Professor and Mrs Aldis: Mathematics, Feminism and Astronomy in Victorian Auckland

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Abstract

The lives of a few people in late Victorian, and early 20th century, Auckland are sketched, in particular Prof W S and Mrs M Aldis. Their contributions to the development of astronomy and mathematics are noted, alongside their pioneering and enlightened stances of various social and moral issues.

Mrs Aldis

In 1990, at an antiquarian bookstall in Auckland, I paid 50¢ for a copy of *Consider the Heavens: A Popular Introduction to Astronomy*, by Mrs William Steadman Aldis (1895). In the Preface, she explained that she had written the book "under my husband's supervision" for "those who at present are quite ignorant of this great subject". Her book is an admirable, non-mathematical, elementary introduction to astronomy, embellished with pious quotations (many from the *Psalms*), and giving some interesting accounts of the historical development of astronomical knowledge. She told how the transit of Venus in December 1882 was hidden from almost all observers in Great Britain by clouds and storms, and yet (p 107) "an unscientific person" (clearly herself) "was rewarded by a parting of the clouds, revealing the round black spot clearly defined against the great disc, ruddy with sunset colouring. It made a picture which could never be forgotten, and there was something strange and weird in the thought that, after those quickly-fleeting moments, it would never again be seen by human eye till generation after generation should have passed away" — in June 2004.

In the account of lunar craters, identified as volcanoes, she wrote (p 68) that:

> *From a hill within a few minutes walk of the spot where these words are written, in the neighbourhood of Auckland, New Zealand, some twenty extinct craters may be counted, of different sizes, but none very large, all being within a circle with a diameter of about nine miles.*

She told of Copernicus's regret that he (living mostly in north Poland) had never managed to see Mercury, and she told that "in the North Island of New Zealand Mercury may be very well and frequently seen, partly owing to the clearness of the atmosphere, and partly because the short twilight gives longer opportunities for observation".

In Chapter 16 on Jupiter, she wrote that:

> *In New Zealand, for example, the possessor of a telescope, pointing it at Jupiter, may say to someone standing by, 'Now if you will look, in half a minute if my clock is right, in such a position you will see the moon which is at present eclipsed'. The person so privileged, placing himself at the telescope, will see the belted planet, and perhaps two or three moons, but in the place he has been told to watch there will at first be nothing visible. Then — 'There it is!' Out of the darkness the tiny light flashes out, showing itself just where expected, an unerring guide to the right time to a second. Years before, in England, the calculations were made which enable an observer at the antipodes to know just when and where to look for that small world four times as far away as the Sun.*

Writing at a period when very many writers on astronomy accepted Schiaparelli's stark drawings of "canali" on Mars as evidence of Martian civilisation, Mrs Aldis displayed commendable caution about the interpretation of observations of planets. She pointed out that Schiaparelli's observations of the rotations of Mercury and of Venus had not been confirmed by other observers, and that their periods must be regarded as unknown. In her discussion of Mars she emphasised some recent observations by Professor William Wallace Campbell (at the Lick Observatory), which indicated that Mars had far less atmosphere and water than earlier observers had estimated, and she made only a passing mention of "the presumed inhabitants of that planet". During the printing of the book she added a long footnote telling of a very recent paper (December 1894) by Campbell, who concluded that the Martian polar caps are probably solid carbon dioxide and that "such atmosphere as Mars still retains must ... consist of carbonic acid in the gaseous form". Few astronomers paid attention to Campbell's studies of Mars until 1912, when most astronomers accepted that the Martian canals were illusory and that its atmosphere is very much thinner and drier than the Earth's atmosphere (Crowe, 1986). In recent years, the spacecraft sent to orbit Mars and to land on it have confirmed the accuracy of Campbell's conclusions.

Who was Mrs Aldis of Auckland?

Mary Robinson was born in England, she married William Steadman Aldis in 1863, and they had a daughter Amy L Aldis. Mary Steadman Aldis wrote a child's introduction to arithmetic, which was published in 1882. Her husband was appointed as the first Professor of Mathematics at Auckland University College, and the family arrived at Auckland in 1884.

In Auckland, Professor Aldis quietly supported Mary in her campaigns on various social and moral issues, and the day came when a Presbyterian minister said "Mrs Aldis,

all the bad men in Auckland *hate* you"! (Nield 1983a). Edwin Harrow settled in Takapuna in 1881, and he named the district of Milford after his home town of Milford Haven (in Wales). Harrow was a vigorous controversialist, and in a polemical pamphlet telling of his disputes with the local government authorities he praised Mrs Aldis for condemning excessive expenditure on military matters — "I greatly admire the fearless Amazonian style of writing adopted by Mrs Aldis" (Harrow, 1890).

The suffragist campaign in New Zealand succeeded in 1893, when women won the right to vote. A writer in the *New Zealand Herald* (25 November 1893) commented that:

> *When the applications to register were first circulated amongst the women, the difficulty presented itself as to how the occupation of the would-be elector was to be described. A perusal of the rolls shows that the great majority are satisfied to be known as engaged in "domestic duties", whilst a number are snobbish enough to describe themselves as "gentlewomen". But there is one glorious exception, namely, Mary Steadman Aldis, who ignores all ordinary titles and sets herself down as a "writer". There may be many who have falsely dubbed themselves gentlewomen, but is there any of my readers who will dare to deny that Mary Steadman is a writer? I venture to say there is not one. Clearly, with the amount of "writing" which she always has in hand, it would have been an absolute mis-statement on her part to have brought herself amongst those who are engaged in "domestic duties". I suppose that the idea in the mind of this lady was that she must say what it was that chiefly occupied her time. If every woman was as uncompromisingly honest, I do not suppose that we should have so many who claimed "domestic duties". Some would have to say "Dressing myself".*

Professor Aldis

William Steadman Aldis (1839-1928), a brother of the inventor of the Aldis lamp, became the first Professor of Mathematics at Auckland University College, in 1884. At Cambridge University in 1861 he was the First Smith's Prizeman and Senior Wrangler, which means that he had won the highest prize in mathematics and had also gained the highest marks in the Mathematical Tripos examination. But since he did not conform to the doctrines of the Church of England he was barred from the careers open to Anglican Wranglers, and so in 1871 he became Professor of Mathematics (and later the Principal) of the College of Physical Science at Newcastle-Upon-Tyne. Professor Aldis was a cultured man and an effective lecturer, who was popular with his students, particularly with the women students (Nield 1983a), and he wrote several textbooks of high quality on diverse branches of mathematics (Aldis 1865,1870, 1872, 1882, 1887).

On the title page of Aldis's advanced text *A Textbook of Algebra* (Aldis 1887), he gave his address as University College, Auckland. He sent a copy to New Zealand's elder statesman Sir George Grey (then aged 75), who had a very strong interest in mathematics (Tee 1990). In response, Grey wrote the following letter to Aldis:

> *Kawau, Jan 24th 1888*[1]
>
> *My dear Aldis,*
>
> *Thank you so much for sending your "Great Book of Algebra". I only received it late yesterday evening, and at once set to work on it — I can see that it is the very work which I have been for years longing to see written — and that it will greatly facilitate the study of mathematics, and be an inestimable boon to the mathematical students.*
> *My regards to Mrs Aldis.*
>
> *Very truly yours,*
> *G. Grey*
>
> (Turn over)
> *P.S. Thank you for putting "University College Auckland" to so valuable a work. G.*

Aldis was very interested in astronomy (Aldis 1895, 1896, 1902). "He prevailed upon the University to import astronomical slides from California, and probably influenced the donation to the University of a telescope, which was then placed under his charge" (Nield 1983b).

In the 1950s, R A MacIntosh FRAS wrote a series of six articles (MacIntosh) about "The Astronomical History of the Auckland Province", in which he told of many people in Auckland before 1920 who had done some astronomical observing.

MacIntosh did not mention Professor and Mrs Aldis.

James Leask Sinclair

In "Part 5 — First Astronomical Society", R A MacIntosh remarked "Nor should we overlook J L Sinclair, whose sole remaining claim to fame is the fact that he was a prolific writer of letters to newspapers on astronomical topics".

In fact, James Leask Sinclair (1829-1895) deserves to be remembered for some additional reasons. He was born at Kirkwall (Orkney Islands) and he published anonymously a volume of *Orcadian Rhymes* (Kelso, 1864). He came to Auckland in about 1865, and worked as a journalist on the *Southern Cross* newspaper. In 1869 he

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1 W S Aldis Papers, Manuscripts Collection A-1, University of Auckland Library. Published by permission of the Librarian.

wrote two letters to Charles Darwin about mental development: Darwin's replies to Sinclair have not yet been found. In 1876 Sinclair became a teacher in Wellington, and later he taught at Newton West School and at Ardmore School. Sinclair died at Otahuhu on 12 November 1895 (Anonymous, 1895), bequeathing his library to Auckland University College. The professors selected 580 volumes (including some rare and valuable scientific books) for the library, and the residue were auctioned. The engraved bookplate for the Sinclair Bequest in the University of Auckland Library is affixed to David Gregory's edition of Euclid's *Opera Omnia* in Greek with Latin translation, a folio volume sumptuously printed by Oxford University Press in 1703; and also to the first biography of Darwin: G T Bettany, *Life of Charles Darwin*, Walter Scott, London, 1875.

Feminism

The University of Otago (founded in 1869) admitted women to all classes from its opening in 1871, and when the University of Otago got absorbed within the University of New Zealand that initiative was maintained. Kate Milligan Edger studied in Auckland for courses of the University of New Zealand, and in 1877 she graduated (in Auckland) as Bachelor of Arts. (Her graduation diploma is now displayed in the Library of the University of Auckland.) Only one woman had graduated before her anywhere within the British Empire — Grace A Lockhardt had graduated as Bachelor of Science from Mount Allison University, New Brunswick, in 1875. At Canterbury University College in 1880, Helen Connon became the first woman in the British Empire to graduate as Master of Arts. James Leask Sinclair's daughter Mary Muir Sinclair graduated MA at Auckland University College in 1890. Some women came from Australia to study at the University of New Zealand, before the Australian universities accepted women students (Gardner 1979).

In 1878 the University of London accepted women for all courses and degrees, but Oxford and Cambridge continued for some decades to refuse to grant degrees to women, even after Girton College and Newnham College had been founded for women to study at those ancient universities. Elizabeth Garrett (later Doctor Elizabeth Garrett Anderson) had to undergo a very prolonged struggle to become accepted as a medical practitioner in Great Britain, and she is now regarded as a major heroine of feminism. Her sister Millicent Garrett (1847-1929) married Henry Fawcett, Professor of Economics at Cambridge University, and their daughter Philippa Fawcett was born in 1867. Millicent Fawcett founded the Suffragist movement in Great Britain, and she devoted much effort to extending educational opportunities for women (Strachey 1931).

Philippa Fawcett studied at Newnham College in Cambridge, and in 1890 she gained the highest marks in the Mathematics Tripos Examination. However, Cambridge University refused to award her the title of Senior Wrangler, which was bestowed instead on the man who had gained the next highest marks. In 1905 Philippa Fawcett became the Assistant to the Director of Education for London County Council, and she still held that post in 1931 (Strachey 1931, page 205).

At the graduation ceremony held in the Auckland Choral Hall in August 1890, Professor Aldis spoke forcefully about that absurd situation, and *The New Zealand Herald* (30 August 1890) commented:

> *We sincerely trust that the suggestion thrown out by Professor Aldis at the meeting in the Choral Hall when the University degrees were conferred, will be acted upon without delay. Professor Aldis suggested that the statutes of the University should be so altered as to allow the degrees of BA and MA to be conferred on women who have passed such examinations as would have entitled them, had they been men, to receive these degrees. It appears that the conservatism of Oxford and Cambridge does not yet allow women to graduate, although they are graciously permitted to undergo the same examinations as men.*
>
> *As everybody knows, Miss Fawcett, the daughter of the late Professor Fawcett, has passed in the mathematical tripos in Cambridge with such marks as would have entitled her to rank above the Senior Wrangler. Now, Professor Aldis, himself a Senior Wrangler, says that he cannot imagine the existence of a human being above a Senior Wrangler so that Miss Fawcett is de jure Senior Wrangler of this year. What is proposed is that she should be offered the degree of MA in the University of New Zealand, the first University in the British Empire which conferred its degrees on women.*
>
> *This would be a graceful and appropriate compliment and there can be hardly a doubt that Miss Fawcett would accept it. It would also be a hint, and a pretty broad hint, to the Cambridge men, that we think them rather behind the times. A few such hints might produce some effect on the British intellect in the course of a quarter century or thereabouts, which is the usual time required for a new idea to penetrate the British skull and reach the British brain.*

Such radical statements by Professor Aldis did not improve his standing with some powerful people in Auckland.

The Aftermath

Sir Maurice O'Rorke, Chairman of the Council of Auckland University College, was angered by various uncompromising statements by Professor and Mrs Aldis, and by a power struggle between the Council and the Professorial Board. In 1892, Professor Aldis reported to Council that he had ridden to the College, to find that all four stables at the College were occupied by the polo ponies of O'Rorke's son. O'Rorke responded

by accusing Aldis of neglecting to give some of his advertised lectures. Thereafter the dispute escalated, and O'Rorke spitefully sacked Professor Aldis. Keith Sinclair devoted Chapter 3 of *A History of the University of Auckland* to an account of that disgraceful episode (Sinclair 1983).

Campaigns in support of Professor Aldis were conducted in New Zealand (supported by Sir George Grey, Thomas Frederick Cheeseman, Sir William Fox, Sir John Logan Campbell, Reverend John Kinder, and Sir Robert Stout) and in Great Britain, but in 1893 O'Rorke employed his casting vote as Chairman to confirm his sacking of Professor Aldis.

Auckland University College was founded in 1883 and the library began in 1890, but it long remained very meagre (Sinclair 1983, page 38). Sir George Grey (1812-1898) gave many scientific books to Auckland Public Library for use by the professors. Grey retired to England in 1894, and he continued to send expensive scientific books to Auckland Public Library.

52 Stanhope Garden,[2]
S. Kensington,
21st December 1895.

My dear Mrs Aldis,

I have now obtained for the Auckland Library the mathematical works that Aldis wanted, as far as they are published. But some of them, by La Place, have not yet been published. They are now going through the press, and will be forwarded to the Library when published. There is also some difficulty in regard to the works of Lagrange.

I forgot to say that I have purchased all of Whiston's works which could be obtained, and one or two other mathematical works which will be curious and interesting.

I am writing to ask the Librarian to obtain permission to allow Aldis to take any of the mathematical works from the Library and use them at his own home, keeping them for such time as he requires for his own perusal. This is an absolute necessity for works so especially difficult to render them of any advantage whatever to a person who is not allowed free access to them at all times while he is doing so thorough and arduous a course of study.

I have never yet thanked you for the work you so kindly lent to me. I was exceedingly pleased by various portions of it, which I read when anxious to have a peaceful evening of philosophical enjoyment.

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2 Auckland Central City Library, NZ MS 4113 (11). Published by permission of the librarian.

With kindest regards to all of you.

Truly yours,
G. Grey

The Grey collection in Auckland central City Library contains the 19th century editions of the Collected Works of the mathematicians Laplace and Lagrange, which include many important astronomical works. There are also 15 books on astronomy, theology and geology by Isaac Newton's disciple William Whiston, who succeeded Newton as Lucasian Professor of Mathematics at Cambridge University, but was dismissed for heresy.

Professor and Mrs Aldis returned in 1897 to England. Mary Aldis had been in poor health for some years, and she died in June 1897.

Professor Aldis published some important mathematical and astronomical tables which he had calculated to high accuracy (Aldis 1899, 1900, 1902), and Leslie John Comrie (FRS, FRAS, FRSS, Honorary FRNZAS, Honorary FRSNZ and Life Member of the Auckland Astronomical Society) gave them his highest accolade: "It seems probable that no error exists" (Comrie 1962, page 783). Later, Ross Barnett re-computed the tables in (Aldis 1900), and he reported that "every digit is correct for his complete table"! (Barnett 1982).

In the Boer War (1900-1902), Louis Botha led the Boer men in resisting the armies of the British Empire, whilst the Boer women and children were herded into the concentration camps, invented by the British to prevent them from helping their menfolk. Millicent Fawcett supported the Boer War, but she examined those concentration camps and her report aroused much concern, so that the suffering of the women and children did get ameliorated somewhat (Strachey, 1931). After the Boers were conquered, Professor Aldis was thanked by Louis Botha for his support and sympathy.[3]

Harrex Hotel, Strand
14.11.02

W. Steadman Aldis Esq.
Dear Mr Aldis,

I am in receipt of your letter of 13th inst, and thank you most sincerely, not only for your contribution to our fund, but very much also for the very kind expression of sympathy for our poor people.

Yours very sincerely,
Louis Botha.

Professor Aldis preached occasionally and assisted with examining, but he never held another teaching position (Nield 1983a, 1983b). He died at the age of 89 in 1928, and in 1940 Amy L. Aldis gave to the Library of Auckland University College a set of

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3 (Auckland Central City Library, NZ MS 4113(4), published by permission of the librarian.)

papers about her father (W.S. Aldis Papers), and she gave to Auckland Public Library some letters to her father from Sir George Grey and others.

The Department of Mathematics at the University has, since 1993, honoured the memory of Professor Aldis by an annual Aldis Lecture.

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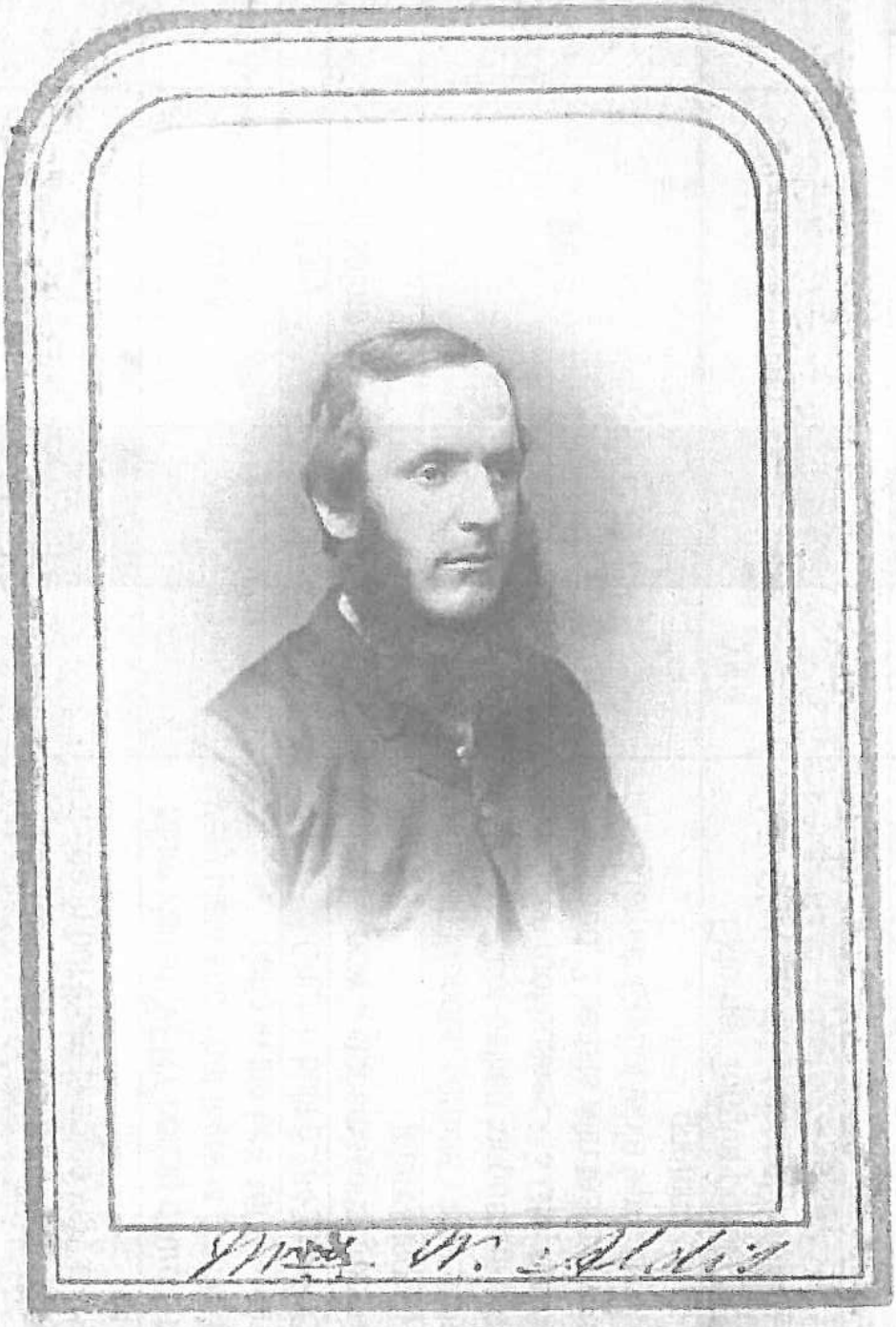

Uncle William - Senior Wrangler at Trinity College Cambridge - later taught in Auckland NZ.

Mention should also be made of Laetitia Aldis (1835 -1938), the sole surviving daughter of John and Laetitia. She nev er married, attained the ripe old age of 103 and left a Will dated 1925 and proved 1938.