Southern African science in the year 1907–100*n*

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In spite of the continuing economic depression in South Africa a hundred years ago, some important scientific endeavours were either launched or completed. A century earlier, proper standards for the delivery of medical services and dispensing of medicines were introduced in the Cape Colony.

1507

Martin Waldseemüller of St Die in Lorraine, France, this year published the first of two great world maps in his *Cosmographiae* These maps had an immense influence on all later cartographers of Africa, particularly on the Dutch School, represented by Ortelius, Mercator, Plancius and others. Waldseemüller's depiction of Africa was based mainly on the manuscript nautical charts of Cantino (1502) and Canerio (1502); however, he retained his faith in the speculative geography of Ptolemy by including two lakes with their rivers arising in the Mountains of the Moon in the centre of the continent.

1607

Captain David Middleton, on his way to the East in the *Consent,* arrived in Table Bay on 16 July. During his stay of two weeks, he visited Robben Island (then known as Penguin Island) and described its fauna in glowing terms: 'In mine opinion, there is not an island in the world more frequented with Fowle and Seales… It hath Pengwins, Wilde-geese, Ducke, Drake, and Pellicanes, and divers other Fowle…' The island was an important source of food for seafarers at the time and the description probably reflects Middleton's culinary needs as much as his interest in natural history.

1707

A paper entitled 'An account of the Cape of Good Hope', by John Maxwell, was read before the Royal Society of London this year and published in its *Transactions.* It was probably the first description of the colony in an English language scientific journal and was based on Maxwell's own observations. However, his brief account was no improvement on earlier descriptions by Johan Schreyer (1679) and others. Most of Maxwell's paper was devoted to a description of the Khoi and their culture. Finding that they did not partake in European industrial and agricultural pursuits and did not share his own Christian beliefs, he concluded that 'they are the most lazy and ignorant part of mankind', a view held by many of his contemporaries. He furthermore advanced a novel hypothesis to explain their uncivilized state: Africa was originally peopled from Asia via the Suez land bridge, he argued, hence the Khoi, inhabiting the opposite side of the African continent, had experienced least contact with the more civilized part of the world.

1807

In January 1807, the British authorities at the Cape issued their first medical legislation, re-creating the Vaccine Commission that had been established under the rule of the Batavian Republic (1803–1806). Drs Alexander Baillie, L.G. Biccard and F.L. Liesching served on the commission. They made a determined effort to achieve the voluntary vaccination of the whole population against smallpox. A minor outbreak of the disease in June, which was easily suppressed, helped to spread their message.

Meanwhile the Governor had requested Dr Baillie to form a committee and report on the apothecary shops in Cape Town, in view of complaints that medicines of poor quality were sold to the public at exorbitant prices. Assisted by Drs A.L. Emerson and William S. Holland, Baillie reported on 3 April that the complaints were justified and drew attention to the 'disgraceful state of the medical art in the Cape'. As a result of his report the Governor issued a proclamation on 24 April aimed at preventing the sale of drugs or practising of medicine by unqualified persons. This proclamation, which has been hailed as the single most important advance in the history of medicine in South Africa, created a Supreme Medical Committee consisting of Baillie, Emerson, and Biccard. Every person practising as a physician, surgeon or apothecary had to submit their qualifications to the committee, or else pass an examination. A list of candidates licensed to practise was published in the *Cape Town Gazette* in August. It included the names of four physicians, nine surgeons, and nine apothecaries. A number of additional persons were allowed to continue to practise as surgeons in the outlying districts only, despite their lack of formal qualifications, on the basis of their long experience in the colony. Other measures recommended by the committee, gazetted a week later, helped to regularize the dispensing of medicine. The Supreme Medical Committee continued to function until 1821.

In May 1807 a new Governor assumed duty at the Cape. He was the young du Pré Alexander, Earl of Caledon (1777–1839). In June he reported to the Colonial Office on the state of the whaling industry at the Cape. According to his information the best time for whaling was about the month of February; the whales then moved to Saldanha Bay, where some could be caught during April and May. At the beginning of winter the females entered Table Bay and Simons Bay for calving. He estimated that about 1350 whales might be caught annually and suggested that whalers should be encouraged to make the Cape their base of operations for southern waters so as to stimulate the colony's economy.

The famous Swedish botanist Carl P. Thunberg (1743–1828), who travelled and collected plants at the Cape during 1772–75, this year published Part 1 of his *Flora Capensis.* Parts 2 to 4 followed in 1811, 1813 and 1820, respectively. It was his best-known work and the first comprehensive treatment of the Cape flora. Together with his other publications on the plants of the Cape, it earned him the appellation 'father of South African botany'.

1907

As a result of the continuing economic depression in the Cape Colony, the scythe of retrenchment this year struck the post of Government Biologist. Its incumbent, John D.F. Gilchrist (1866–1926), became professor of zoology at the South African College. The marine aquarium that Gilchrist had established at St James was put under the control of the South African Museum, which managed to maintain its educational functions despite the museum's own difficult financial position.

The first regular measurements of the intensity of solar radiation in southern Africa were initiated at the Transvaal Observatory, Johannesburg, this year and

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were continued to 1915. Both total solar radiation and sky radiation were continuously recorded by means of a Calendar recorder, standardized periodically with the aid of an Angström pyrheliometer. Subsequently, measurements of solar radiation were carried out in Namibia during 1925–1931 and in South Africa from 1937 onwards.

Sydney S. Hough (1870–1923), who had been chief assistant at the Royal Observatory, Cape of Good Hope under Dr David Gill, succeeded the latter as director of the Observatory on 20 February. He was the first person in this position with previous experience of the institution at the time of his appointment. Hough was an authority on celestial dynamics and an outstanding mathematician, with a special interest in the dynamical theory of the tides. His period as director, until his death in 1923, was marked by solid achievement, mainly by continuing the programme of work initiated by his illustrious predecessor. A genial but shy person, he was elected president of the South African Philosophical Society (forerunner of the Royal Society of South Africa) this year. The position of chief assistant, left vacant by Hough's promotion, was filled by Jacob K.E. Halm (1866–1944). He too had an early interest in the mathematical theory of the tides (particularly in lakes) and arrived from the Royal Observatory, Edinburgh, to assume duty early in July.

The Transvaal University College, situated in Johannesburg, this year started classes in Pretoria and established the nucleus of a science and arts department there. This development effectively created two separate educational institutions, controlled by a single council, which was enlarged by the addition of Pretoria representatives. The two institutions eventually developed into the University of the Witwatersrand and the University of Pretoria.

Ernest C. Chubb (1884–1972), a young British naturalist, was appointed as zoologist at the Rhodesia Museum (later the National Museum) in Bulawayo, where the geologist Frederic P. Mennell (1880–1966) was the only other permanent member of staff. While on a visit to Southern Rhodesia (now Zimbabwe) in 1906, Chubb had explored the Matopo Hills by bicycle and with Mennell discovered a magnificent cave on the southern edge of the Matopos National Park. Following his appointment early in 1907, he became active in the Rhodesia Scientific Association and during his four years in Bulawayo published at least ten papers dealing with the birds and mammals of southern Africa. He later became curator of the Durban Museum.

Thomas R. Sim (1858–1938), Conservator of Forests of Natal Colony, published an impressive tome entitled *Forests and Forest Flora of the Colony of the Cape of Good Hope* in 1907 – the first comprehensive work on South African trees and for many years a standard work of reference on the subject. He resigned his post this year because of differences with Natal's minister of agriculture, who was more inclined to encourage the planting of maize than of timber, and established a flourishing nursery, sawmill and forestry consultancy.

In German South West Africa (now Namibia), the Conservator of Forests for Damaraland, C. Poggé, was instructed by the authorities to circularize all government offices, missionaries and voluntary societies, requesting them to collect material and send it to Windhoek for the 'Landesmuseum' (State Museum) – a name used for the first time in Poggé's circular of 1907. His action soon bore fruit. The railways offered to transport donations free of charge and much material was presented also by private individuals. A museum committee was formed, with Captain Zuelow as its first chairman. Poggé, who represented German South West Africa on the council of the South African Ornithologists' Union at this time, was the son of the well-known African traveller and collector, Dr Paul Poggé.

The third and final report of the Geological Survey of Natal and Zululand, carried out by William Anderson (1860–1915) during 1898–1904 was published in London this year. Anderson made a major contribution to knowledge of the geology of the Lebombo Mountains in this report, which later research has shown to be accurate in most details. He also firmly established correlations between the glacial conglomerates and coal seams of Natal, on the one hand, and the corresponding strata in the Cape Colony. Meanwhile geological surveying continued apace in the Cape Colony (by A.W. Rogers and A.L. du Toit) and in the Transvaal Colony (by H. Kynaston, E.T. Mellor, A.L. Hall and W.A. Humphrey).

Colonel William G. Morris (1847–1935), who had been involved in the geodetic survey of South Africa since 1883, completed the reduction of the measurements made in connection with the geodetic survey of the Orange River Colony and the Transvaal and returned to Britain early in 1907. A report on the work was included in the fifth and final volume of *Reports on the Geodetic Survey of South Africa* (London, 1908). Morris was deeply disappointed that the secondary triangulation of the territories could not be carried out owing to a lack of funds. His contribution to surveying in South Africa, for which he received a knighthood, was extensive and of lasting value, carried out with enthusiasm and devotion to duty. Meanwhile Captain H.W. Gordon (born 1871) of the Royal Engineers completed the survey of a connecting chain between the geodetic surveys of the Transvaal and Southern Rhodesia (now Zimbabwe) in January 1907. This survey completed a continuous arc of meridian stretching from the Cape Colony to the southern shores of Lake Tanganyika. The accuracy of Gordon's survey, particularly the azimuths and heights, was somewhat disappointing, hence in 1930 the International Union for Geodesy and Geophysics decided to re-survey the connection.

Dr George W.B. Daniell (1864–1937) became the first medical person to be appointed as an anaesthetist to a hospital in South Africa, 61 years after a general anaesthetic (ether) was first used in this country. He came to the Cape Colony from England in 1889 and, after practising at Caledon for many years, returned to England to specialize in anaesthetics. His appointment as anaesthetist to the Johannesburg General Hospital lasted but a short time before he returned to general practice. Daniell has been called an 'insatiable gadgeteer'. Some of the apparatus he modified or designed was displayed in the Anaesthetics Museum of the British Medical Association in 1910.

James Drury (1875–1962), Scots-born taxidermist at the South African Museum in Cape Town, this year succeeded in making complete casts of live humans. The director of the museum, Louis Péringuey, had asked him to develop a technique for making true to life models of the San, who were thought to be a dying race at the time. After first experimenting with an employee of the museum to perfect his technique, Drury made his first cast of a Bushman in the De Beers convict station at Kimberley. His technique consisted of moulding the person with plaster of Paris and then casting from the mould. The mould had to be broken to retrieve the cast. Following his initial success, it was decided to make casts of various regional groups of San. Between 1907 and 1923, Drury undertook nine expeditions during which he made dozens of casts and recorded the physical features of the groups he visited. His models were not keen to be encased in plaster and had to be paid in cash or goods. Drury's very life-like casts are a unique possession of the South African Museum and are deservedly famous. □