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AUSTRALIAN VETERINARY HISTORY RECORD



JULY 2012 – NUMBER 62

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The Australian Veterinary History Group is a Special Interest Group of the AVA [AVHG].

All who are interested in any aspect of veterinary history may join. Annual subscription is \$55.

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Australian Veterinary History Society
A Special Interest Group of the Australian Veterinary Association Ltd

Minutes of the 21st Annual Meeting held in the National Convention Centre, Canberra on 21 May 2012 at 5 pm at the AVA AGM and Conference.

Present: J Apsley-Davis, MD Barton, H Fairnie, NE Tweddle, GA Reed, RT Roe, AJ Turner, P Macwhirter.

Apologies: J Brady, A Davidson, AT Hart, KL Hughes

Minutes of 20th Annual Meeting, AVHS at Adelaide May 2011: It was resolved that the Minutes as published in the AVHR in Edition 60 be accepted as a correct record of the meeting. **Passed**

Business arising from the Minutes: The President reported that contact with the SA Division had resulted in Dr A Davidson being nominated as a SA representative to the Committee. Similar contacts with the Tasmanian Division had not been as successful but discussions with Dr R Andrewartha indicated his interest in history and willingness to be considered as a representative when he retires.

Report of the President: The report was published in the Annual Report of the AVA Ltd in AVHR 60. It was moved RT Roe and seconded MD Barton that the report be accepted. **Passed**

Report of Honorary Secretary/Treasurer: The report as attached was circulated and it was noted that membership was holding up as evidenced by the income from subscriptions. It was also noted that the SIG did not receive interest on its accumulated funds in 2011 as had been received in 2010.

Overall there was a healthy surplus of \$1234.18. This surplus was in part due to publishing only two issues of the AVHR in 2011 on account of a lack of historical articles for publication. The Honorary Editor did believe that should have been some more expenditure on postage, printing and stationery than reflected in the statement. It was also noted that the administration charge by AVA National Office reduced from \$471.14 to \$189.00 which would reflect non-attendance at Policy Council and President's Meetings in 2011 that was decided after last year's Conference.

The AVHS makes very minimal demand on Head Office for administrative support and should be charged little.

It was moved NE Tweddle and seconded MD Barton that the report be accepted. **Passed**

Report of Honorary Librarian, Max Henry Memorial Library: The report as prepared by AT Hart was circulated and it was noted that the threat by the University of Melbourne to close the Gilruth Library and the Max Henry Library within it remained.

It was agreed that the AVHS should have a contingency plan for relocation of the library should it close. The site chosen should take account of the subsequent accessibility of the collection to veterinarians generally. It was resolved that some preliminary sounding out should be conducted by AVHS as a precautionary measure against a precipitate decision by the University of Melbourne to close the Gilruth Library.

It was moved RT Roe, seconded MD Barton that the report be accepted and action taken to develop a contingency plan for the future of the MHML. **Passed**

Report of Honorary Archivist: No report was received.

Report of Honorary Editor *Australian Veterinary History Record*: The report prepared by NE Tweddle was circulated who indicated that he was looking for historical articles for publication.

It was moved NE Tweddle and seconded AJ Turner that the report be accepted.

Passed

Election of Office Bearers: It was reported by the President and the Honorary Editor that they were not seeking re-election for their positions but all other office bearers had indicated their willingness to be re-elected.

The President called for nominations for the positions of President and Honorary Editor but no nominations were received. The President indicated that he would continue to seek persons to fill the positions and that he and the Honorary Editor would continue to fulfil the positions until a new office bearer was identified. It was moved J Apsley-Davis and seconded MD Barton that the office bearers for 2012 be;

President:	Vacant
Secretary Treasurer:	J Brady
Honorary Librarian:	AT Hart
Honorary Editor:	Vacant
Committee:	P Canfield, AT Hart, KL Hughes, H Fairnie, RT Roe, P Macwhirter, A Davidson

General Business:

Building the Veterinary History of the Australian Veterinary Profession:

Short History: The President reported that all but one article has been published in the Australian Veterinary Journal and it has been generally well received.

Long History: Completion of the above project clears the way for preparing for this project to be now undertaken. Following discussion on how to progress the project, it was agreed planning should be initiated and MD Barton suggested that Peter Yule might be approached for ideas on the subject which would enable some estimate of costs to be prepared.

Proposed Changes to Membership: As this was to be discussed at the AGM on the Wednesday, it was agreed that there was a need to maintain a watching brief on the issue for any impact on AVHS membership.

Women in Veterinary Science: H Fairnie reported progress on writing the book from the material collected by R Gieschke. Difficulty was being experienced in obtaining material from some people and material of a type that would add some lift to the material was also lacking. The concept that it might be necessary to obtain a social historian to assist with the completion of the project was discussed with H Fairnie able to come back and seek further advice from Committee.

President's Annual Report 2011

The year 2011 saw the completion of the short history of the development of veterinary science and the veterinary profession in Australia with it being published in the *Australian Veterinary Journal*. This production has consolidated a snapshot of the evolving events of the profession between 1788 and 2010.

Vet2011 was the 250th anniversary celebration of the establishment of veterinary education at Lyon, France in 1761. A special occasion meeting to celebrate *Vet2011* was organised by the Australian Government Department of Agriculture, Fisheries and Forests, the University of Melbourne Veterinary School, the AVA and AVHS on 4 July 2011 to celebrate the veterinary profession in Australia. A luncheon in what was the original university veterinary school building in Parkville, Victoria was followed by a symposium that was followed by the Snowden Lecture delivered by Dr Peter Roeder, Secretary of the Global Rinderpest Eradication Program, on the success of that program. Dr Martin Jeggo, Head of CSIRO AAHL was most accommodating in allowing the two events to be combined.

It was fitting to combine the two events because the first veterinary school at Lyon was established to control animal diseases and protect peasants, particularly from the impacts of rinderpest. The completion of this project will see AVHS seeking to gain acceptance for a detailed and thorough history of veterinary science and the veterinary profession in Australia to be written in the near future. Australia's two oldest veterinary schools have achieved centenary status and 2011 sees the AVA achieving 90 years so it is time to consolidate our history into a substantial record.

There has been a gradual decline in members of AVHS as our membership base becomes older. Members are called upon to foster colleagues to join AVHS which is committed to continue producing three newsletters each year. The Annual Meeting voted to maintain the cost of membership as low as possible while maintaining services to members at \$33. Maintaining the membership base of the SIG has not been assisted by a data base that is trying and unreliable. The central administration has decreed that all small SIGs will have a membership fee of \$55 which will take effect from 1 July 2012.

Any members of the AVA are encouraged to join the AVHS to ensure that we can continue to capture veterinary history. If there are AVA or AVHS members who would like to record veterinary history, please contact me at 03 9380 1652 or ajturner@bigpond.net.au.

AVHS and AVA members are invited to the next Annual Meeting of the Australian Veterinary History SIG in Canberra on Monday 21 May 2012. There will be a full program of papers being presented during the day. There will be an Annual Meeting at 5 pm that day and an Annual Dinner at 7.30 pm.

I look forward to seeing members at the Conference in Canberra in May next year.

Andrew Turner
President
December 2011

Secretary/Treasurer's Report

Firstly, I must thank Andrew Turner for all the work that he has done as President of this group for many years. He has performed tirelessly and leaves the position having given our group hours of enthusiastic work. I hope that the next President is able to continue his efforts and promote the AVHG.

I am sorry that I have not been able to contribute more to help Andrew.

The new AVA accounting system has resulted in our group no longer having accrued funds and hence no interest in the income section of the profit and loss.

At present our only expenditure relates to the wonderful Australian Veterinary History Record that Neil Tweddle has edited in an honorary capacity. Again, his efforts are to be applauded and hopefully a replacement editor will be able to continue his great work.

Hopefully we will be able to encourage increased membership of the AVHG and find ways to use our funds to promote the group.

Once again, I thank Andrew Turner for his sterling work during the years and hope that the projects that he has planned will increase awareness of our activities and that the new president will be able to maintain and cultivate further interest.

My apologies for not being able to attend the Annual Meeting and hope the group has a productive and enjoyable conference.

Jeff Brady
Hon Secretary/Treasurer

Australian Veterinary History Group Financials 2011

As at December 31, 2011

	<u>2011</u>	<u>2010</u>
<u>INCOME</u>	\$	\$
Membership		
Subscriptions:	1,733.73	1,766.17
Interest on funds held-AVA		273.60
TOTAL INCOME	<u>1,733.73</u>	<u>2,039.77</u>
<u>EXPENDITURE</u>		
Association Management		
Administration:		
Postage	189.00	471.14
Printing	82.23	553.47
Stationery	228.32	36.31
Total Administration	<u>499.55</u>	<u>1,060.92</u>
TOTAL EXPENDITURE	<u>499.55</u>	<u>1,060.92</u>
NET INCOME/(EXPENDITURE)	<u>\$1,234.18</u>	<u>\$978.85</u>

Max Henry Memorial Librarian's Report 2012

The MHML continues to be mainly a resource for preclinical Veterinary Science students on the Parkville campus of the Melbourne University School of Veterinary Science. It is part of the Gilruth Library and is under lease from the AVA. The librarian, Tammie Goates, is an enthusiastic supporter of the library and the students who use it.

The role of the AVA Honorary MHM Librarian continues to be to liaise with the university librarian and show that the AVA has an interest in the collection. In addition, the MHM Librarian encourages veterinarians to donate books of historical interest, and original writings by themselves, particularly biographies, to the library. A few such donations occur each year and have in the past year.

There continues to be a danger that the Gilruth Library, including the MHML, will be closed by the university at some time in the future. This would place the AVA in the position of having to decide what to do with the collection. The expiry of the lease in 2021 will place the AVA in the same position. This is the main reason for maintaining a close contact with the university.

Tom Hart
Honorary MHM Librarian.



Annual Report: Honorary Editor, Australian Veterinary History Record 2011/12

Two numbers of the Australian Veterinary History Record (AVHR) were produced and distributed during the year. There was a shortage of material submitted for publication during the year. Being World Veterinary Year, several historical papers were published in the Australian Veterinary Journal which may otherwise have been submitted to the AVHR. Hopefully more papers will be submitted this year, although I have none on hand at present.

The AVA Ltd membership database seems to have resolved most of the earlier problems. The AVHR has been sent to current members on the membership list as each number has been printed. When a long-standing member drops off the list, I have usually sent the next number but if the name does not re-appear, then they are dropped off. Several new members have joined. Around 80 copies were distributed to members each number, plus one to the National Library, three complementary copies, including one to the AVA Ltd CEO, plus five to overseas veterinary history collections. The AVHR continues to be posted on the Sydney eScholarship Repository of the University of Sydney Library.

Members are encouraged to record recollections of their own work in the profession, the life and work of other members of the profession, veterinary institutions in Australia or major veterinary achievements and changes and send them to the AVHR so the knowledge is recorded for the future. Every day events for individuals today are unusual for others and the history of the future.

Neil E Tweddle
Honorary Editor, AVHR
18 May 2012

Notices:

President: Since the AGM, Emeritus Professor Mary D Barton, AO has accepted an invitation to fill the vacant presidency of the Australian Veterinary History Society.

Honorary Editor, AVHR: The vacant position of Honorary Editor, Australian Veterinary History Record is being continued in the interim by Neil Tweddle. Anyone interested in taking up this role should contact the President.

HISTORICAL ARTICLES

This article was the basis of a presentation to the Annual and Scientific Meeting of the AVH SIG in Canberra on Monday 21 May 2012.

VETERINARIANS IN THE DEVELOPMENT OF AN AUSTRALIAN PHARMACEUTICAL INDUSTRY

**Geoff A Reed, BVSc, Dip Agr Extn, FAVA
28 Chandos Street
ASHFIELD NSW 2131**

Introduction

The veterinary pharmaceutical industry in Australia has a long history. This paper looks at some of the veterinarians who made significant contributions to the establishment of this industry from the late 19th century until the formation of the Australian College of Veterinary Scientists in 1971. This period is also significant in that there was an ‘explosion’ of new actives from the 1970s, so the earlier years were when the industry was established and subsequently developed. The following decades have seen significant growth in the number of products registered in Australia. The regulatory requirements for the registration of new products, including labelling requirements, have also changed from being non-existent in those early years, to being relatively demanding in 1971 and quite onerous at the present day.

While reference will be made to veterinarians in Australian-owned companies which have developed products for niche markets in Australia, many of the significant contributors to the development of a veterinary pharmaceutical industry in Australia have been employed by multinational companies in the development of products for the Australian market. Specific mention is given to those who made contributions through the development of the outcomes of Australian research, including original CSIRO research.

Some veterinarians are included who, though not employed within the pharmaceutical industry, made significant contributions in the correct choice and application of veterinary products.

While every effort has been made to include all relevant information for the period under consideration, it has been difficult to source information in some instances. Reference has been made to journals, websites and discussions with colleagues, but the information is incomplete in some instances.

The invitation is given to others to provide further information to which they have access so that we can fill in the gaps.

Some prominent veterinarians in the development of the pharmaceutical industry are not included for the simple fact that their contributions came after 1971.

The pioneers

There were very few veterinarians in Australia in the late 19th century and the start of the 20th century either in government service or private practice. In 1880 there were fewer than 50 qualified veterinarians in practice in Australia¹. Treatment of diseases in animals was largely dependent upon practitioners compounding their own medicines for the animals of their clients, with emphasis on dogs, cats, horses and poultry.

The following veterinarians are two who made significant contributions as pioneers in the development of this industry.

Graham Mitchell^{1,2}

A standout amongst these early practitioners was Graham Mitchell in Melbourne. He was a graduate of the Edinburgh University in 1854, moving to Australia in late 1855. It took some time for him to establish a successful veterinary practice in Melbourne in Kirk's Bazaar. He also spent some time working for the Victorian Government. He was responsible for identifying Cumberland Disease as Anthrax. He made many significant contributions to the veterinary profession and livestock industries but perhaps his most significant contribution to the early days of a veterinary pharmaceutical industry was the production of 'Pleuropneumonia Inoculating Lymph' to protect cattle, with reasonable success, against this major cattle disease. He started his work on this product in 1861 and continued to market it for many years.

Harold Rudduck^{3, 4}

Harold Rudduck was born in England in 1873, migrating with his family to Victoria. After attending Melbourne Church of England Grammar School, he completed a Diploma of Agriculture at Longeronong Agricultural College, where he won a scholarship to the Melbourne Veterinary College, from which he graduated with honours in 1894 and worked as an assistant to W. T. Kendall.

In 1895 he established a veterinary practice at 47 Queen Street, Melbourne. He held positions with a number of organisations, including the Williamstown Racing Club and the Brighton Town Council where he held the position of

meat inspector. It was during this time that he developed the ‘Stock Medicine Chest’, the production and sale of which was to form a basic part of his future business.



Ruddocks’s Stock Medicine Chest

He served in the Boer War, following which he returned to the UK for an extended period, during which time he was a reserve officer recalled to active service in Egypt in 1915.

In 1923 he set up a dispensary in Lonsdale Street, Melbourne, manufacturing products to improve pet and animal health, with emphasis on products to control fleas and ticks, nutritional supplements and basic grooming needs. He also manufactured veterinary surgical instruments. He developed a network of sales representatives in south eastern Australia. It was at this dispensary that he produced the first vaccine for pulpy kidney (enterotoxaemia) and contagious abortion (brucellosis).

In 1929 he established Rudduck and Co. Pty. Ltd. The bacteriological testing and the manufacture of veterinary products was taken over by Rudduck Serum Laboratories Pty Ltd in 1939. He later moved the business to larger premises at Moorabbin.



The company advertising from the time indicates that it supplied “A complete range of dog medicines and serums”, which were distributed through chemists and “dog emporiums” throughout Victoria. The company provided specialised products for greyhounds at that time. The company continued to develop its product range and by the late 1960s it was manufacturing a wide range of products for companion animals and vaccines for cattle, sheep and goats and distributed products for Bayer and Nicholas. The company currently trades as Rudducks Pty Ltd and as of 7th February, 2012, had 45 products registered with the Agricultural Pesticides & Veterinary Medicines Authority (APVMA) in Australia.

To the best of my knowledge, Rudducks is the earliest and longest lasting company to have been established in Australia by a veterinarian from his private practice.

The Pasteur Stimulus

In the 1880s, anthrax (originally called ‘Cumberland Disease’ in Australia) was causing significant losses of livestock in NSW. In 1885, 42,000 sheep, 500 cattle and 60 horses died on some properties on the Murrumbidgee River⁵.

In 1888 the Pasteur Institute in Paris was invited by the Government of New South Wales to send representatives to produce chicken cholera for the extermination of the rabbits, which were now in plague proportions⁶. As the Pasteur Institute had already developed an anthrax vaccine in Paris, it was agreed that they would also produce an anthrax vaccine for use in livestock, given the significant losses it was causing. This work was undertaken on Rodd Island in Iron Cove in Sydney Harbour. Dr Germont and M Loir produced anthrax vaccine, the efficacy of which was successfully demonstrated at Old Junee in October 1988.

Over the next couple of decades the fortunes of this collaboration waxed and waned, with a number of changes in personnel from the Pasteur Institute. In 1893 the Pasteur business, which was now at Double Bay in Sydney, employed John McGarvie Smith (a bacteriologist) as a technician. After the representative from the Pasteur Institute at that time returned to Paris, McGarvie Smith linked up with John Alexander Gunn, Manager of Goldsbrough Mort and Co of Yalgogrin Station, to manufacture a single-dose anthrax vaccine.

Arthur Webster

Moving on a few years, there was a young man working as a pharmacist in his father's shop in Burwood, Sydney. This young man, Arthur Farquhar Webster^{7,8}, was not really interested in the shop-keeping aspect of the business, but had developed an interest in bacteriology during his time at university. In about 1928 he met Francois Ray, a representative of the Pasteur Institute who had come to Australia in 1906 to make PPLO (*Mycoplasma gallisepticum*) vaccine for poultry and anthrax vaccine for livestock. The vaccine production had ceased in 1920.

In 1928 Arthur Webster ceased full time work at the pharmacy so that he could spend three mornings a week for a couple of years with Ray learning bacteriology. Ray was able to provide him with the practical knowledge of large-scale vaccine production, which was not known in Australia at that time.

In 1929 Arthur Webster was advised that he would have to be licensed if he wished to continue handling pathogenic organisms.

He thought that the Veterinary course would give him the best training. While he wasn't originally enrolled in the full course, as he only wanted to study bacteriology, he was eventually required to complete the full degree, which he did in 1935.

During his course, he continued to work for Ray, as well as for the pharmacy. Towards the end of his course, Ray and Webster were approached to make some sheep vaccines in their small laboratory at Randwick, starting the partnership of Ray and Webster. The partnership did not last after Webster had graduated and obtained his licence to produce biologicals. At this time (1936) he established his own company, utilising a largish garden shed and a couple of smaller outhouses in the backyard of the family's home in West Ryde.

The first products were poultry vaccines [Fowl Pox and Infectious Laryngotracheitis (ILT)], producing about 1 million doses of each a year, selling them to half a dozen practitioners. In 1935 Macfarlane Burnett had succeeded in growing ILT in embryonated eggs. Webster was quick to adopt this procedure in his production of the vaccine.

He next turned his attention to bacterial vaccines for livestock. Webster utilised his knowledge of large-scale bacterial techniques obtained from working with Ray to the development and production of vaccines against the clostridial diseases enterotoxaemia and black disease, following publication of the work on such vaccines by Turner (Vic) and Bennetts (WA) from the CSIR.

After outgrowing the shed, Webster acquired 15 acres at Telopea in Sydney in 1940, where the business (as well as the family) was based for the next twelve years. By the late 1940s, the demand for the vaccines was such that production capacity had become an issue. The solution lay in deep culture fermentation of clostridial vaccines, using equipment he had purchased from the decommissioned Homebush abattoirs and a Mudgee brewery. Using this equipment and some pipework connections which he designed, he was able to take production from 20 litres (using carboys) to 4,500 litres.

An equine practitioner, Roy Stewart, was also in the business of vaccine production. His company, The Biological Institute of Australia (BIO), provided competition to Websters at this time.

In the early 1950s, the Housing Commission compulsorily acquired the Webster's property at Telopea, as a result of which the company relocated to Windsor Road, Northmead, Sydney.

At that time, BIO was in financial difficulty and the two businesses were merged on the Northmead site under the name Vaccines Pty Ltd, producing products under both the BIO and Websters names for some years. Stewart's equity in the business was purchased by Webster from Stewart's estate at the time of his death, allowing the company to revert to its former name.

Using the embryonated egg technology, the company moved on to the production of new antigens, such as distemper vaccine for dogs, attenuated ILT, mild fowl pox strains and IB vaccines for poultry. At this stage, recognising the need for storage and distribution of live viral products in a stable package, Webster developed his own freeze-drier for vaccine production. This freeze-drier remained in service from around 1965 until well into the 1980s.

In the 1960s, cash was injected into the company by Glaxo UK, which also gave Webster access to a wider distribution network in Australia. This partnership lasted until 1973, when the family again gained full control of the company.

The product range was expanded to include inactivated canine hepatitis vaccine and feline panleucopenia vaccine in the late 1960s, with a footrot vaccine for sheep in the early 1970s.

In 1970 the company had a staff of about 27 and annual sales of almost \$1 million. Many further changes lay ahead in the coming decades, but those changes are outside the scope of this paper.

The early contact with the representative from the Pasteur Institute had significant ramifications for the development of veterinary biological products in this country. A further part of this was the production of an anthrax vaccine for use in Australian livestock. The company also produced a single-dose anthrax vaccine under license to the McGarvie Smith Institute.

Arthur Webster retired from the company in 1980, but never lost his interest in the company, working as an honorary research worker for many years into his retirement. His contribution to the development of veterinary biological products in Australia cannot be underestimated and his innovation was outstanding for his era.

The Practitioners

As indicated earlier, many of the pioneers in the development of a veterinary pharmaceutical industry in Australia were veterinary practitioners. Practitioners have continued to be involved in the development of the industry, as indicated by the following examples.

Tom Hungerford⁹

Tom Hungerford's name has become synonymous with his well-known text, *Hungerford's Diseases of Livestock*, and in the latter part of his career, with the

development of courses run by the Post Graduate Foundation at the University of Sydney. However, these were not his only contributions to the profession.

Following his graduation from the University of Sydney in 1934, he worked for the New South Wales Department of Agriculture for 11 years as a veterinary officer, port quarantine officer and at Hawkesbury Agricultural College. In 1945 he established a private practice at Penrith in western Sydney. It was a mixed practice through which he was able to convince primary producers of the benefits of preventive medicine. He developed a large poultry component to his practice, including the production of poultry vaccines, thus reducing the impact of major diseases in the poultry flocks.

Percy Sykes^{10, 11, 12}

Percy Sykes was born in the Sudan. He undertook his veterinary education in London before World War II, serving with the Royal Army Veterinary Corps in India. After the war he set up a practice in London, where he was drawn into the world of racing through his involvement with horse insurance for Lloyds of London.

In 1951 he migrated to Australia, establishing a practice at Randwick in Sydney. His equine practice has been linked with many well-known horse trainers, including Tommy Smith and Bart Cummings. His practice has grown considerably over the years, not only in the number of veterinarians employed, but in the services provided. His first additions were a laboratory and stabling, then much later a purpose built hospital.

His great clinical acumen and the analysis of his laboratory findings led to the development of specific electrolyte therapy, vitamin and mineral supplementation, body acid neutralisers and alkali reserve replacers for the performance horse. He also clearly identified the essential role of protein in the horse's diet and the importance of the correct amino acid balance for maximum utilisation of that protein.

Percy formed Ranvet over 40 years ago to develop and market the range of products which was the result of his investigations. Ranvet continues its field research on racehorses in training, on broodmares and on young, growing horses on breeding farms. While the products have been concentrated on the needs of the performance horse, they are also applicable to the needs of horses used in recreational pursuits.

The Ranvet product range has grown, with 46 products registered with the APVMA as at 7th February, 2012.

Dick Boon¹³

Dick Boon was a successful practitioner in suburban Sydney. Unfortunately, the full history of the company he formed to market his products, Parnell, has not been recorded, so this information has been obtained from the company website and from discussions with the current owner of the company, who purchased it from Dick Boon in 1986.

At his property at Kirrawee, Dick Boon developed a large number of products for production animals. The product range included products for metabolic diseases in livestock, plus methylene blue for the treatment of nitrate poisoning and a calcium chelate for the treatment of lead poisoning. His products for small animals included products for the treatment of external parasites on dogs and cats. The website indicates that the company started in 1968, but given this is when the first product registrations were granted, it is obvious that his interest and involvement in the development of veterinary pharmaceutical products preceded this time by some years. He was frustrated with marketing and regulatory requirements, being far more interested in developing new products for the treatment of animals (he has not been the only one to have this conflict). Parnell had 27 products registered with the APVMA as at 7th February, 2012.

The Company Veterinarians

Individual veterinary practitioners had identified specific needs for products to treat or control diseases in companion or production animals, with some of them using their initiative to form their own companies to produce and manufacture such products, as outlined previously. It was only to be expected that companies which were involved in the development of human pharmaceutical products, both in Australia and overseas, would identify the potential for pharmaceutical products for the use in livestock and companion animals in Australia.

The credibility, honesty and ethics of veterinarians employed by pharmaceutical companies has sometimes been questioned by colleagues in other areas of veterinary endeavour. Some, indeed, have regarded their colleagues in industry with a greater or lesser degree of distrust. This shows a lack of understanding of the role of veterinarians employed by pharmaceutical companies. While it is expected that they will be loyal to their employer, it is not 'at any cost'. They can face ethical issues which are quite different from those in other areas of veterinary endeavour.

The role of such veterinarians is to:

- Undertake trials to test the efficacy, safety, etc, of new products;
- To provide technical support to company staff in relation to the correct use of company products;
- To provide recommendations with respect to new product development opportunities and priorities;
- In the case of technical services veterinarians, to check the accuracy of advertising material relative to registered claims for the product;
- To ensure the ethical behaviour of the company in relation to the development and marketing of veterinary pharmaceuticals;
- To at all times act in accordance with the relevant State Veterinary Practitioners Act or its equivalent.

This section covers a number of veterinarians who were working in pharmaceutical companies up until 1971 and who have made significant contributions in the development of that industry.

Commonwealth Serum Laboratories (CSL)

In the area of biologicals, Commonwealth Serum Laboratories (CSL) was formed in 1916 to service the health needs of a country which had become isolated as a result of the First World War. While the initial emphasis was in human health products, CSL was to provide veterinary biologicals as well over the following decades. These products include vaccines for companion and production animals, antibiotics and antivenins.

Some of the veterinarians from CSL who made significant contributions during the period covered by this paper are:

Don Oxer^{14, 15}

Don Oxer was born in Tasmania in 1902. His family moved to Western Australia for a while before moving back to Hobart. He obtained a scholarship from the Tasmanian Department of Agriculture to study Veterinary Science at the University of Melbourne, from which he graduated with honours in 1926.

Following graduation he spent time as a Walter & Eliza Hall Fellow and lecturer in veterinary anatomy at Melbourne University. He then moved back to Tasmania as the State's first veterinary pathologist. He was the first to realise that the disease which Bennetts had described as Beverly disease in lambs in Western Australia was enterotoxaemia.

Oxer showed that vaccination of ewes in late pregnancy protected the lambs from the disease in the first few weeks of life.

In 1933 he was appointed as the Principal Veterinary Officer at the Commonwealth Serum Laboratories (CSL). His early work at CSL concentrated on canine distemper, producing a product based on the simultaneous serum-virus method of immunisation. This was superseded by the living egg-adapted virus in the early 1960s.

His greatest area of interest was in clostridial diseases and their prevention, with particular interest in enterotoxaemia, black disease, blackleg and botulism. He published many articles on his research in this area, including tetanus, many within the *AVJ* (not listed here), and was awarded the DVSc by the University of Melbourne in 1942 for his work with anaerobic diseases. His publications included work on enterotoxaemia in goats.

His wide interest in research led to his involvement in the production of a serum to treat dogs affected by the toxin from the paralysis tick, *Ixodes holocyclus*, and a vaccine against infectious laryngotracheitis in chickens. His publications also involved work on equine anaemia in horses and aided in the evaluation of tuberculin.

Those who knew him and worked with him appreciated his availability to discuss their projects and to share his knowledge. He retired from CSL in 1967. He was a founding Fellow of the Australian College of Veterinary Scientists when it was formed in 1971.

Phil Lewis

Phil Lewis grew up on a dairy farm at Darnum, near Warragul in Gippsland, Victoria. At the age of 18 he had to take over the running of the farm following the death of his father. He ran the farm during the Second World War, following which he decided to undertake study for his veterinary degree at the University of Sydney, from which he graduated in 1952. He then established a practice at Trafalgar in Gippsland, which enabled him to service his family farm at nearby Darnum.

In 1959 he joined CSL. His initial three years there were spent monitoring the health of monkeys during and after their importation from the USA for the production of Polio vaccine. He was later involved with the horses stabled at Broadmeadows for the production of antisera.

He took over as Principal Veterinary Officer following the retirement of Don Oxer in 1967.

The area for which he developed a high reputation was in relation to studies on snake bite envenomation and the development of antivenins. Following his retirement in 1979, he continued his studies in this area and was granted a PhD in 1984, the title of his thesis being: "The Pathology, Diagnosis and Prophylaxis of Tiger Snake (*Notechis scutatis*) envenomation in the dog," University of Melbourne, 1984.

Percival Landon (Val) Bazeley¹⁶

Val Bazeley was born in Orbost, Victoria on 2 March 1909. He graduated from the University of Sydney with a veterinary degree in 1938. During his study years, he spent his vacations working at CSL. He subsequently joined CSL on a full-time basis in 1939.

Reference is made above to the importance of CSL in relation to defence needs for biologicals. This became of particular importance in relation to the large scale production of penicillin. Bazeley had joined the Australian Army Militia in June 1939 and began full-time military service in the Australian Imperial Force on 23 May 1941. He had been posted to New Guinea from where he was recalled to head the team at CSL which was responsible for the production of penicillin. He is credited with the success of this project, which resulted in the first shipment of penicillin to New Guinea by Christmas 1943. As a result of his efforts, CSL was responsible for producing large quantities of penicillin in a rather primitive plant. Australia could boast of being the first country in the world to have penicillin made available for its civilian population, having met not only the needs of its own defence forces, but also those of the American allies in the southwest Pacific.

In 1942 he published an article in the AVJ on studies into the effectiveness of a strangles vaccine in the horses of two cavalry regiments¹⁷.

After the war, Bazeley, who had been promoted to Major, returned to university and graduated MB BS (Bachelor of Medicine, Bachelor of Surgery) from the University of Melbourne in 1950. He had received an OBE (Order of the British Empire) for his work on penicillin.

Bazeley led the scaling up of the production of penicillin, scaling up to 10,000 gallon tanks in the 1950s and to 33,000 gallon tanks in the 1960s.

In 1950, Bazeley led the major scale up of the ethanol fractionation of human blood plasma by the Cohn process¹⁸. This yielded a wide range of plasma fractions, plasma expanders (albumin and stable plasma protein solution) and immunoglobulins both 'normal' and with high levels of specific antibodies,

and, from 1961, on the clotting factors VIII and IX, the only effective products for the treatment of haemophiliacs.

In the early 1950s he was working with Jonas Salk and his team at the University of Pittsburgh in the USA on the production of a poliomyelitis vaccine. He moved back to Australia to head CSL's production of the Salk Vaccine, with 25 million doses being produced in the 1950s and 1960s. He was now the Director of CSL.

In 1961, Val Bazeley returned to the USA to work again with Jonas Salk at the Salk Institute in La Jolla, California. He subsequently joined UC San Diego's University Hospital (now 'UCSD Medical Center'). At the same time, he personally funded and maintained a private medical research facility outside Salt Lake City, Utah. He was forced to retire from the University of California at the age of 67, so he moved into private medical practice. He died on 10 September 1991.

Val Bazeley's contribution is highly significant, especially as it is across disciplines and across many years.

C E (Ted) Liefman

Ted Liefman was another significant contributor at CSL. He was the Farm Manager at the new CSL farm at Woodend, Victoria. He was responsible for the production of antisera in the large herd of Clydesdales, but also undertook trials in relation to tetanus in horses and antitoxins.

Hugh Middleton

Hugh Middleton joined Smith Kline & French (SK&F) in Sydney in the mid-60s. In his role there he was involved in some of the animal trials at SK&F's recently established research station at The Oaks, near Camden, south-west of Sydney. In 1968/9 he joined CSL in a technical support role, a position he held until taking over as Principal Veterinary Officer from Phil Lewis in 1979. Much of his contribution is outside the scope of this paper.

Many companies with involvement in human pharmaceuticals established research facilities in Australia to test and develop new compounds for use in or on livestock and companion animals.

The first was ICI Australia in 1954 at 'Merrindale' in the eastern suburbs of Melbourne, closely followed by Nicholas Pty Ltd in 1955 at 'Burnham Beeches' in Sherbrooke Forest in Victoria. Other companies to establish research facilities in Australia up to 1971 were Parke Davis, Smith Kline & French, Pfizer, Wellcome/Cooper's, Merck Sharp & Dohme and Bayer.

Much of the work done at these research stations was the development of products for Australian conditions based on active ingredients which were the outcome of basic research from parent multi-national companies.

Major veterinary contributors from these and other companies to the development of veterinary products for use in the Australian market will be mentioned. Many did not continue in the pharmaceutical industry, but made names for themselves in other areas of veterinary endeavour.

Imperial Chemical Industries of Australia and New Zealand (ICI)

ICI formed its Rural Group in 1944 and established its research station, 'Merrindale', at Croydon in the eastern suburbs of Melbourne in 1954. The research station was used to screen potential active ingredients for use in both agricultural and veterinary products. It also established a tick research station at D'Aguilar in Queensland. The company became a market leader in the provision of veterinary products in Australia, with a number of veterinarians making significant contributions to the industry.

Bruce Forsyth

Bruce Forsyth headed the veterinary research team at 'Merrindale'. Significant products which were launched onto the market during the time covered by this paper were phenothiazine (broad spectrum anthelmintic), carbon tetrachloride (flukicide), oxyclozanide (flukicide), Promicide (tickicide), tetramisole and later levamisole (both broad spectrum anthelmintics). Another anthelmintic which was launched during this period was 2' Phenyl Benzimidazole for sheep. It had to be withdrawn from the market after it was shown to have an unacceptably low safety margin at its therapeutic dose under drought conditions, causing a lot of embarrassment to the company at the time.

He published many papers in relation to these and other products (references not listed here).

Ian de Vere Wilson Montgomery¹⁹

Ian Montgomery was born in Goulburn, NSW in 1910. After obtaining a Hawkesbury Diploma of Agriculture, he went to the University of Sydney to study veterinary science, graduating in 1934. He spent a year as House Surgeon at the veterinary school, following which he joined the woolhouse, Grazcos, in NSW as a Veterinary Officer for 18 months. In mid-1937 he joined the then CSIR, firstly at the McMaster Laboratory in Sydney and then at Armidale.

During the Second World War, he attained the rank of Major and the post of Deputy Director of the Veterinary Remount Service, seeing service in the Northern Territory and New Guinea.

He joined ICI at the end of 1946 as a Technical Service Officer in Sydney, transferring to the company's Head Office in Melbourne in 1953, where he became Manager of the Veterinary Technical Service and Development Section in the company.

He became well known both within industry and within the profession. I recall his telling me that in the 1950s, at which time ICI was manufacturing and marketing phenothiazine, he would ring the various distributors each month to let them know how much they would be allocated for the next month, as production could not keep up with demand.

His standing within the industry was recognised by his appointment as President of the Agricultural & Veterinary Chemicals Association (AVCA, now AVCARE) in the early 1970s.

He appointed other veterinarians to ICI as Technical Services Officers who made their own significant contributions in this area of the industry. These include:

Eric Shepherd

Eric Shepherd was appointed as a Technical Services Officer in Sydney, later transferring to Head Office in Melbourne, where he spent the greater part of his life in industry. He became very well known throughout the wool industry, with a good rapport with the key merino stud owners. He was also well known for his presentations at farmers' field days. His role included the oversight and participation in field trials for new products being developed by ICI.

Keith John Dreghorn Astill²⁰

Keith Astill was born in Brisbane in 1923. After completing his school education, he joined the Queensland Public Service in 1938 as a member of the Titles Office staff. He later transferred to the Department of Agriculture and Stock to become a cadet Sheep and Wool Officer. He undertook further studies at night and after matriculating completed the first year of a University science course at evening classes.

During the Second World War he served with the Royal Australian Naval Reserve and with the naval beach commandos in Borneo from June 1942 until January 1946.

After leaving the navy, he undertook the degree course in Veterinary Science at the University of Queensland, completing the last two years at the University of Sydney as the Brisbane school had not resumed full time teaching for this degree. He graduated in 1949.

He joined the Rural Group of ICI in 1954 as the Veterinary Technical Service Officer in Queensland. He was initially involved in technical and developmental projects, with special emphasis on cattle tick problems. He was also responsible for the trialling in Queensland of sheep and cattle dips, sheep anthelmintics, feed supplementary products and other veterinary products. He was appointed Senior Technical Service Officer in 1962 and was transferred to the company's Sydney office in late 1963.

Michael Robinson

See later under Pfizer.

Nicholas Australia Ltd²¹

George Nicholas was a pharmacist & philanthropist who was born in Victoria in 1884, graduating as a pharmacist in 1912.

During World War I, the German supplies of acetylsalicylic acid (asprin) were cut off. George Nicholas set out to produce the compound, which he did successfully, though the initial product was impure. In September 1915 he had successfully produced a pure product which met the requirements of the British Pharmacopoeia.

The company, Shmith, Nicholas & Co was granted a licence to make and sell asprin in Australia. In April 1917 the trade name 'Aspro' was registered by the company. The company eventually changed its name to Nicholas Australia Ltd.

George and his brother Alfred had worked together to build the company, expanding internationally. Alfred became more interested in horticultural and agricultural interests, establishing gardens at 'Cambrea', in Auburn and 'Burnham Beeches' at Sassafras in the Dandenong Ranges to the east of Melbourne. 'Burnham Beeches' was subsequently divided into the Alfred Nicholas Memorial Gardens and a research and development centre (the Nicholas Institute for Medical and Veterinary Research) for the company based on the house.



Nicholas Institute for Medical and Veterinary Research, 'Burnham Beeches'

Nicholas Australia Limited marketed a wide range of veterinary products, including vitamin and mineral supplements, electrolytes, ectoparasiticides, and cobalt intraruminal pellets for sheep and cattle.

The veterinary range of products was sold to Tasman Vaccine Laboratories (Aust) Pty Ltd (TVL) in 1967.

Nicholas employed a number of veterinarians who made significant contributions to not only the development of the pharmaceutical industry in Australia, but also went on to make significant contributions in other areas of veterinary endeavour. These include:

A K ('Sandy') Sutherland

Sandy Sutherland spent his early professional years with the Department of Primary Industries in Queensland. He was appointed as the Director of the Nicholas Institute for Medical and Veterinary Research in the mid 1950s, overseeing the many areas of research being undertaken by the team of veterinarians. After the sale of the veterinary range of products to TVL, he transferred to the company's Head Office at Chadstone as a Director.

J H (Jack) Arundel

On joining Nicholas Jack Arundel spent a considerable amount of time on investigations into coccidiosis in poultry and its treatment. He also undertook trials into the efficacy of anthelmintics, including phenothiazine, and products for the control of ectoparasites of sheep, publishing a number of papers on these subjects (references not listed here). He left Nicholas in 1964 to join the staff of the newly re-formed Faculty of Veterinary Science at the University of Melbourne.

K D (Doug) Skerman

Doug Skerman joined the Nicholas Institute in 1955-56 from practice in Gippsland. His research at the Institute concentrated on the development of the intraruminal cobalt pellets for sheep and cattle (many references not listed here) which were an outcome of research by CSIRO in Adelaide. Initial work was also undertaken into the development of intraruminal selenium pellets for sheep and cattle, with final development being undertaken by TVL.

***Nancy Wickham*²²**

Nancy Wickham worked at the Nicholas Institute for three years in the 1950s, with emphasis on laboratory investigations.

William (Bill) Joseph Pryor

Bill Pryor graduated from the University of Queensland and joined the Victorian Department of Agriculture at Camperdown.

He joined Nicholas Australia Ltd as a Technical Services veterinarian based at the Chadstone head office in 1956, leaving Nicholas to join the staff of the Faculty of Veterinary Science at the University of Queensland in 1958.

R W (Bill) Gee

Bill Gee followed Bill Pryor as the Technical Services veterinarian at Chadstone, working there for a couple of years.

John Bourke

John Bourke then followed Bill Gee as the Technical Services veterinarian, before leaving to take up his position as the veterinary steward at the Victorian Jockey Club.

Parke Davis

Parke Davis had a chemical research laboratory at Caringbah in their factory complex and established their Veterinary Experimental Station near Mittagong, NSW in the late 1950s.

The significant product to come out of this research was Clioanide (Tremerad), a flukicide, which was marketed by William Cooper and Nephews.

Veterinarians who were employed at the Parke Davis research station, included:

John O'Brien

John O'Brien graduated from the University of Sydney in 1964. Following graduation he spent a short time in practice in Taree, NSW, as a Temporary Lecturer in Veterinary Surgery and Anaesthesia at the University of Sydney, Assistant Lecturer at the new Veterinary Pre-Clinical Centre at Parkville with the University of Melbourne, before joining Parke Davis in January 1968. He was appointed as the clinical toxicologist at the research centre at Mittagong, following on from Coburn DeGoosh (an American graduate) who had returned to the USA. John was responsible for the clinical trial work with the flukicide in target animals. He also undertook research into animal safety and tissue residues with respect to the products under investigation.

Donald W Duncan

Donald Duncan was appointed as Veterinary Manager at the Parke Davis research station at Mittagong. He only spent a short time here, before moving to Melbourne to enter private practice.

Ian ('Sandy') G Pearson

After graduating from the University of Sydney in 1949, Ian Pearson spent seven years at the New South Wales Department of Agriculture's Veterinary Research Station at Glenfield before joining CSIRO at McMaster Laboratory where he worked with Hugh Gordon on liver fluke, and was joined by Joe Boray. After six years he was recruited by Parke Davis in 1961 to be their Veterinary Manager. He was based at Caringbah and controlled the veterinary sales team in Australia and New Zealand as well as being Director of the Research group which entailed frequent visits to Mittagong, and regular contact with Parke Davis Research HQ in Ann Arbor, Michigan.

Clioanide was synthesised in Caringbah, screened and subsequently fully tested for efficacy and toxicity in sheep and cattle at Mittagong, where it showed efficacy against immature fluke. Ann Arbor provided some formulation and testing in laboratory animals, before widespread field trials in Australia and New Zealand. It was the only chemical to be marketed in Australia after the great bulk of the research and development work was carried out in this part of the world. Marketing was lacklustre, then MSD developed the related rafoxanide which showed increased activity against even younger fluke.

After almost ten years with Parke Davis he joined Merck Sharp and Dohme in 1971 in their Applied Rural Research group with responsibility for the trials at 'Hillgrove', Armidale, NSW, before switching to International Animal Science Research with emphasis on the development of candidate chemicals for Australia, part of a regional group which included South Africa and New Zealand.

Cyanamid

Cyanamid had a limited veterinary presence in Australia, with tetramisole being its major compound which was marketed by ICI in Australia under licence.

Syd Hebden

Syd Hebden spent a number of years with Cyanamid in Australia, providing technical support with respect to the marketing of tetramisole in Australia.

Merck Sharp and Dohme (MSD)

MSD has been in Australia since 1952. They established a veterinary research facility at Ingleburn in southern Sydney for the research and development of veterinary products. In the period covered by this paper, the significant products to be trialled at this facility were thiabendazole (Thibenzole), a broad spectrum anthelmintic, amprolium (a coccidiostat) and rafoxanide (Ranide), a flukicide which was more effective against younger immature liver fluke than previously available products.

MSD also funded the Project of Applied Rural Research (PARR) on properties at Hamilton, Victoria, and 'Hillgrove', Armidale, NSW, where work was undertaken on the cost effectiveness of drench programs for sheep and cattle.

***Richard (Dick) Butler*²³**

Dick Butler was born in 1918. He grew up on Queensland, obtaining a Queensland Diploma of Stock from Gatton Agricultural College. He went on to obtain his veterinary degree from the University of Queensland, graduating in 1942. He soon afterwards saw service as a Flying Officer in the RAAF in the later stages of WWII.

After the war, he was employed by the British Colonial Service in (then) Tanganyika, where he gained valuable experience in tropical veterinary parasitology. He had a special interest in the chemotherapy of parasitic diseases and as a result he spent a year studying at the London School of Hygiene and Tropical Medicine, gaining a Diploma of Applied Parasitology and Entomology.

In 1961, following 16 years spent in Africa, he returned to Australia, where he spent 5 years as Senior Veterinary Parasitologist with the Department of Agriculture in Western Australia.

In 1966 Dick joined the team at the newly established MSD Veterinary Research and Development Laboratory at Ingleburn, NSW, as a Research Officer. As such, he was involved in the screening studies of many new chemicals, evaluating efficacy and safety studies with new product candidates and servicing field trials to determine productivity responses to product use. In the period covered by this paper, he had a particularly significant role in the trials associated with the development and ultimate registration of Ranide.

Max Darvill

Max Darvill graduated from the University of Sydney in 1963. After a year as Clinical Instructor at the Rural Veterinary Centre at Camden, he spent a year in clinical practice in the Illawarra Veterinary Hospital.

He joined MSD as a Veterinary Services Officer in 1967, then was promoted to Technical Services Manager, servicing the company's range of anthelmintics, ectoparasiticides and vaccines.

In 1970 he established the PARR program under the direction of Ian Johnstone.

Terry Rothwell

Graduated from the University of Sydney, following which he took up a position as a Veterinary Officer in Papua New Guinea for five years.

On his return to Australia, he spent some time with MSD as a Technical Services Veterinarian before returning to the University of Sydney to complete his PhD, following which he continued in the Department of Veterinary Pathology within the veterinary school.

Jim West

Graduated from the University of Sydney. After many years in private practice in Albury, NSW, he joined MSD as a Technical Services Veterinarian at the time Thibenzole was introduced to the Australian market. He became the Technical Services Manager after Michael Robinson moved to Pfizer.

He was later transferred to MSD (International) where he was responsible for the development of products such as cambendazole and rafoxanide.

John Digby

Graduated from the University of Sydney, following which he spent time in practice in the North Island of New Zealand.

He joined MSD (Australia) as a Technical Services Veterinarian in 1967 where he was responsible for the servicing of the Thibenzole and Rafoxanide range of products in NSW, Victoria, Tasmania and WA. He left MSD to join the Bureau of Animal Health in Canberra.

Russell Riek

Graduated from the University of Queensland. He then joined the CSIRO working on the epidemiology of cattle tick and tick fever in Queensland. He was subsequently awarded a DVSc in recognition of this work.

He joined MSD International and became Director of the International Animal Science Research unit based at the Ingleburn facility. He and his team were responsible for the screening and testing of promising antiparasitic agents, including a number of poultry coccidiostats. He was later transferred to MSD Research in New Jersey, USA.

Ian Hotson

Ian Hotson obtained his PhD at the University of Sydney after which he became parasitologist at Glenfield Veterinary Research Station. While there he was involved in the investigation into the first case of thiabendazole resistance.

He left Glenfield to accept an appointment as the Regional Director of International Animal Science Research for MSD based at the Ingleburn research facility. As such, he was responsible for all the research relating to the company's veterinary products in Australia, New Zealand and South Africa.

His appointment as Director at Ingleburn followed the transfer of Russell Reik to MSD Research in New Jersey. Ingleburn was initially part of Basic Research, but changes within the company meant that its role was changed to that of Development Research, with a development farm in New Jersey becoming the facility for Basic Research under Russell Reik.

Michael Robinson

See under Pfizer.

Pfizer Australia

Pfizer Australia commenced business in Australia in May 1956, marketing a range of medical and veterinary products.

Michael Robinson^{24, 25}

Michael Robinson graduated from the University of Sydney in 1949. After graduation he spent eight years in government service in NSW, including a time as parasitologist at Glenfield before joining ICI in Melbourne.

At ICI he was the Technical Service Officer responsible for Victoria, Tasmania, South Australia and Western Australia. The products were mainly sheep and cattle anthelmintics and insecticides.

In 1958 he moved back to Sydney as Technical Manager of the Veterinary Department of Burroughs Wellcome and later as Veterinary Ethicals Manager after the merger with Cooper's.

He joined MSD in 1962 as Technical Manager of the Veterinary Division and helped launch Thibenzole.

In 1967 he became the Technical Manager of Pfizer Agricare and helped launch and service pyrantel/morantel anthelmintics for sheep, cattle, dogs and horses.

William Cooper and Nephews (Australia) Pty Ltd/Burroughs Wellcome/ Cooper's

This group of companies has had a long history in Australia, with William Cooper and Nephews being the first to make an appearance with their arsenical sheep dip in the 19th century.

The original sheep dip company was founded by a veterinarian, William Cooper in 1843 in Berkhamstead, England. The product was initially imported direct from the Cooper company in the UK. In 1880 agencies were established in Sydney, Melbourne and Tasmania to sell Cooper products. A local company, William Cooper and Nephews (Aust) Pty Ltd was established in 1892. To avoid the transport problems caused by the first World War, a manufacturing plant was established at Cabarita in Sydney in 1919. By the 1920s, there were 70 million sheep in the eastern states with sheep lice being quite a problem. Cooper's Dipping Powder held three quarters of the dip market at that time.

Burroughs-Wellcome was the arm of the company which developed and marketed ethical veterinary products, including antibiotics and anaesthetics.

Cooper's became the name of the company under which products were sold to farmers throughout Australia.

A research station was eventually established in Australia in the western suburbs of Sydney for the evaluation of new compounds sourced from the company's parent in the UK.

Three veterinarians who made significant contributions at the time covered by this paper were ***Bruce Heffer***, and ***Richard (Dick) Sparrow*** and ***Michael Robinson*** (see above, under Pfizer). Bruce and Richard were Technical Service Veterinarians, with Bruce being responsible for the products relating to the farm animals and Dick being responsible for the support of the ethical product range for Burroughs-Wellcome.

Smith Kline and French Laboratories

Smith Kline and French Laboratories commenced marketing veterinary products in Australia in the 1960s, at which time they employed Hugh Middleton (see above) as a Technical Services veterinarian. The company established a veterinary research facility at The Oaks, near Camden to the south-west of Sydney to evaluate new products for the Australian market.

Doug Johns

Doug Johns was in charge of the veterinary research facility at The Oaks. The major product to come out the research during this period was the broad spectrum anthelmintic, parbendazole.

Animeals Pty Ltd

Animeals Pty Ltd was formed in the 1960s to develop medicated molasses blocks. The proprietor was:

Gabriel Kauzel

Gabriel Kauzel spent time working in parasitology at the CSIRO McMaster Laboratories in Sydney. Perhaps the best known of the products which he developed and marketed was Wormolas, incorporating phenothiazine at 1.25% for the ongoing control of internal parasites in sheep and cattle. The blocks also provided “an important supplement rich in sugars and containing calcium, phosphorus, magnesium, cobalt, potassium, protein and vitamins”. His business must have been successful financially, as he was well known for the Rolls Royce which he drove to field days.

Bayer Australia Limited

Bayer Australia Limited originally marketed its veterinary products in Australia through its Agricultural Division. At one stage its veterinary products were distributed in Australia by Rudducks, as mentioned above. It set up an Animal Health Division in its own right on 1 April 1970. It initially imported all its veterinary products from Germany.

Bayer established a veterinary research facility at Bahrs Hill in Queensland in the late 1960s under the leadership of Dr Eric Endrejat for the testing of formulations for the Australian market. Emphasis was on products for the control of internal and external parasites of dogs and cats and lousicides for sheep.

Extension Veterinarians

While veterinarians employed in the area of technical services were deeply involved in extension, there were some veterinarians not employed by the pharmaceutical industry who none the less played important extension roles in relation to the correct choice and/or application of veterinary chemicals. These include:

Victor (Vic) Cole²⁶

Vic Cole was educated at North Sydney High School. In 1930 he became technical assistant to (later Sir) Ian Clunies Ross who was then the parasitologist at CSIR within the Veterinary School of the University of Sydney. When the McMaster Animal Health Laboratory was built in 1931, Vic Cole moved there with other CSIR staff. He continued as a technical assistant until 1933 when he enrolled as an undergraduate at the Faculty of Veterinary Science. He graduated in 1936.

In early 1937 he was appointed as the parasitologist in the Department of Agriculture in New Zealand at Wallaceville. He returned to NSW to take up an appointment as veterinary officer with Graziers Cooperative Shearing Co (later Grazcos Cooperative Ltd). He retained a close association as a consultant with this firm during subsequent years when he was engaged in other activities, returning to full-time employment with Grazcos in 1953. His 'other activities' included appointment as veterinary officer to the Australian Wool Board in 1945-6 and private practice in Dubbo from 1947 to 1953. During this time he was also a consultant to the Graziers' Association of NSW, for whom he contributed a regular column in their weekly journal.

His extension efforts and reputation were legendary and his advice was eagerly sought by graziers. He published a book on diseases in sheep, *Sheep Management for Wool Production*, published by Grazcos Cooperative, which became the graziers' 'Bible'.

Archie Sinclair

Archie Sinclair is another veterinarian who has made a significant contribution to the extension of relevant information to sheep owners. In this case, the information was based on his research into the correct application of insecticides to the fleece of sheep while he was working for the Sunbeam Corporation. His work included studies on constant replenishment sheep dips, sheep showers and jetting compounds. His work is still relied on by chemical companies and graziers alike to ensure that products are applied correctly.

In Conclusion

Few of the companies mentioned in this paper exist today, many having been purchased by or merged with other companies. Most of the research stations have disappeared resulting in very little contemporary original Australian-based research by veterinary pharmaceutical companies. Emphasis has moved over the years from products for companion animals, to production animals and back again.

When the Australian College of Veterinary Scientists was formed in 1971, there were over 50 veterinarians employed in the veterinary pharmaceutical industry, though the Pharmacology Chapter was not formed until 1979 with 20 foundation members. Today the membership of the Chapter numbers 97, though not all are employed in the veterinary pharmaceutical industry.

Membership of the Australian Veterinarians in Industry (AVI) Special Interest Group of the AVA is currently 174 veterinarians, 115 of whom are full members, with 56 student members and 3 Life Members. AVI had 55 members when it was formed in 1967.

I would strongly recommend that someone should be approached to prepare a paper on those who have made contributions to the continued development of the pharmaceutical industry in Australia since 1971, given that there has been an exponential growth in new active ingredients and products since that time. Also, it is important that the history of this period should not be lost, as many of those involved in these later years are now retired.

Acknowledgements

I would like to thank many of my colleagues for their assistance in drawing together much of the information provided in this paper. Particular thanks to Ian Pearson, whose memory has been invaluable, along with his own valuable contribution to the development of the pharmaceutical industry in Australia, as noted in the paper.

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