A brief history of equine private practice in South Africa

C H B Marlow[a]

ABSTRACT

Horse breeding in South Africa started in 1652, shortly after the 1st European settlement in the Cape. African horsesickness posed a serious problem and after a devastating outbreak of the disease in 1719, horses were largely replaced by oxen for agricultural and transport purposes but remained important from a sporting and military point of view. Examples of the latter are the export of horses for military use to India in the mid-19th century and for use in the Crimean War in 1854, reaching a zenith in the Anglo-Boer war in which an estimated 450 000 horses succumbed. Research and disease control and initially also health services were the responsibility of state veterinary authorities. Private equine practice was pioneered by Jack Boswell in the late 1930s, mainly involving race horses and Thoroughbred studs as part of a general practice. Specialised equine private practices were only initiated 10 years later and developed further during the 2nd half of the 20th century. These developments are described in some detail, including resumés of the veterinarians involved, clinical challenges encountered, scientific advances as well as developments in the equine industry with the emphasis on Thoroughbreds and the racing community. The regulatory environment, especially regarding the import and export of horses, and the role of various organisations and associations are also briefly discussed.

Keywords: equine specialists, history, horse breeding, private practice, South Africa, Thoroughbreds.

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INTRODUCTION

Equine private practice, although a small but integral part within the wider concept of equine veterinary medicine, can never be seen in isolation as it is concerned with and dependent upon equine veterinary activities in general and ongoing worldwide research in particular. Consequently, the history of the horse in South Africa (SA), which has played such an important role in the development of the country, must be included in our veterinary history. In SA, equine private practice falls into 2 overlapping categories, namely, the city/urban/peri-urban practitioners who are concerned mainly with those disease conditions that affect the general health and well-being of the recreational and performance horses detrimentally, and the rural practices, generally manned by general practitioners, well-versed in animal husbandry, management and nutrition, who, in close cooperation with their farmer/breeder clients, concentrate on improving and eventually optimising the reproductive and productive efficiencies of the different equine breeds, particularly the Thoroughbred with its restricted breeding season, as well as the other livestock under their care. Obviously overlapping, which may be considerable, especially by the city/urban practitioners, occurs and is unavoidable and beneficial.

[a]Dr Marlow passed away on the 19th of March 2010.

EARLY HISTORY

In April 1652 a consignment of horses from Java[46] of Arabian-Persian descent[40] which arrived off the Cape in a Dutch East Indies Company fleet were, due to bad weather, landed on the island of St Helena before being reshipped to the Cape soon thereafter[46]. In 1653 another 4 horses, including a superb stallion, subsequently devoured by lions, arrived at the Cape. By 1661 15 foals had been born to 22 imported horses[46].

For the next 150 years, until 1820, the blood remained exclusively Arabian-Persian, particularly with the importation of stallions from Persia in 1689, South America in 1778, North America and England in 1782 and again from England in 1810[40]. In 1807 stallions of Andalusian blood being exported to South America were captured on a Spanish ship and brought to the Cape. These horses were the ancestors of the present-day roans famed for their hardiness and endurance[35]. In 1811 Thoroughbred stallions of the best blood were imported from England and until 1870 a great improvement took place in the horse in SA, which showed all the desirable qualities that correctly mated Arabians and Thoroughbreds gave to each other[35]. From 1849 farmers from the Cape exported many horses to India for use by the Indian cavalry and artillery[25]. South African horses were also the mounts in the Charge of the Light Brigade in the Crimean War in 1854[40].

When diamonds were discovered in 1867, the 1820 British Settlers had established themselves in the Eastern Cape, particularly in the region of the Great Fish River and its tributaries, where they had acted as a buffer between the warring indigenous tribes to the East and the European communities to the West. No rail link existed from Cape Town to Kimberley and consequently everything – goods, commodities, men, women and children – were routed through Port Elizabeth. From there all transport was either ox-drawn, horse-drawn or on horseback to Grahamstown and then *via* the Old Colesberg Road to Bedford, over the escarpment to the relatively disease-free, high-lying Cradock, Schoombee in the Middelburg district and Colesberg with many hostelries along the way, before crossing the Orange (Gariep) River into the Orange Free State *en route* to Kimberley. By this time, outbreaks of African horsesickness, which had been a serious and constant threat since the early 1700s, ensured that horse-breeding, with any certainty or continuity, could only be carried on in the high-lying uninfected areas[35] and it is therefore not surprising that the majority of the Thoroughbred studs in SA were established and situated in the Eastern Cape interior until well into the 1960s.

The year 1871 had a severe negative impact on horse-breeding in SA, because the era of the tram was ended in London, and these horses (blood weeds) came on the market. Overseas dealers flooded the country with bad, moody, cull Thoroughbreds that severely damaged many years of good breeding. However, many breeders resisted the invasion of these 'imported horses', and continued to breed good horses, but the damage had been done[35]. The export of horses to India and other countries terminated when the Suez canal was constructed and eastern countries could obtain horses more cheaply from southern Europe. Australia, which incidentally imported their 1st

horses and merino sheep from SA, moved into the remaining markets in India and elsewhere[40].

In order to stem this deterioration in the SA horse, many breeders imported cold-blooded stallions of the heavy and coach type, particularly the Hackney, Cleveland, Bay, Flemish and Allenbury bloodlines. Yet the blood remained, to a large extent, Arabian, and the endurance, comfortable paces, hardiness, good quality of bone, tendon and lung, was much in evidence during the Anglo-Boer War of 1899–1902[40].

Considering the fact that over 450 000 horses, 50 000 mules and an unknown number of donkeys had been 'expended' during the Anglo Boer War (R C Bester, pers. comm., 2005), there were, with the exception of a few bloodlines[35], practically no horses to speak of left in the old Republics and Cape Province. However, armed with the breeding experience obtained from 1820 onwards, the Government and many breeders imported a number of the best Thoroughbred stallions[40], many of them to the Eastern Cape. Interestingly, when Volume 1 of the *General stud book of South Africa* was published in 1906, the entries of Thoroughbreds in SA dated back to the early 1800s (C B Hall, NHRA, pers. comm., 2005).

1900 TO 1950s – INTRODUCTION OF VETERINARY SCIENCE TO THE HORSE INDUSTRY

In 1910 the Grootfontein College of Agriculture, which in later years would play a very important role in equine rural practice, was established just outside Middelburg town on a site with many military buildings that had served as a camp for British troops during and after the Anglo-Boer War. In 1922, S W J (Schalk) van Rensburg (MRCVS 1921) was appointed lecturer in Veterinary Science at the College where he succeeded P J J Fourie (MRCVS 1919) who was transferred to Onderstepoort. His duties included assisting E M Jarvis, the state veterinarian stationed at Middelburg at the time, until 1927 when Dr Jarvis was transferred to De Aar. Dr van Rensburg was appointed state veterinarian at Middelburg and in addition to his lecturing duties, had to take over the supervision of 8 districts in the Cape Midlands and Karoo that contained some of the most outstanding stud breeders of horses, cattle, sheep and goats[62]. His work in Middelburg included visits to Dwarsvlei, owned by Henry Nourse, a mining magnate. This Thoroughbred stud, at one stage, was said to be the biggest in the world with its 600 broodmares, and at his death in the early 1940s, he evidently had over 1000 horses in training. One of his managers was Hendrik du Toit, an exceptional stockman who, when well into his 80s and until his death in the 1960s, gladly offered his vast experience and practical knowledge in equine husbandry, management, nutrition and breeding to anyone prepared to listen to him. An interesting incident occurred at Temple Farm, a famous Thoroughbred breeding establishment, previously a hostelry, on the Old Colesberg Road near Schoombee. The owner Sandy van Breda had lost some of his best horses and his best stallion from arsenical poisoning, suspected and soon confirmed by Dr van Rensburg to have been administered maliciously by the head groom[62]. By the time he was transferred to Ermelo in 1930 the Cape Midlands farming community, particularly the stud cattle, sheep, goat, riding horse and Thoroughbred breeders, had come to appreciate, and for many years remembered, the benefits and value of sound veterinary advice.

The 1st American Saddle horse stallion was imported in 1918 followed by another in 1922 (of which there are no records) before S P Fouche imported a number of these animals in 1934[46]. Other breeders soon followed his example and it was not long before it became a very popular breed, particularly amongst the agricultural show-riding horse fraternity.

In 1932, M W Henning published the 1st definitive textbook on animal diseases in SA and followed this with a completely revised edition in 1949[33]. Locally, articles on dourine[20,51] appeared in the *Journal of the South African Veterinary Medical Association*. In 1937, Caslick's classical investigations concerning the vulva and the vulvo-vaginal orifice and its relation to genital health[12], followed by a study of the sexual cycle and its relation to ovulation and breeding records[11], both in Thoroughbreds, had a major impact on Thoroughbred breeding and are still very pertinent today.

J C (Jack) Boswell (BVSc 1935) can be regarded as the father of veterinary private practice in SA. After qualifying, a Jockey Club sponsorship allowed him to spend a year in England, with Day and Crowhurst at Newmarket, and another in Kentucky with Hagyard, Davidson and McGee before opening a general practice in Johannesburg. He soon became a well-known and respected racing veterinarian and also attended many of the Thoroughbred studs in the Transvaal, particularly in the Standerton area, the northern Free State and even as far afield as Kimberley in the Northern Cape. Many a recently qualified veterinarian passed through his capable hands to gain experience, before moving on to their chosen fields.

During the 1940s a number of articles on different aspects of reproduction in the mare appeared in overseas veterinary publications. These included sterility in the mare associated with irregularities of the oestrous cycle[16], clinical and experimental observations on reproduction in the mare[17], the efficiency of pregnancy diagnostic methods[19], sperm survival[10,18], oestrous, ovulation[15] and pregnancy[31] and clinical problems of horse breeding[9].

Locally the article 'Equine abortion' by Henning, Keppel and Flight appeared in 1943[34] and another entitled 'On the aetiology of epizootic or infectious equine abortion' by Henning in 1946[32]. In 1949 the 2nd edition of the monumental work *Animal diseases in South Africa* by M W Henning[33] was printed. Also in 1949, C W A (Charles) Belonje (BVSc 1936), who was the state veterinarian stationed at the Grootfontein College of Agriculture, Middelburg Cape, was the 1st veterinarian in this country to report on reproduction in the Thoroughbred mare[6].

In 1949, 'The Registered Saddle Horse Breeder Society of South Africa and Rhodesia', established in 1942, became known as the mother society of 4 affiliated societies to accommodate the different breeds, namely The Arabian Horse, The American Saddle Horse, The National Riding Horse (later Boerperd), and The Thoroughbred Polo and Riding Horse Breeders' Societies of South Africa[2].

G L (George) Faull (BVSc1940) who had opened a companion animal and equine racing practice in Cape Town soon became the attending veterinarian to many of the Thoroughbred studs in the Western Cape, particularly in the Bonnievale, Ashton and Robertson districts in the Breede River Valley and as far afield as Ralph Koster's Klawervlei Stud in the Nuweveld mountains in Beaufort West. He loved surgery and his speciality in broodmares was the repair of recto-vaginal lacerations and fistulas. His contribution to Thoroughbred stud and racing practice was enormous and by the 1960s he had not only become a wonderful mentor to many of his younger colleagues but was recognised as the doyen of the equine practitioners in this country.

In 1948, G F J (Frik) van Rensburg (BVSc 1948) became the 1st rural equine private practitioner in SA when he opened a general practice in Colesberg in the Eastern Cape, a region renowned for the large number of 'top' Thoroughbred, Arabian, American Saddler and Boerperd studs, and also for the other classes of livestock, particularly Merino sheep.

A. (Sandy) Littlejohn (BVSc 1949) first

gained experience with Jack Boswell before starting a general practice in Mooi River in 1953, and before leaving in 1961 to take up an appointment at the Royal Dick Veterinary School in Edinburgh. His professional expertise, particularly in the equine and bovine fields, had made him a legend in his own time. In 1959 he published a comprehensive article on Sleepy Foal Disease in Natal[39]. On his return to South Africa in 1971 he was appointed as Professor in the Equine Physiology Research Chair at the Onderstepoort Veterinary Faculty where he did exemplary work before his retirement and return to England in 1985. This Chair was created using funds donated by key persons within the equine industry. Unfortunately, the Chair was discontinued following Sandy Littlejohn's retirement due to insufficient funding.

During the 1950s 2 publications of inestimable value to equine practitioners appeared overseas, namely, on the induction of oestrus by intra-uterine instillation of a sodium chloride solution[47] and on oestrus and infertility of the Thoroughbred mare in New Zealand[3], which confirmed the earlier work of Caslick[11] in the USA. Locally articles on the oestrous cycle[48], infertility in mares caused by ovarian dysfunction[63] and purulent pneumonia in foals caused by *Corynebacterium equi*[29] (renamed *Rhodococcus equi*) were published. In 1958, Charles Belonje, state veterinarian at Grootfontein in Middelburg, was awarded the DVSc degree for his pioneering work on fertility and infertility of the Thoroughbred mare under environmental conditions prevailing in the Karoo Midlands[7].

The veterinarians with a special bent for a career in the equine field who obtained their BVSc degrees in the 1950s include C H (Chris) van Niekerk, W A J (Willie, Dup) du Plessis, Tremayne Toms, J L (Jean) du Plessis, C H B (Chris) Marlow, J M (John) O'Grady, M A J (Maurice) Azzie and B de B (Brian) Baker.

Chris van Niekerk (BVSc 1950) spent 7 years in general practice in Swellendam and Riversdale before moving to Aliwal North in 1957. There he attended a considerable number of studs including Birch Bros (Thoroughbreds) and Fanie Fouche (American Saddlers) before being appointed to the Department of Physiology at the University of Stellenbosch in 1963 and then seconded to the Gynaecology Department, Faculty of Veterinary Science, Onderstepoort, in 1964.

Willie (Dup) du Plessis (BVSc 1951), born and bred in Colesberg and 2nd cousin to Frik van Rensburg who had already established a practice there, joined C H (Coenie) Basson at the 'Blue Cross' in Cape Town in 1952 and soon became involved in the riding and pleasure horse fraternity. Later in his career many of the Thoroughbred studs in the vicinity of Cape Town utilised his services and his veterinary expertise has also been invaluable to the members of the Endurance Ride Association of SA since its inception in the mid-70s.

Tremayne Toms (BVSc 1952) gained experience with Jack Boswell, particularly with Thoroughbreds and polo ponies, before becoming, on Boswell's recommendation, the Oppenheimer's Mauritzfontein Stud resident veterinarian just outside Kimberley in 1957.

During the 30 years he spent on the stud he published an article on the care and management of Thoroughbred foals[52] and, as a valuable member of the Council of the Thoroughbred Breeders Association, was instrumental in compiling the 'Certificate of Breeding Soundness for Barren Mares' in the late 70s.

After qualifying Jean du Plessis (BVSc 1953) purchased Frik van Rensburg's practice in Colesberg and quickly established himself as an astute practitioner particularly in the Thoroughbred, American Saddler and Boerperd studs. In 1960 he sold the practice to R C (Robin) Rous (BVSc 1960) and moved to Dordrecht for 2 years where he attended the 3 Birch Bros Thoroughbred studs before returning to Onderstepoort. His experiences with Birch Bros are contained in the very informative article 'Some observations and data in Thoroughbred breeding'[23] and he also reported on the histopathology of *Shigella viscosum equi* infection in newborn foals[22].

Within 2 months of qualifying Chris Marlow (BVSc 1956), on the recommendation of Willie du Plessis, purchased a mixed, predominantly stud practice, with enormous potential from Andries du Plessis (BVSc 1948) in Cradock in the Cape Midlands. It soon became apparent, considering the progressive nature of the owners and breeders of the numerous equine, dairy and beef cattle, sheep and goat studs, their willingness to share their practical knowledge and experiences, and the vast distances to be travelled on untarred roads, that a clinical 'fire-engine' type of practice was out of the question; and that preventative medicine programmes involving husbandry, management, nutrition, reproduction and production to improve the functional efficiency of all classes of livestock would have to be implemented.

These programmes, at first elementary, were eagerly accepted by many of the breeders whose dairy herds, at the time, were ravaged by vibriosis, or where clostridial diseases, brucellosis and internal parasitism had assumed alarming proportions in small stock, and where the 'bloodworm', *Strongylus vulgaris,* the restricted breeding season and the abysmal foaling rate of less than 50 % were of particular concern to Thoroughbred breeders. In fact, as early as the autumn of 1957, examination of faeces from individual horses on a regular basis for the presence of strongyle eggs became a routine procedure on a number of Thoroughbred studs. Furthermore, Bain's recommendations on Thoroughbred breeding based on his experiences in New Zealand[3], which had just been published, were also included in the preventative medicine programmes. Early in 1957 it also became apparent that Asiatic (European) redwater (*Babesia bovis*) and equine biliary fever (*Babesia equi,* recently renamed *Theileria equi*), were endemic in the vicinity of the Old Colesberg Road. In April 1959 an imported Thoroughbred mare, which had never shown clinical babesiosis, slipped a *B. equi* positive foal, confirmed on blood smear examination.

After qualifying, John O'Grady (BVSc 1958), joined Ashton Tarr's practice in Pietermaritzburg where he soon became involved in Thoroughbred work in the vicinity. After 1961, when Sandy Littlejohn left Mooi River, his stud practice expanded well into the Natal Midlands and by the late 1960s he was known to be exceptionally proficient in the early diagnosis of pregnancy by rectal palpation.

M A J (Maurice) Azzie, who also qualified in 1958, immediately became involved in racing practice in Johannesburg where his uncle was a well-known trainer. He was soon involved in stud practice, particularly in the Standerton area, and having obtained his pilot's licence also did the Birch Bros work in Dordrecht in the mid to late 1960s.

B de B (Brian) Baker (BVSc 1959) spent his 1st year in practice with Jack Boswell before being sent to Fred Day and Bob Crowhurst in Newmarket for 6 months and Hagyard, Davidson and McGee in Kentucky for the rest of the year. He spent the next 2 years with Boswell before moving to Hillcrest in 1964 and, in addition to his racing practice, became increasingly involved in all aspects of Thoroughbred breeding, particularly in the Natal Midlands where he was known as 'The King' for the next 20 odd years.

At the end of the 1950s the only rural private practitioners in SA who were intimately involved with equines were Sandy Littlejohn at Mooi River in Natal, while Jean du Plessis in Colesberg and Chris Marlow in Cradock attended to all the equine breeds throughout the southern

Free State, Karoo and Eastern Cape, particularly the Thoroughbred studs which housed more than 70 % of the South African broodmare population. In the Western Transvaal Louis van Wyk at Lichtenburg was involved in equine work in his rural practice At the time it was accepted that a season's book for a stallion did not exceed 40–44 broodmares, with the resident stallion covering his own mares and possibly a few 'walk-ins' from neighbouring studs. In addition stallions were generally not allowed to cover mares more than twice a day for 6 days a week – a 'rest day' being considered essential. Any long-distance movement was by rail.

At that time, medicines and drugs were few and far between. Antibiotics included penicillin, streptomycin, chloramphenicol and the tetracyclines; the general anaesthetics pentobarbitone ('Sagatal') and thiopentone ('Intraval'); the narcotic chloral hydrate, used orally or intravenously; the local anaesthetic 'Planocaine'; and, the tranquilliser 'Sparine' marketed by Wyeth Laboratories. A variety of 'colic drenches' were available and the anthelmintics included phenothiazine, piperazine and carbon bisulphide.

One condition that caused serious concern was retained meconium, found particularly and not infrequently in colt foals born to younger mares foaling for the 1st or 2nd time. Earlier, enemas were given and a special 'meconium spoon' was used to remove the hard rubbery faecal pellets, often with fatal results. Laparotomy, using pentobarbitone for anaesthesia and manual compression of the distal small colon to move the pellets to the rectum and anus, became the method of choice until a case occurred at night on a stud with inadequate lighting. The condition was and ever since has been successfully treated by simply 1st giving a soapy enema, followed by introducing 20 mℓ of a 1 % 'planocaine' solution and 2 mℓ of 'xylotox jelly' (a medical preparation containing lignocaine) into the rectum before plugging the anus with a wad of cotton wool. Colicky symptoms and straining soon ceased and the foal would suckle and appear clinically normal until the effects of the local anaesthetic wore off 2–3 hours later. The treatment would then be repeated when and as often as necessary until all the meconium had been passed. Lignocaine replaced the planocaine when it became available.

1960s AND 1970s – INTRODUCING VETERINARY CLINICIANS TO THE HORSE INDUSTRY

The 1960s and 1970s saw a dramatic increase in student numbers at the Onderstepoort Faculty; the establishment of numerous rural general private practices; an explosion of knowledge in equine reproductive physiology and pathology; advances in infectious and non-infectious disease control, exercise chemistry and pathophysiology; a host of new drugs and medicines and the discovery of new anthelmintics. It was not long before a considerable number of practitioners became known as 'broodmare' or 'stud vets' in the most important breeding regions in SA. Those in the Western Province, which was rapidly ousting the Eastern Cape as the principal Thoroughbred breeding area, included (with the year of BVSc qualification in brackets) Frank Freeman (1963) and Marianne Thomson (1963) in Ceres, Dave Longland (1964) in Wellington, Tommy Foulkes (1964) and Les Vickerman (1969) in Robertson, Jim Antrobus (1973) who joined Dave Longland at the Wellington Animal Hospital, and Jurie Gilliomee (1976) near Ashton. In Natal they included Stef. Cilliers (1960) with his Arabians at Ingogo, Brian Bowles (1978) and Dave Mullins (1978), both at Mooi River; and in the Eastern Cape Robin Rous (1960) who purchased Jean du Plessis' practice in Colesberg, Hercu van Niekerk (1968) and Casper Troskie (1971) who both joined Robin before setting up their own practices at Wonderfontein in the Eastern Transvaal and Aliwal North in the northeastern Cape. Ron Bester and his future wife, Leza Schoeman, who both qualified in 1973, spent some time with Brian Baker and in the USA before moving to the Bester family farm in Luckhoff in the southwestern Free State in 1978.

Other veterinarians who had a major impact on rural equine practice included those in academia – Steve van Heerden (1942), Chris van Niekerk (1950), Johan Grosskopf (1951), Peter Howell (1952), Philip Boyazoglu (1960), Brough Coubrough (1961), Johan Morgenthal (1962), Sybrand van den Berg (1968) and Rob Gilbert (1977) before he left for the USA; Baltus Erasmus (1960) and Marijke Henton (1968) at the Veterinary Research Institute (VRI), Onderstepoort; Marius van Tonder (1961) and Gareth Bath (1969) at the Veterinary Investigation Centre (VIC), Middelburg (Cape); and, Kleintjie van der Merwe (1945), Koos Erasmus (1953) and Cliff Dent (1950) at the Directorate of Veterinary Services of the Department of Agriculture.

In 1961, when the 1st of the benzimidazole group of anthelmintics appeared on the market, the possibility of any negative environmental impact at some time in the future was obviously not realised. Breeders who were advised to follow what later became known as the 'interval dose system[21] by treating all horses every 6–8 weeks experienced a dramatic reduction in clinical cases of colic caused by the bloodworm *Strongylus vulgaris,* but by 1965 nematode resistance was reported in the USA. By the late 1960s unsatisfactory strongyle faecal egg reduction counts, using a modified McMaster technique, also indicated the development of resistance on Thoroughbred studs in the Eastern Cape.

In the opinion of many, the trigger for the world-wide explosion of knowledge in equine reproductive physiology and pathology was the fundamental research conducted by C H (Chris) van Niekerk in 1964 while seconded by the University of Stellenbosch to the Department of Gynaecology, headed by Prof. S J (Steve) van Heerden, at the Faculty at Onderstepoort. This research is recorded in his MMedVet(Gyn) thesis entitled 'The breeding cycle, ovarian changes and tubal sojourn of ova in the mare'[55]. The practical applications of this work, of inestimable value to every broodmare veterinarian, can also be found in his articles on the early clinical diagnosis of pregnancy in mares[53], early embryonic resorption in mares[54] and on the early diagnosis of pregnancy, the development of the foetal membranes and nidation in the mare[56]. Subsequent articles, of which he was the only or senior author, included the pattern of the oestrous cycle of mares[57,58], nutrition and ovarian activity of mares early in the breeding season[61], anatomical and histological observations on the reproductive tract of mares with abnormal oestrous cycles[59] and the progesterone concentration in the peripheral plasma of the mare during the oestrous cycle and early pregnancy[60].

Two articles, also of inestimable value, which appeared overseas in 1964, described for the 1st time the incidence of cervical and uterine infection in Thoroughbred mares[14], and endometrial cytology as a diagnostic aid[38]. It was their practical application that paved the way for the present-day sophisticated collection methods and diagnostic techniques used in the evaluation of endometrial swabs and smears.

Other articles of relevance publisned in SA included equine viral rhino-pneumonitis[26], the 1st report on babesiosis in aborted equine foetuses[24] and trials with haloxon as an anthelmintic for horses[8]. Articles of interest published overseas included the role of infection in infertility in the Thoroughbred mare[4], abortion in mares[41], uterine curettage[45], foetal losses during pregnancy in the Thoroughbred[5], and as early as 1966 the occurrence of

Pseudomonas in the reproductive tract of the mare[36].

Although the 1st serious outbreak of endometritis caused by *Pseudomonas aeruginosa* only occurred in this country some 10 years later in the mid to late 1970s, the other known venereal pathogen at the time, *Klebsiella pneumoniae,* had been implicated in a number of outbreaks since the early 1960s. In order to cause disease, these venereal pathogens, which are not part of the normal resident flora of the equine genital tract, require predisposing factors such as excessive use of antiseptics on the penis of the stallion and perineal region of the mare, and the abuse of intra-uterine antibiotic medication, practices unfortunately introduced from overseas where they were very much in vogue at the time.

Strangles, probably introduced into SA during the Anglo-Boer War[3], was the only other contagious bacterial disease seen in the late 1960s, particularly in the Karoo, and as an infrequent sequel the odd case of purpura haemorrhagica, an alarming condition associated with high mortality, readily confused with African horsesickness by most breeders and even some veterinarians.

In 1964 a number of equine orientated veterinarians – Brian Baker, John O'Grady, Philip Boyazoglu, Maurice Azzie, Robin Rous and Frank Freeman, to mention a few, and with H P Steyn in the chair, met at the Witwatersrand Agricultural Society Showgrounds at Milner Park to form the Equine Practitioners Group (EPG) of the SAVA, a forum to share ideas and discuss matters of common interest and concern. During 2005 the name of the EPG was changed to SAEVA (South African Equine Veterinary Association). The EPG rapidly went from strength to strength and to its credit has always invited overseas veterinarians, experts in their respective fields, to be the main speakers at the well-attended annual congresses.

In 1964 the 1st endurance ride, a leisurely affair, took place from De Aar to Richmond. Disaster struck the following year. A number of horses that showed severe methaemoglobinaemia died before methylene blue could be flown in from Bloemfontein to Marius van Tonder, state veterinarian at De Aar. Although an official diagnosis of azoturia was made at the time, later enquiries revealed that, in fact, potassium nitrate fertiliser may have been added to the water in 1 of the drinking troughs. However, endurance riding was stopped for a number of years and it was only in the mid-1970s that the Endurance Ride Association of South Africa (ERASA), with its veterinary rules and regulations, was established.

So, from the mid 1960s, stud breeders were fortunate, thanks to Chris van Niekerk, to be the first in the world to have the services of a number of astute broodmare veterinarians, particularly adept at rectal palpation and evaluation of the genital tract of the mare, early pregnancy diagnosis, and more importantly, the early diagnosis of non-pregnancy. Frank Freeman and Dave Longland had built their hospitals and Tremayne Toms was safely ensconced in Kimberley.

In 1967 Marius van Tonder was transferred to the VIC, Middelburg and Chris Marlow performed, as far as can be ascertained, the 1st caesarean section on a Thoroughbred mare in SA. In addition, Chris Marlow, with the active assistance of his Thoroughbred clients, had been asked to develop practical, comprehensive and cost effective preventative medicine, reproduction and production programmes because of the bad roads, vast distances and relative inaccessibility of the majority of stud farms in the Eastern Cape and Karoo. These programmes, initially basic, which were upgraded and refined as new discoveries and developments were made, eventually became tailor-made for each particular stud and contained detailed relevant epidemiological records of the environmental, managemental and nutritional extrinsic factors as well as the intrinsic or animal factors that affect the functional efficiency of the animals on a stud. The weanlings, yearlings and stallions were evaluated as groups and only as individuals when necessary. The broodmares, however, were evaluated individually and each mare had her own file where all relevant physical information could be recorded. In addition to the physical and clinical details, teasing charts, with a block for each day of the breeding season from 1 September to 31 December in a single line, were printed on gummed paper strips and positioned appropriately to record details of the pattern of her oestrous cycles, covering dates and the results of all gynaecological examinations, diagnoses and procedures. Body scores were also recorded. These details were updated at least once a week during the breeding season, usually after the weekly visit, and the mares to be seen the following week were listed. In subsequent years the teasing charts and breeding records were placed and completed immediately below those of the previous year, which enabled a broodmare's entire breeding history to be scrutinised within a few minutes.

Until the early 1970s, the Thoroughbred breeding industry had been almost entirely in the hands of independent, competent, experienced and knowledgeable farmer/breeders, horsemen in every sense of the word. During the next few years a number of events took place that had a profound effect on the breeding industry and consequently also on the rural equine practitioner. Firstly, a vastly improved national and provincial road network had made long-distance transport of horses by road practical, quick and cost-effective. Secondly, the 1st syndicated stallion to stand in SA was imported in 1972 and by the mid 1970s a considerable number of syndicated stallions, mostly imported, did stud duties in the Western Province, Karoo, Northern and Eastern Cape and Natal. Many of these stallions had their 'books' increased from 40 to 60–70 mares per breeding season. Thirdly, numerous breeders who entered the breeding industry in these years knew little about horses, only owned a few mares, boarded them on established studs and frequently nominated them to commercially popular stallions. This resulted in large numbers of mares, some with their foals at foot, leaving their resident studs for the total duration or part of each breeding season and more often than not sent to studs where completely different climatic, nutritional and managemental conditions prevailed.

Consequently, the influx of numerous strange mares on to a stud, the increase in the number of mares in a stallion's book, adverse climatic conditions, amendments and adjustments to management and nutrition coupled with the responsibility of getting as many mares in foal and as early as possible in the breeding season, and impatient demanding owners all contributed to put tremendous pressure on studmasters, and obviously also on their veterinarians, and so the seeds for the beginning of the end of their reciprocal trust and loyalty were sown.

Fortuitously, reproduction was the theme of the 1973 EPG Congress held at Robertson where the main speakers R C (Bob) Crowhurst and W R (Twinks) Allen from the UK enlightened the delegates on the enormous strides that had taken place in equine reproductive physiology, endocrinology and pathology. The information obtained from this congress proved invaluable to all rural equine practitioners and also prepared the SA delegates for the 1st international symposium on equine reproduction in Cambridge in 1974[49]. This symposium and those that have followed once every 4 years have in effect collated all the equine reproductive research data that have been recorded since the early 1960s. SA speakers at this symposium were C H (Chris) van Niekerk, who was also a member of the scientific organising committee, A (Sandy) Littlejohn and M A

J (Maurice) Azzie. P C (Peter) Belonje, D G (George) Faull, R C (Robin) Rous and C H B (Chris) Marlow also attended the symposium. Of particular interest to Chris Marlow were 2 presentations namely, the prognostic value of endometrial biopsy[37], and the treatment of endometritis by regular douching of the uterus with warm and cold solutions of sodium chloride from 1–10 %[64], a simple, cheap and effective procedure that has since been used extensively in this country. Chris Marlow also purchased a basket-jawed biopsy forceps for the collection of suitable endometrial specimens. Specimens collected by Marlow were processed using 3 different staining methods at the well-equipped VIC, Middelburg, headed by E M (Marius) van Tonder, who by this time had insisted on taking responsibility for all his diagnostic work. By the end of 1976, a large collection of histopathological specimens, numbering in the hundreds, collected from a broad cross-section of his clients' broodmares, had been evaluated, taking such mare's detailed breeding histories and records into consideration. In 1977, after discussions with Profs. Coubrough and Gerneke at the Onderstepoort Faculty, Berlin Blue or Perl's staining methods were included routinely in order to determine the amount and distribution of haemosiderin in the macrophages and in the cytoplasm of the glandular epithelial cells; and consequently, to estimate the time between biopsy sampling and either parturition, abortion or more importantly, to establish whether unobserved foetal loss later than 40 days of pregnancy, had or had not occurred.

During the mid 1970s, the myometrial relaxant, clenbuterol, which proved a boon to veterinarians faced with a difficult foaling or dystocia and which saved many a foal's life, came on to the market. At the same time complaints of individual cases of soft faeces and bouts of diarrhoea in adult horses were being received. Repeated dosing with an anthelmintic containing tetrahydropyrimidine controlled the condition suspected of being caused by *Cyathostoma* spp. infestation[13].

The ERASA, referred to previously, was also established and affiliated clubs were formed throughout the country. In the early days veterinary supervision at some of the local rides left much to be desired but a panel of experienced veterinarians, led for some years by Johan Grosskopf, formulated and enforced rules that have ensured strict veterinary supervision at all endurance rides, particularly at the National Championships, which are held over 3 days and 210 km at Fauresmith in July every year. Rural practitioners who served or still serve on the panel include Stef Cilliers, Hercu van Niekerk and Chris Marlow. Robin Rous, who in later years also competed on a successful home-bred Thoroughbred gelding, has since passed away. In 1979, the 2nd '100 miler' in the world (the 1st being the Tevis Cup in America) was held under the supervision of Chris Marlow, in the Hofmeyr, Tarkastad, Molteno and Steynsburg districts, on a bitterly cold day on which the temperature, out of the wind, did not exceed 6 °C. In addition, the route passed over the peak of Aasvoëlberg, 2200 m above sea level. Very strict veterinary criteria, introduced by Chris Marlow, apply at this ride which is held every year in August and which is now recognised by the ERASA as the official '100-miler' in SA.

At the time it was generally accepted that the rural equine practitioner was employed to do the 'vet work' on a stud, the precise definition of 'vet work' being the prerogative of the studmaster which obviously varied considerably from stud to stud. With the influx of syndicated stallions and consequently the ever-increasing movement of broodmares away from their home studs during the breeding season, dissatisfaction and criticisms about 'unnecessary', 'expensive', 'new-fangled' veterinary procedures and tests began to be heard. Chris Marlow, through his close association with E M (Bob) Birch of Vogelvlei Stud, Dordrecht and TBA Chairman from the early 1970s until 1987, discussed the matter at length and eventually the EPG Executive Committee decided to appoint a 4-member Stud Health Sub-committee to address all matters pertaining to stud health.

During the 1977 breeding season a few 'stud vets' were issued with a limited supply of a prostaglandin $F_2\alpha$ analogue for clinical evaluation. Its general release a year later, in addition to supplementary lighting, heralded the somewhat controversial era of the artificial manipulation of the mare's oestrous cycle and, it was hoped, a dramatic increase in the annual foaling rate. However, the dissatisfaction continued because in spite of increased veterinary costs, the overall increase in the live foal rate was a mere 2 %.

In May 1977 clinical signs of an unusual form of endometritis were seen in Thoroughbred mares in England and after using different culture media, the slow growing causal organism of Contagious Equine Metritis (CEM) (*Taylorella equigenitales)* was identified. Positive cases were also found in Australia, France and the USA and a total ban on the importation of all equids into SA was imposed by the Directorate Veterinary Services. Chris Marlow, with the support of Bob Birch and the TBA Council, approached Marius van Tonder at the VIC Middelburg to obtain the necessary culture media and examine every swab he collected from his clients' mares and also from visiting barren mares, to establish whether or not the infection was present in SA.

Thoroughbred breeders in the Western Province also had to contend with a serious outbreak of strangles during the 1979 breeding season which was spread to the Karoo and Eastern Cape by mares and their foals returning to their home studs. *Actinobacillus equuli* was isolated from some of the abscesses and many of the deaths were the result of either 'bastard' strangles or purpura haemorrhagica, usually an infrequent sequel to the disease.

By 1976 the equine encephalosis and serologically related orbiviruses, which were suspected of being at least partly responsible for the high abortion rate in Thoroughbreds, had been isolated and characterised[27] and a number of horses highly positive serologically to the West Nile virus had been identified in the Eastern Cape. Also of considerable interest was the publication of the 4th revised edition of the *Nutrient requirements of horses* in 1978[1] as suspicions of developmental orthopaedic disease had been raised.

In 1978 a few dissatisfied breeders in the Western Province obtained the services of an overseas graduate. Antiseptics and antibiotics were evidently grossly misused and by mid-November a severe outbreak of endometritis caused by *Pseudomonas aeruginosa* had occurred in home-owned and visiting mares that had been covered by a syndicated stallion. Further treatment with antibiotics only aggravated the condition and eventually the owners had no option but to cull 19 valuable mares due to a deep-seated chronic purulent low Category III endometritis[37].

Towards the end of 1978, lifting the ban on the importation of stallions had become a TBA priority particularly because Marius van Tonder at the VIC Middelburg had not found any evidence of CEM in more than 200 endometrial swabs collected by Chris Marlow from a broad cross-section of the SA broodmare population, and it also appeared that the disease was under control in other parts of the world. After lengthy discussions between Bob Birch, TBA Chairman, George Morrison, General Manager of the Jockey Club and Chris Marlow, a delegation that also included Tremayne Toms, a TBA Council member, and Frank Freeman, breeder and EPG Executive Committee member, met J P (Kleintjie) van der Merwe and J M (Koos) Erasmus, the Director and Deputy Director of Veterinary Services, and G C

(Cliff) Dent, in charge of Imports and Exports, in Pretoria in 1979. After assurances were given that as far as Marius van Tonder and Chris Marlow were aware, CEM was not present in SA and that the Jockey Club would police and enforce the traceability of every imported Thoroughbred on a regular basis, permission was granted to import Thoroughbred stallions subject to very strict conditions which included pre-importation certification and post-arrival quarantine at both an official quarantine station and the stud of destination. In effect this meant that the stud farm as a whole was placed under quarantine and consequently all movement of mares to their nominated stallions had to be completed before the start of the breeding season on 10 September. Horses were only allowed to leave the farm once 3 sets of endometrial, cervical and clitoral swabs taken from 20 mares were certified negative for CEM at the VICs at Stellenbosch, Middelburg or Allerton or the VRI at Onderstepoort. In the meantime Tremayne Toms had drawn up the 'Certificate of Breeding Soundness for Barren Mares' which was printed in quadruplicate by the Jockey Club and incorporated in their Rules in the Stud Health Scheme that came into operation just before the 1980 breeding season.

THE 1980s – INTRODUCING VETERINARY REGULATIONS TO THE HORSE INDUSTRY

During the next few years additional regulations were drafted which allowed for the importation of colts and fillies for racing purposes and soon thereafter for barren mares. By the mid 1980s the number of mares in quarantine that had to be swabbed was reduced from 20 to 10 and in 1989 the quarantine requirements were relaxed to an 'animal' and not a 'property' quarantine. The ban on the importation of other breeds and of pregnant mares had also been lifted but the pregnant mares were required to enter a pregnant mare quarantine facility where the necessary tests were conducted immediately after foaling. Currently, with the exception of pregnant mares imported from non-certified CEM-free countries, all necessary tests are conducted in the Official State Quarantine Station in Johannesburg or Cape Town immediately after arrival. On the positive side, this country has remained free of CEM, the live foal rate increased considerably in the Thoroughbred and veterinary participation and regulation of equine breeding in general also improved vastly.

Rural equine practitioners who have qualified since the early 1980s include Deon van Tonder (BVSc 1986) in Wellington, Fonnie Bruwer (BVSc 1981) in Robertson, Dirk Triegaardt (BVSc 1983) in Ceres, Ashley Parker (BVSc 1983) in Port Elizabeth, Martin Denkhaus (BVSc 1983) in Somerset West, Allen Bechard (BVSc 1985) in Mooi River, Henk Basson (BVSc 1984) in Bethlehem and Francois Marais (BVSc 1985) in Colesberg until Gavin (BVSc 1992) and Charmaine (BVSc 1988) Rous inherited Robin Rous' practice. Rural equine practitioners also became involved in their day to day activities with Adéle Faul (BVSc 1963) at the Directorate of Veterinary Services after Cliff Dent's retirement, Lucia Lange (BVSc 1973) specialist pathologist in Cape Town, Alan Guthrie (BVSc 1984) and Cindy Harper (BVSc 1993) at the Equine Research Centre, Martin Schulman (BVSc 1985) at the Section of Reproduction at Faculty, Koos van den Berg (BVSc 1984), equine consultant based in Hermanus and Angelo Nichas (BVSc 1981), equine practitioner in Johannesburg.

In May 1981, a 16-year-old barren mare in very poor condition, with a vaginal discharge and 'wonky in the hindquarters', which had been purchased a few weeks previously at a total dispersal sale of a Thoroughbred stud, was suspected of being and then confirmed positive for dourine. After considerable coercion, the whereabouts of all the mares was established and an in-contact stud identified. A considerable number of these mares, which by this time were at studs throughout SA, and the in-contact stud's stallion, were found to be positive and consequently, a test for dourine was included in the Certificate of Breeding Soundness for Barren Mares and the annual testing of Thoroughbred stallions became mandatory. Incidentally, previous deaths on the stud in mares showing similar symptoms had been diagnosed as chronic seneciosis ('dunsiekte'). Also in 1981, the 1st of the macrocyclic lactone anthelmintics, ivermectin, was released amidst great fanfare by Merck, Sharpe and Dohme in Bloemfontein, the guest speaker being none other than Neil Armstrong, the 1st person to put a foot on the moon.

In the early 1980s the advent of the ultrasound scanners was met with high expectations and enthusiasm. Initially, however, many mistakes were made, which led to considerable suspicion and even rejection by some breeders, principally due to a transducer frequency of 3.5 MHz and inexperience. Faith was re-established with the 5 MHz frequency models and they soon became an integral part of the rural equine practitioner's instrumentation.

In 1983, Chris Marlow demonstrated the nutritional inadequacy of lush green pastures, particularly in mares with foals at foot[44] and also received a MSc (Agric) degree at the University of Stellenbosch for his research on the oestrous cycle, mating practices, conception rates and foetal losses in Thoroughbreds in the Eastern Cape Province[42].

In December 1986 horses just released from post-arrival quarantine were responsible for the 1st outbreak of equine influenza in SA that spread from the Johannesburg/Pretoria area to the Karoo, Port Elizabeth and Cape Town within a few days. The infection was prevented from entering Natal by the intervention of members of the Stud Health Committee, namely Angelo Nichas, who informed their Chairman, Chris Marlow, of a consignment of horses on its way to Natal, and Dave Mullins, who effectively 'shut down' the entire province within a few hours. Decisions taken by the Directorate of Veterinary Services, the TBA Council, Stud Health Committee, Jockey Club and other interested bodies within the next few days included suspension of all racing (except in Natal), the imposition of strict quarantine and movement controls, and the implementation of a vaccination programme (included for Thoroughbreds in the Rules of the Jockey Club). The outbreak, which had rapidly assumed epidemic proportions, and which caused some mortality in young foals and older horses, stabilised and tailed off soon after the vaccination programme was implemented and the last clinical cases were seen in September 1987[30]. The vaccination programme for Thoroughbreds, however, remained in force until 2001.

The 1st major outbreak of equid herpesvirus-1 (EHV-1) neurological disease, neonatal mortality, abortion and respiratory disease to occur on a Thoroughbred stud in SA, was diagnosed by Koos van den Berg after cases were brought to his attention by Ron Bester in the middle of the 1989 breeding season. Subsequently, outbreaks of abortion, varying from a single case to storms of more then 40 abortions have occurred throughout SA. Neurological disease is an infrequent complication. Control, difficult to achieve due to re-activation of latent virus and particularly so on the smaller properties, has centred upon management practices that ensure the isolation of pregnant mares in small groups according to the duration of pregnancy from soon after the breeding season until foaling.

Over the years Chris Marlow's close relationship with E M (Bob) Birch, who was TBA Chairman from the early 1970s until 1987, quite naturally led to innumerable discussions on matters of common

concern and frequent consultations with other interested parties. This soon developed into an informal unofficial consultancy for the mutual benefit of equine practitioners and the TBA. In 1989, however, Ron Bester, Frank Freeman and Sybrand van den Berg recommended that the TBA Council, chaired by Wilfred Koster at the time, appoint Chris Marlow officially as their veterinary consultant as he would be able to deal with relevant veterinary issues promptly and more efficiently on an ongoing basis and also because he had no vested interests in the Thoroughbred industry. The appointment, which provided for the much needed liaison, interaction and cooperation between the TBA, Jockey Club, State Field and Research Departments, Faculty of Veterinary Science, Equine Research Centre, SAVA, EPG and even overseas organisations, was approved with the proviso that he resigned as Chairman of the Stud Health Committee, which he had held since its inception, and also that he would not accept the chairmanship of the EPG at any time in the future.

THE 1990s – IMPROVING VETERINARY DIAGNOSTICS AND CONTROL IN THE HORSE INDUSTRY

Immediate benefits included information to breeders and veterinarians on the complexity and control of equid herpesvirus-1 (EHV-1) infection on Thoroughbred studs; meeting with the Chief Veterinary Officers of England, Ireland and France and Baltus Erasmus from the VRI regarding the possibility of resuming the export of horses to Europe; initial preparations for the 1st biennial course in stud management to be held in the Western Province in 1990 organised by the EPG in co-operation with the TBA and the Department of Theriogenology at the Onderstepoort Faculty; and in March 1990, a telephone call from Francois Triegaardt in Cape Town that led within 10 days to the isolation of serotype 1 (Bryanston) of the equine encephalosis virus by Peter Howell at the Department of Infectious Diseases of the Faculty. The outbreak assumed considerable proportions in the Western Province and a number of deaths due to African horsesickness also occurred.

As far as can be ascertained, the 1st elective caesarean section on a Thoroughbred mare in SA was performed on 29 August 1990 at 340 days gestation on a mare belonging to Birch Bros. of Dordrecht that had suffered a massive intrapelvic haemorrhage while foaling 3 years previously, by a team of 5 rural equine practitioners. Francois Marais was responsible for the anaesthesia, Ron Bester and Robin Rous for the surgery, and Leza Bester and Chris Marlow for the resuscitation of the foal, which turned out to be the most hazardous part of the whole operation. Recovery was uneventful and so rapid that the mare was covered on 18 December and on 26 November 1991, 343 days later, the operation was repeated by the same team. Both horses won while in training and from 1994 onwards the mare was able to foal without assistance.

Two very important appointments were made in 1990. Alan Guthrie returned from the USA and became Director of the Equine Research Centre and Laurence Allen succeeded Lowell Price, both Chris Marlow's clients, as Chairman of the TBA.

A major crisis developed towards the end of 1990. The relationship between a number of urban and rural 'stud vets' and their clients, which included some who were not breeders in the strict sense of the word, had deteriorated to such an extent that allegations of exorbitant fees and even 'rip-offs' were made. This led to the TBA Council unofficially questioning the desirability or necessity of the continued existence of the Stud Health Committee and whether, should it continue to function, it would do so solely within the ambit of the EPG. The crisis was eventually defused after explaining to those concerned that in practice, the studmaster is placed under tremendous pressure to get as many mares pregnant (note 'pregnant') as possible and as soon as possible after the beginning of the breeding season. Most of this pressure is immediately transferred to the 'stud vet' who is forced to resort to costly artificial procedures, often at the demand of the breeder or owner *via* the studmaster, on mares probably not known to him and also where optimal husbandry, management and nutrition has been lacking, in an attempt to optimise production (colloquially referred to as 'deliver the goods'). The usual outcomes would be poor results, high veterinary costs, a dissatisfied studmaster, dissatisfied and critical owners, a frustrated veterinarian, allegations of a rip-off and probably a change of veterinarian who would do no better the following season.

Soon after the highly successful Course in Stud Management in August 1990, where suspicions of 'soft bone' in SA bred horses were mooted, Chris Marlow prepared a protocol for a survey on the incidence of developmental orthopaedic disease (DOD) and its possible relationship with nutrition in SA. Approximately 1200 foals born in 1991 and 1992 on 20 Thoroughbred studs run under a wide variety of nutritional conditions ranging from zero grazing to intensive grazing on lush grass pastures were evaluated until 15–18 months of age for clinical signs of DOD. Approximately 2000 feed samples were analysed chemically. Results indicated that although the eventual outcome of conformational limb deformities at birth could be influenced by dietary excesses, deficiencies and/or imbalances, most of the perceived clinical cases of DOD, particularly in the absence of pain, were normal growth patterns.

Other benefits during the 1990s included Chris Marlow and Ron Bester's chapter on infectious causes of equine reproductive failure in the textbook *Infectious diseases of livestock with special reference to southern Africa*[43].

A comprehensive investigation into the causes of the high abortion rate in Thoroughbreds was initially coordinated by Koos Coetzer (1973) and later by Peter Howell, both of the Department of Infectious Diseases at the Onderstepoort Faculty, in collaboration with the TBA and EPG. Surprisingly, this study found that transplacental piroplasmosis infection was the most frequent cause of abortion in the relatively low percentage of foetuses from which a diagnosis could be made.

In February 1995, Laurence Allen instructed Chris Marlow to report on any progress made in the export of horses to Europe and in March the matter was discussed at length with Adéle Faul at the Directorate and the CVO of the Australian Inspection Services who happened to be in SA at the time. In July, Alan Guthrie organised a 2-day workshop which resulted in the election of an import/export committee and a technical committee. The mammoth task of preparing protocols acceptable to the European Union and amending SA legislation fell almost entirely on Alan Guthrie's shoulders and exports to Europe were resumed in 1997. Vaccination schedules, movement controls and certification added considerably to rural equine practitioners' responsibilities and workload. Two-year bans on exports, except to the USA, were re-imposed in 1999 and again in 2004 after illegal introduction of African horsesickness-infected horses into the Western Province, which was recognised as a zone free from that disease.

Strangles, which had not been diagnosed since early 1980, was reintroduced into SA in 1998 by a consignment of horses from Australia and New Zealand. The outbreak, which was spread to stud farms by fillies out of training, caused considerable concern and a number of deaths due to 'bastard strangles' and purpura haemorrhagica were reported. It appears that the disease has become

endemic in SA and consequently increased vigilance is necessary.

In the autumn of 1993 an outbreak of an unknown disease in weanlings and foals at foot, characterised by fever, listlessness, inappetence, colic, diarrhoea, phlebitis and oedematous swellings of the head and lower limbs, occurred on a stud in the Western Province. During the next 4 years, Fonnie Bruwer, Jurie Gilliomee and Jim Antrobus investigated 16 similar outbreaks, all during autumn, on a number of studs in the region and in spite of repeated attempts, particularly by Peter Howell at the Equine Research Centre, at viral and bacterial isolation, histopathological examination and serological tests, the cause(s) remained unidentified. In May and early June in 1997, Dave Longland and a number of other veterinarians investigated a similar but more severe outbreak that was accompanied by considerable mortality. Again no definite diagnosis could be made. In mid June, after the outbreak, Chris Marlow, as TBA consultant, conducted a detailed epidemiological investigation on all the studs that had been affected, or were suspected of having been affected. A plan of action was drawn up, which in addition to the submission of appropriate specimens, included the collection of identified serum samples from mares, foals, weanlings and yearlings. Peter Howell and Chris Marlow obtained approximately 1500 serum samples in January 1998 and again in 1999 and in 2000. In April and May 1999 an outbreak, accompanied by considerable mortality, occurred on a stud that had been affected every year since 1993. A chance remark by Peter Howell that the histopathology of the caecum and colon had revealed encysted nematode larvae led, *via* Chris Marlow's epidemiological investigation, directly to a diagnosis of larval cyathostominosis and a reevaluation, but unfortunately not the implementation, of intestinal nematode control methods other than the favoured 'interval dosing system'[21].

In the early 1990s the Jockey Club added bloodtyping to their identification system for registered Thoroughbreds. The task of the regular collection and submission of suitable specimens by rural and urban equine practitioners became a logistical nightmare and since 1999 a team from the Equine Research Centre under the personal direction of Alan Guthrie has provided a highly efficient service that also includes micro-chipping and DNA testing to prove maternal origin of Thoroughbred foals.

Regarding equine viral arteritis (EVA), Thoroughbred stallions registered for breeding underwent serological tests in 1989 and 1990 after a suspicious case, which later proved to be negative, was identified in an imported stallion. The survey showed that the few serologically positive stallions had all been found negative and then vaccinated before importation into SA. In the late 1990s, specimens that were submitted by a rural equine practitioner from a Warmblood stud in Natal aroused Peter Howell's suspicions and proved to be serologically positive for EVA. Investigations revealed that semen imported in 1994 originated from a shedder stallion.

During the mid to late 1990s motivation for the notification of contagious and infectious disease outbreaks were received from a number of quarters with increasing frequency, but unfortunately breeders who reported disease outbreaks were victimised and the question of veterinarian/client confidentiality also arose. Consequently, in 2001 Chris Marlow compiled Codes of Practice for each of the more important diseases to keep breeders, veterinarians and other interested parties informed. The Codes for the controlled diseases included those for African horsesickness (AHS), equine viral arteritis (EVA), dourine, rabies, brucellosis, salmonellosis, contagious equine metritis (CEM) and equine infectious anaemia (EIA). The Codes for the non-controlled diseases included equine influenza (EI), equid herpesvirus-1 (EHV-1), equine encephalosis (EE), West Nile virus, Middelburg virus, Simbu-group viruses, strangles, *Pseudomonas aeruginosa* and *Klebsiella pneumoniae.*

By the end of the 1990s the live foal rate in the Thoroughbred had only increased moderately from the rate in the early 1960s in spite of an explosion in equine reproductive knowledge. Until the early 1970s the live foal rate was less than 50 %, by the late 1970s it had increased to 52 % and with the introduction of the prostaglandins in 1978 the rate increased to 54 % in 1980. In 1980 the Stud Health Scheme was introduced and by 1985 the rate had increased considerably to 58 % but from 1986 until 1995 it only increased by 1.5 % to 59.5 % in spite of the general use of ultrasonography using 5 MHz probes. In the late 1990s the rate increased to 62 % primarily due to economic constraints and the culling of mares of low fertility[50]. However, a major advantage of ultrasonography has been a drastic reduction in the reported incidence of twins.

Unobserved foetal loss remains a major component of reproductive failure in mares. Understanding the causes is limited but a study in this country revealed that a significantly higher incidence of foetal loss accompanied conceptus attachment in the postgravid side in pregnancies in consecutive years[28].

THE 2000s – VETERINARY SCIENCE IMPROVEMENTS IN THE NEW MILLENNIUM

In February 2003, a presentation by Nicky Holdstock from the UK at the annual EPG congress included the symptomatology and gross pathology of *Lawsonia intracellularis* infection in foals. Attention was immediately drawn to the fact that during Chris Marlow's epidemiological investigation into the 'unknown disease in weanlings' in 1997, the hoselike thickening of the small intestine had been observed on at least 2 of the affected studs. Early in March, less than 3 weeks later, Martin Denkhaus investigated an outbreak of severe diarrhoea and mortality in weanlings on a stud in the Western Province and the presence of the disease in horses in this country was confirmed.

In December 2003, deficiencies in quarantine procedures were responsible for an outbreak of equine influenza which rapidly spread to and affected racing in all provinces except KwaZulu-Natal. Compulsory vaccination of Thoroughbreds under the rules of the Jockey Club of Southern Africa, which had been discontinued in 2001, was re-imposed and updated vaccination schedules for both equine influenza and African horsesickness were compiled and distributed to all breeders, EPG members and other interested parties.

Since August 1999, when larval cyathostominosis was eventually incriminated as the cause of the 'unknown disease complex in weanlings', Chris Marlow, who had never seen a clinical case, became increasingly concerned about the very serious threat that the cyathostomes posed to the Thoroughbred breeding industry, particularly in the vast majority of studs, which in this country are run under very intensive lush grazing systems and that have a history of regular and frequent anthelmintic treatment. It therefore came as no surprise to hear of a very serious outbreak of larval cyathostominosis and considerable mortality on a stud in the Western Province in May 2003. Towards the end of this outbreak the owner, quite fortuitously, telephoned Dirk Triegaardt to report on the sudden appearance of clinical signs in a weanling filly that differed considerably from the earlier cases, and during a conversation with Chris Marlow it became apparent that the clinical picture was consistent with a classical case of purpura haemorrhagica. After studying all his relevant documentation, he visited the stud a few days later and realised that

many of the clinical signs previously ascribed to larval cyathostominosis were in fact those of purpura haemorrhagica. The diagnosis was also supported by the fact that Peter Howell had repeatedly isolated *Streptococcus zooepidemicus* from specimens of the compromised caecocolonic gut wall and gut content. Obviously this has led to a drastic reappraisal of the epidemiology, pathogenesis and control of the cyathostominosis disease complex in this country. Of interest, in this context, were cases of poor appetite, a painful stiff gait, loss of condition and emaciation in Thoroughbred mares in the Natal midlands in June/July 2004 that were diagnosed as chronic seneciosis ('dunsiekte') and consequently given a hopeless prognosis. After further enquiries, immune-mediated myopathies associated with streptococcal infection, in these cases secondary to the migration of cyathostome larvae, were suspected of being the cause of the problem. Treatment with a larvicidal anthelmintic and a course of penicillin by intramuscular injection led rapidly to uneventful recoveries.

Although this contribution to the history of the rural equine practitioner in SA is incomplete and probably contains glaring omissions for which I apologise, it is firmly believed that further advances in rural equine practice will depend, to a large extent, on the cardinal importance of maintaining the balance and well-being of the entire large bowel microflora population in the husbandry, management and nutrition of the horse.

CONCLUSION

Veterinary science in South Africa was born at Onderstepoort (1908) more than a millennium ago by Arnold Theiler with his work on African horsesickness. Today the equine industry in South Africa and veterinary science can be proud of the solid foundation that was laid during that time.

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