CURRENT SCIENCE

Vol. XIII] APRIL 1944 [No. 4

THE FUTURE DEVELOPMENT OF THE FIELD VETERINARY SERVICES IN INDIA

AT the last meeting of the Animal Husbandry Wing of the Board of Agriculture it was hinted that the Indian Veterinary Services were failing to reach their goal, and it would be a confession of weakness to receive such suggestions either with careless unconcern or helpless dismay. For, if indeed the Veterinary Services have reached a state of stalemate, then the time is long overdue for a thorough ventilation of the whole position. Furthermore, during the same meeting earnest requests were made for concrete proposals for increasing the efficiency of all branches of the service and the present article is intended as a contribution to both these ends.

Considered in their broadest sense the Veterinary Services of India are a chain of communications starting with the collection of knowledge by the investigator, continuing with the impartation of this knowledge to the student or practitioner and ending with the taking of the knowledge to the field. Now, although this chain as a whole may be faltering, it cannot be denied that certain of its links are not only strong but are even rapidly becoming more formidable. Veterinary education, for example, despite minor disagreements as to standards and method is improving from year to year. Whilst, as for research, scheme after scheme is launched and completed and more and more knowledge is daily recorded. Clearly, therefore, these sections of the chain are not at fault and, in seeking a delicate link elsewhere, one is sooner or later struck by the appalling disabilities confronting the veterinarian as he tries to practise his profession in the baffling field conditions of India.

From the veterinary standpoint the difficulties of the Indian moffusil are twofold, *viz.*, difficulties of communications and difficulties concerned with technical methods in semi-tropical rural areas. At present, progress in overcoming these obstacles appears to be awaiting the stimulus of modern practice. Can it be said, for example, that the most highly educated Veterinary Assistant Surgeon posted in a small township is adequately equipped to deal with an outbreak of an unknown infectious disease twenty-five miles away? Can he, in point of fact, despite his modern education, collect a selection of the right apparatus at once, proceed to the outbreak more quickly, make a surer diagnosis and, having applied the right measures, be free sooner for other work than he could a quarter of a century ago? In all probability, no. With a few notable exceptions, he is almost entirely without diagnostic apparatus; he still has to await the railway company's pleasure until he can depart, or chance getting a seat in a bus. Alternatively, he can mount his bicycle, on which little or no delicate apparatus can be carried, and waste untold vital hours wearily plodding to the scene. In any case, he arrives, mentally and physically exhausted and usually has to spend a night away from his hospital, which is, perforce, left in unqualified hands. In this connection, it may be noted that animals are usually available for work in the early morning or at dusk only and, if the Veterinary Assistant Surgeon is dependent on present methods of transport, nights absent from headquarters are almost inevitable. Again, in the routine touring of his jurisdiction, so vital for getting truly in touch with the countryside and winning the confidence of villagers, he, a man trained for brainwork, must waste untold hours a year dulling his wits by pedalling a bicycle or by sitting at railway stations and bus-halts staring into vacancy. Clearly, the facilities for intensive and extensive field practice have not been developed side by side with increasing

competence, and indeed dearly-bought knowledge is being dissipated in the dust of communications.

It appears probable then, that India is not getting a proper return for money spent on veterinary education and research. In the meantime, serum for prophylaxis of cattle disease has already been transported by air in Africa; whilst medical officers are flown to emergency casualties all over Australia.

Modern Methods of Transport

The day of mechanisation has come and sooner or later every efficient field service will have to be motorised. Already, the Army Veterinary Corps is mechanised even for work in roadless Assam, whilst the lesson is clearly to be read from the veterinary practitioner in Europe and America, who simply could not survive competition without his motor car; from the commercial traveller who in olden times visited one town in three days by train, but who now triplicates his business by visiting two towns a day by car; while if further illustration be needed it can be found in every aspect of modern life.

The would-be economist will of course decry the cost, but facts must be faced and either a stagnating service must be endured, in which case the out and out economist would cut the cost of education and research also, or the money must be found. It is a remarkable fact that money can always be found for guns and so why not for butter, which unlike the former, in the long run, pays for itself in a prosperous and healthy community. It might well be added that despite anything that may be said in this article as to the actual modes and methods of advance, the one fundamental obstacle to progress in the past has been the lack of money for elaborating such schemes as are suggested here. The reactionary on the other hand will raise innumerable objections. He will say that India is not suited for motor transport, that the vast majority of villages do not lie on roads, that the Veterinary Assistant Surgeon is not "motor-minded", and so on *ad nauseam*. But history has almost always proved that reactionaries are wrong, and, although it is not suggested that the last word is being offered on the subject, the first half of this paper will be devoted to showing how mechanisation might be applied to the Indian Veterinary Services at the least possible cost and to the greatest possible purpose

The writer has toured the Indian subcontinent from Cape Comorin to the Hindu Kush and from Bombay to Cuttack, almost wholly by self-driven motor-car, and one or two broad conclusions have been reached. The first is that a motor-car can go almost anywhere that a bullock cart can travel. Or in other words, with the exception of mountainous jungle and deltaic tracts, a suitable motor vehicle can reach most villages quicker than any other form of transport. Again, the motor-car makes the journey irrespective of time-tables; and will carry not only the veterinary officer but all the necessary apparatus and servants from the hospital door to the side of the field casualty. In consequence, it has been found that, whilst the ordinary touring veterinary officer expects, on the average, to visit one village a day for twenty days a month, the motor driver, if he likes, can reach from four to six villages a day every day of the month and in many cases spend his nights in comfort at home. He is, moreover, less tired at his journey's end, so that, whilst his visiting efficiency is increased sixfold, his personal efficiency is unimpaired. It is not surprising, therefore, that the writer has found that success in his own survey work of India has always been proportional to the availability of roads. It may be accepted then, that the efficiency of an officer is increased at least sixfold by the use of a motor-car for all routine touring work. But what of the emergency, the case in which speed will save lives of animals? Take, for example, the control of rinderpest; in most cases an officer equipped with a car can reach an epidemic centre within 100 miles radius in three hours or less whilst the same journey by other transport would take a day. Finally, there comes the question of prestige and advertisement. There is no doubt that smart work and efficiency command admiration and co-operation. A properly equipped motor-car or motor-cycle combination, properly used, would raise the prestige and influence of a veterinary officer enormously, for quick results inspire confidence, whilst delay breeds indifference or despair. In many cases, the over-tired Veterinary Assistant Surgeon arrives late on his bicycle and he can either make a guess at the diagnosis, and if he has it with him, apply the necessary remedy, or he can take samples for laboratory examination the results of which will be a week coming through. But in a week's time all animals that are going to catch the disease are already dead, the owner has forgotten the incident and the second visit of the Veterinary Assistant Surgeon with the remedy only serves to remind the cultivator of an unpleasant experience, in view of which he can hardly be expected to extend a welcome and give his remaining healthy animals for vaccination.

But, if the same work is done by car or motor-cycle, the Veterinary Assistant Surgeon arrives mentally vigorous at the earliest possible time and, having all the necessary apparatus with him, he completes a simple and certain diagnosis, injects the right serum or vaccine at once and is free for other work almost immediately.

It is not suggested, of course, that mechanisation can be applied equally all over the country, for some provinces are fairly well supplied with roads whilst others are almost entirely without. Nevertheless, if something is to be done at all, first things should come first and, because it is impossible to mechanise in say deltaic Bengal, that is no reason why it should not be done in the Punjab. Furthermore, if in a good cattle district well served by roads, it is found that certain quite large percentage of the villages cannot be reached by road, this is no reason at all why those that can be so reached should be denied efficient veterinary services. A start has to be made, even if it is only a small one, and having so

started and given satisfaction to the roadside dwellers, those distant from the roads will ask for satisfaction also and more roads will be made. As has been said before, motor transport has come to stay and, although some still appear to doubt it, it is no longer a luxury but an economic and commercial necessity. More village roads will certainly form part of post-war expansion and it seems quite evident that soon after the cessation of hostilities a modified motorised veterinary service could be introduced in the following Provinces: Punjab, N.-W. Frontier Province, U.P., C.P. and Berar, Orissa, Bihar, Bombay and Madras. Broadly speaking, good cattle- and sheep-breeding areas of these Provinces should receive the first attention.

Organisation of a Mechanised Field Service

Before passing on to some practical considerations of organisation, one or two wider points must be discussed and firstly comes the type of touring that are usual within a province. On the whole it may be said there are two, *viz.*, (1) short daily tours from a local centre within 25-50 miles radius and (2) continuous tours from a provincial or divisional headquarters. The former would be in the hands of the Veterinary Assistant Surgeons or better still a specially trained Mechanised Veterinary Officer and in this case there would be a tendency to divide the cost by giving the District Board some share in the organisation. It would be fatal, however, to permit an unprofessional body to have the slightest control over a technical service which, to achieve uniformity and efficiency, must be undividedly in the hands of the technical head of the provincial department. As for the second type of touring, certain reactionaries might still suggest that this can be better done by train, arguing that it is only on short journies that motor transport has such a marked superiority over rail. Nothing, however, could be farther from the truth, for the writer's experience has proved over and over again that the only journey that can be more efficiently made by train is the very long distance mail-train journey from province to province, and that, on the contrary, any journey up to 250 miles is done infinitely quicker by car. Furthermore, on a widespread provincial or divisional tour a car journey may be broken anywhere, irrespective of timetables, connections or stations; wayside halts at the side of grazing cattle can be made at will; diversions can be made on the spur of the moment, often without interfering with the dates of the tour programme, but above all, twice the territory can be intimately covered in the same time and with less fatigue. For all these reasons, therefore, a closer contact with the countryside is established.

The shape of things to come is foreshadowed by the vigorous provincial motoring of the original Veterinary Investigation Officers. Their work, however, as their name implies, has been mainly concerned with investigations about which there are few complaints. But the time has now come for developing applied veterinary science on similar lines and some suggestions to this end are offered in the following paragraphs.

Although bearing different names, the veterinary staff of most provinces is much the same and the work of the Deputy Superintendent, or his equivalent sub-divisional or district officer, merits first attention. As far as can be judged, the present duties of most of these officers consist of surprise inspections of the sanitary condition of hospitals, a forwarding agency for orders and regulations and sometimes receptionist work for visitors. Such an officer may have more than one district in his jurisdiction and an operational radius of up to 100 miles. At present, even for the light inspection duties mentioned above, it appears that a Deputy Superintendent can in some cases visit no more than one-fourth of his territory each year. Under the proposed mechanisation, however, each deputy superintendentship would be remodelled on the basis of motor transport, and the incumbent's main duty would be (*a*) the personal supervision of large-scale prophylactic therapy in the field, and (*b*) the organisation and control of various livestock improvement schemes. It must be recalled that in normal conditions he can reach almost any of his hospitals in less than three hours, taking with him all the necessary staff and equipment. and he can leave night or day irrespective of outside influences. His motor vehicle would be permanently fitted up with diagnostic apparatus such as microscope, stains, slides, hand-centrifuge, slide agglutination materials, specimen bottles, etc., and he would be able to stock it within a few minutes with serum, vaccines, and therapeutics for the more usual infectious diseases It must be emphasised that not even the lowest-qualified veterinarian, let alone the Deputy Superintendent, should be directly concerned with castrating schub bulls, filing of teeth, treating colic cases or such like stockman's duties, and the latter's work would be to see that he is informed by the former of serious outbreaks of certain scheduled diseases; to get to the outbreak in the manner of a flying squad; to diagnose the condition; to apply the remedy and to return as soon as possible to headquarters. Few outbreaks would require an absence of more than a day, for once prevention has been initiated the Veterinary Assistant Surgeon who would be picked up in passing could complete the work. On the Deputy Superintendent's return journey inspection work and follow-up calls could be made all along his route. During periods when diseases are rare this officer would spend his time scouring his jurisdiction, making friends with the cultivator, initiating propaganda work, organising livestock improvement schemes and giving advice.

The headquarters and jurisdiction of these officers would, if necessary, have to be resituated, solely with an eye to road communications. Headquarters, therefore, should be placed at cities on important road junctions, whilst, as far as possible, the limits of a jurisdiction would be determined by impassable river crossings or other natural barriers, and in this respect the possibility of temporary road-blocks due to monsoon flooding should not be overlooked.

Officers holding these appointments should be exceptionally energetic and as far as possible

have had special post-graduate training in field diagnosis and preventive therapy. They would have as an assistant a young post-graduate training in field diagnosis and preventive therapy. They would have as an assistant a young post-graduate trainee, ultimately intended as a recruit to the group of Mechanised Veterinary Officers shortly to be described, whilst future Deputy Superintendents would be drawn from men trained in this category.

Now although the ideal would be to motorise all officers below the office of Deputy Superintendent, this is manifestly impossible, at present at any rate. Indeed, in some provinces it might not be impossible to mechanise below this rank. But in others, and specially in important breeding districts, the mechanised Deputy Superintendent might be supplemented by a class of motorised touring veterinary officer or Mechanised Veterinary Officer. One province at least has already separated the touring officers from the hospital officers, which is an excellent arrangement as thereby hospitals are not left for days at a stretch in charge of compounders or stockmen and each class of officer can specialise in his own kind of work. Provinces that are able to proceed with mechanisation in this manner would grade their junior officers into Veterinary Assistant Surgeons in charge of hospitals. These men would be the least trained and except in emergencies would not make visits requiring an absence of more than a few hours from their posts. The other grade would be the touring veterinary officer consisting of selected post-graduate trainees and being as far as possible mechanised (Mechanised Veterinary Officer). A Mechanised Veterinary Officer situated at a headquarters again chosen for its road communications would be given a geographically suitable jurisdiction of say 25 to 50 miles operational radius. His duties would be (*i*) to supplement or join up with the work of the Deputy Superintendent, (*ii*) to diagnose and treat on his own account small epidemics in his own area and (*iii*) to take over from the Veterinary Assistant Surgeon of his territory all the routine touring which had previously necessitated their leaving the hospitals for more than a few hours. His car or motor-cycle combination would be fitted similarly to that of the Deputy Superintendent and as assistant he could carry a stockman who would attend to routine castrations and similar work.

It is not to be expected that even the richest provinces would be completely mechanised all at once, but in the post-war era there is almost certain to be a big disposal of army vehicles, which, as far as cost is concerned, might present an excellent opportunity for acquiring a nucleus of vehicles sufficient for the Deputy Superintendents and specialised work. Thereafter, one or more touring veterinary officers could be mechanised every year, depending on demand and the results of earlier experiences. Whilst on the subject of demobilisation, it must be recalled that many veterinary officers returning from the war would have wide experience of modern mechanised transport. Clearly, these men would have much of the initial training requisite for the work of a mechanised veterinary officer and could probably be diverted to these duties.

Suitable Types of Motor Vehicles

There can be no question but that for the Deputy Superintendent an American-made station-waggon, such as a Chevrolet or Ford, would be most suitable. These vehicles will carry an enormous amount of equipment besides several passengers. In normal times spare parts are available everywhere and every roadside "mistri" understands these reliable models. Nevertheless, whilst they will travel almost anywhere, especially if fitted with extra large sectioned tyres, for Deputy Superintendents situated in special areas a different car might prove more suitable. It is possible, for example, that, where the majority of touring would be in semi-desert tracts, a Willys Jeep would better fill the bill. Whilst, on bridle roads of hilly tracts either a Jeep or a four-speed low-geared 10 H.P. short chassis car, such as the Opel, might be more serviceable.

The Mechanised Veterinary Officer's vehicle would require more careful selection. For the sake of economy, it would be tempting, of course, to provide him with a cheap small horse-powered car such as a Ford 10 or a motor-cycle and sidecar and, where, as in Madras, roads are abundant, this would be sufficient. But in certain cases it might be better for the Deputy Superintendent to be provided with a station-waggon as a general purpose vehicle for his whole jurisdiction, and one of his Mechanised Veterinary Officers given a Jeep for work in a special tract and which the Deputy Superintendent could, if necessary, borrow. Such selections would have to be made on the advice of an officer with wide motoring experience throughout India.

Equipment

Equipment is the next consideration and clearly there are two kinds of field work that require apparatus, one is surgical or clinical and the other is diagnostic. Now it must be clear to every able thinker that the latter is by far the more important of the two, for manifestly, whilst each is indispensable, it is much better to be able to diagnose say an outbreak of anthrax and so save numerous lives than to carry out work of a clinical nature on individual animals.

It has already been seen how a touring officer, being unable to make a field diagnosis, must send samples to the laboratory with consequent delay. It now transpires that in many cases he has actually to write to the laboratory first to obtain the apparatus in which to take and transmit the specimen, thereby doubling his work and extending the period of delay into weeks.

In the past no doubt there has been an excellent excuse for this lamentable state of affairs, for owing to the fact that the duty of diagnosis has been divided among so many, it has been impossible to train and equip everyone sufficiently. The Veterinary Assistant Surgeon, therefore, has remained the jobbing surgeon and the guessing diagnostician. But it is now

apparent that by concentrating diagnostic work in the hands of a few Mechanised Veterinary Officers it is not only possible to increase the scope and speed of the work by means of the car, but it ought to be possible to train and equip the fewer men needed in a manner worthy of the duties they have to perform. As far as post-graduate training is concerned, a step has already been made in this direction, but the key step of mechanisation has so far not been developed, and the question of supply of diagnostic apparatus has not so far as is known been thought of.

The Mechanised Veterinary Officer's diagnostic work can be divided into two classes, *viz.*, direct, *i.e.*, the work he can do himself in his mobile laboratory and indirect, *i.e.*, cases where he has to send specimen for laboratory examination. *It is clear, moreover*, that in the cause of speedy diagnosis the direct method should be used whenever possible. Indirect diagnosis also includes specimens taken from cases diagnosed directly but which the operator desires to be sent to the laboratory for check. Direct diagnosis could probably be achieved in most of the better known infectious diseases and it might be useful to schedule these conditions and call for special reports on them. Indirect diagnosis would be needed in more obscure conditions which crop up from time to time in certain virus and poultry infections.

For direct diagnosis the first and foremost requisites would be a microscope, slides, and the more ordinary stains. With these and an ability to make satisfactory smears, it ought to be possible to recognise some of the everyday diseases. For the diagnosis of special diseases such as tuberculosis, all that will be required is a special syringe and some tuberculin; for contagious abortion and other diseases recognised by a simple agglutination test a glass plate, some antigen, a few pipettes, and so on. The packing and carriage of such articles is a simple matter and the room occupied in a car is negligible. Further, many provinces may already have sufficient microscopes to equip the few Mechanised Veterinary Officers and the cost of this apparatus would not, therefore, be great. Certain diseases can be recognised by means of a *post-mortem* examination and a suitable *post-mortem* kit would have to be included. A minor surgical kit and castrating instruments could also be carried for the stockman's use.

For indirect diagnosis the euipment would have to be rather more specialised, but it would be little more than elaborately prepared glassware, in the designing of which the advice of an experienced research officer familiar with field technique would be required. Such glassware would have to be properly packed, returned to and re-issued from the parent laboratory whenever samples had to be transported. In passing, it may be mentioned that there is a very wide scope for the use of the thermos flask; an article far from fully appreciated by the field service.

In conclusion, during the transition period, when a policy of jobbing surgery is being altered to one of mechanised state of diagnosis and control of epidemics, it appears that a field *liaison* officer might advantageously be appointed in one or other of the more important research institutions of this country. The duties of this offer, who would require a small staff, would be (1) to advise on mechanisation, (2) to train officers in practical field diagnosis and control, (3) to keep a record of the condition of indirect diagnostic materials coming into the various departments of the institute and, arising from this, to investigate the cause and correct the defects of systems of diagnosis, (4) to develop better methods of field diagnosis, mainly with the object of substituting direct methods for indirect methods, (5) to perfect field diagnostic apparatus and (6) to tour widely in conjunction with Mechanised Veterinary Officers in first one and then another part of the country.

J. B. Polding.

DR. R. E. M. WHEELER, M.C., D.Litt., F.S.A.

BRIGADIER MORTIMER WHEELER whom we have pleasure in welcoming as Rao Bahadur K. N. Dikshit's successor was, before he went on active service to Tunisia, the Keeper and Secretary of the London Museum, Director of the Institute of Archæology in the University of London, and Lecturer in Archæology in the University College, London. Earlier he was in charge of Archæology in the National Museum of Wales, one of the most progressive among the larger museums of Great Britain. He is an outstanding member of his profession and has a wide range of experience in modern archæological excavation, the preservation of ancient monuments and the organisation of museums. He is a Fellow of the University College, London, Member of the Ancient Monuments Board for England and Wales, and a Governor of the National Museum of Wales. Dr. Wheeler's excavations of Bronze Age, early Iron Age, and Roman sites such as Verulamium, in England and in France are considered to be perfect examples of modern archæological technique. India, particularly Southern India, abounds in megalithic monuments, to which class of archæological remains Dr. Wheeler has paid special attention, and we hope that this branch of archæology will benefit by his knowledge.

Dr. Wheeler is known to be a man of active habits with a great capacity for friendship and team work, and we have no doubt that under his guidance the museum movement in India will be better organised than it is at present, and that Indian archæology will not only maintain the progress that it has made since the days of Sir John Marshall, but help to throw further light on the several unsolved problems connected with the story of India's past.