overwhelming compensations because of improved hygiene. This is rarely thought of as having a genetic result, but, as Edwards points out, smallpox, measles, influenza and malaria can hardly be regarded as 'natural' to man, in the same way as fluctuations of climate and temporary shortage of food. Modern community medicine, therefore, by hygiene and immunization programmes, will be directing selection back towards the 'wild type' genotype. This is a very important point, and, unexpectedly, *the* milestone in medical genetics may have been Jenner or, more prosaically, the appointment of the first Medical Officer of Health – Dr W H Duncan – in Liverpool.

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Meeting 7 June 1975
at the Field Station of
the Royal Veterinary College,
Hawkshead Lane, Brookman's Park

Papers

A Short History of the Royal Army Veterinary Corps [*Abridged*]

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The Royal Veterinary College, London, and the Royal Army Veterinary Corps have been intimately linked in the past and the medical profession has played an important part in the origins of both Corps and College.

The Royal Veterinary College Connexion

Professor Edward Coleman, a human surgeon, became Principal of the London Veterinary School after Charles St Bel, that unfortunate first veterinary professor, died in 1793 of glanders, no doubt contracted from one of his equine patients. In 1796 Coleman arranged with the Army to supply veterinary officers for the cavalry and the Board of Ordnance in return for governmental financial aid for the school. The Army duly awarded Coleman the monopoly of supplying veterinary officers for its mounted services and it is not surprising in that age of patronage, when commissions were bought and sold quite openly, that Coleman should use this privilege for his own advantage.

The School at that time was small and could produce only some half dozen fully trained veterinary officers a year, certainly not enough to provide one veterinary officer for each of the 30 or so cavalry regiments, to say nothing of the artillery. To make up numbers Coleman fell back on the expedient of enlisting people whom he thought might be acceptable after very brief veterinary training. These included human surgeons, a few of whom, to the vast annoyance of the Army Medical Board, were almost literally bribed into the Army to serve as veterinary officers. Against all the odds this mixed scratch team of partially trained and fully trained veterinary officers effected some quite remarkable improvements in the health of Army animals, though from all accounts the horses of the Army were so riddled with glanders and other unpleasant diseases that it would be difficult to see how things could have been made worse. Gradually old irrational ideas were discarded, such as the belief that glanders was due to a miasma at the stables. Many of the crude ineffective treatments gave way to more useful procedures.

The Regimental System

The veterinary officer was simply a member of the regimental staff, completely under the thumb of his commanding officer who permitted him to treat only the animals of his own unit. He wore the regiment's uniform and badge. Veterinary officers seldom met each other; there was no central system for dealing with the control of contagious diseases or for the evacuation and hospitalization of the casualties of an army in the field.

In the Crimean campaign hundreds of horses died from starvation, exposure and sheer neglect on the heights above Balaclava. But little was done to improve matters until the 1870s when the frightening spectacle of the defeat of France by the highly organized Prussian Army startled the British Army into reorganizing its own rickety structure. Among other changes, veterinary officers found themselves grouped in an Army Veterinary Department all wearing one uniform and responsible to a principal veterinary surgeon at War Office.

The Army Veterinary Department

This new War Office Department certainly improved the efficiency and morale of the veterinary service which by the end of the nineteenth century contained men of outstanding merit, such as George Fleming and Frederick Smith, both of whom contributed immensely to veterinary literature. Also men of the originality of Griffith

Evans who was the first man to demonstrate that a trypanosome, *Trypanosoma evansi*, the causal agent of surra, could be pathogenic.

However, in a modified form the regimental system continued fairly satisfactorily in the small Colonial wars of the nineteenth century such as the various Zulu and Afghan campaigns in which relatively small numbers of animals were used and although, from neglect rather than want of veterinary care or enemy action, casualties were sometimes heavy, they could always be replaced fairly easily.

The Boer War

The real challenge came in the Boer War. Frederick Smith, in his book 'The Veterinary History of the War in South Africa', avers that, by ignoring the most elementary principles of veterinary science, the British Army had immobilized its mounted units at an early stage in the South African campaign, causing the war, which any competent army would have completed in six months, to drag on for two and a half unnecessary years. It was a pathetic story of mismanagement, or more truly of misconception. In the past, when there were plenty of horses and mules to be had, army animals had been regarded as expendable. Therefore, thought was seldom given to disease control, to salvaging animal casualties or even to simpler measures of horsemastership such as proper feeding or shoeing. Now the replacement of casualties presented a very serious problem: the Army found towards the end of the Boer War that it had lost nearly half a million horses and mules, mostly through sheer thoughtlessness, for gunfire had little to do with the casualty rate, and it had become almost impossible to make good such huge losses, although remount commissions were buying frantically in every part of the world from North America to Australia. The final deplorable insult was that after hostilities concluded, surplus Army animals were sold off without proper veterinary examination, thus starting epidemics in civilian animals in South Africa as well as in Britain.

The Army Veterinary Corps

To avert future unnecessary and inhumane wastage of this nature, an Army Veterinary Corps was established in 1903, officered by veterinary surgeons, but with the great innovation that it had a trained subordinate staff who could be used for duties in hospitals and other veterinary units. Veterinary representation at a high staff level followed as a result of which it became possible to organize ways of limiting the spread of contagious disease, and controlling other sources of major animal wastage.

World War I

The newly organized and equipped AVC was ready efficiently to take the field just in time for the 1914–18 war. Battle casualties were salvaged and treated in hospital and losses due to disease were minimized by rational control measures. For example, sarcoptic mange was controlled by dipping, epizootic lymphangitis was kept in check by early diagnosis and by the scientific dressing of wounds; and the old enemy glanders became a rarity by use of the mallein test. By 1917 the British forces were employing over one million horses and mules, nearly half of which were in France. The AVC treated some two and a half million animals during the years of war, of which two million were returned to duty. Such a recovery rate was something very new in the history of the British Army, which in previous wars had expected to lose the majority of its casualties. Sick and wounded animals were collected and sorted into surgical, medical or contagious. Those requiring lengthy treatment were passed to a veterinary evacuating station at rail-head or river-head, from which the severe cases went to appropriate hospitals on the lines of communication and at base. Recovered animals were sent to remount depots for reissue.

Royal Army Veterinary Corps

The animal establishment after four years of war remained in sound condition and could take up the pursuit of the beaten enemy with great vigour when the final break-through was achieved. After demobilization, surplus Army animals were dispersed into civilian employment without causing outbreaks of disease. In recognition of its war service the AVC was raised in 1918 to the status of a Royal Corps.

Between the Wars

Demobilization considerably reduced the war-time establishment of 1300 officers and 23 000 men. Many officers were discharged in the middle of their careers following the decision in the 1920s to cut the size of the armed forces. Then came the mechanization of cavalry, artillery and transport which gained momentum by the 1930s.

The replacement of the cavalry horse by the armoured fighting vehicle seemed to threaten the extinction of the RAVC, especially as both the Army Veterinary Officer of the period and his civilian colleague regarded equine medicine as the only respectable form of veterinary practice. To them no horsed cavalry meant no veterinary service, for at this period the wide scope of veterinary science was generally ignored; such functions as food hygiene, the inspection of meat and milk products, &c., were beyond the pale, and rarely would a veterinary officer condescend

to treat a dog. Also, it was not fully realized that, despite mechanization, the role of pack transport animals in undeveloped areas remained as important as ever.

However, the Army maintained a considerable equine establishment at home during the mid 1930s, and overseas, especially in India, up to the outbreak of World War II. And the RAVC, although somewhat diminished and somewhat dispirited, remained an effective organization to the beginning of that war. A continuous eye was kept on our potential enemies, the Germans and the Italians, both of whom were increasing their equine establishments. The Germans to our indignation were even buying up surplus British cavalry horses. It was also noted that the Germans were particularly interested in chemical warfare. The RAVC thought it prudent, therefore, to spend a good deal of time at the Chemical Defence Establishment, Porton, devising methods for the protection of animals against gas, particularly the blistering gases.

World War II

From its outset in 1939 it was realized that this war was a matter for the whole nation. So far as the veterinary profession was concerned the military requirement for veterinary surgeons had to be balanced against that of the livestock industry and the need for an emergency civilian veterinary service in the cities threatened by air raids. Until 1943 the Reserve Army, the Territorial Army and volunteer civilians provided the additional veterinary officers required. Then the huge expansion of pack transport for the campaigns in Burma and Italy led to an increased demand for veterinary officers that could only be met by imposing a form of conscription on the profession. Some 500 officers served with the RAVC during hostilities, most of them veterinary surgeons.

At the start of the war the most important veterinary happenings were the move of some 3000 pack mules from India to France and the formation of a horsed cavalry division for which 9000 horses were bought for service overseas. Both events seemed to offer real opportunities for the RAVC to demonstrate its value in modern war but both proved disappointments in this respect. The mules were needed on the Western Front to carry ammunition over country rendered impassable to wheeled transport by shell-fire. They were hardy, fit animals and caused no veterinary problems, but when the German blitzkreig destroyed the allied armies the animals had to be abandoned to the enemy.

The 1st Cavalry Division was mechanized but not before it had engaged in the brisk and successful Syrian campaign of 1941.

The Italian Campaign

It was just prior to the Italian campaign that the RAVC assumed responsibility for the purchase of Army animals, a function previously carried out by the Remount Department, and it was in Italy that the efficiency and economy of the newly combined Veterinary and Remount Services was proved on a grand scale. Over 20 000 pack animals had to be purchased and shipped to Italy from as far away as Iraq and Abyssinia under conditions made far from easy by a sudden epidemic of African horse sickness among the civilian animals in Egypt and Palestine. Control measures ensured that this highly fatal disease never reached Italy despite the movement there of thousands of mules from the infected areas.

To maintain mule transport in the forward areas in Italy, mobile RAVC units combined veterinary and remount functions.

It can be fairly claimed that the RAVC played an essential part in the Italian campaign in which pack animals were often of greater military value than motor vehicles. Battle casualties were considerable and contagious disease, especially epizootic lymphangitis, a constant threat. It would be true to say, however, that in Italy remount duties took precedence over veterinary duties and our main concern was to ensure that every casualty should be replaced by a fit animal within 24 hours.

The Burma Campaign

The situation was reversed in the Burma campaign where, as in the Italian affair, mules and ponies were needed by the thousand, but now in the wet tropics where surra was endemic. Mules and ponies had to be kept at work in areas where normally equine animals would die of this disease within a few months. The Japanese Army Veterinary Service never solved this problem of survival and the final defeat of the Japanese may well have been hastened by their inability to supply their forward troops because they could not keep their pack animals alive in the surra zones.

General Slim's 14th Army was a great deal better served than this by the RAVC and their colleagues of the Indian Army Veterinary Corps. Special anti-surra units provided an extensive system of diagnostic blood-testing, and the drug suramin (Antrypol) proved most valuable both as a curative and prophylactic. It was so vital to our purpose that when consignments arrived at Bombay veterinary officers took delivery there aboard ship and then proceeded immediately to the 14th Army.

In the Burma campaign, due to the urgent need for pack animals in the early days, practically any pony or mule capable of movement was bought

and it was left to the veterinary surgeon to make lame and galled animals fit for service. A plastic operation for scarred backs was devised, allowing many otherwise useless animals to take a saddle. But possibly the most spectacular call on veterinary skill was that occasioned by Wingate's long-range penetration groups, the Chindits, who engaged the enemy deep within their own territory. Their only contact with base was by air. Once their supplies were dropped the Chindits were entirely dependent on pack transport to carry their equipment, but mules can be noisy and noise was dangerous in the quiet jungle near to the enemy. To allow the Chindits to make a close approach to the Japanese without danger of being betrayed by some raucous-voiced mule it was decided to mute all their animals. A suitable operation was carried out on 5500 animals. Treated animals were fit for service within a few weeks and suffered no loss of work capacity.

War Dogs

In the Middle East a situation arose which had an enormous effect on the future of the RAVC. All over the Middle East and especially in Egypt there was large-scale pilfering from every Army installation. Guard dogs provided an effective answer to this security problem and since then the Corps has found itself increasingly involved in the provision, training and care of Army dogs.

Civil Affairs

As hostilities drew to an end in 1944–45 the main veterinary effort was switched from the care of Army animals to civil affairs. Part of the aftermath of war is the unchecked spread of contagious disease resulting from the breakdown of the civil administration and the uncontrolled migration of hordes of refugees with their domestic animals. Foot and mouth disease, rinderpest, and rabies epidemics are particularly feared at such times and the Corps had to institute emergency control measures in the many war-devastated countries until the civilian services could be reinstated.

Post-War

By 1946 the animal establishment of the Army was greatly reduced, much of the civil affairs work was completed and the peacetime organization of the RAVC came to be reviewed. The peace establishment of the RAVC has never been large and in war the Army draws on the profession as a whole to meet its increased needs. A Corps maintained on this type of cadre principle is dependent on training establishments where standards can be maintained and improved and from which expansion can occur when need arises. The RAVC has its training centre at Melton Mowbray and its laboratory, school and stores at Aldershot. Overseas commands have RAVC units scaled to their individual needs and in Germany and at home there are training schools for the various types of dog now routinely employed by the Army especially for guard purposes where they are not only more effective than human sentries but also more economical. They have also proved real life-savers to infantry patrols because of their ability to detect hidden ambushes and mines. In Northern Ireland trained search dogs provide the best means of detecting concealed stores of explosives and arms.

I have had to omit much detail from this abbreviated paper but there is much to interest doctors in the story of this small but remarkable Royal Army Veterinary Corps which in one form or another has been in existence for nearly 200 years.

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