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Cover illustration

Old engraving of Pasterzen glacier, Grossglockner

after a chromolithograph from *Hoelzel's geographische Charakterbilder* published in Vienna by E. Hoelzel, 1887

For further information, turn to the article on mid-nineteenth century glacial theories by Diarmid Finnegan on page 3.

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Edinburgh and the reception of early glacial theory

by Diarmid Finnegan

In reading through one of the several available histories of mid-nineteenth-century glaciology, certain people and places invariably appear – and for good reason. The first hints of the major conceptual innovation and theoretical shift that was early glacial theory are associated with the names of Swiss engineer Ignace Venetz, Swiss naturalist Jean de Charpentier, botanist Karl Schimper and, perhaps most of all, with Louis Agassiz.

Agassiz's conjecture that the surface of the earth had once been covered with ice from the North Pole to the Mediterranean and Caspian Seas during an epoch of intense cold was first announced in his Presidential address given to the Société Helvétique de Sciences Naturelles in Neuchâtel on 24th July 1837. Accounts of this famous episode in the history of the earth sciences track the development and fate of Agassiz's (and others) ideas to various destinations including, of course, Edinburgh. It is here that we encounter Robert Jameson, Professor of Natural History at the University, William Buckland and Roderick Murchison, prominent members of the London Geological Society, and other noted Edinburgh men of science including James David Forbes and Charles Maclaren. Edinburgh and its environs were thoroughly tramped over, from 1840 onwards, to establish an empirical warrant for or against the glacier theory. As Roderick Murchison put it, '"Come and see" is the bold challenge of the Professor of Neuchâtel [Louis Agassiz] to all who oppose him' (Murchison 1842, p.686).

The land-ice theory of Agassiz and his most vociferous British supporter, William Buckland, remained one of several attempts to account for Britain's superficial deposits and contested geological markings for at least two decades before it became more widely accepted. Historians of geology, in order to indicate something of the theory's competitors, point to the influence of diluvialism and the perhaps more widely accepted floating iceberg theory. David Oldroyd (1999) has helpfully sketched an outline of these theories and points to certain variants including the diluvialist 'waves of translation' idea and the 'glacial submergence hypothesis' ('marinism'). Both of these hybrids had acquired, certainly by the 1850s, a certain amount of explanatory currency for British geologists. The somewhat later and incisive contributions of the Geikie brothers and James Croll helped bolster the status of, and transform, the land-ice hypothesis.

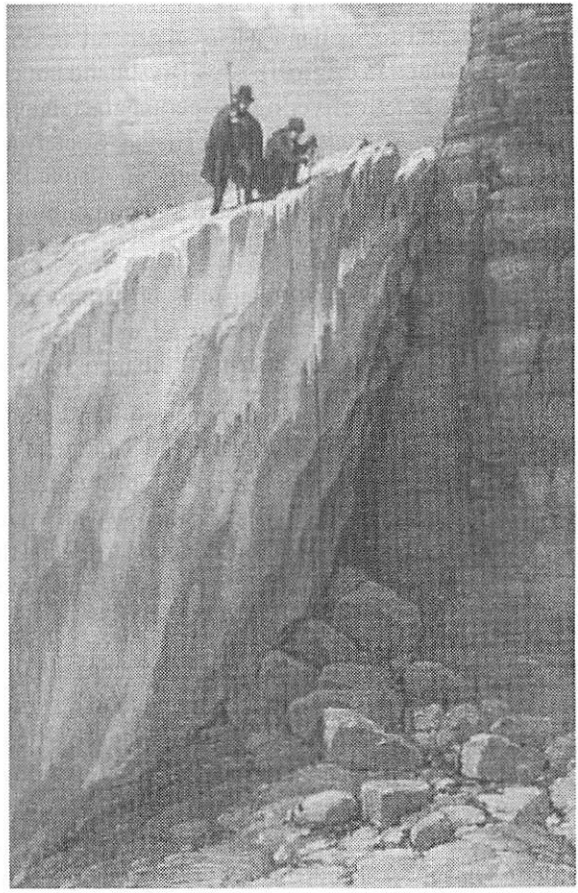
Although such historical accounts are worth pursuing in more detail, I want to change the pace and direction for this article. My own interest in the history of early glacial

theory stems less from the point of view of a historian of geology strictly conceived. I am not nearly qualified to offer a 'what the early glacial theorists did for us' and have been more concerned in my work with 'popular' science than with the production of scientific theory. My efforts here involve highlighting some rather different but hopefully connected characters and concerns to those that appear in the standard accounts of the inception and early development of glacial theory. Rather than attempt to chart the theory's development through time, I spread my focus across Edinburgh's scientific culture (broadly conceived) as it presents itself in the 1840s. This reveals, I think, some intriguing work done by Edinburgh and Scottish 'unknowns' in relation to glacial theory as well as uncovering something of the wider scientific culture evident in mid-nineteenth-century Edinburgh.

Michael Taylor's recent articles in *The Edinburgh Geologist* have already signalled a number of the people and publications that feature here. Hugh Miller and his newspaper *The Witness* provide food for thought and *Chambers's Edinburgh Journal* makes an appearance. The part played by *The Scotsman* has been noted before in accounts of early glacial theory but it is worth re-visiting. Often cited in this regard is the letter from Louis Agassiz, dated 3rd October 1840 and first published in *The Scotsman*, announcing his recently acquired Scottish field evidence in support of previously existing glaciers; an occurrence often celebrated, perhaps unhelpfully, as a famous journalistic scoop. The series of detailed and original articles, published in January 1841, introducing *The Scotsman*'s readers to glacial theory and penned by the geologist editor Charles Maclaren are also widely known. The pages of *The Scotsman* can be mined further, however, for other unfamiliar but still fascinating accounts of glacial theory.

Before turning to these two newspapers and their editors, it is worth saying something about the engagement of Edinburgh's scientific societies with early glacial theory. By 1840, Edinburgh had a number of societies that interested themselves in geological matters. Although the Robert Jameson's Wernerian Natural History Society was in serious decline, there were a number of other more vibrant bodies. The Royal Society of Edinburgh (RSE) provided a formal space in which to present and debate papers on glacial theory. James David Forbes' work, at least for the RSE, concerned itself more with theories of glacier motion than with the larger claims of what he termed the glacier theory. It was the more eccentric Sir George Mackenzie, labelled rather brusquely by the zoologist Edward Forbes as a pseudo-geologist, who first aired Agassiz's ideas in the lecture hall of the RSE. His paper, entitled 'An attempt to reconcile the Theories of the Debacle and the Action of Glaciers, in accounting for the Distribution of Erratic Blocks' was, self-confessedly, a speculative affair.

Mackenzie's summing up suggested a volcanic eruption 'somewhere to the North West of the British Islands' had taken place in the 'Icy Sea' causing water and ice to flood over a submerged Britain and drop cargoes of gravel and boulders (Mackenzie 1841, p.435). Mackenzie gave some support to one of Agassiz's more familiar claims in a paper delivered a year later on the parallel roads in Glens of Lochaber. Agassiz attributed the existence of the parallel roads to a lake that had formed behind a glacier descending from Ben Nevis. Mackenzie, while differing with Agassiz on the reasons why a glacier might have previously existed in the area, supported the idea of an ice-dammed lake. A number of other RSE members tackled the subject of glaciers and glacial theory through the 1840s including James Stark, John Fleming and David Milne. Stark, an Edinburgh physician, concentrated on theories of glacial motion. Milne and Fleming both presented, on various occasions between 1846 and 1848, papers on geological markings around Edinburgh. Their lectures were characterised by a less speculative tone than the earlier presentations of Mackenzie.



Engraving of glaciologists in the field. Taken from Travels through the Alps of Savoy by J. D. Forbes, 1843.

As readers of this magazine will know, the fledgling Edinburgh Geological Society (EGS) provided for its members a more informal debating space, meeting in Alexander Rose's home on the corner of South Bridge and Drummond Street. The EGS minute books reveal a cautious engagement with glacial theory summed up by the statement

given by Alex Bryson in his paper on the subject that 'the Glacier theory of Agassiz is not applicable to Scotland at least in general' (EGS Minute Book No. II, 11 February 1841, underlined in original). Alex Bryson did not confine his presentation of glacial theory to the EGS, delivering a paper on glacial theory to a meeting in late March of the little known Cuvierian Natural History Society (*Edinburgh Advertiser*, 23 March 1841). The EGS continued its debates on glacial theory during 1841. James Brown (the Society's secretary) was noted as commenting on the longer history of the ideas promoted by Agassiz:

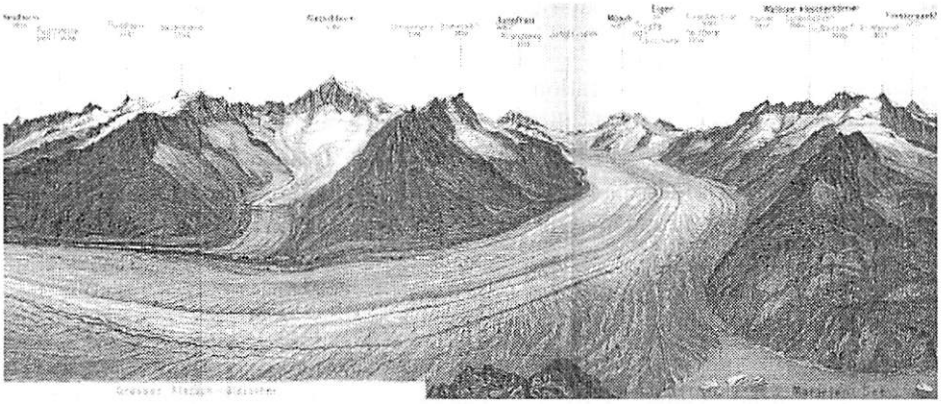
> The theory which now is causing such enquiry among Geologists was advanced and discussed at a former period and though Agassiz may infuse into it something new yet the merits of the theory are not due to him.

Brown's point reveals the willingness of the EGS members to question those who were accorded an elevated status in the geological world in a way that demonstrates the confidence the Society had in its ability to contribute to important theoretical debates. Further contributions were provoked on a number of occasions by discussions of Charles Maclaren's poplar introduction to glacial theory published in *The Scotsman* (and then in the form of a short book) although, sadly, little detail is given of what was said.

If there was space, more could be said here about the cross currents between the survey work encouraged by the Highland and Agricultural Society of Scotland and glacial theory. The lecture series inaugurated by the Edinburgh Young Men's Society in 1842, which included a number of talks given by the theologian and populariser of science Thomas Dick, points to yet another context in which debate about glacial theory may have occurred (and certainly did in a similar lecture series given at that time in Glasgow). The Royal Physical Society of Edinburgh does not seem to have conspicuously debated glacial theory in the early 1840s although records are hard to come by for the Society at that time and its activities may have provided yet another arena for debate.

Edinburgh's institutional engagement with glacial theory in the 1840s provides just one context for re-discovering the sorts of early ideas that were circulated with regard to glacial theory beyond the more commonly cited examples. One of the more interesting mediums for someone interested in so-called popular science are the reports contained in the columns of Edinburgh's two best selling newspapers. Three leading articles, one from *The Witness* and two from *The Scotsman*, are especially revealing.

On the 29th February 1840, just over a month after *The Witness* was launched, a leading article, authored by High Miller, appeared in its pages entitled 'The Chaotic



Engraving from 1900 of a panoramic view from the top of the Eggishorn, showing the Aletsch Glacier, Märjelen and the Fiesch Glacier. At the end of the nineteenth century the Aletsch Glacier was 3 kilometers longer than today. Engraving published courtesy of Michel Azéma from whose web site this image was taken.

Period'. The article was not about the chaos of contemporary church politics but instead outlined geological phenomena and theory that may have been 'alike new to the reader and are of very considerable importance' (*The Witness*, 29 February 1840). It narrated a week spent by 'a Scottish gentleman of very high attainment' with Louis Agassiz in the Swiss town of Neuchâtel. In the article Miller had Agassiz introduce to this Scotch geologist his conjectures regarding the work of glaciers and their former presence not only in areas of Switzerland now free of ice but across much of Europe. Miller's Scotch geologist can be identified as John Grant Malcolmson, correspondent of Darwin and member of the London Geological Society.

Malcolmson had returned from India in 1838, where he had served as surgeon for the Madras Medical Establishment, in order to complete his M.D. In 1839, on arriving back from his trip to Switzerland, Malcolmson spent time examining the superficial deposits and rock surfaces of Scotland to see if Agassiz's theory applied to Scotland. In a letter to Darwin, Malcolmson exclaimed that he 'found a little north of Pettycur in Fifeshire, the sandstones having grooved and polished surfaces ***exactly like the limestone of Neuchâtel***' (Burkhardt *et al.* 1985, - emphasis in original). Despite this evidence, Malcolmson remained cautious about the adequacy of Agassiz' theory in explaining the erratics and drift of Scotland. Although Miller echoed such caution in his article, its 'condensed and popular' presentation of Agassiz's ideas was remarkably enthusiastic in tone. Far from threatening the biblical accounts of creation, Agassiz's 'chaotic period' resonated for Miller with the death and darkness alluded to in the

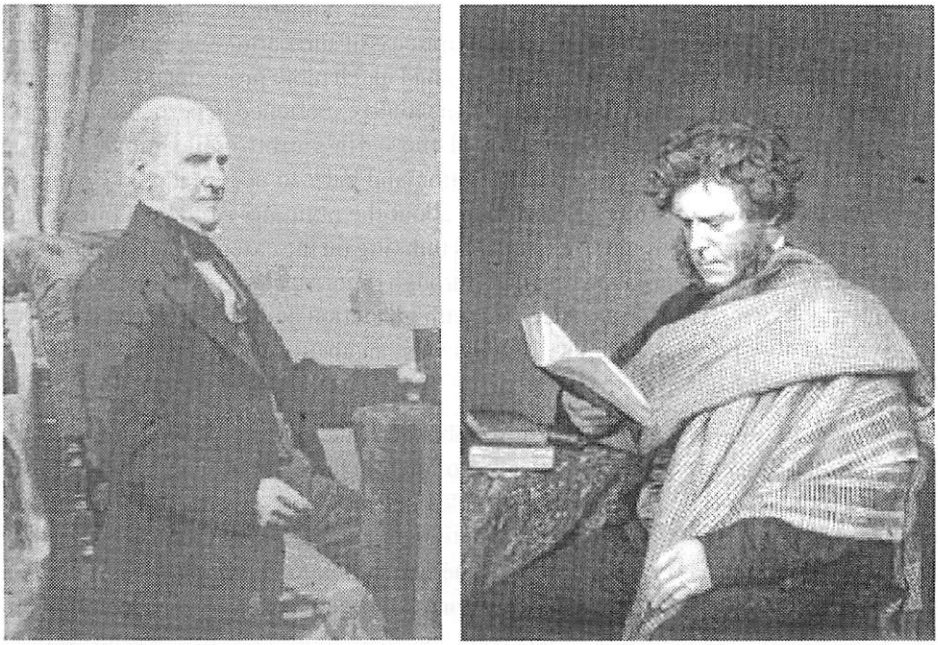
second verse of Genesis. Glacial theory had, potentially at least, scientific and theological warrant.

A number of interesting observations can be made about Miller's piece. The article pre-dates by some seven months the famed announcement in 1840 by Agassiz at the September meeting of the British Association for the Advancement of Science (BA) in Glasgow. Agassiz's ideas had already appeared in Edinburgh thanks to the editorial work of Robert Jameson and his nephew Thomas Torrie. Arguably, however, Miller's piece was the first to bring Agassiz's ideas to a wider and more popular readership than that of Jameson's journal (*Edinburgh New Philosophical Journal*). Even after the BA meeting, none of the Edinburgh or Glasgow newspapers appear to have reported Agassiz's claims that glaciation may have extended to Scotland. *Chambers's Edinburgh Journal*, edited by Robert Chamber, did report such claims some time later and noted that Section C (geology) meeting at which Agassiz gave his address not only attracted the largest audience but also 'the greatest proportion of ladies' (*Chambers's Edinburgh Journal*, 14 November 1840). Miller's piece, however, had given more detail and had pre-empted the popular reportage of Agassiz's public announcement in Glasgow.

The combination of geological and theological concerns presented by Miller was characteristic of all his writings on geology. This sort of mixing does not seem to mean, as some have implied (see, for example, G. Rosie 1981), that Miller was slower to accept glacial theory because of his religious sensibilities. It is true that Miller did not accept Agassiz's idea of an ice sheet, at least in his later geological writings, preferring to appeal to a combination floating icebergs and glaciers. This was in line with a good number of geologists at that time and usually had nothing to do with espousing a biblical deluge (which Miller, as Michael Taylor pointed out, considered a local event). Miller's early article was willing to countenance Agassiz's land-ice theory as a potentially revolutionary move in geological thought and Miller appeared eager to accept it if the evidence so allowed.

Miller's theological appraisals are an aspect of the debates about glacial theory altogether lacking in accounts given by Charles Maclaren of the Scotsman. Maclaren was actively involved in the more elite geological circles of Edinburgh and Britain. A former student of Alexander Rose and Robert Jameson, his 1839 book, *The Geology of Fife and the Lothians*, was widely acclaimed. He participated in the famous October 1840 excursions around Edinburgh that involved, among others, Buckland and Murchison and, two days later, Louis Agassiz himself.

I have already highlighted some of better-known contributions of Maclaren and *The Scotsman* to discussions on glacial theory. There are, as I suggested, some other



Portraits of Charles Maclaren (left) and Hugh Miller (right). Maclaren's portrait appeared in Cox, R. and Nicol, J. 1869. Selected Writings of the late C. Maclaren. *Miller's is by Bell after a photograph by Tunny, photo Suzie Stevenson, courtesy and copyright the Trustees of the National Museums of Scotland.*

unfamiliar articles that make fascinating reading. Two in particular, written by the same person and introduced by Maclaren, are particularly remarkable. The first, despite being 'scarcely adapted for the pages of a newspaper', appeared during the Parliamentary vacation of 1841/42 when 'few stories were stirring'. It was authored by John Dove of Glasgow (about whom I have been able to find out nothing) and concerned itself with establishing astronomical causes for the build up of ice and a vastly increased degree of cold in the extra-tropical regions. These causes, Dove argued, had been established years before the glacier theory had been thought of.

Drawing on the treatise on astronomy by Sir John Herschel in *Encyclopaedia Britannica* Dove pointed out that the ever-reducing obliquity of the ecliptic or the diminishing 'angles formed by the planes of the equator and the ecliptic' meant that in the past, when the angle was greater, 'an universal winding-sheet snow and ice' could accumulate in the winters of the two hemispheres and would produce 'an universal flux in the course of each summer' (*The Scotsman*, 5 January 1842). In

addition to the obliquity of the ecliptic Dove also pointed out the astronomical hypothesis which suggested changes in ellipticity of the earth's orbit would mean that for 'myriads of years' the earth may have had much more pronounced seasonality and for a further long period of time the earth would experience 'a perpetual spring'. Dove pointed out that the eccentricity of the earth's orbit could move from a pronounced ellipse to a purely circular motion and back to occupying an eccentric path. Dove continued his line of reasoning about the obliquity of the ecliptic in his sequel article where he sought to expand his thinking on the extent to which the axial tilt of the earth, and other planets, changes through time. Maclaren introduced Dove's second article, which was less concerned with glaciation and more with astronomy, by giving a more popular summary of what was 'an abstruse subject.... ill suited to readers of a newspaper.'

Dove's accounts offer if not the earliest published attempt to give an astronomical explanation of Agassiz's ideas, at least one of them. I have not been able to establish whether James Croll knew of Dove's articles but they certainly seem to deserve a place in a history of astronomical explanations for the ice age. Often cited in this regard is the French astronomer Joseph Adhémar's book *Révolutions de la Mer*, also published in 1842, which linked the precession of the equinoxes with the accumulation of ice in which ever hemisphere received less insolation. (see Imbrie and Imbrie 1979). That Dove's arguably more ingenious attempts appeared in the pages of a best selling Edinburgh newspaper tells us something about the difficulty of drawing, at that time at least, a clear boundary between popular and 'proper' science.

Browsing through early Victorian Edinburgh newspapers and popular monthlies, the reports of popular educational bodies, the science journals and the proceedings of the more obviously scientifically engaged societies reveals a complex web of connections and disjuncture in the promotion and reception of early glacial theory in and beyond the City. No doubt, much of the real geological work was reported in the pages of the *Edinburgh New Philosophical Journal* and accomplished though the fieldwork of the more expert geologists but glimpses of serious effort can be seen in arenas that we would consider more popular. The ways in which a range of people responded to glacial theory can be of as much interest as accounting for how the 'theory itself' was constituted, refined and disputed. It is surprisingly difficult, however, viewed in the context of mid-nineteenth-century Edinburgh's scientific culture, to entirely separate out the theory's makers, promoters and consumers. Endeavouring to do this can throw out one or two accounts that may constitute hitherto unrecognised additions to our bigger picture explanations of the making of glacial theory.

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The illustration of the Swiss glaciers is by permission of Michel Azéma from whose web site the images were taken. These and other images of these glaciers are to be found on: http://mikeaz.free.fr/marjelen/marjelen.htm

Red herrings by the barrel

The Editor interviews Donald McIntyre

Donald McIntyre might be called the 'Father of the Society' having been a Fellow for sixty years. I went up to see him in Perth, to chat and carry home a few stories to share with readers. I soon learnt that he has an amazing propensity for going off at all sorts of tangents as he talks, though the story always comes around full circle to the point of it all. He knows this himself and the title of this article stems from a lecture that he gave to the Royal Society of Edinburgh in 1986 during a celebration of The Enlightenment. After a long and apparent deviation from the main subject, in which he had read from The Edinburgh Advertiser of 1788 a brief mention of the publication of the first volume of the Transactions of the Royal Society of Edinburgh, he found another announcement: 'Red Herrings - a parcel of fine red herrings, to be sold in barrels, at James McIntyre's, New Quay, Leith.' Laughter rocked the auditorium! Read on and see what I mean...

Ed: Donald, the Society records show that you are the longest-serving Fellow of the Society. I thought that readers of THE EDINBURGH GEOLOGIST might be interested in hearing something about you and your life and the people that have influenced you especially at the start of your career.

Donald: My father's father came originally from Balquhidder but he moved to Edinburgh and worked for the paper-making business of Bertrams of the Sciennes. My grandfather on my mother's side was a doctor in Morningside and went on his rounds in a horse and carriage. When he got a car, and it must have been one of the first in Edinburgh, the groom who looked after the horses became the chauffeur. When he washed the car he spoke to it as he had to the horses! I mention these things to show how much has changed... these were before my time but not <u>much</u> before my time.

My father, at the beginning of the [First World] War, joined up in the Horse Artillery. There are pictures of him with the horses; they actually went into battle with horses in France. And then he was shipped to the Mediterranean. They were in port for a long time in Alexandria and the officers (he was then a sergeant in the RA) got fed up and went to town... you can just imagine the situation. What happened was the ship sailed without the officers. They were sailing to Galipoli, so these officers had essentially deserted in the face of the enemy. They could have been shot; it wasn't a question of a reprimand, it was something more serious than that. So he was the senior person in the group and he was actually commissioned in the field in Galipoli. After the war he decided to become a minister so he took his degree in Edinburgh

and his first charge was in Callander. We later came to Edinburgh to Morningside High Church, which is now the Churchill Theatre.

So when did you first develop an interest in geology?

When war broke out we were on holiday in Rothiemurchus. We always went to the Highlands and I was accustomed to climbing hills. My brother and I were at Watsons but my father decided that it would be unwise for us to go back to Edinburgh so we moved into digs in Grantown-on-Spey. That was a fantastic experience! I was in the Cairngorms virtually every weekend, so I knew those hills well. One of my friends was evacuated to Grantown to be billetted as an evacuee. His host had been a teacher and I got to know him. He was very interesting. He knew about the Gaelic place names of the hills and he told me about... I'll call it geology but he didn't use that word.

He gave me the memoir of the explanation of the sheet that covered that western part of the Cairngorms... Mid Strathspey and Strathdearn. Hinxman was one of the main authors of the sheet. As you can imagine, two thirds of it concerned itself with the 2V of the amphiboles, which meant nothing to me but, and this is the very important thing, about a third of the memoir was on the glaciation. And by golly, that was well done! I could see the ice coming down the Spey. Near Kincraig, there are two streams that come down from the Monadliath and turn at right angles to run almost horizontally for a while before turning to run down once again. This was at the height of the ice... and so you know I could see the ice level. And there are numerous ridges coming out of the Cairngorms with V-shaped notches in them. This was because the ice coming down the Spey went up into Glen More and pushed up into glens such as Glen Einich and the Lairig Ghru, so instead of the ice coming down as you would expect, the ice was pushing up and there were corrie glaciers higher up. The water drained right round Glenmore and when it came to one of these ridges, it cut a V-shaped notch. And I could see these V-shaped notches... I knew them well! And of course there were the great gravel deposits at the mouths of Glen Einich and the Lairig Ghru with crescentic moraines that were crescenting the wrong way. It was absolutely fantastic to me. It really turned me on.

And did that encourage you to study geology?

Well, at that time and for a while, a long while afterwards, geology was a three-year degree... you did mathematics, physics and chemistry first. So when I went to Edinburgh University, I was enrolled as a chemistry student and that meant that classes were predetermined. There was no question for example of taking a class on philosophy of science or the history of science... ridiculous... but that was the way

it was. Now, in our mathematics class... you know, in those days one of the great things was that the professor taught the elementary class in every subject. That's a marvellous tradition and ought to be kept up in every Scottish university. Well, Sir Edmund Whittaker was the professor of mathematics and he was famous as a cosmologist as well as being a pure mathematician. The mathematics department at that time was in Chambers Street and we sat there at benches. I was beside a man (we always happened to sit in the same place; I don't know whether that was *de rigueur* but that's what happened) and this was Sandy Renwick. Later on, he became Director General of the International Geological Congress. He'd been educated in the south of England. Anyway, he was there and he had yellow gloves and a cane and wore a monocle. He must have been the last of the Great Colonials, absolutely the last, probably fifty years later than anyone else. Anyway, Sandy Renwick hadn't risen to these heights when I knew him in the maths class.

He told me that he intended to do geology. "Geology," I said, "what's geology?" He told me something about it because he'd done geology at school and I thought 'this is interesting'. Now, the Director of Studies was Robert Campbell, Reader in Petrology and acting head of the geology department when I first took a class – Professor Jehu was ill. So I'd seen Robert Campbell before signing up for mathematics, physics and chemistry in my first year. When I went back to register for the next year, I asked him about geology and he was delighted and (it wasn't very difficult) talked me into taking geology.

So your move to geology was mainly because of your love for the Cairngorms?

Oh absolutely! That's right... and I knew that other hills were not the same as the Cairngorms. So then I was a student in Edinburgh, a second-year student taking chemistry and geology. I had the beginning class from Robert Campbell in my first term and in my second term from Dr. Finlay who was the palaeontologist and Alec Cockburn. The staff consisted of the Professor, which when I went there at first was Thomas J. Jehu, and Robert Campbell, Reader in Petrology, and R.M. Craig, who taught Economic Geology, and T.M. Finlay, who taught Palaeontology, and Cockburn who was the Assistant... when he did his PhD on the geology of St Kilda, he lived there with the St Kildans. He told me a lot about that. And another interesting fact is that his son was called Ewen. He was named for the Ewen who was the St Kildan with whom Dr. Cockburn lived when he did his PhD... that was an interesting connection. Our son is called Ewen and the only Ewen I knew before was a boy who was named for a St Kildan.

Cockburn taught nearly every subject. He would do the diagrams and all that kind of thing... now that's an interesting thing... you know, there was no photocopying of

any sort at all, no Gestätners and everything had to be written in chalk on the board. That was the way that Cockburn taught in the geology department in my time. He would spend hours on the blackboard putting in coloured diagrams of cross-sections of the Moine Thrust. Hours... then after the class, a lab boy would come in with a bucket of water and a cloth and wash the whole thing off.

In my third year, that was 1943, Arthur Holmes took the chair of geology. That made a big difference to the Department. I was in his class for Advanced Physical Geology and in his introductory lecture to that class, there were three students. I was one... One of the famous Norwegian geologists, the top Norwegian geologist of that time was Holtedahl and his son was at sea when the Germans invaded Norway, so he didn't go back. He came to Scotland and was in uniform when he came to Holmes's lectures. The third person wasn't a geology student. He eventually became the Secretary of the Communist Party of British Guyana. Anyway, the three of us sat there and Holmes gave the most lucid lectures from notes which he had in front of him, mainly of course from the draft of his *Principles of Physical Geology*. I kept very careful notes from Arthur Holmes's lectures (I later gave them to the special collections at Edinburgh University). I did that for only one other lecturer and that was Professor Kendall of Chemistry, and it's an indication of the way that he lectured and the way in which I responded to his lectures.

You know, the staff had all been there for so long... two had been students there. Campbell had been a assistant to Geikie and went fishing with Benjamin Peach. He would tell me stories about Peach in the field... from being a contemporary really... Campbell smoked a pipe... it was a straight pipe which hang from his teeth. The only instruments we had were petrographic microscopes – great glass bell jars over them – and Dr. Campbell would come in and go to show me something under the microscope. He'd take the big glass bell jar off and he'd be talking while he was doing it, which he could do holding a pipe in his teeth. He'd be looking at me as he was doing it and then he'd say, "what a mess on this microscope, what have people been doing here?" but all the time it was the ash from his pipe. Of course he was fantastic in old style Rosenbuschian petrology... absolutely fantastic. Well, that might give you something of a flavour of what it was like. My teachers talked to me – some of the classes were one on one – about people like Hutton. If Hutton had arrived I wouldn't have been surprised!

Then you joined the staff there when you graduated?

Arthur Holmes wanted me to join the staff as petrologist when Robert Campbell retired but the first vacancy was going to be R.M. Craig, the Economic Geologist. Dr Finlay was the first to retire. So Holmes turned to Glasgow which was a

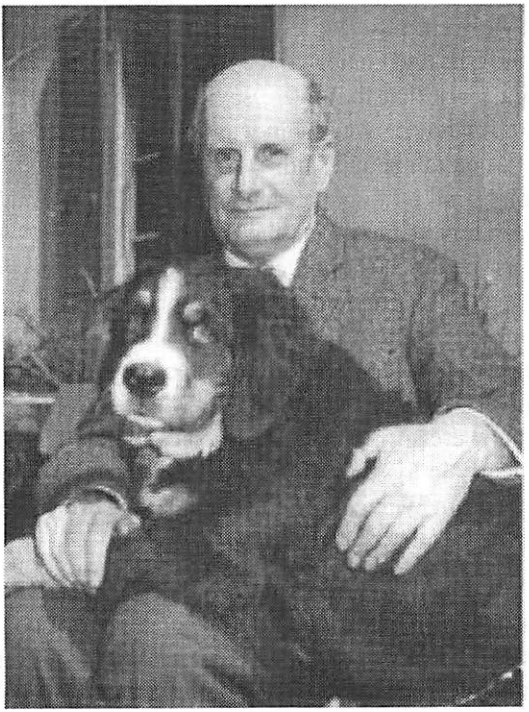
palaeontological school. Gordon Craig was the last student of A.E. Trueman and the first student of T. Neville George. And so he and I were invited to lunch with the Holmeses... so I was at Gordon Craig's interview. Maybe I was to be there just to make it easier for him, somebody not as old as his grandfather! And Gordon can still tell you what we were served. Anyway Gordon then came on the staff and Holmes had to find something for me to do for a year before R.M. Craig retired.

Now you see, the granite controversy was at its peak; the discussion waxed very hot on the origin of granites and, as you can imagine, the reason for that was that we didn't know enough, we couldn't know enough. The presidential papers by H. H. Read for example, who was the President of this and the President of that, were on the origin of granite and migmatites. Well, Holmes wanted me to find out more so he sent me to work with Wegmann, who had published an important paper on the origin of migmatites in *Geologicshe Rundschau*. He sent me to Switzerland, which was a fantastic opportunity. Unfortunately, I was just too late to know Argand, who had just died but Wegmann had taken the chair and he gave me Argand's coat to wear and for my birthday, he gave me a little box of Swiss cigars, they were the last ones that Argand had, with a little pencil with Argand's teeth marks on it... they were like

A photograph of Emile Argand drawing his famous map of Asia, taken by Wegmann and inscribed by him: "Au petit-fils tectonique d' Emile Argand, déc. 1948" (to the tectonic grandson of Emile Argand, December 1948)

holy relics. Argand of course did some great work on the structure of the Alps and of Asia. In fact he shows continental drift in his 1926 paper. He shows why the Himalaya are high because India is going down underneath.

Now, Wegmann was an extremely difficult person. I hadn't been there very long (it would be a matter of days) before we set off for the field, where he was doing his field work in the Vallais, the High Alps. There were people in Neuchâtel who were taking bets as to how long I would last because nobody else had ever lasted with him because he was so difficult. To give you an idea of what was involved, we went by train, of course, and Post Bus. When we got into the train, we sat facing one another beside the window. And I said to him, "Now, Professor Wegmann, I have tried to read up on your work," because Holmes had told me nothing about it, you see, "and I know that there's a particular thing that you talk about as the B-axis. But I haven't been able to figure out exactly what a B-axis is. I know it's a very crucial part of your work, but can you tell me what a B-axis is?" He looked at me… 'what kind of moron has Holmes sent me?' He never answered questions by giving an answer, he asked another question. He always did that and his question was, "Well, tell me, here's an



Professor Wegmann with his dog Ceppi, April 1966

ash tray. It's fastened here just below the window. Why is the B-axis of that ash tray parallel to the B-axis of the train?" Now seeing that I'd asked what the B-axis was, that wasn't so easy, so I looked at this thing and I could see that it was hinged at the bottom and that was the only kind of axis that I could see. But the trouble was that that was parallel to the length of the train while the axles of the train were at right angles. Now, the question was 'why were they parallel?' so I had obviously missed something. "Well, Professor Wegmann," I said, "I'm sorry, I don't understand." He was very annoyed... 'what kind of person have I got here?' and he answered that with another question, "If the B-axis of the ash tray weren't parallel to the B-axis of the train, how could you empty the ash tray without turning the train upside down?"

After I got back, I told this to some of his students and they laughed till they were sore. But nearly a year later, near the end of my time there, the French Association for the Advancement of Science met in Geneva and I was asked to give a talk... which I did in French, which surprises me now, but anyway, I gave a talk at Geneva and after that there was a field trip through the Jura Mountains. I went with Wegmann and others on this trip and we ended up going by train through the tunnel from Besançon to Neuchâtel. Wegmann got me to sit by the window and look at the geology in the cuttings as we went past while he was talking to his colleagues who were going further on to Berne and Geneva... they were all talking in Swiss German and I didn't understand a word that they were saying. And they were getting more and more heated in controversy... Wegmann was getting quite angry and he was going on and he finally turned to me and said, "Well, we'll hear what M. McIntyre has to say on this question." And I thought, 'what on earth is this?' and he said "Why must the B-axis of that ash tray be parallel to the B-axis of the train?" And I said, "Oh. Mr Wegmann, that must be a very complicated question because the first answer that comes to my head seems so simple. It must be more complicated than that." And he said, "No, come on, tell us!" and I said, "Well, if the B-axis of the ash tray weren't parallel to the B-axis of the train, how could you empty the ash tray without turning the train upside down?" I said this because I knew the answer. Well it turned out that some of his students were sitting right behind us and they were hearing this whole thing. They were nearly in hysterics, because they knew that I had no idea why that should be the answer, but Wegmann said, "That's the sort of tectonics we teach in Neuchâtel!"

Anyway it gives you an idea of the kind of situation. After that, I came back to Edinburgh and was taken on in the inappropriate position of Economic Geologist, of which I knew very little. But what I did worked out quite well: I taught what I knew. For example, I'd really learned about stereographic projections in Switzerland. Some

of my students were from the Heriot Watt working for a BSc in mining. They had all sorts of complicated underground mining surveys that they had been given as problems and I solved these problems very easily with a stereographic projection because, you know, I was the first to publish a stereographic projection showing a fold axis determined from the normals to the bedding planes. It was first done in a paper in 1929 by Wegmann but he was doing it with imaginary data, but I published in the QJGS the first actual data where a fold axis was determined in that way in the paper between Grantown and Tomintoul which was published in '51. So I was able to show these mining students how they could solve their problems quicker than the teachers could make them up.

Anyway, this was the kind of thing I was doing and teaching. Then in 1951, the British Association for the Advancement of Science met in Edinburgh. It was a big meeting... Edinburgh was considered a very important place for a meeting and there hadn't been one there for many years. Holmes should of course have been the main host but Holmes was a very shy man, so he and Mrs Holmes left Edinburgh and went to Donegal for field work while the meeting took place in Edinburgh. I had to take his place. I arranged a field trip to the Highlands for the distinguished foreign visitors, Anders Kvale of Norway, H W Fairbairn of M.I.T. and Frank Turner of Berkeley.

Donald MIntyre discussing the Moine Thrust with H.W. Fairbairn at Oykell Bridge. Frank Turner, looking on, is leaning against Donald's first vehicle, an ex-RAF van that had seen war-time use in North Africa. Having his own car was unusual in 1951, but enabled him to get to the Highlands to look at the localities at first hand.

That field trip was very successful and Turner invited me to go in '52 to Berkeley and bring some of the marbles from Strathspey with me, because I knew their context and he wanted to use the information that he and David Griggs had obtained by experiments; Turner did the microscopic work, on twin lamellae and showed how the crystals deformed. You see, with quartz but the trouble with quartz, all you can measure optically is the c-axis, whereas with calcite you've got planes of cleavage, planes of lamellae, twin lamellae in three dimensions – and of course it's easier to deform calcite than quartz. Turner and Eleanor Bliss Knopf had published a series of important papers in the *Bulletin of the Geological Society of America* on the experimental deformation of marble. So I went to Berkeley for the summer of 1952. Well, immediately I met some fascinating people there because Berkeley was one of the great geological institutes of the world at that time, the people that were there were an absolutely fantastic group... I am tempted to tell you more about them but perhaps it's beside the point! Although it influenced me, of course, about the possibility of going there permanently because of that environment... that was very important too but we'll leave that aside as well.

I hadn't been in Berkeley very long before Turner left for the International Geological Congress in Algiers. But before he went, he gave a wine-tasting in my honour at Berkeley. He knew all the people that mattered in Berkeley and at Stanford, and Californian wine was just taking off. Let me backtrack. When I was in Switzerland I was indoctrinated to the art of wine tasting because Argand had been a professional wine taster. Well, Wegmann taught me. Now you're a geologist so you'll understand this. Bowen worked on fractional crystallisation. What Wegmann said to me... well, he put me on to kirsch to start with, because he said "Beginners should start with kirsch because it's easy." What you're doing is fractional distillation, you see. There's a certain fraction distilling off at room temperature. Well we know that, so what you need to do is to take the glass and smell the wine because you're getting that fraction. And then having done all you can with that, you'll take a little, just a little, and let it go down below your tongue and taste it with the tip of your tongue and then begin to work it round and it's getting warmer as it's going and let the vapours go back up your nose, so that you're being able to sense the different fractions as it's breaking up, all of which made sense to a geologist. So you start off with the colour and then you get the aroma, they call it arome if it's a white wine and bouquet if it's a red wine, and then finally, he said, you work it round like a peasant eating bread and cheese, and then you allow some of this to go back down your throat and you get the 'aftertaste'... you're doing a spectral analysis of it.

So you see that's how I was brought up in Neuchâtel! Of course I told Turner about these things when we were chatting because it was very much a matter of interest to

me and I was sharing this information gladly with anyone who'd be interested and he was very interested. So Turner had these people for the wine-tasting. The room was crowded with people – many were Nobel Prize winners, and of course I didn't know any of them. At one stage I was in the corner of the room, speaking with a man who seemed to be on his own and so the obvious topic of conversation was to ask him what department he was in, was it Berkeley or was it Stanford? He turned out to be C.S. Forrester, author of the Hornblower stories. I'd heard of them but I'd never read a single one – moreover, the movie of *The African Queen* had just won all the Oscars... and I hadn't seen the movie... I knew so little I couldn't even pretend. I couldn't say, "well I liked it when the African Queen was crowned," because I didn't even realise that it was the name of a boat! Well, we got on famously! He came later to see me in Pomona College and we met up again in London, and Mrs. Forrester took me to the vineyards when I was in Berkeley, we had a marvellous time. So this was the kind of party you're in, you know, I could have been with someone else and it would have been just as remarkable a story to tell you now, but that was it.

Now, what Turner did was he gave us all a little of this wine... 'this is a new wine from Wente Brothers...' We all took this wine and we all did our best to savour it and then he gave us something else and what he'd done was he'd kept back some of the wine in each bottle that he had served and at the end he gave us some of that and which one is it? So there was an exam at the end of the tasting. Well, that made a glorious evening and then when things were coming to a close, he said, "Now Donald McIntyre is here and I've got a wine here that I particularly want Donald to tell us about." So I said, "well what is it?" Of course he wasn't going to tell me... I was supposed to tell him, so I knew I was on the spot. This was like a geologist being told, "now what do you make of this rock. I know where it came from... do you know where it came from?!"

So he came in from the far end of the room with this wine glass with the wine in it... it was a red wine and I said, "Wait a minute, Frank, that's not a Californian wine." Now that was based on the fact that it was extremely unlikely that he would give me a Californian wine, but I was right! So he stopped in his stride a wee bit and then he came closer and I said, "hold it up to the light" and he held it up to the light and I looked at it and I said, "It's a Swiss wine." So I said, "would it be all right for me to take the bouquet?" and as I did so, I said, "it's from the village of Auvernier... can I taste it?" And I said, "It is from the village of Auvernier and it's 1947." And he said, "My God" and he went and got the bottle and you see everyone in the room was stunned by this amazing display. But the point was that I was in Switzerland in 1947. There are not many red wines in the Neuchâtel region but I knew that it was likely to be something that had a connection with Switzerland rather than France or Arabia or

somewhere else, and that if it was a Neuchâtel wine then that's the one he would have got. He would have seen a Neuchâtel wine and thought 'I'll get that for Donald'. And I knew that Auvernier was the biggest producer in the region and it would have to be a good year both for quality and quantity before they would try to sell it in California and so I thought well, that was the best year for many years... the chances are that's what it is... and that's what it was!

I'd been back in Scotland for a year or so when I got a telegram from Turner that the President of Pomona College had been asking who they could get to succeed Dr. Woodford who was going to retire. He had been there since the beginning... he had founded the geology department and it was essentially a one-man department. So the President had asked Turner for suggestions, obviously thinking of Berkeley people, and he recommended me and so he said, "Don't turn it down just because you've never heard of the place," which I really hadn't, "because we think it would be the right place for you and you are the right person for them."

You see, some people are better in a big university but the smaller university suited me. It's a different environment and I was free to do everything... anything... I worked on seismology: I did work on first motion of big earthquakes. I think I was the first to describe impact metamorphism, at Clearwater Lake in Canada...

I suppose that if you're working in a big place and you start doing that, you're treading on other people's toes...

Exactly! It's all a question of opportunity... and I'll have to tell you something about that in more detail. When I got the opportunity to get equipment for the department, I consulted a colleague in Physics who was working in ultra-soft X-rays and I said "What should I get?" He said, "You should get X-ray fluorescence because you can then make chemical analyses by physics instead of by chemistry," and I said, "Yes but the trouble is that the elements I'm interested in, the major constituents of rocks, are light elements like silicon and oxygen and aluminium." Well my colleague was an expert in ultra soft X-rays so we used X-ray tubes made by him and the result of that was our equipment went to Mars. We were the only department in the world that contributed to the Viking landers. We had two field stations on another planet. And that was because I was given freedom!

We've talked about the start of your career and some of your interests. You were involved with the Scottish Mountaineering Club as well. Tell me about that.

I met Bill Murray at the New Year meet of the Junior Mountaineering Club of Scotland at Kingshouse Inn in 1945-46. He was there, together with Kenneth Dunn, who was at one time President in the JMCS. At that meet... well, Bill Murray had been a

prisoner of war, captured at El Alamein and had gone through a pretty hellish time and had lost both weight and strength. He was only just getting back the strength to go up mountains. And his friends – he was exactly ten years older than me – like Kenneth Dunn and Bill Mackenzie were about the same age. These men had gone through the war; they had been active mountaineers, but they had taken the first steps in business and got married just before the war. So they were not free to go and climb with him because they had years to make up – both in their work and in their personal lives. Bill decided not to go back into banking but to try to make a career by writing about mountains... and he was very successful. He was asked to write the SMC rock-climbing guide to Glencoe and couldn't do it on his own. Well, he invited me to climb with him, which was a great privilege. He was the most renowned figure in mountaineering in Scotland, and weekend after weekend I'd take the train through to Queen Street Station where he would meet me with his ancient car. I had fantastic experiences climbing with him. Many of the things we did together are included in his second book *Undiscovered Scotland.*

In the end, I gave up climbing because I learned to go to the hills to look at the rocks, not from the point of view of climbability, but looking at exposures whether at the bottom of the hill or at the top of the hill. And you know sometimes I've thought that somebody who really wanted to be a mountaineer, the best thing to do might be to become a banker. Then when you had time off, you'd be able to climb. Once you're a geologist, you can't do that. The best rocks may be down in the river at the bottom of the hill, rather than at the top of the hill. But I have no regrets. I have had some fantastic opportunities and I have tried to make the most of them.

There were other things that Donald wanted to tell me and he decided he would walk with me back to where I had parked my car. We talked more of his time in California and of his general philosophy to life, but what struck me most was the spring in his step as he walked. He is still making the most of the opportunities that life gives him.

Donald has a web site, which he is actively working on. This is worth looking at if you want to know more: http://homepage.ntlworld.com/donald.mcintyre

The following references published by Donald might be of interest to readers:

Hutton's Edinburgh; Earth Sciences History, *Vol 16, 1997, p100-157*

James Hutton: Founder of Modern Geology *(jointly with Alan McKirdy), 2001, National Museum of Scotland*

Hugh Miller's collection
a memorial to a great geological Scot

by Michael A. Taylor & Martin Gostwick

Some would argue that Hugh Miller's greatest memorial lies in his writings and his enduring reputation. Nevertheless, as well as the Nelson's Column style monument overlooking his birthplace cottage preserved by the National Trust for Scotland at Cromarty, he also enjoys four other statues or portrait busts. Appropriately for an advocate of self-improvement, a street is named after him in the pioneering self-help housing for the working class at Stockbridge in Edinburgh, as is a library at Cromarty. On the geological side Alaska has its Hugh Miller Glacier thanks to John Muir, and the Old Red Sandstone fish site of Escuminac Bay in Québec rejoices in its Hugh Miller Cliffs. But it may be a surprise to learn that the Hugh Miller collection at the National Museums of Scotland (NMS) was intended to be a key memorial.

New light was thrown on the acquisition of these thousands of specimens, mostly from Scotland, when one of us (MAT) recently discovered, in the British Geological Survey archives, a circular entitled *Proposal to Purchase the Museum of the Late Hugh Miller*. This turns out to have been issued by a committee of civic and scientific worthies at a meeting called by John Melville, the Lord Provost of Edinburgh, in the Council Chambers on the '12th April' (the year is not stated but it has to be 1858 as we will see). There had been 'strong desire felt and expressed in many quarters' that the Miller collection should be 'secured for Scotland, and deposited in the new Industrial Museum' – by which the writer presumably meant the Natural History Museum, newly combined with the Industrial Museum proper to form the precursor of the old Royal Scottish Museum. (This would not be the last time that the terminology of the Chambers Street museums confused the uninitiated, even though, as we shall see, the Keeper of the Natural History Museum was on the committee!)

'An application had been made to the late Government with a view of inducing them to become the purchasers. They had cordially entered into the project, and a sum of £500 had been set aside ...' This application may have been a joint one. The Royal Physical Society of Edinburgh was Miller's favourite local scientific forum, and its meeting of 24 December 1856 was adjourned because of the news of Miller's death. Its next meeting, on 28 January 1857, heard a brief but very much to the point eulogy on Miller by the President, following an unanimous vote by the members present to ask their council to make such an application jointly with 'other bodies' which, it was understood, 'intended moving in the same direction'.

In any case, however, as the appeal leaflet later explained, a 'Scottish Nobleman' – was he the geologically inclined Duke of Argyll, or perhaps Miller's Portobello

neighbour Lord Kinnaird, one wonders? - offered £1000, while an 'American College' bid 1000 guineas [£1050]. So, even assuming that the new administration would honour its predecessor's promise, the shortfall had to be tackled by public appeal before the 'family could be asked to carry out their desire to have the Museum permanently deposited in Edinburgh'. The aim was to raise £600, capping the top bid by £50, on the grounds that:

> '... no more suitable Memorial of the genius and scientific labours of Mr. Miller could be erected and preserved; that a Collection so distinctively illustrative of the Geology of Scotland, made by one of whom Scotland had such reason to be proud, instead of passing into private hands, should be placed in one of the public Institutions of the country ...'

The committee set up a subcommittee of worthies convened by the Provost to 'prosecute the Subscription with as little delay as possible'. This included, amongst others, George Wilson, Professor of Technology and first director of the Industrial Museum, and Professor George Allman, the biologist who was also Keeper of the University's Natural History Museum, as well as the medical Professors Simpson and Miller, and Robert Paul, manager of the Commercial Bank.

Obviously the leaflet must date from after Miller's death in December 1856, and this particular copy has a manuscript annotation dated July 1858. The change of government mentioned has to be the replacement in February 1858 of Palmerston's administration of 1855-1858 by Lord Derby's of 1858-1859. In turn this dates the original committee meeting to 12 April 1858, and the issue of the Proposal sometime soon after that. No wonder it expressed a sense of urgency: the collection 'must ... be removed from its present site before Whitsunday' - the Scots legal term day, 15 May for letting or selling property, but 28 May for removals in towns. Where was this 'site'? An obvious possibility is the 'museum' (i. e. physical building, rather than the leaflet's usage of 'collection') which Miller had built in the garden of Shrub Mount, the family's Portobello house. Sasine records show that his son William did not sell Shrub Mount till 1864. However, the family had long gone: they temporarily dispersed early in 1857, and may never have returned to Shrub Mount. Indeed, it seems from the family account books now in the National Library of Scotland – more specifically the lawyers' accounts for the late Hugh Miller's estate – that Shrub Mount was being rented out through a Portobello house agent by well before November 1857: perhaps quite early in 1857, assuming that the rental charge was not greatly different from later years. Either Shrub Mount had been let without the 'museum' where the collection remained, presumably unsupervised, or the collection had been moved to some intermediate store on which rental was being paid.

The committee soon had enough subscribers to fill two and a half double column pages of small print in the leaflet by the time Peach's copy went to press, taking them to almost £400, two-thirds of the way to their target. Either the subcommittee had moved very quickly, or the copy we have is the original preamble text married to a later listing of subscribers, which may not necessarily date from before Whitsun 1858. At any rate, the leaflet we do have was, of course, intended to drum up the remaining cash. That it apparently succeeded – seemingly helped by the family's willingness to waive the last £24-odd – is shown by the payment of £1025 0s 6d [£1025.03] recorded in the family accounts. Of this the Government through the national museum fully paid the promised £500 in 1859, when the specimens officially came into its tenure, as NMS records confirm.

The List of Subscribers to the Hugh Miller Museum Fund is fascinating. It is not always possible to identify each Mr X unambiguously, especially if his address is given incompletely or not at all, but some trends are plain even if a full analysis is completely beyond the scope of this note – though no doubt different names from those examined here would catch a different reader's eye. As one would expect, Edinburgh people feature strongly, as do professionals and other big city people: the news had not had time to filter out, and after all the whole point of the leaflet was to recruit from all over the kingdom. There are a few aristocrats, unsurprisingly including the geologically inclined Duke of Argyll (and of the Ardtun leaf beds), of whom Miller had written approvingly, and Lord Kinnaird. The Marquess of Breadalbane is there; he was an important lay supporter of the Free Kirk whose creation Miller did so much to support with his journalism in *The Witness*. But the great bulk of the list seems to comprise professional men.

As one would expect of a list heavy on the Edinburgh side, there are lawyers aplenty, and medics and University teachers. Professor Simpson must be James Young Simpson, the obstetrician and advocate of anaesthesia in childbirth, and Miller's fellow parishioner at Free St John's (now Free St Columba's) on Johnston Terrace. Here also are John Balfour, the Professor of Medicine and Botany and Regius Keeper of the Royal Botanic Garden at Inverleith, and James Miller, the Professor of Surgery. This last is somewhat ironic, for Hugh, evidently troubled by his physical and mental state, consulted him and the Miller family's doctor Dr Balfour – who must be the Dr Andrew Balfour of Portobello, not on the list - the day before his suicide. They prescribed, amongst other things, a haircut, and a regular bedtime at eleven after only a light supper and a warm sponge-bath, though to be fair they rather more usefully recommended a complete break from work. Unfortunately Miller did not last even the night, and a few days later James Miller and Andrew Balfour were two

of the four doctors signing the crucial post-mortem report which concluded that Hugh Miller had committed suicide 'under the impulse of insanity' – in other words, a sudden act, neither a wilful one nor a reflection of long-term madness.

Bankers are represented by Robert Paul of the Commercial Bank, no small figure in the business establishment, who had spotted Miller (then an accountant at the Bank's Cromarty branch) back in 1839 when the Evangelicals were seeking an editor for what became *The Witness*. Literary men are represented by Robert Chambers, and John Ruskin of Camberwell is surely the art critic and mineral collector, listed alongside his father John James Ruskin. Overt female donors are thin on the ground. Some perhaps gave invisibly through their menfolk. However, the list does include the Duchess of Argyll and Lady Emma Campbell, and, rather lower down the social scale of the day, Miss Marion Wood, a family friend of the Millers.

Interestingly most people seem to have subscribed a pound, maybe two, but we need to multiply these sums by about 100 or 200 to give even a very coarse idea of modern values. The biggest donations by far are the £25 each from Robert Horn, the advocate and committee member, and the MPs Alexander Murray Dunlop and Charles Cowan. Cowan, the Penicuik papermaker, was a Liberal politician and supporter of the Free Church, and incidentally also a relative of the late Thomas Chalmers, the Free Church leader and Miller's ally. This particular copy of the leaflet has, scribbled on it, 'Sent Dr Smith' – a committee member - '10s/ in postage stamps 23[?] July 1858 CWP'. That unmistakable scrawl confirms that the leaflet belonged to none other than Charles Peach, former coastguard, fossil collecting friend of Hugh Miller, and father of that Ben of Peach and Horne fame. That 10 shillings [£0.50] was surely no insignificant sum for a pensioned coastguard.

Geologists were already well signed up, no doubt through their society and Survey networks: as well as Peach, and Roderick Impey Murchison (at 10 guineas [£10.50]), it is easy to spot Charles Lyell, Philip Egerton the fish enthusiast, Patrick Dudgeon the mineralogist, Colonel Portlock of the Irish Ordnance Survey, Andrew Ramsay of the Geological Survey, and William Logan, 'Provincial Geologist of Canada', while Archibald Geikie only just squeaked onto the list – perhaps he had been away on Survey fieldwork. There are also less weel-kent but interesting names such as the Montrosians James Howden, the fossil collecting Superintendent of the Montrose Royal Asylum, R. Barclay and Christian Hoyer Millar, all three leading lights of the local Natural History and Antiquarian Society. 'Mr Moore' of the Geological Society of London has to be that Society's Secretary, and 'J. T. Bowerbank, Esq., of London' was perhaps an error for James Scott Bowerbank, the wealthy distiller of London Clay fruit and Palaeontographical Society fame. The Rev. John Duns of Torphichen

must be the geologically minded minister who edited John Fleming's *The Lithology of Edinburgh*. Perhaps he knew the Millers also: a copy of this book recently turned up in a bookseller's catalogue, with a dedication to 'Mr H. Miller' – though this cannot very well have been to Hugh himself as the inscription is dated 31 December 1858, and the book was published in 1859, and the question remains open whether it was a present to wee Hugh junior, or some other Mr Miller entirely. Other scientific men are represented by Sir Thomas Brisbane, army general and amateur astronomer.

This List was, of course, an interim one, and no final list of subscribers, if indeed one still exists anywhere, has yet been traced, so it is unfair to draw too many conclusions from the list, particularly when a particular group is scattered across the country, as in the case of the ordained ministers or clergy. Still, this professional group, and the Free Church in particular, seems distinctly underrepresented, given all that Miller did to encourage and sustain the Free Church. There are only about sixteen ordained men on a sub list of over two hundred at a time when there were around three dozen Free Kirk ministers known in and near Edinburgh alone. Moreover, some of those Free Churchmen who are on the list may have been there primarily for personal and family reasons. The Reverend Guthrie was Miller's friend and parish minister at Free St John's on Johnston Terrace. Dr Hanna was Guthrie's colleague at St John's, and the son in law of Thomas Chalmers. 'Rev. Principal Cunningham' is William Cunningham, the Principal of New College and also a friend and ally. His colleague the Professor of Divinity, the Reverend Bannerman, is also on the list. Of the remaining ordained gentlemen, some were members of other denominations, such as the Anglican Bishop of London and Dean of Carlisle, and Dr Cairns of the Secession and later United Presbyterian Churches of Berwick, while a Rev. John Jaffray may be the Establishment (C of S) minister of Dunbar.

The thought naturally arises as to whether this reflects any differences within the Kirk, for Miller had certainly become alienated from the new ruling faction in the Free Church, led by Robert Candlish, Robert Buchanan and Robert Rainy, none of whom appear here. Certainly, also, Buchanan's history of the troubles in the Kirk which led to the Free Church, published in 1849, had pointedly omitted Miller completely, probably because Miller had upset this faction by insisting on his independence and refusing to let *The Witness* become a mere mouthpiece of theirs. Still, this absence of Free Kirk ministers is perhaps best put down to a lack of direct personal or scientific interest. There seems no reason to expect Free Church ministers, as a group, to donate to a primarily scientific objective. They had many other fish to fry than *Pterichthys milleri*, after all, and other things on which to spend their limited stipends, and it is always possible that some who are not listed here nevertheless

made donations to the other, and certainly more conventional, monument, the Handyside Ritchie statue of Hugh Miller on top of the pillar above Cromarty, which was going up about this time.

The collection was catalogued in summary by Geikie, in a list dated 14 June 1858, apparently before it came to the Museum – or perhaps it had been stored at the museum once it became clear that the appeal had a fighting chance of success. It was catalogued more thoroughly by Peach after it became legally part of the national museum collection in 1859. These MS catalogues are still in use. The work goes on even today, and the Miller Collection has been earmarked as a possible priority for a major computer documentation project. But not all the 'Miller Collection' is in NMS. A small, but well chosen, selection of Miller specimens ended up (with specimens from other sources) in the Cottage in Cromarty. They apparently stemmed from the 'museum' set up there (or just possibly in the Miller family's other house next door) by Hugh Miller junior (1850-1896), Miller's youngest son, a professional with the Survey, and a Vice-President of the EGS. It seems that he established this museum while living locally, mapping his father's old stamping grounds around Cromarty in the mid-late 1880s. Who chose these specimens, we do not yet know – except that he or she evidently knew enough geology to make a shrewd selection to represent Hugh senior's work - nor how and when these specimens left the main collection and (perhaps at a much later time) ended up in Cromarty. We hope to carry out further research into the history of the collection and the Cottage to solve this puzzle, and meanwhile we would be most grateful to hear of any other copies of the Proposal leaflet or other relevant archival material in existence.

Peach's copy of the Proposal is catalogued as GSM 1/669 in the Library Archives, British Geological Survey, Keyworth, which we thank for permission to cite, and to place a copy in the Reading Room at Hugh Miller's Cottage. We thank Graham McKenna, Librarian, BGS, Iain Maciver of the National Library of Scotland, and the staff of the National Archives of Scotland and the NMS Library for their help, Marian McKenzie Johnston for access to family papers and critical comments, Peter Dryburgh for drawing attention to the RPSE notices, Lyall Anderson for spotting fellow Montrosians, and Graham King for information on them.

Mike Taylor is Curator of Vertebrate Palaeontology at the National Museums of Scotland. Martin Gostwick is Acting Property Manager at Hugh Miller's Cottage, Cromarty, where he hosted the visit of the EGS members on their spring 2002 weekend field trip to Hugh Miller territory.

A complimentary dinner

by Alan Fyfe with help from
Richard Batchelor and Norman Butcher

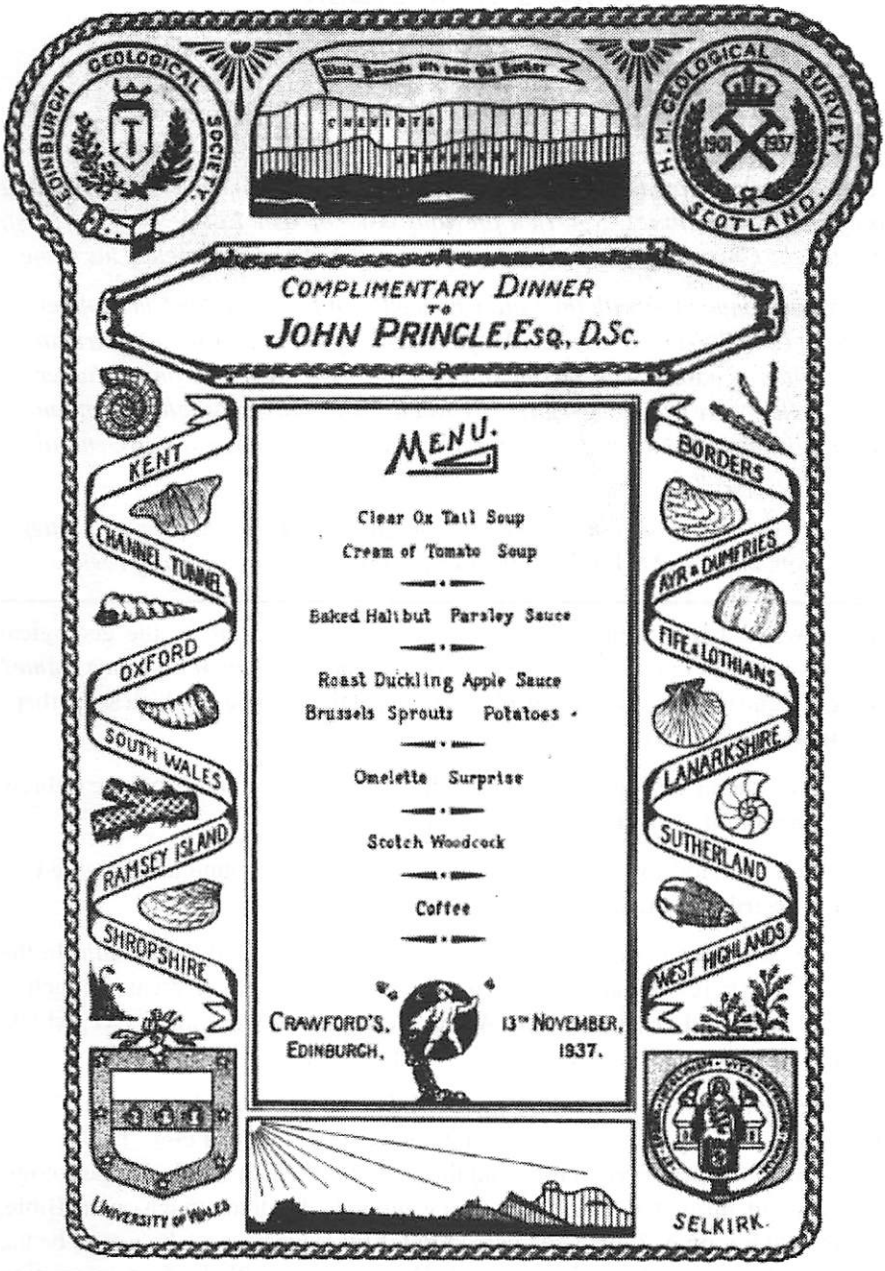
When Tony Wier, a Fellow of the Edinburgh Geological Society, died last year, his friend and colleague at St Andrews, Richard Batchelor, discovered amongst his belongings a copy of a menu for a dinner held in Crawfords Restaurant in Edinburgh in 1937. The dinner had been held in honour of John Pringle, who was then retiring from the Geological Survey aged 60. It was surrounded by the signatures of some 79 folk. It would be impossible and probably unwise to list them all, but we have looked into the history of a few of the most notable.

John Pringle was employed by the Survey in 1901 as a fossil collector and was later promoted to *Palaeontologist to the Survey* in 1934. There were at least 15 colleagues from the Geological Survey. These included Murray MacGregor, the Assistant Director (Scotland) from 1926 to 1945, Edward Bailey, Vic Eyles and Archie MacGregor. There were some retired Survey men as well including Walcot Gibson, who had been Assistant Director (Scotland) until 1925. It was at this dinner that Murray MacGregor recited the poem *The Aged Palaeontologist*, the words of which graced the pages of THE EDINBURGH GEOLOGIST some years ago (Issue 3, Spring 1978).

There were several people from the University Department including Robert Campbell, the Petrologist, R.M. Craig, who lectured in Economic Geology, and Thomas Finlay, the Palaeontologist. There is more information on all of these characters in the article on Donald McIntyre on page 12 of this issue.

Of course, there was John Weir, the finding of whose copy of the menu is the reason for this article. He was a palaeontologist at Glasgow University, no doubt present to celebrate the retiral of a fellow fossil man. John Weir was also a Clough Medallist for 1957-58, but he is not the only one. There are James Livingston Begg (1942-43), Murray MacGregor (1944-45), James Wright (1946-47), Robert Campbell (1948-49), John Simpson (1953-54), Edward Bailey (1961-62), Archie MacGregor (1967-68) and James Phemister (1971-72). I wonder whether there has ever been an event when so many future Clough Medallists were gathered together.

Other signatures include Norman Falcon, an oil geologist who was one of the first geologists in the Anglo-Persian Oil Company when it metamorphosed into British Petroleum. And there is A.E. Trueman of the University of Glasgow, who wrote *The Geological Scenery of England and Wales* and went on to be Chairman of the University Grants Committee. There was also a D. Haldane, about which we have found nothing. However, below the artwork of the menu, illustrated opposite, were the initials 'DH'. Perhaps the draftsman was the only one to sign the menu twice!



A replica of the central part of the menu that was surrounded by 79 signatures

What's in a Name?

Getting personal

by the Editor

This article was prompted by a letter sent to me by Hatten S. Yoder, a Corresponding Fellow from Washington, U.S.A. In a previous issue of THE EDINBURGH GEOLOGIST, *I had listed the Corresponding Fellows of the Society but had mis-spelled his name...*

> *'I have no connection with the Lord Chancellor of England, Sir Christopher Hatton (1540-1591),' he writes. 'My first name spelling is from the German "wir hätten gehabt," with the umlaut removed. The joke was on my father because they were expecting a girl: "we would have had." I hesitate to mention my middle name Schuyler that comes from the Revolutionary Major General Philip J. Schuyler.'*

My thoughts wandered on to how geologists might name their children and, after a little research, managed to coalesce themselves into the following brief review.

When geologists name their children, do they give any regard to the geological derivation of some of our common and less common names? This ***What's in a Name?*** looks at girls' and boys' names with geological connections, some of which are perhaps more tenuous than others!

Why don't we start at the beginning? With **Adam**? This name comes from the Hebrew word for man, but it also has a link to red earth:

> Then the Lord God formed a man from the dust of the ground and breathed into his nostrils the breath of life. [Genesis 2, 7]

The Hebrew word for man is *adam* and the dust of the ground is *adamah*. In the deserts of Iraq, where the Garden of Eden is supposed to have been created, much of that ground will right enough be red. **Adam**'s companion was called **Eve**, which, just for the (fossil) record, comes from the Hebrew for life.

But there are names that come from a more solid geological foundation, that of rock itself. These are nearly all boys' names and the most obvious is **Peter**. This is from the Greek word πετρα, *petra*, a rock and the same root which we find in petrology, petrography and, ultimately, petroleum. Not wanting to dwell too much on the Bible, but the apostle Simon was allegedly named **Peter** by Jesus because he was to be the rock on which he would build his church [Matthew 16, 18]. It is an interesting speculation, but had Jesus and his disciples lived in Scotland, Simon might have

been called **Craig**, for this comes from the Gaelic word for rock. The name **Arthur** is also believed to be of Celtic origin, this being derived from the Irish for stone.

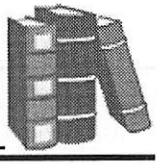
If rocks are dominantly a male preserve, then the fairer sex gets more than its fair share of precious stones. The most common are **Amber** and **Auriel** (from the Latin for gold), **Beryl** and **Ruby**, but there are also **Sapphire** and **Amethyst, Opal, Topaz** and **Chrysoprase** (just checking to see who was awake!). There is another precious-stone name which, like amber, owes its origins more to biology than geology and that is **Pearl**. This comes from the French word *perle*. But there is another, far more common pearl name, one that comes from the Greek μαργαριτ, *margarite*, meaning pearl and giving the French name **Marguerite** and the English and Scots name **Margaret**. So all the **Maggies** and the **Maisies**, the **Megans**, the **Mays** and the **Marjorys**, to say nothing of the **Peggies**, **Gretas** and **Ritas** are pearls too.

Many of the other names that have a geological provenance stem from landforms, dominantly Celtic and Norse ones. **Glyn** and **Glynis** come from the Welsh word *glyn*, a valley, and a very near relative of the Scots word and name **Glen**. The Norse word for valley gives us **Dale**, also a boy's name and probably derived from the surname. The name **Brynmore**, also Welsh, comes from *bryn mawr*, a big hill while the Scots name **Kyle**, which, like **Dale**, probably comes from the surname, is a point where the sea narrows between two bodies of land.

Islands are landforms that are surrounded by water. Actually, the word 'island' itself has an interesting derivation. the Latin word *insula* seems to be the root of the French word *île*, the English word *isle*, the Gaelic word *innis* and the Scots word *inch*. The English word 'island' is a concatenation of isle and land, implying something rather larger than simply an isle. The Scots names **Ila** and **Innes**, **Isla** and **Ailsa** are all islands, as are **Iona**, an island off Mull famous for its monastery and marble, and **Rona**, an island off Skye and several other places, in turn derived from the Gaelic *ron*, meaning seal.

And so we come to the sea itself. The name **Marina** comes from the Latin *mare* and means 'of the sea', whereas the name **Dylan** is Welsh, meaning a wave, and is also the name of an ancient Celtic sea-god. Lastly **Morgan** is a Welsh name meaning 'of the sea'. Its female form is **Morgana**, a name famous in Arthurian legend, for she was the sorceress who outwitted Merlin and eventually led to the downfall of **Arthur**. The whole story is clearly one of coastal erosion, where the sea in the shape of **Morgana** breaks down the rock and stone in the shape of **Arthur** to leave sand, which brings us back to **Adam**... for from dust we were created and unto dust we shall return [Genesis 3, 19].

BOOK REVIEWS



The Lothian and Borders RIGS group is managed by a subsidiary committee of the Society. Among the things that they do, they produce leaflets and posters. Here Bill Baird reviews the three site information leaflets that they have published.

Recent Lothian RIGS leaflets

Bill Baird

Over the last decade, the hard work of RIGS groups throughout Britain has been largely influential in raising the awareness of Earth Heritage sites locally. By producing understandable geological information in the form of talks, guided walks and information leaflets, they have been bringing the wider field of geology to adults and children throughout most of the country. By promotion, protection and preservation of sites, they have given geology a media image it has not had since geology was a fashionable subject of study in Victorian times. One key element in the process of providing the public with relevant information has been the site leaflet and here we have three very different styles. Although all sites are in the Lothians and the age of the main sedimentary rocks are all Carboniferous, the leaflets are each very different in style and approach.

Corstorphine Hill

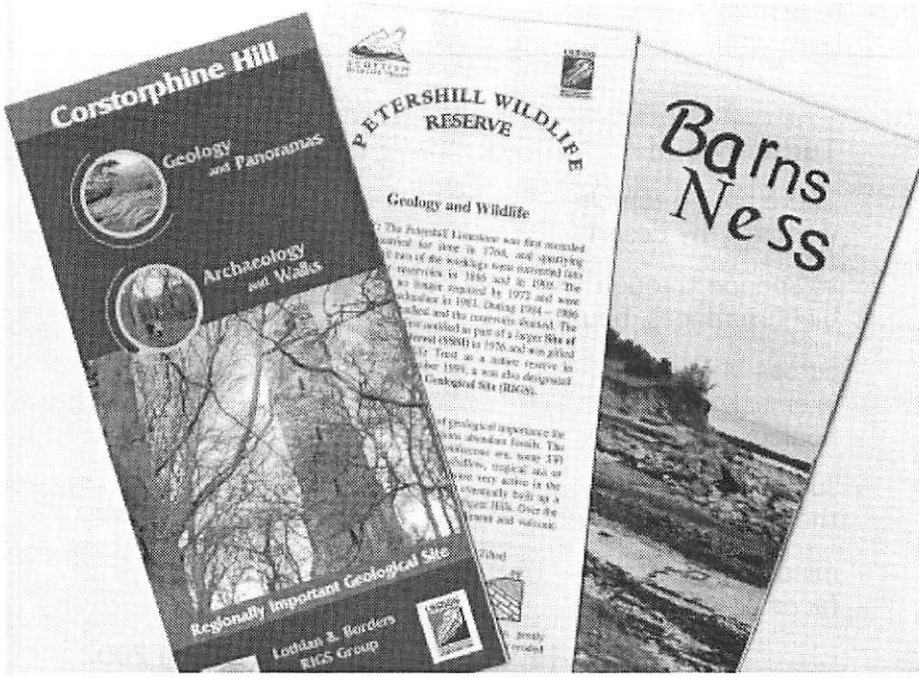
This is a very professionally-written and well-produced A3 multi-colour leaflet. Within its glossy neat folds there is a wealth of information on the geology, history and landscape of the area, along with useful location and site maps. Although not perfect, this leaflet should perhaps be regarded as a standard for others to emulate. If one wishes to be picky, one might say that it is overly busy and I think there are just too many postage-stamp sized photographs, but overall it is a mine of useful information.

Petershill Wildlife Reserve

While only half the size (A4) of the Corstorphine Hill leaflet, it still takes the same space to acknowledge its sponsors and tell us about RIGS. One gets the feeling that its production on green paper owes more to the availability of a box of green paper rather than an artistic, well thought-out choice. The natural history examples illustrated are of varying use and appropriateness and I think more suitable alternatives could have been selected. For example, the most common rugose coral at Petershill is *Aulophyllum* rather than *Dibunophyllum*, probably in a proportion of a hundred to one. The Clouded Yellow butterfly is an irruption species not native to the UK. The rock section showing tilting is without a key and other attributions regarding wildlife are a bit vague and generalist. This is not a bad leaflet, but compared with Corstorphine Hill, it looks dated and simply not up to scratch.

Barns Ness

This leaflet is different in concept from the others. It has been produced as part of a geological project by a group of Girl Guides. As such it is an interesting experiment, but I think it fails in some key aspects because attention has not been paid to producing the detail and graphics in a manner suitable for publication as a site information leaflet. As a result of missing out the detailed preparation stage, the geological table is untidy and out of scale, and the representations of *Lepidodendron* and *Stigmaria* are simply wrong. The location map is an interesting work of art but is of little use to the visitor trying to reach Barns Ness. Again, like the Corstorphine Hill brochure, it does not escape those postage-stamp sized photographs. As an example of a project report by youngsters, it shows great skill and promise, but it falls down as a site leaflet because of the failure to grasp the importance of the need for final hard pre-publication slog. One feels that with a little bit of help from one of the professional geologists within the Lothian and Borders RIGS Group, these errors could have been put right. Had this been done, this would have been an outstanding example of the new wave of RIGS leaflets.



The three Lothian RIGS site information leaflets

Poet's Corner

The following two poems were sent to me by Melisande Luna, an undergraduate at California State Univeristy, Bakersfield. The field area enjoyed by CSU typically comprises the San Andreas Fault Zone, the Sierra Nevada batholith and the horst and graben tensional, and low-angle displacement faults in the Mojave Desert, i.e. Death Valley.

Melisande started school 'a bit later in life', and has been studying the geo-sciences for about seven years. Following a nervous breakdown some time between learning stereonets and mapping the nuances of the Zabriske Fault Margin, Melisande began spontaneously writing poetry in what psychologists call 'The Clang Effect', a component of bipolar disorder. She has been writing poetry as a serious effort for just under two years and has become moderately successful with publishers. She is currently working with WebDelSol.com as a forum editor and serves as a director on the InterBoard Poetry Competition sponsored by Web Del Sol.

Tumbleweed

There are no tumble-
weeds in my desert

to sponge through
bighorn fences, bounce

across blacktop,
in smack dab
boulder dashes.

Just wind to blow
the sand around,

mined from pitted-
faces of volcanoes.

Melisande Luna 2002

To A Fault

On the lam, off the road
thirty-five miles south of Hell

among stony outcrops
in the company of hawks

The echo of a broken record
—begs

questions to please-God-stop
I can't love anything

but these thirsty mazes
where faces lie exposed

whispering history over playas
spinning Badwater legends with windy sighs

I stroll across the Devil's bed
left slept-in and rumpled, I'm

-h o p p i n g

over rills and washes
where jasper clasts gather

My boot-heels snap mesquite
sticks like hollow bones popping

Armed with lodestone and lead
I walk the fault

—ringing my rock hammer
off bedrock knobs

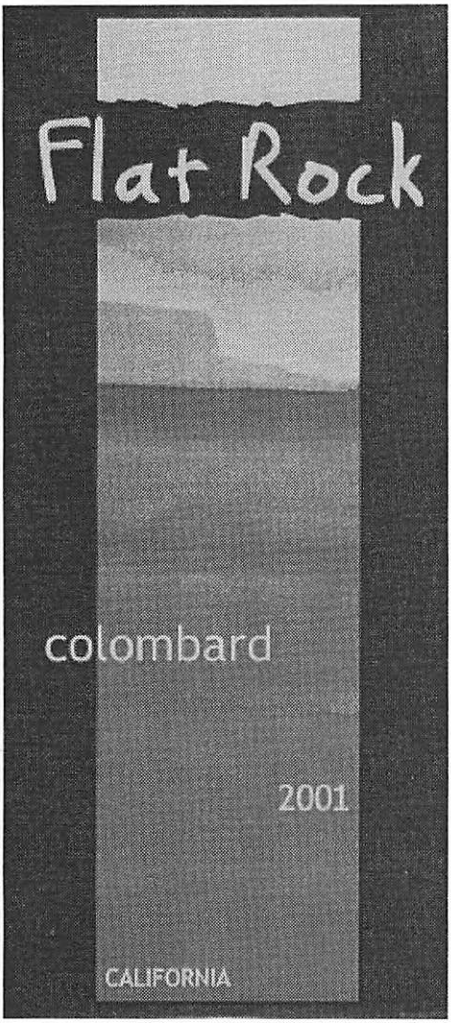
I chase the ancient
thorough time. Hunting

orogeny, my love
Obsession: a question

for the mountain

Melisande Luna 2002

Geo-vineyards



Information

Searching for more information on Flat Rock based on Vic Loudon's sketch drew a blank until, by luck, I received a contribution for Poet's Corner from Melisande Luna of California, who also sent me the following:

Flat Rock winery is near Flat Rock beach in northern Mendicino County, on the extreme north coast of California. I believe this is the Cascade volcanic geoprovince. Being due west of (and at lower elevation than) Mount Lassen, the soils should comprise chemically and weathered volcanic alluvium. (mostly felsic andacites, but with some local basalt flows and ash lenses).

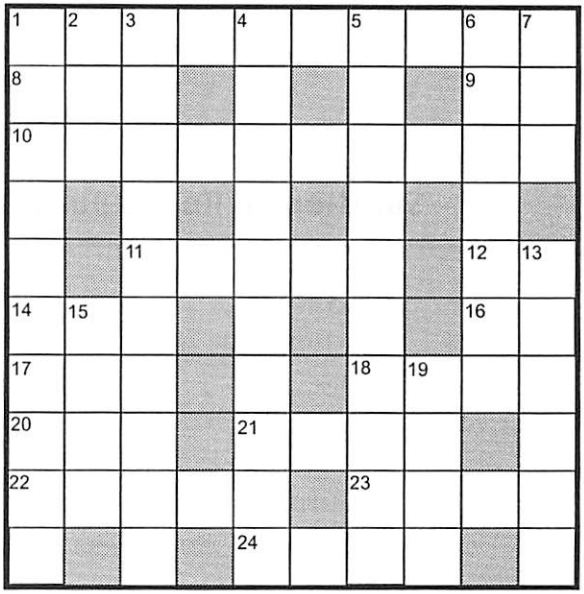
[It must be these volcanic soils that give it its positive flavour full of sweet blackcurrants... and I thought they used grapes! -Ed.]

Thanks to Vic Loudon, who sent me this label, together with a small sketch of what the whole of 'Flat Rock' should look like. Thanks to Melisande Luna for help with filling in the geological details.

Again, a plea for more labels with a geological slant, though if you have more than just a sketch to follow up on, I'd be grateful!

Rocksword Puzzle No. 9

compiled by Angela Anderson



Clues across

1. Oh rage melt into the hot earth! (10 letters)
8. Part of circle in arch (3)
9. Don't stop (2)
10. I turn at gas in an excess of silica (10)
11. Laugh a bit in the way of crystals (5)
12. Out of into (2)
14. Geode holds a poem (3)
16. Singular Christmas greeting (2)
17. Drop right out over a lenticular ore body (3)
18. Lop over a gemstone (4)
20. Your in mine (3)
21. Doubly negative (2-2)
22. Sordid beheaded and confused robot (5)
23. Had it in a mine tunnel (4)
24. Sell over old units of length (4)

Clues down

1. To grasp do up a class of snails (10)
2. In after a time (3)
3. Oh cat drone over an eight-sided body (10)
4. Take a bold henner over an amphibole (10)
5. On a tilt or a turn over (10)
6. Hang up at a jawless fossil fish class (7)
7. Did Napier set it alight? (3)
13. Oh toil over a limey pellet (6)
15. Held our Scottish trait (4)
19. Plural of 17 across (4)

This is Angela's latest puzzle, making use of her newly-purchased geological dictionary, which she tells me was edited by her former classmate Isobel Winstanley.

Angela has also let me into one of her secrets... she uses Scrabble letters to help her with the anagrams. I thought it might help to use Scrabble letters to help to solve them... but I find that the <u>real</u> problem is working out which clues are the anagrams!

Solution to Rocksword Puzzle No. 9

Clues across

1. GEOTHERMAL
8. ARC
9. GO
10. SATURATING
11. HABIT
12. TO
14. ODE
16. HO
17. POD
18. OPAL
20. OUR
21. NO-NO
22. DROID
23. ADIT
24. ELLS

Clues down

1. GASTROPODA
2. ERA
3. OCTAHEDRON
4. HORNBLENDE
5. ROTATIONAL
6. AGNATHA
7. LOG
13. OOLITH
15. DOUR
19. PODS

Proceedings of the
Edinburgh Geological Society
for the 168th Session 2001-2002
No. 32

Membership

The total membership of the Society at 30th September 2002 was (with last year's figures in brackets) 590 (580) comprising:

Honorary Fellows	6	(6)	Senior Fellows	42	(39)
Corresponding Fellows	12	(13)	Family Fellows	38	(33)
Distinguished Fellows	2	(0)	Glasgow Associates	13	(13)
Life Fellows	17	(20)	Junior Associates	12	(13)
Ordinary Fellows	448	(443)			

Changes in membership from session 2000-2001 are summarised as follows: 37 new Ordinary Fellows were elected during the year while 21 resigned, were removed from the membership list or moved away. 5 Ordinary Fellows were transferred to Senior Fellowship and 2 elected as Distinguished Fellows (see below). 1 Corresponding, 3 Life and 4 Ordinary Fellows died during the year and their deaths are recorded below. 6 new Family Fellows were elected and 1 resigned.

Distinguished Fellows During the year, the Laws of the Society were amended to introduce the membership category of Distinguished Fellow. The Society may confer Distinguished Fellowship on any Fellow of the Society in recognition of service to the Society. Like Honorary and Corresponding Fellows, Distinguished Fellows receive a Diploma and pay no membership fee but, unlike Honorary and Corresponding Fellows, they are permitted to have a voice in the management of the affairs of the Society. The number of Distinguished Fellows will normally be limited to ten. Two Ordinary Fellows, David Land and David McAdam were elected as Distinguished Fellows.

Deaths With great regret we have to record the deaths of Corresponding Fellow Professor Brian Sturt of *Norges Geologiske Undersokelse* in Trondheim, of Life Fellows Sir Frederick Stewart, Professor J G C Anderson and Mrs M M B Friel and of Ordinary Fellows Ken Oakley, Don Shelley, R Annis and J A (Tony) Weir. Obituaries of several of these Fellows were recorded in the Billets of the Society.

Council elected 22nd November 2001

President: Peter Dryburgh

Vice-Presidents: Tom Kerr, Graham Smith

Honorary Secretary: Mike Dean

Honorary Treasurer: David Gould

Membership Secretary: Mary Leitch

Excursions Secreatry: David McAdam

Lectures Secretary: Don Mallick

Assistant Secretary: Ian Jackson

Assistant Secretary (Billet): Caroline Paterson

Proceedings Editor: Alan Fyfe

Librarian: Bob McIntosh

Publication Sales Officer: Emrys Phillips (Ian Jackson from August 2002)

Scientific Editors: Philip Stone, Peter Hill

Ordinary Members of Council: Diane Mitchell, Bob Reekie, Christine Thompson, Tom Wilson, Angus MacPherson (1 vacancy unfilled)

Trustees: Ian Rolfe, William Harper, Ian Hogarth

Independent Examiner: Dalgliesh & Tullo, Chartered Accountants

Business Council held six meetings during the session, discussing a number of issues including:

safety of excursions
plaques for James Hutton and Hugh Miller
Charles Clough's gravestone
online publishing of the Scottish Journal of Geology
the Society web site
the membership category of 'Distinguished Fellow'
affiliated RIGS groups
the setting up of the Scottish Geological Societies Conoco Award

Lecture Meetings were held as follows:

17th October 2001	**Dr. C. Lewis**: Arthur Holmes and the dating game
31st October	**Dr. J. E. Francis**: Climate warming is not all bad! Forests, dinosaurs and Cretaceous climates of Antarctica
14th November	**Prof. B.J. Dawson**: Volcanoes and the rift valley of northern Tanzania
28th November	**Mr. P.M. Hobbs**: Landslides (followed by the Annual General Meeting)
12th December	**Dr. C. MacFadyen**: Earth Science Conservation in Scotland: the role of Scottish Natural Heritage
16th January 2002	**Dr. M.A. Taylor**: Hugh Miller 200 years on: a reassessment
30th January	Fellows Night
13th February	**Prof. J.A. Plant**: Geochemistry and health at the global scale (the James Wright Memorial Lecture)
27th February	**Prof. R.A. Fortey**: The natural history of trilobites
13th March	**Dr. R.A. Scrutton**: The missing link in the plate tectonic cycle
27th March	**Dr. A. W. A. Rushton**: Fossils, fashion and failure: examples from the Lower Palaeozoic of southern Scotland and northern England. (Dr Rushton was presented with the Clough Medal at this meeting)
	Average attendance at lecture meetings was 79

The **Clough Medal** was awarded to Dr A W A Rushton for his work on Lower Palaeozoic palaeontology in southern Scotland and northern England.

Publications

The *Scottish Journal of Geology* vol 37 part 2 and vol 38 part 1, and *The Edinburgh Geologist* nos 37 and 38 were published this year. The *Ballachulish Guide* was published at the start of the year.

Field Meetings were held as follows:

17th April 2002	Testimony of the Rocks: Hugh Miller (1802-1856) [NMS]
20th April	**Bob Reekie & Richard Gillanders**: Wanlockhead and Leadhills
8th May	**Hugh Docherty & Mike Browne**: Roslin Glen
11th May	**Euan Clarkson & Cecilia Taylor**: North Esk Inlier
18th-25th May	Arran week excursion
29th May	**Norman Butcher**: Scotland Street to Wardie
15th June	**Rosalind Garton**: Kingsbarns and Boarhills
19th June	**David Gould**: Castlelaw
26th June	**David McAdam & David Land**: Blackford Hill
28th-30th June	Cromarty weekend excursion
6th July	**David Stephenson**: Glen Tilt
10th July	Longannet
27th July	**David McAdam & Jane Robb**: Haddington
31st July	**Suzanne Miller & Paul McCauley**: Monuments in Princes Street Gardens West
17th August	**Alison Monaghan & Sarah Arkley**: Heads of Ayr
31st August	**Mike Browne**: Kirkcaldy to Kinghorn
21st September	**Neil Clark & Euan Clarkson**: Lesmahagow Inlier

Average attendance at field meetings was 30

Lothian and Borders RIGS Group

No new Regionally Important Geological Sites were designated, but efforts have continued on producing interpretive posters and site information leaflets. The group ran four excursions for the general public during the Edinburgh International Science Festival. The RIGS Group officers were Mike Browne (chairman), David McAdam (secretary) and Cliff Porteous (treasurer).

Accounts

A summary of the accounts for the year ending 30th September 2001 follows.

REVENUE ACCOUNTS FOR THE YEAR ENDED 30th SEPTEMBER 2002

	General	Publications	Clough	Mykura	Total 2002	Total 2001
INCOME	£	£	£	£	£	£
Gross income from investments	1,525	755	534	138	2,952	2,938
Net gain (loss) on disposal of investments	(129)	(64)	(45)	(12)	(250)	738
Bank interest	93	46	33	8	180	325
Subscriptions	7,400	-	-	-	7,400	7,269
Tax recoverable on Deeds of Covenant	879	-	-	-	879	961
Legacies and donations	330	-	-	-	330	1,326
Social evening	500	-	-	-	500	80
Sales of publications	-	3,415	-	-	3,415	3,882
TOTAL INCOME	10,614	4,152	522	134	15,422	17,519
EXPENDITURE						
Adminstrative Costs						
Printing, Stationery, Postage	151	57	-	-	208	194
Insurance	280	-	-	-	280	254
Bank charges	499	-	-	-	499	556
Miscellaneous	150	-	-	-	150	41
Printing of Laws, Roll and publicity sheet	-	-	-	-	-	170
Independent Examiner's fee	644	-	-	-	644	588
Depreciation	-	-	-	-	-	60
	1,724	57	-	-	1,781	1,863
Direct Charitable Activities						
Lecture costs	2,063	-	-	-	2,063	1,627
Printing of billets	1,863	-	-	-	1,863	1,673
Postage of billets and Ed' Geologist	805	-	-	-	805	1,073
Award and Medal expenses	-	-	361	-	361	221
Excursions	1,203	-	-	-	1,203	1,537
RIGS Group	13	-	-	-	13	550
Refurbishment of Clough's grave	806	-	-	-	806	-
Edinburgh Geologist	-	2,242	-	-	2,242	1,211
Special Publications	-	1,073	-	-	1,073	(41)
Grants made	1,550	-	550	-	2,100	520
	8,303	3,315	911	-	12,529	8,371
Cost of Publications sold	-	2,133	-	-	2,133	3,122
TOTAL EXPENDITURE	10,027	5,505	911	-	16,443	13,356
SURPLUS (DEFICIT) for year	587	(1,353)	(389)	134	(1,021)	4,163

BALANCE SHEET AT 30th SEPTEMBER 2002

	2002		2001	
	£	£	£	£
FIXED ASSETS				
Investments at Market Value		54,992		63,640
Tangible assets		-		-
		54,992		63,640
CURRENT ASSETS				
Stock of publications	34,487		33,922	
Other stocks	620		698	
Debtors and prepayments	517		619	
Taxation recoverable	82		128	
Bank accounts	9,847		10,989	
	45,553		46,356	
Less				
CREDITORS REPAYABLE WITHIN ONE YEAR				
Sundry	755		1,312	
Scottish Journal of Geology	-		-	
	755		1,312	
NET CURRENT ASSETS		44,798		45,044
NET ASSETS		99,790		108,684
REPRESENTING				
FUNDS				
Permanent Endowment		47,130		52,543
Unrestricted		52,660		56,141
		99,790		108,684

prepared by David Gould, Honorary Treasurer

approved by Dalgliesh and Tullo, Chartered Accountants

adopted by Council on 27th November 2002

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