

1880.
NEW ZEALAND.

TWELFTH ANNUAL REPORT OF THE NEW ZEALAND
INSTITUTE, 1879-80.

Presented to both Houses of the General Assembly by Command of His Excellency.

MEETINGS of the Board were held on the following dates: 21st July, 19th November, 1879; and 17th February, 5th April, and 20th April, 1880.

The members who retired from the Board in conformity with the Act were Messrs. Travers, Mason, and Waterhouse. The two former gentlemen were reappointed; and the Hon. G. Randall Johnson was appointed by His Excellency in the room of the Hon. Mr. Waterhouse.

The gentlemen elected Governors of the Institute by the incorporated societies, under clause 7 of the Act, are: Dr. Buller, F.R.S., C.M.G.; Mr. T. Kirk, F.L.S.; and Captain Russell, M.H.R.

The list of honorary members of the Institute having reached the number prescribed by section 4 of the Rules and Statutes (viz., thirty), no nominations took place during the past year.

The number of members now on the roll of the Institute is as follows:—

Honorary members	...	...	...	...	...	30
<i>Ordinary members.</i>						
Auckland Institute	...	...	...	...	...	274
Hawke's Bay Philosophical Society	...	...	...	...	...	78
Wellington Philosophical Society	...	...	...	...	...	269
Nelson Association	...	...	...	...	...	50
Westland Institute	...	...	...	...	...	121
Philosophical Institute, Canterbury	...	...	...	...	...	229
Otago Institute	...	...	...	...	...	226
						1,277

The printing of Vol. XII. was commenced in January and finished early in May; but, owing to delay in getting the lithographed plates printed, the volume was not ready for issue until the 8th of June.

Vol. XII. contains 59 articles, and several Presidents' Addresses and abstracts of papers which appear in the Proceedings and Appendix. There are 14 plates and 538 pages of letterpress.

The following are the sections of the work, compared with last year's volume:—

	1880.	1879.
	Pages.	Pages.
Miscellaneous	240	186
Zoology	76	216
Botany	84	66
Chemistry	14	26
Geology	6	22
Proceedings	52	66
Appendix	66	42
538		624

The volumes of the Transactions now on hand are,—

Vol. I., second edition, 430; Vol. II., none; Vol. III., 4; Vol. IV., 2; Vol. V., 70; Vol. VI., 60; Vol. VII., 165; Vol. VIII., 30; Vol. IX., 170; Vol. X., 20; Vol. XI., 100; Vol. XII., not yet fully distributed.

The balance-sheet herewith shows the sum of £4 8s. 3d. to the credit of the Board, to which must be added the sum of £31 2s. 6d. due by the Auckland Institute, making in all £35 10s. 9d.; against which there is an outstanding balance of account for printing of £66 6s. 6d.

To meet the deficiency of £30 15s. 9d. it will be necessary to make a call of 1s. per volume on the present issue.

The usual annual reports of the various departments connected with the Institute are appended.

JAMES HECTOR,
Manager.

Approved by the Board, 21st July, 1880.

W. B. D. MANTELL,
Chairman.

Ayes.—The most interesting additions to this section are—a pure “albino” of the common wood-pigeon (*Carpophaga novæ zelandiæ*), obtained in the Wairarapa District; the New Zealand snipe (*Gallinago aucklandica*); and specimens of the “flightless duck” (*Nesonetta aucklandica*) and the megansur (*Mergus australis*), from the Auckland Islands.

Pisces.—A considerable collection has been sent to the Hon. W. Macleay, Sydney, in exchange for a series of Australian fishes received last year. Additions have also been made to the stock of New Zealand fishes in hand, so that exchanges may be effected as opportunities offer. The most interesting additions to the Museum collection are—*Chironemus fergusonii*, Wellington Harbour; *Erichthys nitidus*, from the Brothers Rocks; *Sphyræna obtusata*, *Atherina pinguis*, and *Atypus strigatus*, from Island Bay; a collection of about eighty specimens illustrating the ichthyology of Japan, presented by the Hon. G. M. Waterhouse; and a valuable series from Melbourne, obtained by Dr. Hector.

Invertebrata.—Collections of mollusca, polyzoa, crustacea, and annelids, made in the neighbourhood of Wellington by members of the department, and a number of Australian mollusca from Mr. T. F. Bailey, of Melbourne, have added considerably to the very large series already existing in the Museum.

Ethnological.—A collection of Fijian articles, consisting chiefly of mats, baskets, &c., has been secured for the Museum through the kindness of Mr. T. Vickery, the Executive Commissioner for Fiji at the Sydney Exhibition. A *pouraka* and a *hinaki*, Maori fishing-nets, received from Mr. Henry Tryon, of Taupo, are the chief items under this head.

SYDNEY EXHIBITION.

An extensive series, numbering 2,585 specimens, was selected from the Museum collection for exhibition at Sydney, accompanied by a detailed catalogue, of which the following is an abstract:—

*Collections illustrating the Geology and Natural History of New Zealand.**

(1-82) Palæozoic Fossils	(2553-2585) Publications— <i>continued</i>
(83-389) Lower Mesozoic Fossils	Natural History of New Zealand
(390-654) Upper Mesozoic Fossils	Meteorological Reports, 1868-79
(655-1211) Tertiary Fossils	Transactions of New Zealand Institute, Vols. I. to IX.
(1212-1420) Recent Mollusca	The Grasses of New Zealand
(1421-1517) Tertiary Corals and Polyzoa	One Hundred Photographic Views of New Zealand Scenery
(1518-1535) Fossil Vertebrata	Models made by Dr. Hector—
(1536-1737) Human Period	New Zealand Topographical
(1738-1941) Fossil Plants	New Zealand Geological
(1942-2106) Rocks	Volcanic System of Ruapehu and Tongariro
(2107-2147) Gold Specimens	Sketches of New Zealand Scenery by W. M. Cooper
(2148-2391) Minerals	Casts of Moa Eggs and Other Objects
(2392-2405) Coals	Maps, Plans, and Sections illustrating the Geology and Physical Features of New Zealand.
(2406-2424) Crustacea	
(2425-2476) Phormium Samples	
(2477-2552) Timbers	
(2553-2585) Publications, viz. :—	
Geological Reports, 1868-79	
Museum and Laboratory Reports, 1867-79	
On Phormium Tenax	

GEOLOGICAL SURVEY BRANCH.

A number of important surveys have been made during the past season, the full results of which will appear in the annual volume of Reports. Owing to my protracted absence from the colony in connection with the Sydney Exhibition, the field-work for the year has chiefly devolved on Messrs. Cox and McKay, certain special reports having been obtained from Mr. W. E. Rowe, who was temporarily employed.

Reports have been obtained on the following mines:—

Antimony Lodes.

Hindon.
Stony Creek.

Copper Lodes.

Big Bay.
Dusky Sound.
Waitahuna.
Aniseed Valley.
" " (Johnston's).
Roding River.
Dun Mountain.

Chrome Lodes.

Ben Nevis.
Dun Mountain.
Aniseed Valley.

Auriferous Reefs.

Wairarapa.
Longwood Range.
Mount Ophir, Collingwood.
Mount Arthur.

Coal Seams.
Paringa River.
Springfield.
Motanau.

* For particulars see New Zealand Handbook and Appendix.

The following extensions of the Geological Survey have afforded important additions to the general mapping of the colony:—

1. *Auckland District*.—The country lying between Whangarei and Kaipara, about 1,500 square miles.
2. *Canterbury District*.—The country between Motanau and the Rakaia River, about 1,000 square miles.
3. *Otago District*.—Special examination of the Jurassic strata at the Mataura.
4. *Otago District*.—The Alpine district lying to the north-west of the Wakatipu Lake, about 1,400 square miles.

A *résumé* of the geology of the colony has been published in the Handbook of New Zealand, and the second edition of the same work is illustrated by a small-scale geological map, printed in colours.

The comparison of the geology of New Zealand with that of Australia formed the subject of a lecture delivered by myself in Sydney, which has been printed in the Transactions of the Royal Society of New South Wales.

MINERAL COLLECTIONS.

During the past year a large and interesting collection of minerals and rock-specimens has been made from the Wakatipu District by Mr. McKay, who was employed in running detailed sections through that part of the country west of the Wakatipu Lake, in continuance of what was done last year in that district by Mr. Cox and myself.

Amongst others may be mentioned specular iron ore, magnetite, pyrrhotine, rhodonite, copper-pyrites, chromite, a very rare chromium mineral (chrome mica), and scheelite; bearing out the statement which I made in 1864, that the country lying to the westward of the faulted area about Lake Wakatipu would, in all probability, prove to be highly mineralized.

Mr. Cox made a good collection of copper ores from the Nelson District, representing the different classes of ore which are found at the various mines. He also examined the so-called copper stratum in Aniseed Valley, the occurrence of which was mentioned last year, and states that no evidence has yet been found proving it to exist in more than irregular masses, but that its occurrence in isolated localities has been shown through a considerable stretch of country, and it appears to obey the laws which regulate the other copper deposits in the district. He also brought specimens of a highly-pyritous quartz from the Mount Arthur Reef, in Gridiron Creek, which yielded over 2 oz. of gold per ton, most of which was free, and, besides containing about fifty per cent. of pyrites, had also several other minerals, as galena, zinc-blende, and pyrrhotine, associated with it.

Some interesting specimens of coal have been forwarded from the Paringa River, Westland, from a seam stated by Mr. McFarlane, the sender, to be 12 feet in thickness; and the same contributor has also forwarded a sample of copper ore (chalcopyrite) containing 18.55 per cent. of copper, taken from a lode 3 feet wide, in the vicinity of Big Bay.

Good collections of rock-specimens, illustrating the geology of the district, have also been made in the Wakatipu District by Mr. McKay, while the volcanic rocks of the Auckland District were largely collected from by Mr. Cox.

At West Oxford the occurrence of a considerable and highly important deposit of chalk has been proved, which is not less than 100 feet in thickness, which will be of great value for the manufacture of "whiting" and "Portland cement."

PALEONTOLOGY.

The Geological Survey of the Auckland District from Whangarei south to Auckland has formed the most important part of Mr. Cox's work for the past year, this being undertaken in continuation of the previous work of the department in the northern part of the Auckland Provincial District.

I had previously pointed out that younger secondary rocks were represented in the Kaipara District, and Mr. Cox has now succeeded in proving the existence of still lower beds of the same formation in the Upper Wairoa River, which cuts through soft sandstones with *Inoceramus*, &c.

Besides these, beds of Cretaceous-tertiary age occur in the Kaipara Harbour, and at Komiti Point are overlaid unconformably by sandy marls and grits, over which are tufaceous sands and concretionary greensands. These beds, which are the same fossiliferous beds which I discovered in 1874 at Komiti Point, he classes together, and considers to be the same as the fossiliferous grits at Cape Rodney, and the equivalents of the Waitemata series; but, *Pecten pleuronectes* and many Orakei Bay fossils being found at Komiti Point only in the marls, whereas the tufaceous beds are associated with a great preponderance of lower miocene forms, this rather bears out the view that the Waitemata series must be divided at the horizon of the Parnell grits. It is only right to state, however, that it is not altogether on the occurrence of these fossils, but rather on stratigraphical grounds, that Mr. Cox has placed these two sets of beds in the same horizon; and if this view is borne out its bearing on questions concerning the distribution of coal in the North is most important.

The special examination of the beds at the Mataura Falls was made by Mr. McKay, with the view of placing beyond doubt the position at which *Macrotæniopteris* occurs. The result of this work is to prove that this fossil plant, which has special interest on account of it also being found in the Rajmahal beds in India, occurs in strata of Upper Oolite age. A fine series of fossils, numbering some one hundred specimens, were added to the collections by Mr. McKay during this survey.

A large collection of fossils was made at the Curiosity Shop, Canterbury, embracing 2,500 specimens, amongst which are a few bones of the extinct giant penguin, *Palæudyptes antarcticus*. The great feature of this collection is the Brachiopoda, one-half the total number belonging to this class. Most of the Gasteropoda and Lammellibranchiata are in the condition of casts, with the exceptions in the former class of the Turritellidæ, and in the latter of the genera *Ostrea*, *Pecten*, *Lima*, and *Pinna*, of which latter only fragments have been obtained. On the contrary, all the Brachiopoda retain their tests, as also, generally speaking, do the Echinodermata.

In the Trelissic basin large collections were made from the volcanic tufas which are interbedded between the Mount Brown and Weka Pass limestones, and between the latter and the chalk-marls which represent the Amuri limestone. The younger Tertiary rocks were also collected from.

From the Cairn Range a good collection of fossil ferns was obtained from strata which are of the same age as at Clent Hills fern-beds, and, there is some reason to believe, are also the equivalents of the Matura sandstones, which are, as already stated, of Upper Oolite age. From beds which belong to the Otapiri series, on the north-west side of the Mount Thomas Range, a fossil *Trigonia*, which also occurs at Nugget Point; in the Hokanui Hills, and at the Wairoa Gorge, was obtained. This fossil passes downwards into the Wairoa series, but is not found in younger beds.

The diabases, cherts, and limestones of the Malvern Hills were traced through a great extent of country, both in Canterbury and Nelson, and the calcareous portion was found to be richly fossiliferous in the hills lying between the Upper Okuku and Waipara Rivers. The character of the rocks leaves no doubt as to their identity with the same rocks in the Malvern Hills, while the fossils obtained are equally decisive as to their age; *Monotis salinaria* and *Mytilus problematicus* being everywhere in New Zealand confined to the Middle Trias or Wairoa formation.

In the beds which overlie the coal in the Matura basin saurian remains occur. *Mauisaurus haasti* and *Plesiosaurus crassicostratus* have been identified as present in these boulders; and another species also occurs, which may be *Plesiosaurus australis*, but this is less certain.

Remains of saurians in the shape of teeth of *Plesiosaurus* were also found in the younger rocks which occur at the Twelve-mile Creek on Lake Wakatipu, and are of interest as confirming my previous determination of the age of these beds as being of the Mesozoic and not Tertiary period. Resting on them unconformably, Mr. McKay has shown, however, that beds belonging to the Miocene Tertiary (Pareora series) also occur in the same district.

PUBLICATIONS.

The following works have been issued by the department during the year:—

1. Fourteenth Annual Report of the Colonial Museum and Laboratory, with an Abstract of the Results of Analyses. 54 pp. 8vo.
2. Thirteenth Progress Report of the Geological Survey of New Zealand, for the Season 1878–79 with maps and sections. 135 pp. 8vo.
3. The Indigenous Grasses of New Zealand (concluding parts); with 64 plates. By John Buchanan, F.L.S. 192 pp. folio.
4. Manual of the New Zealand Mollusca. By Professor Hutton, C.M.Z.S. (This work embodies and replaces the following prior publications, all of which are now out of print: *Marine Mollusca of New Zealand*; *Land Mollusca of New Zealand*; and *Critical List of New Zealand Mollusca contained in European Collections.*) 224 pp. 8vo.
5. Manual of the New Zealand Grasses; with 64 plates. 174 pp. 8vo.
6. Manual of the New Zealand Coleoptera. By Captain Thomas Brown. 700 pp. 8vo.
7. Handbook of New Zealand; giving an Account of the History, Industrial Progress, and Natural Resources of the Colony. Prepared for the Sydney International Exhibition, with maps and diagrams by Dr. Hector. 110 pp. 8vo. Also a second and revised edition of the same work.
8. Catalogue of the Collections illustrating the Geology and Natural History of New Zealand, as exhibited in the Sydney International Exhibition. 67 pp. 8vo.

The following works have been partly prepared for publication:—

1. Manual of the Fishes of New Zealand, with Information regarding the Edible Species. By Dr. Hector. Illustrated with woodcuts.
2. Manual of the New Zealand Birds. By Dr. Buller, F.R.S. Illustrated with lithographs and woodcuts.
3. Manual of New Zealand Mineralogy and Mining, with Digest of all Analyses made in the Colonial Laboratory since 1865. By Dr. Hector.
4. Contributions to New Zealand Palæontology—(1) *Belemnitidæ* and (2) *Brachiopoda*, by Dr. Hector; (3) *Fossil Flora*, by Dr. Hector; (4), *Fossil Corals*, by Rev. J. E. Tenison Woods.
5. Catalogues of New Zealand Insects belonging to the following Orders: *Diptera*, *Hymenoptera*, and *Orthoptera*. By Professor Hutton.

METEOROLOGY.

No change has been made in this branch during the year; the number and equipment of the observing stations being the same as formerly, viz.: Mongonui, Auckland, New Plymouth, Napier, Wanganui, Wellington, Nelson, Cape Campbell, Christchurch, Bealey, Hokitika, Dunedin, Queenstown, Wallacetown, Waitangi (Chatham Islands).

Each station is furnished with the following instruments: Barometer, with attached thermometer; wind-gauge (Robinson's); rain-gauge; set of self-registering thermometers—maximum and minimum dry, and maximum and minimum wet; solar-radiation thermometer and terrestrial-radiation thermometer.

The observations are made at 9.30 a.m., and posted into the monthly forms, which are then forwarded at the end of each month to the head office at Wellington, where they are reduced and published.

The following returns have been published or sent in for publication during the year:—

1. The results of the observations taken at all the stations in the colony during 1879, for the yearly statistics.
2. Monthly abstracts of observations from all stations, with averages for previous years, and remarks, for *Gazette*, up to June, 1880.
3. Returns of daily readings taken at Wellington, with averages and remarks, up to June, 1880.

The issue of the biennial report for 1877-78 has been held back, so as to include the results for 1879, as economy in printing is thereby effected.

At the request of Government I represented the colony at the Meteorological Conference held in Sydney on the 11th November last.

The following propositions were considered and resolutions adopted at this Conference:—

Propositions for Meteorological Conference.

1. To consider the meteorology of Australia and New Zealand, with a view to united action in its investigation.
2. To consider whether additional first-class stations shall be established, and, if so, in what localities.
3. To consider the desirability of using the same class of instruments at all stations, and making the observations at the same local hour.
4. To consider the desirability of securing the co-operation of the meteorologists of New Zealand and Tasmania in the system of weather telegrams, which now embraces the Colonies of South Australia, Victoria, New South Wales, and Queensland.
5. To consider by what means the weather telegrams may be transmitted and published for public information at an earlier hour than they are at present.
6. To consider whether meteorological stations should be established upon the highest available mountains, for the special study of winds.

Resolutions.

1. That, in view of the great importance which a better knowledge of the movement and origin of strong gales and storms on our coast-lines and neighbouring seas is to the shipping and commercial interest generally, it is desirable to secure, as far as possible, co-operation in all the Australasian Colonies for the investigation of storms, as well as for agricultural and general climatological purposes.
2. That, with the view of giving effect to the foregoing resolution, similar observations and the same form of publication should, as far as possible, be adopted throughout the colonies.
3. That, in order effectually to carry out the objects of the Conference as affirmed in the foregoing resolutions, it is desirable to establish first-class meteorological stations in certain well-selected positions in the several Australasian Colonies, including New Zealand, in addition to those now existing.
4. That the observations taken are to be limited to those for determining atmospheric pressure; maximum and minimum daily temperature of atmosphere, and of insolation and radiation; the average daily amount of moisture, the rainfall and number of rainy days; the force and direction of wind; and amount and character of cloud.
5. That the instruments at each first-class station consist of a mercurial barometer of either the standard or Board of Trade form; thermometers of Kew or approved patterns, compared with standards as frequently as possible; rain-gauges of 8 inches collecting diameter; and wind-gauges of any approved form. The local hours of observation to be 9 a.m., 3 p.m., and 9 p.m. Beaufort's scale of wind to be adopted; the observations to be recorded in equivalents in velocity and pressure.
6. That it is desirable to secure the co-operation of the Governments of Western Australia, New Zealand, and Tasmania in the system of weather telegrams, which now embraces the Colonies of South Australia, Victoria, New South Wales, and Queensland.
7. That, in the opinion of this Conference, it is desirable that weather telegrams and forecasts shall in all cases depend upon the observations used for general meteorological and climatological statistics, and be under the direction of the head of the meteorological department in each colony.
8. (1.) That this Conference, having been informed that the Eastern Extension Telegraph Company will charge half-rates for the transmission of weather reports through the cable connecting Australia and Tasmania, and probably also the cable to New Zealand, recommend that the cost of such reports be defrayed by the participating colonies in equal proportions; and that, in the opinion of this Conference, such cost need not exceed in the aggregate £350 per annum.
- (2.) That, in the opinion of the Conference, this expenditure is justified by the extreme importance to the shipping interest of early information of the approach of dangerous easterly and westerly gales.
9. That the several Governments be requested to cause precedence to be given to the regular weather telegrams and special storm reports.
10. That, in the opinion of this Conference, there should be established in each of the colonies upon a high mountain-peak, a meteorological observatory for the special study of winds and other meteorological phenomena:

	About
South Australia—Mount Lofty	2,500 feet above sea level.
New South Wales—Kiandra	4,600 "
New Zealand—Tauhara, Taupo	4,600 "
Do. Mount Herbert	4,000 "
Tasmania—Mount Wellington	4,000 "
Victoria—Mount Macedon	3,500 "

11. That the interchange of weather statistics, in carrying out the suggestions of this Conference, between the different Australasian stations, should be in the form of a diagram; and that this should not interfere with the printing of statistics by the different colonies in any way they like.

12. That, in the transmission of cablegrams, the reports be generalized from the local weather reports.

For New Zealand the following subdivision into districts is recommended for convenience of reporting:—

A. ... N.E. aspect ...	North Cape to East Cape.
B. ... N.W. aspect ...	Cape Maria to West Cape (exclusive of Cook Strait).
C. ... S. aspect ...	West Cape to Moeraki.
D. ... S.E. aspect ...	Moeraki to East Cape (exclusive of Cook Strait).
E. ... Cook Strait ...	Comprising Wanganui, Wellington, Cape Campbell, and Cape Farewell, Nelson.

That Australia be divided into six meteorological areas for transmission of reports to New Zealand—viz., Western Australia, South Australia, Victoria, New South Wales, and Queensland; South Australia being divided into two districts, tropical and extra-tropical.

13. That the extreme importance of the weather system proposed be strongly urged upon the Queensland Government, with a view to obtain their more active co-operation.

14. That, as investigation of the Newcastle tide-gauges has shown that such instruments give valuable indications of distant earthquakes, gales, and sea-disturbances, it is desirable, in the opinion of the Conference, that self-registering tide-gauges be established in as many convenient places as possible on the coast, in connection with the Meteorological Departments of the different colonies.

To give effect to the resolutions, and to promote the efficiency and economy of the service, I consider it will be necessary to reorganize both the Meteorological and Weather-signal Departments in the direction I indicated in my early reports on the subject in 1867 and 1873.

TIME-BALL SERVICE.

The astronomical observations required for regulating the time throughout the colony are still taken by the Ven. Archdeacon Stock.

The second clock for sidereal time has now arrived in the colony, and will be shortly placed in position. It has been procured from Messrs. Dent by the Agent-General, and, being a first-class instrument, will afford great additional security to the correctness of the observatory work.

LABORATORY.

The number of analyses performed in the Colonial Laboratory during the past year is 323, which makes up the total number to 2,724.

These are subdivided as follows, the same classification being used as heretofore:—

Coals and oils	...	...	...	...	...	...	18
Rocks and minerals	...	...	...	...	...	...	57
Metals and ores	...	...	...	...	...	...	36
Examinations for silver and gold	...	...	...	...	...	...	159
Waters	...	...	...	...	...	...	15
Miscellaneous	...	...	...	...	...	...	38
Total	...	...	...	...	...	...	323

All analyses of interest or importance are given in full in the annual report on the work performed in the laboratory, published separately.

LIBRARY.

There have been 120 volumes added to the Institute Library; but, owing to want of space, it has been impossible to arrange the books in the most convenient manner for reference. The catalogue which was prepared last year, and which includes the books belonging to the Wellington Philosophical Society, has been kept up to date.

In accordance with the report of the Public Petitions Committee dated 28th November, 1879, the books of the Provincial Library of the Province of Wellington have been deposited in the Colonial Museum. They have been arranged and catalogued, and it has been found that a large number of volumes are missing, and many valuable works rendered almost useless owing to the absence of one or more volumes. Although the books have been arranged, the space available at the Museum is quite insufficient for their proper display or to allow of their being made use of by the public.

ACCOUNTS of the NEW ZEALAND INSTITUTE, 1879-80.

<i>Receipts.</i>			£	s.	d.	<i>Expenditure.</i>			£	s.	d.
Balance in hand on 21st July, 1879	...	...	140	16	3	Balance due for printing Vol. XI.	...	...	155	13	2
Vote for 1879-80	...	...	500	0	0	On account of printing Vol. XII.	...	...	504	10	0
Contribution from Wellington Philosophical Society (one-sixth of annual revenue)	...	...	36	14	2	Miscellaneous items (including woodcuts, Library catalogue, &c.)	...	...	17	0	0
From Westland Institute, in aid of Vol. XI.	...	...	3	0	0	Balance	...	...	4	8	3
Sale of a volume of Transactions	...	...	1	1	0						
			<u>£681 11 5</u>						<u>£681 11 5</u>		

21st July, 1880.

A. STOCK,
Treasurer.

By Authority: GEORGE DIDSBURY, Government Printer, Wellington.—1880.

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures transparency and allows for easy auditing of the accounts.

In addition, it is noted that the books should be kept up-to-date at all times. Any transactions that occur should be recorded immediately to avoid discrepancies. Regular reconciliations between the books and bank statements are also recommended to catch any errors early on.

The second section of the document provides a detailed breakdown of the various types of accounts that should be maintained. These include accounts for cash, receivables, payables, and inventory. Each account type is described in terms of its purpose and the specific information that should be tracked.

For example, the cash account should record all incoming and outgoing payments, while the receivables account should track amounts owed by customers. Similarly, the payables account should record amounts owed to suppliers, and the inventory account should track the quantity and value of goods on hand.

The document also discusses the importance of proper classification of expenses. It suggests that expenses should be categorized according to their nature, such as salaries, rent, utilities, and advertising. This helps in identifying trends and controlling costs effectively.

Finally, the document concludes by stressing the need for regular reviews and audits. By conducting periodic checks, the business owner can ensure that the books are accurate and that there are no unauthorized transactions. This practice is essential for the long-term financial health of the business.

The following table provides a summary of the key points discussed in the document. It outlines the main objectives of bookkeeping and the specific steps that should be followed to ensure accuracy and compliance.

Objective	Key Steps
Maintain accurate records	Use receipts and invoices for all transactions
Keep books up-to-date	Record transactions immediately
Regular reconciliations	Compare books with bank statements
Proper classification of expenses	Categorize expenses by nature
Regular reviews and audits	Conduct periodic checks for accuracy

By following these guidelines, businesses can ensure that their financial records are reliable and that they are in a position to make informed decisions based on accurate data.