

To the furtherance and promotion of science: Intersections of research and the primary school classroom in colonial New Zealand

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ABSTRACT

In 1887, Henry Hill of Napier, New Zealand, was made a Fellow of the Geological Society, London. He spent years traversing the Kaingaroa Plateau and was a regular commentator on volcanic activity and earthquakes. Hill published at least 39 scientific papers on these and other subjects over fifty years. However, this was mainly work he did in his spare time as Henry Hill was the first senior inspector of schools for Hawke's Bay (1878-1915). In that role, he was uniquely placed to incorporate his scientific knowledge into regional classrooms. This paper examines the ways in which Henry Hill BA, FRG combined his considerable expertise within the subject fields of science and education to promote and influence the teaching of natural science within the national primary school curriculum.

At an occasion to celebrate his fifty years in Hawke's Bay in 1928, Henry Hill concluded that:

My life, as far as I have been able to interpret it, has been connected with the social life of the people, the industrial, the political and the educational life of the people, and my spare time has been given to the furtherance and the promotion of science. I love it as well as anything in this world (Hawke's Bay Herald, 13 June 1928).

This paper argues that as a reputable scientist, senior educationalist and author, Henry Hill influenced regional teacher training and the national primary school curriculum. It was through these combined roles that Henry Hill ensured that colonial school children were taught natural science that included for the first time, features from the New Zealand landscape.

Educational and career profile

Born in 1849, Henry Hill was taken into the care of the Anglican Church in Lye, Stoubridge when orphaned at a young age. By the age of fourteen years he had become a pupil-teacher firstly at Lye and then at St David's School, Birmingham. During his two years at St Mark's Training College, Cheltenham, he furthered his friendship with another former Lye pupil-teacher, Emily Knowles, a student at the Cheltenham women's training college. With a first-class teachers' certificate he was sent to Nottingham in 1870 where he combined teaching with extra-mural study, qualifying in 1873 as a science and art master (Hill Family Papers). References from the associated institutions held by the Hill family praise Henry Hill's abilities as a scholar, as a teacher and as someone with superb

organisational skills. These were attributes sought by Lord Lyttelton in 1873, who on behalf of the Canterbury Provincial Government in New Zealand, selected the twenty-four year old from more than 200 applicants to help with the establishment of public schools in Christchurch (Hill Family Papers). Henry Hill did not come alone, having married Emily Knowles 12 days before embarking the *Mereope* bound for Christchurch, New Zealand.

By 1875, Emily was the infant mistress and Henry the headmaster of the new Christchurch East School. They combined raising a family with teaching; there would be four daughters and three sons. They would later also become foster parents of Hamiora Hei.¹ While based at Christchurch East School Henry studied part-time at Canterbury University College and is listed as the sixth student on the register, having enrolled in the year the university college first opened in 1875 (Canterbury University College, 1879). Henry Hill graduated with a Bachelor of Arts in 1878. He excelled in geography, geology and botany but was also the first recipient of the University of New Zealand's Bowen Prize in English Literature (Canterbury University College, 1879). With glowing testimonials from Canterbury (Hill Family Papers), Henry Hill applied for and was appointed as inspector of schools for the newly established Hawke's Bay Education Board and by July 1878 he had moved his family to Napier and taken up this position (Hill Family Papers; Alexander Turnbull Library [ATL], MS 172/77).

Regional education boards had been created to administer primary education under The New Zealand Education Act 1877 as part of a new system of state education. School Inspectors were required to "inspect all Public Schools" maintained by public funds (Statutes of New Zealand, 1877: 128). For the first time, primary schooling became free, secular and compulsory, school districts were defined, school committees elected and a department of education under a Minister of the Crown constituted. In 1878, the fourteen schools administered by the Hawke's Bay Education Board could not cope with the numbers of children who flocked to the schools because of free access and the fact that it was compulsory for parents to send them. Further, buildings were inadequate for the purpose and the teachers untrained. Henry Hill has been described as a "great optimist", "a cheerful soul" possessing "an enquiring mind and boundless energy" (Hawke's Bay Herald, June 13, 1928). He needed all of these qualities just to sustain the 37-year mission to bring the region's education system into line with better endowed provinces, let alone to conduct a challenging programme of school inspections. When Hill became Inspector of Schools he was 28 years of age and he and Emily had a young family based in Napier. As he described it:

My work was very strenuous. The district extended from Woodville in the south to Hicks Bay beyond East Cape on the North east. On the west Tarawera on the Taupo road and Motu on the Opotiki road were two of the most remote places (ALT, MS 172/77-142).

His diaries record a pattern of school visiting that enabled him to cover his 8,578 square mile district mostly on horseback or by horse and trap twice within each year (ALT, MS 172/77).

By the time Henry Hill retired in 1915, the schools had increased in number to 148 with an average attendance of 90 percent (Appendices to the Journals of the House of Representatives [AJHR], 1916, E-2: xvi). However his other accomplishments included pioneering efforts in the design of school buildings and furniture; the in-service training of teachers; the fostering of teacher union membership; the establishment of a superannuation fund for teachers; the founding and editing of New Zealand's first professional educational journal, *The New Zealand Schoolmaster*; and importantly, the development of a geography and natural science curriculum and the writing of a series of first locally published geography texts (Morris Matthews, 1987; 1988; 1993).

The intersections of education and science

When Henry Hill turned his attention to the teaching of science in the Hawke's Bay region he was not starting anew. This was because his predecessor from 1872-1877 was none other than the renowned botanist, William Colenso FRS.² Colenso's first inspector's report to the Hawke's Bay



Provincial Council [HBPC] reveals that in addition to teaching the 'three R's', Colenso encouraged the teaching of geography and science, reporting warmly on the use of specimen tables and maps (HBPC, 1873: 2). To foster a love of science, Colenso offered rewards of his own including in 1875, "twelve cash prizes, six of which were to be for natural science collections of not less than one hundred specimens" (HBPC, 1875: 4). These were modest beginnings as at that time there was no formal state schooling system, no formal primary school curriculum and even by 1870 the majority of teachers in the 22 schools were untrained and paid according to the number of pupils who attended each week (HBPC, 1874: 4).

Colenso's correspondence and annual reports reflect the amount of time he was obliged to spend on monitoring pupil attendance rates and standards of school buildings rather than what was actually being taught in schools. Even then, his brief was to report primarily on the proficiency of reading, writing and arithmetic in each school (William Colenso, 1872-1877; HBPC, 1872-1877). Colenso was therefore particularly pleased to see any evidence at all of science lessons on his school visits; a few teachers only understood some rudiments of science which at the time was about natural history and geography. These were the subjects that linked William Colenso and Henry Hill. Indeed, they were acquainted even before Hill left England. As early as 1869, Henry Hill had written from Cheltenham asking William Colenso for information about the New Zealand land wars and in particular about the Hawke's Bay Battle of Oamaru. Further, whilst Hill was based in Christchurch, he and Colenso corresponded regularly for the purposes of exchanging botanical and geological data at the time when Henry Hill was studying both subjects at university (ALT, MS 0146-11).

Because Colenso's personal circumstances had left him with no family and few friends in the province, he welcomed Hill not only as his professional successor but as a fellow natural scientist. For Hill's part, as novice inspector in an unknown environment, he was keen to call upon Colenso's extensive knowledge of regional educational matters. However, it was their mutual love of science that bonded the two unlikely companions and what is known from Hill's detailed diaries is that his lengthening absences from Napier on school inspection visits prompted Colenso to travel with him for several years. On these trips Hill would leave Colenso, now in his seventies, comfortably ensconced at the local hostelry while Hill rode out to his schools. In the evenings, he recalled years later, he joined Colenso and "the room was closed against intrusion, unless the visitor was an old friend and common to us both" (ALT, MS 172/77-142). Hill's diary entries suggest that topics of scientific interest, not educational, were discussed. At Woodville in 1880 he noted "Colenso told me tonight how he met with Darwin in the Bay of Islands in 1835!" (ALT, MS 172/77-12). In Hill, Colenso had a young educated colleague, ready to absorb any matter of mutual scientific knowledge. Having the knowledgeable locally-based Colenso as a scientific mentor would no doubt have suited Hill who ensured that wherever appropriate, he drew upon and cited Colenso's earlier published work.

It was Colenso's early encouragement of Hill's research on volcanoes and his recognition of the importance of that research that led Hill to presenting and publishing his findings. Indeed, Colenso's mentoring of Henry Hill as scientist was pivotal to Hill's gaining access to Maori tribal lands of Tuwharetoa on the volcanic plateau. Colenso, who had lived among Maori as one of the earliest church missionaries to New Zealand in the 1840s, knew and respected Maori protocols and was a fluent Maori language speaker. He made sure that his energetic young friend had sufficient knowledge of both and most importantly, that before any lands or mountains were explored in the name of science, he did so with the permission of the local iwi (tribal group). This meant that Henry Hill needed to share with them the nature, scope and protocols for his work so that they could be assured of his respect for their cultural stewardship over the land. In turn, he might be trusted with tribal knowledge about the lands he wished to explore. This was a very different scientific world to the one Hill had known to this point.

Henry Hill's formal science training began in the early 1870s when studying, with much success, for his advanced teaching qualifications through the Science and Art Department, South Kensington, London (Hill Family Papers). This solid foundation no doubt stood him in great stead when he embarked upon degree study at Canterbury University College in New Zealand. The teaching he received there, initially by Dr Llewellyn Powell and in his final year with Professor Julius Von Haast, inspired a life-long interest in geography, geology and botany. It was Powell in particular who influenced the young Henry Hill. By all accounts, Powell's Botany and Physiology "lectures and demonstrations were greatly enjoyed by his students" and he had "exceptional skills in drawing and colouring" (Gardner, Beardsley & Carter, 1973: 127). Hill too, excelled in drawing from observation which was a fundamental tenant to science knowledge in this era. In addition to reading and writing he wanted school children to be introduced to the subjects that he enjoyed because as he said:

An ideal course is one that comes from known facts about us, concerning the three kingdoms of Nature true life environment as it appeals to the children. History and Geography constitute the treasure houses of all knowledge past and present for they embrace all events where life has played a part (ALT, MS 172/77-146).

To this end he reported at the end of his first year in 1878, on the books, maps and apparatus supplied to each of the schools. In addition to an impressive range of wall maps and two types of globes, he included Object Lesson apparatus for Natural History, comprising Natural History cards and Oliver and Boyd's Animal, Vegetable and Mineral Kingdom. Larger schools also received Johnston and Reynold's Diagrams for Botany and Physiology, maps by E. Von Lydon and for Mechanics, the book Mechanical Powers by Laurie (National Archives [NA], Annual Reports, 1878: 47). Throughout his career, Henry Hill concerned himself with the teachers and pupils in his care. He sympathised with the dilemma of country and bush children. While he insisted on their regular attendance at school and quality of work, he did appreciate the problems they had getting to school, and once there, the inappropriate nature of much of what they were taught. His despair is evident in an early report to the Minister of Education:

Why are the children of this district to go in imagination to a country they have never seen, and to a period in its history? What is the use of children in the bush learning a list of dates in English history? (AJHR, 1881, E-1b: 13).

Hill realised that the teachers themselves had only a restricted knowledge. For many, British geography, history and botany was all that they knew of these subjects. The few text books available, were, of course, of British origin and did not include New Zealand material. Such was his frustration, Hill set to and wrote and illustrated in 1882, *Geography for Standards II and III*. The contents of this book contained sections of geography oriented towards New Zealand including New Zealand maps. The text's two-fold purpose was no doubt instrumental in its becoming an "approved class book" in 1885 (New Zealand Gazette, 1885: 119) by which time Hill had authored a companion volume *Geography for Standards II, III and IV* (1884). By 1887 he had added *Geography for Standards III, IV and V*, including more New Zealand material and illustrations gathered as part of his geological research publications.

Gathering local data

Henry Hill's belief in the value of science and scientific training for school children was underpinned by a number of factors: his science education as part of his professional training in England; his New Zealand university degree study; the many and varied research projects he completed whilst based in Hawke's Bay; and the ongoing stimulation and interest he gained from the research findings of other scientists, both local and international.

As an educationalist, I am interested in the ways that knowledge is transferred across continents and academic disciplines and then in the ways that knowledge is disseminated. I first piloted ideas about such matters when I focused upon Henry Hill in the early 1980s as a pioneering curriculum

innovator in New Zealand's educational past (Morris Matthews, 1987). For that work and for his entry in the Dictionary of New Zealand Biography (Morris Matthews, 1993), I read Hill's diaries, manuscripts, official education reports, scrapbooks and notes of which there are great number. I was impressed that although his professional and familial roles were demanding enough, Henry Hill maintained another parallel life as research scientist and author of at least one research publication a year for nearly forty years. He did not operate in isolation. He was a member of the Hawke's Bay Philosophical Society [HBPS] from 1878, Council member for 31 years and served as President in 1905 (HBPS Minutes, 1874-1933).

In focusing upon the intersections of Henry Hill's scientific and professional roles for this paper, I sifted through his numerous science diaries and papers containing geological observations and countless sketches of volcanoes, earthquakes, moa, pumice, artesian wells and river systems. Of special interest were his notebooks relating to Tūwharetoa and Māori tikanga (custom) and the relationship of both to his fieldwork. As noted above, and following Colenso's advice, Henry Hill was early to establish his credentials with the elders of Tūwharetoa, his diaries from 1879 indicating that he did this through initial and then regular visits during school holidays to the Waipahihi Marae on the shores of Lake Taupo. There he was hosted for days at a time and he learned at first-hand the history of the region and the customs and protocols of the people. His diaries of these visits record key words and phrases in Māori—which suggest he had at least a reasonable understanding of te reo (Māori language)—and alongside, Hill's notes in English from the narratives that had been shared (ALT, MS 0146-05).

At a time when many new settlers dismissed such knowledge as 'mythical', Henry Hill took seriously the information that was imparted and, interspersed within a number of his published papers, makes reference to the importance of Māori knowledge in tandem with his geological findings. In his publications on the Taupo and Kaingaroa Plain he actually starts with the Māori perspectives of the region before going on to outline those of earlier Pākehā explorers such as Polack, 1833-37 and Bidwell, 1839. In his 'Notes on a history of Lake Taupo and District' he makes the point that whilst Bidwell ascended the volcano Ngauruhoe in 1839, he did so unknown to the local Māori, indeed at a time when the mountains were held sacred. Further, Hoschstetter had been refused permission to ascend Ngauruhoe in 1859 (ALT, MS 0146-03). Hill knew why. In his 1891 paper entitled Ruapehu and Ngauruhoe he explained that:

Te Heu Heu, a great and renowned chief, ruled in those parts; and the native proverb around Taupo ran thus: 'Ko Tongariro te munga, ko Taupo te moana, ko Te Heu Heu te tangata—that is to say, Tongariro is the mountain, Taupo is the sea, Te Heu Heu is the man'. The authority, or mana, of Te Heu Heu extended from Tongariro over the whole of the Taupo district. Tapu had been set upon the Tongariro Mountain since the tohungas had deposited there the bones of a former chief who lost his life at Te Rapa, near Tokaanu, in 1846, and woe to anyone, be he European or other, who disobeyed the word of such a chief (Hill, 1891: 603).

Hill was clearly affected by the stories of disasters that had and could befall explorers who ignored Māori protocols. He also understood the importance of reciprocity in any cultural encounter, namely that he was required to spend time with the local people explaining the scope and purpose of his scientific mission prior and during any explorations on tribal lands. In return, if he won their trust, the local people would share with him knowledge of a particular feature of their landscape including its history, weather patterns and changing features. Hill's message to fellow scientists is clear. "Colonists take far too little interest in the past", he said (ALT, MS 0146, 1926). Respect for the land and its people was paramount and agreement established in the interactions with the local iwi preceding any exploration was a pre-requisite. Hill knew that this included respecting iwi authority and direction for scientific work on their land.

Earning the trust of the local iwi cleared the way for his own expeditions. He did this through the regular contact he maintained with the local iwi when staying on the marae at Waipahihi on his way to and from the volcanic plateau. Thus, Hill became an eager student of the Taupo volcanic region. In 1891 he wrote:

The entire district from north to south has been visited by me, the southern portion three times, and the central or Taupo district many times. All the mountains or volcanic peaks belonging to the Tongariro series have been ascended and crossed, and the sources of the Whangaehu, Waikato, and Wanganui have been explored (Hill, 1891, 604).

Hill was not alone on such expeditions. On a climb in 1892 there were six in his party including members of his Napier-based family, two of them his children. The advice of the local chief was much appreciated by Hill who recorded that having left at seven in the morning with one day's rations each "we were not long in reaching this place, and we found to our great delight that the traveling was comparatively easy; so much so, in fact, that ladies could ascend the mountain by this track without much difficulty" (Hill, 1893: 389). He documented the dimensions of the crater, the extent of the eruption, details of the gases, sulphur and mud, comparing these observations with his notes taken in March 1890 when he had last climbed Tongariro.

While he was early to publish on volcanoes and earthquakes, Henry Hill also had a fascination for flora and fauna unique to New Zealand. Moa were a life-long favourite. His school visiting diaries indicate how he always searched for signs of the bird in river beds and crossings as he travelled between schools throughout the East Coast. Farmers would contact Inspector Hill if they found any bones of interest on their properties. Hill would then call in on his next visit to the district. In 1889 and 1895 Hill published papers about his discoveries and in 1914 summarised research on the Moa and the reasons why he believed it extinct (ALT, MS 0146- 07; Hill, 1888; Hill 1894; Hill, 1913).

Another great interest was pumice on which Hill was an acknowledged expert. His question was: "How did the pumice come to be spread over miles of country in the middle of the north island? The pumice is thirty and even fifty feet in thickness over thousands of acres of country!" (ALT, MS 0146-01). Again, with a subject such as pumice he was clear that Maori knowledge informed such a question, saying that:

If we take our Maori legendary and myths and study them in connection with the physical and earth changes that are reported from time to time, it will be found that they often give a clue to the interpretation of some difficult problem in Geology or Botany or natural history generally (ALT, MS 0146-01).

Such a statement reinforces Hill's leadership related to new understandings in New Zealand science. It signals a move beyond the common European usage of 'myth' and 'legend' to diminish the authority of Māori knowledge. Instead, such as with his publications on pumice, Hill prioritised the knowledge he had been given by the local iwi. He first wrote of the geology of the district between Napier and Ruapehu Mountain in 1889 (Hill, 1889). He was fascinated by the pumice land between Napier and Taupo across which he had to travel to the volcanoes and also partially, for the purpose of inspecting schools. There is no doubt from the diaries that he kept on his twice yearly school inspection trips that he also used his time on horseback, with horse and cart and later by train, to make scientific observations and recordings (Hill, 1895).

Making science 'more real' for children

Throughout his thirty seven years of school visits and subsequent report writing as Inspector of Hawke's Bay schools, Hill did not cease to make some reference to the teaching of science or the science curriculum in primary schools. His goal was to have science, botany and geography made compulsory subjects at the senior level of the primary school and moved from their 'extra subject' status at the junior level. When he observed these subjects being taught in an exemplary manner he included a description within his annual report to the Minister. This was the case in 1886 when the small remote Makaretu School in the Ruahine foothills was singled out:

as among the best—not for examination results but for adaptation of syllabus for the children of mainly Scandinavian and mixed race. They are acquainted with the more important trees in the bush, and can botanically describe the flowers growing by the wayside. I have carefully examined

the pupils in most of these matters, and I must confess to the pleasure I experienced on finding topographical maps of the settlement constructed by Stds II and III pupils – excellent-mounted and varnished and sold to settlers for 2s to 10s each (AJHR, 1886, E-1b: 24).

In another instance, a young boy in a country school showed a flair for elementary science. Having posted the boy some magnets, the grateful lad reported to Inspector Hill the experiments he had tried:

I made a microphone myself, and have put up a telephone line from our washhouse to the woolshed. The line is supported on two poles, has two wires, and is about ten chains long. I put a battery of my own making in the washhouse, and also a telephone; then I go down to the woolshed and put on the microphone. People talking or singing three feet or four feet away, can be heard in the telephone quite distinctly (AJHR, 1889, E-1b: 19).

Henry Hill wanted classroom work to become more real for children, particularly his 'bush pupils' who were labouring "under great disadvantages". He was well pleased when the 1893 Inspectors' Conference accepted many of his initial suggestions for curriculum change and his own remits on the teaching of geography and natural science were passed into regulations unchanged (The New Zealand Schoolmaster, April 1894: 145).

While Hill did all he could to train his East Coast teachers to present New Zealand and local features within their teaching, he was frustrated at the slow pace of change and said so within his annual reports from Hawke's Bay to central government. For example in 1902 he wrote:

Here and there one finds exception, and some fine specimens of plants, insects, and of native birds' eggs have been collected by some of the children in the bush districts. But individuality is too little fostered—children too reliant on the book—originality of thought and of expression are seldom fostered (AJHR, 1902, E-1b: 20).

Although segments of Hill's report were usually published in Hawke's Bay newspapers, he realised that it was not settler parents alone who would influence Wellington decision makers. Instead, he used his scientific networks to promote his cause, such as in 1902 when a paper he had delivered to the Hawke's Bay branch of the Philosophical Institute of New Zealand was published in the nationally distributed Transactions and Proceedings of the New Zealand Institute. Under the subject 'Technical and Scientific Training', he deliberately set out "to review the present state of science in this country" (Hill, 1902: 159). His critique mirrored that of his Inspector's reports: "We must foster a knowledge of natural science among the teachers so far as related to local and even colonial environment" (Hill, 1902:164). While he advocated "for science, pure or applied, being left to the senior standards" what he wanted was natural science to begin in the infant schools forming the groundwork of all training and education. "The study of natural phenomena, the quickening of observation, the collecting of facts and the constant reference to 'why'. The training in natural science gives power to children. They are early led to see and to think for themselves" (Hill, 1902: 164). To cement his message he listed the kinds of lessons to be included such as:

the clouds in the sky, the phenomena of rain, hail, snow, wind, thunder, lightening, heat, cold. ... Air, earth, water, animal and vegetable life provide facts that are available for all forms of science and all departments of discovery and invention (Hill, 1902: 164).

It was the message of incorporating natural science as part of the core curriculum to help develop a child's critical thinking skills that Hill advocated at the 1904 Conference of Inspectors of Schools and Teacher Representatives. There he put his case during the discussion on natural science. He urged the Department:

to issue diagrams of New Zealand flora and fauna and other natural products of New Zealand; to encourage and foster among school children observation and research; to provide facilities for exchange of natural history specimens between schools in each district (AJHR, 1904, E-1c: 22).

Within the resulting Amendments to the Regulations for Inspection and Regulation of Schools (1904), nature study and elementary science became mandatory for standards three to six. For

standard one pupils, there was now an expectation of a definite set of nature study lessons in those schools with more than one teacher and in sole charge schools, the expectation for at least a nature study observation table.

It is clear that Henry Hill did not think these regulations went far enough. Again hoping to convince New Zealand Philosophical Institute members via a published paper, he made clear his views in his Presidential Address to the Hawke's Bay branch in 1905. Interwoven within his paper, *Social and Industrial Conditions as They Affect New Zealand*, he explained the importance of primary schooling being "a platform for teaching natural science where children can learn of New Zealand birds and plants, flora and fauna". He was concerned that what actually happened was that "they read of plants and birds in other lands—not here" (Hill, 1905: 4). It was not until four years later that he was able to praise *The New Zealand School Journal* for including articles on New Zealand flora. While he acknowledged this was a good start, he pushed the Department of Education to instigate "a separate issue of a nature study and elementary science number at intervals of three or four months, treating solely flora, fauna etc and certain aspects of New Zealand physical geography" (AJHR, 1909, E-1: 109).

The relevance of the curriculum to the everyday world, equipping children with knowledge that would assist them in their adult roles, is a recurring theme of Hill's philosophy:

In anticipation of farming life, children should be taught about plants ... chemistry of soils, manure, zoology, geology, knowledge of insect pests, making of butter and cheese, the raising of poultry, knowledge of timbers, cereals, roots, and rotation of crops. Children must gain such knowledge by practical training as will give them power to deal with nature as intelligent beings, who know something of their environment (Hill, 1905: 5).

To encourage children in this direction, it was common for Inspector Hill to take model lessons on natural science when on his school visits. He also thought he might inspire classroom teachers to think creatively around pedagogies that could be employed for science. He "was surprised at the absence of scientific method", suggesting that "if teachers would foster observational and experimental work more, school-keeping would be robbed of its seemingly tediousness, and the children would come to express themselves freely and in a natural way" (AJHR, 1912, E-2: xxvi).

In a bid to improve the overall teaching of elementary science in the region, for many years Hill ran science-specific Saturday classes for teachers in Gisborne, Napier, Hastings and Dannevirke to coincide with school visits (AJHR, 1915, E-1). As teachers became better acquainted with him through his Saturday classes, his in-service training and in the case of those in more remote areas, their hosting him in their homes overnight, they discovered that when off-duty he liked nothing better than time spent on the volcanic plateau. Such was his enthusiasm for geology that many teachers gathered rocks for Hill's collection, leading a skeptic to suggest "that school work took second place of preference at Port Ahuriri School where the inspection of rock specimens often occupied much of the inspector's time during his visit" (Port Ahuriri School, 1968: 34).

It is likely that a genuine interest in any aspect of science would have created a favourable impression with Inspector Hill. Perhaps this was the reason teachers sent him detailed reports on earthquakes experienced in their district. Scores of letters pasted into his scrapbooks testify to the fact that Hill's published works drew on teachers' individual descriptions. Among them is a note from the Tarawera schoolmaster, apologising for the brevity of his written observations, the result, he explained, "of his being in the bath when a particularly strong tremor accrued" in the mid 1880s. In thanking the teacher for his effort Hill added a light hearted comment. "Next time one occurs when you are taking a bath", he suggested, "it would be helpful if you could observe the direction of the waters' movements". Detailed instructions were then given as to how speed and velocity of the bathwater could best be measured (ALT, MS 172/77, Earthquake Scrapbook).

To the end, Henry Hill bemoaned the fact that there were "few teachers taking university courses in science" (AJHR, 1915, E-2: xviii) and that it was more necessary than ever, for teacher classes to include nature study and field botany as he had seen on a recent trip to London.

Teachers still had work to do in linking the science and geography syllabus to children's lived experiences. "We must make our geography as real as possible", he said, giving the example that "in some schools near Dannevirke, inquiry was made as to the effects of mountains on climate, and the matters appeared not to have been considered, although nature was performing experiments of a grand scale at their doors" (AJHR, 1915, E-2: xix).

In his final report as Hawke's Bay's senior inspector of schools in 1915, Henry Hill summarised his life-long philosophy linking science and education. "For all modern industrial needs, science is becoming indispensable, and the possessor, whether man or woman, should receive the fullest recognition if scientific teaching is to be fostered as part of the school course" (AJHR, 1915, E-2: xxiii).

Conclusion

Henry Hill was a scientist to the end. From his Lake Taupo property he continued to explore the Kaingaroa plain and write copious notes about his findings there. His grandson, Seddon Hill, later to be Principal of Wellington College, spent holidays at Taupo and recalled explorations with his grandfather "carting with him a reel of 100 yards of twine up Mt Ruapehu for measuring distances and watching the sequence of events in the boiling lake for an hour to give an accurate report" (Personal Correspondence, 4 October 1983).

On his death in 1933, writers recalled his "energy and enthusiasm" in all matters. In education circles he was remembered as having "had a most stimulating influence and [done] much to arouse and maintain interest in the study of science" (Obituary, 1935: 411).

Notes

1. On a visit to East Cape primary schools in the mid 1880s Henry Hill was impressed by the scholastic abilities of Hamiora Hei. Perhaps recalling the way in which he had gained his own educational opportunities, Hill arranged with Hamiora's tribal family that he should oversee the boy's education. Hamiora Hei joined the Hill family in Napier and attended the Napier Main School with Winifred and Harold Hill. Henry Hill then paid Hamiora's school and boarding fees at Te Aute College and then supported him financially through his law studies at Auckland University College where he graduated in 1913 with a LLB. Hamiora Hei practised law in Gisborne. The Hill family maintained contact with him throughout his life (Hill Family Papers; Interview with Seddon Hill, 2 March 1983; The University of New Zealand, 1948: 54).
2. The Hawke's Bay Provincial Council appointed William Colenso their Inspector of Schools in 1873. Although Colenso had been dismissed from the Anglican Church Missionary Society some twenty years earlier for moral impropriety, Councillors believed his strengths outweighed his weaknesses. He was an internationally recognised botanist; and an experienced and competent administrator who had been a Provincial Councillor, Auditor (1859), Inspector of Schools (1862-63) and Member of the House of Representatives (1861-65). When he died in 1899, it was Henry Hill who, as executor of Colenso's estate, arranged for Colenso's botanical collections to go to the Hocken Library and Auckland Museum and his papers to the Alexander Turnbull Library (ALT, MS 0172-004).

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