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TRANSACTIONS

AND

PROCEEDINGS

OF THE

NEW ZEALAND INSTITUTE

1905

VOL. XXXVIII

(TWENTY-FIRST OF NEW SERIES)

EDITED AND PUBLISHED UNDER THE AUTHORITY OF THE BOARD OF
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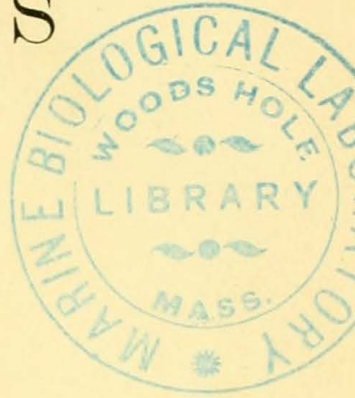
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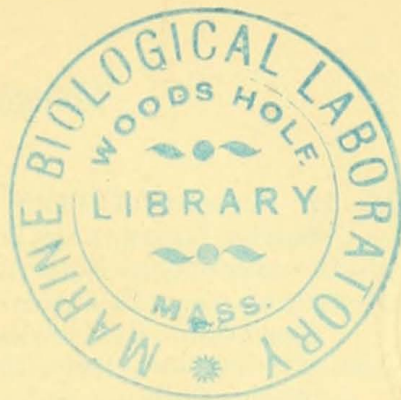
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CONTENTS.

TRANSACTIONS.

I.—MISCELLANEOUS.		PAGES
ART. I.	Early Native Records of the Manawatu Block. By P. E. Baldwin	1-11
XVIII.	Maori Place-names, with Special Reference to the Great Lakes and Mountains of the South Island. By James Cowan	113-120
XIX.	Some Historic Maori Personages. By T. W. Downes	120-127
XX.	The Winged Pilot of Hawaiki. By Archdeacon Walsh	127-130
XXI.	On a Stone-carved Ancient Wooden Image of a Maori Eel-god. By A. K. Newman	130-134
XXII.	On the Musical Notes and Other Features of the Long Maori Trumpet. By A. K. Newman. And Notes on the Maori Trumpet, by W. H. Warren	134-139
XXV.	Maori Eschatology: The <i>Whare Potae</i> (House of Mourning) and its Lore; being a Description of many Customs, Beliefs, Superstitions, Rites, &c., pertaining to Death and Burial among the Maori People, as also some Account of Native Belief in a Spiritual World. By Elsdon Best	148-239
LV.	Notes upon a Find of Kauri-gum in Rangitikei, Wellington Province. By S. A. R. Mair	499-501
II.—ZOOLOGY.		
XI.	Notes on the <i>Hemiptera</i> of the "Index Faunæ Novæ Zealandiæ." By G. W. Kirkaldy	61-62
XII.	Note on a Water-beetle found in Sea-water. By Charles Chilton	63
XIII.	On the Occurrence of <i>Metoponorthus pruinosus</i> , Brandt, in New Zealand. By Charles Chilton	64-65
XVI.	Results of Dredging on the Continental Shelf of New Zealand. By Charles Hedley	68-76
XVII.	On some <i>Foraminifera</i> and <i>Ostracoda</i> obtained off Great Barrier Island, New Zealand. By Frederick Chapman	77-112
XXVI.	Additional Notes on the Earthworms of the North Island of New Zealand. By W. B. Benham	239-245
XXVII.	On a Large Pterotracheid from the Pacific Ocean. By W. B. Benham	245-248

	PAGES
ART. XXVIII. An Account of some Earthworms from Little Barrier Island. By W. B. Benham	248-256
XXIX. On the Anatomy of <i>Hyla aurea</i> . By George Marriner	257-265
XXX. Report of some <i>Crustacea</i> dredged off the Coast of Auckland. By Charles Chilton	265-269
XXXI. List of <i>Crustacea</i> from the Chatham Islands. By Charles Chilton	269-273
XXXII. Description of a Species of <i>Phreatoicus</i> from the Surface Waters of New Zealand. By Charles Chilton	274-276
XXXIII. Note on the Occurrence in New Zealand of Dipterous Insects belonging to the Family <i>Blepharoceridæ</i> . By Charles Chilton	277-278
XXXIV. Results of Dredging on the Continental Shelf of New Zealand. By R. Murdoch and H. Suter	278-305
XXXV. Results of Dredging on the Continental Shelf of New Zealand. By W. H. Webster	305-308
XXXVI. Additions to the New Zealand Fauna. By W. H. Webster	309-312
XXXVII. On the Anatomy of <i>Paryphanta atramentaria</i> , Shuttleworth. By R. Murdoch	313-316
XXXVIII. Notes on New Zealand <i>Mollusca</i> , with Descriptions of New Species and Subspecies. By H. Suter	316-333
XXXIX. Genus <i>Isidora</i> : Correction of Article XVI in Last Year's Transactions (Volume XXXVII). By H. Suter	333
XL. On <i>Flabellum rugulosum</i> , Tenison-Woods. By H. Suter	334
XLI. Notes on Insect Swarms on Mountain-tops in New Zealand. By G. V. Hudson	334-336
XLII. Notes on some South Island Birds, and Maori Associations connected therewith. By James Cowan	337-341
LVII. Note on the Occurrence of Two Rare and Two Introduced Moths. By G. Howes	509
LVIII. Some New Species of <i>Lepidoptera</i> . By G. Howes	510-511
LXI. The Portobello Marine Fish-hatchery and Biological Station. By G. M. Thomson	529-558

III.—BOTANY.

XLIII. On a Specific Case of Leaf-variation in <i>Coprosma baueri</i> , Endl. (<i>Rubiaceæ</i>). By L. Cockayne	341-345
XLV. Notes on a Brief Botanical Visit to the Poor Knights Islands. By L. Cockayne	351-360
XLIV. On the Supposed Mount Bonpland Habitat of <i>Celmisia lindsayi</i> , Hook. f. By L. Cockayne	346-350
XLVI. Notes on the Subalpine Scrub of Mount Fyffe (Seaward Kaikouras). By L. Cockayne	361-374
XLVII. Notes on the Growth of certain Native Trees in the Auckland Domain. By J. Stewart	374-377
XLVIII. On the Leaf-structure of some Plants from the Southern Islands of New Zealand. By Miss E. M. Herriott	377-422
XLIX. Description of a New Native Grass. By D. Petrie	423-424
L. Appendix to List of Seaweeds of Norfolk Island. By R. M. Laing	424
LIV. Two New Ferns. By H. C. Field	495-498

IV.—GEOLOGY.		PAGES
ART. II.	Magmatic Segregation in its Relation to the Genesis of certain Ore-bodies. By James Park ..	11-16
III.	Contact Metamorphism in its Relation to the Genesis of certain Ore-deposits. By James Park ..	16-20
IV.	Thermal Activity in its Relation to the Genesis of certain Metalliferous Veins. By James Park ..	20-33
V.	On the <i>Rôle</i> of Metasomatism in the Formation of certain Ore-deposits. By James Park ..	33-36
VI.	The Deposition of Mineral Matter from Aqueous Solutions in its Relation to the Filling of Cavities and Vein-fissures. By James Park ..	36-39
VIII.	Technical Analyses of Coal, and Coal-testing. By A. M. Wright	42-45
XIV.	On <i>Crassatellites trailli</i> . By Captain Hutton ..	65-66
XV.	On a Skeleton of <i>Emeus crassus</i> from the North Island. By Captain Hutton	66-67
LI.	The Occurrence of Gold at Harbour Cone. By C. N. Boulton	425-446
LII.	On the Geology of the Clarendon Phosphate-deposits, Otago, New Zealand. By Arthur Robert Andrew	447-482
LIII.	The Gem Gravels of Kakanui; with Remarks on the Geology of the District. By J. Allan Thomson	482-495
LXII.	On the Treatment of Partially Decomposed Pyritic Tailings by the Cyanide Process. By H. Frank Shepherd	558-560
LXIII.	Geological Notes on the Country North-west of Lake Wakatipu	560-567
V.—CHEMISTRY, PHYSICS, ETC.		
VII.	The Temperature of Combustion of Methane in the Presence of Palladiumised Asbestos (Abstract). By H. G. Denham	39-41
IX.	Some New Compounds of a Similar Nature to Antifebrine. By P. W. Robertson	45-50
X.	The Estimation and Detection of the Alkaloids by means of their Double Sulphocyanides. By P. W. Robertson	51-61
XXIII.	On Temporary Stars. By M. Chapman	139-143
XXIV.	Notes on a Meteoric Appearance. By M. Chapman ..	143-148
LIX.	The Effect on Temperature of Molecular Association and Dissociation. By W. S. Page	512-515
LX.	The Resistance of Steel to Mechanical Shock, and the Determination of Material suitable for Machinery. By Professor Scott	515-529
LVI.	Brief Notes on the Theory of New Zealand Earthquakes. By G. Hogben	502-509

RECORDS OF MILNE SEISMOGRAPHS—

No. 16, Christchurch : Observer, H. F. Skey ..	568-571
No. 20, Wellington : Observer, G. Hogben ..	572-574

REPORTS AND PROCEEDINGS.		PAGES
Annual Report of the New Zealand Institute .. ..	.. ..	577
Proceedings—Wellington Philosophical Society .. ..	.. ..	583
“ Auckland Institute .. ..	.. ..	591
“ Philosophical Institute of Canterbury .. ..	.. ..	594
“ Otago Institute .. ..	.. ..	600
“ Westland Institute .. ..	.. ..	606
“ Hawke’s Bay Philosophical Institute .. ..	.. ..	607
“ Nelson Philosophical Institute .. ..	.. ..	609
“ Manawatu Philosophical Society .. ..	.. ..	610

LIST OF PLATES AT THE END OF THE VOLUME.

Plate.	To illustrate Article
I., II. Results of Dredging.—HEDLEY	XVI.
III. Deep-sea <i>Foraminifera</i> .—CHAPMAN	XVII.
IV.–VIII. Clarendon Phosphates.—ANDREW	LII.
IX.–XIII. Gold at Harbour Cone.—BOULT	LI.
XIV.–XVII. Sketches by Gilfillan.—DOWNES	XIX.
XVIII. <i>Chiton</i> and <i>Helcioniscus</i> .—SUTER	XXXVIII.
XIX. Species of <i>Isidora</i> .—SUTER	XXXIX.
XX. Anatomy of <i>Paryphanta</i> .—MURDOCH	XXXVII.
XXI.–XXVII. Deep-sea <i>Mollusca</i> .—SUTER and MURDOCH	XXXIV.
XXVIII.–XXXVII. Plant Structure.—HERRIOTT	XLVIII.
XXXVIII. Deep-sea <i>Mollusca</i> .—WEBSTER	XXXV.
XXXIX. New Zealand <i>Mollusca</i> .—WEBSTER	XXXVI.
XL–XLII. Earthworms.—BENHAM	XXVI.
XLIII. <i>Firola coronata</i> .—BENHAM	XXVII.
XLIV. New Zealand <i>Lepidoptera</i> .—HOWES	LVIII.
XLV. <i>Hyla aurea</i> .—MARRINER	XXIX.
XLVI. Larva of <i>Curupira</i> .—CHILTON	XXXIII.
XLVII.–LI. Trees in Auckland Domain.—STEWART	XLVII.
LII. Leaf-variation in <i>Coprosma</i> .—COCKAYNE	XLIII.
LIII., LIV. New Zealand Earthquakes.—HOGBEN	LVI.
LV.–LIX. Portobello Fish-hatchery.—THOMSON	LXI.
LX. Maori Eel-god.—NEWMAN	XXI.
LXI.–LXVII. Records of Milne Seismographs.—SKEY and HOGBEN.	

FRONTISPIECE.

Portrait of the late Captain Hutton.

ART. XXXII.—*Description of a Species of Phreatoicus from the Surface Waters of New Zealand.*

By CHARLES CHILTON, M.A., D.Sc., F.L.S., Professor of Biology, Canterbury College, New Zealand.

[Read before the Philosophical Institute of Canterbury, 6th December, 1905.]

IN my paper on the subterranean *Crustacea* of New Zealand published in 1894 (Trans. Linn. Soc., vi), when discussing various questions in connection with the three species of *Phreatoicus* known at that time, I said, "The questions suggested may perhaps be some day solved by the discovery of species of *Phreatoicus* still living above ground in the mountain-streams of the Southern Alps, places where very little search of the kind required has hitherto been made" (*l.c.*, p. 202). I am not sure that the questions under consideration are very much nearer solution now than they were then, and certainly no species of *Phreatoicus* has yet been found among our Southern Alps; but in making the statement quoted I little anticipated that within the next twelve years so many species would be found in other places.

At that time there was known only the one genus, with three species—two found underground in New Zealand, and the third on the Mount Kosciusko plateau, in Australia. Now, thanks to the researches of Mr. G. M. Thomson, Professor Baldwin Spencer, Mr. T. S. Hall, and particularly of Mr. O. A. Sayce, we are acquainted with five species of the genus *Phreatoicus*, and with no less than three other closely allied genera, each with one species. All these additional forms, however, were from Australia and Tasmania, and up to 1902 no surface form had been recorded from New Zealand. In that year, however, Mr. (now Professor) H. B. Kirk brought me specimens of a *Phreatoicus* found in a fresh-water lagoon in Ruapuke Island, in Foveaux Strait. These were exhibited at a meeting of the Philosophical Institute of Canterbury on the 26th November, 1902 (see Proc. N.Z. Inst., xxxv, p. 564), but no description has as yet been published. In the present year (1905) specimens of the same genus were found at Mosgiel, and afterwards at Woodhaugh, both places being near Dunedin. These have been very kindly handed over to me for examination by Mr. G. M. Thomson.

The occurrence of the species at Woodhaugh reminds us how little we really know of the smaller animals even of places that have been fairly well searched, for Mr. Thomson and myself, and probably many others, have made many collections from this locality without coming across the species in question, although it is by no means a particularly small one, some of

the specimens being nearly 1 in. in length. Judging from Mr. Sayce's experience in Australia, it is quite probable that other forms are still to be found from the streams and fresh waters of New Zealand, and I shall be grateful to any collectors who will send me any shrimp-like creatures they may find under stones or in moss in such situations.

From the description given below it will be seen that the species now to be described, though found in surface waters, is a blind one, and that it is whitish in colour, in these respects resembling the two subterranean species occurring in the underground waters of the Canterbury Plains.

***Phreatoicus kirkii*, sp. nov.**

Specific Diagnosis.—General appearance of the body and appendages very similar to that of *P. assimilis*. Eyes not visible. Body rather stout and compact, the segments of the pereion fitting closely to one another; pleura of the 2nd to 5th segments of the pleon largely developed, fully as deep as their segments and concealing the pleopoda, rounded below and with the inferior margin and the lower part of the hind margin thickly fringed with long setæ; 5th segment as long as the 3rd and 4th together; inferior margin of the 6th segment with six curved setæ which increase in stoutness posteriorly, the last being very stout; the projection at the end of the last segment narrower (as seen in side view) than in *P. assimilis*, longer than broad, tipped with two or three stout setæ and bearing also several more slender ones; below this the hind margin on each side is irregularly convex, and bears numerous short setæ of varying degrees of stoutness. Surface of body with a fair number of slender setæ arranged singly or in small tufts, and becoming more numerous posteriorly, especially on the last segment of the pleon. Lower antennæ scarcely half as long as the body; flagellum of about twelve joints, not much longer than the peduncle. Pereiopoda as in *P. assimilis*, rather short and very spiny; the 1st forming in the male a powerful subchelate claw of the same general structure as in *P. assimilis*, but with the anterior produced portion of the meros armed with one stout seta and a few slender ones in place of the thick brush of fine hairs found in *P. assimilis*; 4th pereiopod of male shorter than the 3rd and specially modified. In the female the 1st pereiopod has the subchelate claw much smaller and like that described for *P. typicus*, and the 4th pereiopod is similar to the 3rd. The last three pairs of pereiopoda with the basa considerably expanded. The mouth parts are practically the same as in *P. assimilis*, the lower lip having the lobes rounded, and the inner lobe of the first maxilla bearing only four plumose setæ.

Colour.—Whitish.

Length—cephalon, 2·5 mm.; pereion, 8·5 mm.; pleon, 6·5 mm.
Depth—pereion, 2 mm.; pleon, 3·5 mm.

Hab.—Fresh-water lagoon on Ruapuke Island.

The description given above applies to the Ruapuke Island specimens. Those from the neighbourhood of Dunedin differ considerably in general appearance, having the segments of the pereion longer, so that the appendages are more separated, and there are also some minor differences. I was at first inclined to consider them as a separate species, but the resemblances in the appendages are so close, and the differences rather in the proportions of the body—characters difficult to estimate precisely, and perhaps partly due to shrinkage caused by the preserving-fluids used—so that I propose to consider them as a variety.

Phreatoicus kirkii, var. *dunedinensis*, nov. var.

Differing from the type in having the segments of the pereion rather longer, more slender, and more separated; the dorsal surface of body, especially of the last segment of pleon, with more numerous setæ; pereiopoda more slender, the basa of the last three pairs less expanded.

Colour.—Whitish.

Length—cephalon, 2·5 mm.; pereion, 13 mm.; pleon, 7 mm.
Depth—pereion, 2 mm.; pleon, 3·5 mm.

Hab.—Streams at Mosgiel and Woodhaugh, near Dunedin.

Mr. Sayce has laid considerable stress on the proportion of the length of the pleon to that of the cephalon and pereion combined in the various species of *Phreatoicus* and allied genera. If we take the measurements given above and work them out as Mr. Sayce has done we find that in the typical specimens the pleon is $\frac{5.9}{100}$ of the combined length of cephalon and pereion, while in the variety *dunedinensis* the corresponding fraction is only $\frac{4.5}{100}$, the difference being thus considerable. Measurements of this kind are, however, not easily made with the same accuracy in all cases, and they vary to some extent in different individuals, and certainly these fractions in the present instance would lead one to think that the specimens from the different localities differ more than they really do.

It will be seen that the present species is very closely allied to *P. assimilis*, and that in the lower lip and the inner lobe of the first maxilla it agrees with this species and with *P. australis* and *P. shephardi*, and differs from *P. typicus*.

In the structure of the last segment of the pleon, and in some other points, it may be considered to be intermediate between *P. australis* and *P. assimilis*.

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