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ANNUAL SUBSCRIPTIONS

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Dr. JH Auty, 3/400 Latrobe St Melbourne, Vic. 3000.

Meeting of the Australian Veterinary History Society

The Australian Veterinary History Society will meet in Adelaide on Monday 6 May 2002 as part of the AVA Annual Conference.

We will welcome all members and colleagues to this meeting for the opportunity to renew or to forge friendships, to hear six speakers and to enjoy a convivial dinner.

PROGRAM

- 8.30 - 9.15 Dr. John Auty, Two Royal Commissions revisited.
- 9.15 - 10.00 Professor Keith Hughes, Sir Charles MacMahon (1824-1891) Veterinarian, Hussar, Entrepreneur, Police Commissioner and Parliamentarian.
- 10.00 - 10.30 Morning Tea.
- 10.30 - 12.30 AVA Plenary Session and Conference Opening.
- 12.30 - 1.30 Lunch.
- 1.30 - 2.15 Dr. Robin Giesecke, Miss Margaret Keats MBE, BVSc. The first woman to graduate in Veterinary Science from an Australian University.
- 2.15 - 3.00 Dr. Hugh Wirth, Isobel (Belle) Reid. The first woman graduate in Veterinary Science in Australia (MVC 1906) and the first woman to be registered for practice in the British Empire.
- 3.00 - 3.30 Afternoon Tea.
- 3.30 - 4.15 Mr Carl Hockey, The history of cattle tick control in Australia.
- 4.15 - 5.00 Dr. John Fisher, Two-way technological transfer: Veterinary Surgeons, the "Pleuro" and tail inoculation in Australia.
- 5.00 AVHS AGM.
- 7.30 AVHS Dinner - to be arranged.

ABSTRACTS OF PAPERS

Two Royal Commissions Revisited.

John Auty, 3/400 Latrobe Street, Melbourne 3000

In recent years, a new slogan has surfaced in Australian historiography: the "Black Armband". One of the bases for this slogan is the book "Massacre Myth" by Rod Moran, who claims to have reinterpreted the events of the Forrest River punitive killing of Aboriginals in the East Kimberley of Western Australia as principally recorded in the Royal Commission of 1927. Moran, to make good his interpretation, seeks to destroy the objectivity of Commissioner Wood and the truthfulness of all the witnesses against the police and other members of the punitive party, and the reputation of the missionary, Ernest Gribble, who brought about the Royal Commission. One of the members of the party was a veterinarian, Daniel Murnane, who was castigated by the Commission as untruthful. This was not the only Royal Commission in which Murnane featured. He was also named many times in the Royal Commission into the cattle industry of Western Australia of 1928. The majority of Kimberley graziers when asked if they agreed with his finding that whitewood was the cause of Kimberley horse disease stated that he was wrong and gave their reasons. Some suggested the nature of the likely plant and subsequent work in the Northern Territory proved them to be correct.

When the writing of history is belittled by slogans, it becomes necessary to ensure that the bases for these slogans is carefully examined. This paper will examine the activities of Murnane during his Kimberley sojourn.

Sir Charles MacMahon (1824-1891): veterinarian, hussar, entrepreneur, police commissioner, parliamentarian.

KL Hughes, 29 Munro Street, Indoorpilly Qld 4068

Charles MacMahon was born into a wealthy aristocratic family in Ireland. After serving in the army, he obtained his veterinary diploma from London in 1852 and soon after sailed to Australia where he started to establish a business to provide services to the gold mining industry in Victoria. Soon after his arrival in Melbourne, Captain (ret) MacMahon was ensnared by the government to join the colonial Victorian police force. Over the next five years, he was successful in improving the operations and efficiency of the force, as well as the working conditions and morale of staff. In 1858 he successfully defended a scurrilous parliamentary attack upon his character, in which

it was spuriously claimed that he had misappropriated funds from the police force. In the parliamentary enquiry that followed, MacMahon was completely exonerated. Disillusioned, he resigned. Three years later he was elected to parliament, intermittently holding the position of speaker for eight years.

While MacMahon did not engage in veterinary practice in Australia, he was undoubtedly a notable and dignified Australian whom history has largely overlooked. MacMahon knew WW MccGwire, who arrived in Victoria in 1876 and shortly afterwards entered into partnership with Graham Mitchell. The partnership agreement between MccGwire and Mitchell provides an insight into practice contracts of the era and the consequences of default should the partnership be dissolved, which in this case it was. The author explores the association between MacMahon, MccGwire and Mitchell and contemporary Victorian society.

Miss Margaret Keats MBE, BVSc. The first woman to graduate in veterinary science from an Australian university.

Robin Giesecke, 16 Gulfview Road, Blackwood SA 5051

Margaret Keats was born to a pioneering pastoral family in New South Wales during the 1890s Depression and grew up during a time of significant changes in the development of Australia's sheep and wool industry. She was educated in a system still full of challenges for a woman wishing to study for a professional career, and survived to graduate from the University of Melbourne in 1923 and to conduct single-handed a rural practice in the developing north west of Victoria between 1923 and 1962.

Her career spanned not only the immense social changes wrought by the 1930s Depression but also changes in animal husbandry practices associated with land clearance and the growing professionalisation of veterinary science in Australia. She embraced these changes with characteristic enthusiasm and tenacity, influencing many who saw practice with her and winning the respect of both clients and colleagues.

Born a survivor, she became a legend in her own lifetime.

Isobel (Belle) Reid. The first woman graduate in Veterinary Science in Australia (MVC1906) and the first woman to be registered for practice in the British Empire.

Dr. Hugh Wirth, 185 Whitehorse Road, Balwyn, Vic 3103.

The History of cattle tick control in Australia.

Mr Carl Hockey, 10 Cromwell Street, Woolloowin, Queensland 4030

The cattle tick (*Boophilus microplus*) was first introduced to the Northern Territory in the 1800s and quickly spread across the northern parts of Australia and down the east coast of Queensland toward New South Wales. Before long the economic losses in the cattle industry attributed to cattle tick became significant and the need to control the parasite was recognised. The earliest control method was arsenical dipping solution. This marked the beginning of a progression of chemical compounds that have since been used to control the cattle tick. Many of these are no longer used for various reasons including development of resistance, toxicity and environmental problems. The chemical control problems have led to the need for alternative strategies. These include development of tick resistant cattle breeds, the use of pasture spelling and planned or strategic dipping. Much scientific research has gone into new control methods and the most recent breakthrough in non-chemical control has been the development of a vaccine. The history of cattle tick control in Australia is a story of alternating success between scientist and cattle tick and the key to future success may well lie in learning lessons from the past.

Two-way Technological Transfer: Veterinary Surgeons, the “Pleuro” and tail inoculation in Australia.

Dr. John Fisher, University of Newcastle, New South Wales

The present paper attempts a fresh look at what will be, for Australian veterinary historians, a familiar story. It follows something of the same lines as the classical work on technology transfer by Jan Todd, who demonstrates, contra to the views of many historians, the capacity of Australian colonials not only to adopt new technology but also to improve on the concepts involved in the course of modifying them to local circumstances. Jan Todd deals with the introduction of the Pasteurian immunological package into Australia. The present paper looks at a similar episode in the age before Pasteur, when germ theory was still a contentious proposition. Where it also differs from Jan Todd's story is in the complexity of the transfer process. Tail inoculation against CBPP was a European innovation, introduced to Australia by a roundabout route through South Africa. It was adopted here largely by migrant veterinary surgeons, a group with no prior knowledge of the concept and no understanding of the immunological principles that underlay its efficacy. Despite this, and despite their marginal role in the colonies, they adapted and refined the concept to the point where it gave them an enhanced professional standing in Australia and enabled the re-export of an improved

product back to the European metropolis. The focus of the paper is on two themes. The first is what the initial ignorance of tail inoculation reveals on the state of veterinary science in Britain in the mid-nineteenth century. The second is the interaction between migrant veterinary surgeons and the nature of colonial pastoralism that underlay the revealed innovative capacity of this group.

Annual General Meeting of the Australian Veterinary History Society

The 2002 Annual General Meeting of the Australian Veterinary History Society will be held during the AVA National Conference in Adelaide at 5.00pm on Monday 6 May 2002.

AGENDA

1. Present.
2. Apologies.
3. Minutes of the 2001 Annual General Meeting.
These Minutes were published in the Australian Veterinary History Record, N° 31, July 2001.
4. Business arising from these Minutes.
5. Report of the President, 2002.
6. Report on Membership of the AVHS.
7. Report of the Honorary Secretary/Treasurer.
8. Report of the Honorary Editor.
9. Report of the Honorary Librarian.
10. Election of Office Bearers.
11. General Business.
12. Place and time of the next meeting of the AVHS. The meetings of the AVHS in 2001 and 2002 have been held with the AVA Annual Conference. The AVA Annual Conference 2003 will be held on 24-30 May in Cairns.

Apologies, nominations for the positions of President, Honorary Secretary/Treasurer, Honorary Editor, Honorary Librarian and Committee Members (3) and items for General Business should be in the hands of the Secretary/Treasurer, Dr. John Auty, 3/400 Latrobe Street, Melbourne 3000, Tel 03 9328 5214, by the start of the AGM.

EARLY TIMES OF POULTRY PRACTICE IN NEW SOUTH WALES

JOHN W EVANS

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John graduated in Veterinary Science from Sydney University in 1938 and spent the war years, 1940-45, working in the Victorian Department of Agriculture. The following account records John's experiences from graduation to his years as a Poultry Practitioner in the early days of the Poultry Industry.

In 1940 the single intradermal tuberculin test was used to test for tuberculosis (TB) in the cattle herds supplying Melbourne with milk. PL Bazeley and BHE Barraclough (both graduated from Sydney in 1938) had tested most of these herds the previous year. Reactors were identified and slaughtered a week later. At slaughter all lymph nodes were thinly sliced and carefully examined for lesions. About 25,000 tests were conducted over this period identifying about 100 positive reactors. As the reactor rate was so low I began to mistrust my ability to make an intradermal injection correctly.

The Victorian Government had Cattle and Swine Compensation Acts. Under these Acts compensation was paid for certain diseases of cattle and swine. As a result, farmers were encouraged to report to the local Stock Inspector any cattle or pigs they suspected might be suffering one or other of the listed diseases. The stock inspectors, on being called to a property, would examine the animals and agree with the owner on the value, and either destroy the animals on the property or forward them to an abattoir for slaughter under supervision.

The Department had a number of properties with long histories of cattle and swine being infected with TB. On one such property in South Gippsland the dairy herd was clean on testing for TB; a theory was that the probable source of positive reactions was due to avian TB in the poultry flock. As no specimens were sent to the laboratory from the birds on the property this was not confirmed.

Pig farmers using swill (restaurant and hotel waste foods) were required to boil up the material before feeding. Most owners had the equipment but it was rare indeed to find it in use or even that it had been in recent use.

King and Anderson reported on the swine fever outbreak in NSW in 1942 in the Veterinary History Newsletter No. 8. My recollection of that event is that a shipment from the USA, which included pig meat for Singapore, was diverted to West Australia because of the Japanese presence in South East Asia. Before the disease in pigs in WA had been correctly diagnosed, pig meats had been sent to Victoria and NSW. The NSW consignment was directed to the trade and that for Victoria was placed in cold store and, when swine fever in WA was finally diagnosed, was re-exported.

Brucellosis (*Brucella abortus*) in dairy herds was a cause of serious wastage in areas where the dairy herds consisted of 50 to 60 milkers maintained together with herd replacements on small properties of about 50 to 60 acres. Too often about half the

heifers would "slip" (abort) on their first pregnancy, often abortions occurred in the remaining heifers in their second pregnancy. After some discussions with interstate authorities, which sometimes became a little heated, the decision was taken to vaccinate using attenuated *Brucella abortus* strain 19 which officers of CSIR had obtained from USA. Heifer calves 4-8 months old, held on properties where the disease was known to exist, were the first to be vaccinated. Many of the farmers who agreed to the scheme had already tried the remedies that had been "peddled" and "this needle couldn't be any worse". There was little interest shown until the inoculated animals had produced 95 per cent full term calves and then? The Department then had to use lay stock inspectors to extend the scheme after first giving instruction on the risks associated with self-inoculation before allowing them to do the vaccinations.

In 1945 a memo from Melbourne arrived on my desk, "arrange tuberculin test of X's herd at Y". The herd were grade Ayrshires in excellent condition. About 12 had a number of firebrands on the left rump. The owner, on being questioned, replied that each time Dr T Gregory inoculated the herd a firebrand was applied. What was that for? Tuberculosis, the inoculum was *Bacille Calmette-Guerin* (BCG). The test revealed some 25 reactors including all BCG animals, which were the oldest cows in the herd. Lesions were found in all the other reactors but in only one of 12 BCG inoculated cattle.

In my opinion, it would be a useful demonstration in the final years of the veterinary course to inoculate a beast with BCG and test it with tuberculin at an appropriate time later to show students a typical positive intradermal reaction.

Charlie Pope had enlisted as a Veterinary Officer in the Australian Army Veterinary Corps, AIF, shortly after the outbreak of the Second World War and was sent to the Middle East. However, there was no need for veterinarians in the mechanised army forces in the Middle East so Charlie was returned to Australia, discharged and he settled at Ballarat. One of his tasks at Ballarat was to TB test dairy cattle as there were large numbers of American soldiers in the area. One herd were stud Shorthorn cattle after some of the herd had been tested the owner said, "That is enough." Charlie replied, "If I leave off at this point the whole herd will have to be quarantined." I found some time later that I too had to use this "carrot and stick" approach when testing a property of five share holdings on which there were 900 grade Jersey cows. At the preliminary discussion, the manager expressed himself as being in favour of TB testing in general, but not when it applied only to the animals on the property which he managed. Some time later a neighbour approached me whose herd had been tested, "My neighbour Mac would like to know what you will do if he continues to not agree to test?" I replied, "I am prepared to quarantine the properties and this means all stock and produce will remain on the farms." This was not a good start! To make matters worse, there was no hotel in the area so Bill Howell, stock inspector and I had to stay in the homestead with the owner. As was to be expected the conversation after dinner in front of a roaring fire was rather formal for several evenings. But when, on the fourth day, valuations commenced, everything

improved! That test produced 288 reactors. Because the rail siding at Meeniyan could only handle ten trucks, 3 mobs of 100 had to be driven by road to another railhead. One reactor died on the road and was examined at postmortem on the spot. One young bull made it halfway and was retrieved later. The manager replaced the dairy cattle with beef and it was said that the milk cheque remained the same. Six months later there were only 38 reactors. As I was preparing to return to New South Wales I received a phone call "Evans, Mac here, you can't leave now our retest is due in one month." I reassured him that my successor would not forget. All's well that turns out well.

In the early 1940's in Victoria attempts were made to repeat the work of Hungerford and Hart (1939) relating to the control of infectious laryngotracheitis (ILT) outbreaks in poultry flocks following the use of autogenous tracheal vaccines. At that time veterinary authorities held virulent strains of the ILT virus that were present in NSW and USA. In the studies above, the efficacy of the vaccines used was tested some 2 to 3 weeks post-vaccination by intratracheal challenge with the same strain.

Burnett (1936) found an ILT strain in Victoria that was less virulent than the NSW isolates and Pulsford (1954) in South Australia was able to confirm Burnett's findings. In Victoria the disease was diagnosed in the Veterinary Research Institute (VRI). An officer from the laboratory would visit the property, select a number of birds, deliver them to VRI and return the following day with the fresh vaccine to inoculate the rest of the flock. Because it proved difficult to find acute cases, results were not encouraging. Infectious laryngotracheitis was discussed at length in the 1940s in Annual General Meetings of the AVA. Veterinary laboratory facilities in the State Departments were aware that extraneous agents might also be present in disease outbreaks. So they were in favour of using autogenous vaccines.

Furness (1945) described fully the techniques to be used and the strategies to follow in multi-aged groups and was satisfied that prophylactic vaccination was the way to go. In 1940, 87,000 birds were vaccinated; 1941, 120,000; eventually rising to 293,000 young birds between 8-20 weeks in 1944. At the meeting Tom Hungerford suggested that passaging the virus in chick embryos could have reduced its antigenicity. Gorrie (1944) who was not averse to rocking the boat showed that swabbing the cloaca with a culture of *Salmonella pullorum* and *Pasteurella multocida* could infect a bird. He advocated using a separate swab, slightly larger than a matchstick, for each bird.

Hungerford (1968) over a decade later was to add to his ILT vaccine stock a new field strain that was contaminated with *P. multocida*. The use of the Gorrie swab would not have averted the catastrophe that resulted. It is recorded that many mature birds died but few up to 16-17 weeks. Although threatened with legal action Hungerford managed to keep out of court. In those early years and continuing into the 60's, the only criterion of a satisfactory vaccination was the appearance of a "take" in the cloaca 4-5 days later. The membrane changed from normal pink colour to a brighter pink or red and there was oedema and swelling. A number of birds were caught 4 to 5 days later to ensure the "takes" were

satisfactory. If not, the flock would be revaccinated to avoid the risk of what JK Hutchison, one of the earliest poultry practitioners, described as "five-day-five day" that is, the birds that had not "taken" caught the disease from those that did. He also described another uncommon sequel that occurred 5 days post-vaccination, some birds would be seen squatting and reluctant to walk. On examination the cloaca would be dark red (nearly black) and recovery to normal would occur within an hour or two. In 15 years using tracheal vaccines I had only one such case reported.

The poultry veterinary practitioner's chicken year during the 40s and 50s was roughly divided into two parts. The first consisting of pullorum testing breeders, December to June, and the second vaccinating chickens May to January. The vaccination year would start by using a local strain grown on eggs and transferring this strain on to the trachea of susceptible pullorum-free cockerels. The tracheal exudate was harvested 48 hours later. It was then finely ground and diluted 1:40 to 1:100 depending on the severity of the lesions in the donor. A rough rule of thumb was one trachea for each 1000 birds and part thereof. Diluent was tap water and glycerine in equal parts. In 1950 the practice that I was associated with purchased 750 such cockerels using about 750,000 doses of ILT vaccine and continued at this production level of tracheal vaccine for another decade.

Furness was well aware that the State Department would restrict ILT vaccines to egg grown strains from pure virus strains. In 1947 he trialed thoroughly the Commonwealth Serum Laboratories (CSL) "wet" vaccine. Chilled vaccine was despatched by air daily from Melbourne, picked up next morning still chilled at Sydney airport and used in the field that same day, the use-by-date being the following day.

This product gave uniformly good "takes" but an alarming number of breakdowns occurred 2 to 3 months later, when such flocks were revaccinated and "takes" checked on day 5, about 10 per cent were negative, 10 per cent showed good "takes" while the remaining 80 per cent had resolving "takes" similar in appearance to lesions at 7 days. Practitioners in NSW confirmed the farmers "findings in Victoria and despite the view held by CSL that farmers" techniques were faulty showed that the CSL "wet" vaccine was not a good commercial product. At this time an experimental batch of CSL ILT virus (living) in dried form was used by three operators to vaccinate some 8000 birds. There were no "takes" and when this was reported to CSL the laboratory claimed there had been a breakdown in refrigeration during storage.

In October 1949 the Chief, Division of Animal Industry addressed a memo to all veterinarians engaged in Poultry Practice indicating there was a move to restrict the use of ILT vaccines other than those prepared from pure virus strains. He also invited comment. He was advised of most of the findings that are in the preceding paragraphs. This information and material from other sources had the effect of deferring amendment to the legislation for a decade.

At this time there was a swing to crossbred production; the favoured mating was White Leghorn males and Australorp females (WL/AO) although New Hampshire

males and White Leghorn hens (NH/WL) were sometimes used. At least the WL/AO cross had been shown to have hybrid vigour in that the females laid more eggs than either parent breed. As a result WL cockerels became less available for vaccine production and crossbred birds took their place, whereas the 48-hour harvest from a WL was frankly haemorrhagic, that from NH/WL crossbred was a thick pink sheet while that from a WL/AO was clear bubbly mucus and tended to be free of blood. In June 1954 by arrangement through the Department of Health one such 48-hour infected freshly killed intact trachea was forwarded to CSL. Dr. Oxeer acknowledged receipt as follows: "One passage was made into a cockerel (breed not stated) which developed a mucoid tracheitis on the second day. It was left till the third (day) when signs were the same. There was no haemorrhage into the trachea. The trachea was collected on the third day and a sample transferred to embryonated eggs. Virus was present in good concentration." Some Rhode Island Red genetic stock was naturally immune to ILT giving no "take" on vaccination nor showing any signs in the midst of an outbreak. Could such birds act as a natural reservoir of infection in an otherwise free environment?

Movement of Poultry Interstate from NSW in 1948

Only eggs for hatching could be sent to Tasmania from pullorum-tested flocks. Export to Western Australia was prohibited. South Australia would accept stock from ILT-free areas on a negative pullorum test. Queensland required a pullorum test in fowls and turkeys and day old chickens from a pullorum tested flock.

In February 1949 the Queensland requirements were amended because of the prevalence of ILT in NSW. Adult birds were now entirely banned from NSW and only day old chicks and hatching eggs from tested flocks would be accepted but only from flocks, which had not had ILT in the previous 12 months.

Meanwhile CDAI did not implement the stated intention to restrict the use of tracheal vaccines. Instead the staff at Veterinary Research Station (VRS) conducted a series of experiments to establish (a) the route whereby stained virus was absorbed as there had to be better routes than either the cloacal or conjunctival for vaccination; (b) whether maternal antibody could affect the recommended safer, early age for vaccination; (c) whether virulent or mild strains of virus were best suited for use in vaccines; (d) the degree of potency necessary to ensure a lasting immunity.

The next decade confirmed the presence of ILT in all mainland states. Hart (unpublished) confirmed the presence of ILT in West Australia. Pulsford and Stokes (1953) reported acute outbreaks of the disease in South Australia and a state wide survey of flocks showed that about 50 per cent of flocks sampled had antibodies to the disease. This was not unlike some flocks in the Sydney area where over a number of years only false negatives had been identified from suspected active cases submitted to the laboratory. This could be a source of financial loss in a small hatchery that claimed, "Only own eggs set". Simmons et al (1954) confirmed that a virus causing subacute respiratory disease in Northern

Queensland and South East Queensland was ILT. The Queensland strain was later forwarded to CSL under agreement that it would be held and freeze dried and stocks of it returned to Queensland as required. Pulsford et al (1956) in South Australia described a strain of low virulence (SA2) which differed from previously described strains of low virulence in that it had greater pathogenicity for cloacal than tracheal mucosa. Pulsford and Watts (1961) confirmed Sinkovic's finding that in endemic areas maternal (passive) immunity persisted in day old chicks for 3 weeks.

Pulsford (1961) working with ILT strains of low virulence described two features associated with the ability to live in a resistant host, which were not present in virulent strains,

1. ILT antiserum of NSW virulent strains were less efficient in virus neutralisation tests
2. Although cytopathic these ILT strains tended to remain cell-associated. Howes et al (1962) determined the potency factors in egg grown vaccines. The birds were challenged with virulent ILT intratracheal at 8.5 weeks post vaccination. For satisfactory results, i.e. lasting immunity, such a vaccine should contain 2.6×10^6 PFU/ml although 2.6×10^5 PFU/ml gave satisfactory "takes".

By the mid 60s all laboratory-produced vaccines were based on SA2 strain, the most convenient form being the dried (living) virus, which could be refrigerated and reconstituted for use as required. The CSL product consisted of whole embryo reduced to particulate form without a final filtering. On being reconstituted the gray particulate matter adhered to the applicator in the case of cloacal application and flocculated in drinking water. Other commercial vaccines were preferred which when reconstituted formed clear solutions.

Other methods of vaccine application have been tried over the years and included the eye-drops or interconjunctival (IC) method, atomised sprays were used on day old chicks and the vaccine was added to the drinking water.

In his original investigations with stained virus DW Sinkovic found the stain absorbed on the hard palate adjacent to the palatine cleft. He also selected the SA2 strain as the least pathogenic. The success or otherwise of day-old chick vaccination depends to a great extent on whether maternal antibodies are present. Whereas Sinkovic & Hunt (1968) found DO chicks vaccinated IC with SA2 resistant to intratracheal challenge at 3 and 8 weeks of age, Clarke et al (1980) found spray inoculation at DO less than satisfactory. Robertson & Egerton (1981) confirmed that while virus replication in cloacal vaccinates was confined to the cloaca most replication occurred in the nasal cavity in interconjunctival and drinking water vaccinates. They concluded that the success of drinking water (DW) application depended on the accidental contamination of the nasal cavity during drinking.

When using the DW method in Queensland the length of time taken to clean the water troughs is a sufficient period of "water starvation". However, the method is of doubtful value in nipple systems and open V troughs. In the case of chicks on deep litter all waterlines must be medicated otherwise spectacular cases of "5 day-5 day" syndrome may result.

Wicks & Kogan (1979) described a fluorescent antibody test for speedy accurate diagnosis of ILT effective from 2 to 14 days post-infection. Prior to this laboratories took 2 to 3 weeks to provide

a diagnosis which often was a false negative, or if positive, was past the time for vaccination. In Queensland in the 1950s and 1960s the Department restricted the use of ILT vaccine to the properties where ILT had been positively identified. Usually vaccination was carried out on the young stock the following year. This was found unsatisfactory in multi-aged groups held in cage sheds. The "carrier state" following infection, always known to be of lengthy duration, had been shown by Turner (1972) to be as long as 16 months.

Diagnosis

The experienced field worker has an advantage over the laboratory worker in that they can see and hear the clinical signs such as the eye (lids lightly gummed together), tracheal rales, coughed up blood and in the case of young stock up to 8 weeks of age the typical distressed, whistle-like cry. The laboratory worker on the other hand, is restricted to 3 or 4 submitted specimens. The section of trachea, aseptically removed and placed in antibiotic broth prior to proceeding to further treatment potentially includes tracheal cells producing antibody as well as the virus in the cells already shed this often resulted in incorrect diagnosis necessitating further submissions.

On several occasions when the laboratory had failed to detect virus but confirmed serologic evidence I would select a bird with slight tracheal haemorrhage and harvest the trachea and prepare a "test" vaccine, that was applied to the cloaca of susceptible birds held in isolation for 4 to 5 days and checked for "takes". If "takes" were present vaccination went ahead. I was not aware of any agent, apart from ILT virus that produces a "take" within 4 to 5 days in the cloaca.

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PROFESSIONAL ACTIVITIES AT THE GLENFIELD VETERINARY RESEARCH STATION: Part A 1923-1959

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The NSW Department of Agriculture Veterinary Research Station at Glenfield played a very important role in diagnosis, research and control of livestock diseases in that State over a period of 67 years. This account covers the professional activities at the Station over the years 1923-1959. The history of buildings on the Station is given in a separate article.²

BEFORE 1923

Livestock were afflicted with diseases from the earliest days of the New South Wales Colony. In 1788 sheep were affected by "Scab", and during the nineteenth century some diseases with obvious signs such as anthrax, tuberculosis and pleuropneumonia were introduced in livestock into Australia and caused considerable economic loss. Many other microbiological and parasitological diseases occurred but had to wait till the 20th century before scientific knowledge and research was able to reveal the causes and identities of the organisms responsible.

In-1890 the New South Wales Department of Agriculture was established. One of its roles in the field of animal health was the control of diseases. However, there was little knowledge of many diseases and very limited laboratory support for research and diagnosis. Some diagnostic work was done by the Board of Health and later by Dr. Sydney Dodds FRCVS in the laboratories at the Veterinary School, University of Sydney. These efforts were the start of the scientific investigations of livestock diseases.³ The economic cost of livestock diseases and the need for a research facility was recognised by the Government. The Minister of Agriculture gave approval for the establishment of a veterinary institute in 1913. However, implementation was delayed because of World War I. In 1916 land was purchased and in the early 1920s construction began on a laboratory building, residences for officers and farm buildings. During the period from 1919 to 1922 Dr. Dodds was employed as a part-time Consulting Veterinary Pathologist and no doubt had an input in the design of the laboratory building.

² Grist Mills, *Journal of the Campbelltown and Airds Historical Society* (in press).

³ Mylrea, P.J. (1989) The laboratory diagnosis of diseases of stock in New South Wales: 1890-1947. *Aust Vet J* 66: 114-117.

THE FIRST SCIENTIFIC PERIOD 1923-1936

Once the buildings were constructed the next requirement was the appointment of the Director, which was offered to Dr. Dodds who declined.

In 1923 Dr. HR Seddon was Lecturer in Pathology and Bacteriology at the Melbourne Veterinary School and was offered the position as Director of Veterinary Research. The Institute was named the Glenfield Veterinary Research Station. The term Station followed the United States precedent where agricultural research establishments were known as "stations".

A photograph taken of the pioneer staff members at Glenfield in 1926 includes F Chapman who was Farm Foreman and the first person appointed to the staff, probably about 1916-17. He was responsible for establishing the farming operations. HR Carne BVSc was the first Veterinary Research Officer appointed. He later studied at the Pasteur Institute in Paris and on returning to Australia joined the staff of the Veterinary School University of Sydney. Carne became Professor of Veterinary Pathology and Dean of the Faculty. J Stanley Freeman was the Senior Technical Officer. J Stanley Freeman later became Mayor of Liverpool and a member of the New South Wales Parliament. W (Billo) Childs was Senior Animal Attendant. WT Brown was an Animal Attendant, N Blinman and H Sanders were Laboratory Attendants and all three commenced work at Glenfield as boys and continued at Glenfield, or in other Departmental veterinary laboratories, for the rest of their working lives. Miss Phyllis Watts and Miss Verlie Watts (later Mrs Seddon) worked in the office. Miss M Blinman was the part-time cleaner.



The staff of the Research Station in 1926.

Left to right they are Miss Blinman, W Childs, N. Blinman, J Stanley Freeman, Miss Phyllis Watts, Miss Verlie Watts, WT Brown, HR Carne, H Sanders and F Chapman. Dr. HR Seddon the Director, is not in the photograph presumably he was taking the picture.

Work at Glenfield in the early years fell into two interrelated areas of diagnosis and research. This pattern of work continued throughout time but with increased volumes of diagnostic material and improvements in laboratory technology.

In the first year of operation of the Research Station the total number of specimens was 909 received in 449 consignments for laboratory examination. Most of the specimens were derived from cattle, sheep, pigs and horses with lesser numbers from dogs, poultry and native animals.

Research work began soon after the establishment of the Station. In the years 1923-4 feeding trials were carried out on three plant species suspected of being poisonous to stock and on bovine mastitis, an area that was to be a subject of research throughout much of the existence of the Research Station. In the following years research covered a wide range of diseases. Those of sheep included worms, external parasites, Clostridial diseases, scabby mouth and footrot. In cattle the main areas were infertility and pleuropneumonia. Little research was carried out on diseases of pigs but a start was made on the diseases of poultry.

In the period to 1936 there were a number of research officers who served at Glenfield for short periods of time. Others, however, worked there for many years. Among these were HR Seddon, WL Hindmarsh, G Edgar, ROC King and L Hart.



The staff of the Station about 1932.

In the front row from left: L Hart, Dulcie Clissold, WL Hindmarsh, HR Seddon, G Edgar, Kathleen Fenton, ROC King.

This was also the period when a degree of specialisation commenced in the areas of poultry diseases and bovine brucellosis.

At this time there were many small poultry farms throughout the State with large numbers of birds in the Sydney region. Poultry were exposed to many diseases that affected the livelihood of the farmers. To try and alleviate the situation work began at Glenfield on poultry diseases and JK Hutchinson BVSc. was the first Veterinary Research Officer in this field. He resigned about 1930 and was replaced by L Hart who joined the Glenfield staff in 1932. Diagnostic and research work on poultry diseases continued until 1990.

The other area of specialisation was bovine brucellosis. At that time abortions and infertility in dairy cattle resulting from brucellosis was common with a consequent loss of milk production. The problem was so great that the dairy industry provided funding for research which was undertaken by ROC King who graduated in 1929.

PRE AND POST WORLD WAR II 1936-1947

In 1936 Dr. HR Seddon left Glenfield to become the first Professor of Veterinary Science at the new Veterinary School in the University of Queensland. He was

followed as Director of Veterinary Research by WL Hindmarsh. Hindmarsh graduated from the Veterinary School, University of Sydney, in 1914 and immediately joined the Australian Army Veterinary Corps and served overseas during World War I after which he studied at the Royal Veterinary College, London. On his return he held various field positions before joining the staff at Glenfield in 1927. He was Director of Veterinary Research from 1937 to 1947.

World War II occurred in this period and affected the working of the Station. In 1942 there was an outbreak of swine fever. This exotic disease would have caused severe harm to the pig industry if it had not been eradicated. Glenfield undertook a considerable amount of diagnostic work enabling the successful eradication of this disease. Around this time bovine pleuropneumonia was rife especially around Sydney. Glenfield adopted the complement fixation test and this was crucial in controlling the disease. JC Keast and JT Hayston joined the staff and were involved in much of the diagnostic work. The volume of diagnoses increased over the years and in 1947 about 20,000 specimens were processed. At the same time there were a number of important research projects. Poultry diseases continued as an important area of activity with L Hart the main worker. The recognition and control of a number of poultry diseases including the development of a stained *Salmonella pullorum* antigen for the testing of fowls on farms, the recognition of infectious laryngotracheitis and work on chronic respiratory disease, fowl cholera, coryza and avian encephalomyelitis.



*The veterinary research officers, laboratory and office staff about 1944.
In the front row from left: J Hayston, Olga McPherson, L Hart, WL Hindmarsh (Director of Veterinary Research), G Edgar, JC Keast; second row third from left ROC King.*

Research and development work was initiated on artificial insemination of cattle from the mid 1940s onwards. Because the use of artificial insemination in cows was developing overseas it was decided to investigate its feasibility under Australian conditions. A project was started at Glenfield in 1945 that provided an AI service to local dairy farmers. This service continued until 1952 when activities were transferred to the Artificial Breeding Centre at Berry, New South Wales. HER Beattie undertook much of the early work and

later continued with diagnoses and research on bovine infertility.

Mastitis in dairy cattle was an ongoing problem and DF Stewart worked on the bacteriology of mastitis.

At the end of the first 24 years of the Research Station the professional staff consisted of Hindmarsh, Edgar, King, Hart, Hayston and King. Olga McPherson and McClymont resigned during this time. They were replaced by a group of younger graduates who served for varying lengths of time.

(Appendix 2).

The diagnostic load continued to increase and in 1958 over 35,000 specimens were received in 4500 consignments. The officers most concerned with this work were JC Keast, IG Pearson, TE Jones, PD Carter, M Robinson, IR Littlejohns and D Helwig. Poultry work continued for a short period by IG Pearson and later by B Sinkovic and M Lindtner. In this period work was done on infectious laryngotracheitis especially on aspects of vaccines and vaccination and also on infectious bronchitis.

Livestock nutrition was introduced as a new area. From the early 1940s GL McClymont had worked in the field of animal nutrition and in 1948 the Nutrition Laboratory was built and became the domain of McClymont for the next six years until he moved to the University of New England in 1954 as first Professor of Rural Science. The Laboratory undertook a large amount of nutritional work both at Glenfield and on Departmental and commercial properties. McClymont's main research area was pregnancy toxæmia of sheep in which BP Setchell was his collaborator. Others in the Nutrition Laboratory for shorter periods were E McBarron, K Wynne, PJ Mylrea and P Reis.



Near the animal yards about 1955.

G Edgar, Director of Veterinary Research, on the right and RM Watts, Principal Veterinary Officer, on the left. Both were to become Director Generals of the Department of Agriculture. JC Keast second from left was soon to become Director of Veterinary Research. Emeritus Professor HR Seddon, second from right, was a short term consultant working on tuberculosis.

The start of the myxomatosis campaign against rabbits commenced in 1951 in New South Wales. Glenfield's role was to produce myxomatosis virus for distribution to land holders. The first virus was distributed in 1951 and in each of the next four years over a quarter of a million doses was distributed annually. Thereafter the demand declined gradually over the next three decades.

Towards the end of the 1950s the number of professional officers on the staff was still relatively small and consisted of Edgar, Keast, Beattie, Sinkovic, Littlejohns, McBarron, Lindtner, Setchell and Helwig.

SOURCES AND ACKNOWLEDGEMENTS

Information on the first twenty-five years came from the Annual Reports of the Director of Veterinary Research and Departmental records. This was supplemented by information on the early years from L Hart and the late RM Watts. Their help is gratefully acknowledged. Additional information on periods of employment of permanent officers came from NSW Public Service Board, Public Service Annual Staff Lists.

Appendix 1. Transport arrangements from 1923.

Over time those members of staff who had to travel to Glenfield used different forms of transport. When Glenfield opened in 1923 steam trains operated throughout New South Wales including the service to Glenfield from the city and from country locations. After the line was electrified from Sydney to Liverpool, steam trains continued to service stations south of Liverpool and passengers changed trains at Liverpool. The line was electrified in 1968 to Campbelltown. By the early 1960s cars came into use and were used more often by the staff. Train travel in the 1950s and perhaps earlier, was quite "refined"! The staffs of the Research Station, Hurlstone Agricultural High School and Glenfield Special School travelled in the last carriage of the steam train from which students were excluded. On arrival at Glenfield the students waited back until all staff members had alighted and crossed the railway line before they raced ahead.

Specimens for the laboratory came by rail until the 1980s when couriers were used more frequently. For many years specimens were sent in wooden "specimen boxes" that had a metal lining. There was no way of cooling samples so fresh material was rarely submitted. Samples for bacteriology were sealed into glass tubes, tissues were submitted in jars of formalin and serum samples were sent in small glass vials preserved with boracic acid. A laboratory attendant collected the boxes from the railway station three or four times a day.

Appendix 2. Professional officers who were permanent appointments to the staff of the Veterinary Research Station before 1959. Others on short term temporary employment are not listed. The degrees shown are those held during the period of work at Glenfield.

NAME	AT GLENFIELD
HR Seddon, DVSc	1923-1936
HR Carne, BVSc	1924-1926
G Edgar, BVSc	1926-1959
WL Hindmarsh, BVSc, MRCVS	1927-1947
JK Hutchinson, BVSc	1929-1930
ROC King, BVSc	1929-1948

L Hart, BVSc, HDA	1932-1949
DF Stewart, BVSc, Dip Bact	1936-1942
JC Keast, BVSc, HDA	1936-1976
JT Hayston, BVSc	1939-1951
GL McClymont, BVSc, PhD	1942-1954
HER Beattie, BVSc	1945-1970
O McPherson, BVSc	1942-1945
IG Pearson, BVSc	1949-1955
K Wynne, BSc	1950-1955
TE Jones, BVSc	1950-1956
B Sinkovic, DVM	1951-1961
M Robinson, BVSc	1952-1954
PD Carter, BVSc	1952-1954
PJ Mylrea, MVsc	1952-1956
EJ McBarron BVSc	1953- ?
P Reis, BSc.Agr	1953-1955
BP Setchell, BVSc, PhD	1953-1962
IR Littlejohns, BVSc	1954- *
M Lindtner, DVM	1955-1969
D Jakovljivic, MB	1955-1979
D Helwig, BVSc	1956-1964

*Transferred to the Elizabeth Macarthur Agricultural Institute 1990.

(Part 2 to be continued in AVHR Number 34)

Milestones in Australian Veterinary History.

Project for Sydney University Veterinary Students.

The Australian Veterinary History Society is at present liaising with the Veterinary Faculty, University of Sydney, on this innovative and exciting program. The Faculty is planning to publish 49 teaching manuals covering subjects that students will study during their course. On the back cover of the manuals it is planned to print short articles, of approximately 300 words on Australian Veterinary History. The Society has been presented with a great opportunity to introduce veterinary students to the history and traditions of our profession. Dr. Keith Baker is the coordinator for this program. Dr. Baker will be approaching members to prepare articles. Any member can submit suitable material and all articles used will be acknowledged.

Dr. Keith Baker can be contacted on Tel 02 9327 3853, Fax 02 9327 1458 and E-mail keithbaker@ozemail.com.au

AUSTRALIAN VETERINARY ASSOCIATION COAT OF ARMS

This paper was among those of the late WAN Robertson and consists of extracts from the Report of the Heraldry Sub-committee 1937 and the description of the Coat of Arms as published in the AVJ. *Aust Vet J* 13:209. 1937

The shield is divided by an inverted Y-shaped bank of deep red or maroon, the colour commonly associated with Veterinary Associations, Army Veterinary Corps, etc.

In the top right hand segment (as viewed by the bearer of the shield) an opium poppy (*Papaver somniferum*) is depicted against a gold background. The poppy indicates our therapeutic ability and, in addition, our power to relieve pain.

In the top left hand segment, five stars (mullets) are arranged as a "Southern Cross" on a blue (azure) background. The term mullet is from the French molett, the rowel of a spur. Strictly speaking, Australia's geographical position does not give her a sole right to the Southern Cross, but ever since its use on the National Ensign, it has been regarded as indicating Australia Felix.

The base is a balance and a sword in a horizontal position, both being depicted against a silver background. In heraldry the balance is always taken to be in "equipoise" unless otherwise stated. "The Sword and Scale of Justice" represents our ability to control and eradicate disease by legislation. The crest was the ornament worn on the top of the helmet, in this case a centaur forcene. Forcene or salient means rearing, or jumping with the forelegs in the air and the hind legs on the ground.

The Centaurs were a people of Thessaly, half men and half horse. The fable of the existence of these monsters is supposed to have arisen from the fact that the people of Thessaly tamed and rode horses, and when mounted, appeared to the other non-equestrian Greeks as a single creature. Their name originated from the Greek *kentauros*, a bull goader or killer, probably from the fact that they hunted or herded bulls on horse-back. The chief of the centaurs was Chiron, who was famous for his knowledge of medicine and shooting and taught mankind the use of plants and herbs. He is depicted here "holding a rough knotty staff entwined by a serpent". This is the staff or wand of Aesculapius, the Greek God of Medicine. Aesculapius was the son of Apollo and Coronis. The Sun God, discovering the infidelity of this paramour, destroyed her in a fit of anger but saved the infant and gave him to Chiron to be educated. His preceptor instructed him in the art of healing, and he eventually became so skilful that Jupiter struck him down with a thunderbolt because Pluto (the God of the Underworld) complained that Hades was becoming depopulated.

From early times, the serpent has been considered a symbol of natural healing since it periodically renews itself by sloughing off its old skin. In medical and veterinary heraldry, the wand of Aesculapius has frequently been confused with the caduceus of Hermes. The caduceus is a smooth staff entwined by two serpents in the form of a figure of eight, the heads facing inwards.

The shaded bar below the crest is the torse. Originally this was a wreath of twisted

metal and silk used to hide the ugly join between the crest and helmet. In modern heraldry the torse is usually depicted as a straight bar with three bands of colour, and the helmet is frequently omitted. In our case the torse is silver and maroon.

Supporters - these are a comparatively recent introduction into heraldry, and are usually figures of men and animals whose function is to hold up or support the shield bearing the arms. In our arms, the supporters are, on the right a ram and on the left a bull; both represent the livestock industry, upon whose support our profession rests. The supporters stand on a field which may be represented by a floral scroll.

Australian Veterinary History Record (1998) Number 23: 10-12.

Australian Army Veterinary Corps Banner.

On demobilisation at the end of World War I the Australian Army Veterinary Corps (AAVC) personnel in New South Wales formed the Army Veterinary Corps Association. It included officers and men who served in the veterinary services. When Anzac Day marches were inaugurated the members of the Association marched as a single body irrespective of the units to which they had been attached. Lieutenant Colonel Max Henry DSO, ED was the first President and until ill-health forced him to retire he led the AVC contingent at each Anzac Day march. In succeeding years it was led by Lieutenant Colonel WL Hindmarsh ED, Captain Davidson MC, Major RA Patten, Major HS Lucas, ED, and Major GF Finlay. In the early 1930s the commissioned officers presented a banner to the Association and this



was carried at each Anzac Day march thereafter until 1969. Membership of the Association had dwindled to 25, all in their late seventies and early eighties. Only 15 took part in the 1969 march. The Association decided to discontinue the march and accepted a suggestion that the banner, which had been carried for nearly 40 years in the Anzac Day march be offered to the Australian Veterinary Association for safe keeping as a lasting memorial to the men of the AAVC who had served in the first AIF. The AVA agreed to accept the banner to be held in trust. On 25 April 1969 the banner was handed over in a simple ceremony by Lieutenant Colonel WL Hindmarsh to the registrar of the AVA RE Churchward.

As noted at the time, few of the present members of the AVA ever think of the great part played by horses, mules and camels in World War I, when apart from railways, practically all movement of troops, equipment armaments and stores was by animal transport. It was an axiom of the war of those days that operational success depended upon mobility and this was determined by the fitness of mounts and transport animals. The Army Veterinary Corps was a very important part of every field force.

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