HISTORICAL STUDIES

GROUP

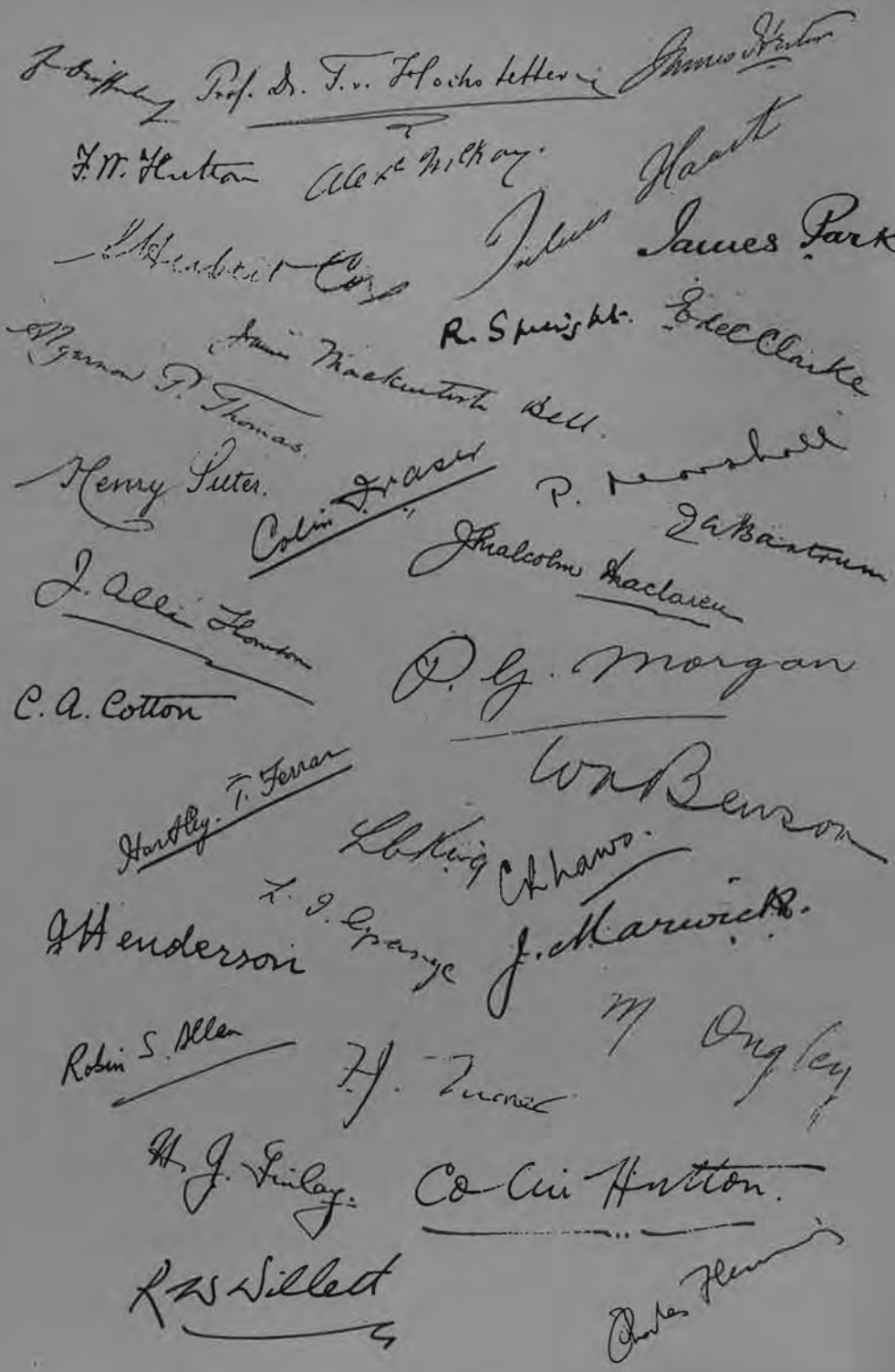
NEWSLETTER

No 27

SEPTEMBER 2003

ISSN - 1174-9989

GEOLOGICAL SOCIETY
OF NEW ZEALAND



The best geologist is he who has seen the most rocks

- H. H. Read

Our Introductory Quotation :

We found this in a report entitled 'Retiring President's Ramblings' in Newsletter No. 32 of The International Commission on the History of the Geological Sciences published in 2000. The retiring president was Hugh Torrens of U.K. and it is worthwhile quoting the full paragraph in which he quotes Read –

> I have been recently reading a fascinating lecture given by Herbert Harold Read (1889-1970) and first published in 1952. In this, Read made the interesting claim that "that the best geologist is, other things being equal, he [she] who has seen most rocks, so that the experience of a geologist in fieldwork is of fundamental importance". His lecture was first published as 'The Geologist as Historian' in *Scientific Objectives: A Selection of Lectures Given at Imperial College, London 1949-1951* (London, 1952). Read rightly pointed out what a wonderful school subject geology should be, and urged how vital it is that geologists view their subject as being the history of the earth. So much has since changed, The computer has rapidly and (supposedly) rendered field experience 'merely expensive', the history of the earth is seen as much less important than an understanding of the processes which the earth has, and continues to, undergo, while geology itself is in serious trouble as a university-level subject in Britain, let alone any improvement being observable in its status as a school subject.

H.H.Read finished his career at Imperial College, London. Many New Zealand geologists of the older generation will have first come across his name when they cut their mineralogical teeth on Rutley's Elements of Mineralogy. Read revised editions of this book no less than eight times. Rutley's Mineralogy was first published in 1874. My own copy, purchased over sixty years ago, is the twenty third edition, published in 1939 and revised, of course, by H.H.Read. Read was prominent in the 'Granite Controversy' of fifty years ago.

In previous numbers of our newsletter we have quoted several geologists on the importance of field work. They go back as far as Petrus Severinus in 1571 (Newsletter 14) and include Archibald Geikie in 1892 (Newsletter 12) and David Page in1869 (Newsletter 19).

There is also much food for thought in other parts of Hugh Torrens paragraph as given above.

* *

MALCOLM MACLAREN

New Zealand's Most Newsworthy Geologist

In Historical Studies Group Newsletter No 8 ([Mason] 1994) we gave a brief account of the life and work of Malcolm Maclaren under the subtitle 'A Forgotten New Zealand Geologist'. Summarizing the information given in that article –

Malcolm Maclaren was born in Thames in 1873 which makes him the first New Zealand born geologist. He was one of five brilliant students who graduated in geology from Auckland a century ago (Mason, 1998). In the early years of last century he was offered the position later given to James Mackintosh Bell but declined for financial reasons. After working for the Geological Survey of Queensland and then the Geological Survey of India Maclaren, in 1906, began a life-long career as a consulting mining geologist where he gained an outstanding reputation. Following his death in 1935 the obituaries made frequent use of superlatives such as "unique", "remarkable". "outstanding", "pre-eminent", "extraordinary", "striking ability". Unfortunately most of his research remained in confidential company files and was never published. For this reason he is almost entirely unknown to the present generation of New Zealand geologists.

We ended that earlier article with the promise of a more detailed account to follow. Unfortunately it has not been possible to deliver fully on that promise as information on his working life has not been forthcoming from the sources involved. However we do have additional material received from family members,mainly press cuttings and diaries and these form the basis of the present account.

For the major part of his consulting career Maclaren was associated with the Goldfields Group which had been founded by Cecil Rhodes. This group became a world-wide organization with a hundred subsidiaries and 100,000 employees. (Cartwright, 1967). It is a measure of Maclaren's standing with the group that he was frequently called to London for top-level discussions with people such as Lord Harris, Lord Brabourne and John Agnew, the successive chairmen of the group during his connection with it. Agnew was actually an old friend of Maclaren, having been at Otago School of Mines about the same time.

He had the ears of governments as well as the great mining groups and his advice was frequently sought in decisions of major international importance -

> "..... he is a man whose work must be judged not by what he published but by the influence which he exercised in the counsels and on the policy of the leaders of the industry whom he advised."
>
> - Anon, 1935 A

For most of his professional life the name of Maclaren seldom figured in the scientific journals but it appeared frequently in the newspapers and the mining press. He was undoubtedly New Zealand's most newsworthy geologist ever and from his daughter—

in-law we have received over one hundred scrap-book pages of newspaper cuttings dealing with his activities. Extracts from some of these are in the montage opposite.

In the early years of last century Maclaren published a number of longer articles and one book (Maclaren 1908) but once he started his career as a consulting mining geologist almost all his research remained unpublished in confidential company files and such longer items as did appear usually dealt with topics outside his professional sphere of mining geology.

One interesting exception was that with J.Allan Thomson on the Kalgoorlie Goldfield (1913). Interesting for several reasons. The survey was initiated by Herbert Hoover, later President of the United States of America. Thomson was employed by Maclaren as a petrologist and that employment prevented him from accepting the position at Victoria University College later obtained by Charles Cotton. It was his work on the Kalgoorlie petrology that earned Thomson his D.Sc from the University of New Zealand (Mason, in Stevens 1998)

Amongst the items received from the Maclaren family is a typewritten manuscript of 75 pages "The General Relationships of Auriferous Rocks by J.Malcolm Maclaren, B.Sc.,F.G.S."(Maclaren 1906) This was never published except insofar as its information would have later been included in his book (Maclaren 1908). In fact it is really a synopsis of that book. Its contents show that it was written in 1906 the year before he was awarded a D.Sc by the University of New Zealand. The last page is a list of his publications and is headed "List of Papers attached and to be taken with this paper" suggesting that the whole was his doctorate thesis.

(The obituaries give a surprising variance of statements on Maclaren's D. Sc thesis . For Anon 1935B it was work on "certain aspects of gold deposition:" which he had carried out whilst at the Royal School of Mines in 1901-2. Anon 1935 A claims it was a series of papers on gold mining in the British Isles published in The Mining Journal.. Anon 1935D says that it was awarded for his book on Gold while for Cullis 1935 it was his paper on the Coromandel Goldfields [Maclaren 1900]. Anon 1935C and Fermor 1935 state that the degree was obtained from London University.)

Apart from his book (Maclaren 1908) most of his scientific publications were of the short note type, usually in mining journals, but two stand out ; that on gold in Great Britain and Ireland (Maclaren 1903) and that on the Kalgoorlie Goldfield (Maclaren and Thomson 1913)

This article could also have been given the title "Malcolm Maclaren - the World's Most Travelled Man" for that is what he claimed to be, and justifiably so, towards the end of his life. He was a mileage millionaire by 1929 and I mean miles and I am talking about surface travel, not air travel.

In the mid-1920's his wife compiled a series of tables analysing his travels up to that time. There are 28 tables in all and they make interesting reading. Only one of the tables is reproduced here – the summary for Europe (next page). You will note the 74 miles by horse sledge in Estonia, the 100 miles by mule in Spain and the 4200 miles by bicycle in Great Britain.

DR. MACLAREN'S RECORD.

500,000 MILES.

EQUAL TO 32 TIMES ROUND WORLD.

Dr. Maclaren's View on Ashanti Gold—

As anticipated, Mr. J. H. Batty, the chairman, had a most optimistic tale to unfold at the Ashanti Goldfields meeting held yesterday.

Of outstanding interest was the summary of Dr. Maclaren's report which was read. From

was thoroughly "vetted" by Dr. Malcolm Maclaren, the eminent mining geologist, whose advice has proved so valuable in connection with the prosecution of development operations in Sub Nigel mine the last few years.

An interesting item in the annual report is that Malcolm Maclaren has accepted the position of consulting geologist to the company. Dr. Maclaren has done important work in various parts of the world, and in securing his services the Gold Fields has considerably strengthened its position.

This morning, on the publication of the report of Dr. MacLaren, the eminent geologist who was commissioned to make a detailed examination of the mine, the price moved down to 37s. 6d., but there are signs of "bear" covering at that level.

many shareholders and speculators rushed in to sell on the statement of Dr. Maclaren, the celebrated geologist, that the ore deposits would not live in depth. Now, Dr. Maclaren is a name to conjure with and he seldom makes mistakes.

The directors are being guided by the advice of Dr. Maclaren, the eminent geologist, who is at present paying his second visit to the property. In a preliminary report which the directors have received from him he states that he has no reason to change his previously expressed opinion—that the future prospects are uncertain.

The most important point is, of course, Dr. Maclaren's opinion of the general structure of the ore body, and it is exceedingly satisfactory to find that, from his vast experience, he gives the considered opinion

Now, what market men, and probably the general body of Ashanti shareholders, want to know is what Dr. Malcolm Maclaren, the eminent geologist, thinks about the mining prospects.

Noted Geologist Visits Panama Enroute To London

Malcolm McLaren, noted geologist, who has been a guest at the Washington Hotel for several days, is one of the men who guides the miners towards the subterranean storehouses of this precious yellow metal.

It was Mr. McLaren who discovered the wonderfully rich Potosi silver mine in Bolivia — which, incidentally, is now producing large quantities of tin.

Rumour has it that the visit of Dr. Malcolm Maclaren, the eminent geologist, to the Heidelberg district is not unconnected with a very important prospecting scheme.

By the way, it is a big feather in the cap of the geologist proper that within the past few years Dr. Maclaren's study of the Sub Nigel enabled him to make a suggestion that has greatly simplified underground development.

It is not surprising that people are recalling that the well-known geologist, Dr. MacLaren, when he made a report on the property, appeared to be more than usually cautious.

This has enabled those interested to have the expert advice of so eminent a geologist as Dr. Malcolm Maclaren.

CURRENT YEAR'S GOOD START

REPORT BY DR. MACLAREN

SUB-NIGEL SETBACK
DR. MACLAREN'S ADVICE

The slump in Sub-Nigels, preceding and following the publication of the report of Dr. Malcolm Maclaren, the eminent consulting geologist, seems to reflect the general nerviness of

Mr. McLaren, a New Zealander by birth, is of opinion that the Johannesburg mines in British South Africa can still lead the world in gold production, supplying as they do fifty-six percent of the world's gold.

Europe

	Coast Steamer	Rail	Motor Car	Bicycle	Mule	Horse sledge	Total
Great Britain & Ireland	1800	71660	5500	4200			83160
France		10914	720				11634
Spain		2698	300		100		3098
Switzerland		1284					1284
Italy & Sardinia		4185	270				4445
Austria		1719	180				1899
Jugo-Slavia	280	2089	400				2769
Rumania							
Old Rumania		609	408				2060
Transylvania		95	948				
Greece			220				220
Belgium		640					640
Germany		3525					3525
Poland		240					240
Lithuania		864					864
Latvia		576					576
Estonia		896				74	970
Norway		360					360
Sweden		960					960
Finland		708					708
Russia		1425					1425
	2080 :	105,447 :	8946 :	4200 :	100 :	74 :	120,847

Highlights from the other tables :

190 miles by foot in Tibet
3100 miles by horse, 210 miles by elephant, 760 miles by dugout canoe, and 214 miles in some thing called a tonga in India and Burma
610 miles by camel in Persia
510 miles by dog sledge and 320 miles by canoe in Canada and Alaska.
780 miles by mule in Peru and Ecuador
190 miles by houseboat in Korea

Up to the mid-1920's his travels in Asia were :

Asia Minor	385	Siam	120
Persia	610	Straits Settlements	420
Baluchistan	565	Japan	710
India	25,364	Korea	2570
Burma	4,340	Manchuria	520
China	394	Siberia	3300
Tibet	190		

And all this when he was only two-thirds way through his professional career. In fact, the pace of his travel seemed to have increased in later years.

In the course of a journey, Maclaren would sometimes receive cabled instructions from London to proceed elsewhere before coming home For example between August 1930 and the end of 1932 Maclaren spent only two months at home. The following information comes from his wife's diaries.

On January 30 1931 he arrived home after five months in West Africa (Gold Coast, Sierra Leone, Liberia). A fortnight later, accompanied by his wife, he was on his way to Capetown. On April 29, in Johannesburg he received cabled instructions from London to proceed to Rhodesia before coming home.

From Rhodesia they travelled across country to Mombasa in Kenya. In addition to trains this involved boat journeys on the Lualaba River, Lake Tanganyika and Lake Victoria. Mrs Maclaren's diary mentions that at Ndola in Zambia she "met Mr. Matson whom I last met in Korea".

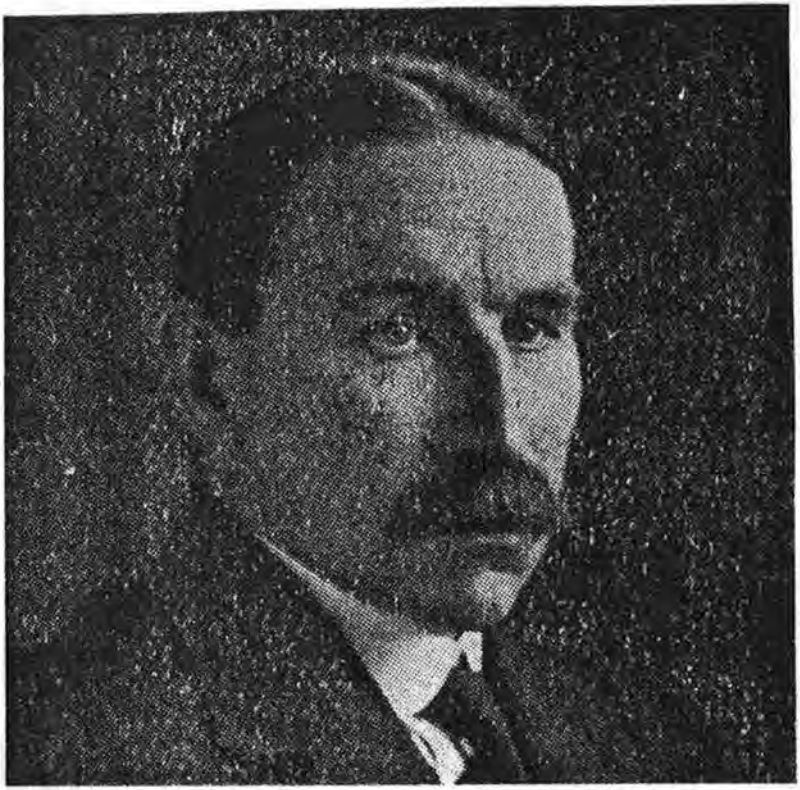
On June 27 they sailed from Mombasa for home but on arrival at Port Said Maclaren received another cable from London telling him to go to Serbia. He spent the next five weeks in Serbia whilst his wife went home.

Maclaren must have received yet another cable from London whilst in Serbia as he spent all of September in France. Whilst there yet another Head Office cable instructing him to go to Burma.

However he did manage to fit in three days at home in Cornwall. On October 4 1931 his wife's diary comments "Malcolm arrived - not looking well" –(understandable !). Yet three days later they were both off to Burma where they spent four months at the Bawduin Mine, in the jungle 800 miles north of Rangoon. Altogether, Maclaren visited the Bawduin mine on five occasions.

They left Rangoon on 19 March 1932. His wife went straight home but Maclaren went to France. He was called home suddenly on 13 May following the death of his son, Neil, aged 14 – "Malcolm got in at 4.00 am, very done".

Six weeks later, on 28 June they were both off to Denmark and Norway where Malcolm stayed until the end of August. Again only a very short time at home before he sailed for the West Indies and South America on 10 September 1932



James Malcolm Maclaren (1873-1935)

The family have provided information on Malcolm Maclaren the man. He was short and stocky, about 1.7 metres in height with dark brown hair and very bright blue eyes and he usually had a moustache. His eyesight was poor but despite this he was a good shot (tigers in India, partridge and snipe in Cornwall). He had a thirst for knowledge and was deeply read in the works of Continental and American geologists. He reputedly spoke seven languages. His wife's diaries attest to his ability to work long hours –

"Malcolm finished Bawduin report at 2.00am. I typed for for six hours."

"Malcolm sat up until 3.00am and finished report"

He was a practising Christian and, unusual for one with such intellectual accomplishments, he could turn his hand to anything. His wife's diaries abound with entries such as

"Malcolm making grass cutting machine"

"Malcolm upholstering my settee"

He appears to have been a supporter of the women's liberation movement in its early stages. A Special General Meeting of the Geological Society of London was held on 17 June 1908 to consider the following resolution proposed by Maclaren:

> "That Fellows non-resident in the United Kingdom be invited to express an opinion concerning the admission of women to Fellowship or Associateship of the Geological Society of London."

By virtue of his profession as a consultant we have little direct information on Maclaren the geologist but the demands on his services and the assessments of his contemporaries as given in the obituaries leave us in no doubt as to his ability. We give below extracts from three of those obituaries.

> Amongst distinguished men of science who have concerned themselves with the application of geological knowledge to the problems of mining, James Malcolm Maclaren stood pre-eminent. By his death economic geology has lost one of its ablest exponents and the mineral industry a competent and faithful servant. His services and technical advice had been continually sought for more than a generation, and the breadth of his travels and experience, coupled with the soundness of his observations, gave to his professional opinions a significance and authority well-nigh unique.....
> .....In the course of his consulting work Maclaren was often entrusted with enquiries of great moment calling for decisions that involved financial and political consequences of the first importance. He acted not only for many of the famous mining groups, but was also frequently employed on behalf of governments
>
> – Cullis 1936

> To a world-wide circle of mining engineers Dr Maclaren was known as perhaps the most eminent and widely-travelled of present day economic geologists. He commanded respect also as a man of great general attainments, being widely and deeply read, particularly in science, travel, sociology, and international affairs. He was never influenced by any motives of personal gain, his work being marked by a simple, unwavering determination to arrive at the truth and a courageous statement of his conclusions, which dealt so often with issues of great moment.....his striking ability and unique personality marking him as a leader in his profession.....his outstanding work on the Rand forming a fine climax to a remarkable career.....Indefatigable as a worker, concise in his reports, courageous in his convictions, his ripe judgment and integrity earned the unshaken confidence of the large groups who esteemed themselves fortunate in counting on his advice
>
> Anon, 1935B

> Dr. Maclaren had been during most of his life so continuously engaged on visits and reports to mining fields abroad, and was personally so averse from publicity that the fact of his recent serious illness was probably not widely known, any more than the decisive part which he played in the destinies of many great mines, where his reports and advice were accepted as decisive by the big mining groups in whose service he passed most of his extraordinarily active career.....But he is a man whose work must be judged not by what he published but by the influence

which he exercised in the counsels and on the policy of the leaders of the industry whom he advised.

Anon 1935A

Maclaren also made the Obituary Column of the Times of London and that recognition has been given to only one other New Zealand born geologist – Frank Turner.

Whilst his legacy to New Zealand geology is minimal Malcolm Maclaren must be regarded as one of the top ten geologists produced by this country.

Acknowledgments :

I am grateful to members of the Maclaren family for much of the information in this article and in particular to Mrs Peggy Short, widow of Malcolm's son Peter, who provided newspaper cuttings, pocket diaries, photographs, a copy of Malcolm's book and much other material. Her sons, Piers and Tim Maclaren, were also very helpful as were 'Buster' Taylor, widower of Malcolm's daughter, Jean who provided family diaries. I was placed in contact with these family members by Julian Williams of Cornwall, a more distant relation.

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Alan Mason

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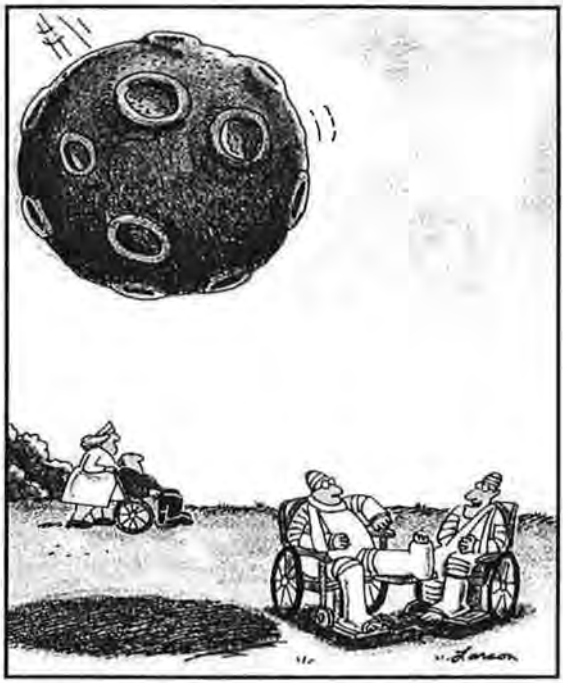


"You're kidding! ... I was struck twice by lightning too!"

Postscript: Edward de Courcy Clarke

In response to our recent article on E. de C. Clarke (HSG Newsletter 26, pp. 11-19, 2003), Dr H.J. (Larry) Harrington of Canberra kindly sent notes on two aspects of interest about Professor Clarke's career. First, in relation to the former use of camels by the Geological Survey of Western Australia, Larry wrote to say that in 1959, while on a visit to the Survey offices in Perth he was shown the camel harness and saddle room. It was a very big store and still had a storeman to look after all the equipment. However, it had recently ceased to be used by the Survey because four-wheel drive vehicles were coming to be widely used. Larry went on to say: "Clarke did all of his extensive field work with teams of camels in very hard country. He would have been bothered by bush flies the whole time and baked dry." Clarke's field trips were long, even by comparison with his extensive work in New Zealand, where the mapping seasons were interrupted by time at headquarters over the autumn and winter.

Larry also mentioned that among the Geology Department staff during Clarke's professorship were three men who later had outstanding careers. These were Rhodes Fairbridge, Rex Prider and Curt Teichert: of these Fairbridge left to go to a professorship at Columbia University, New York, and later brought out a series of remarkable earth science encyclopedias; Teichert established an international reputation for his palaeontological work; and Prider, whose main interests were in petrology and mineralogy, succeeded Clarke in the chair and served as professor from 1949 to 1975. Larry also suggested that we contact Peter Harris, an expatriate New Zealander in Perth, who succeeded Prider in the professorship. A graduate of Victoria University, Peter went to Leeds University as a lecturer in 1955, and after promotion to Senior Lecturer and Reader was appointed to a personal chair in 1971. He then went to the University of Western Australia in 1975 and retired in 1989. In retirement he became chairman of the Western Australian Council for International Students. For his geological work in Western Australia he switched interests from igneous geochemistry to hydrogeology because of its great importance to the state.

In turn Peter informed us about Dr John Glover who has written widely on the history of geology in Western Australia and elsewhere, and kindly sent a copy of Glover's interesting and well illustrated book "Geological Journeys: from artifacts to zircon" (Geological Society of Australia, Western Australian Division, 2003). Among the topics referred to is the earlier history of the Geological Survey and the Geology Department and the part played in them by E. de C. Clarke (especially pp. 132-135). He also includes photographs of Fairbridge, Prider and Teichert, as well as of Clarke himself. Finally, in reference to Clarke's university teaching one passage (p. 134) is particularly worth quoting: "Clarke himself expanded knowledge of the State by publishing the results of his fieldwork -----On one trip that combined teaching with research, he drove through the Carnarvon Basin in his own Chrysler motor car for six weeks with Teichert and senior students W.H. Johnson and J.H. Lord. Under Clarke, old-world manners still applied, and Mrs Clarke attended some field trips to chaperone female students. When he retired at 68 in 1948, many of his former students remembered him not only as an effective Head of Department, but also for his acts of individual consideration and kindness".

Alan Mason and Bill Watters

PUTTING A STAMP ON OUR HISTORY

The following extract comes from a letter by William A.S.Sarjeant of the University of Saskatchewan published in The Independent, London, on 4 October 1997. The occasion was the important double bicentenary - of the death of James Hutton and the birth of Charles Lyell.

> Hutton and Lyell, then, were among the greatest pioneers of the earth sciences. At meetings held in England and Scotland this summer, scientists and historians from many countries assembled to commemorate their achievements. Yet, when approaches were made to the British Post Office for the issuing of stamps to mark the double bicentenary, the request was rejected, despite the potential for dramatic and appealing designs that such stamps would have offered.
>
> Instead, the British Post Office has issued a whole set of stamps commemorating Enid Blyton. So it seems Britain is prouder of such a writer than of two world-renowned scientists. Indeed, our values are changing.

New Zealand geologists will have empathy with Professor Serjeant's complaint -

> Early hopes that the centenary of government science in New Zealand would be celebrated by the issue of a postage stamp were disappointed when requests by the Royal Society and by D.S.&I.R. for a centenary stamp were declined by the Postmaster General.
>
> - Geol. Soc. N.Z. Newsletter No.17, May 1965, p.3 on the occasion of the centenary of the N.Z.Geological Survey

and

> Society members recently approached the Post Office, regarding production of a stamp to mark the centenary of the Tarawera eruption, but were turned down. (Those with long memories will recall that a similar request for the centenary of N.Z.Geological Survey met with a similar response).
>
> - Geol. Soc. N.Z.Newsletter 71, March 1986, p.9

Yet, within the last thirty years or so the New Zealand Postal Service has issued special stamps to celebrate such events as -

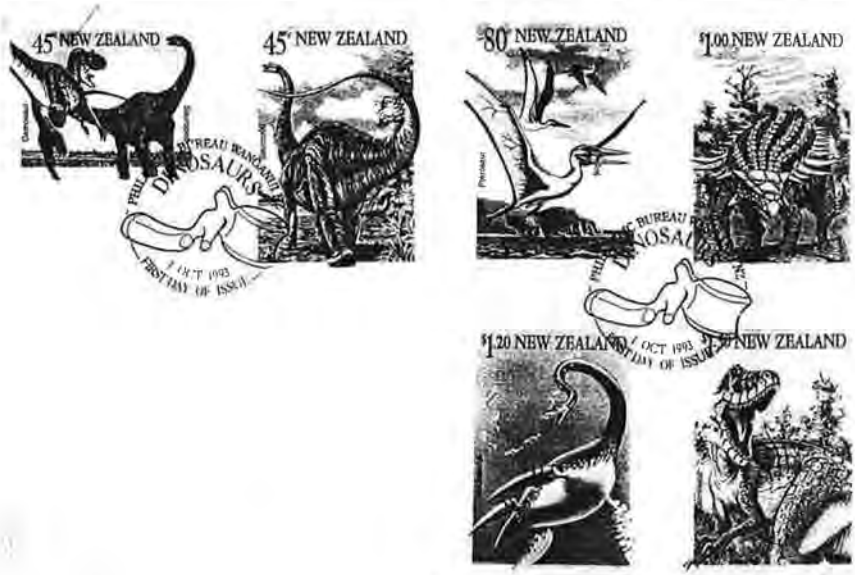
> National Scout Jamboree (1966)
> Maori Bible Centenary (1968)

Otago Medical School	(1975)
League of Mothers	(1976)
Orchid Conference	(1979)

and series celebrating the founding of such centres as Wanganui, Fielding, and Masterton plus several series on vintage transport.

Whilst the New Zealand Post Office and its successor have ignored geology in the New Zealand context (if one excludes the 1993 Thermal Wonders stamps) there have been mineral stamps (1982) and the inevitable dinosaur stamps (1993)

Alan Mason



WILLIAM JOHNSON SOLLAS

W. J. Sollas (1849-1936) was Professor of Geology at Oxford for 39 years and there was hardly an aspect of geology in which he did not make a contribution. However he did gain a reputation for eccentricity particularly in later life. We quoted one example of this on page 24 of Newsletter no. 12, taken from E.A.Vincent's Geology and Mineralogy at Oxford 1860-1986. Vincent quotes other examples of Sollas's excentricity one of which came originally from J.A.Douglas, Sollas' Demonstrator and later, his successor -

> The lectures were, said Douglas, something of a joke, as at the back of the lecture theatre was a means of exit down a sloping roof, and it was a point of honour to see how many could escape every time Sollas turned his back to the audience. At one lecture there were eighteen at the start and two at the finish - a fact of which Sollas was completely oblivious.

When Larry Harrington was studying at Oxford in the early fifties Sollas had been dead less than twenty years and stories of his peculiarities were still being repeated. One of these concerned the Oxford Museum which in 1860 had been the scene of the famous Huxley/Wilberforce encounter on Darwinism. At the entrance to the Museum were severals Tyrannosaurus skeletons and as Larry tells the story -

> An aged Sollas thought that the Tyrannosauri were trying to bite him as he passed them on the way to his room so, at the end of an aisle between rows of Lyell cabinets he set up a rifle target backed by the department's collection of the Geological Magazine (because it was a Cambridge journal). Having had shooting practice he used to creep along behind Lyell's cabinets and take pot shots at the dinosaurs. This was trying for other staff who had ladders made so that they could climb in and out of the windows to their rooms. The ladders were still in place when I arrived at Oxford in January 1952.
>
> Despite his eccentricities Sollas had tremendous mana with his staff and they put up with this dangerous activity

In his old age Sollas was taken care of by two unmarried daughters. He was visited weekly by his Chief Technician who told Larry -

> The truth was that they were Christian Scientists. On my last visit to Sollas I found him sitting in his chair by the fire. He had been dead for two days but his daughters would not believe it.

Alan Mason

Geology at Canterbury

Part 3: 1953-65

Max Gage prepared this account of his years in the Geology Department at Canterbury University (initially Canterbury University College) about 1990, fifteen years after he had retired. He was appointed Senior Lecturer in geology in 1947, following Brian Mason, who had taken up an appointment at the University of Indiana. This article deals with the period from 1953-65 when the Geology Department gradually expanded and modernised. It has been transcribed and edited by Simon Nathan.

Modern ideas about transport needs are very different from what they were in the 1950s, when new cars were scarce and seemed vastly more expensive than before the War. Most professors and some lecturers had cars, but few students could afford even a motorbike. It did not occur to the College that it should provide vehicles for Departments, except for the School of Engineering's 30cwt Austin truck. Towards the end of the decade some science departments began to seek funds for acquiring vehicles but the College Council continued to resist, claiming that it was more economical to rent, and charge the hire against departmental grants. Surprisingly, it was Geology that made the breakthrough, and this is how it happened.

In 1959 the Department had a visitor, a noted scientist and a man of substance who bought two Landrovers, one for his research and the other for his wife and family to accompany him in the field. After only a few months and with genuine regret he had to abandon his project and return home to the US, leaving behind as an expression of gratitude some equipment and one of the Landrovers. The distinction of the visitor was such that the College could not with decency refuse the gift or deny the Geology Department permission to accept, but decreed that the vehicle must bear no sign of its College ownership. Garaging it was a problem, which Robin Allan solved by taking it home to Cashmere every night and disposing of his old Ford. Some of us took a dim view of this. However, while he was away on leave and I was Acting HOD a chance came along. Unmarked and parked on the roadside near Castle Hill, our Landrover was associated with illicit shooters by the runholder who removed the distributor cap, causing a lot of inconvenience. Without asking permission, I had a signwriter modestly inscribe "Canterbury University College, Department of Geology" on the doors. In no time, other Departments were running their own vehicles.

Department Library

Prior to 1953 the bookshelves around the professorial study were crammed to the ceiling with New Zealand and overseas paleontological and geological journals and a complete set of the Transactions of the New Zealand Institute (later Transactions of the Royal Society of New Zealand), NZGS Bulletins, Paleontology Bulletins, and Annual Reports of the Geological Survey. Some were Bob's own property, some inherited from Speight, and a large number on "extended loan" from the College and Canterbury Museum libraries and elsewhere. (Later I was to discover that the tardy return of much borrowed literature and type fossil material had been of concern to owners in New Zealand and abroad). A valuable reprint collection had been built up through exchanges from Speight's and even from Hutton's time. It contained some classic items, and its destruction in the fire would have been a major catastrophe. It was well looked after, although Bob's habit of having sets of reprints on a common topic bound in gilt-lettered hard covers proved to be a nuisance later on.

The Department had gained from cordial relations between Bob Allan (for a long time on the Prof. Board's library committee) and the Chief Librarian. Clifford Collins was himself interested in geology while his brother B.W. (Tony) Collins was a professional geologist. Like all college libraries around this period, Canterbury's was desperately short of space. It was agreed that the most heavily used geological journals and serials covering recent decades would be transferred from the Library to our new seminar room. Such arrangements go against a Librarian's custodial instincts, but it released urgently needed shelf space. Our library had to be available at all reasonable times to legitimate users from other departments and Royal Society of New Zealand members, but there were few problems apart from the occasional hunt for a stray serial part needed by the Library for binding. More precious material remained in the professor's study.

All went well until the move to Ilam. Blithely assuming the arrangement would continue, Allan had requisitioned and was granted ample space and furnishings for a "Reading Room", but with a combined sciences library planned for Ilam, attitudes were hardening against departmental libraries. We were given notice that all the materials paid for out of Library funds would eventually be recalled. Vigorous joint protests from Zoology, Geology, Botany and the Geological Survey (now close neighbours) were of no avail. Nor did it help that we provided space for a temporary sciences library (in the charge of Robert Erwin) in space designated for our museum but not yet fitted out. When the Physical Sciences Library was finished we could keep only the reprint collection and books and journals indisputably belonging to the Department and staff members.

Geological Survey and Sedimentology

About the time of my arrival at Canterbury, the N.Z. Geological Survey established an office in Christchurch by transferring B.W. Collins from Timaru, to be joined later by Les Oborn, Harry Gair, Pat Suggate and others. They had an office in the MLC Building on Manchester Street, and later came to St Elmo Courts, within coo-ee of the Department. The Christchurch geological fraternity, augmented by keen rockhounds was numerous enough to support a "Geology Colloquium" which met informally in Room 43 and evolved eventually into a Canterbury Branch of the Geological Society of New Zealand. Apart from those meetings, I was the only member of the Department to keep in frequent contact with the Survey and join their Friday afternoon gatherings, usually in Shades Hotel.

Despite the setback of the fire I still hoped to get sedimentology going properly, but realised now that we would need a properly equipped laboratory and someone on the staff who knew a lot more about the subject that I did. Neither was in sight when we moved back into still restricted quarters in the East Block at the end of 1955, but over the next couple of years the situation improved. R.W. Willett (Director of the Geological Survey after 1957) was a former colleague and a vigorous advocate for closer cooperation between university and DSIR geologists; and he also wanted to expand in the sedimentation field. Construction of the new Engineering School at Ilam began in 1957; Dick Willett knew that Geology would be among the many contenders for space in the buildings it would vacate. With his strong, politically astute support, Geology put in for the Concrete Research laboratory, to be converted into a Sedimentology lab and operated jointly by the Survey and us. DSIR would contribute to the cost of equipping it.

Luckily, Vice-Chancellor Leigh Pownall backed the scheme, although neither he nor Dick could get their respective names right; frequently an intermediary, I was asked to pass on some message or query from "Len" Pownall to "Doug" Willett, and vice-versa. Miraculously, it seemed, the proposal was approved by both parties, and the conversion carried out in 1961. Dick Willett transferred J.T. Kingma to Christchurch, and we had another lectureship added to our

establishment with sedimentology as part of the specifications. At the salaries then offered, it was hard to attract experienced people. However, at Illinois while on my way back from leave in 1961, a completing PhD was recommended to me as having a good background in sedimentology and potential research interests in that field. This was W.D. Sevon who remained with us for four years. Development of sedimentology however turned out to be very much a Survey affair until Doug Lewis came on the scene in 1965. Thus, when planning for Ilam was under way, Ko Kingma had much to do with the design of facilities for sedimentary studies.

Engineering Geology

It was very lucky for us that Canterbury in the 1950s still had the major Engineering School, and even more so that its Chair in Civil Engineering came to be occupied by a forceful character from Australia, H.J. Hopkins, who firmly believed that every Civil Engineering graduate must have had a substantial grounding in geology and understood its applications in their profession. Harry Hopkins was a good friend to us in many ways in difficult times. I sincerely doubt that Geology would have survived as a separate department had it not been for his support.

As mentioned earlier, in 1948 the B.E. (Civil) 3rd Professional classes were expected to join our Stage I Physical Geology lectures and labs and take a special short course in "Engineering Materials" introduced by Brian Mason. This included a walk around the city streets looking at the wide range of natural stone that had been used for construction and for building and facing bridges. I chickened out of that, but after my first year saw the need to develop this course into one aimed at bringing out the significance of geological processes, rock structures, recent geological history, seismology and so on in site-selection and design for engineering projects. In later years I was often to hear how popular this became with the students; how it enabled them to see some sense in their having to study some geology. Encouraged by Harry Hopkins, we remodelled the courses for B.E. (Civil) and spread them over two years. At 2nd Professional level they had a half-year course (one paper) in "Engineering Geology" covering appropriate geological basics, and in 3rd Professional year "Applied Geology" (limited here to engineering applications) in tandem with a Soil Mechanics course taught by Civil Engineering staff. It was far from an ideal arrangement, but the B.E. (Civil) degree was already so full of course work that the students were screaming and no further expansion or better arrangement was practicable. Lectures were given in the Engineering School; under sundry makeshift arrangements a condensed laboratory course covered the recognition of common rocks and rock-forming minerals, understanding of simple geologic maps, and there were a couple of one-day field trips.

Through the 1950s and 60s geology graduates were in high demand for mineral and oil exploration as well as engineering. It was vital to cash in an this rebuilding from our nadir after the fire. We proposed expanding geology and sought new appointments in sedimentology and engineering geology, but the low salaries and poor standing of the Department made it hard to get good applicants. Nevertheless we obtained the services of Simon MacDonald, a mining man from among those forced out from Malaya by new policies favouring Asians. He had not taught before and had little experience in engineering, but did his best for three years, teaching both engineering and economic geology. He left in 1964 and was replaced by J.K. Hill, who did have strong interests on the engineering side, but there could be no real development in economic geology until after the move to Ilam.

Equipment

It will have been very obvious already that the most notable thing about facilities and equipment in the pre-Ilam era was the lack of them. Much of what was destroyed in the fire was no great loss, and the university insurance provided better microscopes, etc. For years such refinements as the U-stage were no nearer than Dunedin. In paleontology classes there were seldom enough fossil specimens to go round, but in any case R.S. Allan's favourite way of operating was to bring out elegant specimens from his collection and show them individually to the class, having put up detailed, labelled drawings on the blackboard for them to copy; alternatively he would bring out paleontological monographs or litho plates extracted from them. There was an ancient epidiascope to project lantern slides, but the room was almost useless because it could not be properly darkened. There was no darkroom until the sedimentology lab was set up, but I rigged up my camera as a copier at home and made slides from my negatives and diagrams in textbooks. All that went up in smoke in the fire. Insurance provided our first 35mm projector and a 35mm camera, and the Department's stock of geological colour slides began to be built up.

Michael Frost joined the staff in 1960 - essentially a mineralogist/petrologist, and a philosopher as well. He argued that advanced instruction and research in his field was no longer possible without X-ray equipment, for which we obtained a substantial grant and approval for alterations to accommodate it in Room 55. Evidently the University (which, nominally at least, we had now become) recognised that Geology was not passing into oblivion, as some had predicted, but was on the way up again with growing enrolments.

During reconstruction of the old workroom, many boxes of unidentifiable rock specimens and thin sections dating from Speight's day and other useless material was thrown out to make room for the new section-cutting and grinding machine. With this, and a darkroom in the Sedimentology lab now in sight, we needed somebody proficient in operating the machine and able also to do photographic work. While at Birmingham in 1960 I knew Robin Allan was doing the letter-writing (one of his strengths) towards getting our first Technician. So, when approached by D.J. Jones, who could see no hope of advancement there under the hierarchical system then pertaining to technical staff in England, I told him of a likely opening at Canterbury - giving the place a bit of a build-up at the same time. And that is how we came to have Davy Jones, our first technician.

Buller Field Station

A permanent out-station of our own for extended class trips and research became not only an attractive idea but an increasing need as the Department grew and the diversity of its activities increased while access to Cass and Kaikoura became harder to get at convenient times. Shearers' quarters had not been very satisfactory. The West Coast was attractive because of the wide geological variety but suitable accommodation for larger groups was a problem. The climate demanded a comfortable base for parties to return to after a wet day in the bush. Westport was favoured because many aspects of geology were represented within a day's travel, it could be reached from Christchurch easily by public transport, and the weather could be kinder than farther south.

Preliminary scouting in 1964 showed it might not be too hard to find a large house suitable for conversion. Property values were depressed. Estimates were made and a case put up to the Finance Committee, which agreed in principle, being no doubt aware of the pressure on the other field stations and foreseeing use of one at Westport by other departments as well. Our rock-hound contacts soon made the proposal known among the Westport citizenry who gave it

enthusiastic support. Through the good offices of a local accountant, R.J. Avery, the University was given the chance to acquire the old 2-storey house in Queen Street which became the Buller Field Station. It had immediate advantages as it had been a nurses, home for Buller Hospital, and was cheap. Having heard that approval was granted, we had Phil Lummis, the University works overseer, plan the essential alterations while Ray Avery ("Mr Westport") arranged for the bunks and other furniture to be made or bought locally and for local tradesmen to do what wiring and plumbing was needed. With extensive coverage by the (West Coast) press, the Buller Field Station was opened with some ceremony in 1965 by the Mayor of Westport, in the presence of our Vice-Chancellor and the Professor of Geology.

High hopes were held that student and staff research in the region would lead to great wealth from new mineral discoveries. That has not happened, but I believe the field station had proved its worth to the University by the time class numbers began to overfill it. The first graduate student to use it as his base for M.Sc thesis mapping was Simon Nathan.

Planning for Ilam

Predictions that Canterbury College would inevitably outgrow the city site and any practicable extensions to it were accepted by 1947. Moves to acquire land in an outer suburb followed. Held up by politics and financial stringency, the final decision to begin building a new School of Engineering at Ilam was not made until 1957. When I came back from leave early in 1961, the new Engineering laboratories were in use although lectures were still given in town and a shuttle bus service provided for students. The way was now clear for tackling the second Ilam stage, the Science departments, including Mathematics. Robin Allan took overseas leave, and while I was Acting HOD, the Vice-Chancellor informed Prof Board that if we were all quick enough about preparing plans and specifications, some departments might be able to move at the end of 1963. He was over-optimistic by two years. A major difficulty proved to be high water table under the Ilam building sites. Having so recently been on leave, I could not decently duck the responsibility of collating Geology's requirements, filling out questionnaires from the MOW architects, and so on, but it was a shock nevertheless to find that we were going to have to draw up scale plans and projections, quantities and specifications of the fixtures, furnishings and services for all laboratories, staff and student rooms, storerooms, workshops, the lot. Overall space allocations for Geology had already been decided (it seemed very generous at the time) and we also knew what the modular dimensional constraints would be. The Geological Survey, who were to share Level 3 with us, were responsible for their own planning.

It was a daunting task. At that stage it was particularly difficult in Geology to forecast student and staff numbers and likely directions of expansion. We then had 6 full-time staff plus one technician and a total of about 160 students, counting in the Engineering courses. Having consulted everybody, I decided it would have to be a flexible plan; so many class laboratories each with similar basic furnishings and services, so many staff/student rooms with standard basic furnishings and capable of being allocated in pairs, singly or shared, special function rooms for X-ray, wet chemistry, draughting and map storage, reading room, etc. Two large spaces designated "museum" had been put in for by Robin Allan. It would have been even more of a nightmare without the help of other staff members. Fortunately, the MOW architect and his draughting staff were also very co-operative. As noted earlier, Ko Kingma was responsible for designing the sedimentology facilities. From our scale drawings, the draughtsmen prepared plans, which came back for checking with detailed schedules of the provision, type, size of every fitting and fixture in the building.

The Botany/Geology building was under way in 1963. Geology was actually the first Science department to move in November 1965. I prefer not to dwell on the trauma of the move, which anyway is within the memory of some present staff members, who will recall vividly the surrounding chaos, uncompleted wiring, plumbing and decoration. It was to be a long time before all the furnishings and fixtures had been delivered, and the apparatus we had been able to order against a generous initial equipping grant was installed. But it was wonderful to think that the Geology Department at Canterbury need no longer be ashamed of its cramped, scrappy old quarters, that we now had a worthy home of our own, expectations of soon having staff to cover adequately all the main disciplines, and the basic necessities for growth in various possible directions.

Sadly, Robin Allan, who had been one of the greatest advocates for the transfer of the University to Ilam, lived for only a few months more.

Into the Ilam Scene

The end of 1965 seems to be the best time for winding up this account. Shifting to Ilam proved to be more than a mere translocation; it was our Mesozoic/Cenozoic boundary succeeded by mainly new faces in a fresh environment. When, in due season, a further chapter of the Geology Department saga is called for, 1966 will be an appropriate starting paint and events thereafter should be well chronicled.

Robin Allan retired on January 31, 1966, by which time it was known I was to succeed him as Head. Thus he was able to occupy the new professorial suite (study and workroom straddling a small office for the Secretary) for a few weeks; several months later he suffered a stroke from which he did not recover. With schoolboy enthusiasm he had looked forward to resuming brachiopod research in workspace closed off by specimen cabinets in one of the Level 1 rooms designated "Museum", and to pursuing other interests including the cultivation of alpine plants. However, that was not to be. Several memorials to Robin Allan have been written and this is not the place for another one. Often an exasperating fellow to work for (or with) , he was a friendly, kindly soul, well liked and admired professionally for his resolute support of sound biostratigraphic principles and promotion of the true scientific spirit. Often in the ensuing months I would gladly have sought his advice and guidance.

Besides the staff members of 1948-1965 whose names have already cropped up, a few more should be mentioned. Dawn Rodley (later Mrs Beck) held a temporary post in 1961-62, teaching chiefly paleontology; H.S Edgell arrived in 1961 to develop micropaleontology but left the following year for health reasons; his replacement, A.E. Cockbain resigned to join the Western Australian Geological Survey just before our move to Ilam. On the technical front, Alan Smith joined as a junior in 1964 and AR ("Monty") Banks transferred from the Civil Engineering Department. The Professor had secretarial assistance for a time while involved with organising the 1949 Pacific Science Congress but our first departmental secretary was not appointed until about 1957. She was Coral Cornelius. I forgot the name of her successor, who was followed in turn by the redoubtable Gwen Lewis. Ilam proved to be too rural for that city girl, who left soon after we moved and was succeeded by Alice McJannet, well remembered by some of the present staff.

A few graduates, chiefly from the early part of the period, deserve mention. It seems remarkable to me that some have already reached retirement after successful professional careers, like J. C. Schofield (NZGS) , S. R. Taylor (notable career in geochemistry, mainly at ANU) and D.J. Young (Mineral exploration in various parts of the world), D. R. Gregg, after several years with

N. Z Geological Survey and Curatorship of Geology at Canterbury Museum was then Director of the Tasmanian Museum, Hobart. George H. Scott who was Demonstrator around 1955-56 and distinguished himself scholastically as the only M.Sc candidate to score a 100% mark for his thesis, is noted for penetrating criticisms of popular biostratigraphic concepts in the course of his paleontological career with N.Z. Geological Survey.

In conclusion, I should point out that the foregoing is essentially a personal reminiscence, drawn mostly from memory with help as regards dates from references to Geology in "A History of the University of Canterbury" (W.J. Gardner, E.T. Beardsley and T.E. Carter; University of Canterbury, Christchurch 1973) . Having avoided as far as possible matters I did not feel reasonably sure about. I am hopeful that there are no substantial errors or omissions.

Maxwell Gage
Napier, July 1991.

Postcript

Max Gage took up the position of Professor of Geology and Head of Department in early 1966. As a graduate student in 1964-66, I was aware that his appointment was not greeted with great enthusiasm by existing staff members who felt that he was too conservative. There were several resignations in a short period before and immediately after he took up his position. Although this must have been very disappointing to him, it did mean that he was able to select several new staff members himself. Of those appointed around this period, Doug Lewis, David Shelley, John Bradshaw, Walter Oldershaw and Graham Jenkins gave lengthy service to the Geology Department. After a few months he arranged a field trip around the South Island so that new staff could rapidly understand the problems of New Zealand geology, and this laid the seeds for several future research projects. In retrospect it is clear that Max rebuilt the Geology Department with new facilities and new staff in the period 1966-67.

From the viewpoint of a student, Max was a remote, rather unapproachable figure – in later years I realised that he was shy, and did not find it easy to communicate with students. His lectures were always well organised and copiously illustrated with his own 35mm slides. He would often finish lecturing saying "Now lets have a picture show". His first year lectures and the Banks Peninsula field trip inspired me to go on in geology, but our contacts were formal for the next three years. It wasn't until I started my MSc thesis on the West Coast and he took me on a field trip that I realised that he was a different person on a one-to-one basis, full of enthusiasm and encouragement.

Max Gage took early retirement in 1974. He was having problems with his eyesight, and dreaded going blind as had happened to one of his relatives. In fact he lived for another 25 years, and although his sight deteriorated, he retained reasonable vision with the aid of very thick glasses. In the 1970s and 1980s he undertook a variety of consulting assignments, and wrote "Legends in the rocks", a description of New Zealand geology published by Whitcoulls. In 1999 we worked together to produce "A geologist remembers: recollections of fieldwork" which covers his early days with the Geological Survey from 1935-47. He died in Napier in 2000.

Simon Nathan

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IN THE BEGINNING - R.G.Jameson

Little is known of Jameson apart from what he himself gives in his account of his visit to the Antipodes (Jameson 1841). This account is a travel book to encourage, and a handbook to advise, intending emigrants. It contains a wide range of observations – besides geology – of vegetables and of Maoris and their interactions with visiting sealers.

In June 1838 he sailed from the U.K. for South Australia in charge of emigrants as surgeon superintendent appointed by Her Majesty's Colonization Commissioners. From February to October 1839 he was in South East Asia and then, after a few more weeks in Australia, he left for the Bay of Islands, returning to Sydney at the end of January 1840. On this visit he did not travel far from the Bay of Islands but noted *"between Mangonui and Wangaroa numerous rocks and islets of trap formation"*. Trap is an obsolete name for basalt.

He was back in New Zealand in March 1840 and seems to have remained in the country until mid-year. On this visit , in addition to the Bay of Islands, he went to Waiheke Island, Auckland, Coromandel , and Hauraki Plains. At the Bay of Islands and at Auckland he noted the volcanic cones and in the latter district –

The character of the substance (i.e.lava) itself, and the appearance which I noticed in the bed of the Tamaki, of the undecayed trunk of a tree which it had manifestly surrounded whilst yet in a state of fusion, cause me to be of opinion that the latest eruptive phenomena of this district have occurred at a comparatively recent period (pp. 287,8)

The island of Waiheke -
consists of the common argillaceous rock of New Zealand, and in some situations it assumes the appearance of an amygdaloidal trap, like that which is so abundant in Coromandel Harbour.

A fair enough description of the geology but he is less reliable when he goes on to state -

The neighbouring islets are all of the eruptive or volcanic class; and some of them assume that remarkable sugar-loaf shape which has elsewhere been noticed as a very frequent characteristic of that formation (p.291)

From Waiheke, Jameson travelled to Coromandel Harbour which was signposted by –

An enormous mass of basalt, which having a castellated outline, and being visible at a great distance, forms a landmark called the Castle Hill (p.292).

In Newsletter 25 was published 'The First Report on Coromandel Geology' by a Mr.Grayling (Mason 2002). Researching the present article I find that Grayling was preceded by Jameson who remarks (p.304) –

There is something stern and imposing in the aspect of this mountainous peninsula which consists of plutonic or trap rocks.

Jameson devoted all his time to wandering along the shores of Coromandel Harbour and on what is now known as Beeson's Island he describes –

Vast precipes of a concrete argillaceous rock, thickly studded with balls or nodules of a ferruginous clay, varying from the size of a pebble or a hen's egg to that of masses nearly a foot in diameter. Of these nodules, several that I examined consisted of concentric layers disposed like the coats of an onion. They appear to have been rolled into their peculiar shape by the action of water, subsequently embedded in mud, and afterwards elevated, in a hardened state, by volcanic agency. To this rock, in describing the island of Wyheke, I have elsewhere applied the name of amygdaloidal trap, as more expressive of its geological character than the names of pudding stone or conglomerate. In another part of the harbour I observed clefts in this species of rock which contained quantities of a mineral substance resembling, externally,copper ore..... In one part of the coast of Coromandel Harbour there is a promontory, consisting of a rock resembling the Bath oolite, and said to be well adapted for building purposes. I picked up, within high high-water mark, numerous ligneous fossils, with the jointed appearance characteristic of the palm, fern, and other monocotyledonous plants. (pp.294,5)

This appears to be the first mention of plant fossils in New Zealand

On Page 305 Jameson notes the contrasting nature of the geology on the other side of the Firth of Thames -

The opposite shore of the estuary of the Thames differs widely in its aspect and geological structure from the shores of the peninsula of Shouraki. It presents to the waters of the frith a range of horizontal stratified rocks of a clayey sandstone, which seems to have been softened by the influence of humidity, and is, like the sandstone of Port Jackson, devoid of organic remains.

Jameson's furthest south was Matamata but he does discuss districts further south using information from other authors. One interesting item occurs on page 245 –

The exuviae – (i.e. fossils) – *of ammonites and other marine shellfish have been found by some of the missionaries in the secondary calcareous strata, which are observed on the east coast, between Tauranga and East Cape; and elsewhere they will doubtless be found , when these islands are more minutely examined by geologists .*

This is the first mention of ammonites in New Zealand. Ammonites are yet to be found between Tauranga and East Cape but there are fossiliferous Jurassic and Cretaceous localities so their occurrence is a possibility.

Jameson quotes Dieffenbach in several places but the two would not have met as Dieffenbach was in the Cook Strait area during Jameson's time in New Zealand

On pages 244 and 245 Jameson gives his summary of the geology of New Zealand –

Without hazarding a geological theory, I should say that the scenic character of New Zealand is such as might be supposed to have resulted from the simultaneous upheaving, by volcanic force, of argillaceous and basaltic rocks and mountains, which have been subsequently disintegrated and rounded off by the action of the elements..... Rocks of the primitive and secondary classes, including the carboniferous strata, are extensively found in some parts of New Zealand, and there is abundance of transition slate - (a finer version of greywacke) - *in the neighbourhood of Hokianga, Isolated masses of quartz and granite occur through the island, but the predominant structure and aspect of the rocks and mountains marks them as belonging to the igneous classes denominated trap, basalt, and greywacke*

This is one of the first applications of the word 'greywacke' to New Zealand (even though it is said to be "one of the igneous classes "). The first mention of greywacke that the authors have been able to find in the literature is on page 6 of the New Zealand Journal 'Extra' for Tuesday 5 May 1840 (Dieffenbach 1840).

It is not known where Jameson learnt his geology. He was not a direct descendant of Robert Jameson of the University of Edinburgh but his scientific language suggests that he could have been a pupil of his Wernerian (Neptunian) namesake. That language, and his writing style, indicates considerable confidence in his not always correct geological observations. He was the first to record plant fossils and ammonites in New Zealand and one of the first to use the term greywacke.

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Alan Mason
Heather Nicholson

New Zealand's Most Prolific Geologist

This title must go to James Park. The Bibliography of New Zealand Geology to 1950 lists 166 items under his name, second only to Hector with 180.

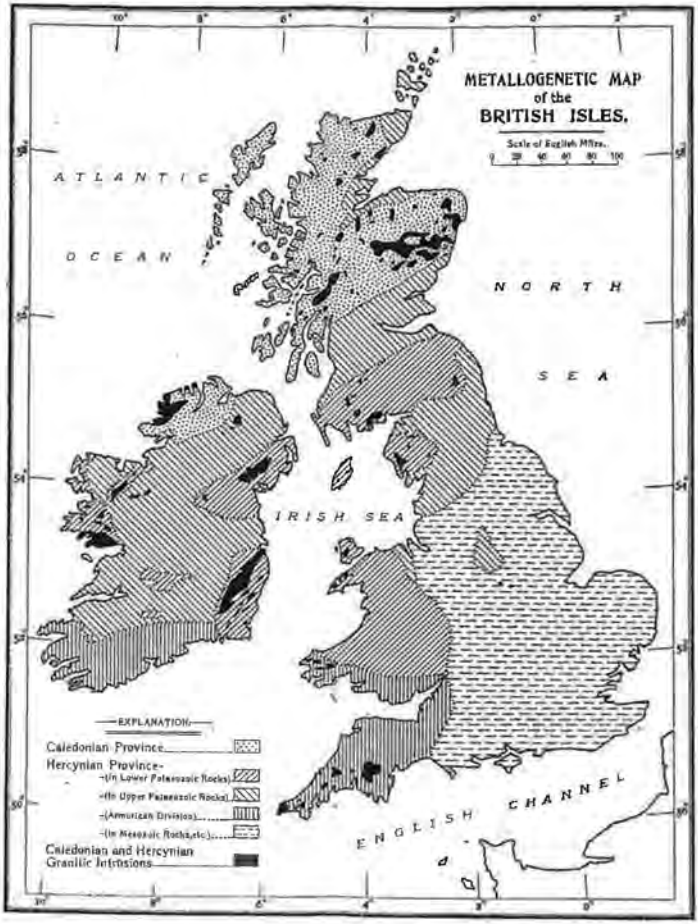
But when it comes to text books Park is well ahead of his nearest rival. His ten titles ran to a total of 32 editions with 70,000 copies sold..

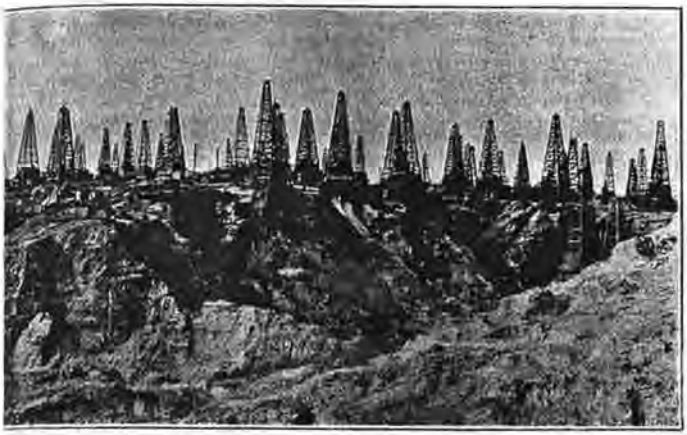
There were ten editions of Cyanide Process of Gold Extraction , including two in German; five of Theodolite Surveying and Levelling, and five of Practical Assaying.

Illustrations relating to the work of A.M. Finlayson

Further to the writer's article on Alexander Moncrieff Finlayson in issue no. 25 of the HSG newsletter (September 2002, pp. 15-21), the following brief supplement includes two illustrations pertinent to Finlayson's geological career. Their omission from the article was a mistaken decision on the writer's part at the time, but it is hoped that the figures given here will still be of interest.

The first illustration shows Finlayson's early metallogenetic map of the British Isles. His studies of ore deposits in England around 1908 to1910, during a period when the country's mineral production was important, included an early depiction of a metallogenetic map. This was published in 1910 in the Quarterly Journal of the Geological Society (vol. 66, pp. 281-298) in a paper on the metallogeny of the British Isles. It represents a pioneering effort to show, on the basis of contemporary knowledge, the main metallogenic provinces in relation to the important episodes of tectonic activity, as well as of granite plutonism. An accompanying table in his paper (p. 293) listed the ore deposits associated with each province and sub-province.





The second illustration is an early photograph of part of the Yenangyaung oilfield in Burma, dating from about 1912, when Finlayson was working in the country. It was included in a general account by him of labour conditions and relations in the Burmese oilfields, published in 1912 in the Mining Magazine (vol. 6, pp. 137-140). The company for which Finlayson worked, from 1911 to 1915, the Indo-Burma Oil Co., was active in the Yenangyaung field. In the letter to Mr P.G. Morgan (20 December 1912, in P.G. Morgan files, IGNS archives) referred to in my article (p. 17), he wrote: "Yenangyaung has been and continues to be the main standby for all companies. In 4 years we have drilled 56 wells there (all oil, with no dry holes)." He went on a little later to write: "I have mapped up the Yenangyaung sands from the logs, but they are unsatisfactory, being very variable both in thickness and in persistence. They are extremely numerous and feather out and bulge with great rapidity. The deeper sands (1900 to 2200 feet [ca. 580 to 670 metres]) which have been developed in the past 12 months, however, are ---- more regular ---- ".

Regrettably none of this stratigraphic information could be published, and his company was later taken over by a much larger competitor. Well before this took place, Finlayson had left Burma in 1915 to join the British army and sadly to die of wounds in July 1917.

Bill Watters

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Alfred T. Dewey, who published the Mining and Scientific Press for thirty years at the end of the last century clung to certain features which his staff regarded as inappropriate to a technical journal. Amongst the papers that Dewey owned was the Ladies Home Journal and he constantly emphasized its usefulness to the Mining and Scientific Press as a means by which awkward spaces could be filled by cooking hints and recipes important to bachelor miners.

ANZAASC

The original of this document is in the archives of the Geology Department at the University of Auckland. It is Professor Bartrum's copy of the menu for the Geology Section dinner at the ANZAAS Conference in Melbourne in 1935.

The M U G S in the logo is not a reflection on the intelligence of the delegates. It stands for Melbourne University Geology Society

MATERIAUX D'ASSILIMATION

Ostrea cucullata (ad. nat.)
à la Singleton

Consommé magmatique
à la Marshall

Sillago ciliata à la Hills

Gallus skeatsi (N.B. tuff
cum Sûs (varved)

Plantae incertae sedis

Bombe volcanique et antarctique
à la Mawson

Café Lahar

Hôtel Orientale
Le 22 Janvier, 1935

At the dinner Bartrum obtained the signatures of those attending and these are shown on the opposite page. Readers will recognize the names of several New Zealand geologists who were in many cases accompanied by their wives. Oliver Chalmers, formerly of the Australian Museum, has provided the following short biographical notes on some of the Australians present. Oliver started at the Australian Museum in 1929 and retired as Mineralogist. He knew many of the delegates personally. Oliver now lives in retirement in Queensland.

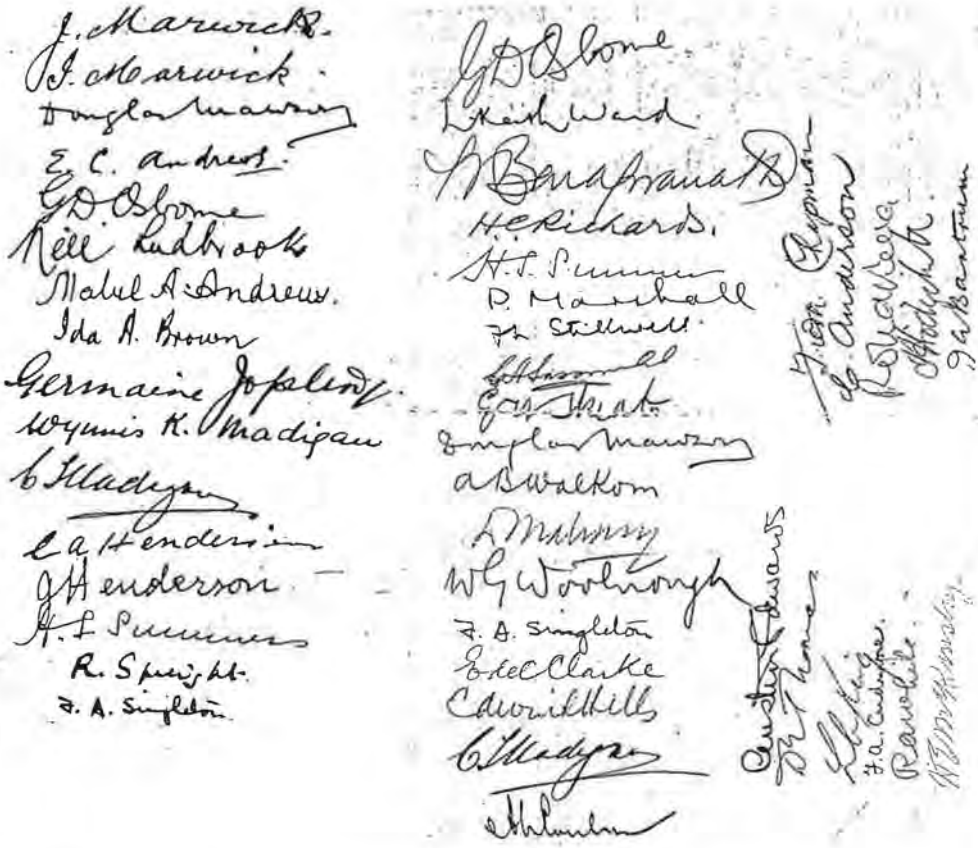
Sir Douglas Mawson : Well-known as an Antarctic explorer and Professor of Geology at Adelaide from 1921 to 1952.

E.C.Andrews : Government Geologist in New South Wales in the 1920's and 1930's.

G.D.Osborne : Lecturer and Reader in Geology at Sydney University mid 1920's to mid 1940's. Oliver comments "never had a chair although he deserved one".

Ida Brown : A brilliant student who spent her working life in the Sydney Geology Department. Started as a petrologist but switched to paleontology (?cf. James Allan Thomson).

Germaine Joplin : A graduate of Sydney University, she lectured at the University and wrote several books on petrology. Later at A. N. U.



C. Madigan : Was in Antarctica with Mawson and also his assistant at the University of Adelaide. They didn't hit it off.

H.L.Summers : Professor at Melbourne in the 1930's.

F.A.Singleton : Senior Lecturer at the University of Melbourne.

L.Keith Ward : Chief Government Geologist in South Australia.

W. Baragwanath : Chief Government Geologist in Victoria.

H.C.Richards : First Professor of Geology, University of Queensland.

F.L.Stillwell : Pioneered the study of minerals in reflected light in Australia. Was at C.S.I.R.O. (mineragraphy)

C.A.Sussmilch : Lecturer in Geology at several technical

colleges in New South Wales. He taught Oliver.

E.W.Skeats : Professor of Geology in the University of Melbourne.

D.Mahoney : Petrologist with the Geological Survey of Victoria. Later Director of the National Museum in Victoria.

W.G.Woolnough : A student of David, he became the first Professor of Geology at the University of West Australia.

Edwin S. Hills : Professor at Melbourne. Very versatile; physiography, petrology, paleontology.

Austin Edwards : A Melbourne graduate. Succeeded Stillwell as Director of the C.S.I.R.O. Mineragraphy section.

D. Thomas : A fiery Welshman. Director of the Victorian Geological Survey.

F. Chapman : Paleontologist to the Victorian Geological Survey. An all-round paleontologist of the old school.

C. Anderson : A mineralogist and Director of the Australian Museum when Oliver started there in 1929.

T. Hodge Smith : Mineralogist at the Australian Museum from 1921 to 1945.

Mawson, Osborne, Madigan and Singleton signed twice. It must have been a good dinner for them.

Alan Mason

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The following story is told of William Berryman Scott (1858-1947) the vertebrate paleontologist at Princeton University -

> Scott was closely associated with the American Philosophical Society and at one of their meetings a member was reading a long, boring paper. Scott, in the audience, seemed safely asleep throughout the reading, but when comments were in order, he woke up and remarked "That was well done - exactly as I heard it here ten years ago".

Scott had the same birthday (12 February) as Charles Darwin and Abraham Lincoln. There is more on Scott, and a photograph, on page 32 of HSG Newsletter 9.

Nuclear New Zealand in the 1950s

Uranium was regarded as a strategic mineral in the late 1940s and early 1950s, and there was an organised search for economic deposits. When cheap, portable Geiger counters were available from about 1952 uranium prospecting was taken up with enthusiasm by many people, culminating in the discovery of low-grade uranium deposits in the lower Buller Gorge in 1955 (Beck, Reed & Willett 1958). The grade and quantity were too low for economic exploitation, and local interest in uranium exploration dropped away when a number of large deposits were discovered overseas.

Crawford (1998) gives an account of two other events which have hitherto remained largely hidden in official files: the heavy water proposal and the search for H-bomb sites. I am very grateful to Malcolm Templeton for bringing this paper to my attention, and thought that other members of the Historical Studies Group might be interested.

When the Wairakei geothermal investigations were started, there was considerable debate about how the steam would be used. In 1952 the British government asked New Zealand to urgently study the possibility of producing heavy water from geothermal steam. It was clear that any heavy water produced would be used in the British nuclear weapons programme, and New Zealand authorities regarded the project as a significant contribution to Commonwealth defence preparations. The British government agreed to the design and construction of a plant as a joint UK-NZ project provided that heavy water could be produced at an economic price. At the end of 1953 Britain withdrew from the project when it appeared that heavy water could be available at a lower price from the USA.

The heavy water project was reactivated in 1954 and then terminated. The British authorities used the excuse that the price of the heavy water produced from Wairakei was too great, but it seems that the reason was an offer by the USA to supply heavy water at low price together with the discovery that thermonuclear weapons did not require as much heavy water as had been originally estimated.

In June 1954 the British government decided to design and build its own hydrogen bomb, and started to look for suitable test sites in the Commonwealth. Sites previously used in Australia could no longer be used because the Australian government had ruled out the testing of such weapons on the Australian mainland. UK officials decided that the most promising site was in the Kermadec Islands, almost 1000 km NE of Auckland. The British Prime Minister, Anthony Eden approached Sidney Holland to seek permission to use the Kermadec Islands for tests starting in 1957. Despite Eden's assurance that wind patterns and weather conditions in the islands rendered them "a completely safe site". Holland was not convinced, and sought advice from Dr Ernest Marsden, then recently retired from DSIR. Marsden reported that either Raoul or Macauley Islands could be suitable, but that it might not be possible to use the weather station on Raoul for a year after such tests. This seems over-optimistic, and there was no consideration of likely effects on the fauna and flora. But Marsden recognised that there might be some public opposition, and suggested use of the more remote Auckland Islands.

Although he had little interest in foreign affairs, Holland was a shrewd politician with a good understanding of public opinion. There had been an unfavourable public reaction to reports in February 1955 that Britain intended testing thermonuclear weapons in Antarctica. He considered suggesting the Pitcairn Islands, and finally decided to regretfully decline Eden's request. Holland told the British High Commissioner that the use of the Kermadecs would be a "political H-bomb" in New Zealand, especially as the tests were scheduled immediately before a general election.

Marsden clearly did not recognise that Raoul Island was an active volcano that had previously erupted in 1815 and 1870, and was to erupt again in 1964. We can only speculate on the result if there had been nuclear tests in the Raoul Crater, which would have seemed an excellent flat site with the crater walls providing some natural shelter.

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Crawford, J 1998: "A political H-bomb": New Zealand and the British thermonuclear weapons tests of 1957-58. *Journal of Imperial and Commonwealth History 26(1)*: 127-50.

Simon Nathan

* *

SPARRMAN, ANDERS (1748–1820), Swedish naturalist. He donated mineral specimens personally collected in the South Sea Islands to the Stockholm mining college (now the Riksmuseet). *[Zenzén, 1921]*

This is a copy of an entry in a census of mineral collectors 1530 to 1799 published in The History of Mineral Collecting 1530-1799 by Wendell E. Wilson, The Mineralogical Record, Tucson, 1994.

Wilson gives the full reference for Zenzen, 1921 as

Zenzen, N. 1921. Studier i och rorande Bergskollegii Mineralsamling. Arkiv for Kemi, Mineralogi och Geologi 8, no. 1, 1-70.

Sparrman was one of the naturalists on Cook's second voyage so it is very likely that the "mineral specimens personally collected in the South Sea Islands" include material from New Zealand.

Zenzen's paper and the Riksmuseet could therefore be profitable avenues of research in the history of geology in this country

THE HOCHSTETTER – HEAPHY CONTROVERSY

Some further information

In Newsletter 25 (Mason 2002) I discussed the controversy that arose in 1864 following Hochstetter's claim that Heaphy had used information from the former's map in compiling his own map of the Geology of Auckland. My article quoted from Auckland newspapers which, understandably, supported Heaphy and provided compelling evidence for their opinions.

Since my article was published two further items of information have come to my attention.

Firstly, I have noticed that Heinrich von Haast has something to say on the subject (Haast, 1948; 363-5). He quotes a letter from Hochstetter to his father on 20 November 1864 –

> *The last letters brought me Heaphy's despicable actions under the title "Major Heaphy and Dr. Hochstetter": lies from beginning to end. I have written a reply and sent it direct to the editor of* The New Zealander. *The position is most unpleasant to me, and if I had an inkling that Fischer had translated the text of to the Atlas, I should have asked him to suppress the sentence against Heaphy, for one has to guard oneself against a scandal with such kinds of people. He is not ashamed to lie in saying that I had not mentioned his name with the woodcuts and illustrations, notwithstanding that each one from his own hand bears his name. I shall send you a copy of my reply by next mail, but I hope that Fischer has replied already, from Auckland, against the personal calumnies.*

I have searched the columns of The New Zealander from August 1864 until May 1865 and cannot find the reply that Hochstetter claims that he had sent to that newspaper. I would expect that such a letter would be given some prominence in the newspaper in view of the amount of space given to the earlier debate. It is significant that Heinrich makes no mention of it although Hochstetter was going to send a copy to his father by the next mail. Fischer had already replied on Hochstetter's behalf and he was on the defensive (Mason 2002, p.37).

The older Haast was not aware of the full reports in support of Heaphy that were published in the Auckland newspapers between 27 August and 10 September 1864 extracts from which are given in Mason 2002. His only knowledge of them came from The Lyttelton Times of 10 September which quoted a small portion of the editorial in the The New Zealander on 27 August 1864 making no mention of the comparison made of the two maps (Mason 2002, pp. 34 and 36).

So Haast Senior would have been unaware of the full facts of the case. He responded to the Lyttelton Times article with a letter to the editor over the pseudonym of 'Fair Play' (Haast 1948, p.364) –

DR. HOCHSTETTER AND MR. C. HEAPHY.

TO THE EDITOR OF THE LYTTELTON TIMES.

SIR,—In your last number you gave an extract from the *New Zealander* of the 27th of August, from which the reader might at first sight conclude that Dr. Hochstetter copied Mr. Heaphy's map. There is no doubt that as soon as Dr. Hochstetter is made aware of the correspondence concerning this affair, he will be able to defend himself successfully against such an accusation, and only the wish to prevent the public from forming too hasty a conclusion has induced me to state the following facts.

The letters of the secretary of the Mechanics' Institute of Auckland and of the other gentlemen prove nothing, except what Dr. Hochstetter states himself, *i.e.*, that Mr. Heaphy, in 1857, attempted to make a geological map of the neighbourhood of Auckland, in which he coloured the different small craters, but, as Dr. Hochstetter observes—"without possessing even the most elementary knowledge for making a geological survey."

Dr. Hochstetter, if I understand him rightly, complains that Mr. Heaphy has taken the geological *details* from his (the Doctor's) map, which was in Mr. Heaphy's official charge, and made use of them.

It is doubtful whether the writers of the letters in Auckland have sufficient knowledge of geology to judge how far Mr. Heaphy copied Dr. Hochstetter or how far Dr. Hochstetter copied Mr. Heaphy: both having had as ground plan for their work the official topographical maps of the district in question. But common sense might suggest that there is a great difference between the work of a geologist of well-deserved reputation and that of an amateur in geology, even admitting that the latter possesses some elementary knowledge.

I have the honour to be, sir,
Your most obedient servant,
FAIR PLAY.

Lyttelton, Sept. 10, 1864.

Heinrich von Haast concludes, with his usual filial loyalty and , therefore, support for Hochstetter by saying –

The whole record of Hochstetter's life is that of a man who was the soul of honour, modest as to his own work, but generous in his acknowledgment and praise of the work of others. He was, therefore, the last man in the world to be a plagiarist. Moreover, he was a skilled geologist, while Heaphy had no knowledge of that science. The verdict then must be judgment in Hochstetter,s favour.

The second item of new information is that I have located a tracing of Heaphy's 1857 map in the Alexander Turnbull Library. The reference number for the tracing is Map. Coll.-832. 12 caq/ [ca.1858] / Acc. 3299-3300. It was originally part of the John White papers at the Library. The tracing is signed by L.B.Dickson

John White is best known for his Maori studies and in particular for his six volume The Ancient History of the Maori but in the early 1850's he had served under Heaphy as a Gold Commissioner (Anon. 1902 , p.442). Nothing is known of L.B.Dickson but he may have been connected to Elwin Brodie Dickson who was curator of the Auckland Museum from 1859-1864 (Park 1998).

The John White papers in the Alexander Turnbull Library make no mention of either Heaphy or Dickson.

The tracing is on a scale of 1:63,360 and covers the area from Mahurangi in the north to Manukau Heads in the South and from Manukau Heads in the west to Waiheke Island in the east. The tracing has no colouring or locality names so The New Zealander's comments on these cannot be checked (Mason 2002, p.34). The map was originally described as "Sketches of the geological formation of the Auckland District" (Mason, 2002, p.31) but the only geology transferred by Dickson to his tracing is that of the Auckland Volcanic Field (Fig. 2). Here it shows centres of eruption and the boundary lines between the various formations as mapped by Heaphy. The latter can be matched up with those of his 1860 map (see later). It also shows the Kumeu River which the Hochstetter map has "sinking into the earth" (Mason 2002, pp. 34-36).

Fig. 1. Detail from the west margin of Heaphy's 1857 map. Note the Kumeu River on the left and compare it with the detail from Hochstetter's later map on page 35 of Mason 2002. Although Hochstetter's map extends further to the west than Heaphy's his depiction of the Kumeu River ends in the same position.

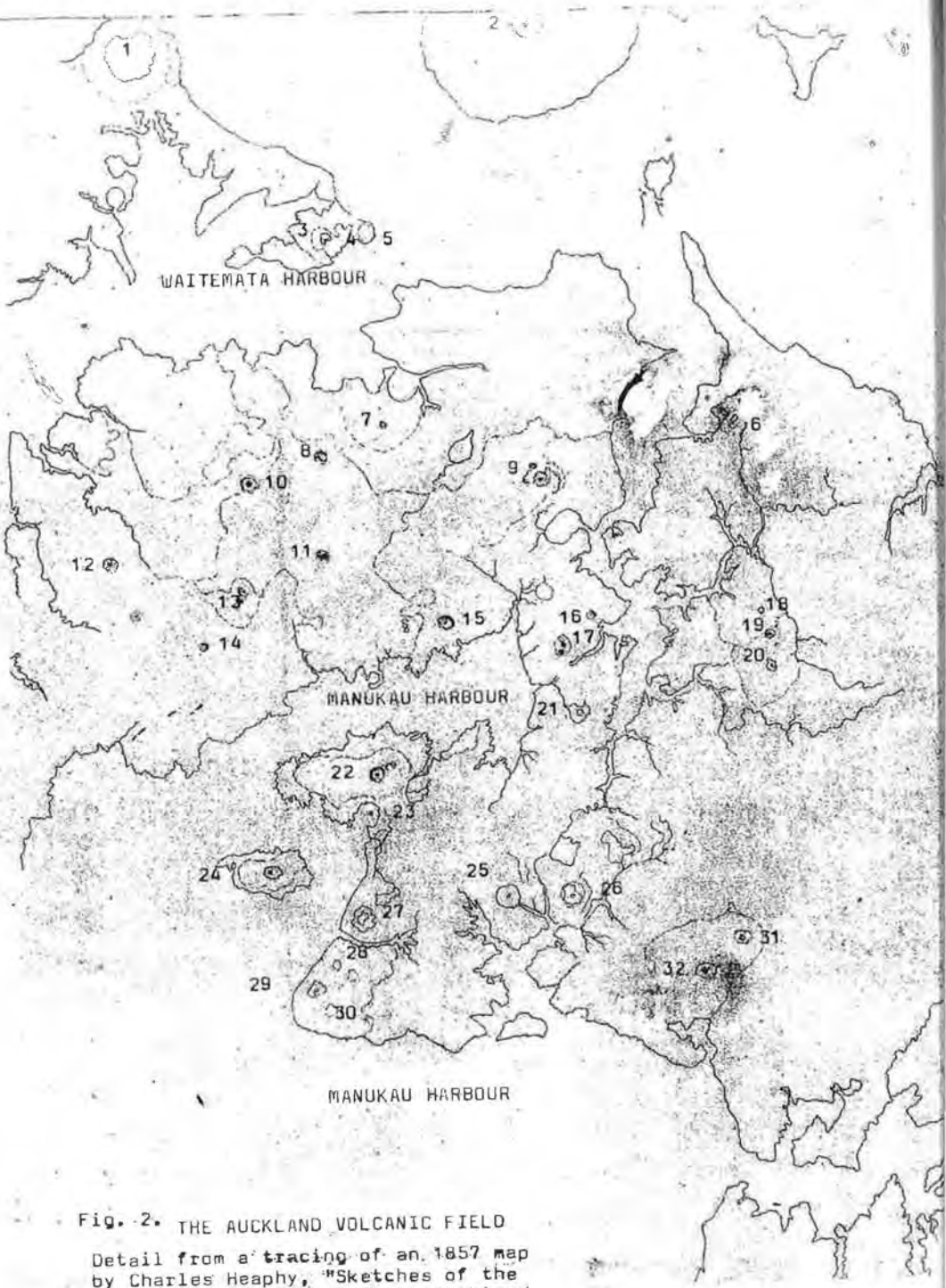

Fig. 2. THE AUCKLAND VOLCANIC FIELD

Detail from a tracing of an 1857 map by Charles Heaphy, "Sketches of the geological formation of the Auckland District

It is unfortunate that Heaphy's original map is not available. In this article I can only refer to a photocopy of a tracing and it is not known how accurate that tracing is. For example the tracing does not show Brown's Island, with its obvious cone and crater, as a volcano. Again , while it appears to show Lake Pupuke as a centre it omits similar centres such as Onepoto and Orakei.

So, human error on the part of Dickson is an important factor but I have identified what appear to be 32 centres of eruption on the tracing compared with 48 identified by Kermode (1992, p.32) in the same area. I have numbered these on the Heaphy tracing opposite and comparing the tracing with the map on page 32 of Kermode 1992 I have identified them as –

1. Pupuke
2. Rangitoto
3. Mt Victoria
4. Mt. Cambria
5. North Head
6. Pigeon Mtn
7. Little Rangitoto
8. Mt. Hobson
9. Mt. Wellington
10. Mt. Eden
11. One Tree Hill
12. Mt. Albert
13. Three Kings
14. Mt. Roskill
15. Mt. Smart
16. McLennan Hills
17. Mt. Richmond
18. Styaks Swamp
19. Green Hill
20. Otara Hill
21. Robertson Hill
22. Mt. Mangere
23. Mangere Lagoon
24. Puketutu
25. Pukaki
26. Crater Hill
27. Waitomokia
28. Pukeiti
29. Otuataua
30. Maungataketake
31. Ash Hill
32. Manurewa

The Auckland Volcanic Field portion of Heaphy's 1857 map was published in 1860 (Heaphy 1860) and is here reproduced in Fig. 3. It is described as "Geological Sketch- map of the Auckland District by C. Heaphy, 1857 (Corrected to Feby 1859)". In an addendum to Heaphy's paper the Editor of the Quarterly Journal says (Heaphy 1860, p. 251) -

> "the central portion of a large Geological Sketch –map of Auckland and the surrounding district, constructed by Mr. C. Heaphy from actual survey in 1857, and corrected to February 1859.
>
> The corrections here alluded to have arisen from observations made during the Progress of Dr. Hochstetter's geological survey of the Auckland District."

The corrections referred to by the Editor are not great. They consist of the addition of several new volcanic centres mainly those now submerged e.g. Onepoto, Orakei Basin , Panmure Basin etc which were probably identified by Hochstetter. Where they can be identified in the tracing Heaphy's 1857 formation boundaries line up closely with those in his 1860 map.

Certainly the facts do not substantiate Hochstetter's claim as reported in Mason 2002, p.32 that Heaphy's 1860 map was "a very incomplete copy of my observations and

Fig. 3. The Auckland Volcanic Field (Heaphy 1860)

Legend Opposite

The Legend for Heaphy's map of the Auckland Volcanic Field (opposite). Heaphy's article also includes a map showing some of the geology of the North Island and the above Legend applies also to that map.

maps". Furthermore Hochstetter's statement that Heaphy's earlier work was done "without possessing even the most elementary knowledge necessary for making a Geological Survey" is also not correct. The discussions in Mason 2002 and herein show that if there was plagiarism, then Hochstetter was the culprit.

Hopefully, the story is not yet finished. Heaphy's 1857 map could still be in existence and may yet be located.

Acknowledgment :

I am grateful to Dave Small Curator Cartographic Collection at the Alexander Turnbull Library who provided a copy of the tracing of Heaphy's 1857 map

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Alan Mason

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Charles Lyell, 1797–1875

Arthur Holmes, 1890–1965

Alfred Lothar Wegener, 1880–1930

Sir Harold Jeffreys, 1891–1989

Eduard Suess, 1831–1914

510. — La plus grande, la plus longue, la plus importante crevasse se trouvait du nord au sud, bien visible et déjà large à l'aurore du sixième jour, n'empêchait pas la communication des eaux d'un côté à l'autre. Cette crevasse aura été peut-être d'une immense largeur; elle divisait la terre presqu'à moitié dans la direction indiquée. On pouvait pressentir qu'une séparation inévitable; que la masse la plus grande, en raison de sa pesanteur, et que la serait repous-ée à une distance un équilibre proportionnel.

511. — La masse la plus forte à l'est, et elle y est restée.

Nous ne savons pas de quel nom on appelait, à l'aurore du sixième jour, le continent de cette masse après Noé, on l'appela, comme de nos jours, l'Asie, l'Afrique et l'Europe.

La grosse masse partielle, dont la crevasse séparait du sud au sud de l'aride, était à l'ouest, et dans l'écartement qu'elle a subi, sa surface s'est portée plus à l'ouest encore; cette masse forma elle-même un grand continent, que nous appelons aujourd'hui l'**Amérique.**

Preuves de la formation de l'Amérique.

Sommaire. — Les faits toujours appuyés de leurs preuves, 522. — *Preuves physiques*; correspondance des caps et des golfes, 523. — Preuve tirée du système des volcans, 524. — Nomenclature des principaux volcans, *note* U, *id.* — Tremblement de terre de Lisbonne, 525. — Tremblement au Pérou, 526. — Cataclysme au Kamtschatka, 527. — Cataclysmes partiels; effets à attendre du prochain cataclysme général, 528. —

Harry Hammond Hess, 1906–1969

Portraits from 'The Dark Side of the Moon' by Robert Muir Wood

HISTORICAL STUDIES GROUP NEWSLETTER

Number 27 September 2003