1844, collected in New South Wales a bird he listed at that time as Bugernigang Parrot, but his writing is not clear and could be Bugerrigang. This diary entry was one of the first known uses in English writings of the name of the birds now generally known as the Budgerigar, and was four or five years later than Gould's earliest usage (Betcherrygah, 1839-40), a year before Roach's bird was observed by Delessert (Budgerry, 1845, published 1847), and was several years earlier than the variants noted by Leichhardt, Sturt and Huxley. Wall's expedition was referred to by Whitley (1967, p. 43). Another early spelling of the bird's name was Budgeree-gar (Budgeree signifying handsome or good), in George Bennett's *Gatherings of a naturalist,* 1860, p. 228.

As regards renderings of the name Budgerigar, Lieut. Commander G. C. Ingleton wrote to us,

'Referring to your article "John Roach and the Budgerigar" the other day I mentioned another early rendering of the name. This is in: *Australian Furs and Feathers* by Mary Anne Fitz-gerald with illustrations by W. T. Anderson. Published in Sydney and Brisbane by Edwards, Dunlop & Co., Ltd., 1889.

Amongst the various birds and animals described is included an illustration and description of "The Warbling Grass Parrakeet or Zebra Parrot, with the final sentence as follows:

"The Aboriginal names are *Budgeree-gar* and *Betcherrygah,* both referring to the beauty of their appearance."

[When] Dan Farson was interviewing the English as animal lovers on T.V. the other evening, the birds were simply called "Budge".

Of all the variant spellings of Budgerry the only one authors were at pains to avoid was, remarkably enough, published by a clergyman. Mr. Alec. Chisholm kindly furnished the quotation from Rev. John Graham's 1861 *Poems, Sacred, Didactic and Descriptive,* in his "Night in the Australian Bush":

> . . . the forest's primal stillness breathes
> Its deep and unbroken rest.
> Unbroken—although a pulse of air
> The gum-leaves stirreth among,
> And the flying squirrel's sudden leap
> Awakes the buggery-gong.*

Mr. Norman Horrocks, of the State Library, Perth, Western Australia, wrote:

Three small errors appear to have occurred in the article "John Roach and the budgerigar" by Tom Iredale and G. P. Whitley which appears on pages 99 to 102 of the September 1962 issue of "Australian Natural History".

On page 102 Austin and Sanford are quoted as using the forms "Budgerager and Bugirigar from Western Australia in 1855". The bibliographical source for this is given as "Austin, 1855, Journal of Assistant-Surveyor R. Austin . . . expedition to explore the interior of Western Australia. Small folio, Perth, Western Australia, 1855. Appendix, W. A. Sanford to Robert Austin, p. 49 (includes undulated grass parrakeet or bugirigar)".

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* "Very beautiful"—native name of the Melopsittacus Striatus.

1. Page 49 occurs in the Journal not the Appendix. The actual phrase on page 49 reads ". . . Several budgeregar or shell parrots (*melopsitticus undulatus*)".
2. The reference to "undulated grass parrakeet" appears on page viii of the Appendix.
3. On page viii of the Appendix the spelling used is "bujirigar" and not the "bugirigar" quoted by Iredale and Whitley.

There were several editions of Austin and Sanford's book, which may explain some of the discrepancies.

Finally we may refer again to Eugène Delessert whose book first put us on the track of this historical paperchase. He was the son of Benjamin Delessert who bought the invaluable collection of shells left by Lamarck, who had prepared from them a monumental account of invertebrate animals, the conchological volumes becoming the basis of later scientific work on shells. When the book was examined in the Mitchell Library, Sydney, it was found that the writer, E. Delessert, was one of the sons of Benjamin. Consequently we attempted to trace the stories of Roach and Delessert. The latter was comparatively easy as another book by E. Delessert was also available in the Mitchell Library. It may be noted that neither of these books is listed in the Catalogue of the Library of the British Museum (Natural History), nor does Zimmer mention either. Sherborn (Index Animalium) only listed one as being in the British Museum at Bloomsbury.

One of Eugène Delessert's books* describes how he left Le Havre, France, at the end of August 1844 and Portsmouth, England, on September 17th, reaching Sydney after 97 days' sailing, December 27, 1844. He left Sydney, August 15, 1848.

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SOME EFFECTS OF A BUSHFIRE ON HEATHLAND BIRDLIFE

by P. E. ROBERTS

SUMMARY

An area of woodland heath, under daily observation since 1960, was burnt out by a bushfire in January, 1967, and eight of the nine resident breeding bird species abandoned the area. Of five species that had previously foraged almost exclusively in the affected area, three have still not returned after two and a half years, one has visited the area, and one returned as a resident within a year. Three species whose territories had extended well beyond the heath have vacated the burnt area but still live around the margins. Another seven species which before the fire had rarely visited the heath reaped a short-term benefit from the fire and were able for a few months to exploit a new feeding ground.

THE STUDY AREA

The study area is 25 acres of woodland heath, typical of the more elevated parts of the Hawkesbury Sandstone country near Sydney. It is located on an easterly slope next to Mount Kuring-gai, on the northern outskirts of Sydney. At the beginning of 1967 it was mostly in an undisturbed state, and after 15 years without any bushfires the heath was tall and dense, dominated in different places by *Banksia ericifolia* (growing to 15 feet), *Angophora cordifolia* (10 feet), or *Hakea sericea* (8 feet), with an understorey of smaller shrubs in considerable variety. A swampy region in the centre was covered thickly with native grasses; lower down it formed a small creek flanked by a dense strip of the above shrubs as well as *Baurea rubioides* and *Leptospermum squarrosum*. At intervals were stunted trees, *Eucalyptus haemastoma, E. oblonga, Hakea propinqua* and *Banksia serrata,* growing to about 25 feet. The area is bounded at the top by a railway embarkment following the ridge-top at an altitude of 700 feet, below and to one side by dry sclerophyll forest, and on the other side by houses and domestic gardens.

THE BUSHFIRE

At 7 p.m. on 13 January, 1967, a fire that had been burning in Kuring-gai Chase National Park for two days, swept up the gully from the east. In a matter of five minutes the whole of the shrub cover in the study area had been destroyed by flames that in some parts were just hot enough to scorch the leaves, and in others were so fierce that stems and all were reduced to ash. The effects on the trees varied; with about one third of them the leaves caught fire and were completely burnt. With the rest, the foliage did not burn but died as a result of being scorched by the burning undergrowth.

REGROWTH

Three types of regrowth occurred.

i. Plants that survived the fire, despite the loss or death of all leaves. Amongst the Eucalypts, less than 5% died; the rest developed suckers on limbs and trunks within a month, and after two and a half years dead branches and scorched bark are the only prominent evidence of the fire. The *Angophora cordifolia* suckered even more rapidly, and appeared to be back to normal before the end of the year. Blackboys (*Xanthorrhoea*) also grew vigorously, and may even have been stimulated by the fire.

ii. Plants that died off above ground, but suckered from the roots. The most noticeable were *Lambertia formosa* and *Banksia spinulosa,* which grew rapidly and formed fairly compact shrubs before the end of 1967.

iii. Plants that were killed by the fire. Most species, including nearly all the smaller shrubs, were killed outright, and except in a few isolated pockets it is doubtful if any specimens of *Boronia* (3 spp.), *Isopogon, Grevillea* (2 spp.), *Hakea* (3 spp.), *Epacris, Eriostemon, Kunzea,* or *Banksia* (*serrata* or *ericifolia*) survived. However, within six weeks a prolific germination of seeds of many of these species took place, and the ground was soon covered with close-packed seedlings. Growth was not particularly rapid, perhaps due to an unusually dry winter; after two and a half years few seedlings exceed a foot in height, and most species have yet to flower. As far as I can determine, all the species formerly growing in the area are represented amongst the seedlings.

EFFECTS UPON BIRDLIFE

The fire had an immediate detrimental effect upon eight resident breeding species that depended directly or indirectly upon the shrub cover for food and shelter, and that had occupied territories mainly or entirely within the study area. I have no evidence that any of them perished in the flames, and consider it likely that nearly all were able to escape. But after the fire all eight species were absent from the area.

Psophodes olivaceus

A pair of Whipbirds had inhabited the area for at least seven years, sometimes moving away for a few months. Their headquarters seemed to be in the rank growth beside the creek, but they ranged widely over the heath, often entering my yard alongside. They had nested in November and December, 1966, and were still caring for two flying young at the time of the fire. In the two years since they have not been seen or heard near the study area, and I consider it will be several more years before there is a sufficient shrub density and enough leaf litter to make the area attractive to them.

Meliornis niger

White-cheeked Honeyeaters were the commonest birds in the study area, with a resident breeding population of 12 to 20 birds. The population appeared to be stationary, obtaining all their food without leaving the area. For a month or more before the fire they were rarely absent from my yard, feeding on a flowering *Grevillea banksii* and several large Old Man Banksias (*B. serrata*) in neighbouring yards. Nearly all these trees escaped the fire and continued to bloom, so I expected the birds to continue their visits. However, except for a fleeting visit three days later by one bird, the species vanished from the whole area. A few birds, perhaps six, returned briefly in spring 1967, and again in spring 1968 for a longer period while there was a prolific flowering of Blackboys, and they may have nested at this time. However, they departed when the Blackboys finished flowering.

Anthochaera chrysoptera

Three or four pairs of Little Wattlebirds lived in the area; unlike the above species they used to feed quite extensively in the surrounding forest and gardens. The effects of the fire were not nearly so drastic on the Wattlebirds, and they have been observed regularly in the gardens. However, even after two and a half years they never visit the area affected by the fire.

Acanthorhynchus tenuirostris

The number of Spinebills in the study area is difficult to estimate, but was probably less than six. Like the Wattlebirds they foraged extensively in gardens; since the fire at least one pair seems to be resident.

They have not abandoned the heath as completely as have the other two species, and are occasionally observed there feeding from *Lambertia formosa* flowers.

Malurus lamberti

Variegated Wrens were breeding residents in the area, probably not more than a pair or family party that never moved outside the study area. Since the fire there have been no sightings.

Hylacola pyrrhopygia

The study area was occupied by one pair of Heath Wrens, a species that forages a lot on the ground for insect food. After the fire had removed the whole of the shrub cover they disappeared completely. Almost a year later, in mid December 1967, a pair occupied the area; by that time most of the ground was covered by seedlings to a depth of six or eight inches, and there were some fairly extensive thickets of *Angophora cordifolia,* as well as scattered bushes of *Lambertia* and Blackboy. I have the impression that they failed to breed in 1968, but since the birds are notoriously elusive I could be mistaken.

Acanthiza pusilla

Three or four pairs of Brown Thornbills frequented mainly the study area, visiting the surrounding gardens and forest frequently. Since the fire they are seldom observed in the heath, although one or two pairs still frequent their other haunts.

Aegintha temporalis

Red-browed Finches were breeding residents on the heath. Autumn flocks of up to 23 had been observed, but the number of permanent residents was probably smaller. Since the fire, they have completely disappeared from the locality.

The fire had a short term beneficial effect on seven other species that previously had frequented the forest or gardens fringing the study area, but had seldom or never been observed feeding in the heathland. They are discussed in two groups:

a. *Dacelo gigas* (Kookaburra), *Strepera graculina* (Pied Currawong), *Gymnorhina tibicen* (Black-backed Magpie), *Grallina cyanoleuca* (Magpie Lark), *Corvus coronoides* (Raven). On the morning after the fire these birds moved into the burnt heath and thereafter spent long periods foraging for food on the ground. I surmised at first that they were seeking insects, lizards, and other animals that had died in the fire, but when they continued to spend a large part of their feeding time in the area I concluded that the removal of the vegetation had created a new feeding ground for them in a place that they had been unable to exploit before the fire. There was no apparent increase in the numbers of any of these species; it appeared that the former residents merely expanded their territories. After three or four months they were spending less time in the study area, and by the end of the year their visits had almost ceased, presumably because the ground cover was becoming re-established.

b. *Platycercus eximius* and *P. elegans.* Both Eastern and Crimson Rosellas used to visit the study area occasionally, sometimes feeding on lerps on the *Eucalyptus* leaves, more often to eat the seeds of some of the shrubs. After the fire, from two to four birds of each species became daily visitors, spending long periods foraging on the ground or extracting seeds from the woody seed-pods of the *Banksia* and *Hakea* shrubs that had split open in the heat. Their interest continued for over a month.

In the case of one resident breeding species the fire had no apparent effect:

Colluricincla harmonica. One pair of Grey Thrushes occupied the study area, working mainly in the trees, but their territory extended

beyond into perhaps an equal area of dry sclerophyll forest where they spent most of their time.

The fire destroyed most of the understorey in the forest habitat, but the trees were, for the most part, undamaged or merely scorched. The shrubs did not appear to form an important part of the birds' economy—even when they were in the heath they kept mainly in the trees—and after the fire they were still observed in the trees in both areas. The fire had no obvious effect on their movements, numbers or behaviour.

One species appeared to derive a long-term benefit from the fire:

Meliphaga leucotis. A pair of White-eared Honey-eaters was resident in the heath when I first began observations in 1960, and nested in July and August for several years. Although at first they occupied the study area permanently, their status changed to that of occasional visitors. In January, 1967, I had not observed them there for more than a year.

About six months after the fire a pair began to visit the area frequently, and in 1968 they were permanent residents. They began nesting in late July, and after a series of failures, managed to hatch two young in September.

DISCUSSION

In the case of the eight resident species that abandoned the study area after the fire, the obvious explanation is in terms of the removal of vegetation, with loss of cover and associated food supply in the form of insects and/or nectar. The presence of two of these, the Whip-birds and Red-browed Finches, as permanent residents is rather unusual in heathland, and probably arose from the very tall dense growth. For the three honeyeaters, the loss of cover is probably not nearly so important as the loss of a supply of nectar. This is normally provided in heathland by a succession of flowering trees and shrubs. The critical period in most habitats comes in autumn and winter, but in the coastal heathlands this is the time when nectar appears to be most abundant. Several species of plant are in bloom during the cooler months, but by far the most important is *Banksia ericifolia.* Its large and long-lasting flowers begin to appear in March, and for five months provide a plentiful and reliable food supply, which even attracts a considerable population of honeyeaters from other habitats. Both White-cheeked Honeyeaters and Little Wattlebirds have been frequently recorded as nesting during these months. In the study area the *Banksia* seedlings have not flowered in the three winters since the fire, and show no signs of doing so during 1970. Until they do, it appears unlikely that either honeyeater can re-establish itself as a permanent resident.

The White-eared Honeyeater is obviously in a different category, perhaps because its diet runs more to insects than is the case with the other species. Where they are commonly observed in dense, tangled thickets, the White-eared Honeyeater shows a preference for the more open, or even stunted heath, which may explain their departure prior to the fire when the vegetation in the study area had become too tall and dense. If so, it would appear that the fire had the effect of producing a more suitable habitat for them.

ACKNOWLEDGEMENTS

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"MENTAL ACTIVITY" IN CERTAIN BIRDS

by A. H. CHISHOLM

Considerable interest attaches to the fact, as revealed by L. H. Brown and E. K. Urban in the *Ibis* (England) for April 1969, that Egyptian Vultures have been known to visit a lake-island in Ethiopia and make a practice of breaking the eggs of Great White Pelicans by hurling them against rocks. A good photograph of a Vulture with a Pelican's egg in its widely-gaped bill illustrates this observation, and it is added that the action is approximately the same as that recorded in regard to the Egyptian Vulture using stones to break Ostrich eggs, "but would seem to represent quite a different level of mental activity".

Presumably this last remark relates to the fact that when attacking Ostrich eggs (which are too large to grip) the Vultures pick up stones and use them as missiles. Apparently a confirmed practice, it was well described by Jane and Hugo van Lawick-Goodall in *Nature* for 24th December, 1966 and again, in more detail and with numerous illustrations in colour, in the *National Geographic Magazine* for May 1968. Moreover the same authors returned to the subject, again with striking photographs, in *Animals* (London) for July 1969.

The contribution to *Nature* erred by restricting birds' use of 'tools' to only one other species, the Woodpecker-Finch of the Galapagos Islands, whereas another Galapagos species, the Mangrove Finch, also is known to use sharp sticks to probe insects out of hollows, and several Australian birds have long been given rank as primary tool-users. Most of the Australian species so accomplished are Bowerbirds, which use wads of vegetable matter during the 'painting' of their arbours, but more relevant to the present consideration is the case of the Black-breasted Buzzard, *Hamirostra melanosterna;* this large hawk of inland areas has been recorded during intervals of more than one hundred years as making a practice of using stones to break the eggs of Emus and other large birds.

I discussed this subject in the *Ibis* in 1954 (The use by birds of "tools" or "instruments"; 96:380-83), and now desire to amplify those notes by stating, as an odd fact, that the breaking of Ostrich eggs with stones, by a raptore, has been known also in Australia. My information on this matter has come from Lord Casey, former Governor-General of the Commonwealth. His father, a pastoralist, was at one time manager of Murray Downs station, New South Wales, and it was upon that property, in the 1880's, that the eggs of imported Ostriches (kept and bred for the feather industry) were often found to have been broken by stones. Observation revealed the culprit to be a large predatory bird. As far as Lord Casey could ascertain, the species was not identified—though there were printed references to the matter in the Melbourne *Daily Telegraph* (long since defunct) on 30th April 1884—but there need be no doubt that the raider was the Black-breasted Buzzard.

Clearly, the hawk had not been deterred by the fact that the eggs of the Ostrich were much lighter in colour than the dark-green eggs of the Emu. It was the egg that mattered, not the colour. Yet in this case, too, the enterprise would seem to have represented, in some degree, a "different level of mental activity".

These last two words appear to be involved also in another oddity touching birds at the nest, one raised by J. Cairns in notes on the Serpent Eagle of Penang Island (*Ibis,* Oct. 1968). Remarking that the eagles' forests in the area carry many Great Tits, which tend to be colonial nesters, the author adds that the small birds' 'colonies'

were "always in the vicinity of the eagles' nests", and he suggests that one reason for the association may be that the Tits acquire fur for nest-lining from the eagles' prey.

Personally, I doubt if that particular benefit to the small birds is anything more than a by-product of the association. Here in Australia we have numbers of cases in which birds of different genera are associated during breeding activities, and, although it is sometimes difficult to determine whether the contact is mutual or one-sided, it appears in most instances to be adopted by the smaller or less-aggressive bird for the purpose of protection.

With certain finches and thornbills, the frequent impulse to associate with a larger bird extends into attaching the nest to the base of the larger bird's nest—the stick-built structure of a hawk or a magpie. This, assuredly, is a non-mutual action; and yet the 'hosts' in such cases, though frequently preying upon small birds, do not appear ever to molest their 'guests'.

When John Gould was in New South Wales, in 1839, he often found nests of the Spotted-sided Finch attached to the nests of eagles, and he was unable to account for the tolerance of what he described as the small birds' "rapacious but friendly neighbour". Nor are we better informed today. There is a suggestion that such sites are adopted by the small birds merely for convenience, but the general view is that they deliberately seek the protection of the larger bird, just as certain finches, as well as the small warblers of the genus *Gerygone,* appear to do by placing their nests alongside those of aggressive wasps.

In none of these Australian nesting associations is there any indication that the 'guests' benefit in the manner noted by Mr. Cairns for the Great Tit, but in all of them there are peculiar suggestions of what has been ascribed to the Egyptian Vulture: that is, "different levels of mental activity".

Postscript: Since writing the above notes I encountered, on Tamborine Mountain in Queensland, another and (to me) quite novel case of nesting association between birds. This was the fact that a nest of the Satin Bowerbird (containing young) was situated on an old nest of the same kind and a nest of the Red-browed Finch (with eggs) was attached to the lower nest. The site was in a thick-foliaged tree near a patch of rain-forest, at a height of about 20 ft., rather higher than that usually adopted by the Finch. Did the small 'guest' seek bowerbird company for the purpose of protection? This seems improbable. I incline to think it chose the situation either as a matter of convenience or through the spur of example.

A NOTE ON THE SEASONAL OCCURRENCE OF SOME NORFOLK ISLAND BUTTERFLIES

by C. N. SMITHERS
(The Australian Museum, Sydney)

A list of the species of butterflies known from Norfolk Island was recently published (Smithers and Peters, 1969) based mainly on a collection made in November, 1968. An opportunity for further collecting arose in March, 1969 and comparison of the occurrence of some species at these times is possible. The numbers of specimens collected of the six commonest species occurring in November and March are given in Table I. Although the collecting was not in any way designed to give comparable samples on the two visits, the numbers taken reflect the differences in the populations suggested by field observations.

TABLE I

Specimens of common butterflies collected on Norfolk Island, in November, 1968 and March, 1969.

	November, 1968			March 1969		
	♂	♀	Total	♂	♀	Total
Papilio ilioneus	7	—	7	7	4	11
Cepora perimale	28	—	28	28	4	32
Danaus plexippus	—	1	1	19	4	23
Vanessa kershawi	6	—	6	—	—	(1 seen)
Vanessa itea	—	4	4	1	—	1
Zizina otis	37	23	60	5	3	8

COMMENTS

Papilio ilioneus ilioneus Donovan was fairly common and seen at widely separated points in November and March. Pupae were present in November and larvae and pupae in March.

Cepora perimale perimale (Donovan) was common in November and March. Males were far more frequently encountered than females and were to be found all over the island; females were only found near their host plant, *Capparis nobilis* (Devil's Guts). Females were seen to mate almost immediately after emergence. A few males appeared to have a short flight route over which they travelled repeatedly, although most specimens flew without any such obvious repetition of their course. Eggs, larvae and pupae were present in March.

Danaus plexippus (Linnaeus) was very uncommon in November and found only over a patch of its host plant (*Gomphocarpus fruticosa*) (Milkweed, Swan plant or Wild Cotton) at Burnt Pine. The plants showed no sign of having been attacked by larvae and there was no fresh growth. In March the butterflies were seen in many parts of the island, specimens were very common over the patch of Milkweed and eggs and larvae were present. The plants were growing and many had been severely damaged by larvae. By contrast, in November on Philip Island growing plants were heavily attacked by larvae and adults were common. Philip Island was not visited in March. The growth condition of the host plant is known to affect its attractiveness to laying females under Australian conditions and the difference in numbers on Philip and Norfolk Islands in November could have been due to plant condition at the time. The difference in numbers on Norfolk Island in November and March was very striking.

Vanessa kershawi (McCoy) was fairly common in November although not many specimens were taken. Only one specimen was seen in March. In November this species was migrating in large numbers in eastern Australia (Smithers, 1969) and was reported as reaching New Zealand in numbers (Gibbs, 1969). It is not known whether it is present throughout the year on Norfolk Island.

Vanessa itea (Fabricius) was present in small numbers in November and in March.

Zizina otis labradus (Godart) (= *Zizeeria otis labradus* (Godart)) was extremely common all over the island in November. It occurred abundantly wherever suitable leguminous plants had been allowed to grow uncropped amongst grass and was a litle less common over cropped grasses. At Emily Bay several specimens could be caught simply by sweeping a net through the tall grass behind the beach. In March very few specimens were seen. They occurred in various parts of the island, especially at Headstone Reserve. At Emily Bay only one specimen was taken.

In all, eleven species of butterflies are recorded from Norfolk Island the remaining species being *Graphium macleayanus* (Leach), *Anaphaeis java peristhene* (Boisduval), *Hypolimnas bolina* (Linnaeus), *Precis villida calybe* (Godart) and *Lampides boeticus* (Linnaeus). Scott's record of this last species (Scott, 1890) was overlooked by Hawkins (1943) and by Smithers and Peters (1969).

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BUTTERFLIES OBSERVED IN KURING-GAI CHASE NATIONAL PARK, NEW SOUTH WALES

by A. B. ROSE

INTRODUCTION

This list of eighty species would be far from complete owing to sporadic occurrences of many species of Lepidoptera and a thorough search of the area has not been undertaken.

The months of the year species have been observed would no doubt be broadened by further observations.

Many are very local e.g. *H. mirifica,* females did not leave a certain gully, tagged specimens being recaptured within 150 yards of release, up to four weeks after. Yet none were observed elsewhere and none at all in 1969. *H. merope merope* common and widespread. Tagging made it apparent they did not move far, specimens being caught within 100 yards of release up to four weeks after. In one small area, 31 were tagged from 1st November, 1968 to 23rd November, 1968. On 28th November, 1968, a bush fire swept through and not one was recaptured even though it was unburnt within 200 yards. In fact only one untagged specimen was seen in that burnt area, the rest of the summer.

The specimens of *Delias argenthona argenthona* have been observed in very fresh condition indicating the species is breeding locally.

Only one specimen of *Hesperilla crypsargyra crypsargyra* has been recorded; this being only the second specimen recorded from near the coast, the first being recorded at Berowra by the late Leslie Mosse-Robinson.

LEPIDOPTERA

HESPERIOIDEA

HESPERIIDAE-PYRGINAE	*Months Observed*
Netrocoryne repanda repanda Feld. 'Eastern Flat'	February
H.-TRAPEZITINAE	
Trapezites symmomus symmomus Hübn. 'Symmomus Skipper'	February/March
Trapezites eliena eliena (Hew.) 'Eliena Skipper'	September to April
Trapezites iacchoides Waterh. 'Iacchoides Skipper'	September
Trapezites maheta praxedes (Plötz) 'Maheta Skipper'	October, March, April
Trapezites phigalioides Waterh. 'Phigalioides Skipper'	October
Trapezites phigalia phigalia (Hew.) 'Phigalia Skipper'	September to November March, April
Trapezites petalia (Hew.) 'Common White-spot Skipper'	October
Dispar compacta (Butl.) 'Dispar Skipper'	February, March
Toxidia peroni (Latr.) 'Large Dingy Skipper'	September to April
Toxidia parvula (Plötz) 'Parvula Skipper'	November, April
Toxidia doubledayi (Feld.) 'Doubleday's Skipper'	October, November, January
Hesperilla masteri Waterh. 'Masters' Skipper'	February, March
Hesperilla ornata ornata (Leach) 'Spotted Skipper'	February, October
Hesperilla picta (Leach) 'Painted Skipper'	December, January
Hesperilla crypsargyra crypsargyra (Meyr.) 'Silvered Skipper'	October
Signeta flammeata (Butl.) 'Bright-Shield Skipper'	February, March
Motasingha dirphia dilata Waterh. 'Dirphia Skipper'	October, November
Mesodina halyzia halyzia (Hew.) 'Halyzia Skipper'	November, January, March

	Months Observed
H.-HESPERIINAE	
Ocybadistes flavovittata flavovittata (Latr.) 'Common Dart'	October
Ocybadistes walkeri sothis Waterh. 'Yellow-banded Dart'	September to December, March, April
Ocybadistes hypomeloma hypomeloma Low 'Pale Orange Dart'	November, February
Suniana lascivia lascivia (Rosen.) 'Dingy Dart'	November
Telicota colon argeus (Plötz) 'Pale Darter'	December
Telicota ancilla ancilla (H.-Sch.) 'Greenish Darter'	November, December, February
Cephrenes augiades sperthias (Feld.) 'Orange Palm-dart'	March
PAPILIONOIDEA	
PAPILIONIDAE-LEPTOCIRCINI	
Graphium macleayanus macleayanus (Leach) 'McLeay's Swallowtail'	March
Graphium sarpedon choredon (Feld.) 'Blue Triangle'	October to April
P.-PAPILIONII	
Papilio anactus Macl. 'Dingy Swallowtail'	November to March
Papilio aegeus aegeus Don. 'Orchard Butterfly'	October to March
Papilio demoleus sthenelus Macl. 'Chequered Swallowtail'	February
PIERIDAE-COLIADINAE	
Eurema smilax (Don.) 'Small Grass Yellow'	November
P.-PIERINAE	
Delias argenthona argenthona (Fab.) 'Northern Jezabel'	November
Delias nysa nysa (Fab.) 'Nysa Jezabel'	September, February
Delias aganippe (Don.) 'Wood White'	October
Delias harpalyce (Don.) 'Imperial White'	September to April
Delias nigrina (Fab.) 'Common Jezabel'	June to November
Anaphaeis java teutonia (Fab.) 'Caper White'	October to December March, April
Pieris rapae (L.) 'Cabbage White'	all year round
NYMPHALIDAE-DANAINAE	
Danaus plexippus (L.) 'Wanderer'	July to April
Danaus chrysippus petilia (Stoll) 'Lesser Wanderer'	March
N.-SATYRINAE	
Ypthima arctous arctous (Fab.) 'Dingy Ring'	October to April
Hypocysta euphemia Westw. 'Rock Ringlet'	August to April
Hypocysta metirius Butl. 'Common Brown Ringlet'	September to May
Hypocysta pseudirius Butl. 'Dingy Ringlet'	September to April
Hypocysta adiante adiante (Hübn.) 'Orange Ringlet'	September to May
Heteronympha merope merope (Fab.) 'Common Brown'	September to May
Heternympha mirifica (Butl.) 'Wonder Brown'	January to March
Heteronympha banksi banksi (Leach) 'Banks' Brown'	March, April
Argynnina hobartia cyrila W. & L. 'Cyril's Brown'	August, September
Geitoneura acantha acantha (Don.) 'Eastern Ringed Xenica'	November to April
Tisiphone abeona abeona (Don.) 'Swordgrass Brown'	September to April
N.-CHARAXINAE	
Polyura pyrrhus sempronius (Fab.) 'Tailed Emperor'	November to April
N.-NYMPHALINAE	
Vanessa kershawi (McCoy) 'Australian Painted Lady'	September to March
Vanessa itea (Fab.) 'Australian Admiral'	September to December
Precis villida calybe (Godt.) 'Meadow Argus'	March to November
N.-ACRAEINAE	
Acraea andromacha andromacha (Fab.) 'Glass-wing'	February
LYCAENIDAE-LYCAENINAE	
Ogyris genoveva gela Waterh. 'Genoveva Azure'	September, October January to March
Ogyris abrota Westw. 'Dark Purple Azure'	September, October, March

LYCAENIDAE-LYCAENINAE—cont.	*Months Observed*
Ogyris ianthis Waterh. 'Sydney Azure'	November to April
Hypochrysops delicia delicia Hew. 'Blue Jewel'	November
Hypochrysops ignita ignita (Leach) 'Fiery Jewel'	October
Hypochrysops byzos byzos (Boisd.) 'Yellow Spot Jewel'	October, November
Pseudodipsas brisbanensis brisbanensis Misk. 'Large Ant Blue'	October to April
Pseudodipsas cuprea Sands 'Copper Ant Blue'	December
Paralucia aenea aenea (Misk.) 'Dull Copper'	November to March
Paralucia aurifer (Blanch.) 'Bright Copper '	October, November
Nacaduba biocellata biocellata (Feld.) 'Double-spotted Lineblue'	September, April
Theclinesthes miskini (Luc.) 'Miskin's Blue'	February, March
Lampides boeticus (L.) 'Pea Blue'	September to November
Lucia limbaria Swains. 'Small Copper'	December
Neolucia agricola agricola (Westw.) 'Fringed Blue'	September to November
Neolucia serpentata serpentata (H.-Sch.) 'Chequered Blue'	November to April
Zizeeria otis labradus (Godt.) 'Common Grass-blue'	August to April
Erina acasta (Cox) 'Blotched Blue'	August to May
Erina hyacintha hyacintha (Semper.) 'Common Dusky Blue'	August to March
Holochila consimilis (Waterh.) 'Consimilis Blue'	December to February
Holochila absimilis (Feld.) 'Pencilled Blue'	December
Cyprotides cyprotus cyprotus (Oll.) 'Cyprotus Blue'	September to December
Candalides xanthospilos (Hübn.) 'Yellow-spot Blue '	September, October, January

ACKNOWLEDGEMENTS

For supplying additional observations I am indebted to Dr. A. Sibatani; Mr. D. P. Sands, Experimental Officer, Division of Entomology, C.S.I.R.O.; Mr. J. V. Peters, Mr. M. Moulds, and Mr. C. N. Smithers, Deputy Director and Curator of Insects, The Australian Museum, Sydney. Thanks are due to the Australian Museum entomologists for allowing me to check species with their collection and for altering generic and specific names, which have been changed since 1964, the year "Australian Butterflies" by I. F. B. Common was published. For that has been my reference book.

EIGHT ADDITIONAL OPISTHOBRANCH MOLLUSCS FOR NEW SOUTH WALES

by ROBERT BURN

Hon. Associate, National Museum of Victoria, Melbourne

Among New South Wales opisthobranch species collected by the writer or forwarded to him for identification are many new species and new records. Twelve of these have been described or reported in a series of papers published since 1960, and in this paper a further eight species are added to the State fauna. Two of the species are new records for Australia.

The initial research for this paper was made possible by a grant from the Science and Industry Endowment Fund, C.S.I.R.O., Melbourne. All material has been deposited in the Australian Museum, Sydney.

Superorder OPISTHOBRANCHIA

Order DORIDACEA

Family Dorididae

Subfamily Miamirinae

Miamira magnifica Eliot (1910: 432, pl. 25, f. 10-11).

During 1963-1965, several large specimens of this handsome species were collected at Minnie Waters, northern New South Wales, by Mr. Geoffry Biddle (Australian Museum reg. no. C65694). The preserved specimens agree wholly in shape and coloration with the description and figures of the unique Seychelles specimen, but have a slightly narrower radula of about 180.0.180 teeth per row. Eliot gave the radular formula as 'at least 112 x 250.0.250', from which it may be inferred that he did not accurately count the many uniformly hamate teeth.

In photographs of the living animals, the specimens cannot be separated from *M. flavicostata* Baba (1949: 147, pl. 22, f. 80) from Japan. Its radula has 100 rows of 150-170.0.150-170 teeth, which is a little less than in N.S.W. specimens. Despite these differences in the numbers of teeth per radular row, I consider *M. magnifica* and *M. flavicostata* to be identical, and refer the latter to the synonymy of the former.

As in earlier descriptions, the N.S.W. specimens have reddish-purple marginal lobes, median and lateral ribs and tubercles on the notum, with greenish patches edged with white between the lobes. The species has been recorded from Queensland as *M. flavicostata* (Kenny, 1960: 226).

Subfamily Platydoridinae

Platydoris cruenta (Quoy and Gaimard, 1832: 260, pl. 18, f. 5-7).

A typical specimen, 150 mm long by 100 mm wide in life, was found by Mr. Clem Carter at Woody Head, Clarence River Heads, 16 March 1968 (A.M. reg. no. C65693). The white leathery body marked by intensive black 'scribbling' and several large red patches agrees precisely with the coloured figures of this species from Indonesia, New Caledonia and Japan (Bergh, 1905: pl. 1, f. 3; Risbec, 1928: pl. 2, f. 7; Baba, 1936: pl. 1, f. 3).

Family Polyceridae

Subfamily Polycerinae

Polycera risbeci Odhner (1941: 14)

One specimen measuring 7 mm in length was found on the underside of a stone at Woody Head, Clarence River Heads, by the writer on 5 October 1959 (A.M. reg. no. C63006). Its dark green body and

light brown rhinophores, branchiae and pallial tubercles agree closely with the original description of the New Caledonian type specimen (Risbec, 1928: 198, pl. 6, f. 8).

P. risbeci was proposed as a new name for *P. lessoni* Risbec (1928: 198; non d'Orbigny, 1837), and Risbec later unknowingly provided a second new name *P. pruvotae* (1953: 102) for the same species. This species is a new record for Australia.

Polycera janjukia Burn (1962: 99, text f. 3-4).

Two specimens of this rather common central Victorian species are known from New South Wales; an 11 mm long specimen from Long Reef, crawling on weed, collected by the writer on 3 November 1959 (A.M. reg. no. C63005), and an 8 mm long specimen collected by Mr. Geoffry Biddle at Minnie Waters in September 1964. Unlike the preceding species, *P. janjukia* has a long slender body, bright pink in colour with numerous chrome-yellow spots scattered over the notum and sides.

Family Vayssiereidae

Vayssierea caledonica Risbec (1928: 290, pl. 12, f. 8).

Two 3 mm long specimens of this small bright orange species were collected by the writer in the Clarence River Heads area, one at Angourie Pool on 3 October 1959 (A.M. reg. no. C63012) and one at Woody Head on 5 October 1959 (C63013). There are no branchiae in this family and genus, the rhinophores are smooth and the anus opens to the right of the middle line at mid-length. Related species feed on spirorbid polychaetes on the underside of rocks.

The relationship of *V. caledonica* to *Okadaia elegans* Baba (1931), a common and widespread northern and central Pacific species, needs to be re-examined. They are most likely congeneric and conspecific, in which case the earlier taxa should be used. *Trevelyana felis* Collingwood (1881), as pointed out by Risbec, is externally very similar but remains anatomically unknown; in the event of its being rediscovered and its identity established, the specific name *felis* has priority over all others.

This species is a new record for the Australian fauna.

Order DENDRONOTACEA

Family Tritoniidae

Tritoniopsis alba (Baba, 1949: 165, pl. 34, f. 122).

This new record has been taken on occasions at Minnie Waters by Mr. Geoffry Biddle (A.M. reg. no. C64642). In Queensland waters it has been found in large numbers on the base of an unidentified soft coral, where because of its white colour, it is not easily seen. Kenny (1960: 223) reports this species from Moreton Bay, Queensland.

Family Fimbriidae

Melibe mirifica (Allan, 1932: 315, pl. 34, f. 1-8).

A single large ceras, almost 100 mm in length, was scooped from the surface about 4 miles off-shore from Minnie Waters by Mr. Kevin Smart on 6 May 1968 (A.M. reg. no. C65692). The sea at this position is about 10 fathoms deep. The collector observed that the ceras "swam slowly with an up and down motion of the paddle-tail, had a small mouth on one side of the swollen front end, and was bright pink covered with watery blisters and on one side some short branching appendages". The 'paddle-tail' proves to be the wedge-like distal half of the ceras, the proximal half of which is swollen and rounded. The 'mouth' is the point of attachment of the ceras to the body. Allan described and figured the newly cast-off large ceras of the type specimen from Cairns, Queensland, in somewhat similar terms, even depicting the short branching appendages or dendritic papillae on

the inner side of the proximal half of the ceras (Allan, 1932: pl. 34, f. 3-4).

For this species, Allan proposed the genus *Propemelibe* (1932: 314). According to Odhner (1936: 1113, footnote), and from personal examination of the type specimen and another from Moreton Bay, Queensland, there are insufficient characters to justify the separation of *Propemelibe* from *Melibe* Rang (1829). *M. mirifica* is very close to the large Japanese species, *M. japonica* Eliot (1913; Baba, 1949: 171). They differ only in the form of the cephalic veil, anteriorly notched in *mirifica,* entire in *japonica.*

Family Dotidae

Doto ostenta Burn (1958: 33, pl. 1, f. 5).

Numerous examples of this common Victorian species were collected from the tips of brown algae in sheltered rock pools at Long Reef by Mr. Phillip Colman and the writer, 1-3 November 1959 (A.M. reg. no. C63066-7).

Zoogeographical Remarks

The eight species newly recorded from New South Wales have their zoogeographical affinities explained as follows.

1. Indo-West Pacific tropical fauna.
   Miamira magnifica and *Platydoris cruenta* belong here, while *Vayssierea caledonica* and *Polycera risbeci,* respectively with possibly widespread and New Caledonia-eastern Australia distributions, are confined to the West Pacific. Peripheral species, limited to Japan and eastern Australia, are *Tritoniopsis alba* and *Melibe mirifica* and its Japanese twin *M. japonica.*
2. Southern Australian temperate fauna.
   The records of *Polycera janjukia* from Minnie Waters and *Doto ostenta* from Long Reef greatly extend the eastward and northward ranges of these species. At present neither is known from the west of central Victoria (Wilson's Promontory to Cape Otway), therefore are representatives of the rich south-eastern subfauna. Other species of this subfauna are *Runcina australis* Burn (1963) *Caldukia affinis* (Burn, 1958), *Paliolla cooki* (Angas, 1864), *Facelina newcombi* (Angas, 1864), and *Spurilla macleayi* (Angas, 1864).

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SOME CORRECTIONS

by L. COURTNEY HAINES

I must apologise for the delay regarding the following corrections.

In the paper "Notes on the Hawk-Moths and Butterflies of Bandon Grove, N.S.W." by Miss M. J. Dowling and myself and in my paper "Some Notes on the Moths and Butterflies Found Occurring in the Haberfield and Five Dock Districts, Sydney, N.S.W." (*Australian Zoologist,* 13(1), 1963, pp. 1 & 57 respectively), the Hawk-Moth which I have named in the vernacular the Olive Shades Hawk is quite wrongly determined as *Ascosmeryx cinerea* Butler. Its correct name is *Theretra latreillei* McLeay.

Also on page 62, "Haberfield Lepidoptera", species 39, *Callogramma festiva* Donovan, the Lily Moth, should read, "Common during April, 1956. The black, yellow and white-striped caterpillars of this moth were found feeding on Cliviers", and not as printed, "breeding on Oliviers."

Again on page 57 of the same paper, a sentence occurring in the fifth paragraph should read:- "Apart from the Box-brushes (*Tristania* sp.) therefore, lopped down outrageously each summer when their shade would be most welcome", etc., and not in the senseless manner in which the sentence in question has been printed.

One other small amendment: the caption for Plate II which depicts the Brown Honey-eater (a species mentioned in my paper "The Birds of Canada Bay, N.S.W., *Australian Zoologist,* 13(1), 1963, p. 33) should have run along the right hand edge and not across the "tail" of the magazine. The way the caption for this important photograph is arranged gives an entirely wrong idea of the bird and its nest.

BOOK REVIEWS

"The Joy of the Earth", by A. H. Chisholm, (Sydney: William Collins), November 1969, 368 pp., illustr. Price $4.95.

Our esteemed member, Alec H. Chisholm, O.B.E., F.R.Z.S., has produced an entertaining autobiography in *The Joy of the Earth*. There is much to be savoured therein: the conditions in his native Victorian countryside more than half a century ago, the personalities of the bush, the customs of the Chinese in Maryborough, with remembrances of football and cricket, poetry and journalism, the whole generously sauced with literary allusions and salted with anecdotes.

Zoologists are served a feast of bird lore, distilled from sixty years of patient bush-watching and diary record, as well as photography by means of what seems now to be prehistoric apparatus. "Much of the pleasure to be gained from knowledge of natural wonders lies in passing it on to others," says Chisholm, and our thanks are due to him for doing this. The bad old days of aigrette-wearers, bird shooters and nest-robbers belong to an almost forgotten time, the unlamented passing of which is largely due to the influence of Chisholm and others.

The Joy of the Earth records its author's life up to the age of 24 or so. We hope his remarkable total recall will be drawn upon for one or more sequels, for reminiscences like these are precious mementoes of the fleeting Australian scene.

G.P.W.

"60 Camera Studies of Australian Birds", by Donald Trounson and Molly Clampett: Consolidated Press, Sydney, 1969. 64 pages of colour plates. Price $1.00.

At a time when the natural history market is being flooded with large format picture books at fancy prices, it is a pleasure to report that there is an inexpensive production that compares favourably with the best of them.

Over the last two years Donald Trounson has pioneered new techniques of photographing captive birds, using high-speed flashlights and elaborate arrangements of perches, background foliage and artificial backdrops. The results are, at their best, pictures of a technical quality never before achieved in this country; beautifully lit from stem to stern, colours faithfully reproduced, and so sharp that it is possible to count not only the feathers but very often the webs on many of them. Of course, not every one of the "60 camera studies" (69 by my count!) attains these heights, but the overall impression is one of superlative quality.

Contrasted with the purposeful look of a bird approaching its nest, most captive birds tend to look bored or even frightened in photographs. Mr. Trounson and his assistant, Miss Clampett, have managed to keep their subjects looking bright-eyed and alert, even in the static portraits. But it is in the flight pictures that this book achieves its greatest impact; the modern marvel of electronic flash freezes the image to reveal features that the eye sees only as a blur, or not at all. The amount of yellow in the wings outspread of the Regent Bowerbird is quite startling compared with that in the folded wing. Altogether, a very pretty picture book of exceptional scientific interest.

—P.E.R.

ANNOUNCEMENT

CAPTAIN COOK BI-CENTENARY PUBLICATION

A handbook covering the history of zoology in Australia from the earliest times to the period of Captain Cook's three great voyages will be issued in 1970 by the Royal Zoological Society of New South Wales in honour of the bi-centenary of Cook's discovery of New South Wales.

Illustrations from various quaint old historical sources of some of the remarkable animals found in Australia by the old explorers are to adorn the handbook, "Early History of Australian Zoology", which is being written by Mr. G. P. Whitley, and will be obtainable from the Honorary Secretary, Royal Zoological Society of New South Wales, Taronga Zoo, Mosman, New South Wales, 2088.

HAPPY BIRTHDAY, MR. IREDALE

March 24th, 1970 is the ninetieth birthday of Tom Iredale, F.R.Z.S. Few of the younger generation of conchologists, ornithologists and mammalogists have met this veteran taxonomist who now lives in retirement, still busily sorting his vast store of books and manuscripts and extracting minute shells from beach-sand. An account of his work by D. F. McMichael and the writer was published by the Royal Zoolgical Society of New South Wales in 1956. Later years have not been idle ones and Tom Iredale still produces the occasional paper for publication.

As long ago as 1914, the great American conchologist, William H. Dall, wrote to Iredale, "I think some millionaire ought to endow a chair of Molluscan nomenclature with a view to getting a perfect Nomenclator, and nominate you as incumbent for life. You certainly have a genius for that line of work."

Altogether, Iredale has written for publication more than 360 papers and books, and has provided some 2,660 new generic and specific names for animals. He worked on a check-list of Australian mammals with Troughton, on birds with Mathews, ascidians and some fishes with me, and has helped ornithologists, entomologists, bibliographers and historians in their researches.

So we say "Happy Birthday" to our "Australian Linnaeus" and, as a small present, append a tribute, written in 1957 by our late friend, Melbourne Ward.

—G.P.W.

IN APPRECIATION OF TOM IREDALE

My first contact with Tom Iredale occurred back in the early 1920's. I had met him officially at the Australian Museum, but Iredale in the field was quite different. The first meeting was quite accidental on Bottle and Glass Rocks in Port Jackson, on one of those days so dear to the marine biologist when the tide drops to a minus and yards of shore are uncovered for such an unusual length of time that hidden creatures make their way to the surface of the drying terrain.

I had been delving in the narrow gutters thickly choked by the coarse brown kelp-weed and the jar of sea-water, into which my crustacean treasures were being dropped, looked like a miniature of an aquarium tank at Taronga. On one of my risings from the submarine world, I found a strange pair of feet beside me and they were shod in white canvas shoes with rope soles from which rose the whitest shins I had seen for a long time; ordinary street trousers were rolled to the knee and at the top end of the slender body was a face with a broad grin. I was to know that grin for thirty years and as those years advanced more and more of the remarkable man behind that grin.

On that first occasion Iredale gave me his undivided attention and the benefit of his remarkable and original mind. In the years that followed I had the privilege of being one of his confidants and I can scarcely look at a seascape or view an ocean reef with its foaming white billows and masses of marine life, without also seeing the indefatigable Iredale; if his critics overseas had spent time with Iredale in the field they would understand his point of view. He was never tired of collecting specimens and observing them in the field, his ideas were not sudden impluses but the result of painstaking observation not only of the living creatures he was studying, but the various ecological factors of their environment; a great appreciation of distances between lands and many other factors were all taken into account.

In the 1920's I spent considerable time in world travel and I heard of Iredale in Hawaii where his paper on the Mollusca found off the Kermadec Islands was used as a text. In Cuba, his was the only name Carlos De La Torre knew in Australia. And I came back to listen with added attention to Iredale. He had a gift of making a student feel at home, in fact I soon found that I could intrude upon him in his shell room at the Museum at any time and be immediately attended to, he had the gift of dropping his immediate problem to take over mine.

We had several trips together to the Capricorn Group at the southern end of the Great Barrier Reef and all through these field trips I had the advantage of seeing and hearing, for Iredale always talked about what was going on in our reef combing. On those fascinating trips we often sat up all night in the train and Iredale would sit bolt upright, fold his arms, push his face into the upholstery at the end of the seat and go off to sleep and no matter how the train joggled, he slept to the envy of the rest of us. In the morning he would come to life just as suddenly as he went off the night before, rub his face briskly with both hands and grin at our tired and haggard faces.

Iredale found the problems of the living world not with preconceived ideas but fully conscious that classification as developed with dead material in museums was artificial and it was his courageous facing up to the vagaries of nature that brought about what his critics call "splitting"; if Iredale had discovered that snails and crabs were one and the same he would have been the first to declare along those lines. The more I see of nature alive and in its vast complexity the more I appreciate that Iredale is years ahead of his time.

To reminisce of him in the field, there was that memorable trip we made to North West Islet in the Capricorns. I had discovered a small sand bank which exposed at low tide but was over a mile down the lagoon, so Iredale, Whitley and I set off to visit it. We had to travel fast so as not to be trapped by the tide, we had a four gallon bucket to put specimens in and we were pushing our way through the water as fast as we could. Iredale was holding forth when he tripped on a piece of coral and, in the middle of a word, disappeared completely out of sight, there was an awful turmoil of water and spray and then he popped up to finish the word which had been drowned in his mouth as he disappeared. He did not lose the trend of his discourse, and Whitley and I set another mark of affection in our hearts for the irrepressible Iredale who, by the way, could not swim.

—MELBOURNE WARD
April 1957.

Appeal for Back Numbers of the Society's Publications

Members or their friends having duplicate or unwanted back numbers of the *Australian Zoologist* or our *Proceedings* are urgently requested to inform the Honorary Secretary (Mrs. L. Harford), either at Taronga Zoo or by telephoning 55-1397, as stocks of some issues are at a low level and it is becoming difficult for the Society to fill orders for sets or to maintain exchanges.

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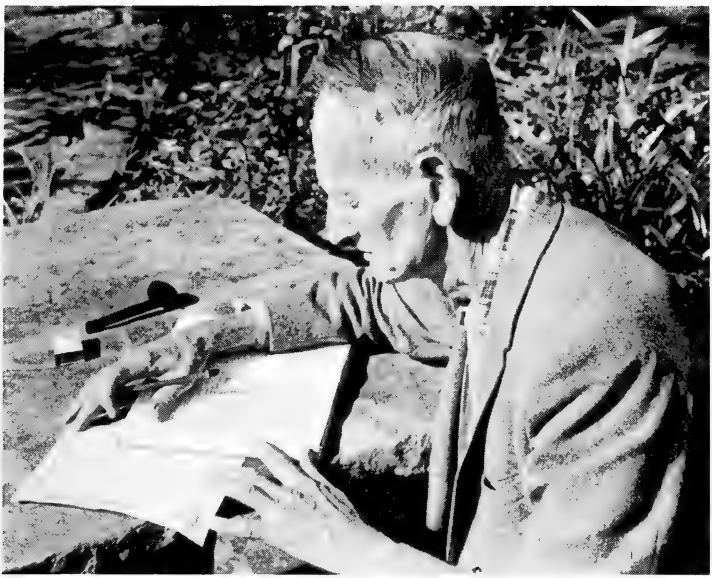
—*Hon. Secretary.*

Authors alone are responsible for the opinions expressed and for the accuracy of the facts in their contributions.

John Mann, M.B.E., F.R.Z.S., Director, Biological Section, The Alan Fletcher Research Station, Department of Lands, Sherwood, Queensland.

Section of the Entomological Laboratory, The Alan Fletcher Research Station, Sherwood, Brisbane, Queensland.
Photo: Dept. of Lands, Brisbane.



Gilbert Roscoe Gannon

Photo: *K. A. Hindwood.*

1. Bush Curlew, *Burhinus magnirostris.* Watling drawing No. 252. Artist unknown.

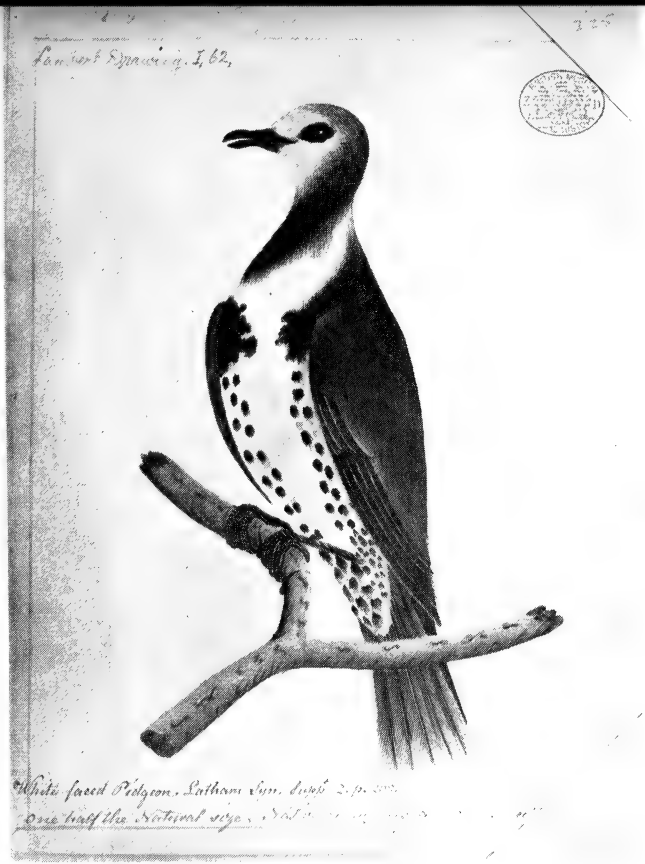
2. Bush Curlew, *Burhinus magnirostris.* Lambert drawing, vol. 3, No. 41; based on Watling drawing No. 252 or a similar drawing. Artist unknown. Reproduced by courtesy of the Right Honourable the Earl of Derby.

3. Fantailed Cuckoo, *Cacomantis pyrrhophanus*. Watling drawing No. 75 (see text for discussion). Artist unknown.

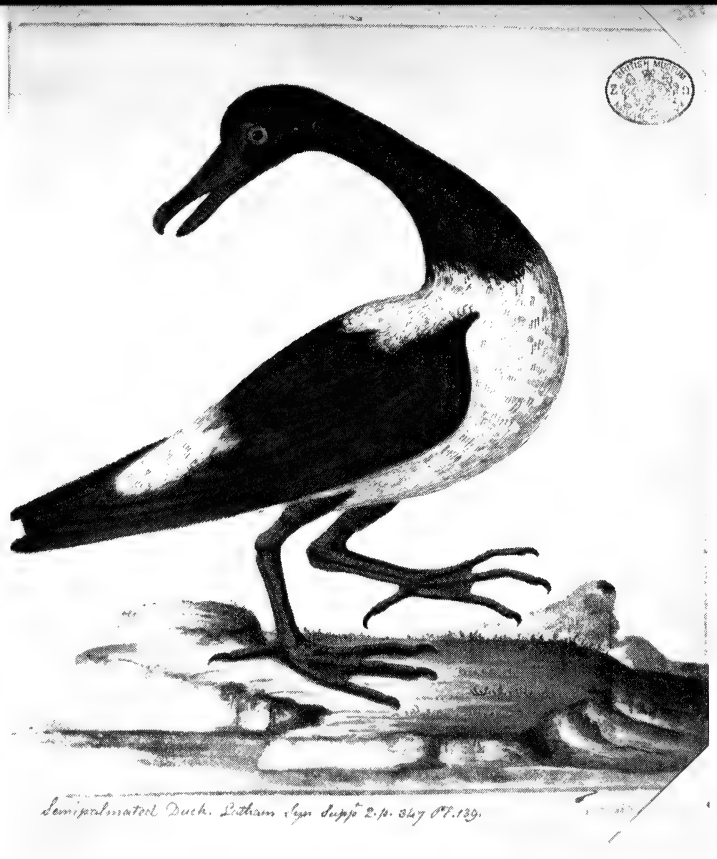
4. Fantailed Cuckoo, *Cacomantis pyrrhophanus*. Engraving from Latham's *Second Supplement, General Synopsis of Birds,* 1801, pl. 126. (See text for discussion, under Watling drawing No. 75).

5. Species indeterminable. Watling drawing No. 180. Artist unknown.

6. Red Goshawk, *Erythrotriorchis radiatus*. Watling drawing No. 10. Artist unknown.



7. Wonga Pigeon, *Leucosarcia melanoleuca*. Watling drawing No. 225, December, 1791. Artist unknown.



8. Pied Goose, *Anseranas semipalmata*. Watling drawing No. 288, January 2, 1794. Signed Thomas Watling.

Yours
W. Leighton Rothers

Dr. H. L. Kesteven

From a photograph taken in 1924.

ROYAL ZOOLOGICAL SOCIETY OF NEW SOUTH WALES

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PUBLICATIONS

The Australian Zoologist, published at irregular intervals since 1914.
Proceedings, published since 1933-34.

Australian Zoological Handbooks and special reprints:
"A Check List of the Birds of Paradise and Bower Birds", by T. Iredale, 1948.
"Revision of the New South Wales Turridae", by C. F. Laseron, 1954.
"The published writings of Tom Iredale, with an index of his new scientific names", by D. F. McMichael and G. P. Whitley, 1956.
"A reclassification of the Order Odonata", by F. C. Fraser, 1957.
"Dragonflies of Australia", by F. C. Fraser, 1960.
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