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SIR WILLIAM MACGREGOR HENDERSON
17 July 1913 — 29 November 2000

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BY EDWARD BODEN

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W. M. ‘Gregor’ Henderson belonged to the great tradition of veterinary involvement in the control of epizootic diseases that was such a feature of the middle part of the twentieth century. He was one of the pioneers of research into the virology of foot-and-mouth disease and the development and application in the field of vaccines to control it. Throughout his career, first as scientist, latterly as administrator, he maintained a close interest in the animals to whose wellbeing research was directed and in the work of the practising veterinary surgeons who ultimately translated veterinary science into veterinary practice.

EARLY DAYS

When Gregor (he was always known by that name) was a schoolboy at George Watson’s College, Edinburgh, one of the masters, despairing of his class’s lack of understanding of some elementary scientific principle, declared that he would lick the boots of anyone who was elected to the Fellowship of The Royal Society. Thirty-seven years later, when Henderson achieved that honour, the sceptical dominie was no longer around to carry out his promise.

Henderson had two sisters; as the only boy, his father, the manager of a printing firm, had originally hoped that Gregor would follow him into that industry. Two things militated against that. One was that Henderson senior lost his job at a crucial time; the other was that young Gregor had not the slightest inclination towards printing as a career. While he was still at school, Henderson decided he wanted to become a scientific research worker. However, although he was only about 14 years old, he was already possessed of a canny intuition that he was to show throughout his life. He realized that research might not be an enduring course of activity or source of income. Consequently, he decided to qualify in one of the science-based professions so that, in the event that he became disenchanted with research, he would be able to earn a living.
Inclined towards the practice of medicine but undecided at first whether to take up the human or veterinary application of that discipline, he finally plumped for the latter. He made his decision on the basis that if an animal was suffering from an incurable disease, it was put down humanely and its suffering ceased. Human patients, on the other hand, had to be kept alive by all possible means, which meant often that their suffering was prolonged.

In 1931, he enrolled at the Royal (Dick) Veterinary College, Edinburgh, to study for the diploma in veterinary medicine and surgery of the Royal College of Veterinary Surgeons, the diploma being the only means of qualifying to practise. Realizing that a recognized scientific degree was essential if he was to have any hope of pursuing his research ambitions, he took concurrently a course at the University of Edinburgh (of which the veterinary school was only an associated college at the time) that led to the degree of BSc (Veterinary Science).

The veterinary school and the university were the best part of a mile apart and Henderson had to work hard physically as well as academically in pursuit of his dual courses. Having often only five or so minutes between classes at the different establishments, he had to run the distance. He also managed to help his student budget by breeding guinea pigs, which he sold to the university.

During this period, he struck up acquaintance with several young medical researchers through the good offices of one of his sisters, who was secretary to the professors of pathology (A. M. Brennan) and bacteriology (J. S. Mackie). This greatly stimulated his interest in bacteriology and virology to the extent that he tried, unsuccessfully, to switch his degree course.

What he did do, however, having gained his diploma as a veterinary surgeon in July 1935, was to spend time in the final year of his degree course, during which there was a minimal requirement to attend lectures, working as an unpaid assistant in the bacteriology department of the Animal Diseases Research Association, Moredun, under its head, Dr W. S. Gordon. Concurrently, between October 1935 and March 1936 he was engaged as a demonstrator in pharmacology to the veterinary students.

Keen on sports (except cricket, for which he claimed he had no aptitude), he played rugby in the College 1st XV and was commissioned into the Territorial Army Reserve of the Royal Army Veterinary Corps—one of the very few commissions that was signed by King Edward VIII during his short reign. This latter experience he later recalled as one of the most enjoyable of his young life, both for the camaraderie and for the opportunity of working with the Corps’ horses.

Henderson’s career proper began immediately after he graduated, when he was taken on as assistant to Professor George F. Boddie, holder of the chair of medicine and pharmacology in the veterinary school. His duties at Edinburgh included regular attendance at the college’s veterinary practice. The experiences here, in what he was to call his ‘James Herriot years’, left Henderson with a fund of anecdotes and an affection for the practising side of the veterinary profession that stayed with him throughout his career.

The two years he spent as Boddie’s assistant gave him his first real taste of veterinary research. Although he was disappointed to find there was no real encouragement to pursue his own interests at the ‘Dick’, it afforded the opportunity to spend a period (at his own expense) at the Ministry of Agriculture veterinary laboratory at Weybridge. This experience inspired his own efforts, initially in studying the strongyles, the economically important parasite of ruminants that were of concern to the Weybridge laboratory at the time.
After a couple of unsuccessful applications for posts in which he could have furthered his ambitions as a researcher into viruses, Henderson succeeded in gaining appointment in 1938 to the staff of the Animal Virus Research Institute (AVRI), Pirbright. His arrival increased the scientific staff of the Foot-and-Mouth Disease Research Committee of the Ministry of Agriculture by 25%—from three scientists to four.

Henderson recalled that the research staff shared two laboratories between them. In those days there were no sterile rooms, nor even safety cabinets. The room to which he was allocated had an open fire that, he remarked, had the incidental benefit of creating a negative pressure within the room, and exposing the exhausted air to heat—at least in winter.

Primitive facilities notwithstanding, Pirbright was to prove a fertile environment for Henderson and his co-workers. Research into the nature and transmissibility of foot-and-mouth disease (FMD) virus was the prime activity. However, many of the subsidiary techniques used to facilitate animal studies and the anatomical structures involved in their replication and distribution in the body had still to be established. Henderson’s first publications described his work in that preparatory field.

Henderson spent his early Pirbright years on the typing of field strains of FMD virus. The only technique available at first was to adapt the virus obtained from outbreaks to guinea pigs and then to perform a challenge test of the resistance of guinea pigs immunized against each of the three strains then known. Assuming all went well, the procedure took four to six weeks. (He gave his colleague John Brooksby, with whom he worked closely on typing strains, the credit for developing the complement fixation test which superseded that laborious procedure, reducing the time taken to hours rather than weeks.) The procedure of intracutaneous injection for diagnostic tests in cattle had been little used at that time but was necessary in various studies at the institute. Henderson investigated the appropriateness of different sites for injection and their effectiveness in assessing the results (2, 4, 8).*

The need to anaesthetize cattle to study the infectivity of samples of virus material by injection into the epidermis of the tongue led Henderson to the investigation of suitable narcotics. He concluded that thiopental sodium (Pentothal) was the best drug available, and the technique he developed became the routine procedure for inducing the rapid immobilization and recovery of bovines (3). Another of what he referred to as his ‘spin-offs’ was Henderson’s important work on the drainage of the lymph nodes of the head and neck of cattle (6).

A major obstacle to be overcome before real advances could be made in the development of FMD vaccines was the need to differentiate between the FMD virus and that responsible for causing vesicular stomatitis, a less serious cattle disease that causes superficially similar lesions. This, too, was one of Henderson’s successful projects (7).

Such studies were a prerequisite to progress in what was to be one of his major contributions to virology. This was his work on the quantification of FMD virus, for his thesis on which he was awarded a DSc in 1945 (5). This, and his Agricultural Research Council monograph on the subject, published in 1949 (9), represented what his colleagues adjudged ‘gold standard’ research. That work marked out Henderson as a scientific worker of the first class. Until a reliable and quick method of estimating the virus content of the material used in their preparation had been devised, it was not possible to know whether a vaccine was safe to use

* Numbers in this form refer to the bibliography at the end of the text.
or to determine its potency so that one vaccine could be compared with another. Henderson’s development of a virus titration method of estimating potency, using the tongues of live cattle, became a standard procedure. The fact that it has since been superseded takes nothing away from its ground-breaking importance at the time.

Henderson faced several problems in his efforts to develop a reliable, repeatable technique for the quantitative assessment of FMD virus strains. Guinea pigs were, of course, readily available and convenient to use. However, they had a major drawback in that they could be used only with guinea-pig-adapted strains of FMD virus, which were unpredictable when the results were applied to cattle. Henderson established by comparative tests on the same virus-containing blood that the results in guinea pigs gave no indication of the virus content of the blood as shown by tests in cattle. Other workers had shown that the widely used method of quantifying virus, by propagation in eggs, was ineffective for FMD virus.

As far back as 1898 the German workers Loeffler and Frosch had made the first quantitative study of FMD virus in calves with prepared dilutions of bovine vesicle lymph for inoculation, probably by applying diluted lymph to scarified mucous membrane of the lips. A similar method had been used in 1938 at the German Foot-and-Mouth Disease Institute, although details of the technique and results were not known to Henderson.

Thus the potential for using live cattle as test animals had been established. But until it could be shown that several viral dilutions could be tested on a single animal the number of cattle required for tests would obviously make the procedure economically unviable.

Having demonstrated that the tongues of cattle provided a site for inoculation that was both accessible and provided results, in the form of raised blebs of varying size according to the amount of virus present, that could be ‘read’ comparatively easily, Henderson began the laborious process of developing and standardizing a suitable technique. Using virus suspensions of different, known, dilutions inoculated by scarification at different sites on the tongue he developed a procedure by which the tongues of two cattle were each inoculated at five sites with four dilutions of virus. This provided ten observations for each of the four dilutions.

A similar method was used for comparing the potencies of two viral suspensions. This involved the use of four cattle, inoculating each tongue with both suspensions at five sites instead of using two cattle for each suspension. A more precise result was thus obtained.

As well as the intellectual insights required in developing the scientific procedures involved in their estimation, the methods used to assay samples of virus material involved a great deal of physical effort. It was necessary to examine the tongue of each inoculated steer three times in every 24 hours, usually at 1000, 1600 and 2200. The cattle were kept at three separate sites. Each time a cattle compound was visited, clothing had to be changed and personnel showered on entering and leaving. Henderson himself visited each site at least twice a day. Usually two people were present for the tongue examinations but Henderson always did the 2200 examination of the cattle alone—something that would hardly be allowed under health and safety regulations today. He noted that it took ‘quite a long time’ to get through the procedures of the final examination by himself. That ‘quite a long time’ was needed is apparent from Henderson’s description of what was involved (9):

The tongue is grasped near the tip with piece of rough cloth such as towelling. It can then be pulled sufficiently far out of the mouth to make the portion between the tip and the prominence of the dorsum readily accessible for inoculation. The needle attached to the syringe is used to make tracks in the thick epidermal covering of the tongue, the inoculum is injected at the same time as these tracks are made and in this way the blebs are occasionally raised.
The occurrence and size of those blebs depended on the strength of the virus suspension and the susceptibility of the animal.

The animal had, of course, to be restrained or anaesthetized during this procedure.

Studies on the preparation of an effective FMD vaccine were to move forward apace when, in January 1948, a scientist from Mexico arrived at Pirbright with specimens of tongue epithelium from an animal infected with FMD, which had broken out in that country after an absence of many years—probably brought into the country by fighting bulls imported from Spain. From this specimen it was discovered that, as well as the three immunologically distinct types of FMD (O, A and C), there were within each type several strains with different antigenicity (1). This knowledge provided an important impetus to vaccine studies. The collaboration with Mexico and, later, South American countries that was thus initiated was eventually to lead to a major change in the direction of Henderson’s career.

Considerable attention in foot-and-mouth disease vaccine research at that time was aimed at developing a modified live virus vaccine that would induce a stronger and longer-lasting immunity than the inactivated virus vaccines. Various routes were explored to modify the virus. At Pirbright, the inoculation of unweaned white mice was investigated (17), as was inoculation into the embryo in hen’s eggs (15). Both methods proved unsuccessful, as did transmission through day-old chicks and young rabbits at centres in Venezuela and Brazil. When, later, techniques improved sufficiently to offer real prospects of producing effective live vaccines, their introduction was opposed because of fears that the live vaccines might themselves carry infection. So efforts were concentrated on improving the inactivated vaccines, with much success.

A MOVE TO SOUTH AMERICA

By 1955 Henderson had progressed to the post of assistant director of AVRI; he was not, however, to stay long in that position. He was head-hunted by the Pan-American Health Organization and offered the directorship of the organization’s Foot-and-Mouth Disease Center in Rio de Janeiro, then fairly newly established. The post was clearly a challenge. On the one hand it presented a wonderful opportunity to put into practice the application on a large scale of the vaccines on which he had worked. On the other, it meant leaving one of the world’s premier virus research institutes and stepping out of the mainstream of scientific research for a new job in a new country, starting virtually from scratch in a fresh enterprise. There was the further consideration that, as a man with a young family to provide for, there was no guarantee either that the move would prove successful or that, after changing his career direction so abruptly, he would be able to pick up the traces should he decide to return to the UK.

However, he made his decision and moved, with his family, to Argentina. He described the Pan-American FMD Center as ‘but a small bud on the tree of the United Nations’, and found a polyglot staff of 13, variously of Argentinian, Chilean, Uruguayan, British, Belgian and Russian origin. Henderson was faced with a mammoth task, but one on which he embarked enthusiastically. The centre was responsible for identifying suspect FMD viral strains from the whole of South America. Henderson was thus involved in visiting FMD laboratories throughout the continent, encouraging the training of personnel in those outposts and organizing vaccination campaigns. It was an enormous undertaking. To help facilitate the training process
over his far-flung area of responsibility, he made a film illustrating the principles of control and techniques of vaccination; it was widely used to educate technicians and farmers.

He made it his business to become proficient in both Portuguese and Spanish to make it easier to communicate with local people. He relished the travel involved, not only across the South American continent but also to the USA for his regular visits to Washington to report to his head office.

He introduced the ring vaccination system, effective in areas where FMD is endemic, by which infected cattle are surrounded by a ‘ring fence’ of vaccinated cattle within a given radius of an outbreak to contain the spread of the disease. Where the system was applied properly, the benefits in cattle health and economics were substantial. The problem was that the cattle population was enormous, the area covered was vast, resources were limited and each country operated its FMD programme in its own way. Although FMD vaccines were produced in several South American countries, effective quality control was often lacking. There was often no systematic use of vaccine. There was only rarely any coordination of vaccination programmes in neighbouring countries. And, almost always, efforts were bedevilled by the shortage of funds and administrative support for the programmes.

By 1962, however, Henderson was able to report substantial progress in many countries in strengthening programmes for the prevention or control of the disease (10). In Argentina, where, along with his base, Brazil, his efforts had been particularly fruitful, a national campaign for the eradication of FMD was begun in 1961, supported by adequate funding, operating autonomously under the aegis of the Argentinian Ministry of Agriculture. The National Commission for the Eradication of Foot-and-Mouth Disease had a nucleus of full-time veterinary staff and was able to establish zones of compulsory vaccination based on three vaccinations per year. Quality control of Argentinian vaccine production was put in place, with routine tests for virus type, quantification and antigenic potential of the products. The results for the prosperity of the Argentinian cattle industry were substantial.

Henderson, a modest man, felt that his efforts ‘did not achieve a great deal for Argentina’. The Argentinians thought otherwise. He received academic and national honours and for the rest of his life was held in the highest regard, regularly returning as a guest of the Ministry of Agriculture or as a consultant. And the sound basis on which he set up the system for the control of FMD served as a lasting memorial to the excellence of his work in South America.

That regard served him in very good stead on his last visit to Buenos Aires in 1983. He was there in connection with a tour of the FMD production facility by then established by the Wellcome Foundation in Argentina. His duties concluded, Henderson prepared for departure. As he walked from his hotel to the Ministry of Agriculture to say his farewell to the director of veterinary services, Dr Emilio Germano, an old friend, he noticed much excitement in the city—car horns sounding, flags displayed from windows. When he entered the director’s office, he was greeted by a somewhat agitated Dr Germano who told him that Argentina had just invaded the Falklands (Las Malvinas), and advised him to return to his hotel immediately, pack his bags and await further instructions. This Henderson did. After an hour or so, he was informed that two men wanted to see him. He went to the lobby. ‘We have a car waiting. Come with us,’ he was instructed. Not without misgivings, Henderson complied. They set off in the direction of the airport but after travelling part of the way pulled in behind another car. He was told to get in it. By this time rather rattled, Henderson’s apprehension was relieved when he recognized the driver as an employee of the Wellcome Foundation. He was driven further, only to stop behind another car to which he was again transferred. This time they went straight to
the airport. There another Wellcome employee rushed him onto a plane waiting to take off for the UK and saw him safely to his seat. That was the last flight out of Buenos Aires until after the end of hostilities.

RETURN TO THE UK

One of the factors weighing in favour of Henderson’s acceptance of the post in Argentina had been that his family had their travel between the UK and South America paid for. For his children, two of whom were being educated in Scotland, this privilege would cease when they left school. The fact of that age approaching was, he said, the principal factor prompting his decision in 1965 to return home. Another, unstated, consideration might well have been that he thought he had taken his work in South America as far as he could at that time.

When he decided to resign, he did so without a job to go to—but he did have contacts. Shortly before he was due to give up his post in Rio he attended a meeting in Paris of the Office Internationale des Épizooties, routing his return journey via London. While there he contacted a former colleague who was working at the Agricultural Research Council (ARC) in Portland Place. Henderson’s reputation as both scientist and administrator had preceded him and by the end of his short visit he had been offered, and accepted, the post of head of the department of microbiology at the ARC’s Institute of Research on Animal Diseases (IRAD) at Compton, Berkshire, with a view to succeeding the institute’s then director, Dr W. S. Gordon, who was due to retire shortly. It was something of a coincidence that it was Dr Gordon to whom he had acted as unpaid assistant back in his student days in Edinburgh.

THE COMPTON YEARS

Thus began the service with the ARC that was to last until Henderson’s (first) retirement and was undoubtedly the pinnacle of his career. After a short time at the department of microbiology, he succeeded Gordon as director of IRAD in 1967. Gordon had died on the very day of his retirement, having been ill for some time previously. On his first day as director, Henderson called a staff meeting at which he sympathized with them for the unavoidable lack of direction under which they had worked during his predecessor’s absence through illness and indicated that he would ‘wind things up’. His words rebounded at the staff concert later when much play was made of ‘MacGregor’s lost key’ and his efforts to ‘wind up the institute’s clock’.

Henderson was fortunate to have come to the IRAD at a time when its activities were expanding considerably. The vigour and experience that he brought to the directorship was given opportunity for expression. One of his first tasks was to plan for the construction of a new microbiology building and staff accommodation that doubled laboratory and support facilities. Facilities were provided for the production of gnotobiotic calves and piglets. Staff numbers increased, eventually reaching a total of 324. The animal population of the institutes grew to 1184 cattle, 516 sheep, 222 goats, 993 pigs and some 15000 small laboratory animals. Although his own work as a hands-on scientist was now largely behind him, his talent for administration, which had been developing alongside his research work, now came to the fore. He was able to advise, guide and provide facilities for his colleagues’ endeavours at IRAD.
The institute’s research programme at this time fell into two main categories: first, the study of conditions of importance in dairy cattle, including brucellosis, acetonaemia and disorders of mineral metabolism, and second, research into diseases of young stock, concentrating on those conditions likely to occur under intensive production systems, particularly respiratory and enteric infections of calves and pigs. A long-term project on scrapie in sheep, with the establishment of flocks of predictable susceptibility (16), formerly funded by the United States Department of Agriculture, continued for some time under Henderson. Clarification of some of the unusual features of the transmissibility and the pathology of the disease were felt at that time to be of importance both in relation to scrapie and to the possible aetiology of other slow, degenerative disease of the nervous system of animals and man. Unfortunately, the project was ultimately abandoned at Compton for financial reasons. The arrival of bovine spongiform encephalitis some 20 years later led to the revival of that work, emphasizing the farsightedness of the Compton research.

While Henderson himself continued to be associated with particular virus research projects, such as studies on the growth of adenoviruses in pig kidney cells (14), his interests broadened to accommodate the overall responsibilities of the director. As well as the laboratories, the Compton site of some 2000 acres with its substantial herds of cattle and sheep was in effect run as a farming enterprise as well as a research facility. Henderson revelled in this wider involvement and became an advocate of the importance of animal health in relation to productivity and welfare. Projects were started on infections of increasing relevance to those fields, for example salmonellosis in cattle and transmissible gastroenteritis in pigs. Diseases in wildlife that were potential sources of infection to farmed animals came within the scope of the institute’s enlarged range of interests. They included leptospirosis and atypical acid-fast bacterial infection.

One long running project initiated under Henderson was the study of ruminant metabolism in relation to husbandry, nutrition and production (11), much of it centring on factors that hindered productivity—the so-called production diseases. It was from this work that the Compton metabolic profile test was developed.

As well as bringing a new vitality to the IRAD, Henderson saw to it that its achievements were brought to a wider audience. He initiated the publication of regular reports of work both in progress and completed. He encouraged close liaison with the University of Reading, which led to the institute’s being granted the status of an associated institution of the university; the title of visiting professor was conferred on the director, and senior staff members were granted honorary membership of the university’s staff. The institute’s international reputation was enhanced under his directorship, and many researchers into animal health problems, particularly from overseas, saw a period at Compton as an essential part of their training, or came to IRAD to participate in research projects.

Collaborative projects were undertaken with other establishments and a close connection was maintained with veterinary research in East Africa. Three Compton-based staff were seconded to that area under the auspices of the Overseas Development Administration.

Henderson was assiduous in keeping abreast of the work his colleagues were doing. Indeed, he had a reputation for seeming to keep one step ahead. He had a habit, when asking a colleague to explain his work to visiting scientists, of sometimes capping the presentation by commenting, ‘That is quite right as far as it goes, but…’.

Under his directorship, IRAD consolidated and expanded a reputation that made it a byword for excellence in the field of veterinary research into farm animals.
After six years as director of IRAD, Henderson was invited in 1972 by the Minister of Agriculture, James Prior, to take on the job of Secretary of the Agricultural Research Council (now the Biotechnology and Biological Studies Research Council), the body overseeing some 30 agricultural research institutes in the UK. It was a difficult time for the ARC because the customer–contractor relationship recommended by the Rothschild report on government research had to be implemented. This involved, in part, the potential transfer of more than 50% of ARC funds to the Ministry of Agriculture, Fisheries and Food (MAFF). By working with the MAFF’s chief scientist, Sir Charles Pereira FRS, also newly appointed, with whom Henderson got on well, the impact of this radical alteration in funding was able to be moderated, so that what could have been a traumatic upheaval became a relatively smooth transition to the new regime.

Once settled in his post as Secretary, to which he brought his usual enthusiasm, he introduced a new regime, which his colleagues found invigorating. One of them described Henderson’s arrival as like a breath of fresh air blowing through the organization. Where each research establishment or institute within the ARC had been pretty much a closed shop to the rest, Henderson encouraged them to an awareness of each others’ efforts and of the aims and developments of the Council’s projects as a whole.

Every year he convened a meeting of directors of institutes and units at which he reviewed progress, or lack of it, in the various sectors and brought his colleagues up to date on policy matters. His performance in front of this group of very senior scientists was competent and polished. Yet he confessed, after he retired, that he had found it difficult to ‘perform’ in this way and that preparing his review gave him a ‘deal of anxiety’.

His own interests, naturally, continued to widen in line with the broader responsibilities of his role. Throughout his tenure at the ARC, Henderson lectured and gave papers at conferences and symposia world wide. His ability to address his audiences in Spanish, Portuguese and French as well as in English made him something of an international ambassador for UK veterinary and agricultural science. At his retirement, the reputation of the ARC and its institutes was at its peak. That achievement owed much to Henderson’s knowledge as a scientist, to his ability as a manager to bring out the best in his colleagues, and, as an administrator, his ability to see that the ARC ran efficiently.

As one door closes…

His own reputation meant that as he closed the door of the ARC behind him, other doors were held open. He was appointed chairman of the Veterinary Advisory Committee of the Horse Race Betting Levy Board in 1978. Although he had no personal interest in racing, it was a job he greatly enjoyed and one in which he was able to promote the establishment of the Equine Virology Research Foundation; he held the post until 1985. In 1979 his interest in the potential of genetic modification techniques for medical and veterinary use was recognized by his appointment as chairman of the newly formed Genetic Manipulation Advisory Group (12, 13). On resigning from that post in 1982, he joined the board of the then newly formed company Celltech, which was to investigate the commercial exploitation of genetic manipulation. He also acted as a consultant for, among others, a Wellcome Foundation company running salmon
and oyster farms in western Canada, monitoring the health of the farmed fish. An aspect of that consultancy he was not averse to was the monthly return flight, first class, between Heathrow and Vancouver.

In 1984, when he was 70, came a late, and to some surprising, development in Henderson’s career. On the retirement of Lord Zuckerman as president of the Zoological Society of London the post was offered to Sir William, as he was by then (having been knighted in 1976). He came to the Zoo at a time of crisis. Attendances had been falling and income was no longer sufficient to cover the running costs. Through the influence of the treasurer, Lord Peyton of Yeovil, he was able to obtain a grant of £10 million, a one-off contribution intended to secure the future of the Zoo and its scientific research. As he had always done when faced with a challenge, Henderson tackled with vigour the problems of heading the nation’s premier zoological collection and resource for research on exotic species. He hoped to revitalize the institution and create at London Zoo a definitive mammalian gene bank. The Zoo’s problems, however, could not be solved at a stroke. Although much useful work was being done at the Zoological Society’s research facilities, the cash grant did not, in the event, solve the Zoo’s problems and Henderson’s retirement as President in 1989 was followed by a series of acrimonious disputes over the future of the establishment.

In his final retirement, he maintained contacts with old colleagues, gave advice to young veterinarians and virologists at the many conferences he continued to attend, and enjoyed a convivial dram on social occasions such as the monthly discussions and dinners of the Royal Society Club.

Foot-and-mouth disease, on the study of which his career was founded, remained an abiding interest throughout his life.

THE FAMILY MAN

Henderson enjoyed a long and happy marriage. His wife was Beryl Goodridge, a bank manager’s daughter whom he met shortly after he arrived at Pirbright and married in 1941. After he completed his work in South America, they settled in Streatly, on the banks of the Thames near Reading. Yarnton Cottage, which they bought in 1965, remained the family home thereafter. Many colleagues, both from the UK and overseas, enjoyed the Hendersons’ hospitality there.

They had four sons: Graham, Alstair, Neil and Andy; the last named, and youngest, was born in Brazil. None followed their father into a scientific career.

After his (final) retirement, Henderson’s main hobby was investigating his family’s genealogy. The ancestor of whom he was most proud was on his mother’s side: Robert Louis Stevenson. Other antecedents included a professor of surgery at Edinburgh who was an examiner for the Royal College of Surgeons, and a solicitor to the supreme court of Scotland.

His paternal grandfather, a shoemaker, was also, in his day, a noted ‘Scottish vocalist’. With his brother, and a piano mounted on a cart, he toured the towns and villages of southwest Scotland. Henderson’s father carried on the musical tradition, being organist at his local church. The piano, which had one octave less than standard (so that it would fit on the cart), became the family’s instrument on which Henderson unsuccessfully took lessons as a child.

Gregor and Beryl enjoyed a happy retirement, relishing the company of their sons, and their wives and families—they had seven grandchildren. He died at the age of 87, predeceasing his wife.
William MacGregor Henderson

HONOURS AND AWARDS

Henderson was knighted in 1976, the same year in which he was elected to the Fellowship of The Royal Society. Fellowship of the Royal Society of Edinburgh followed in 1977. In recognition of his work in South America he was awarded, in 1962, the Argentinian Order de Mayo. He was made a corresponding member of the Argentine Association of Microbiology (1959) and a Foreign Member of the Argentine National Academy of Agronomy and Veterinary Science (1960). The Brazilian Society of Veterinary Medicine elected him an Honorary Member in 1965. His own profession acknowledged his eminence by electing him a Fellow of the Royal College of Veterinary Surgeons (1973); from the British Veterinary Association he received the Dalrymple–Champneys Award (1974) and the Wooldridge Memorial Medal (1981).

He became an Honorary Fellow of the Royal Agricultural Society of England in 1979 and received the Massey Ferguson Award for services to agriculture in 1980.

Honorary doctorates were bestowed by the Universities of Edinburgh (DVSM, 1974), Liverpool (DVSc, 1977), Bristol (DSc, 1985) and Stirling (PhD, 1989).

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