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DAVID FERGUSON'S MINERAL PROSPECTING VISIT TO THE FALKLAND ISLANDS, 1913-1914

by

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From much of the recent press coverage of offshore hydrocarbons exploration around the Falkland Islands, it might appear that the serious examination of the archipelago's potential mineral resources is a new development. In fact, the history of professional mineral prospecting onshore goes back for about a hundred years.

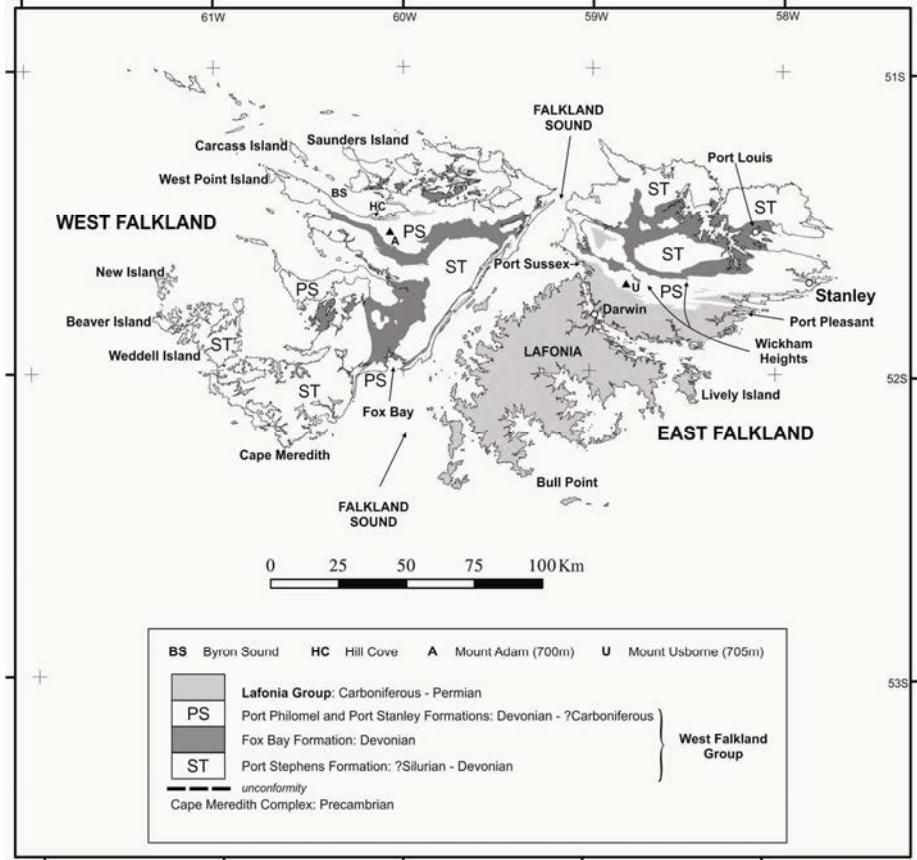


Figure 1. An outline geological map of the Falkland Islands showing the positions of the principal localities mentioned in the text.

Best known is the 1920-1922 survey work of Herbert Arthur Baker, who had been appointed 'Government Geologist' with the principal objective of assessing any minerals of economic value that might be present in the islands. Baker's work was published as a comprehensive report (Baker, 1924) and laid the foundations for the modern geological map (Figure 1) and interpretation (e.g. Aldiss and Edwards, 1999), but he found nothing of commercial interest.

In his report, Baker made only passing reference to the same negative conclusions arrived at a few years earlier by David Ferguson, a Scottish geologist employed by the Salvesen Whaling Company as a mineral prospector. The Salvesen Company (based in Leith, Scotland) operated a whaling station on New Island between 1909 and 1915, from which base Ferguson worked in the Falklands during the 1913-1914 austral summer. His findings were not published or made publically available and his report to Salvesen was presumably regarded by that company as commercially confidential. Baker, in his 1924 report, referred only to a letter written to William Allardyce, Governor of the Falkland Islands at the time of Ferguson's visit, in which Ferguson had summarised his principal conclusions.

Several hundred rock specimens obtained by Ferguson between 1911 and 1914, from South Georgia, the South Orkneys, South Shetlands and the Falkland Islands, are held by Glasgow University's Hunterian Museum. Many of the specimens were scientifically described by University staff, notably Prof. J. W. Gregory, and Dr G. W. Tyrrell, and the whole collection was formally presented by the Salvesen Company to the University in 1915. Until recently, the value of this material was limited by a lack of accompanying archival data. Then, in November 2003, the Bank of Scotland Archives gifted to Glasgow University a collection of papers that had been retained from the estate of David Ferguson since his death in 1936. Ferguson was described as a surveyor and mining engineer, who had studied Geology and Mineralogy at the University as a mature student of 48 between 1905 and 1907. Happily, University Archive Services and Hunterian Museum staff immediately made the connection with the extant rock collection. The material passed on by the Bank of Scotland proved to include Ferguson's field notebooks from his South Atlantic and Antarctic prospecting trips; they are partly water-damaged, but the writing and diagrams are mostly clear and comprehensible. They provide a fascinating accompaniment to the rock specimens. Confidential reports on his prospecting were of course submitted by Ferguson to the Salvesen Company and these, together with some of his photographs and letters are preserved in the Salvesen Archive, now held by the library of the University of Edinburgh. Taken together, this wealth of material throws light on a little-known contribution to the scientific exploration of the South Atlantic region. It is to be regretted that whilst prints and original glass plate negatives for many of Ferguson's photographs from South

Georgia and the South Shetlands are present in the Salvesen Archive, none of his Falklands photographs seem to have survived.

Nothing is known of Ferguson's early years, but the material passed on by the Bank of Scotland reveals that he had been active as a mineral prospector and mine surveyor in Iran (1891-1893) Newfoundland (1894) southern Africa (1895-96 and 1901-03), and had also worked as a mine surveyor in the Scottish coalfields. He was first employed by the Salvesen Whaling Company to examine South Georgia for economic mineral prospects, and visited that island early in 1912. In collaboration with Gregory and Tyrrell he published scientific papers describing the geology in the *Geological Magazine* (1914) and the *Transactions of the Royal Society of Edinburgh* (1915). He returned to the South Atlantic on behalf of the Salvesen Company for the 1913-1914 austral summer, arriving in Stanley on October 15th and departing in mid-April. Not all of that time was spent in the Falklands: from 1 December 1913 to 7 February 1914 Ferguson accompanied whaling vessels around the South Shetland Islands and the northernmost part of the Antarctic Peninsula. His geological observations from this Antarctic excursion, and a detailed description of the specimens that he collected there by Tyrrell, were published as scientific papers in the *Transactions of the Royal Society of Edinburgh* (1921).

No account of Ferguson's Falklands investigations was ever published, though his field notebook for the Falkland Islands (Number 3 in the series held by the University of Glasgow Archive Services, UGC176/3/3) shows that he made extensive observations and developed comprehensive, if somewhat idiosyncratic views on the regional geology. This omission cannot have been due to his lack of success in discovering economic minerals, since his examination of South Georgia and the environs of the South Shetland Islands had produced similarly negative conclusions. Equally, there would have been no reason to suppress his findings on the grounds of commercial confidentiality. Of course, the pressures of the 1914-1918 Great War may well have precluded the adequate working-up of his results (note the delay in publication of the Antarctic results), but it is also possible that discussion of his findings with Gregory and Tyrrell when back in Glasgow, led Ferguson to doubt his original conclusions on the geology of the Falkland Islands.

Social Commentary

Ferguson's 'Number 3' notebook contains two parallel threads of observation: one series of geological and/or geographical notes and another series headed "incidental notes". The latter contain fascinating comments on the people that he met in the Falklands, and the social and agricultural conditions of the time. Ferguson was an experienced man in his 50s when he visited the Falklands; he did not hesitate to express strong opinions, and formed those opinions very quickly. After just a few days in the islands he summed-up what he saw as a lamentable situation as follows

(these and all subsequent extracts from the 'Number 3' notebook are quoted verbatim, and are followed by page references and dates in parenthesis):

"The workers on the sheep stations have always plenty to eat as mutton is free and very often milk as well, and they can grow vegetables to supply all their wants, and they are all earning salary of some amount. There is really no poverty or want to be seen anywhere. There is however nothing that the working people can aspire to ... Their lives are ... without ambition or incentive to higher things ... it is a tame, uninteresting and deadening career for a freeman in the twentieth century." (pp 3-4, 19 Oct. 1913)

"The bane of the Falkland Islands is absentee landlordism, and the alienation of the almost entire country to large proprietors. The Government who parcelled out the land in huge areas ... committed a crime against the interests of the Falkland Island settlers and was guilty of the gravest injustice to every worker who has been born and brought up in it. As it is there is not, nor can there be any alteration, from the hum drum dead and alive condition which obtains in the Falklands." (pp 4-5, 19 Oct. 1913)

In contrast to the above, rather negative observations, Ferguson was generally favourably impressed by the farmers that he met during his travels around the islands and whose hospitality he clearly enjoyed. The following series of quotations give the flavour of his happy experiences with the Falkland Islanders.

"Mr Waldron [Henry Waldron, owner of Beaver Island] may easily be set down as the grand old man of West Falkland. He is 82 years of age and straight and burly with a strong full voice that suggests good health and good lungs. He is not tall, but none the less a striking and interesting personality. ... Flowers, books and the latest music of all kinds from Grand Opera to Comic songs, for an excellent gramophone are his favourites. He ... has a fund of information, and anecdote that make him quite a charming entertainer to a visitor." (pp 21-22, 23 Oct. 1913)

"The island of West Point belongs to Mr Arthur Felton, another very interesting personality ... He is the Natural History exponent of the Falkland Islands, particularly the West Falklands. A painstaking and progressive sheep farmer, he is equally at home and acquainted with the wild life of the island on which he has made his home." (p. 31, 5 Nov. 1913)

"Mr Miller [manager at Hill Cove] has shown what can be done in the way of growing hay and oats, and his garden is a sight worth seeing. Cabbages, Potatoes, Lettuce and all the requirements of the kitchen cooking, are grown luxuriously and of excellent quality." (pp 38-39, 6 Nov. 1913)

"Darwen (*sic*) is the headquarters in Lafonia of the Falkland Island Company. They have a big station here. It is a pretty green little place, of nice soft sward, closely cropped right round the houses and the settlement. The jetty runs out from the store ... and a road has been made across the west arm of the Sound, to the Wool Store and Clipping establishment on the N. side of it. ... Mr Moir the Secretary and also Schoolmaster to the Company I was introduced to who turns out

to be an Aberdeen University M.A. An excellent man reminding me of the old parochial school masters of Scotland, in the days before Schoolboards and compulsory education.” (pp 119-120, 9 Mar. 1914)

“I landed [at Lively Island] and ... had a very nice tea from Mrs Ogilvie, a Scotch lady from Dundee with all the healthy vigour of the race she comes from. We had a nicely furnished room, a roaring peat fire, china tea cups and all the little luxuries which one is used, and thinks nothing of at home.” (p. 137, 12 Mar. 1914)

“Stayed ... with Mrs Hansen the Proprietrix of Carcass Island ... She is a charming old lady of 72 years of age, bright and active and full of energy. The house is very comfortable and pleasant, and plenty of reading matter, which we enjoyed very much.” (p. 171, 23 Mar. 1914)

“Met the renowned Mr Williams the owner of Weddell Island, and along with Captain Sinclair of the S.S. *Coronda* who was with me, we enjoyed his conversation and jokes very much. He is undoubtedly a character, but well educated, and the manners of a gentleman.” (p. 194, 8 Apr. 1914)

In stark contrast to the admiration that Ferguson clearly developed for the Falkland Islanders, his antipathy to the Norwegian whalers with whom he generally travelled comes across very clearly. He frequently questions the seaworthiness of the whaling vessels and the competence of the crews, and clearly resents the lack of respect accorded to him, complaining in the most outspoken terms. In fairness to the whalers, they probably regarded him as an unwanted encumbrance imposed on them by a remote senior management. The following series of quotations sums up the situation.

“I have had no end of trouble about the crew, proposed to be sent down with the S.S. *Hanka* to the South Shetlands ... the Manager [of the New Island whaling station] an ignorant uneducated Norwegian keeps out of the way, and does not answer the letters I have addressed to him ... The day has not yet arrived and I hope never will when I a British born subject will go and humbly ask favours of an uneducated Norwegian peasant and fisherman on British Territory ... I am not going to prospect a wild Antarctic region, an uncharted coast full of rocks and icebergs, with an incompetent crew, who speak only a few words of English.” (pp 67-68, 28 Nov. 1913)

“I will tolerate no insolence or indignity at his [the Manager’s] hand, and if I don’t get redress for it in the Falklands, I will deal with it at home, with Mr Salvesen or the Colonial Office ... If he [Mr Salvesen] harbours any idea that I am going to be humble and solicitous with these uneducated men of alien nationality he sends out to manage his whaling station, he will be put right in as blunt a way as necessary. I don’t take on work in a British Steamer or in British Territory, and allow any greasy foreigner to forget that I am an educated and respectable British born subject.” (p. 84, 12 Feb. 1914)

“The indignities one has put up with off these uneducated unwashed Norwegians sent out by Mr Salvesen, will have to be adjusted when I get home.”

“I am quite sure if the conduct and circumstances under which Mr Salvesen runs British registered ships, under the British flag, in charge of incompetent aliens were reported it would be forbidden entirely by the Board of Trade.” (p. 86, 14 Feb. 1914)

“The idea in the mind of these Norwegian fishermen, is that nobody but a Norwegian understands whaling work. It is an idea sure to get a hold of any uneducated man, who thinks he has a monopoly of skill and genius in a particular line. To the unbiased outside observer, the whaling business is practically unskilled labourers work ... British labour, would reject in most departments of it, the wages, the food, the quarters, and the dirt.” (p. 188, 7 Apr. 1914)

So concerned was Ferguson about the outlook for his voyage from the Falklands to the South Shetland Islands, that he wrote to his MP, Sir Robert Balfour (Partick Division, Glasgow) asking that, should he not return, the circumstances should be made known to his family and executors. Fortunately however, things seem to have improved for him and prior to departure for the South Shetlands (Figure 2) Ferguson felt able to record that:

“I have created a healthy discipline among the crew of the SS *Hanka* and the manager of the New Island Station, which promises to work well during the prospecting trip in the South Shetlands.” (p. 71, 30 Nov. 1913)



Figure 2. One of David Ferguson's photographs from his trip to the South Shetland Islands and Antarctic Peninsula showing the S.S. Hanka in Skontorp Cove on the Danco Coast of Graham Land (Ferguson 1921, Plate II:2).

Despite Ferguson's low opinion of Norwegians in general, the individual who comes in for the bitterest criticism in Ferguson's 'incidental notes' was British, Capt Quayle Dickson, the Colonial Secretary and Acting Governor in the absence on leave of William Allardyce; a brief biography of Dickson by Tatham (2008) suggests that he was not an unqualified success in the role. Ferguson had evidently anticipated that Dickson would support him in his disputes with the Norwegian whalers but was disappointed, recording in terms that would now be considered as casually racist that:

"He was of the opinion that it was private enterprise with which he could not interfere. The safety of a British subject in British territory, in a British ship, run by a gang of incompetent foreigners, is no concern of his ... He has been amongst n---s in the Pacific and South Africa, which have wholly unfitted him to deal with white men. Added to an opinionated self assertive disposition, he has a brusque manner, no self respecting man will tolerate and he is hopelessly ignorant of legal business. I am not done with him and will have the matter referred to the Colonial Office as soon as I get home. I don't believe in standing any nonsense of people I pay taxes at home to keep in a job." (pp 69-70, 29 Nov. 1913)

Geology

Running in parallel with the series of 'incidental notes' Ferguson maintained a more extensive set of notes describing the geology of the Falkland Islands and assessing the possible presence therein of minerals of economic value. Prior to his arrival, specimens of bituminous oil shale had been found on several west-facing beaches and had attracted much attention. Ferguson visited the sites, examined them and the surviving specimens in great detail, and concluded that the oil shale did not have a local provenance but had been washed in as flotsam. He rather favoured a source in Patagonia but acknowledged that cargo lost from a wrecked or passing ship was also a possibility. The source remains uncertain though subsequent opinion at Glasgow University (Gregory, cited in a letter from Ferguson to Ethel Currie, a member of staff at the Hunterian Museum, 7 June 1922) was that the oil shale might well have been Australian. In his later economic assessment of Falklands geology, Baker (1924) presented convincing detail in favour of an Australian provenance, and anecdotal evidence of oil shale cargoes passing through Stanley.

Ferguson was able to make a more definitive assessment of specimens of base metal ore found on the southern shoreline of Lafonia, and passed on to Ferguson by Ernest Robert Gleadell. In his notes Ferguson wrote:

"They are Copper and Iron Pyrites and Galena [lead sulphide]. The Galena is coarsely crystalline and may contain Silver. It has also apparently some Zinc Blende in it. The Copper and Iron Pyrites is in a Quartz matrix, and carries in some of the pieces a little Galena. The Galena in one piece carries Copper Pyrites and all

of it carries a little of it. The Copper and Iron Pyrites with a very little Galena in it and all in a Quartz matrix may contain if tested both Gold and Silver. The specimens were got on the beach at Bull Point, the S.W. point of the East Falklands on the South Coast of Lafonia. As this place has been the scene of quite a number of shipwrecks of vessels coming round Cape Horn, it is not unlikely that the ore was strewn on the beach from a wrecked ship and probably came from Chile or other known metalliferous country on the South American West Coast. It is highly unlikely that it came out of the flat lying Permo-Carboniferous rocks at Bull Point.” (pp 51-52, 15 Nov. 1913)

Ferguson’s surmise about shipwrecks is almost certainly correct: for example, the 400 ton barque *Horatia*, travelling from Valparaiso to Swansea with a cargo of copper ore, was wrecked on Bull Point on 19 August 1860 (Southby-Tailyour 1985, p.67).

When it came to the general, regional geology of the Falklands, Ferguson’s interpretations were not so astute and from a modern perspective look a little strange. This is unexpected, since only a few years prior to his visit much geological work had been carried out by J G Andersson during the Swedish South Polar Expedition (1901-1903) and T Halle during the Swedish Magellanic Expedition (1907-1908). These two scientists had correctly established the basic pattern and nature of the geological succession and had published their interpretations, respectively, in 1907 and 1912. Perversely, Ferguson seems to have deliberately taken issue with all of their findings, sometimes dismissing their earlier work quite contemptuously. Perhaps his low opinion of Norwegian whalers coloured his judgement of the abilities of Scandinavians in general, including Swedish geologists. The following examples illustrate the main points of difference.

1. The stratigraphical succession.

The older part of the Falkland Islands sedimentary succession comprises a thick accumulation of quartzite, sandstone and mudstone. Andersson and Halle had correctly established that there were two white, quartzite and quartz-sandstone divisions separated by yellow-brown, micaceous sandstone and mudstone containing fossil shells of Devonian age (the Fox Bay Formation, ca 400 million years old: see Figure 1). Ferguson disagreed, mistakenly conflating the two quartzitic divisions into a single unit lying above (so younger than) the fossiliferous sandstone and mudstone forming the Fox Bay Formation. In the following extracts from his notes, Ferguson refers to the quartz-rich rocks as ‘white sandstone’ and the fossiliferous unit (Fox Bay Formation) as ‘shales and sandy shales’.

“The shales and sandy shales containing the Devonian fossils are [at Fox Bay] clearly and unmistakably below the white Sandstone Series” (pp 9-10, 19 Oct 1913). This observation was correct, but then Ferguson goes astray. “Cape Meredith ... shows us

the fundamental error that Professor Andersson of the Nordenskjöld Antarctic Expedition¹ had fallen into in describing the unconformability there. He makes the white Sandstone Series at Cape Meredith a lower series of the Devonian Sandstones on which overlie the shales, sandy shales etc of Fox Bay ... The white Sandstone Series above the fossiliferous shales etc. at Fox Bay ... is the one and only Sandstone Series in the West Falklands, and is clearly that at Cape Meredith. A mere walk over the ground from Fox Bay to Cape Meredith, or a cruise round the coast between the two points cannot fail to establish this plain and simple fact to any observer ... no lower horizon than the fossiliferous shales etc is to be seen in the West Falklands, or the East Falklands.” (p. 14, 19 Oct 1913)

Despite the emphatic tone of Ferguson’s interpretation, his field observations were relatively cursory and he was entirely wrong. The Andersson-Halle version has proved to be correct.

2. The glacial tillite beds

One of Halle’s most significant geological insights was the first recognition that the boulder conglomerate beds exposed at Hill Cove and elsewhere had been deposited from an ice sheet. They were he realised beds of ‘tillite’, the lithified remains of the rock debris deposited widely across the southern continents, during an ice age about 300 million years ago, when they were all combined into the huge landmass of Gondwana. As such, Halle appreciated that the Falklands example (now known as the Fitzroy Tillite Formation, a unit near the base of the Lafonia Group: see Figure 1) was the direct equivalent of the Dwyka tillites of South Africa. Halle’s interpretation has been proved correct, but Ferguson thought it laughable, preferring instead to see the Hill Cove boulder conglomerate as a vestige of a very recent deposit that had once filled a valley eroded into ancient crystalline rocks, rocks that were otherwise hidden beneath Byron Sound (Figure 3).

He was completely wrong, and was probably misled by the apparent softness of the rock matrix at Hill Cove – but this feature arises simply from the rock there being less indurated than the equivalent strata elsewhere in the Falklands, and hence it is more readily weathered. Ferguson’s opinion is made very clear in the following extracts from his notes.

“This deposit stated by Halle to belong to the Glacial period of the Dwyka conglomerate in the Permo-Carboniferous rocks of South Africa ... is a bedded clay ... and contains boulders of Granite and other eruptive rocks, as well as boulders of sandstone, similar to the white Sandstone “in situ” adjacent to them ... The deposit has as much relationship to the striated glacial deposit of the Dwyka Conglomerate of South Africa, as it has to the Devonian white Sandstone Series, into which it is deposited and in places overlies. There is not the slightest sign of glaciation or ice-

scratching to be seen in a single boulder along the whole length of the deposit.” (pp 40-41, 7 Nov. 1913)

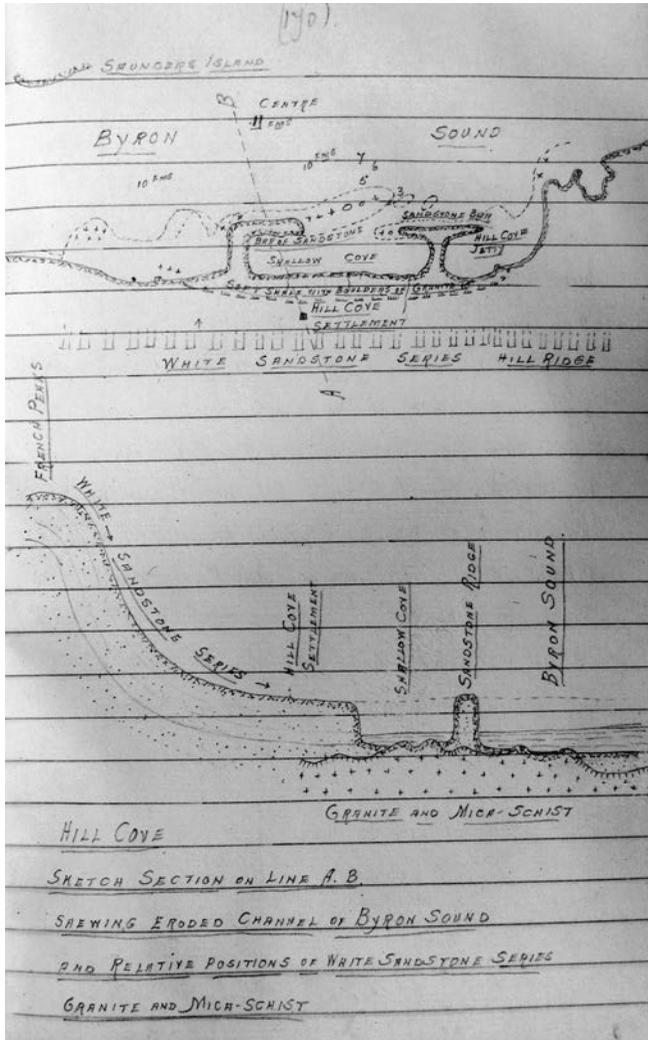


Figure 3. A sketch from Ferguson’s notebook showing his misinterpretation of the geology at Hill Cove. He regarded the Upper Carboniferous tillite as a recent boulder accumulation filling a valley eroded into ancient rocks similar to those seen at Cape Meredith, and now underlying Byron Sound. University of Glasgow Archive Services: Ferguson notebook 3, p 170 (21 March 1914).

“The Soft Sandy Shale and Boulder deposit, [is] not a Glacial deposit. There is no single shred of evidence either in the soft sandy shale, and the boulders, occurring in it to show that it is a glacial deposit. How or why it should be connected with the Dwyka Conglomerate and the glacial deposit of Permo-Carboniferous age in South Africa is far from evident. ... To assert that it is the Dwyka Conglomerate is simply a wild absurdity. The latter is a hard indurated deposit of Palaeozoic age, the Hill Cove deposit, is a recent Quaternary deposit.” (pp 163-164, 21 Mar. 1914)

“The assertion made by Halle ... shows the danger of advancing opinions with impeachable evidence to support them and indulging in the luxury of a mere theory.” (p. 164, 21 Mar. 1914)

The final statement above was particularly unfortunate since it is Ferguson himself who proves to have committed the crime with which he charges others. His disdainful dismissal of the glacial interpretation is particularly hard to understand since he was clearly familiar with the detail of Halle’s published work, in which are reproduced photographs of ice-scratched boulders at Hill Cove. It is very likely that when back in Glasgow, and discussing his results with Gregory and Tyrrell, the true nature of the rock was pointed out to him. A microscope slide in the collection of the Hunterian Museum (TS4630) was made from one of Ferguson’s Hill Cove specimens, almost certainly for Gregory, and is clearly labelled “Tillite (Permo-Carb = Dwyka of South Africa)”.

3. *Geological structure*

In East Falkland, the stark topographical contrast between the rocky upland of the Wickham Heights and the low-lying plain of Lafonia reflects the different geological characters of the two areas: the West Falkland Group underlies the former, the Lafonia Group underlies the latter (Figure 1). Ferguson commented on that difference as follows:

“This fundamental change could only be produced by a structural fault, which undoubtedly exists between the arial line of the Wickham Heights and Mount Osborne, and the flat easy dipping rocks of the low, gently undulating country, stretching S. of its foothills to Darwen (*sic*) and over the length and breadth of Lafonia.” (p. 128, 10 Mar 1914)

“The Great Fault runs as near as we can see from ... the headland of Port Sussex, to a point about a mile S. of the head of Port Sussex, thence S.S.E. to a point about a mile S. of Ceritos, and about three miles S. of the crest of Mount Osborne. From this point it runs first a little S. of E. to a little below Mount Pleasant, then E. to Port Pleasant and Pleasant Island where it reaches the open sea. All to the North of the Great Fault is of Devonian Age, and all the rocks to the South of it, all of Permo-Carboniferous age.” (p. 134, 10 Mar. 1914)

“Halle and Skottsberg, draw the line of division, N. of Port Sussex and include the black fissile shales, and the White Sandstone overlying it in the Permo-Carboniferous beds. They make no reference to faulting, and leave it to be inferred that the line of separation may be an unconformity. That these black shales and the White Sandstone are not related to the Permo-Carboniferous rocks, we can quote Sir Wyville Thomson of the Challenger Expedition, in his book “The Atlantic” Vol 2 page 208 – 1877. He states that “while the ship H.M.S. *Challenger* was at Port Stanley, Mr Moseley went across to Port Sussex, to examine a supposed deposit of coal, and brought back a fine lot of fossils from the Sandstone.” (p. 131, 10 Mar. 1914)

Sadly, Sir Wyville Thomson had messed things up. The fossils in question came not from Port Sussex but from Port Louis, as made clear in the formal scientific description by Etheridge (1885). The contradictory accounts may later have been pointed out to Ferguson by his better-informed colleagues at Glasgow University.

4. *West Point Island: the ‘buried forest’ and penguin scratchings*

During Ferguson’s visit to West Point Island he had been shown around the farm by Arthur Felton and had been much impressed by what he saw. Ferguson’s notes continue:

“It is however his researches into rock formations and the buried timber on the shore line of his island home, that have attracted most attention to him. He has dug out quite a lot of timber in the clay escarpments above the beach, near the jetty, in the harbour adjacent to his settlement and sheep station. The geologists for the most part, dispute his idea that it is part of a buried forest grown on the Falklands at West Point, and assert that it is drift wood from Staten Island or the Tierra del Fuegan coast ... Halle and Skottsberg of the Nordenskjold Antarctic Expedition² examined it, and agreed with Mr Felton that it was a fragment of a native submerged forest. If Mr Felton could produce the roots entire of some of the buried trees, it would be good evidence of a local growth, but the specimens in Port Stanley Museum and those to be seen at West Point are slabs of round timber without roots. Drift wood from the Tierra del Fuego coast and Staten Island, makes for the ports facing that way, in the Falklands, and is strewed at different times on the coast.” (pp 31-32, 5 Nov. 1913)

Despite his doubts, Ferguson nevertheless collected specimens of the wood and these are still preserved in the Hunterian Museum, University of Glasgow (Figure 5). They are the best examples of their kind currently held by any British museum. Once again, Ferguson came down on the wrong side of the argument, and the wood is now regarded as having originated in situ, when the Falklands had an extensive tree cover, most probably about seven million years ago.



Figure 5. Ferguson's collection of wood fragments from the 'buried forest' on West Point Island. Hunterian Museum, University of Glasgow.

One final puzzle awaited Ferguson on West Point Island, though at least it did not involve a dispute with Scandinavians.

"Mr Felton showed us ... on the west coast of the island, a series of scratches like glacial ice striae on an escarpment of Sandstone. The scratches were on a face, but little removed from the vertical but with a slight slope inward or landwards. These he assured us were the scratches made by the feet of the penguins ascending from the sea below to their rookery. As the penguins return each year with remarkable regularity to their old rookery for breeding purposes, the scratches represent the combined efforts or scratchings of many years. The same kind of scratches or groovings can be seen on the Sandstones at the large Penguin rookery below Rookery Hill on New Island. Mr Charles Scott an old settler in the Falklands and like Mr Felton a close and careful observer of its various natural phenomena assured me they were penguin scratches, although closely resembling glacial striae." (pp 34-35, 5 Nov. 1913)

Ferguson's doubts as to the veracity of the claim are clear, but he was sufficiently impressed to collect a block from the New Island locality and take it back to Glasgow. It can still be seen in the Hunterian Museum (Figure 6)



Figure 6. Ferguson's rock specimen from New Island showing the grooves eroded by the passage of myriad penguin's feet. It measures approximately 12 cm x 6 cm. Hunterian Museum, University of Glasgow.

Many other examples are to be found around the Falklands coastline (Figure 7).



Figure 7. A polished and grooved rock slab leading up from the beach to a penguin colony on Lively Island.

Epilogue

David Ferguson's notebooks and reports from his prospecting trip to the Falkland Islands provide some fascinating insights into life on the islands in 1913. We can only wonder what the islanders made of him. He was certainly a robust character with no hesitation in speaking his mind, though perhaps a little arrogant and with an inflated opinion of his own abilities. His antipathy to Norwegian whalers must have made his life unnecessarily complicated and perhaps spilt over into a low opinion of Swedish geologists, which in turn probably encouraged erroneous scientific interpretations. His dealings with John Quayle Dickson clearly engendered little respect for Falklands 'officialdom' and this in turn might have influenced the following comment on proposed government legislation pertinent to his prospecting activities:

"I have obtained a copy of the Government Gazette containing the proposed terms of the Mining Bill to be put before Legislative Council for consideration and approval.

There are some of its terms not at all bad, but generally speaking it might be fairly well described, not as a Bill to regulate prospecting and mining in the Falklands, but effectually to prevent anything being done. It mixes up a Miners right and a prospecting license, in an absurd way ... it is an insane bill." (pp 181-182, 1-2 Apr. 1914)

So, outspoken to the last, Ferguson was probably quite pleased to be heading home, and at various times expressed the hope that this voyage might be possible on a British ship. These hopes were not realised and he lamented:

"I will just have to go home on the S.S. *Horatio*. There will be inconveniences, such as bugs in the bed, Norwegian cooking ... and practically no English spoken." (p. 195, 10 Apr. 1914)

Once back in Glasgow, Ferguson completed formal reports on his prospecting around the South Shetlands and the Falkland Islands. Copies of these are held by Edinburgh University Library in the Salvesen Archive. In the Falklands report Ferguson devoted much space to a discussion of the supposed oil-shale, despite its acknowledged extrinsic origin. He saw no economic potential for metalliferous minerals in the Falklands though did speculate, by comparison with South Africa, on the possible presence of coal at depth beneath Lafonia; subsequent geological work has ruled out even this faint hope.

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Notes

1. Johan Gunnar Andersson was the geologist with the Swedish South Polar Expedition (1901-1903) led by Nils Otto Gustaf Nordenskjöld.
2. Thore Gustaf Halle was the geologist with the Swedish Magellanic Expedition (1907-1908) led by Carl Johan Fredrik Skottsberg. Ferguson appears to have erroneously conflated this expedition with the earlier one.

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