

GEOLOGICAL SOCIETY OF NEW ZEALAND

NEWS LETTER

No. 3

January 1957

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This NEWSLETTER is edited by B. W. Collins, Secretary of the Society, and published for the information of members by the Geological Society of New Zealand, C/o New Zealand Geological Survey, P.O. Box 2110, Christchurch, C.I.

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THE SOCIETY

The Geological Society of New Zealand was founded in May, 1955. Its objects include fostering investigations in the various fields of earth science and serving as a medium for the expression of the views of New Zealand geologists. Membership is open to all those interested in the earth sciences, including all branches of geology, paleontology, mineralogy, glaciology, geophysics, seismology, oceanography, pedology, hydrology, mining, and the utilization of minerals and rock products. There is only one class of members, and the annual subscription is at present 2/6d.

OFFICERS

1956-7

President:  
Vice-President:  
Secretary-Treasurer:  
Committee:

Mr. J.W. Brodie  
Dr. R.N. Brothers  
Prof. R. H. Clark  
Dr. I. Irving  
Mr. D. Kear

Mr. H.E. Fyfe  
Dr. J.T. Kingma  
Mr. B.W. Collins

The Secretary's address is:

C/o N.Z. Geological Survey,  
P.O. Box 2110,  
CHRISTCHURCH, C.I.

THE NEWSLETTER

The Society publishes a NEWSLETTER at irregular intervals. It is hoped to bring this out about twice a year. A few copies of the first two numbers (March and November 1956) are still available on application to the Secretary.

The NEWSLETTER is edited by the Secretary, who will be pleased to receive contributions. Personal notes, short items of geological and geophysical interest, news of the mineral industries, suggestions for Society activities, reports of meetings, descriptions of recent field trips, reviews or criticisms of recent publications, letters on any relevant topic, and similar items will all be welcomed.

Unless specifically indicated, opinions expressed in the NEWSLETTER are not to be regarded as the official views of the Society.

# A NOTE ON THE HISTORY OF THE SOCIETY

At the time of the Eighth New Zealand Science Congress (Auckland, 1954) it became apparent that almost the only groups of New Zealand scientists without a specialized society to look after their interests and present their views were the earth scientists and the physicists. Chemists and engineers had long had their own institutes; agricultural scientists were catered for by societies for Animal Production, Grasslands, and Veterinary Science; anthropologists, architects, astronomers, the medical profession, foresters, geographers, horticulturalists and ornithologists all had their own societies; and there were also the newer more specialized societies for ecologists, entomologists, geneticists, psychologists, soil scientists, and statisticians.

Informal discussions had previously taken place among geologists about the desirability of forming a body to represent their science in New Zealand; but there was a general feeling that no action should be taken that would weaken the Royal Society of New Zealand, which had for some 80 years been the premier scientific society in this country and had well served the interests of

It is desired to place on record here that it was Dr. H. W. Wellman, Chairman of Section E (Geology) at the Auckland Congress, who suggested to the writer that he call a meeting of those interested in the formation of some form of organization of geologists and other earth scientists. This meeting was held in the Station Hotel, Auckland, on May 21, 1954 (the last day of the Eighth New Zealand Science Congress), and was attended by some 50 geologists, geophysicists, and pedologists. After considerable discussion a motion "that those present consider the formation of a society of geologists in New Zealand would be desirable" was carried by 33 votes to 4 (some abstained from voting, and others known to be in favour had left the meeting early). An interim committee consisting of Dr. R.S. Allan, Messrs J. Bradley, J.W. Brodie, J.P. Fox, and B.W. Collins (convener) was set up to take steps to organize a society.

The interim committee co-opted Dr. M. Gage and Messrs J.D. Campbell and D.D. Wilson, and held several meetings in Christchurch as well as keeping in touch by correspondence with the members resident in Wellington. Following up suggestions made at the Auckland meeting, the committee decided first to approach the Royal Society of New Zealand to see whether a Geological Section could be formed within the Royal Society itself. Parts of the letter sent to the Royal Society are quoted in Trans. Roy. Soc. N.Z., vol. 82, pt. 5, p. 1 x 11 (March 1955). A reply from the Secretary of the Royal Society, received in April 1955, stated:

"Member Body status for National Scientific Societies was considered at some length but the opinion of members of the Council was averse to its adoption." The letter also stated that "the question of the Royal Society being a composite body reorganized in accordance with representation from different scientific disciplines has been carefully considered and rejected ... as being dangerous on account of the possibilities of disintegration ... The Council has, after much deliberation and examination of various methods of association, considered that ..... a system of very simple and free affiliation with a minimum of obligations and a maximum of good will" would best serve the interests of New Zealand scientists.

At the New Zealand Geological Survey Staff Conference in Kaikoura in May 1955, the convener of the Interim Committee (B. W. Collins) therefore took the opportunity to call a meeting of geologists to discuss the formation of a society. The meeting was held in the Adelphi Hotel on May 11. There were present 36 persons, including representatives of the Geology Departments of Auckland and Victoria University Colleges and the Auckland and Dominion Museums.

as well as the Geological Survey. Mr. R.W. Willett was elected chairman of the meeting. After an extended discussion, a motion "that this meeting decides to proceed with the formation of a Geological Society of New Zealand" was carried unanimously. The meeting then adopted a constitution and elected officers and committee. It was decided also that those joining the Society within the next six months (up to November 30, 1955) be considered foundation members; that the initial annual subscription be 2/6d, and that all known interested persons be circularized about the formation of the Society.

There was general agreement that the Society should not compete in any way with the Royal Society of New Zealand. The question of affiliation with the Royal Society was discussed, but no decision could be made as the Royal Society had not then made any concrete proposals. (It is understood that since then the Royal Society has not proceeded with its plan for the affiliation of specialized scientific societies).

The main functions of the Geological Society were agreed to be:

- (a) to serve as a channel for the expression of the views of New Zealand geologists;
- (b) to organize if possible an annual conference; and
- (c) to assist in the organization of the Geology Section of the New Zealand Science Congresses sponsored by the Royal Society.

It was also decided that in the meantime there should be no attempt to publish a regular scientific journal.

The constitution also includes as objects:

- (a) to serve as a means of facilitating communication among members; and
- (b) to foster investigations in the various fields of earth science.

There is only one class of members, and membership is open to "all those interested in the earth sciences".

The First Annual General Meeting of the Society was held in the Gisborne Hotel on May 12, 1956, in conjunction with the Twelfth Annual Staff Conference of the New Zealand Geological Survey (to which members of the Society were invited).

Membership of the Society has grown as follows:

May 14, 1955	31
Nov. 30, 1955	91
Dec. 31, 1955	96
Apr. 30, 1956	112
May. 24, 1956	124
Dec. 31, 1956	147

An especially pleasing feature is the number of amateur geologists and persons interested in related sciences that have joined the Society.

Dec. 29, 1956

B. W. COLLINS

Blessed are they who run around in circles for they shall be known as wheels. ("GeoTimes")

GEOLOGICAL SOCIETY OF NEW ZEALAND

FINANCIAL STATEMENT

<u>RECEIPTS</u>			<u>PAYMENTS</u>		
Subscriptions, 1955	£12	19 6	Receipt books	1	10 6
Subscriptions, 1956	17	12 11	Rubber stamp	2	4 6
Donations	10	17	Cash Book		1 -
			Envelopes	1	13 9½
			Stamps	6	19 3
			Credit balance	32	14½
<hr/>			<hr/>		
£41 19 -			£41 19 -		
<hr/>			<hr/>		

The above statement covers the period from the formation of the Society in May 1955, to December 31, 1956.

Dec. 31, 1956

B. W. COLLINS.  
Hon. Treasurer

Statistics cannot substitute for poor geology.  
("GeoTimes")

Have you paid your 1956 subscription yet? If not please don't forget any longer.

AUCKLAND BRANCH

The Secretary of the Auckland Branch of the Society (Dr. R.N. Brothers, Auckland University College) has supplied the following report.

The Auckland section was formed in May, 1956, mainly for the purpose of holding meetings throughout the winter at monthly intervals. The meetings have taken the form of discussions on particular topics, with one or two "lead" speakers opening the discussion. The section was quite well supported at the four meetings held, with attendances between 20 and 25. A pleasing feature was the number of amateur geologists who were attracted and joined the Society as a result. The topics covered were: Trias-Jura of the West Coast; Pleistocene beds of Auckland; the Waitemata Group, and ignimbrites.

A FOUR - MILE GEOLOGICAL MAP OF  
NEW ZEALAND

The latest Annual Report of the D.S.I.R. contains the announcement that the Geological Survey is embarking on the production of a geologic map of New Zealand on a scale of four miles to the inch. This project will use data from existing surveys where available but will also involve additional geological work in many areas. This stocktaking of geological knowledge is planned to culminate in 1964 with the appearance of a Four Mile Geological Atlas of New Zealand.

A new geological map of New Zealand on a scale 1: 2,000,000 has also been prepared and is due for publication this year (1957). A simpler version of this map, together with a short descriptive note, will appear in the proposed National Atlas. The Geological Survey is also proceeding with the preparation of a new mineral map.

CENTENNIAL OF THE NEW ZEALAND GEOLOGICAL SURVEY

It is understood that the completion of the four-mile geological map project mentioned elsewhere in this NEWSLETTER is planned to coincide with the celebration of the Centennial of the Geological Survey. The act setting up the Survey was passed in 1864, though it seems that Sir James Hector, the first Director, did not assume office in Wellington until 1865.

An invitation has been extended to the International Geological Congress to hold its 22nd meeting in New Zealand in 1964, also to mark the centennial of the N.Z.G.S. The Government is reported to have regarded this proposal favourably, and, if the invitation is accepted, the stimulus to New Zealand geology will be considerable. The I.G.C. has only once previously met in the Southern Hemisphere - Pretoria, 1929.

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Can you get a new member for the Society?

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Geologist (to caddie): "Well, what do you think of my game?"  
Caddie: "I suppose it's all right, but I still like golf better."  
("Core Driller")

NEW ZEALAND GEOLOGICAL SURVEY  
UNPUBLISHED REPORTS

By kind permission of the Director of the N.Z. Geological Survey (Mr. R.W. Willett), we are able to announce that the following recent unpublished reports have been placed on "open file", and are available for consultation (and in some cases borrowing) by members. Enquiries should in the first instance be made to:

The Director,  
N.Z. Geological Survey,  
P.O. Box 8002,  
WELLINGTON.

"Faults in the Cook Strait Area", by  
G.J. Lensen. 14/9/56. 3pp.

"Development of Thermal Resources, Te Aroha", by  
J. Healy. October, 1956. 8pp. (duplicated)

"The Wellington Fault in the Tararua Range (N153, 157, 158, 161)", by G. W. Grindley. 5/10/56. 4pp. map.

"Pikikiruna Range, Takaka S.D., Nelson (Magnetite and Scheelite)", by W. A. Watters. 31/8/56. 5pp. map.

"Baton River Devonian," by  
G. W. Grindley. 23/8/56. 2pp.

"Wairoa Limestone, Nelson," by  
G. W. Grindley. 23/8/56. 3pp.

"Notes on the Geology of the Port Hills and Banks Peninsula," by  
B. W. Collins. 14/6/56. 6p.p. (duplicated).  
(Copies available from N.Z. Geological Survey Office,  
P.O. Box 2110, Christchurch).

Translation: "The Material and Structural Metamorphism of Coal", by M. and R. Teichmüller (Geol. Rdsch., 42 (2): 265-96; 1954). 16pp.

It is to be understood that no reference to the subject matter of these reports may be made in any publication without prior permission of the Director of the Geological Survey.

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A geologist in the course of field work got talking with one of the local identities.

"Yes", said the local man, "that rock you're standing on is 250 million and ten years old".

"How do you know it's that old?" asked the geologist curiously.

"Well, another of them geologist fellers came there back in 1946 right after the war, and he said it was 250 million years old then".

(Acknowledgements to "GeoTimes").

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If you can keep your head while everyone around is losing theirs, perhaps you just don't understand the situation.  
("GeoTimes")



INTERNATIONAL GEOLOGICAL CONGRESS

A brief report on the 20th International Geological Congress held in Mexico during September 1956, appeared in the October issue of "Geo Times", the monthly publication of the American Geological Institute. The following extracts may be of interest:

Nearly 3,500 congressists, representing the geologists of some 70 countries, gathered in Mexico for the Congress, its technical sessions and field excursions. By the end of the pre-Congress field trips, geologists from many parts of the world had made friends with people from distant places. Even the delegates from the Iron Curtain countries showed interest in friendly exchanges, so typical of the geological fraternity.

To report on the technical sessions is a completely frustrating task. The program listed over 900 papers, but between 40-50% of these were read only by title. Unfortunately, many authors were rather unco-operative in that they failed to advise the Organizing Committee that they would not be available for presentation of their papers. As a consequence, the session schedules were disrupted.

Not only did the technical sessions have competition from the Council meetings, but from concurrent field trips in vicinity of Mexico City, sight-seeing to the pyramids of Teotihuacan and elsewhere, shopping with the good wife, and talking with acquaintances old and new.

The symposium on manganese, coordinated by Dr. J. Gonzalez Reyna, was one of the best attended and most widely acclaimed portions of the program. The program listed 52 papers on manganese. The oil and gas symposium, coordinated by Ed Guzman, was also well attended, as was the symposium on geochemical prospecting arranged by Tom Lovering. The Russians pulled a surprise when they submitted at the last minute some 20 papers for the Cambrian symposium.

It was proposed in the Council by F. Blondel of France and approved that a Section of Applied Geology be made a regular part of the program of each I.G.C. A proposal by Soviet geologist Bogdanoff for a tectonic map of the world was approved and referred to a sub-commission of the Commission for the Geological Map of the world to be appointed. Also approved as a sub-commission to the geologic map commission was the Soviet-proposed sub-commission on Current Geobioclimatological Problems, and another on a World Metalogenetic Map.

After proposing an international abstracting service, Dr. H.M.B. Schurmann, Netherlands, was appointed head of a Commission on International Abstracts. The work of the Commission is expected to coordinate existing services in France, U. S. S. R. and the United States, and move on to world wide coverage. An International Committee on Geological Terminology in Spanish was introduced by G. P. Salas, Mexico, and approved.

The Leonide Spendiarov Prize, awarded to a young geologist in the country in which the Congress is held, was given to Mexican Manuel Alvarez, of the National Institute of Scientific Research and the National School of Engineering, for his work on the Tectonics of the Mexican Republic. Alvarez received his geologic training at the University of California.

Dr. T. Sorgenfrei, on behalf of the Danish Delegation, extended an invitation to the council to hold the XXIst I.G.C. meeting in Copenhagen in 1960. Cooperating closely with the



Danes will be the other Scandinavian countries - Finland, Sweden, Norway and Iceland. Field excursions to these countries are anticipated in the plans. The invitation was accepted, with the alternative proposal that the meeting be held in West Germany, should the Scandinavian plans hit a snag. Venezuela also extended an invitation for the 1960 I.G.C. The Indian Delegation, most interested in playing hosts in 1960 to the XX1st Congress are reported to have received cable confirmation of government support only minutes after the Danish invitation was accepted. An effort to reopen consideration of the matter was blocked. New Zealand made an early bid that the XX1nd I.G.C. be held in their country in 1964, when the Geological Survey of New Zealand will be celebrating its centennial.

After several committee meetings on the exchange of scientific geologic data between the Iron Curtain countries and the Western World, Dr. Rhodes W. Fairbridge of Columbia University was named to co-ordinate this exchange.

Information on the availability of the new Geologic Map of Mexico and other publications of the XXth International Geological Congress, including the World Directory of Geologists, the Symposium on Oil and Gas, the Symposium on Manganese and the Symposium on the Cambrian System may be obtained by writing the Executive Committee, XXth International Geological Congress, Balderas 36 - 302A, Mexico, D.F.

#### CONFUSION IN ANTARCTIC GEOLOGY?

(From "The Press" Christchurch, November 27, 1956)

#### ARCTIC ROCKS IN ANTARCTIC

#### U.S. Photographer's Frank

(From BRIAN O'NEILL, "The Press", correspondent with the United States Navy Task Force 43 in the Antarctic)

McMURDO SOUND, NOV. 23.

Geologists fossicking on Ross Island in McMurdo Sound in the future may be excited, perhaps a little baffled even, when they pick up a type of rock specimen whose presence in the Antarctic has not previously been recorded.

A thought that they may have stumbled on a rock which could unfold a new relationship between the South Polar continent and polar regions in the Northern Hemisphere may leap to their minds. They may be able to identify the rock as a type found in Greenland to support the theory, but if they do drift into that way of thinking they should beware - because the chances are that they are the victims of a logpull.

There is Greenland rock on Ross Island, but there is nothing indigenous about it. Half a bag of hand-sized specimens were brought to the island and scattered over the west side of it by an American photographer. The photographer was piqued with his Antarctic assignment with the United States Navy and was determined to get his own back on the basic cause of his pique - the Antarctic itself. He impishly decided that the best way of expressing his annoyance was to scatter "foreign" rocks about the place with the object of confusing existing theories of geological structure and historical relationships of the Antarctic with other lands.

# PRESERVATION OF AUCKLAND'S VOLCANOES

In view of our Society's resolution to attempt to prevent the needless destruction of important geological features, current activities in Auckland are of interest. An energetic campaign is being waged by the Historic Places Society to have controls imposed on quarrying the volcanic cones, and this is meeting with some success. Nevertheless quarrying of the scoria is proceeding at what is called an alarming rate, although it is stated that it forms a most unsuitable road metal. The society realizes that it is impossible to stop quarrying altogether, but wishes to see certain unique cones preserved and others that have been largely destroyed by excavation completely demolished.

The Society has issued several circulars giving facts about the volcanic phenomena of Auckland and quoting comments of geologists, overseas visitors, and other important persons. From one of these we learn that there are more than 63 points of volcanic activity in the Auckland district, comprising cones, craters, islands, lagoons, and a lake. The late Mr. H.E. Holland, M.P., is quoted as saying "One wonders why Auckland people have not taken action to preserve the volcanic cones around their city from destruction". Sir A.W. Hill, Director of Kew Gardens, London, said: "I think Auckland is very fortunate in its hills; they are most interesting and should be preserved with the greatest care."

In 1956 the following cones and craters had been completely demolished:

Little Rangitoto	(Remuera)
Mt. Cambria	(Devonport)
Duders Hill	(Devonport)
Waitomokia	(Ihumatso)

## Practically removed were:

Mt. Smart	(Te Papapa)
Wiri Mt.	(Wiri)
Pukeiti	(Ihumatso)
Three Kings	(Mt. Roskill)

## Heavily quarried:

Mt. Albert	(Mt. Albert)
Mt. Wellington	(Panmure)
Mt. Richmond	(Otahuhu)
Green Hill	(East Tamaki)
Otautau	(Ihumatso)
Smales Mt.	(East Tamaki)
Taylor Hill	(West Tamaki)
Pigeon Mountain	(Pukuranga)

## Slightly quarried:

Mt. Victoria	(Devonport)
North Head	(Devonport)
Mt. Eden	(Mt. Eden)
Mt. Hobson	(Remuera)
Mt. St. John	(Epsom)
One Tree Hill	(Epsom)
Mt. Roskill	(Mt. Roskill)
Mangere Mt.	(Mangere)
Mt. Robertson	(Sturges) (Otahuhu)
McLennan Hill	(Otahuhu)
Hamblins Hill	(Westfield)
Tuhimata	(Drury)

The only hills practically undamaged by quarrying were:

Albert Park	(City)
Auckland Domain	(City)
West Tamaki Head	(Glendowie)
Maungataketake	(Ihumatao)
Boulton Hills	(Mangere)

Craters:

Kohuora Hills	(Papatoetoe)
Pukekirikiri	(East Tamaki)
Styaks Swamp	(East Tamaki)

Islands:

Browns Island	(Waitemata)
Puketutu Island	(Manukau)

(Whether these craters and islands have been damaged or not is not stated, but it is reported that Puketutu has been surveyed for quarrying. The Railways Department also plans to quarry Mt. Roskill).

There are at the present time 14 quarries operating regularly on Auckland's Hills, and 4 worked intermittently. The culprits are not only private companies but include borough and county councils, the Railways Department, and the Auckland Harbour Board (the last on Rangitoto itself).

There is also a list of sea-level or drowned craters, as follows:

Onepoto Lagoons	(Northcote)
Panmure Basin	(Panmure)
Pukaki Lagoon	(Mangere)
Mangere Lagoon	(Mangere)
Geddis' Basin	(Onehunga)
(Reclaimed - now Gloucester Park)	
Orakei Basin	(Remuera)
Lake Takapuna	(Takapuna)
Lake St. John or Waitata-rua lake	(Meadowbank)

Most of these are undamaged, though some have been drained or enclosed by embankments with flood-gates. Mangere lagoon may be affected by the proposed sewage ponds of the Auckland Drainage Board.

A total of about 361 acres of land on the hills has been given to the public by benefactors, and 105 acres are at present held by local bodies as quarry reserves. These reserves would form possible domain areas after removal of scoria. (B.W.C. from information supplied by Dr. R.N. Brothers).

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"The volcanic activity is the oldest geological incident in the history of this region since the lavas include fragments of all subsequent rocks formed prior to the close of igneous activity after the invasion of the gabbros and granites which now form the rocks underlying those deposited previously". True or false? (N.B. Punctuate at will).

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The ideal committee is composed of three people, two of whom are dead. ("GeoTimes")

### RADIOACTIVE MINERALS IN NEW ZEALAND

Since the discovery in November 1955, by Messrs F. Cassin and W. Jacobsen of a radioactive deposit in the Buller Gorge, near Batty's Creek there has been increased interest in prospecting for uranium and other radioactive minerals. Analysis of specimens by the Dominion Laboratory showed that the rock contained sufficient uranium for economic working provided the deposit were extensive, and extraction of the metal presented no great difficulties.

Examination by officers of the Geological Survey and the Mines Department showed, however, that the deposit was only 4 ft. to 9 ft. wide and could be traced only a few chains. A sample collected across the "lode" contained a lower percentage of uranium than the first sample.

The "lode" occurs in the Hawks Crag breccia, and the radioactivity appears to be localized in the ferruginous matrix. The uranium is so finely distributed that attempts, both in New Zealand and in Great Britain, to separate the mineral concerned have been unsuccessful. Possibly the uranium is present not as a distinct mineral but as a fine dissemination of absorbed material.

Further study, in both field and laboratory, is required to ascertain the nature and source of the uranium. The "lode" appears to be worth driving on, for at depth, where the rock is less oxidized, the uranium content may be higher. It is possible that there may be a primary uranium mineral at depth.

A find of a radioactive mineral in the Haast Valley below Square Top by Mr. P. Corcoran was announced about the same time as the Buller Gorge discovery. Analysis of a sample from a boulder showed that the mineral contained a fairly low percentage of thorium. An examination of the area by a Geological Survey officer in the company of Mr. Corcoran failed to find the outcrop from which the boulder came, but further prospecting in the Haast district is warranted. The radioactivity of the Haast rocks is due to the presence in the migmatite or gneiss of the mineral thorite (thorium silicate). No uranium minerals were found.

Several prospecting claims have been taken up in the Buller Gorge area during the last year. The most active prospecting has been done by the Nelson company Lime and Marble Ltd., whose managing director is Mr. T.J. McKee of Mapua. This company established a base camp by helicopter in difficult country above the Buller Gorge last October, from which further prospecting of its 5000 acre claim will be done.

Applications for further claims made recently include one for 10,000 acres by Prof. G.J. Williams of Dunedin, and three by Mr. R. Searle of Australia (for 10,000, 8000, and 8000 acres) - all reported to be on the south side of the Buller River near Hawks Crag and the site of the original find by Messrs Cassin and Jacobsen. The greater part of the Lime and Marble Company's claim is understood to be on the north side of the river, but they also have 900 acres on the south side, which has been only partly explored so far.

According to newspaper reports the claims applied for by Prof. Williams and Mr. Searle are on behalf of the Rio Australian Exploration Proprietary Ltd., which has been concerned with the development of uranium at the Mary Kathleen lease, near Mount Isa in Queensland. Rio Australian is a subsidiary of the Rio Tinto Company, Ltd., one of the world's largest mining organizations.

Mr. S.B. Dickinson, who visited the Buller district last November with Prof. Williams and Mr. Searle, has recently retired from the position of Director of the Department of Mines of South Australia, and is now managing director of Rio Australian.

Another recent visitor to the Westport district is Dr. C. B. Campbell, of the United Kingdom Atomic Energy Authority.

This account has been compiled from information published in the 30th Annual Report of the D.S.I.R. (1956) and newspaper articles.

B. W. COLLINS

INTERNATIONAL ASSOCIATION OF HYDROLOGY  
COMMISSION ON SUBTERRANEAN WATER

The International Association of Hydrology is part of the International Union of Geology and Geophysics (U.G.G.I. - from the initials of its French title). The Association is composed of three commissions and two committees, whose corresponding members in New Zealand are as follows:

COMMISSIONS:

Surface Water: Mr. E.C. Schnackenberg,  
Soil Conservation and  
Rivers Control Council,  
Wellington.  
Subterranean Water: Mr. B.W. Collins,  
Geological Survey,  
Box 2110, Christchurch.  
Snow and Ice: Mr. N.G. Robertson,  
Meteorological Office,  
Wellington.

COMMITTEES:

Land Erosion: Mr. D.A. Campbell,  
Soil Conservation and  
Rivers Control Council,  
Wellington.  
Bibliography: Mr. W.L. Newnham,  
Chairman, S.C. & R.C.C.,  
Wellington.

A circular concerning the next assembly of the Union and the programme of the Commission of Subterranean Water has recently been received from Dr. Stevenson Buchan (Geological Survey of Great Britain), who is secretary of the Commission.

The next assembly is to be held in Toronto, Canada (not Buenos Aires as previously proposed), from 3rd to 14th September, 1957.

The subjects to be discussed are as follows:

- (1) Methods used in the production of hydrogeological maps, showing the occurrence, quantity, and quality of ground water.
- (2) Outlines of methods for estimating ground-water resources (excluding geophysical methods).
- (3) Contamination of ground water by saline waters, industrial

wastes, mine or oil-well-waters, etc.

- (4) Methods of using radioactive and other tracers to determine the direction and rate of movement of ground water.
- (5) The role of vegetation and cultivation of a catchment in the hydrological cycle.

The last question will be discussed at a joint meeting of the Surface Waters, Subterranean Water, and Land Erosion Commissions.

Papers are now invited on these questions. Reports or papers on subjects other than those listed may be presented provided they are sufficiently interesting from a scientific point of view.

It was the unanimous recommendation of the Commission at the Rome Assembly (September 1954) that papers should be submitted only through National Committees, and that the latter should select and forward only those contributions that are original and considered to be of outstanding scientific merit. It is proposed to take steps to set up a National Committee on Underground Water for this purpose during the ANZAAS Meeting in Dunedin.

Titles of papers that have been accepted by the National Committees, together with names of authors and abstracts of 250 words, should reach Prof. L.J. Tison, Secretary of the International Association of Hydrology, 61 Rue des Ronces, Gentbrugge, Belgium, by April 1, 1957.

The circular states that papers should not exceed 20 typed pages of 360 words each, double spaced. Figures and especially photographs should be kept to the absolute minimum. Page size is  $7\frac{1}{2} \times 4\frac{1}{2}$  inches. Complete papers, in triplicate, should reach Prof. Tison by June 1, 1957.

Each adhering country is also required to present a national report. Suggestions for material to be included in this report would be welcome.

Would anyone intending to present a paper please get in touch with B. W. Collins, Geological Survey, P.O. Box 2110, Christchurch.

Dec. 28, 1956

B. W. COLLINS

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A university student in the recent exams is reported to have defined permeability as the ability of a rock to pass water.

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Then there was the lass who thought a meadow lark was a farmers' picnic.

("Core Driller")

# RADIOCARBON DATING

Two officers of the New Zealand Department of Scientific and Industrial Research (Messrs: T.A. Rafter and G.J. Fergusson) established a few years ago the first radiocarbon laboratory in the Southern Hemisphere, and one of the first four in the world. In this laboratory, using the method first developed by Prof. W. F. Libby and co-workers at the University of Chicago, Messrs: Fergusson and Rafter have been able to date accurately samples of organic material that were formed up to 45,000 years ago.

In its original form the method could be used on samples up to only 20,000 years old, but the New Zealanders have so improved the techniques and methods that samples up to 45,000 years old can now be accurately dated. When the apparatus and techniques used in New Zealand were described at a recent conference in the U.S.A. they were referred to by an American scientific journal as "the high point of the conference".

This method of dating samples of once-living material depends on the fact that atmospheric carbon dioxide contains a small constant proportion of radioactive carbon ( $C^{14}$  or  $14C$  - the more common stable isotope being  $C^{12}$ ). Radiocarbon is constantly being produced in the upper atmosphere by transmutation of nitrogen ( $14N$ ) by cosmic rays, which are continually entering the earth's atmosphere from outer space. The atoms of radiocarbon so produced combine with oxygen to form radioactive carbon dioxide, which becomes distributed by air currents. The proportion of radioactive carbon dioxide in the atmosphere has, over a long period, become constant because the production of radioactive carbon atoms is balanced by their decay. (This was true until recently, but in the last few years an increase in atmospheric radiocarbon due to atomic and H-bomb tests has been detected).

Radioactive carbon dioxide is absorbed by plants and animals from the air and built into their tissues in the same way as ordinary carbon dioxide, so that in living organisms the ratio of radioactive to ordinary carbon is almost the same as that existing in the atmosphere. On the death of the plant or animal the radioactive carbon proceeds to decay into ordinary carbon at a constant and uniform rate. After 5,568 years half the original number of atoms of radiocarbon have changed to the stable isotope. (The period 5568 years is known as the "half life" of  $14C$ ). The measurement of the ratio of radioactive to ordinary carbon in a sample of wood or other carbonaceous material (peat, shells, bones, etc.) can therefore be used to determine the time that has elapsed since it was living. After the death of an organism there is no further interchange between the atmosphere and the organism (especially if the remains are buried in impermeable sediments). Thus if the ratio is found to be only half that of a living plant, we would know that the material was 5568 years old; if one quarter, then it would be 11,136 years old, etc.

The measurement of this ratio (of radioactive to ordinary carbon) is in practice a very difficult problem owing to the very small amount of radiocarbon present. Very sensitive apparatus must be used (similar to the Geiger counters used in the detection of radioactive minerals). The counters must be surrounded by heavy lead or iron shields to exclude extraneous radioactivity while the sample itself must be purified by exacting techniques to remove all traces of other radioactive contaminants.

Other difficulties have been encountered. The slight increase in atmospheric radioactivity due to atomic and H-bombs has already been mentioned. It has also been suggested that the



industrialization of the last 70 years or so, accompanied by the production of vast quantities of carbon dioxide by the combustion of coal and oil (low in radiocarbon because of their great age), should have diluted the atmosphere. Investigations, using trees from both the northern and southern hemispheres, from which 20-year sections were dated back for 300 years, have shown that the effect if any has been the same in both hemispheres. This may indicate a rapid exchange of atmospheric gases around the world.

Anomalous results have been obtained when dating carbonaceous specimens other than wood - i.e., sea shells, and moa and seal bones. The anomalous ages were explained as due to chemical, fractionation processes taking place and enriching or depleting the amount of radiocarbon incorporated in the organic material by the biological mechanisms of shell and bone formation. Because of these processes, recently-dead animal tissue and recently-dead timber give (uncorrected) ages differing by 280 years. The correction factors are now known, however, and differences in type of material can be allowed for.

This article has been compiled mainly from recent annual Reports of the D.S.I.R. In the next NEWSLETTER it is hoped to include a list of recent results of radiocarbon dating of New Zealand materials and some account of their geological significance.

Dec. 28, 1956.

B. W. COLLINS.

#### PERSONAL NOTES AND NEWS

We are glad to welcome back to New Zealand Mr. H.E. Fyfe, chief geologist, N.Z. Geological Survey, who recently attended the 20th International Geological Congress in Mexico. He unfortunately had to spend a short time in the Stanford University Hospital in California but has now recovered.

Congratulations to Dr. R.A. Couper, who after two years' research at the Sedgwick Museum, Cambridge, has been admitted to the degree of Doctor of Philosophy. Dr. Couper has recently returned to resume work as paleobotanist at the Geological Survey.

Dr. H.J. Harrington, Geological Survey, Wellington, is the New Zealand correspondent for the "Journal of Glaciology".

A recent visitor to this country was Prof. K.E. Caster, of the University of Ohio, Cincinnati, who was particularly interested in our Devonian rocks and fossils. During a visit to the Reefton district, a party consisting of Dr. and Mrs. Caster, Prof. R.S. Allan, Dr. C.A. Fleming, and Mr. R.P. Suggate discovered the first New Zealand specimen of the obscure echinoderm group Carpoidea. The fossil belongs to a new family and new genus, and is reported to be more like Ordovician than Devonian forms of this rare group. It was found in the Reefton mudstone in Rainy Creek on August 10, 1956.

Mr. J.M. Dorreen, a graduate of Canterbury University College, and recently exploration manager for Standard Vacuum Oil Co., in India, has been appointed to organize oil exploration in Denmark. From 1939 to 1941 Mr. Dorreen was employed by the New Zealand Petroleum Co., in the Gisborne district, and later was in Peru with the Standard Oil Co. of New Jersey. Mr. Dorreen has recently been visiting New Zealand on leave. He expressed the opinion that the renewed efforts to locate oil in New Zealand should have

better chances of success than any of the earlier exploration work. New techniques of oil exploration and drilling made it much less likely that oil would escape discovery if it existed in any region.

Prof. F.J. Turner, now chairman of the department of geology at the University of California at Berkeley, is now in New Zealand and will attend the ANZAAS Meeting in Dunedin. Prof. Turner was formerly lecturer in geology at the University of Otago.

Other overseas geologists who will be attending ANZAAS include Dr. Neil H. Ludbrook (micropaleontologist, Geological Survey of South Australia), Mr. L.C. Moskes (supervising geologist, Bureau of Mineral Resources, Canberra), Mr. J.E.H. Rishworth (Geological Survey, Malaya), Prof. R.T. Frider (University of Western Australia, Perth), Dr. Dorothy Hill (University of Queensland, President of Section C), Mr. P.B. Nye (Director, B.M.R., Melbourne), Mr. E.D. Gill (National Museum, Melbourne). Several others have offered papers. All visiting geologists we extend a warm welcome to this country, and express the hope that they will have time, before, during, or after the ANZAAS meeting, to make or renew personal contacts with New Zealand geologists.

#### A.N.Z.A.A.S. SHERRY PARTY

The Sherry Party sponsored by the Society for members of Section C (Geology) at the A.N.Z.A.A.S. Meeting in Dunedin has been arranged for 5.15 p.m. on Thursday, January 17, in the Geology Department, University of Otago. Overseas geologists and their wives will be the guests of the Society. It is hoped that as many New Zealand geologists and their wives as possible will also attend. Donations received so far towards the cost of the party total £10.17.0.

It is certain that the cost of this function will be far greater than this, and further contributions will be gratefully received. It will probably be necessary to impose a levy on New Zealanders attending. Arrangements will be finalized when numbers and costs are more definitely known.

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Wife to husband at party: "Herb, don't you take one more drink. Your face is already getting blurred". ("Core Driller")

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Early to bed and early to rise - and you miss the most interesting people. ("Core Driller")

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An isotope is a substance which when injected into a scientist produces a paper. ("GeoTimes")

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As every field geologist knows, Kilroy was a bed-ridden invalid compared with the prospector (or, in New Zealand, we might say, compared with Alex. McKay). ("GeoTimes")

---

What about that contribution to the NEWSLETTER? The response so far has not been very encouraging.

GEOLOGICAL SOCIETY OF NEW ZEALAND

MEMBERS.

(At December 31, 1956).

(For abbreviations see end of list)

* Allan, Prof. R.S.	P S	C.U.C. Box 1471, Christchurch
* Annear, E.T.H.	G	N.Z.G.S. Box 90, Greymouth
Arnold, H.C.	G, Oil, Pet	Shell-D'Arcy-Todd,
Ashworth, R.K.	Ped, M	35B Buller Street, New Plymouth
Bakker, G.	G, Gph	"Kapiti Gardens", Main Road
Barron, R.H.	Ec	South, Paraparaumu
Bathey, Dr. M.H.	Pet, V	Shell-D'Arcy-Todd, Box 1873,
Baumgart, I.L.	V, Ped	Wellington
Beck, A.C.	G, Gph	A.U.C.; 7 Kiterawa Road,
Benney, C.H.	O, Ec	Remuera, Auckland
Benson, Dr. W.N.	G	Auckland Institute and Museum
Berry, Dr. J.A.	Pumice	D.S.I.R., Box 8018,
Boreham, Miss A.E.	P	Wellington.
Bossard, Dr. L.	G, T, Ec	N.Z.G.S. Box 8002, Wellington
Boult, A.E.	G	M.D., Wellington
Bowen, F.	G, C, Pl	O.U., Box 56, Dunedin
Bradley, J.	St, Ec	4 George Street, Napier
Brodie, J.	G, O	N.Z.G.S., Box 8002, Wellington
Brothers, Dr. R.N.	G, Pet	24 Edmund Street, St. Heliers,
Brown, Dr. D.A.	P, S, F	Auckland
Bunby, H.S.	Eng	N.Z.G.S. Box 8002, Wellington
Campbell, J.D.	G, Meso P, S	V.U.C.; 14 Penny Avenue,
Canterbury University	G	Wellington
College Librarian	Gm, Ped	N.Z.O.I.; 26 Croydon Street,
Gaswell, E.J.S.	G, Hy	Wellington
Chandler, P.M.	St	A.U.C. Box 2553, Auckland
Clark, Prof. R.H.	G	O.U., Box 56, Dunedin
Clarke, Prof. E de C.	G, Gph, O	Metropolitan Drainage Board,
Clinton, C.O.	G, Pl, Hy, Ec,	Box 208; Auckland
Collins, B.W.	Eng, Oil	C.U.C. Box 1471, Christchurch
Coombs, Prof. D.S.	M, Pet	Box 1471, Christchurch
Cossens, G.G.	G	N.Z.G.S.; 233 Tinakori Road,
Cotton, Dr. C.A.	Gm	Wellington
Craze, G.E.	M	N.Z.G.S. Box 60, Invercargill
Cutler, E.J.B.	Ped	V.U.C., Box 196, Wellington
Dibble, R.R.	Gph	O/- W. Scott, P.B., Te Awamutu
Doherty, W.	C	D.S.I.R., Box 2110,
Double, K.W.W.	G, Ped	Christchurch
Eiby, G.A.	Gph, T	N.Z.G.S., Box 2110,
Firth, C.W.	Eng, Gph	Christchurch
Fleming, Dr. C.A.	G, P	O.U., Box 56, Dunedin
Fox, J.P.	G, Ped	41 Hope Street, Dunedin
Fyfe, H.E.	G	2 Manuka Avenue, Lower Hutt
Gage, Dr. M.	Gl, Gm	125 Peel Street, Westport
Garlick, R.K.	G, S, M, P,	S.B., Box 733, Dunedin
	Pet	S.O., Kelburn, Wellington
		M.D.; 22 Mills Street,
		Runanga
		S.B., Box 8001, Wellington
		S.O., Kelburn, Wellington
		Waterworks Engineer,
		Auckland City Council
		N.Z.G.S.; 42 Wadestown Road,
		Wellington
		Waihaorunga, No. 7 R.D.,
		Waimate
		N.Z.G.S., Box 8002, Wellington
		C.U.C., Box 1471, Christchurch
		68 Hamilton Avenue,
		Christchurch

Glennie, K.W.	St, Oil	Shell-D'Arcy-Todd, Box 1873, Wellington
Gordon, F.R.	G, Ec	C/- M.O.W. Box 451, Dunedin
Graham, Dr. J.J.	S, MiP	Standard University, California, U.S.A.
Grange, Dr. L.I.	G, V, Ec	21 Colway Street, Wellington
Grant-Mackie, J.A.	P, S, T	A.U.C., Box 2553, Auckland
Grant-Taylor, T.L.	G, Hy	N.Z.G.S., Box 8002, Wellington
Gregg, D.R.	G, Gph	N.Z.G.S., Box 499, Rotorua
Grindley, G.W.	St, S.	N.Z.G.S., Box 8002, Wellington
Gudex, M.C.	G, Ped	6 Union Street, Hamilton
Gunn, E.M.	Gl, T	O.U., Box 56, Dunedin
Gutierrez, F.I.	Antarctic G MiP	University of the Philippines, Quezon City
Hamilton, D.	Sed, S, P	O.U. Box 56, Dunedin
Hamilton, Dr. W.M.	G	D.S.I.R., Box 8018, Wellington
Harrington, Dr. H.J.	G, Pet, C	N.Z.G.S., Box 8002, Wellington
Hatherton, Dr. T.	Gph	G.D., Box 8005, Wellington
Hay, R.F.	G, S, St	N.Z.G.S., Box 8002, Wellington
Healy, J.	G, Gph, V	N.Z.G.S., Box 499, Rotorua
Heinz, W.F.	G, M	14 Cox Street, Merivale, Christchurch
Hope, J.M.	G, C	M.D., Granity, Westport
Hopgood, A.M.	St, Pet, S	A.U.C.; 9 Batt Street, Palmerston North
Hornibrook, N. de B.	MiP, S	N.Z.G.S. Box 8002, Wellington
Innes, G.D.	G, Hy	N.Z.G.S., Box 2110, Christchurch
Irving, Dr. J.	G, Oil	Shell-D'Arcy-Todd, Box 1873, Wellington
Jaekill, Dr. R.	T, Pg, Gph Oil	Shell-D'Arcy-Todd, Box 1873, Wellington
Jobberns, Dr. G.	Gm	C.U.C., Box 1471, Christchurch
Johnston, J.F.	M	Box 3201, Auckland
Kear, D.	Ec, S, Met	N.Z.G.S., Box 11, Ngauruawahia
Kerry, E.	C	Whatawhata Campbell Coal Mine, P.B., Frankton
Keyes, I.W.	G, P	N.Z.G.S., Box 8002, Wellington
Kingma, Dr. J.T.	G, MiP	N.Z.G.S., Box 8002, Wellington
Lensen, G.J.	T, Pg, Gm	N.Z.G.S., Box 8002, Wellington
Leopard, A.E.	Pet	N.Z.G.S., Box 8002, Wellington
Lillie, Prof. A.R.	G	A.U.C., Box 2553, Auckland
Lloyd, M.H.	Pet	A.U.C.; 25 Niccol Avenue, Devonport, Auckland
Maasland, P.	G, St	1A Tiri Road, Milford, Auckland
McCraw, J.D.	Ped	S.B., Box 67, Alexandra
McDowall, I.C.	G, M, Oer	P.A.C.R.A.; 53 Ranui Terraco, Tawa Flat, Wellington
McKee, T.J.	Ec, Min, Gm	"Ridgeways", Mapua, Nelson
McKellar, I.C.	G, Meso St & P, Pl, Gph	N.Z.G.S., Box 60, Invercargill
Mackie, J.B.	Pet, St, Eng,	O.U., Box 56, Dunedin
Maling, Dr. P.B.	Ec, Gph Gm, St, P	150 Heaton Street, Christchurch
Marshall, F.W.	G, Gm,	M.D., Ohai
Marwick, J.	G, P	70 Cambridge Terrace, Lower Hutt
Mason, A.P.	G, P	109 Shelly Beach Road, Ponsonby, Auckland
Mason, Dr. B.H.	G, Gc	Amer. Mus. Nat. Hist., New York 24, U.S.A.
Mead, A.D.	St, V, Ped	133 Owairaka Avenue, Auckland

Miller, W.S.	G, Min	Hepburn Road, Glen Eden, Auckland
Modriniak, N.	G, Gph	G.D., Box 8005, Wellington
Moore, W.R.	G, St	V.U.C., Box 196, Wellington
Munden, F.W.J.	G1, St	1 Wainui Street, Pabson, Westland
Mutch, A.R.	Meso & Paleo S & P	N.Z.G.S., P.O. Box 60, Invercargill
Nash, J.A.D.	G	D.S.I.R., Box 8018, Wellington
Nicholson, Mrs. H.M.	Sed Pet, P	Raleigh Road, Northcote, Auckland
Oborn, L.E.	G, Hy	N.Z.G.S., Box 2110, Christchurch
Odell, Dr. N.E.	St, V, Met, Gm, G1	C/- Clare College, Cambridge, England
Ongley, M.	G	Waiwhetu Road, Lower Hutt
Paltridge, I.M.	G, Pet	A.U.C., Box 2553, Auckland
Pantin, Dr. H.	C	N.Z.O.I., Box 8018, Wellington
Pick, M.	G, Oil	Todd Bros., Lowe Street, Gisborne
Player, R.A.	Meso, Oil	111 Vauxhall Road, Devonport, Auckland
Priestley, J.E.	Cer, M	Box 14, Huntly
Pullar, W.A.	Ped, F	S.B., Box 468, Gisborne
Raeside, J.D.	Ped, M, Gm	S.B., Box 733, Dunedin
Rahim, A.J.	G, Gm	111 Clyde Street, Dunedin
Reed, J.J.	G, Pet	N.Z.G.S., Box 8002, Wellington
Rich, C.C.	Gm, Pl, St, S, Oil	V.U.C., Box 196, Wellington
Robb, H.J.	G, C	Whitecliffs, Canterbury
Robertson, Dr. E.I.	St, Gph	G.D.; 21 Te Hiko Street, Titahi Bay, Wellington
Rowntree, J.B.	Eng	Metropolitan Drainage Board, Box 208, Auckland
Sara, W.A.	G, C	N.Z.O.S., Box 90, Greymouth
Schofield, J.C.	S, St, Hy	N.Z.G.S., Box 11, Ngarawahia
Scott, Miss P.C.	G, Ped	No. 4 R.D. Springston, Christchurch
Seal, K.E.	M, Cer	Box 4, New Lynn, Auckland
Searle, E.J.	V	A.U.C., Box 2553, Auckland
Selkirk, R.C.	V, Gm, T	32 Victoria Road, Papatoetoe, Auckland
Shaw, J.C.	G, V	N.Z.G.S., Box 8002, Wellington
Steiner, A.	Pet, M	N.Z.G.S., Box 8002, Wellington
Stephens, J.N.	Ec, Gc, Gph	4 Bruce Street, Mosgiel
Stevens, G.R.	Pl, P, Sed	N.Z.G.S., 25 Collingwood Street, Lower Hutt
Stewart, W.L.	G, Gm	170 Hastings Street, Waltham, Christchurch
Suggate, R.P.	G, Pl, C	N.Z.G.S., Box 2110, Christchurch
Taylor, N.H.	St, Gm, Pl, Ped	S.B., Box 8001, Wellington
Taylor, Dr. S.R.	Gc, Pet	Dep. Geology, University Museum, Oxford, England
Thompson, B.N.	G	N.Z.G.S., Box 499, Rotorua
Thomson, Miss S.	G	37 Messines Road, Karori, Wellington
Todd, B.	Oil	Todd Bros., 110-116 Courtenay Place, Wellington
Turner, Prof. F.J.	Pet, Gc	Univ. California, Berkeley 4, California, U.S.A.
Uttley, Dr. G.H.	G, P	292 Main Road, Wellington. W.3
Vella, P.	Oil	C/- British Petroleum Co. Wellington
Vose, W.	M, Cer	Western Hutt Road, Belmont, Lower Hutt
Vucetich, C.G.	Ped, V	S.B., Box 499, Rotorua

* Ward, W.T.	Gm, St, Ped	S.B., Box 1273, Christchurch
* Warren, G.	G	N.Z.G.S.; 68B Clyde Road, Christchurch
* Warren, Miss M.	G, M, Ped	No. 1 R.D. Greendale, Christchurch
* Watters, Dr. W.A.	Pet	N.Z.G.S., Box 8002, Wellington
* Webb, C.T.T.	G	N.Z.G.S., Box 8002, Wellington
* Wellman, H.W.	T, Pl, Oil	366 Waiwhetu Road, Lower Hutt
* Willett, R.W.	Ec, Eng, Pl	N.Z.G.S., Box 8002, Wellington
* Williams, Prof. G.J.	Ec, Eng, Min	O.U., Box 56, Dunedin
* Wilson, D.D.	Ec, Pl	Ashley Downs, Clinton, South Otago.
* Wilson, S.H.	Gc	D.S.I.R., Box 8018, Wellington
* Woodzicki, A.	Ec, Gph	O.U., Box 56, Dunedin
* Wood, B.L.	S, T	N.Z.G.S., Box 60, Invercargill

Foundation Members (admitted before November 30, 1955)

ABBREVIATIONS:

(1) FIELDS OF INTEREST:

C	Coal
Cer	Ceramics
Ec	Economic Geology
Eng	Engineering geology
F	Field geology
G	General geology or geology
Gc	Geochemistry
Gl	Glaciation
Gm	Geomorphology
Gph	Geophysics
Hy	Hydrology (including ground water)
M	Mineralogy
Meso	Mesozoic
Met	Metamorphism
Mi	Micro
Min	Mining
O	Oceanography
Oil	Oil, Petroleum geology
P	Paleontology
Paleo	Paleozoic
Ped	Pedology, soil science
Pet	Petrology
Pg	Paleogeography
Pl	Pleistocene geology
S	Stratigraphy
Sed	Sedimentation, or sedimentary
St	Structural geology
T	Tectonics
V	Volcanology (including ash showers)

(2) ADDRESSES:

A.U.C.	Auckland University College
C.U.C.	Canterbury University College
D.S.I.R.	Department of Scientific and Industrial Research
G.D.	Geophysics Division, D.S.I.R.
M.D.	Mines Department
M.O.W.	Ministry of Works
N.Z.G.S.	N.Z. Geological Survey, D.S.I.R.
N.Z.O.I.	N.Z. Oceanographic Institute

(2) ADDRESSES:

O.U.  
P.A.C.R.A.

R.D.  
S.B.  
S.O.

V.U.C.

Otago University  
Pottery and Ceramics Research  
Association

Rural Delivery  
Soil Bureau, D.S.I.R.  
Seismological Observatory,  
D.S.I.R.

Victoria University College

NOTES:

The total number of members listed above is 147. As far as possible an indication has been given of the main fields of interest of each member. Also shown are the organizations to which members are attached (if any), and their preferred mailing addresses. Members are asked to advise the Secretary of any changes desired in future lists.

The omission of the following name from the list of new members in NEWSLETTER No. 2 is regretted:

E. Kerry,  
Whatawhata Campbell Coal Mine,  
Private Bag,  
Frankton.

Further new members in the last two months are:

Baumgart, I.L.  
Bunby, H.S.  
Canterbury University College Librarian  
Cutler, E.J.B.  
McCraw, J.D.  
Rowntree, J.B.