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PROVINZ NÜCKELAND
N. N. N. N.

Zur Geschichte des Nord- und Ostlandes
von
Dr. ERDMANN v. HOCHSTETTER
1850



HISTORICAL STUDIES



GROUP



GEOLOGISCHE ÜBERSICHTSKARTE
VON
PROVINZ NÜCKELAND

Geologie
Stratigraphie
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Vergleichende Chirurgische Zahnheilkunde

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F. Driffield Prof. Dr. T. v. F. P. also letters in James Hutton

J. M. Hutton Alex. McKay

W. H. Hutton James Park

M. G. Hutton R. Spright E. Lee Clarke
James Mackintosh Bell

Henry Luter P. Marshall
Colin Fraser

J. Cecil Thomson Alcalcohn MacLaren
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Robert Chaw

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Robin S. Allen

H. Turner

M. Ongley

H. J. Finlay

C. C. Hutton

R. S. Sillit

John Hutton

A day well spent in the field is worth
a dozen of reading at the fireside.. 'To
the field on every fitting occasion'
should be the guiding maxim of the young
geologist.

- David Page, 1869

EDITORIAL

The work of our Historical Studies Group was recently recognized by the award of a New Zealand Science and Technology Medal. The pleasure of having the efforts of the Historical Studies Group acknowledged in this way is enhanced by the knowledge that the Royal Society of New Zealand regards the history of science as an important part of scientific research in New Zealand. Regrettably, this is not the case in many other scientific institutions in this country

The Historical Studies Group has lost another one of its senior members. In our last newsletter we recorded the death of Arnold Lillie on 11 February this year. There are two further tributes to Arnold in this issue. We now mourn the death of Harold Wellman on 28 April. Harold was the last of a trio of New Zealand geologists who were all born in 1909 (Ernie Searle, Arnold Lillie and Harold Wellman).

On the positive side, it is a pleasure to record that at a glittering ceremony at the end of last year our oldest member, Cyril Firth (95 on 25th January this year), received a University of Auckland Distinguished Alumni Award. There is an account of Cyril's life and contribution to engineering geology in Newsletter No.8. Cyril is still active and has provided a note on Arnold Lillie for this issue.

We also congratulate Heather Nicholson whose book, The Loving Stitch: a History of Knitting and Spinning in New Zealand, has just won the non-fiction prize at the Montana Book Awards. It seems a far cry from her excellent article in our last newsletter, 'The Settler Geologists, the Maitai and the Axial Rocks'.

Alan Mason
75A Argyle St
Herne Bay
Auckland 1002

Our introductory Quotation :

David Page (1814-1879) was Professor of Geology at Durham University College. He wrote a large number of books in both the popular and educational fields and had the ability to translate the facts of geology into popular language. We do not know the context of the quotation.

HAROLD WELLMAN

In 1989 the Geological Society of New Zealand celebrated the eightieth birthdays of three prominent New Zealand geologists, Arnold Lillie, Ernie Searle and Harold Wellman. All have died within the last three years, the last of them, Harold Wellman on 28 April this year. All three were members of the Historical Studies Group

Harold Wellman was born in Somerset on 25 March 1909 and came to New Zealand with his family in 1927. The family returned to England in 1932 but Harold remained in New Zealand, working as a surveyor until the onset of the Depression left him without a job.

The Depression years were hard years for New Zealand and for Harold they were harder than the norm. He spent most of this period, swag on back, prospecting for gold on the West Coast of the South Island.

These years of hardship on the West gave Harold an interest in geology and in 1935 he obtained employment as a field hand with the New Zealand Geological Survey. He also now had the opportunity of attending university (part time) in Christchurch and Wellington, interrupted by another year of hardship (malaria, tropical ulcers, and near assassination) in New Guinea.

In 1939 he was appointed to the professional staff of the Geological Survey, spending the war years in Nelson and later Greymouth. It was during this period that he made an epic reconnaissance with Dick Willett through roadless South Westland and West Otago which produced the first hint of lateral shift on the Alpine Fault. That hint was formulated in Harold's address on the 480 km. dextral displacement at the 7th Pacific Science Congress in 1949. His discovery of the Alpine Fault was his best known achievement and led, forty years later, to a BBC television documentary on his work, 'The Man who moved the Mountains'.

For most of the 1950's Harold was at the Survey Head Office in Wellington and he made outstanding contributions on Quaternary tectonics and the Cretaceous. This was also a time of official recognition of his work; a D.Sc. from the University of New Zealand and a Fellowship and the Hector Medal from the Royal Society of New Zealand. It was early in this period that Harold's thinking inspired the New Zealand Fossil Record File which is still operating today. In the late fifties he turned paleontologist and prepared a subdivision of the New Zealand Cretaceous based on *Inoceramus* species.

Early in 1957 Harold Wellman left the Geological Survey to work for BP Exploration in Gisborne but as an office job it was not



to his liking so in 1958 he made a major change in career direction and took up a position as Senior Lecturer in Geology at Victoria University College in Wellington. Bob Clark's appointment of Harold to his staff was not without its critics but it turned out to be highly successful. Harold Wellman, the geologist, endured, eminently so, but it is Harold Wellman the teacher who will be remembered best by his students.

A lucid lecturer and an innovative teacher, he was never one to be awed by authority and in his every day activities he identified more with students than he did with staff, often to the displeasure of university authorities.

Harold was promoted to Associate Professor in 1963 and was given a personal chair in 1970. He officially retired from the University in 1975 but continued to maintain a contact for twenty years and to teach for fifteen.

In his professional life, Harold was a 'throw-back' to the general geologists of earlier years and his publications which number well over one hundred cover most of the broad fields of earth science. As a field geologist he stands with Alexander McKay but unlike McKay Harold was able to apply his detailed knowledge to the solving of New Zealand's major geological problems.

Alexander McKay died eighty years ago. Now Harold Wellman has gone. Will there ever be another from the same mould? It is doubtful. The passing of Harold Wellman marked the passing of an era in New Zealand geology.

Alan Mason

* * * * *

Mozart and Ignaz von Born

Bill Watters

Ignaz von Born (1742-1791) was a distinguished 18th century geologist and a friend of Wolfgang Amadeus Mozart. He is undoubtedly unique among geologists in having had a cantata composed in his honour by one of history's greatest composers. This article is a follow-up to the one by Alan Mason in the HSG newsletter for March 1998 (pp. 39-40).

Born was probably best known in his time as a mineralogist - it was he after whom the copper-iron sulphide bornite was named (Palache et al. 1944, p. 197) - but he was also deeply interested in paleontology and was an early student of volcanism. Mozart's association with him appears to have been because both men were prominent freemasons. Born was master of the lodge Zur wahren Eintracht (True concord, or true harmony) to which the great composer Joseph Haydn also belonged. But on 24 April 1785 he was honoured at Mozart's lodge in Vienna, Zur gekrönten Hoffnung (Crowned hope), on the occasion of his investiture as a Reichsritter (Knight of the Empire) by the Austrian emperor Joseph II. For this occasion Mozart and his father Leopold were present, and to mark the celebration the former composed a cantata "Die Maurerfreude" (K. 471) (literally masons' joy) in Born's honour (Landon 1989). Later, the cantata would also be performed in honour of Mozart himself in Prague on the occasion of the first showing of his opera "La Clemenza di Tito".

The other main interest in Born for students of musical history is that according to 19th century research he is regarded as the model for the high priest Sarastro in Mozart's great opera "The Magic Flute". This was first performed in Vienna in 1791, the year of the deaths of both men.

Even in modern publications Born is variously described as Austrian, Hungarian or Czech. These peoples belonged then to the Austro-Hungarian empire, but he was a native of what is now the Czech Republic. For the first 25 years of his life he lived in Prague and the small town of Staré Sedliště in the western part of the country. In 1776 he went to Vienna to catalogue and curate the imperial geology and natural history collection (Hutchings 1976, p. 98; Wilson 1994, p. 162). He also became master of the Crowned Hope lodge (Landon 1989). Under Born it was noted for its support of science and for the furtherance of the freedom of conscience and thought (Hutchings 1976), and through it he and Mozart became friends.

During his life Born travelled extensively in, and wrote on the geology and minerals of, parts of what are now the Czech Republic, Slovakia, Hungary and Romania. He also studied fossils in the lower Paleozoic beds of Bohemia (Czech Republic) (Zittel 1901, p. 445). Born's influence as a paleontologist was described by Zittel (p. 41) as follows:

"Ignaz von Born ----- was a learned mineralogist, and a palaeontologist of far keener insight than most of his contemporaries ----- he realised the great part that fossils were destined to play in historical geology, observing that successive assemblages of fossils gave indication of the different geographical and climatic conditions which had obtained in the same area during successive ages."

Some of Born's geological and mineralogical observations were described in



Ignaz von Born. From an engraving by J. Adam after a painting by G. Bertrand (Hutchings 1976)



The original title page of Mozart's cantata "Die Maurerfreude" composed for solo tenor, male-voice choir and orchestra, in honour of Ignaz von Born (Landon 1989)

letters to the prominent Swedish mineralogist, Professor J.J. Ferber. These were originally published in German in 1776 and later translated into English (Born 1777). Ferber was widely travelled throughout Europe and he had visited Naples in order to observe the activity of Vesuvius (Zittel 1901, p. 41). Born never travelled to Vesuvius himself, but in collaboration with Ferber and F.J. von Kinsky closely studied several Quaternary volcanic centres in western and central Bohemia. In these investigations Born and his fellow workers showed themselves in advance of contemporary thinking on the origin of these centres. They argued for their formation as the result of former volcanic activity, such as that in progress at Vesuvius during the later decades of the 18th century. In contrast, current wisdom in central Europe, and elsewhere, under the influence of A.G. Werner in Saxony, was in favour of a neptunist (water-laid) origin for igneous rocks (see Geikie 1905, Chap. 8).

Like many scientists of his time Born was a great collector of minerals, fossils and rocks. He described his own in a large publication, Litho-phylacium Bornianum, which was printed in Prague in 1772 and 1775. Later he sold his collection to Charles Greville F.R.S. (1749-1809), a leading English collector of art works and natural objects, including minerals and gems (Wilson 1994, p. 75). Although Greville was particularly interested in minerals he did not study them scientifically. His main scientific interest was in horticulture, and he was one of the founders of the Royal Horticultural Society. The important Australian genus of flowering shrubs, Grevillea, was named for him by his friend Joseph Banks. In 1810, one year after his death, the whole of his collection was purchased by the British Museum for the then enormous sum of 13,727 pounds (Mr P. Tandy, Natural History Museum, London, pers. comm.). Part of the Born material was on-sold during the 1860's (Cleavelly 1983, p. 61). According to Mr Tandy, only part of the Born collection was documented in an original catalogue, so that it is difficult to be sure which specimens are Born's and which are Greville's in the present holdings of the Natural History Museum.

Born's death was premature, at the age of 49 - although he was still appreciably older than his friend Mozart. He died as the result of arsenical poisoning contracted at a mine in the district of Baia Sprie (Felsöbanya) in north-western Romania. The mine was being worked by the old method of fire-setting, by which a large wood fire was lit at the mine face and the heated ore was then broken by quenching with water. Born apparently entered an adit before the poisonous vapour from the fire had cleared, and he never fully recovered from the effects of this. His death removed one of the leading European earth scientists of his time.

Acknowledgments. I am grateful to Alan Mason who gave me copies of some published material on Born and to Peter Tandy and Paul Ensom, Natural History Museum, London, for information.

References.

- Born, I. von 1777. Travels through the Bannat of Temeswar, Transylvania and Hungary in the year 1770. London.
- Cleavelly, R.J. 1983. World palaeontological collections. British Museum (Natural History), London.
- Geikie, A. 1905. The founders of geology. Macmillan, London.
- Hutchings, A. 1976. Mozart. The man, the musician. Thames & Hudson, London.

- Landon, H.C. Robbins 1989. Mozart. The golden years. Thames & Hudson, London.
- Palache, C., Berman, H. and Frondel, C. 1944. The system of mineralogy (of J.D. and E.S. Dana). 7th ed., vol. 1. Wiley & Sons, New York.
- Wilson, W.E. 1994. The history of mineral collecting 1530-1799. The Mineralogical Record, Tucson.
- Zittel, K.A. von 1901. The history of geology and palaeontology. Walter Scott, London.

The Origin of Crystallography



The founder of the science of crystallography was the Abbe Rene Haüy (1743-1822). Tradition has it that Haüy while examining a collection at the home of a friend, dropped a specimen of calcite. Gathering the pieces together, Haüy noticed that they were all similar and resembled other calcite crystals he had seen. With an exclamation of "Tout est trouve!" - All is discovered! - he returned to his laboratory and systematically demolished all the different shapes of calcite crystals he could find in a successful effort to prove his point. No matter what the shape of the parent crystal, the broken-down pieces all had faces at the same angles, each one being a rhombohedron. (from The Mineral Kingdom by Paul Desautels)

Haüy stated the results of his investigations in his Traite de Mineralogie (1801) -

" Geometry has direct and inescapable relations with mineralogy in the description of crystalline formsA casual glance at crystals may lead to the idea that they were pure 'sports of nature' but this is simply an elegant way of declaring one's ignorance. With a thoughtful examination of them, we discover laws of arrangement. "

FIELD WORK IN VICTORIAN NEW ZEALAND

(And you think you've had it tough)

The early New Zealand geologists were pioneers not only in science. Their names figure prominently in the history of exploration in this country.

Elder, Goldseekers and Bushrangers in New Zealand, 1930, gives several accounts of the hardships suffered by early New Zealand geologists in the field. One example he quotes (pages 91-102) is that of Hector's overland expedition, early in 1863, to the then unknown mountainous regions of Western Otago. Hector was in his late 20's at the time and had already made his name as an explorer with the Palliser Expedition of 1857-60 in Western Canada.

Included in Hector's party was a newspaper reporter, J.W.Sullivan, who sent regular reports of the expedition to the Otago Daily Times. Sullivan had actually been with Hector on the Palliser Expedition. In the lower part of the Matukituki River they were greatly hindered by the marshy nature of the ground and Sullivan reported to his newspaper -

“ Our difficulties were greatly increased by the swamp. For the space of four hours we plodded, up to our waists in the water, leading the packhorses through dense clouds of sandflies and mosquitoes. Towards evening the mire became more deep and, in less than five minutes, all the horses, with the exception of two, had sunk so effectually into the mire as to preclude any probability of their again rising laden. No alternative remained for us but to ease the animals of their burdens, pack the baggage piecemeal on our backs, and seek the driest spot on which to leave it. By the time we had accomplished this and extricated the horses, night, accompanied by a real mountain shower, compelled us to encamp.”

Proceeding up the valley, they were frequently compelled to cut their way through dense scrub, which consisted of prickly thorns with an undergrowth of large sized bayonet grass. Sullivan's account, as reported by Elder, proceeds in a similar vein until on 26 March 1863, on the return journey, and two months after the start of the expedition, dry weather enabled them to light a fire. Sullivan wrote -

"Taking advantage of the few dry sticks we could collect, we kindled a fire, roasted a ka-ka, and made some tea. It will be seen that since the morning of the 23rd up to the present date, the 26th, an interval of exactly three days, the only food which we had consumed between the three of us, consisted of one pigeon and a ka-ka. When I recall the hard climbing in such a continual saturated state, I am at a loss to account for the successful manner in which we regained the summit of the mountain."

Such phrases as "constant rain", "dense fog", "keen hunger", "difficult and dangerous" occurred frequently in Sullivan's reports. He also paid tribute to "Dr. Hector's characteristic daring and skilful leadership"

During those same early months of 1862, as Hector was struggling over the mountains of Western Otago, further north, Haast was enduring comparable privations in the Haast Pass area. In his massive biography of his father, The Life and Times of Sir Julius von Haast, 1948, H.F. von Haast (p.284) tells us that it took Haast and his party four days to cover the two and a half miles between the junction of the Wills and the confluence of the Burke. On page 285, the biography relates an episode on the same journey when they were flooded out in their tent and forced to move to a small cave with a sloping floor where the water was already lapping at the lower end. They watched the water rising in the dark, gradually shifting higher in the cave until they were on a small ledge of rock close to the roof. In the elder Haast's own words -

In the meantime, the others and I sat close to the fire which was still burning under an overhanging rock, keeping the collections, journals, and instruments with me. As the water from the river rose higher and higher it extinguished the fire and we were in the dark. Cold and wet to the skin, we huddled close together under the little bit of overhanging rock, anxiously awaiting the morning. At first, one of my companions, a jolly sailor who had travelled all over the world, enlivened the night with his yarns. Sometimes we were with him in Chinese waters chased by a pirate, or at the Guano Islands on the western side of America, or in Canada on the Lorenzo River loading timber. We listened with pleasure to the vivid narratives of his adventures, through which he always came, like Bayard, without fear, but, unlike him, not always without reproach. After a time he became silent, and my turn came. I went faithfully through all the songs I could remember in German, French, Italian or English, until I was hoarse, and I had fairly sent my hearers to sleep, a short and uncomfortable one. Then came some hours of silence for me, but not for nature, the splash of the waterfall near us, the howling of the wind, and above all, the thundering and deafening roar of the swollen river made the night dismal and dreary.



Hector, Haast and Park as they were about the times of the episodes mentioned in this article

Elder (1930, pp.117-20) describes the contribution of another geologist to the exploration of Western Otago; that of Park in the headwaters of the Pyke, Cascade and Arawhata Rivers (Rep. Geol. Explor. 1886-87, pp.121-137). He quotes from an address given by James Park to the Otago Institute in 1922-

In the hope of finding water we continued the descent till darkness overtook us. Our search for water being still unsuccessful, we blundered on through the darkness till we suddenly caught sight of Lake Alabaster glimmering through the trees below us. Soon after this we pulled up on the top of a steep declivity overlooking the lake. It was now nine, and too dark to find a way down to the edge of the water. Weary and hungry, with our backs to the mountain and our faces to the lake, we sat down on a ledge of rock to await the coming day. During the night there came on a cold drizzling rain. The only shelter we carried with us was a thin calico tent fly, and this we pulled over our heads. Thus we sat till the dawn. Stiff and cold we started off at five, and within an hour reached the flat ground at the head of the lake. The rain now came down in torrents. With the ground soaked with water and the bush dripping wet, it was fully an hour before we succeeded in getting a roaring camp-fire going. Here we set up our fly and spent the remainder of the day drying our clothes and camp gear."

Then on the return journey of Park and his party -

A cold south-west wind now came off the snows of Tutoko, but it was behind us. As the afternoon wore on, the wind increased to a gale, and the temperature dropped suddenly. Our clothing, not yet dry, began to freeze, and the stiffness of our trousers compelled us to walk with short, jerky steps. After a time Courtenay began to complain of a great pain in his legs below the knees. In an hour his lower limbs had swollen to four times their normal size, and what were small skin scratches were now fiery-looking wounds. As he was suffering greatly, I left the wind-swept summit and dropped down the eastern slope.

The narratives which often introduced the articles in the Reports of Geological Explorations are interesting reading but they leave a lot unsaid. They were sometimes masterpieces of understatement. For example, the events narrated in the first of the two Park extracts above, the descent to Lake Alabaster, are dealt with by Park in his official account (Rep. Geol. Explor. during 1886-87, p.122) with the curt statement

"....and, descending the west side, reached the north end of Lake Alabaster."

The second episode is covered by

"....we suffered greatly from cold and exposure, more especially my field-hand, whose feet and knees got slightly frostbitten."

Perhaps circumstances as narrated in our extracts were the norm rather than the exception and therefore not worthy of official mention.

As Elder put it (1930, p.121) in discussing Hector's Geological Survey -

"In mid-Victorian days there was no room in that service for weaklings but only for men of great physical strength, endowed with the courage to suffer stoically privation, unutterable fatigue, and constant peril of life from flooded rivers and frozen snowfields."

Alan Mason

* * * * *

Arnold Lillie: a fond recollection

Towards the end of 1939, I was completing first year at Victoria University (College); only a few months prior, Arnold Lillie had joined the staff of the NZ Geological Survey, centred at 156 The Terrace, Wellington, only ten minutes' walk from the University. Dr Lillie was a refreshing newcomer to the Survey, bringing new concepts from the other side of the world. One of my early impressions, as a geology undergraduate, was of a large panoramic photographic illustration, on the wall of one of the rooms of the Lillies' home, displaying Swiss alpine nappe structures; these I had been introduced to in lectures, and I was intrigued to learn that Arnold had worked in that terrain.

On completing Geology 1 I was keen to have University vacation employment with the Geological Survey during the 1939-40 summer. Mr Henderson, Director of the Survey, kindly took me on and appointed me as a field assistant to "Dr Lillie". Summer field work was to be in the Dannevirke Subdivision. We set up camp in a farmer's field - I in my small tent, and a caravan housing Arnold, Rhoda and two small daughters, plus a private nurse who had come with the Lillies from Eutope. I shared their evening meals. It was a home away from home.

I was transformed from a completely raw geology student to one conversant at least with basic mapping procedures. The art of effectively wrapping hand specimens was another acquisition. Highlights of Tertiary soft sediment mapping included the attempted traversing of bentonite formations in the rain, and encountering a small hill converted by means of an underground furnace to "volcanic scoria", for use as road metal in a region where no appropriate natural lithology existed.

I regret not having lived in New Zealand for most of the years subsequent to my initiation in geological mapping insofar as I thus have been unable to maintain a close association, either professionally or socially, with a man whose reputation for kindness and consideration for others substantiates my own experience. I can but cherish the memory of that early encounter.

Robin Oliver

ARNOLD LILLIE

I was away from Auckland in February so I missed the notice of the death of Arnold Lillie. The obituary in Newsletter 18 and that in Society Newsletter 118 recalled for me my first meeting with him in late 1939. Art Feldmeyer, Senior Geologist for Superior Oil, and I were doing a reconnaissance for the Company's Dannevirke Concession, in southern Hawkes Bay *, when we came upon Arnold setting up a well appointed camp in wild bush country south of Pahiatua. He was his typical 'bewildered self', thrust into this, his first assignment with the New Zealand Geological Survey, in country the antithesis of the Swiss Alps from which he had come. His whole family was with him, plus the childrens' German-Swiss nursemaid. We were able to give him some assistance before moving on.

My next contact with Arnold was in 1946 when he was appointed the first full-time geologist at the Auckland Museum and I introduced him to Auckland geology and the Museum Geology Department. My own contact with the Museum started in my university days in the early 1920's when I became associated with a group of fieldwork enthusiasts which included Raymond Firth (my cousin) and his pals, Bob Falla and Baden Powell (then junior staff members at the the old Princes Street Museum) **

In more recent contacts with the Lillies another common interest was revealed. Raymond Firth left New Zealand in the mid 1920's for U.K. and became a world authority in Social Anthropology and Dean of Anthropology, London University. In 1936 he married one of his students, Rosemary Upcott who, it transpired, was a one time school friend of Rhoda Frankenberg, Arnold's wife. Raymond, now 97, and Rosemary are still reasonably active. He and Bob Falla were both knighted, for services rendered, in 1973.

Cyril Firth

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* For more information on Cyril's work with the Superior Oil Co, readers are referred to his account of the work in Newsletter No. 9. - Ed.

** There is more on Cyril's association with the Auckland Museum elsewhere in this issue. - Ed.

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GEOLOGY AT THE AUCKLAND MUSEUM

Part 2 : 1867 to 1946

In Newsletter 13 (Mason 1996) we gave an account of the early years of Auckland Museum geology from its beginnings in 1852 to 1867. That account ended with mention of the formation of the 'Auckland Philosophical Society' on 6 November 1867.

.....

The Daily Southern Cross, an early Auckland newspaper, carried full coverage of that formative meeting in its issue for Thursday, 7 November 1867. Its report began -

A public meeting of gentlemen interested in the formation of a branch of the New Zealand Society in Auckland, to be incorporated under the New Zealand Institute, was held at three o'clock yesterday afternoon at the City Board office, Canada Buildings

(The Canada Buildings were in Queen St., just above Vulcan Lane - Bush, 1971, p.67)

Present at the meeting were three people who had been associated with the early years of Museum geology, Heaphy, Hutton and Whitaker (Mason, 1996) and it was Heaphy who proposed the motion that "That the thanks of this meeting are due to Mr. Gillies and Captain Hutton for having taken steps to initiate the Society".

The meeting decided to form an 'Auckland Philosophical Society' and Whitaker, Hutton and Heaphy were all elected to a steering committee charged with preparing a constitution and rules.



F.W.Hutton and Charles Heaphy. Heaphy is wearing his Victoria Cross, the first awarded to a New Zealander.

At a further meeting on 10 March 1868 the name was changed to 'The Auckland Institute' and Hutton became a member of the first Institute Council appointed at that meeting. (Powell 1967, p.11)

The first general meeting of the Institute was held on 4 May 1868 in the Museum and for the next eighteen months there was an informal association between Museum and Institute, due, no doubt, to Hutton's connection with both organizations. That association was formalised late the next year when the Provincial Council transferred control of the Museum to the Institute.

Hutton was the prime mover in both Museum and Institute and as he himself was primarily a geologist, geology played a prominent part in both organizations. Information on Hutton's Auckland period is preserved in his letters to Hector (Hocken Library Ms443, James Hector Papers). Extracts from those letters, with pertinent comments, are given by Campbell (1984) and they indicate that throughout the period Hutton was very frustrated by the lack of support given to his work with both Museum and Institute. For example, in his letter to Hector of 1 January 1869 -

"I hear that the Canterbury Government have voted 1200 pounds to build a museum and make Haast curator. I wish I could get the semi-educated drunkards who govern up here to do the same."

Hutton's letter of 29 October 1868 tells us that had he had "got a room for an office in the same building as the Museum..." The Museum at this time would still have been on the 'Northern Club' site at the corner of Princes Street and Kitchener Street so Hutton could well have occupied the same room as was occupied by Hochstetter ten years earlier. (Mason 1996, p.25)

From the Proceedings of the Auckland Institute as printed in the 'Transactions of the New Zealand Institute' we learn more about geology at Auckland in these early days.

At the first general meeting on 4 May 1868, the Secretary, Gillies, "read a note that had been left at the Museum stating that a number of miners from Thames had visited the collections and had been much interested and gratified by examining the minerals there".

At that same meeting -

"Dr. Hector then gave a most interesting account, first of the geology of the New Zealand Islands as a whole, and next, more particularly of the geology of the northern part of Auckland....The lecture was illustrated by a Geological Map of the Northern District, which was published by Dr. Hector in 1866, and also by unpublished maps and sections of the coalfields."

The "Geological Map of the Northern District which was published by Dr. Hector in 1866" would be No 1701 of Kidd 1996 (p.171). Hector (1868, p.1) gives more information on this map -

The field work of the first season of the survey in 1865-6 embraced a superficial examination of the district lying to the north of the City of Auckland.....The results of this examination were, in part, furnished in the form of Maps and Memoranda to the Provincial Government of Auckland, and a geological map of the above district was published in November last.

At the final meeting for 1868, on 5 October, Hutton proposed that Hochstetter be elected the first Honorary member of the Auckland Institute. In reporting on this meeting, the 'Daily Southern Cross' for Saturday, 10 October, had this to say :

"Dr. Purchas thought that they should communicate with the Imperial Museum, Vienna, and they would, no doubt, be able to get plenty of specimens etc.

Dr. Fischer said a great many things had been sent to the Museum at Canterbury by Dr. Hochstetter.

Captain Hutton said the great difficulty was, not to get specimens, but to get cases to put them in when obtained. They had now a box full of birds and another full of rock specimens, and no place to put them in."

The Dr. Fischer mentioned in the report was a German by birth and practised homoeopathy in Auckland (Gluckman, 1980). He had befriended Hochstetter on the latter's visit to Auckland and had translated Hochstetter and Petermann's booklet into English (Hochstetter and Petermann, 1864)

Field work was not neglected and the first annual report of the Institute (for 1868) tells us

"Field excursions of the members have been made to the Tufa craters of Waitomokia, the North Head of Manukau, and to the caves at the Three Kings, during which much interesting information was collected respecting the geology and natural history of the districts visited."

The Institute Minute Book for 1867 to 1871 is still in existence and two of the minutes for 1869 are of interest :

3 April 1869 : The Secretary was instructed to enquire of Dr. Haast respecting the geological specimens left for the Auckland Museum by Dr. Hochstetter.

5 June 1869 : An acknowledgment received from Hochstetter re his appointment as a Honorary Member. Also a letter from Haast respecting the geological specimens collected by Hochstetter.

said to have been left in the charge of Mr. Heaphy for the Museum.

The last previous record we have of the Hochstetter specimens is that at 21 December 1861 they were packed away in cases at the Museum (Mason 1996, p.24). Haast and Heaphy were both geologists and both had accompanied Hochstetter on Auckland expeditions so they were logical people to contact as to the whereabouts of the specimens. However the Museum Council of 1869 seems to have been unaware of the December 1861 report and, furthermore, the specimens may have already been lost by 1869. (Mason, 1996 p.27)

With the departure of Hutton for Wellington in 1871, geology at Auckland Museum went into a decline. Hutton was unique amongst New Zealand scientists in that he not only held the premier position in the New Zealand Institute (President 1904-5) but at various times had held office in all the affiliated institutes in the four main centres and had acted as museum curator in three of them. A comprehensive account of Hutton and his work is given in Dawson, 1994 and an account of his Auckland period is found in Campbell, 1984. On page 22 of his article Campbell makes the following succinct assessment of that period -

I have long had the feeling that he -(Hutton)- has been rather less than fully honoured by New Zealand geologists and by Auckland geologists in particular, and I think that it was Auckland's loss when he slipped through the province's politicians' fingers a little more than a century ago.

In the period 1868 to 1870 there were eight papers on geology presented at meetings of the Auckland Institute, five by Hutton. In the ten years following Hutton's departure early in 1871 there were only five.

Such mention that geology received at the Institute Council meetings in the 1870's and early 1880's dealt mainly with the acquisition of specimens from within New Zealand and overseas.

At a meeting on 23 September 1871 the secretary reported that a mineral case had been broken into. On 2 June 1879 the president said - "In the Department of geology we have a large number of valuable rock specimens, including a typical collection specially obtained from England, which cannot be exhibited in the Museum for want of suitable table-cases."

That Hochstetter had not forgotten his association with the Museum was evidenced at a council meeting on 16 August 1880 when

The President called attention to several interesting additions to the Museum and Library. Among the most important were a complete set of the publications of the "Novara" Expedition obtained through the kind offices of Drs. Hochstetter and Fischer."

An interesting note in the Report for 1880-81 refers to the visit to Auckland of H.A.Ward, founder of the famous Ward's Natural Science Establishment in New York. The Museum took advantage of his visit to purchase a set of "his instructive casts of fossils". Later, in the 1896-7 year, "A valuable collection of minerals, including many specimens of great beauty" was purchased from the same source.

With the arrival of Algernon Thomas in 1883 to take up the foundation chair of Natural History at the University, geology emerged from its limbo in the affairs of the Institute and the Museum. The subject once more figured prominently in the Institute's lecture series and further stimulus was given by the eruption of Tarawera in June 1886 which led to a succession of papers on the event. Thomas was very interested in the eruption and his one major publication in geology dealt with this subject (Thomas, 1888). Early in 1887 he presented to the Museum over forty specimens collected on Tarawera

Two of the lecturers in this period, W.D.Campbell and J. Martin, were Fellows of the Geological Society of London. Another lecturer of significance was Hugh Shrewsbury, New Zealand's first Masters graduate in Geology. At an Institute meeting on 2 November 1891 he spoke on 'The Auckland Volcanoes'.

This revival of interest in geology expanded in the 1890's with contributions from James Park, Director of the Thames School of Mines and later Pat Marshall, at Auckland Grammar School. Marshall also spent several years on the Museum Council. The Thomas influence continued to be felt and arising from his "Golden Years of Geology" (Mason, 1998) a number of Auckland geology students addressed the Institute.

The collections also received new attention. At the meeting on 24 August 1891 there were exhibited collections of minerals and rocks received from the United States National Museum and from James Park. Arising from this revived interest in the geology collections, the President was able to report on 18 February 1895 -

...the mineralogical collections have been cleaned, rearranged and relabelled, all recent additions being worked into their proper places; an explanatory series intended to facilitate the study of the mineral collections by beginners, has been formed, and supplied with descriptive printed labels; the collection of New Zealand fossils, by far the greater proportion of which had never been exhibited to the public, has been cleaned, systematically arranged, mounted and labelled; the type collection of rocks, purchased some time ago in London, has been more suitably displayed; as also a special collection presented by Mr. Park, intended to illustrate the geology of the Thames Goldfields.

The Annual Report presented on 28 February 1898 announced that Mr. T. Russell C.M.G., a resident of the U.K., donated 100 pounds for the formation of a mineral collection to illustrate the resources of the Hauraki Mining District. Mr. Russell could well afford it. He was responsible for launching the famous Waihi Goldmining Company limited and when he died in England in 1904 he left an estate of 160,000 pounds (Stone, 1973, p.190)

The early 1900's marked the start of a 25 year lean period for Auckland Museum Geology. Donations of minerals and rocks continued to come in from the goldfields and the Annual Report for 1914-15 records an extensive set of named New Zealand fossils presented by the Geological Survey

The Report for 1916-17 reports the establishment of a mineral room.

Following his appointment as Lecturer in Geology at the University in 1914, J. A. Bartrum gave a number of lectures on geological topics at Institute meetings. However the first twenty five years of this century were not good for Auckland Museum geology.

This was to change with the arrival of Cyril Firth (Mason, 1994) as the Museum moved to its present location in the Domain in 1929. Plans for the new War Memorial Museum had incorporated generous provision for geology which was allotted the Hall of New Zealand Geology and a proportion of the Hall of General Natural History. Later, the Hall of New Zealand Geology was to be incorporated into the Hall of General Natural History to make way for the Maritime Hall.

In mid 1929, Gilbert Archey, Director of the Museum asked Cyril to assist with the preparation of the geology displays in the new Museum building which was to be opened in a few months. Assistance for the work was limited and Cyril was already working full time for the Manukau County. Material from the old museum in Princes St was still in boxes and all that was possible in the time available was to follow the old pattern and display on a specimen basis only. Cyril began a register and each specimen was numbered as it was taken out of its case. Amongst the items registered were rocks from Cape Royds and Mt. Erebus in Antarctica that had been presented by Sir Ernest Shackleton.

The Museum authorities must have been impressed with Cyril's work in establishing the new geology displays because in early 1930 he was appointed Honorary Geologist (definitely unpaid, Cyril points out). Cyril had married late in 1929 and for the next two or three years he and his wife were at the Museum most Saturdays sorting exhibits, drafting labels and experimenting with layouts. Cyril tells us that in those days good draughtmanship was part of the stock-in-trade of an engineer. During the week whilst Cyril was at his job with the Manukau County Council, Edwin Leese, who had been employed by the

Museum as a mechanic, would prepare final displays based on Cyril's designs.

Field work was not neglected and specimens were collected to fill in gaps in the local petrology and stratigraphy displays. Several of Cyril's display cases were to remain in place for over half a century.



Cyril Firth

In 1934 Cyril was given the title of Associate Geologist. He resigned from the Museum and from his job with Franklin County in July 1939 to take up employment with Superior Oil Co. (N.Z.) Ltd. as engineer and field geologist.

About the time that Cyril Firth was appointed Honorary Geologist in 1930, 'Baden' Powell (Dell, 1988) was appointed Conchologist and Palaeontologist. Powell's personal interest in paleontology was limited to the Tertiary and he published several papers in this field. Powell also added to the fossil displays in the Museum and in this area he had the great advantage of experience as a commercial artist in the early 1920's. It was under the influence of Powell that Charles Fleming began his molluscan studies.

Also in the area of paleontology, there was the pioneering work of the Museum Botanist, Lucy Cranwell, in palynology. It was here that Bill Harris was introduced to the subject (Harris and Mason, 1993; Mildenhall et al., 1993)

As was the case in many fields, the war years were lean years for Auckland Museum geology. Cyril Firth was no longer there and Powell's administrative duties as Acting Director during Dr. Archey's absence on war service took up most of his time. The only significant event in this time was the donation of 200 pounds by R.C.Horton towards extending the mineral collection.

This, only the second financial gift to Museum geology, was also the last.

In 1946, the Museum appointed its first full-time geologist, Arnold Lillie, and Cyril Firth performed his final service to the Museum by introducing Arnold to the Museum work and showing him the features of local geology.

The following ten years were the most active in the history of Auckland Museum geology. We will deal with those years in the next instalment of our story.

Acknowledgments

Cyril Firth and Graham Turbott gave their recollections of Museum geology in the 1930's and 1940's. Andrew Carr and Alistair Carlile, Museum Archivists, provided access to Museum correspondence files and Council minute books. The Hocken Library, University of Otago, gave permission to publish extracts from the Hutton correspondence in the James Hector Papers, MS443.

References

- Anon. Proceedings of the Auckland Institute in annual volumes of Trans. N.Z.Inst.
- Bush, G.W.A. 1971: Decently and in Order. Collins, Auckland.
- Campbell, J.D. 1984: F.W. Hutton, the Auckland Years, 1866-71. Geological Society of New Zealand Newsletter 64; 22-29.
- Dawson, E.W. 1994: F.W.Hutton (1836-1905): Pioneer New Zealand Naturalist. Occasional Papers of the Hutton Foundation New Zealand Number 5.
- Dell, R.K. 1988: Arthur William Baden Powell, 1901-1987. Proceedings of the Royal Society of New Zealand, Vol. 116, 68-77.
- Gluckman, L.K. 1980: Dr. Carl Frank Fischer M.D. Auckland - Waikato Historical Journal, 37, 18-20.
- (Harris, W.F. and Mason, A.P.J) 1993: A Pioneer of New Zealand Palynology. Geol. Soc. N.Z. Historical Studies Group Newsletter No.7. 7-16.
- Hector, J. 1868: Abstract Report of the Progress of the Geological Survey of New Zealand During 1866-7. Government Printer, Wellington.
- Hochstetter, F.V. and Petermann, A. 1864: The Geology of New Zealand: in Explanation of the Geographical and Topographical Atlas of New Zealand. Delattre, Auckland

- Kidd, C.M. 1996: Union list of archival, manuscript and theses geological maps of New Zealand. Geological Society of New Zealand Miscellaneous Publication No.93
- [Mason, A.] 1994; Cyril Firth: a Ninetieth Birthday Tribute. Geol. Soc. N.Z. Historical Studies Group Newsletter No.8. 6-12.
- Mason, A. 1996; Geology at the Auckland Museum. Part 1 :The Beginning: 1852-1867. Geol. Soc. N.Z. Historical Studies Group Newsletter No.13. 19-28.
- 1998; The Golden Years of Auckland University Geology: 1894-1903. Geol. Soc. N.Z. Historical Studies Group Newsletter No.16. 29-36.
- Mildenhall, D.C, et. al. 1993; Dr. W.F.Harris, Palynologist: an Appreciation on the Occasion of his 90th Birthday, 18th June 1993. Geol. Soc. N.Z. Newsletter No.101. 28-37.
- Powell, A.W.B. (Ed.) 1967; The Centennial History of the Auckland Institute and Museum. Unity Press Ltd.
- Stone, R.C.J. 1973; Makers of Fortune. Auckland University Press.
- Thomas, A.P.W. 1888; Report on the Eruption of Tarawera and Rotomahana, N.Z. Government Printer, Wellington.

Alan Mason

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Birth of the Mount Torlesse Formation

References to Haast's Mount Torlesse formation including the entry in the Stratigraphic Lexicon of 1959 show that Haast introduced the name in 1865. The only reference that either Alan Mason or I have found to 'Mount Torlesse' as a stratigraphical name prior to 1879 is a brief one-line remark by Haast in his 1865 Report on the Geological Formation of the Timaru District which deals with water supply questions. In his description of the gravel in a well Haast included 'paleozoic rocks, dioritic sandstones, cherts, and other rocks of our Mount Torlesse series...'. So far as we can tell, 'Mount Torlesse' was then not used as a series or a formation name until 1879 when Haast described his Mount Torlesse formation in *Geology of the Provinces of Canterbury and Westland, New Zealand*.

- Heather Nicholson

From the Historical Studies Group Archives -

The photograph below, taken in 1949, shows Dick Willett and Nick Brothers. At the time, Dick had recently completed a six-year term in charge of the Invercargill office of the New Zealand Geological Survey to take up a position with the Coal Survey. Nick had just completed his M.Sc. studies and had also joined the Coal Survey, in Invercargill. Both went on to greater things, Dick to Director of the Survey and then Assistant Director of D.S.I.R., Nick to Professor, Head of Geology, at Auckland. Both, unfortunately, died young, Dick in 1974, aged 61, and Nick in 1988, aged 63.



CHARLES EDWARD ADAMS

A Predecessor to Cotton

It is not generally known that geology was taught at Victoria University College prior to Cotton taking office in 1909.

Beaglehole gives the following account of the appointment -

In 1899, the College Council was considering the provision of courses in biology and/or geology and the advice was sought of Sir James Hector. He was not in favour of the teaching of either subject but made the comment that biology, for which Wellington and its surroundings offered a good field would be better than geology, "the surroundings of Wellington offering very little opportunity for its study in the field".

However, In 1900, at the instigation of Sir Robert Stout, an influential Council member, Charles Edward Adams was engaged to lecture part-time in geology at a salary of one hundred pounds per annum. At the time, Adams held the position of Chief Computer and Plan Examiner at the Lands and Survey Department in Wellington.

Adams appears to have had the ear of the College Council as grants were readily forthcoming for minerals, a blowpipe, two microscopes and slides, and cutting and grinding appliances. In 1901, a college committee proposed a course in civil engineering and Adams, who had studied engineering at Canterbury College for four years, offered to become a full-time teacher of either geology or civil engineering but the offer was not taken up by the College Council. (Beaglehole 1949, pp.51-53)

Adams was even on the Professorial Board (below) although it does appear that in those early days of the University, all teaching staff members were on that board.

In the College calendars of the time we find the following information on Adams' courses and students.

His prescribed texts included Geikie's Class Book and Field Geology, Wood's Paleontology and Harker's Petrology. Half a century later, New Zealand students were still 'cutting their geological teeth' on Wood and Harker.

His syllabus was -

Study of rocks and minerals in thin section
Identification and description of fossils
Construction of geological maps and preparation
of thin sections
Practical work was done at the Colonial Museum and
Geological Museum (whatever that may have been - APM).



THE PROFESSORIAL BOARD, 1904

M. W. Richmond, B.Sc.
Professor von Zedlitz

C. E. Adams, B.Sc.
Professor Mackenzie

D. Ritchie, B.A., B.L.
Professor Brown

Professor MacLaurin
Professor Esselfield

The Professorial Board, Victoria University College, 1904

Lectures were held every night of the week with the Practical on Saturday afternoon.

However, Adam's geology classes were not well supported. His best year was 1901 when he had five students, one of whom was Douglas Hector, son of Sir James, who shortly afterward was to die tragically whilst accompanying his father on a return trip to Canada.

With only three students in 1903, the smallest department in the University, the College Council must have decided that it had had enough and there is no mention of a geology course in the College's 1904 Calendar.

Adams' outstanding student was Hugh Vickerman (1880-1960) who gained First Class Honours in Geology (1903) and in doing so gained a higher mark than James Allan Thomson who graduated from Otago in the same year.



HUGH VICKERMAN
D.S.O., D.I.E., M.Sc., M.Inst.C.E., M.N.Z.Soc.C.E.

This information is given by Adams in support of his application to succeed Alexander McKay as Government Geologist. (Letter dated 21 September 1904, National Archives File MD1904/1284). The New Zealand University Calendar for 1904-1905 (p.248) lists the following names for Honours in Geology in 1903 and according to Adams they obtained the marks shown below -

Vickerman (Victoria)	67
Thomson (Otago)	62
Donovan (Auckland)	54
Andrew (Otago)	51

Vickerman later had a prominent career in engineering.

Charles Edward Adams was born at Lawrence, Otago, on 1 October 1870. His father had arrived in New Zealand from Tasmania in 1862 and was a geodesical surveyor in the provincial Survey Department. From 1888 to 1892 Adams studied civil engineering and science at Canterbury College including a full course of geology and a special course of engineering geology under Hutton. He graduated B.Sc with Honours in 1892, M.Sc in 1909, and was awarded a D.Sc. in 1915.

From 1892 to 1896, Adams was in charge of Civil Engineering at Lincoln College. He also acted as observer at the College's meteorological station in which position he succeeded another geologist, P. Marshall, and preceded the chemist, J.W.Mellor. (Blair 1956, p.395). From 1897 to 1899 he worked as a surveyor in Napier where he was secretary of the Hawkes Bay Philosophical Society. In 1899 he joined the Lands and Survey Department in Wellington as Chief Computer and Plan Examiner from where he lectured part-time in geology as described above.

In 1904 Adams was one of 55 applicants to replace Alexander McKay as Government Geologist (MD1 904/1284 National Archives Head Office, Wellington). Adams was one of nine applicants chosen for further consideration but was not on the final short list of three names from which James Mackintosh Bell was selected.

In his application Adams states that he had "had field experience in Tasmania with Professor David and other leading Australian Geologists" but gives no indication of the time and circumstance of this. He is possibly referring to the fourth meeting of the Australasian Association for the Advancement of Science held in Hobart in 1892. His father, C.W.Adams, delivered a talk at that meeting and he may have been accompanied by his son. David was President of Geology Section at that meeting (Morton 1893) and Adams' "field experience in Tasmania with Professor David and other leading Australian Geologists" may refer merely taking part in the field excursions of the meeting.

Shortly after his arrival, on 22 February 1905, to take up the position of Government Geologist, Bell negotiated the title of Director of the Geological Survey and he immediately set about obtaining new staff. (Mason 1998, p. 6) Amongst those employed was C.E.Adams, temporarily transferred from the Survey Department to act as Topographer for the new department. (Anon. 1905, p.393) Almost immediately, Adams was in the field with Bell and Fraser in the Hokitika Subdivision (Bell 1907, p.3) but

his stay with the Survey was a short one. In a letter dated 22 July 1905 to the Minister of Mines (MD1 904/1284 National Archives Head Office, Wellington)} Bell discusses "the question of a Surveyor to succeed Mr. Adams".

Back with the Lands and Survey Department, Adams. in 1912. was given the additional responsibility of government astronomer (not government astrologer as stated in Hight and Candy, 1927. p.195) and following a period in 1915 as Martin Kellogg fellow at the Lick Observatory, California, this position became full-time. As government astronomer, Adams was in charge of the Hector Observatory.

It was also in 1915 that Adams was granted a D.Sc. from the University of New Zealand for his work on tidal observations and predictions



Charles Edward Adams (1870-1945)

In 1920 seismology was added to Adams' responsibilities. In 1925 the Hector Observatory became the Dominion Observatory and in 1926 it was placed under the control of the newly formed Department of Scientific and Industrial Research. According to Hayes (1987, p.36), Adams expected to be put in charge of the new department and resented the appointment of Ernest Marsden so it is ironic that the first Council of Scientific and Industrial Research formed in October 1926 included Hugh Vickerman, Adams' only Honours graduate in geology from his time at Victoria University College over twenty years previous (Atkinson, 1976, p.21).

From this point on there was an increasing emphasis on seismology in the observatory (eventually it became known as the Seismological Observatory). The period 1929 to 1934 was the most seismically active in New Zealand's history and Adams documented the major earthquakes of this time before retiring in 1936.

This article has concerned itself with Adams' involvement in geology but Smith (1996) points out it was his work in astronomy that was his major contribution to New Zealand science. Readers are referred elsewhere for information on this contribution e.g. Smith(1996) and two articles in Southern Stars, Vol.2 No. 5, 1936 and vol. 27 No 1, 1977. It suffices to say here that in 1991, 46 years after his death, an asteroid discovered in 1985 by Mt John University Observatory, Lake Tekapo, was named Ceadams in his honour by the International Astronomical Union.

On 18 November 1896 Adams married Eleanor Robina Jacobson at Akaroa and there were three sons and three daughters of the marriage. One grandson, R.D.Adams, followed in his grandfather's footsteps - for a period in the 1960's he was in charge of the Seismological Observatory (Hayes 1997, page 143).

Charles Adams died in Wellington on 31 October 1945. His wife had died in 1941.

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A Note on Sources

In writing this article I have relied mainly on two sources - Warwick Smith's article on Adams in Volume 3 of The Dictionary of New Zealand Biography (Smith 1996)

Adams' letters of 28 July 1904 and 21 September 1904 to the Minister of Mines in support of his application for the position of Geologist to the Department of Mines (MD1, 1904/1284 National Archives Head Office, Wellington). I am grateful to the National Archives for their permission to use this information.

Where information has been obtained elsewhere, the reference is given in the text.

The photograph of Vickerman comes from International Press Who's Who New Zealand 1933 and that of Adams from the IGNS collection. The photograph of the Professorial Board is from the Evening Post Collection, Alexander Turnbull Library. National Library of New Zealand. Te Puna Matauranga o Aotearoa. Reference Number F-123689-1/2.

References

Anon. 1905: Notes and Comments. The New Zealand Mines Record Vol. VIII. 392-399.

Atkinson, J.D. 1976: DSIR'S First Fifty Years. New Zealand Department of Scientific and Industrial Research Information Series 115.

Beaglehole, J.C. 1949: Victoria University College; an essay towards a history. New Zealand University Press. Wellington.

Bell, J.M. 1907: New Zealand Geological Survey Department (First Annual Report). Append. J. House Rep. N.Z.1907, C.-9. 1-18.

Blair, I.D. 1956: Life and Work at Canterbury Agricultural College. Caxton Press. Christchurch.

Hight, J. and Candy, A.M.F. 1927: A Short History of the Canterbury College.

Hayes, M. 1987: In Spite of his Time a Biography of R.C. Hayes. The New Zealand Geophysical Society. Wellington.

Mason, A.P. 1998: James Mackintosh Bell: Some New Information and a New Appraisal. Geol. Soc. N.Z. Historical Studies Group Newsletter No. 16. 3-16.

Morton, A. (Ed.) 1893: Report of the Fourth Meeting of the Australasian Association for the Advancement of Science. Hobart.

Mines Department Inward Correspondence. MD Series 1 (National Archives Head Office, Wellington).

Smith, W.D. 1996: Adams, Charles Edward. In The Dictionary of New Zealand Biography Vol.3. 3,4.

Alan Mason

* * * * *

THE THAMES MINERS' GUIDE

A little known book of this title was first printed in 1868 and 'Sold for the proprietors by Edward Wayte . Queen St.' A facsimile edition was published by Capper Press of Christchurch in 1975

In the text of the work several mentions are made of "the authors" but neither they nor "the proprietors" are anywhere named. Hector attributed the work to F.W.Hutton but on what evidence is not known (Haast, 1948, p.571).

Garry Tee (1981) provides the name of one of the "authors" (almost certainly, the author) - Edward Clarke who was sub-editor of an Auckland newspaper, the 'Daily Southern Cross'. Edward Clarke was not related to the Edward Clarke of a later generation who served in the New Zealand Geological Survey under James Mackintosh Bell (Mason 1998, p.33). This is made apparent when notes on the later Clarke's family given in his sister's autobiography (Scott, 1966, 26-7) are compared with Garry's account of the earlier Clarke.

In his article, Garry quotes a letter which Clarke wrote to his Aunt Mary in London on 31 July 1868. Aunt Mary was none other than the novelist George Eliot. That letter contains the following -

I am employed preparing a new work for the Press entitled the Miners Guide and Pocket Companion with Plans of the Goldfields, price 10/6. this is my first attempt to write a book, and from the great number of orders for copies that have been received I feel sure that with regard to the pecuniary return, it will be a success. Captain Hutton, the Government Geologist, has undertaken the revising of my work previous to its going to press. I will send you a copy when published. I intend to produce another and larger edition towards the close of the year, which will include the newly opened Gold Fields, which are not yet developed.

Clarke is not correct in describing Hutton as 'Government Geologist'. At the time, Hutton was having no success in his efforts to obtain permanent employment in Hector's Geological Survey, This is clear from Hutton's correspondence with Hector in the James Hector Papers in the Hocken Library (MS 443). However he did obtain several short term contracts one of which was a report on the Thames Goldfields (Hutton, 1867). He was thus a logical person to edit the chapter 'Geology of the Coromandel Peninsula' which occupies pages 27 to 34 of the Guide

In a letter to Hector from Auckland on 5 July 1868 (Hocken MS 443) Hutton says -

A gentleman here named Clark is getting up a pamphlet to be called "The Miner's Guide and Pocket Companion". He showed me the geological portion which as you may suppose was rather absurd and so at his urgent request I have undertaken to revise this portion of it for him.

I shall say nothing but the most general statements about the geology of the Thames as I do not know what you are doing in the matter and I do know how little we know about it.

In a later letter (22 October 1868) -

I send you four copies of the Thames Guide.....the description of claims in the guide (which part I had nothing to do with) is miserably deficient and incorrect.

Hutton's revision of the geology portion of the work is probably the basis for the several mentions of "the authors" in the text.

There may have been another contributor to the chapter on Coromandel geology - G.F.H. Ulrich who was later to be Professor of Mineralogy and Metallurgy at Otago University (Watters 1993). Pages 33 and 34 of the Guide make a comparison between the Thames field and the mining districts of Schemnitz and Kremnitz in Northern Hungary. At the time the Guide was being prepared Ulrich, then in Melbourne, published an account of these Hungarian fields (Ulrich, 1868). This account may have been available to Clarke or Hutton when writing the Guide: Ulrich's Preface is dated 24 June 1868 and the Preface to the Guide is dated August 1868. However, the account of the Hungarian fields in the Guide contains information not given in the printed article suggesting that there was correspondence between Ulrich and Clarke/Hutton.

Confusion is added to this matter by a report on a meeting of the Auckland Institute held on 18 October 1869 ([Kirk], 1870, p.415). Amongst the items exhibited at that meeting were -

...specimens of auriferous quartz, from the gold mines of Hungary and Transylvania. Captain Hutton said the specimens exhibited had been sent to him by Dr. Hector who, he believed, had received them from Dr. Haast. They correspond very nearly with the auriferous rocks of Thames....

In addition to the authorship of the Thames Miners' Guide there is the lesser mystery of 'the proprietors' mentioned in our opening paragraph. In his letter to his Aunt Mary, Clarke says that he is preparing the work "for the Press". It can be assumed that "the Press" was the Daily Southern Cross as Clarke was sub-editor of that newspaper.

The larger edition promised in Clarke's letter to his Aunt Mary and mentioned in the Preface and elsewhere in the Guide never eventuated.

The Thames Miners' Guide was a case of 'quick quid sub terra est'. The Thames Goldfield had been open for only a year but the rush was well under way and the Daily Southern Cross recognized an unsatisfied market so it cobbled something together. The background technical information, which occupies 40% of the text, has been taken from overseas books. This is admitted by Clarke in his Preface and he names them in his letter to his Aunt Mary (Tee, 1981). Most of the remainder of the Guide deals with claims and mines at Thames and they are of a kind that would be gathered by a journalist such as Clarke by travelling to Thames on one of the boats servicing the run, talking to crew, publicans, and miners and filling in gaps with items from newspapers. (Refer above for Hutton's opinion of this part of the Guide.)

Browsing in The Thames Miners' Guide starts ruminations. For example, fifty years ago it was not uncommon to come across abandoned stamper batteries in the bush. (Most have been removed since then by souvenir hunters and others.) At that time they were taken for granted but of course they had an evolutionary history and were a product of many attempts to solve the crushing problem. They were part of the frenzy for mechanical inventions that was characteristic of early and mid Victorian times. Some of that evolution can be inferred from the book's chapter on 'Machinery' :

The first mill erected on the Thames Gold Field was called the Great Expectations. It commenced working about November, 1867, and consisted of four wooden stampers, shod with plates of iron, the whole worked by a donkey-engine. The machine is not now working, it having given place to larger and more efficient machinery. (Page 93)

Until 1867, the Thames miners presumably had to crush mainly by hand using cast iron pots that they called 'dollies' (was the name rude?) and hammers or flat-ended iron crowbars. Some devised log and boulder contraptions worked by donkey engines which evidently had literally supplanted donkeys in Cornwall or some other place at an earlier time.

The Guide also contains a description of the use of the now forgotten touchstone:

The proportion of gold contained in an alloy is expressed in "carats". A "mark" is divided into 24 carats, and if 24 grains of the alloy contain 22 grains of pure gold and 2 grains of other metals, the alloy is called 22 carat fine. The rough estimate of the carating, or proportion of pure gold in an alloy, is performed by means of the touch-stone. This is a very fine-grained, black, silicious (sic.) slate.

ground quite smooth. A streak is made across the stone with the gold to be tested; then other streaks are drawn beside it with needles composed of alloys with silver of known composition called "trial needles." and the gold is considered to be of the same fineness as that of the needle whose streak approaches nearest in colour to that of the gold to be tested. More accurate estimates are made by assaying..... (Page 1)

By 1867, miners in other countries, including Australia, had become very ingenious in the work of extracting gold from crushed rock and sulphide contaminants using sodium amalgam or chlorine gas (and in later years, cyanide). All methods had their dangers, high costs, and unrecorded disasters. This book's description is in fact amazingly clear and simple :

The concentrated tailings are roasted until all the sulphur is drawn off. They are then moistened, and put into large wooden tubs with false bottoms, into which chlorine gas, made from a mixture of salt, binoxide of maganese (sic.) and sulphuric acid, is introduced and allowed to permeate through the mass. After the expiration of 12 or 15 hours, clean water is introduced, and the liquid, containing chloride of gold in solution, is drawn off into glass carboys. Solution of green sulphate of iron is then added, which precipitate the gold in the form of a dark brown powder easily separated by decantation and filtration. (Pages 21,22)

.....

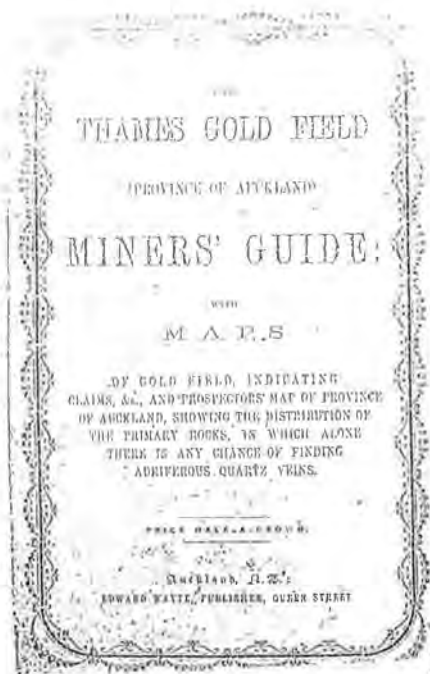
The Thames Miners' Guide exists in three 'states' of binding (Bagnall 1980, p.1017) :

- A. Cream paper covers
- B. Purple cloth boards
- C. Green cloth covers

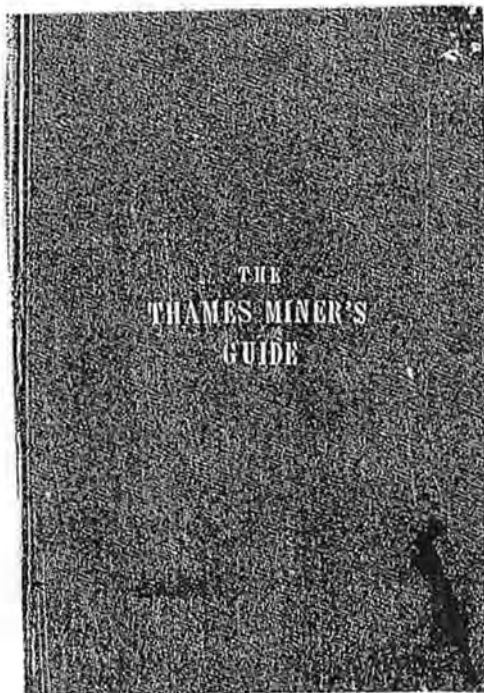
A prospectus for the Guide published in the New Zealand Herald for 25 July 1868 says that it will be bound in cloth and a review in the same newspaper for 22 September 1868 refers to a cloth binding. This would be 'State C'; the other two bindings probably followed later.

Sixteen copies of the Guide have been seen and of these three are in 'state A', four in 'state B', three in 'State C', and six have been rebound so their original stastes of binding are not known.

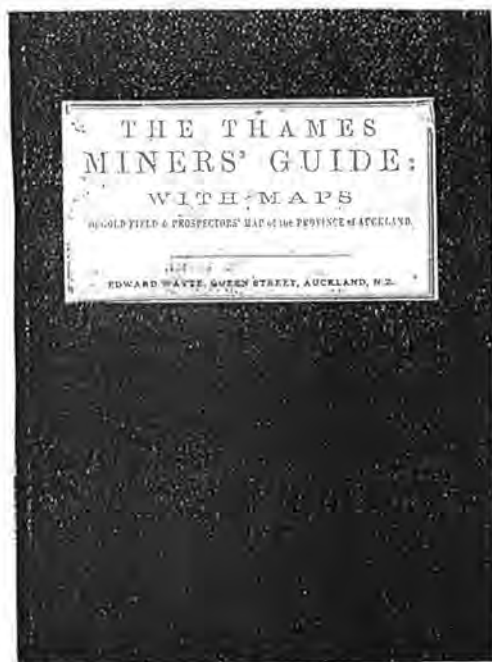
The text is the same in all three states, although the page sizes are not the same, but the cover wording differs in each (shown below, approximately two fifths natural size).



Cover of State 'A'



Cover of State 'B'



Cover of State 'C'

THE THAMES
MINER'S GUIDE,
WITH MAPS

TWO OF WHICH ARE DETACHED FOR CONVENIENCE, BUT WHICH
FORM PART OF THE BOOK.

POET.—What's to be thought of him? Does the venture hold for love that he
is so full a field?
TOWN.—That there I have Gold; look, you have!
APRANTON.— * * * * * I'll say there has't field; then will be
through to shortly.—*Times of Africa.*

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AUCKLAND
SOLD FOR THE PROPRIETORS BY EDWARD WATTE, QUEEN STREET.

1868.

Title Page

The wording on the title page of the Guide is the same for all states even to the omission of the 'R' in 'Rumour' in the first line of the quotation (above). This would appear to indicate that there was only one print run for the Guide but the different page sizes and different covers suggest otherwise. Clarke, in his letter to his Aunt Mary, refers to "great numbers of orders" so the different page sizes probably arose from print runs in quick succession with no effort to correct errors.

Throughout August 1868 the New Zealand Herald ran a series of pre-publication advertisements for the Guide quoting a price of 10/6 as mentioned by Clarke in his letter to his Aunt Mary (Tee 1981). On the other hand, the paper cover for State "A" gives the price as 2/6. It is likely that State "A", with its cheaper paper cover was the final issue.

The title page carries the statement - "With maps, two of which are detached for convenience, but which form part of the book". This may not be correct for all states.

There are three maps involved viz

Thames Gold Fields
Province of Auckland
Karaka Block

The Thames Goldfield map is present in fifteen of the sixteen copies examined, bound in opposite the title page. The other two maps are the detached ones and as is to be expected after 130 years of circulation they are often no longer present. The Auckland map was found in six copies and the Karaka map in five copies. Only two of the sixteen copies examined had both detached maps.

Significantly, Hocken (1909, p.257) mentions only two maps and the Capper facsimile of 1975 which has the original title page indicating two loose maps lacks the Karaka map. The master for that facsimile must, therefore, also have lacked the Karaka Map.

The Thames Goldfield Map shows the coastline for 16 miles (25.6 km.) northwest of Shortland at Thames and on the map the word 'Gold' is dotted around in much the same way as pictures of cherubs were put in the margins of early maps of the oceans. If the cherubs had pursed lips they indicated the direction and even the force of prevailing winds.

The Karaka Map, which is the largest of the three, is attributed to "D.M.Beere, C.E., Gold Fields Surveyor". It shows the positions of the various claims in the area north-east of Thames. A similar map of the claims, also by Beere, occurs in Hutton's second report on the Thames Goldfield (Hutton 1869, p.15). Hutton refers to this map in a letter to Hector of 11 November 1868 (Hector File, Hocken Library Ms443) - "I have seen the map Beere is making. It will be a very good one, far better

than the one in the Thames Guide."

The Map of the Province of Auckland shows the North Island from Napier and Mokau to Cape Reinga and is attributed to F.W.Hutton. Although the map itself is the same in all copies, there are two forms of the description, entitled "The Prospectors' Map" and simply "Map" respectively (below).

THE PROSPECTORS' MAP

THE PROVINCE OF AUCKLAND

SHOWING (SO FAR AS IS BY PRESENT KNOWLEDGE) THE DISTRIBUTION OF THE PRIMARY ROCKS, OR THOSE IN WHICH ALONE THERE IS ANY CHANCE OF FINDING AURIFEROUS QUARTZ VEINS.

BY
CAPT F.W. HUTTON, F. G. S.

Scale 27 miles equal to 1 inch

PRIMARY ROCKS COLOURED RED.

PUBLISHED BY E. WAYTE,
BOOKSELLER & STATIONER, QUEEN ST.,
AUCKLAND.

MAP

THE PROVINCE OF AUCKLAND

SHOWING (SO FAR AS IS BY PRESENT KNOWLEDGE) THE DISTRIBUTION OF THE PRIMARY ROCKS, OR THOSE DISTRICTS IN WHICH THERE IS THE BEST CHANCE OF FINDING AURIFEROUS QUARTZ VEINS.

BY
CAPT F.W. HUTTON, F. G. S.

Scale 27 miles equal to 1 inch

PRIMARY ROCKS COLOURED RED.

PUBLISHED BY E. WAYTE,
BOOKSELLER & STATIONER, QUEEN ST.,
AUCKLAND.

The covers for States A and C (above) refer to a 'Prospectors' Map" so it is probable that the 'Map' variant was supplied with State B of the Guide.

That the 'Prospectors' version was supplied with 'State A' is supported by the similarity of the wording on map and cover ("in which alone there is any chance of finding auriferous quartz veins"). In fact, in the eight copies sighted that were still in their original bindings, there were only two copies of the 'Prospectors' map and both of these were with State A.

That it was supplied with State C, which we believe to be the first issue, is shown by the review in the New Zealand Herald for 22 September 1868, the day on which the Guide was made available to the public -

We have received a copy of the "Thames Miner's Guide," neatly printed, in octavo cloth, and sold by Wayte of Queen-street.... and there are attached to it maps, one of the Thames Goldfield, another of the Karaka Block, and a third, Captain Hutton's Prospector's Map of the Province,

(The underlining is the author's)

The 'Prospector's' and Thames Goldfields maps were available for sale separately prior to the publication of the Guide. During August 1868 Edward Wayte ran an advertisement in the New Zealand Herald which included the following -

Prospector's Map (showing Goldfields of the Province). 1s.

Map of Thames Goldfield, 1s.

The Thames Miner's Guide will shortly be published, shewing the position, &c., of claims on the Thames Goldfields. 10s.6d.

The Karaka map was not offered for sale in this advertisement and the description on this map states that it was produced "expressly for the Thames Miners' Guide". The lithographer was W.C. Wilson whereas the lithographer for the other two maps was Hutchinson & Co.

Acknowledgments

The Alexander Turnbull Library kindly provided information on the collation of their copies of the Guide. The Hocken Library gave permission to quote from MS 443, James Hector Papers. Copies of The Thames Miners' Guide were made available for inspection by the following libraries -

Universities of Auckland and Canterbury
Auckland and Wellington Cities
Auckland and Canterbury Museums

References

- Bagnall, A.G. 1960. New Zealand National Bibliography. Vol.1. Government Printer, Wellington.
- (Clarke, E.) 1868. The Thames Miner's Guide. Edward Wayte, Queen Street, Auckland.
Facsimile edition, 1975. Capper Press.
- Haast, H.F. von 1948. The Life and Times of Sir Julius von Haast. Wellington, New Zealand.
- Hocken, T.M. 1909. A Bibliography of the Literature relating to New Zealand. Government Printer, Wellington.
- Hutton, F.W. 1867. Geological Report on the Thames Gold Fields. Government Printer, Wellington.
1868. Unpublished correspondence with James Hector, MS 443, James Hector Papers. Hocken Library, Dunedin.

Hutton, F.W. 1869. Second Report on Thames Goldfield, Rep. Geol. Explor. 1868-9. N.Z. Geol. Survey, Wellington: 15-38.

[Kirk, T.] 1869. Proceedings of the Auckland Institute. Trans. N.Z. Inst., II: 404-417.

Mason, A.P. 1998. The Golden Years of Auckland University Geology: 1894-1903. Geological Society of New Zealand Historical Studies Group Newsletter 16: 29-36.

Scott, M. 1966. Days That Have Been. Blackwood and Janet Paul, Auckland.

Tee, G.J. 1981. Edward Clarke, author of the Thames Miners Guide. The Turnbull Library Record. 14(1): 5-12.

Ulrich, G.H.F. 1868. Observations on the Mode of Occurrence and the Treatment of Auriferous, Lead, and Silver Ores, at Schmenitz, Upper Hungary. Government Printer, Melbourne.

Watters, W. 1993. George Henry Frederick Ulrich, 1830-1900. Geological Society of New Zealand, Historical Studies Group Newsletter No.7, 34-40.

Alan Mason, Auckland
 Larry Harrington, Canberra

* * * * *



510. — La plus grande, la plus longue et la plus importante crevasse se trouvait du nord au sud, et bien visible et déjà large à l'aurore de ce sixième jour, n'empêchait pas la communication des continents l'un de l'autre. Cette crevasse aura été peut-être de 1000 lieues de largeur; elle divisait la terre presque également dans la direction indiquée. On pouvait pressentir qu'une séparation inévitable que la masse la plus grande restait en raison de sa pesanteur, et que la plus petite serait repoussée à une distance proportionnelle.



511. — La masse la plus forte et la plus étendue restée.

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

La grosse masse partielle, dont la crevasse s'étendait du nord au sud de l'Asie, était à l'ouest, et dans l'écartement qui s'est produit, sa surface s'est portée plus à l'ouest en ce que cette masse forma elle-même un grand continent, que nous appelons aujourd'hui l'Amérique.



Arthur Holmes, 1890-1965



Alfred Lothar Wegener, 1880-1930



Sir Harold Jeffreys, 1891-1959

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. —



HISTORICAL STUDIES GROUP NEWSLETTER

Number 19 September 1999

Editorial.....	2
Harold Wellman.....Alan Mason	3
Music and Geology : Mozart and Ignaz von Born...Bill Watters	6
Field Work in Victorian New Zealand.....Alan Mason	10
Arnold Lillie : a fond recollection.....Robin Oliver	14
Arnold Lillie.....Cyril Firth	15
Geology at Auckland Museum. Part 2; 1867-1946...Alan Mason	16
From the Historical Studies Group Archives.....Alan Mason	25
Charles Edward Adams : A Predecessor to Cotton..Alan Mason	26
The Thames Miners' Guide.....Alan Mason and Larry Harrington	32