

TIME AND PLACE — A REMINISCENCE

by George Elby

A tribute to R.C. Hayes delivered at the Dinner of the New Zealand Geophysical Society on Thursday May 19, 1988*.

Many of those who were present when the NZ Geophysical Society launched Margaret Hayes's biography of her late husband have urged that the after-dinner speech by George Elby be published. As much that can pass for wit when spoken to a gathering prepared to laugh is shown to be poor stuff when committed to print, and the nakedness of unsupported assertion is revealed, he has agreed only with reluctance, and begs that readers who were not there will do their best to imagine what their memories cannot supply.

Scientific text-books seldom say much about people. They give you the impression that the world of science is an arid desert in which thought arises without thinkers, and science without scientists. It may be true, as Bacon insisted, that "books must follow sciences, and not sciences books" but there is plenty of scientific stimulus to be gained from a good biography.

Now proper biographies must bring their subjects to life. Those nil nisi bonum obituaries that list honours and distinctions and offices held and catalogue published works are as lifeless as the text-books. Change the lists and they'll do for anyone. Real science arises in curious and unexpected ways. What if Archimedes had never taken a bath; if Kepler's mother had never been arrested for witchcraft; if Faraday had not turned up a wooden top-hat on his lathe, so that he was fittingly clad for a visit to Sir Humphrey Davy; what if Kekule had decided to travel home by tube and not by bus; or if Pauli had never gone

to the Folies Bergeres? If a chap I'm reading about acquired a mistress, lost a fortune, caught mumps, or became addicted to cricket, vodka, or playing the sitar, I expect biographers to tell me about it or I shan't buy their books. Geophysicists need a special caution not to follow the regrettable and fortunately unique example of G.B. Airy, who produced a lengthy autobiography written in the third person.

Apart from taking baths and riding in buses, R.C. Hayes shared few of the frivolities of his more flamboyant colleagues. He was certainly not one of those characters described as "colourful", which means that they are bearable and even amusing when contemplated from a distance, but are hell to work with. Hayes was shy, meticulous, and of an extraordinary scrupulousness. Apart from a brief visit to Samoa he never worked in exotic places, he fought in no wars, created no scandals, rose to no public eminence, sought no publicity - in short, he was that rarity, a good and honest man. And so it was that when Mrs Hayes first told me that she intended to write his biography, my heart sank.

I had met a biographer before. My mother not only wrote a biography of her father, but demanded that I find her a publisher. To my surprise I succeeded; but I didn't reckon upon the consequent outbreak of literary fervour among my multitudinous aunts. Fortunately none of them had the staying power for a novel; but they did pen some wholesome stories of impeccable propriety and marmoreal lifelessness, scrupulously adhering to the rules of English grammar as laid down by Nesfield.

* Reprinted from the N.Z. Geophysical Society Newsletter No. 20, pp10-16, August 1988.

** "In Spite of His Time" by Margaret Hayes. See also "General Information" for details of a special purchase offer to NZNSEE members. The book will be reviewed in the next issue of the Bulletin.

This is what is nowadays called a "no-win situation". What Edwardian aunt would ever believe that a boy who could find publishers for Hilda's book (of which they disapproved), and for a book on so dull a subject as earthquakes, could not find one for their delightful stories? Either I was unpardonably indolent, or impertinently lacking in respect. And that is why I inherited no part of the family fortune, - if indeed there ever was one.

Now Mr Hayes may not have been an obviously attractive subject for biography, but a wiser man than me once wrote this: "There is no life of a man faithfully recorded, but is a heroic poem of its sort", and Mrs Hayes has been able to see and to communicate the drama that lies in a life of dedicated striving towards scientific and artistic goals to which others remained blind, indifferent, or even hostile. She writes with a lively style and a sense of humour, and can admit shortcomings as well as praise strengths. She has been able to delight everyone who has been privileged to read the book in manuscript, and to win for Hayes the sympathy and respect of readers who never knew him.

There is no way that I can convey in half as many minutes, the quality of an acquaintance that extended over 30 years, all but four of them in daily professional contact, and I have no intention of traversing the ground that Mrs Hayes has covered, so I shall use my time in trying to convey something of the mood and attitudes that prevailed on the observatory hilltop in the twenties and thirties.

I became interested in astronomy while I was still at primary school, and used to visit the old City Observatory in the "green tin shed" on fine Saturday nights. There I met Dr C.E. Adams, Ivan Thomsen, and other members of the very small circle of Wellingtonians who had an interest in the physical sciences. Hayes was not one of them, though I learned of his existence. I didn't sight him until 1933, when I braved a howling southerly to consult Adams about work I hoped to enter for a college science prize. Adams was not only a Doctor of Science - a rare distinction in the Wellington of those days - but he carried the sonorous title of Dominion Astronomer and Seismologist, wore a beard: and was careful to behave with a dignity worthy of the respect due to Science. Not only had he graciously granted me an audience, but he even offered to lend me books - this was long before library interloan, and people who had books possessed knowledge denied to others - and then invited me to watch the transmission of a time-signal for shipping.

This was a daily ceremony about which the work of the Observatory centred. Two staff members were essential - one to throw switches and to deter the ancient TRF radio from bursting into oscillation, and the other to send the Morse preliminaries with a hand key, and to feed ink from a medicine dropper to the chronograph pens. On that day, Ivan Thomsen was at the radio, and Hayes wielded the medicine dropper with the solemnity appropriate to a scientific task

of the greatest delicacy. Clocks and relays ticked, against a background hum from the chronograph motor and a whine from a rotary converter that provided 100 volts for the Observatory's obsolete electrics. Adams was there to certify that the signal had gone out without mishap, and to sign the log lest the accuracy of that very signal should become the subject of a marine enquiry.

The signal itself was a complicated pattern of dots and dashes that lasted some eight minutes, during which the only sounds were ticking clocks and the whining motors of the chronograph and the rotary converter. No one spoke until the motors had slowed to a halt. Adams signed the book, and ushered me once more into the storm. I was enormously impressed, and decided that this would be the place to work, at least until I could get a degree and head overseas for fame and fortune.

It was 1939 when I first looked for a job. Back in those days getting a government job was no simple matter. The Public Service Commission first checked out your educational qualifications, demanded your birth certificate, and sent you for a medical examination. Next you were interviewed by the Departmental Head, though in my case I found Dr Marsden missing, and had to be content with Mr Callaghan. He asked what subject I was doing at University. I said "physics". He expressed horror. Chemistry would be a much wiser choice. He also advised me against a job in the Observatory. The astronomy was unlikely to be developed, and anything we needed to know about earthquakes could be got from overseas. Yes, there was a job in the Observatory, but I'd be silly to take it. There was another problem. You couldn't have a government job if a close relative had one, as that would inevitably lead to corruption. My uncle was Commissioner of the Government Life Insurance, and I'd have to wait two months until he retired. Meanwhile I could declare before a J.P. that I had no criminal convictions, that I would bear true allegiance to His Majesty King George VI, his heirs and successors by law appointed: and that I would not breathe a word of governmental matters to outsiders. These necessities attended to, the mail brought me a summons to report at the Observatory at a stated hour on the day after Uncle Ernest retired. I had had no contact with the Observatory whatever.

When the day arrived there was another howling southerly, I had a foul cold, and a recurrent nose-bleed. The summons hadn't actually said "Herein fail not at your peril", but the wording certainly implied it, and I wouldn't have dared to absent myself on day one. My sole previous glimpse of Mr Hayes, who was now Acting Director, suggested a rather forbidding person. I fortified myself with peppermints and Baxter's Lung Preserver and braved the storm.

Hayes seemed pleased to see me - he'd been short-handed for months - and lost no time in preliminaries. He showed me the time-book, and explained the significance of the

red line, and we moved on to the clock-room. In the six years since I last saw it, disaster had struck. Much of the rubber insulation on the electric wiring had perished, and about half the circuits were now carried by temporary cables that ran directly from a terminal board in the centre of the ceiling to individual clocks, chronographs, and relays. The impression was that of creepers in a tropical forest, and the ease of movement no better. Bare terminals carried lethal voltages and performed much the same role as poisonous snakes and spiders. There were giant copper knife-switches, and domed switches with brass covers, smooth and polished; and fluted ones coated with verdigris. Relay contacts were platinum pins that dipped into cups of mercury covered with castor oil and mounted on marble slabs.

The variety of power sources and voltages in use was astonishing. Bells and buzzers demanded anything from one to twenty dry cells. In the lavatory there was a bank of 120 wet Leclanchés that provided HT for the radio, which had a variety of valves (mostly bright emitters) demanding 2, 5, or 6 volts from accumulators under the transit-room bench. The seismograph timing and the chronograph motor ran from Edison cells that had to be changed with the help of a monstrous mercury-arc rectifier that lived in the basement and looked like a glass octopus. A row of galvanometers that must have been survivors from Wheatstone's original telegraph kept track of outgoing time-signals. Power points could be either 110 volts or 230, but the 110 ones were dead unless the converter in the basement was running. Fuses (when there were any) could be upstairs, downstairs or in the attic. There were of course no circuit diagrams.

Staff relations were formal, but not unfriendly. Christian names were in most cases unknown, and omitting an honorific Mr or Miss unthinkable. Dark suits (with waistcoats) and collars and ties were the only acceptable wear, and not to wear a hat was eccentric. This was to change during the War, at least between those of equal rank, but you could expect your seniors to call you Mr, and women remained entitled to Miss.

I think that the decline in these standards dates from the establishment of the Geophysics Division, which opened the Observatory's cloistered world of astronomers and natural philosophers to prospectors, whose gentlemanly sensibilities had been blunted by contact with geologists. I don't undervalue the knowledge they brought with them, nor their questioning of our ways; but I regret the accompanying disappointment it brought to Hayes.

When Dr Marsden became first secretary of the newly-formed D.S.I.R., he forced the Reverend Bates, director of the Weather Office, into premature retirement and replaced him with the innovative Dr Kidson. When Dr Adams retired in 1936 he planned a similar coup for the observatory. Bullen was an obvious man to handle the

seismology, but he didn't want the astronomy, the administration, or the problems of the seismograph network, and he knew and appreciated the quality of Hayes. The other favoured candidate was Lyndon Bastings; but when Miss Lehmann showed him to be wrong about S-waves through the core, Marsden's interest in him vanished. Hayes was clearly the only man who could do the job, so he continued to be Acting-Director, at a fraction of the salary paid to Adams, and offered to Bullen and Bastings. Fourteen years later he was still Acting. When the Division was formed he became Director for a few short months, only to have his style changed to Superintendent when the Directors of the larger divisions succeeded in persuading Head Office that the place for geophysicists was below the salt.

Before I close, I think I should say something about Hayes's qualifications. He had no university degree; but no New Zealand university could have taught him his astronomy or his seismology. That was learned from books, from doing, and from Adams, who was not a man to accept the second rate. In his position, apprenticeship was certainly superior to academic training, which would have involved spending precious time on irrelevancies.

The war freed the professions from a great deal of nonsense. Most of us came back having gained maturity and some unlikely skills - the air-force not only taught me electronics, but something of fitting and turning and how to climb and service tall radio masts - but we had to acquire a different background before we could be accepted back into the community as trained professionals. Everyone was impatient, and it no longer seemed necessary for doctors and labourers to have four or five years Latin.

Hayes had of course learned his Latin at Christ's College, along with some useful French, and how to play Bach. His most obvious lack was in mathematics, but we should probably ask "what mathematics?" His acquaintance with the calculus was certainly minimal, though Watson-Munro's yarn about his cancelling the d's when confronted by dy/dx is pure calumny. Even in my day you didn't meet calculus until Maths II, and the Physics Honours syllabus noted that "an elementary knowledge of differentiation and integration would be required". Where Hayes was at home was in astronomy - spherical trig., least squares, probable errors, interpolation and the like which were more widely known among surveyors than in Maths departments. He also had a command of geometrical and graphical skills that are no longer fashionable, but were handier tools in fighting one's way through thickets of uncertain and incomplete data than analysis would be.

When Mrs Hayes chose the title for her book, I suspect that she took it for granted that things have improved. It may no longer be true that working in physics carries with it a mandatory sentence of 40

years imprisonment in a government office, but the chronic and debilitating weariness that afflicts the sufferer from petty bureaucracy seems likely to give place to an acute infection of philistinism that could prove fatal to science. In any age, freedom from ills seems too much to hope for. If we face different obstacles, at least the career of R.C. Hayes shows us how much can be achieved by quiet persistence. I owe him much as a teacher and as an exemplar. I am grateful for the chance to speak about him tonight, and hope that you will find inspiration and pleasure in reading the account of his life.