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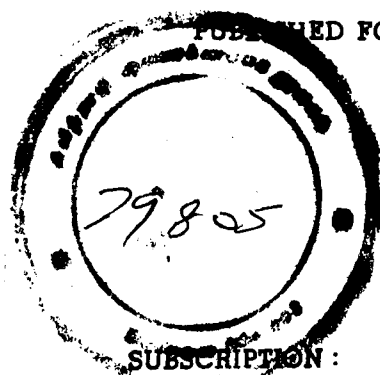
The Indian Veterinary Journal

A Bi-monthly Record of Veterinary Medicine and Surgery
Devoted to the Cause of Veterinary Profession

PUBLISHED FOR THE ALL-INDIA VETERINARY ASSOCIATION

EDITOR :

P. SRINIVASA RAO, G.M.V.C.



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THE Indian Veterinary Journal

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Vol. XIX JANUARY 1943 No. 4

General Articles

ANIMAL HUSBANDRY IN INDIA*

By

COL. SIR ARTHUR OLVER, C.B., C.M.G., F.R.C.V.S.,
*Principal, Royal (Dick) Veterinary College, Edinburgh, and formerly
Animal Husbandry Expert to the Government of India*

In discussing animal husbandry work in India, I do not propose to go into any detail as regards the composition and functions of the Imperial Council of Agricultural Research. These and the extent of its activities have been very thoroughly dealt with by Sir Vijayaraghavacharya and Sir Bryce Burt, and I feel that you would be more interested if I could start by painting for you a general picture of the background against which livestock production and maintenance have to be viewed in India, as I grew to know it during my eight years in the appointment of animal husbandry expert. Without some understanding of the special factors by which such work is conditioned it would, in fact, be quite impossible to give a clear idea of the complexity of the problems which have to be faced. I refer to factors such as :

1. Religious and traditional prejudices and customs.
2. The effect of the density of the population and the low purchasing power of the cultivators on farming practice.
3. The general lack of appreciation of the fundamental principles which underlie proper breeding, feeding and management, and the great need which exists for a properly balanced system of land utilisation.
4. The lack in most provinces and states of any expert animal husbandry organisation devoted solely to the interests of livestock.

*Paper read before the Royal Society of Arts in May 1942.

5. The annual droving of millions of dealers' cattle from north to south of India.

Some of these are doubtless well known to you, and I will not dwell upon them, but it is necessary to refer to their effects on the development of animal industry along modern lines.

SLAUGHTER

Inhibitions due to religious feeling are traditional and very strong amongst large sections of the people of India. Orthodox Jains, for example, will not knowingly take life in any form and go to the extreme of covering their mouths with a small curtain to obviate the possibility of killing a fly. These principles carried into animal husbandry are productive of the most far-reaching difficulties: the cow, as a semi-sacred animal cannot in any case be slaughtered, and in strict-Hindu communities it is not permissible to give a merciful release even to a fatally injured and suffering animal of any kind. One can well imagine what the answer of an up-to-date dairy farmer in this country would be if told that he would have to carry on his business in such circumstances, and must make arrangements for his old, discarded, and otherwise derelict stock to be pensioned off and allowed to die in the course of nature.

CASTRATION

In some parts of India, until comparatively recently, stock owners were not willing to castrate, particularly at an early age, though, under the village system of management, the males and females were permitted to run together on the village grazing grounds. In recent years these objections have been relaxed, and the number of castrations of bulls carried out by official veterinary departments has steadily increased until it now amounts to over one million a year. Assuming that the best are kept, this must tend to improve the general standard of cattle, but it cannot be too much or too often emphasised that no lasting progress can be expected until arrangements are made for controlled mating and the proper feeding and management of the breeding females and young stock, all over the country.

GRAZING AREAS

Though highly desirable and everywhere to be encouraged, the improvement of such grazing areas as are still available is, I believe, not a solution of the cattle-feeding problem. The best of these areas tend as time goes on to be taken up for cultivation, and it is obviously impossible to produce or maintain good class stock on the coarse forest and over-stocked village grazings which are likely to remain. In short, the time seems to have come when cultivators everywhere in India, as elsewhere, must aim at devoting a portion of their holdings to fodder crop production thereby

producing on the cultivated land better stock and more milk, while helping to maintain the fertility and physical condition of the soil. This is, in fact, the present custom in the areas where the best cattle are produced in India.

Without such a change of system—where necessary—I think it is clear that progressive degeneration of cattle must follow the gradual disappearance of the good grazing lands on which the better cattle are at present bred; albeit, with some assistance from crop residues and specially grown fodder crops. Only very mediocre cattle are produced on grazing alone.

PINJRAPOLES AND GAUSHALAS

To demonstrate the effect of proper breeding, feeding, and management, I was particularly anxious while in India to develop the semi-religious *pinjrapoles* and *gaushalas* (homes of rest for derelict cattle) in such a way that the very large funds which are, by long established custom, regularly contributed to them might be utilised to better advantage. My object was to demonstrate to their supporters that under proper management such institutions could add very materially to the supplies of milk in cities, and at the same time fulfil more effectively the purpose for which they were originally established. The humanitarian intention underlying these institutions is indeed admirable, but to a very large extent the performance has become so vitiated that many of the existing *pinjrapoles* and *gaushalas* are anything but the homes of rest and comfort they set out to be. By arranging for competent management, for example, at the Delhi *pinjrapole*, we did, in fact, show quite clearly that by breeding from the best of the cows and selling the milk and other dairy products, considerable amounts of milk and butter could be produced in the city, and profits made. Moreover, by taking up suitable land outside the city these extra funds were utilised to great advantage—for the provision of fodder crops and grazing grounds for the hopelessly derelict and for the proper feeding of the milking herd and young stock. It was also made clear that by using selected sires such institutions could be of considerable value to breeders in the vicinity, by producing well-developed young bulls.

I am sure that properly conducted *pinjrapoles* and *gaushalas* should have considerable effect in demonstrating correct principles of livestock production and land management.

DENSITY OF POPULATION

The general effect of the high density of the rural population on the cultivable areas, in all the more fertile sections of India, is another factor which has to be taken into account in any projects for the improvement of livestock. Owing to the smallness of the holdings, and the low purchasing power of the individual, it has generally been considered impracticable for

the ryot to produce fodder crops for the proper feeding and development of his cattle, or to produce or purchase the large supplies of milk which all authorities now agree are essential for the health and proper development of the people. The tendency has been to consider that the only practicable policy is to produce more and more crops, for sale or direct human consumption.

So much importance has been attached to this that the fertility of the soil and its humus content have been so depleted in many areas that the improvement in yields which could be effected by the growing of improved varieties of crops and the control of plant diseases has largely been nullified. Enormous damage by denudation is also occurring, owing to removal of cover and humus from the soil; much as in the U.S.A., where a similar catch-penny, cash-crop policy has resulted in the formation of the now world-famous "Dust Bowl."

NEED FOR BALANCED SYSTEM OF LAND UTILISATION

To me there always seemed to be grave danger in the official policy pursued in some provinces of devoting large areas to intensive cash-crop production, without due provision for livestock to preserve fertility and provide the necessary labour and a better diet for the people. Consequently, I was particularly pleased to read in Sir Bryce Burt's recent address that *Careful experiments have shown that by the substitution of mixed farming, including milk production, for the mere raising of crops for sale, agriculture in many parts of India could be raised to a higher level.** These experiments were arranged shortly before I left to test out the view which I had often expressed, that by a suitable system of mixed farming the ryot in many parts of India could obtain as high a cash return as under the present system of devoting his entire cultivation to cash-crops and, in addition, produce better stock and an invaluable supply of milk and dairy products for his family.

The ideal which I put forward was that every ryot should, as far as possible, maintain a certain head of cattle on his holding and grow some fodder crops for their proper development and maintenance during the lean period.

DUNG BURNING AND THE MANURIAL VALUE OF LIVESTOCK

The custom, which is universal throughout India, of burning a very large proportion of the solid droppings of cattle, is obviously a most serious handicap on agricultural operations of all kinds. Not only is a great deal of manurial value lost, but the soil is deprived of humus which should go towards keeping it in good physical condition for cultivation and the conservation of moisture. A further important fact which is liable to be

* *Jnl. Roy. Soc. Arts.* XC, No. 4614.

overlooked in this connection is that unless cattle are maintained and herded on land due for cultivation, the manurial value of their urine, which is nearly as great as that of their solid faeces, is also lost.

Under the present system of herding cattle on village grazing grounds, away from the cultivated land, it is also obvious that these grounds become so trodden and infected with disease that it is quite impossible to breed or maintain on them any but the most stunted stock, and that practically all the manurial value of such cattle is lost. On the other hand, it is clear from the time-honoured custom of paying flock masters to allow their sheep and goats to remain for a night or two on land waiting to be ploughed, that the importance of manuring cultivated land has long been recognised in India. Thus I am sure that the practice of mixed farming ought to be encouraged, wherever possible, as a means of maintaining fertility.

In the general absence of available firewood or other fuel, it is difficult to see how the practice of burning cow dung can be overcome except possibly to a limited extent, by reducing the large amount which is at present used for the prolonged boiling of ghee. The adoption of improved ghee boilers or a hay box system of keeping ghee hot, such as was introduced at the Hissar farm, might prove of value in this direction, if widely extended.

BREEDING PRACTICE AND EUROPEAN CATTLE

It seems that some system of controlling the production of good stock and the maintenance of fertility in the cultivated areas will become imperative with the steady increase of population and gradual disappearance of the good grazing areas on which, in the past, good cattle have been bred by professional breeders and distributed to areas where the breeding of good cattle is not practicable or not attempted.

For, except amongst these expert breeders, who, as a class, are dying out, there is little tendency to pay attention to systematic mating to produce a definite type, and one of the greatest dangers of importing European cattle into India is that their male, crossbred, progeny are certain to be used indiscriminately as sires, with the result that in the end only degenerate mongrels are produced, instead of useful indigenous stock. Though they may not, as a rule, be high class, these indigenous cattle are far more suited to the climate and conditions under which they have to live, and it has now been shown that the better breeds can easily be improved to a relatively high standard by proper feeding and management.

To effect lasting improvement some system of exercising general control over mating in the village herds appears to be essential, and for this properly organised animal husbandry departments, independent of the needs of crop production, are necessary in all provinces and major states. Without such

control, the use of animals of mixed or unknown parentage as sires is likely to continue, despite the pooriness of the progeny of scrub bulls and the well recognised deleterious effects of a tropical climate on European cattle.

Data of the comparative efficiency of European and Zebu cattle in North Australia have recently been published, by the Council for Scientific and Industrial Research in Australia, which fully support the view that European cattle do not thrive under tropical conditions, and a photograph which accompanies the report in which these data are given, shows very clearly the obvious distress of the European beast in the heat, compared with the appearance of comfort and well-being of the Zebu crossbred standing alongside.

Moreover, in the general absence in India of expert animal husbandry organisations, there is every possibility that livestock improvement, which is unavoidably longrange work, may, as in the past, be sacrificed to the interests of cash-crop production when the financial shoe pinches.

BUFFALO OR COW ?

The much discussed question whether buffaloes or cows should be kept, for the production of milk, and the prevailing customs in regard to the rearing of calves and the maintenance of cows in cities are other complicating factors which do not nowadays exist in countries in which milk production is governed by strict economic and sanitary considerations.

More highly fed as it usually is, the she buffalo is generally considered to be a much more efficient milk producer than the cow, but a careful analysis of available data shows that this is probably only the case where an abundance of coarse fodder is cheaply produced, *e.g.*, on river banks subject to periodic flooding. If the real value of cow's and buffalo's milk were strictly assessed, in relation to the relatively high value in nutrition of solids-not-fat compared with butter-fat, and with due regard to the need for a correctly balanced diet for the proper development and health of the people, it is probable that, for home production, the balance would favour cows of the better milking breeds. With good feeding the best already produce as much or more milk than the buffalo, with approximately the same content of solids-not-fat, and though the butter-fat is lower in the case of the cow, it has been shown that the Zebu cow is probably more efficient in converting animal foodstuffs, and particularly dry-crop residues, into feed of high biological value for the human race than any other animal. Indeed, it has been shown that improved cows can produce butter-fat as cheaply as the buffalo when under equally good management.

Nevertheless, for the commercial dairyman the buffalo has obvious advantages, and the fact that buffalo ghee has better keeping qualities than

cow ghee may probably be the deciding factor. It is, however, difficult to feel that the prevailing custom of maintaining female buffaloes for milk production and cows for the production of working bullocks can, on agricultural holdings, be economically sound.

CALF REARING

The widely prevailing habit of allowing unwanted calves to die is another difficulty which requires to be overcome. In the case of buffaloes, where as a rule only the cow is much valued, the female calves are well fed and properly reared while the males very soon succumb, only their hides being kept so that they can be stuffed and presented to the cow at milking time to induce her to give milk. In the case of the cow exactly the opposite happens—the female calves are at best only sufficiently fed to keep them alive, while, wherever there is a prospect of good prices for well-developed bulls or bullocks, the males are adequately and, indeed, often more than adequately fed. These and the almost universal habit of presenting the calf or its stuffed hide to the cow, to induce her to yield her milk, are old customs which have long been discontinued in other countries, and could be discouraged in India with more success if only cows were bred on agricultural holdings. Already it has been shown that Indian cows are little different from European cows in the matter of yielding their milk without the presence of a calf; all that is required is some preliminary gentling and persuasion at the start, such as ought to be given to every milch animal when it is first brought into the milking herd. In suitable areas where the system of mixed farming could satisfactorily be developed, it thus seems that as time goes on it may prove sounder, from various points of view, to use cows instead of buffaloes as domestic milk producers, and to rear all the calves. Cows must be maintained somewhere to provide the essential supply of working bullocks, and if better fed and managed many of them would give a considerable milk yield.

COWS IN CITIES

The keeping of cows in cities for milk production is another old practice which, though at one time prevalent, is no longer permitted in European cities. In Indian cities, though they are usually some of the best cows obtainable, the majority are slaughtered after the completion of the current lactation, and everything possible ought to be done to check this heavy drain on the best breeding females.

DUAL OR SINGLE PURPOSE CATTLE

An answer had also to be given to the much discussed question whether to attempt to breed dual or single purpose cattle; for no experienced breeder could expect steady progress from the see-saw policy which is commonly adopted, where there is any demand for milk, of sometimes using a dairy type sire and at others a working type. Experience with the shorthorn

breed had shown that in the hands of the most expert breeders little success had been achieved in trying to produce a dual purpose breed, capable at the same time of efficient production of milk and meat. Seeing that the types of cattle are not very dissimilar in which these latter capacities are found, it appeared to me that it would be far more difficult to produce a dual purpose breed which could be relied upon to produce high milk production along with high working capacity.

My conclusion, therefore, was that to secure high efficiency, in either direction, it was necessary to breed specifically for it, and that in view of the essential need for fast plough bullocks the time-honoured practice of breeding for speed and activity should be continued in the main breeding tracts; but that to increase milk production throughout the country, pure Indian milch breeds ought also to be developed, by suitable feeding and handling combined with strict milk recording and selection. In this connection the striking improvement which has in recent years been effected, in milk yield, early maturity, and docility, by expert breeding, feeding and management, in the Pusa herd of pure-bred Sahiwal cattle, has very clearly demonstrated that modern dairy farming methods would be of very great benefit to India.

With the development of motor traction, the demand for fast trotting bullocks for road work is already diminishing, and it seems possible that, after the war, cultivation of the plains of India by tractor-drawn implements will have to be developed on a considerable scale. Some loss of speed may therefore be accepted in order to secure more milk under the proposed system of mixed farming, and it is probable that the general policy of the future will be to breed working-type cattle with a moderate capacity for milk production.

Indeed, shortly before leaving India, I was assured by a large estate owner in the Punjab who had used work-type Harianas and milchtype Sahiwals for the cultivation of his land, that, on the whole, he preferred the Sahiwal bullocks for work on the farm. Observations made at the Hissar farm also seem, as far as they have gone, to indicate that a considerable capacity for milk production may be developed in working-type cattle without serious injury to the breed.

ANIMAL HUSBANDRY DEPARTMENTS

When I assumed my duties in 1930 I was told by a senior official that I would find them interesting but there would be little for me to do. In fact, owing probably to the abolition some years previously of the post of Veterinary Adviser to the Government of India, the needs of livestock had received scant attention, and everywhere, except in the Punjab, had been subordinated to those of crop production.

The view I took was that to ensure success on the broad scale needed, comprehensive animal husbandry departments, with adequate powers to deal with all livestock matters—independently of the requirements of cash crop production—were essential in all the provinces and major states of India, along with a long-range policy of proper land management by mixed farming.

Such departments must be so constituted that they would be able to deal effectively with disease control and all branches of livestock production, maintenance and disposal, including special branches such as dairying, and poultry, so that all such matters could be systematically studied and dealt with.

DISEASE CONTROL AND VETERINARY RESEARCH

From my review of the situation it seemed clear that though the Mukteswar Research Institute had long been established and had achieved a world reputation, there was a great lack of liaison between it and provinces and states in regard to systematic investigation of disease among livestock and animal husbandry problems in general. It appeared also that research had been much interfered with by the recommendation of the Inchcape Committee, that all research institutes in India should be required to cover their expenses by the sale of biological products. As a result it had been necessary at this Institute, which was established solely for research, to concentrate on cheap production of such products, and with the staff then available, it was not possible to carry out the immense amount of research which was needed into diseases other than the more fatal plagues such as rinderpest and surra, to the study of which the work of the Institute had mainly been devoted. Every effort was therefore made, with the support of our Chairman to-day, to assist Ware, the then Director, to place the work of the Institute on a better footing. To this end the already existing plains station at Izatnagar was developed as the production and dispatch centre for biological products and for certain lines of research which could be satisfactorily carried out on the plains.

Eventually the ruling was rescinded that such institutes must cover their cost by the sale of their products, and there is no doubt that this decision has been of great advantage to research. It appears unlikely, however, that the annual production of rinderpest serum, which had exceeded seventy million doses, will ever be as great as it was at the time when this decision was made. Owing to the widespread substitution of vaccination with goat virus for the use of serum, alone or along with bull virus, much less serum is now required, and for other reasons its manufacture had in the meantime been taken up in Madras and Mysore.

Somewhat later an All-India Animal Nutrition Institute was established at Izatnagar to work in close co-operation with the Mukteswar Institute in

studying Indian problems of nutrition and their relation to animal health and efficiency. Under a further grant from the Imperial Council of Agricultural Research, arrangements were also made to employ a poultry diseases research officer at Izatnagar, and in order that he might have healthy poultry for his experimental work, it was decided to establish an All-India Poultry Institute there and to bring out from England a poultry expert to cater for the needs of the poultry industry throughout India.

Finally, on the taking over of Karnal farm as a sub-station of the New Pusa, a herd of Haryana cattle was transferred to Izatnagar to form the nucleus of a genetical section.

In this way it has become possible to visualise the development of animal husbandry research on the co-ordinated lines which are so essential in a country like India, where a great variety of problems have to be dealt with.

Probably the most valuable contribution of all has been the development in recent years of a vaccine prepared from the blood and tissues of goats infected with a rinderpest virus of fixed and reduced virulence for the bovine. This vaccine has been developed as a result of observations made by Dr. J. T. Edwards when he was director of the Institute. Blood from goats inoculated with this virus was at first used and proved satisfactory, but subsequently a tissue vaccine was prepared at Mukteswar which has an important advantage over the blood vaccine, in that it remains active somewhat longer. But the great advantage of goat virus vaccine is that the blood of goats is not liable to transmit other diseases, as was the case when bovine blood was used in the serum simultaneous method of protection, and it has the further very important practical advantage that it is much cheaper and easier to apply in the field than either the serum or serum simultaneous method. For the great majority of plains cattle no serum at all appears to be necessary and, since over 1,000 doses of the vaccine can be prepared from a goat costing only a few rupees, the cost of the material is negligible. Consequently, it can be and is freely used where previously the relatively high costs of serum acted as a definite obstacle to the wide use of protective inoculation. Already in at least one province large-scale protective inoculation has been undertaken, at the frontier, of the great droves of dealers' cattle which pass through annually in the normal course of trade. This annual transit of millions of dealers' cattle from north to south of India is a serious complicating factor as regards disease control as well as in cattle breeding.

Except in certain areas of Madras, where the cattle appear to be more than usually susceptible, this method of protection against rinderpest has already been adopted as a routine practice.

Another finding of great economic importance was the treatment of surra by the intrathecal injection of a solution of Bayer 205, which also was first instituted by Dr. J. T. Edwards. This procedure proved that, treated at an early stage, animals affected with surra could, in a large proportion of cases, be definitely cured; but since it involved a somewhat delicate operation, not always easy to carry out under field conditions, the use of this method, except for valuable animals, was unlikely to extend very far. Later, however, observations were made in the Punjab which showed that equally good results could be obtained by administering Bayer 205 intravenously. This observation was first made under the direction of the Lahore Veterinary College, and was later confirmed at Mukteswar, and is likely to prove of great economic value, particularly in the north of India, since surra in camels can also be satisfactorily treated by this drug.

The discovery in 1934, by Datta, that the so-called nasal granuloma of cattle, which up to then had been a very serious cause of sickness and mortality amongst work cattle, was another finding which has been of very great economic advantage. Once it was known that the cause of the disease was a schistosome, it was not difficult to devise a satisfactory method of treatment, and since this discovery was made treatment has been widely extended, with great benefit to cattle owners. In areas where the disease is widespread arrangements are, in fact, now regularly made for veterinary assistant surgeons to carry out this treatment at fairs, melas, etc., at which large numbers of cattle are in the habit of congregating.

The number of discoveries in the helminthic field has been very large. From such work it is becoming clear that helminths are of even greater importance in India than was realised in the past, particularly in their immature forms. For example, it has been found that immature forms of paramphistomes, a parasite of the fluke class, appear to cause very heavy mortality and unthriftiness amongst cattle, sheep, and goats, in various parts of India, and that such previously little understood conditions as bursati, khojli (*lichen tropicus*), hump sore, and hepatic cirrhosis of equines are due to immature forms of nematode worms.

Improved measures of control have also been tested and adopted for dealing with hæmorrhagic septicæmia, anthrax, and blackquarter, and a considerable amount of knowledge has been obtained of tuberculosis, John's disease, bovine abortion, mastitis, and strangles in India, all of which diseases are now being specially studied under grants made by the Imperial Council of Agricultural Research.

Some advance has also been made in the study of poultry diseases. This is a field to which special attention is now being paid as a result of the appointment of a poultry diseases research officer in India.

In the field of protozoology, the appointment in 1934, under a grant from the Imperial Council of Agricultural Research, of a systematic protozoologist to work at the Mukteswar Research Institute, has greatly facilitated the study of this class of parasites. The organisms classified under this heading are, in the main, blood parasites conveyed by ticks, biting flies, or other similar means, and though they do not necessarily cause heavy mortality, the animal once affected is usually a carrier for life, and is liable at all times to a recrudescence if subjected to any severe adverse influence. For example, a large proportion of the cattle of India are infected with piroplasms, and fatal infection with such parasites, from the inoculum, was one of the main difficulties of protective inoculation against rinderpest until the goat virus method was introduced. Numerous fatal or very debilitating blood diseases of dogs, goats, sheep, and horses are also due to this class of parasite, and it is very necessary in a country such as India, where ticks, biting flies, and other vectors are ubiquitous, that the life histories of organisms of this class should be thoroughly studied by protozoologists and entomologists.

BREEDING, FEEDING AND MANAGEMENT

For the purpose of this brief survey I will take nutrition and the proper breeding and management of livestock together because I am sure that the improvement of livestock depends more on improvement in nutrition than on any other factor.

It has been found that an average increase of over 60 per cent. in milk yield had been obtained from milch cows, purchased by the Military Dairies, after they had been brought on to their system of feeding and management; while the further increase obtained in the next generation, from home-bred stock, had only amounted to about 12 or 13 per cent.

For further study of such matters it was clearly necessary that, in all British provinces and states, the cattle farms which had been in existence for years should be maintained and developed, and that suitable breeds, particularly local breeds, should be scientifically bred and managed in sufficient numbers to provide scope for improvement, by genetical as well as nutritional factors. From past records it appeared that at the majority of such farms attempts had long been made to improve Indian cattle by the use of sires of European breeds, but such work had usually been abandoned, or the policy modified, before results of any real significance could be expected.

In more than one case cross-breeding with animals of European origin had reduced valuable herds of pure-bred indigenous stock to collections of grossly degenerate mongrel animals which would not breed true and were subject to contagious and other disease to an astonishing degree. The only tangible result of this work was the negative observation that European

cattle, including their cross-bred progeny, do not thrive satisfactorily in tropical countries. This fact is now well established in other tropical countries, and I possess a photograph, taken in tropical Australia, which shows very definitely the distressing effect of tropical heat on a beast of European origin, and the strikingly different appearance of comfort and well-being of the cross-bred Zebu animal standing alongside it. In this connection, it may be of interest that I was informed, when in India, that all the highest milk yields obtained by the Military Dairy Farms, from cross-bred Zebu-European cattle, had been obtained north of the Indus river.

Nevertheless, the policy of the Military Dairy Farms and many privately-owned commercial dairies is, as far as possible, to use European sires—either Ayrshires or Friesians—and this is another difficulty which has to be faced in the improvement of cattle in India. There is no doubt that for commercial dairying, where breeding can be carried on under the strictest supervision by expert breeders, this is the quickest way of obtaining a high-yielding dairy herd. But, as a long-range policy for the improvement of Indian cattle, it cannot be advocated, particularly in view of the striking results which have recently been obtained in the improvement of a number of the best breeds of Indian dairy cattle, *e.g.*, Sahiwals. Within 25 years, in the Ferozepore herd of the Military Dairies, the Pusa herd and a number of others, pure-bred herds of this breed, have been produced whose yields, particularly in butter fat, compare very favourably with those of the best commercial dairies in this and other countries, and there is no reason why similar results should not be obtained by commercial dairymen in India. The pioneer work done by Matson in building up the Ferozepore herd, and on pre-handling and early maturity by Wynne-Sayer in the Pusa herd, should prove of the greatest value to India if properly followed up. By expert breeding, feeding, and management, not only were the average milk yields brought to a high level in these herds, but it has been shown, at Pusa, that in pure-bred Sahiwal cattle early maturity can easily be induced and that there is no need to have a calf alongside to induce the cow to give its milk. The importance of progeny tests in assessing the value of stud, bulls is another aspect of the work done at Pusa which should be of great value to India, but to reap the benefit of such work it is obvious that some organisation is essential which can exercise control over breeding and management throughout the country. Without such control any measure adopted for the improvement of cattle is likely to be a work of Sisypheus.

When I left India the Director of the Military Dairy Farms was still hoping to produce, by careful selection, a herd of pure-bred Friesian cattle which would maintain constitution in India, at least in the north, but it had yet to be seen whether that experiment was likely to prove a success, even under their highly favourable management.

In the meantime, very high prices—up to six times the ordinary price—had been paid for pedigree Sahiwal bulls from the Pusa Sahiwal herd; and the work done by the Animal Husbandry Bureau, the nucleus of which was established shortly after I took up my appointment as animal husbandry expert; in collecting, collating and analysing available data; in obtaining and publishing the results attained on farms where milk recording is carried on; and in maintaining herd books; combined with the publicity given to cattle breeding by the All-India cattle show, should in course of time have a marked indirect effect in improving the cattle of India.

In dealing with the improvement of dairy cattle, the valuable work which has been done for a number of years by the Imperial Dairy Institute, at Bangalore, and the rapid improvement which was effected in the Tharparkar and Hariana cattle at the Karnal farm up to the time it was handed over to the Imperial Agricultural Research Institute, must not be overlooked. When these herds were established at Karnal, in 1923, the average daily yield was 8.8 lbs. By 1934, *i.e.*, in 11 years, the average had risen to 13.2 lbs. in the Tharparkar herd, and 14.1 in the Hariyana herd, and without any special forcing, individuals had yielded up to 8,734 lbs. in the former and 7,412 lbs. in the latter, with a butter-fat content of about 4.7 per cent. The average lactation period of these Tharparkar cattle was 267, and of the Hariyanas, 308 days. Considering the length of time occupied in effecting this improvement, these figures compared favourably with the results obtained in the Ferozepore and Pusa herds of Sahiwal cattle after 25 years, and clearly showed that pure Indian breeds, other than Sahiwals, respond very rapidly and markedly to proper breeding, feeding and management.

The main problem of animal husbandry in India is, however, the systematic improvement of work-cattle throughout the country, but the number of stud-bulls available is still only a fraction of the total required. In most provinces farms have long been maintained for the improvement of cattle, but in the absence of suitable organisations to deal systematically with livestock improvement in the villages throughout the country their effect on the stock has generally been small. Only in the Punjab and the North-West Frontier Province had such an organisation existed, and only there, with the exception of certain areas in Bombay Presidency and the U. P., had systematic improvement of stock been developed on a broad scale.

In the Punjab the Hissar farm of 42,000 acres served as the hub of the valuable organisation for livestock improvement, throughout the province, which had gradually been built up by the veterinary department. At this farm highly important pioneer work has been done by Pease and his successors in producing from cattle of mixed origin the Hissar-Hansi breed,

than which no finer work-cattle exist anywhere in India to-day, and a great deal of other valuable research on the breeding and management of stock of various kinds and on cultivation and fodder crop production.

Before I left India, the issue of carefully selected and approved stud bulls from this herd had reached 500 a year, and it was proposed to increase it to 1,000. These are distributed in selected areas in the Province, and there is no doubt that they have done a great deal to improve the standard of working bullocks in those areas. But probably the most general improvement has been effected in the tracts in which Dhanni, Hariana and Dhajil cattle are bred. In these areas improvement has been effected mainly through local shows and fairs at which prizes and sanads are awarded to village cattle, and by systematic selection of the best sires available within the whole area, by representatives of the veterinary department in collaboration with the stock-owners of the villages concerned. The interest thus shown by Government in inducing stock-owners to breed, feed and manage their cattle on better lines has had great effect, and it is one of the sights of India to see the beautiful condition in which these animals are produced for show, *e.g.*, in the Dhanni tract, where work on these lines has been longest in progress. As a result, the cattle throughout this tract, being much improved and vary even in type and quality, command much higher prices than formerly.

Similar results are being obtained in the Hariana and Dhajil tracts, and in the areas in which Murrah and Nili buffaloes are bred; while in the North-West Frontier Province marked results are already being obtained from a similar system.

Some improvement has also been effected by the cattle-breeding work carried out at grantee farms, and it is probable that this work will be helped by the publicity which is now being given by the animal husbandry bureau to the milk yields of stock from such farms.

According to the latest authentic figures available, pure Sahiwal cows have given over 12,000 lbs. in a lactation of 300 days, while the high herd average yield of 20 lbs. a day has been reached.

ALL-INDIA CATTLE SHOW

In organising the first All-India cattle show my main purpose was to give as wide publicity as possible to the merits of Indian cattle, and I was fortunate in having the powerful support of the Viceroy, and in obtaining from the Education, Health and Lands Department a lump sum down, sufficient to ensure that the show could at least be carried on for more than one year. I am showing a photograph of the cattle parade at this show to give those who have not seen it some idea of the wonderful setting in which this unique show was held, and I need hardly say that I am very glad to hear that arrangements have now been made to carry it on indefinitely.

Provided that it is properly made use of, as the central show of a series of similar shows in all provinces and states throughout India, and that provincial governments are prepared to bear a certain amount of expense in arranging for the exhibition of the best representatives of the different breeds at this central show, I am sure it will have great effect. Indeed, it seems possible that, with suitable development, it may in course of time to some extent take the place of the Delhi Horse Show, which in the past has been a great social function of the Delhi season. In bringing cattle from all over the sub-continent of India it must be remembered that a great deal of attention has to be given to their accommodation in the relative cold of the Delhi winter season, and to the many different kinds of food which they and their attendants require.

I shall not deal at any length with the breeding of horses in India, though a considerable organisation for the production of remounts, in suitable areas of Northern India, has for years past been in operation under the military authorities. The main object of this work was to produce suitable remounts for the army, and by the use of English thoroughbred sires the result has been that roughly 40 per cent. of the riding horses now supplied to the Indian Army are Indian country bred.

Valuable work has also been done at the Hissar farm in producing an excellent type of donkey, which is extensively used in the Punjab and elsewhere for the improvement of local donkeys.

SHEEP, GOATS AND POULTRY

In the past, only spasmodic attention had been paid to the improvement of sheep, though, as a whole, the sheep of India are of great economic importance, on account of the wool and meat they produce, and because of their manurial value. Several attempts have been made to improve them by the introduction of merino and other breeds of sheep from overseas, and at the Hissar farm and in Mysore considerable success has been achieved in producing wool of the merino type. It is, however, questionable if in present circumstances it will be possible to produce in India a wool of this type which will be able to compete with such wool from Australia, where, for generations, no expense has been spared in developing the production of merino wool of a very high standard. Indeed, until the breeding of sheep in India is in the hands of a better educated class of people, it seems likely that it will be impracticable to attempt to do more than improve the existing breeds for whose wool for carpet production there is a well-recognised position in world markets. Such work as has been done has shown that definite improvement can be secured by better feeding and management and, under grants from the Imperial Council of Agricultural Research, a co-ordinated programme of controlled breeding, for the improvement of sheep in different parts of India, was undertaken with encouraging results.

Apart from producing improved sheep, these sheep-breeding experiments should be of value in providing more precise information regarding the diseases and the myriad parasites to which Indian sheep are subject. Indeed, difficulties in carrying out the breeding programme due to disease had already been experienced which were never likely to be solved so long as sheep-breeding was entirely in the hands of semi-nomadic people with no education.

Some attention has been given recently to the improvement of goats, under grants by the Imperial Council of Agricultural Research, to the Etah Mission and Hissar farm but, here again, their liability to myriads of parasites and to fatal diseases which at present are not fully understood, has proved a great difficulty.

In certain areas of the foothills of the Himalayas there is a type of goat which in many respects resembles the Angora and, before I left, a grant was obtained from the Imperial Council of Agricultural Research, for the Superintendent of the Hissar farm to proceed to South Africa to study the breeding of Angora goats in that country, in order that some breeding of these goats might be carried on at the Hissar farm and elsewhere, with a view to ascertaining the prospects of establishing an Angora industry in India.

POULTRY

In most provinces a certain amount of work had been done on the improvement of poultry, and European breeds generally appear to stand Indian conditions quite well. They and native poultry were, however, liable to be almost entirely swept away by severe outbreaks of fatal disease, and not much progress had been made, except in the case of the United Provinces Poultry Breeding Association, where valuable work was done for years by Mrs. Fowkes, and at the Etah Mission, where Mr. Slater, by a systematic distribution of eggs of European poultry and by the holding of village shows, secured marked improvement in the poultry of a large area surrounding the Mission. On these lines, along with the improved marketing of eggs, I believe much progress could be made in many parts of India.

Time will not permit of my dealing with marketing in this paper, but improvement of marketing facilities is undoubtedly one of the most promising measures by which livestock could be improved in India.

Dairying also has not been referred to as it has been exhaustively dealt with by Dr. Wright in his most valuable report.

VETERINARY COLLEGES AND PROVINCIAL VETERINARY SERVICES

Veterinary education received a good deal of attention, but is too big a subject to deal with here, but I must, however, refer to the progress which

has been made during recent years. When I first took up my appointment in 1930, there were five veterinary colleges in India, at which veterinary assistant surgeons were trained, essentially for service in the official provincial veterinary departments to control contagious disease and for animal husbandry work. At four of these colleges the duration of the course was at that time three years, while at the Lahore college it was four years. Since then the training at all colleges has been improved in various ways, and recently arrangements have been made at the Madras Veterinary College for a four-year course, which, after some extra time and tuition as prescribed by the Madras University, enables veterinary students to obtain a degree in Veterinary Science additional to their graduation from the veterinary college. This is a distinct step towards higher veterinary education, the need for which was continually stressed, and it may be anticipated that for the future the provincial as well as the subordinate staffs of veterinary departments will be entirely, or almost entirely, staffed by graduates of Indian veterinary colleges.

At the Lahore college extensive clinical as well as scientific training has always been provided, and considerable use was made of the Hissar farm to give the training in handling, feeding and management which is required.

Similarly, at the Patna college a large stock-breeding and dairy farm was maintained in connection with the college, and it is of interest that, in conjunction with the new University course, the Madras college has arranged for all students to spend a period at the Hosur cattle breeding farm as a part of their training. This has been made possible by the fact that responsibility for the improvement of livestock has recently been taken over by the Director of Veterinary Services of that province.

In the almost total absence of veterinary practitioners the control of disease and the treatment of cases amongst animals of all classes is dealt with throughout India by provincial and, to a lesser extent, State veterinary departments, composed of fully qualified veterinary surgeons (European and Indian) and veterinary assistant surgeons trained at the above colleges.

The activities of these veterinary departments have steadily extended since the beginning of the century, and in 1936 the numbers of provincial service officers in the Civil Veterinary Departments of British provinces amounted to about 150, and veterinary assistant surgeons to a little over 2,000. The Royal Commission on Agriculture in India, however, recommended at least 300 provincial service officers and about 6,000 veterinary assistant surgeons, based on a provision of one provincial service officer per district, with about 600,000 cattle in addition to other stock, and one veterinary assistant surgeon per 25,000 cattle. The numbers available were thus about one-half of the recommended numbers of provincial service officers,

and one-third of the subordinate staff. It was obvious that this provision was quite inadequate to deal with the vast amount of disease, parasitic infestation and malnutrition which exist in India, and before I left arrangements were made in most provinces and some States, to supplement this staff by stockmen who, after six months' special training at veterinary hospitals, were employed to assist veterinary assistant surgeons in their work.

The numbers of veterinary hospitals and dispensaries were also steadily, if slowly, increased. These establishments are essential as centres on which to base the control of disease by inoculation and other veterinary work; since it seems clear that Government will always have to bear the burden of controlling outbreaks of contagious disease, and should make provision for systematic animal husbandry work throughout the country. Control by slaughter is out of the question, and powers are generally lacking to prevent movement of cattle. Moreover, it has been found by experience that, except in the face of a severe outbreak, stock-owners will not pay even a small charge for preventive inoculation, though well aware of the risk of devastating loss; so control by protective inoculation seems to be the only practicable policy in present circumstances.

It is not possible to give any reliable comparison between the results which are at present obtained in the control and treatment of disease by veterinary departments, since the system of recording in most cases has been changed, and is now much more effective than was formerly the case. There is, however, no doubt that the improved methods of controlling rinderpest, hæmorrhagic septicæmia, anthrax and blackquarter, to mention only the most important, and for the treatment of surra, schistosomiasis and a host of other bacterial, protozoal and helminthic diseases, have had tremendous effect.

Far more detail could be given, but enough has, I think, been said to show that the duties and responsibilities of the departments responsible for the proper care and development of the 300 million farm livestock of India are immense, and should not be subordinated to any other consideration.

DISCUSSION

THE CHAIRMAN, in opening the discussion, said: There is one matter on which I should have liked Sir Arthur Olver to throw a little more light in his paper, i.e., the question of the dual purpose animal. The Royal Commission on Agriculture advanced the slogan "One thing at a time," but qualified that maxim to some extent by saying that an attempt to provide a dual purpose animal might be made "in those districts in which the prospects for successful milk-production are markedly better than, on the average, they now are," but that "even in such districts the question whether it is expedient to develop high milk production in cows or to resort to buffaloes should always receive careful consideration." I think I am right

in concluding from what Sir Arthur Olver has said on the subject that that is very much his opinion. He agrees, I think, with the Royal Commission, that efforts to produce a true dual purpose animal are likely to prove infructuous, but in view of the development of motor transport, which is now proceeding, and the development of tractor cultivation, which is a possibility of the near future, I think Sir Arthur Olver is prepared to give a qualified approval to the policy of producing working type cattle with a moderate capacity for milk production.

It is a matter of great regret to me that I left India before the first All-India Cattle Show was held. When one was able to keep in much closer touch with India than is possible now, I heard on all sides of the success of that Show, and I am glad to know that it is to be held every year, thus providing increasing ocular evidence of the progress which animal husbandry has made as the results of the recommendations of the Royal Commission on Agriculture in India and the work of the first Animal Husbandry Expert with the Imperial Council of Agricultural Research.

SIR BRYCE BURT, C. I. E., M. B. E., said: I deem it a great privilege to be the first speaker in the discussion on this excellent paper, which brings back to me memories of eight years of very happy collaboration with Sir Arthur Olver in India. I am sure he will be glad to know that in a recent issue of *Indian Farming* mention was made of the progress which has been achieved in the demonstrations of mixed farmers to which we both attach importance.

I should like to refer to the improvement of grazings and fodder production, not because there is any difference between Sir Arthur Olver's view and my own, but because it is not always understood that they are not alternatives; they must go together. Neither, alone, is a complete solution of the problem of feeding Indian cattle. There are large areas of grazings in India which could be and should be improved, and such improvement would be of great value for the maintenance of some of the excellent breeds of cattle which have been shown on the screen this afternoon. In my view the improvement of grazings and the development of fodder growing must go hand-in-hand.

I agree with Sir Arthur Olver on the supreme importance of a proper balanced policy of land utilisation, including proper attention to livestock and livestock products. The future developments of Indian agriculture should be more definitely directed to the better feeding of the population. There are two obvious ways of improving the supply of protective foods in India. One is the development of fruit growing, on which considerable emphasis has been placed lately, and the other is a better supply of livestock products. Such a development of Indian farming as would lead to a better supply of milk and milk products would be an enormous advantage to the

cultivator, both to his pocket and to his physique, and also of inestimable value to the not inconsiderable town populations in India.

I used to be an enthusiast in mechanical cultivation, and hoped that it would solve many Indian problems, but I am afraid that mechanical cultivation does not provide any real solution of the problems of Indian peasant agriculture. The tractor may have a great future before it, in estate agriculture and for special purposes, but I think that the agricultural engineer can render greater assistance on the lines indicated by the lecturer. It may well be desirable in many areas to use heavier and slower working cattle, drawing heavier implements, thus reducing the need for maintaining both buffaloes and cows on the same holding. I do not think there is any difference of opinion as to the value of the buffalo as a producer of milk and butter fat, but as Sir Arthur Olver has said, very often the resources of a small holding are often strained to provide food for buffaloes for milk production as well as for cows to breed working cattle.

DR. J. T. EDWARDS, formerly Director of the Mukteswar Research Institute, said: I am grateful for the honour of being asked to speak on Sir Arthur Olver's paper.

One of the great merits of Sir Arthur Olver's task in India was that it demonstrated clearly the immensity of the animal industry side of agriculture in India, and how great is the scope of the work confronting the expert on animal industry in all its aspects. I wish to mention two pieces of research on animal diseases, that on rinderpest and that on theileriasis.

The problem of rinderpest in India seems to be in a fair way to solution, and in a most unexpected manner, not generally applicable elsewhere, for the reason that the conditions in India are peculiar. The Zebu cattle of India have a large degree of basic immunity, probably as a result of having had to confront periodic waves of infection with rinderpest for untold ages. When I arrived at Mukteswar I endeavoured, among other lines of research into the disease, to ascertain whether one could, by fixing the virus on other species, produce some attenuation for cattle. I succeeded, in 1922, in fixing the virus on rabbits, and there seemed to be progressive attenuation for cattle, but unfortunately, after fifteen months, all the rabbits died from pasteurellosis, and I had to think of another species. In 1926 I succeeded, after some difficulty, in fixing the laboratory cattle virus on goats by a special process. After some time the virus appeared to be getting less and less virulent for cattle, but still it did not seem that it would be possible in immunisation to avoid the use of expensive serum altogether to curb the severity of infection, for the disease set up in the Himalayan hill cattle at Mukteswar, although not fatal, was somewhat severe. Fortunately, however, Mr. James, a veterinary inspector in the Central Provinces, took the risk of applying the attenuated goat virus alone to the cattle in a village

Uplift Scheme in which the serum-simultaneous method of immunising cattle against rinderpest was undertaken as part of propaganda work in the Central Provinces at the time. His result, together with the results of further work amplifying and corroborating it, was published in a paper under the name of his chief, the late Major Sterling. The trial initiated by Mr. James proved to be successful, and it is largely due to his enterprise that, instead of costing about 30 rupees to confer a permanent immunity from rinderpest on a beast in India—a proposition which would be impracticable—it now costs less than a farthing, so the scheme is economically worth-while. With proper organisation and the application of improved technical methods of preparation and distribution, rinderpest ought to be no longer a limiting factor in livestock improvement in India, for it can be wiped out.

With regard to theileriasis, when I arrived in India the Imperial Agriculturist, Mr. Henderson, told me that he considered himself extremely fortunate if he could get an imported bull to survive until it had served 40 cows, so great were the risks of sudden and rapid death in the case of bulls imported into India. I could not understand that, until in carrying out the serum-simultaneous inoculation of cattle at Pusa and elsewhere, I found that these cattle died a somewhat lengthy time after inoculation with the presence of an extraordinarily large number of small piroplasms in the blood. Before my time in India the prevalent cattle piroplasms were simply known as "small" piroplasms and "large" piroplasms. It was known that the large one was the common *Babesia bigemina*, but no one seemed to have any idea what the small one was. On investigation it was found that every beast in India had these piroplasm, which were undoubtedly of the kind known elsewhere as *Theileria mutans*, and when by chance they were accidentally inoculated into an imported beast they became extremely virulent and produced a disease which was often fatal and was identical in almost every respect with the disease known as East Coast fever in South Africa. If the animals did not get the disease accidentally they were almost certain to get it naturally, presumably from the bites of locally infected ticks, as I remember a batch of bulls imported from South Africa got it in the Punjab in 1928. Different races immunologically of *T. mutans* appeared to persist in different localities. Theileriasis was one of the factors, therefore, which militated against the acclimatisation of imported stock in India. The native cattle, having become infected soon after birth, namely, at an age when they are relatively resistant, developed a large degree of immunity (or "premunition") against theileriasis, and it was only occasionally that their immunity broke down; but imported cattle almost inevitably contracted this infection (harboured in the locality by the native cattle as carriers), and they succumbed later to the extent of 40 or 50 per cent.

Having regard to those two diseases, namely, rinderpest, against which native cattle can be immunised safely by a cheap method, and theileriasis, which all native cattle harbour, but against which they are immune, it is most unwise to import cattle into India with the object of improving the native cattle, which can be improved, as has now been abundantly demonstrated in better way, by selective methods of breeding. From the veterinary point of view it is a fatal policy for India to attempt to obtain long-term improvement by importation.

The second subject upon which I should like to dwell for a few minutes is that of education. Just before I was appointed to India, as a result of the Report of the Islington Commission, a scheme was mooted for sending Indians to England to be given a post-graduate education here. Simultaneously, the India Office consulted the late Sir Stewart Stockman, and his advice was similar to that which I gave the India Office at the time, which was as follows. The problems of India in the matter of animal disease are peculiar, the animal ecology of India being of a special kind, as is evident to anyone who has closely studied the subject of tropical veterinary pathology. The common problems with which we had to deal in the veterinary colleges at home at the time, such as the examination of horses for soundness, bandaging, dressing of wounds, and so on, are not the most pressing problems of India, important though these manipulations may be in the hands of the subordinate personnel of a veterinary dispensary. Veterinary education should be developed within India, it was contended, to meet the peculiar and extensive problems of India, where one has to deal in the main not with individual clinical cases but with animals in the mass. The problems of India are different again from those of South Africa; for example, there is no horse-sickness in India. Rinderpest, hæmorrhagic septicæmia and piroplasmosis, of a peculiar kind, are the important cattle disease problems of India, and the young veterinary graduate destined to higher service has to be specially schooled to confront those particular problems and the methods of dealing with them. For some few years immediately after my arrival in India, I endeavoured to give the requisite intensive training at Mukteswar, with the loyal help of my colleagues, Messrs. Bennett and Cooper. I feel very strongly that the Veterinary Department should have the handling of the breeding question. The results of extensive experience in other countries within the British Empire, such as Kenya and South Africa, have shown that the animal side of agriculture in these great territories must be looked upon, although in itself it is extremely diversified, as a single problem from the economic standpoint, and one quite apart from the soil problem.

I know that the veterinary profession has been greatly to blame in the past for failing to turn out graduates competent to deal with the comprehensive problems, because of deficiencies in its system of education.

Veterinary workers have to be given, in any event, a basic education which should embrace a sound knowledge of the subjects upon which can be carried a superstructure of a vocational training in animal genetics and nutrition, as well as preventive medicine and clinical work. The result in practice has been that in India and elsewhere people who have had maybe merely a training as botanists or as estate agents have been chosen haphazard as animal breeding experts. In the veterinary profession we are given already a basic training in general biology, physiology and anatomy, and now that steps have been taken to add the more comprehensive superstructure we ought to be able to deal executively with the whole problem. We cannot, it must be confessed, profess to be experts in every branch of the work. Experts of world-wide repute, such as, for example, Dr. Hammond, in animal genetics, and Dr. H. H. Green in certain aspects of animal nutrition, both of whom are present here this afternoon, have made striking contributions to advancement in our knowledge by research. But in a system of veterinary training to fit veterinary workers to deal with a problem which is, as Sir Arthur Olver has now demonstrated, although we little suspected it, probably the greatest single industrial problem of the world, that of the animal industry of India, the subjects of breeding and nutrition should be included, so that the graduate can confront animal problems as one single ecological problem, thus enabling progress to be made which could not be made in any other way.

It is significant that in India the Province in which the animal breeding question has been developed to the greatest extent is the Punjab, where from the beginning the work has been in the hands of the Veterinary Department.

MR. R. D. ANSTED, M.A., C.I.E., said: The presence of Sir Frank Noyce in the Chair to-day reminds me that in 1924 he and I took over the big military grass farm at Hosur, and established a cattle breeding station in the Madras Presidency on a really big scale. We laid down a policy to try to solve some of the many problems, not only of cattle breeding, but also of nutrition which were then outstanding. In those days the Agricultural Department had to do this work because the Veterinary Department, as the Chairman has said, was understaffed and had its hands full with the medical side, and it was generally admitted, I think, that the men in the Veterinary Department had not the training that was necessary to carry out the breeding and agricultural policy then laid down.

In the Madras Presidency one of our outstanding difficulties was always the feeding of the cattle. There are long periods of dry weather there, lasting from three to five months, when there is no grazing to be had. The holdings generally are very small, averaging between five and seven acres. It is very difficult for a peasant on a small holding like that to grow his food

crop, to grow a crop to sell, in order to have money with which to pay his taxes and his own expenses, and also to grow a crop to feed his working cattle, and to provide fodder for high milk yielding cattle or any cattle at all. He cannot spare any ground for growing fodder to make silage, or anything of that sort. The solution of the problem, I know, is mixed farming. But it is very difficult to teach mixed farming in any practical way on small holdings, and to substitute mixed farming for the old practices. We always hoped that the jemindars and the small rajahs might develop herds of cattle, and in our time they were beginning to do so, and we sent them improved bulls from our farm.

Colonel G. K. WALKER said: The old cattle breeders of the Punjab had a very great advantage because they were nomadic and went from one grazing ground to another. It did not matter to them whether the grazing belonged to anybody else; it did not belong to anybody in their view. One advantage that they had was that they did not deal in milk; they were devoted to their cattle, and the consequence was that the calves born in their herds received nearly all the milk of the mothers, so that fine cattle were grown. With the restriction of the grazing grounds difficulties began to arise. Disease in irrigated ground is bound to occur, and it has been explained to us how parasitic diseases particularly develop in irrigated places. The Veterinary Department can do very good work in controlling those diseases to some extent.

In my opinion one of the most important points that has emerged this afternoon is the necessity of teaching the Indian the best methods of preserving fodder, which in my time were very little understood. I attempted to make silage, but I was not very successful. I feel that the Agricultural Department could help a great deal in educating the Indian cultivator in the best methods of preserving fodder. The seasonal difficulties that exist in India are well known, and the problem of feeding animals in that country properly is an acute one.

Mr. A. H. BYRT said: I think one of the greatest things that Sir Arthur Olver did in India was to start the All-India Cattle Show in Delhi. Most people acquainted with India know how difficult it is to start there anything which costs money. Not only were the Central Government concerned in this matter, but so were all the Provincial Governments. The active support and co-operation of each of them, except, I think, one Provincial Government, were secured, and the Show was organised and established with a sagacity and thoroughness which promise perennial life.

Of the many difficulties in India in connection with the growing of fodder, fragmentation of the holdings, and so forth, I have some personal acquaintance through my connection for some years with the co-operative movement in Bombay. I wish we could have had present to-day Dr. Harold Mann, whom many of you remember as the Director of Agriculture in

Bombay. I heard him address an audience of Indian students in London some time ago, and was rather disturbed by his recommending them to study what was shocking to most people then but has since become quite respectable, i.e., the way things are done in Russia. Since then we have had the Russian Cultural Exhibition in London, and in it were shown, in a series of the most arresting graphs, diagrams and pictures that I have ever seen at a propagandist exhibition, the astonishing results which the Russians claim to have achieved in the development of their agricultural, mineral and other economic resources. Now that Russia is considered respectable, we shall not be able to overlook what has been achieved there when we strive in every possible way to solve the problems of stock breeding, agriculture and rural poverty in India.

Mr. LARRY SMITH said: I feel it a great honour to have been invited to attend this meeting, as I am only a practical farmer. I took over the cattle farm at Hissar in 1928, and I found that certain questions had to be tackled there. One was the question of producing milk from the working type of cow. When I arrived at the farm there were 1,200 cows there, and permission had just been obtained to start a dairy. We gentled the cows and quietened them down and started to milk them, and we obtained a considerable amount of milk. When I left the cows were giving 5,000 and 6,000 lbs. of milk, and they had not lost their working capacity. I think if one tried to obtain more milk than that one would find that the cows lost their working capacity.

With regard to the poor condition of cows in the villages, there are two separate herds there. One is kept for providing milk, and that is well looked after and well fed, and the other is a scavenger. The scavenger goes out into the jungle and eats what it can find, and that is why it is in such poor condition; it is kept for producing dung, which the people use as fuel for cooking purposes.

SIR ARTHUR OLVER, in replying to the discussion, said: Referring to the opening remarks made by our Chairman, it is very generally agreed, I think, that it is not possible to breed a dual purpose animal that will breed true for high production in two directions at one time, but I think India in the future will use a general utility animal which is in practice a dual purpose animal to some extent, that is to say, in the villages cultivators will breed working type animals which will produce a certain amount of milk but not sufficient to interfere with their working capacity.

I agree with Sir Bryce Burt that grazing and crop production are complementary to each other, but there is one point which I think is often overlooked by people who have not had wide experience of stock raising in India, namely, that throughout India the best cattle are produced in comparatively dry areas in which they have to depend mainly on crop residues and such

grass as is produced on the bunds surrounding the fields and, in some cases, on a small legume which grows as a weed after the grain crop has been removed. I entirely agree that the great difficulty is the smallness of the holdings, and I feel that the most promising solution of the problem—and one that is now taking place on a very considerable scale in the Punjab—is the consolidation of holdings. There is also the question of co-operation, but unfortunately our efforts at co-operation, particularly in the milk industry, were not very successful. A good deal of strict supervision is required.

Dr. Edwards has an extensive knowledge of cattle disease in India, and his remarks were very interesting and illuminating. The effect of rinderpest and theileriasis in relation to the use of European sires is a very important one, which, apart from the effect of the climate and conditions under which cattle have to live in India, should never be forgotten when the question of importing European cattle is under consideration.

With regard to veterinary education, it is quite true, as Dr. Edwards also said, that we ourselves are very much to blame. I think it can fairly be said that, owing very largely to Government neglect, there is no other country in which livestock has such tremendous importance or in which so little has been done for veterinary education. As a result, the necessary facilities are still not available at veterinary colleges in this country for adequate practical instruction. One of my main preoccupations in India was to try to induce every veterinary college to have a stock farm or a dairy at which the students could be given such instruction.

I quite agree that veterinarians cannot claim to be experts in special branches of animal husbandry such as dairying and poultry, but in the composition of the animal husbandry departments every branch must be represented. In short, all animal husbandry departments must be comprehensive organisations, in which problems can be dealt with by heads of sections in collaboration, and there must be co-ordinated research and investigation work constantly in progress, so that the department shall not be caught napping by problems which ought to have been investigated.

A certain amount of work had been done on the preparation of silage, and when I took up the question of mixed farming and tried to bring forward a scheme that might be practicable for small holders, I tried to induce them to produce silage on a small scale; but I agree that the ultimate solution of the fodder problem is the consolidation of holdings.

It is quite true that, as Mr. Smith said, in the drier areas of India large numbers of what he aptly calls "scavenging cattle" are kept simply to produce dung for burning; but in forest countries such as Assam, where there is an abundance of fuel, cattle are kept solely to produce dung as a fertiliser. They go out into the forests daily to find food and a certain number are taken by tigers, but their owners do not mind, since they keep the cattle solely for the manure they produce when brought in at night.



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Editorial

OUR WAR EFFORTS

With the ushering in of the New Year we extend our cordial greetings to our readers and wish them all a happy, peaceful and prosperous New Year.

On this occasion, it is customary to take a retrospect of the past so as to enable us to have a correct planning of the future. The war has been the all-pervading topic of the past year and still continues to be so. It has influenced practically all our actions and activities. And it has formed part of our existence now. Naturally, therefore, a question often arises whether we, as a profession, have anything to do with this war and whether we have anything to contribute to its successful prosecution and termination. In other words, is there anything like "our war efforts" as far as the Veterinary profession is concerned? Of course, we have no hesitation in answering with an emphatic affirmation and in asserting that we, as a profession, have a very large part indeed to play in the efficient prosecution of the war. We will explain how. As is well known, an army moves on its belly. Arms and ammunitions are, of course, very necessary, there is no question about that. But the supply of rations to the fighting unit is an equally important factor. General Wavell once summarised the cares of the soldier very truly and pithily in two words—*guns and butter*. It is very well known that during the last war, the Russians broke down for want of guns while the Germans collapsed for want of butter. Regular ration to the army is, therefore, a vital factor which

cannot be lightly disposed of. Lack or insufficiency of food-stuffs will lead to a falling of the morale which the Government must, at all costs, prevent. It is the realisation of this essential truth that has made the Government undertake a large scale propaganda on "Grow more food" campaign so that the civilian as well as the military may be kept well fed and fit. It is here that the part of the Veterinarian comes into play. The land cannot be made to yield more food without healthy and virile livestock. To manure the land and to plough the field, to transport the produce and to market the agricultural products, cattle are essential. Much more so in a country like ours where mechanisation of agriculture is practically unknown. Again for the supply of beef and mutton, milk and eggs, man is dependent on the livestock of the farm; without them, the problem of production and supply of foodstuff to the nation will become a menacing one. And, therefore, the success of the 'grow-more-food' campaign depends greatly on the livestock of the farm. To keep these animals in a state of health and free from diseases and also to increase their productivity and utility, a well organised and efficient Veterinary service becomes a *sine qua non*.

In Great Britain, which is one of the actual theatres of war, this fact is very well recognised and the members of the Veterinary profession are listed in the reserved occupations owing to their potential power and worth. Keeping the animals in a state of health is not easy and a number of problems are to be confronted and solved. As the *Veterinary Record* aptly puts it, "the control of animal diseases is no light task and however good the leadership, we must retain the right of responsible free speech and criticism. In this spirit of searching enquiry, we must ask whether, as our contribution to the winning of the war, we are making a total effort to control animal diseases. Are all the effective means of control being applied with utmost energy, and are ineffective methods being modified or dropped? Is research being prosecuted with the utmost efficiency? Are students receiving the best possible training to combat disease and to increase the productivity of our livestock? Are the most able and energetic men in the most important posts? Are the leaders of our profession effecting a total mobilisa-

tion of all our resources, both human and material, to establish control of animal diseases, and to increase livestock production? Do personal prejudices and out-of-date methods based perhaps on a great experience of conditions which have now changed, clog our war effort? These are questions to be asked and answered by every member of the profession". How aptly these apply to our country!

These problems of the profession are being frequently discussed in England in meetings and conferences of the members of the profession and we find from the Veterinary periodicals of that country that a good deal of progress has been made in the tackling of many a common disease of animals which normally would not have been the case. These meetings and conferences have gone a long way in facilitating exchange of ideas and views, in formulating a common definite line of action and generally in mobilising the profession as a whole to an intensive war-time activity.

Turning to the conditions in this country, it is very saddening to learn that in the Province of Madras, a Veterinary Conference proposed to be held in the Christmas week of 1942 had to be postponed, we understand, because a Veterinary Conference would not be considered a definite war effort. We can only characterise it as an exhibition of the ignorance of the potentialities of the profession.

In striking contrast to this, we have before us a copy of the report of the Ceylon Veterinary Association, wherein His Excellency the Governor is the Patron of the Association and who, in spite of that country being in the actual scene of war, found time to open a Conference recently. It is also heartening to hear that the Bombay Veterinary Conference, which was held in December 1942, was presided over by Mr. Mohey Deen, Principal of the College and opened by Mr. H. F. Knight, Adviser to the Governor of Bombay.

We do hope that the above examples of Bombay and Ceylon will be followed up by other provinces in the country so that the Veterinary profession as a whole may contribute its legitimate share in the war effort.

THE ALL-INDIA VETERINARY ASSOCIATION, MADRAS BRANCH

We are desired to announce that the proposed Veterinary Conference to be held under the auspices of the Association was unavoidably postponed to a future date. We share the regret of the organisers of the Conference that circumstances beyond their control had made it impossible to have the function as contemplated.

We do hope that it would be possible to hold the Conference at an early date.

PAPER SHORTAGE

We regret very much that owing to acute shortage of paper we have had to condense many of the interesting clinical articles and insert them under "Our Mail Bag". We hope that when conditions improve and supply of paper becomes more easily available, we will be in a position to revert back to pre-war conditions and record these clinical articles in greater detail. Till then we request our correspondents to bear with us and put up with the inconvenience caused by the 'clipping' of their articles.

OBITER DICTA

It is our misfortune to live in a bad period, but it will end And so, to the man tempted by despair, I say, remind yourself that the world is what we make it and in the making up of it each one of us can contribute something. This thought makes hope possible and, in this hope, though life will still be painful, it will be no longer purposeless.—(Bertrand Russell in *Readers' Digest*, November 1941).

Clinical Articles

CHEMOTHERAPY OF CANINE PIROPLASMOSIS DUE TO *BABESIA GIBSONI*

BY

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INTRODUCTION

Symons (1911-12) was the first to try Salvarsan intramuscularly in canine piroplasmosis due to *B. gibsoni*. The results, though good, were invariably complicated with necrosis and fibrous-tissue formation at the site of the subcutaneous injection. Novarsenobillon which was later on tried by him intravenously had no such after-effects. Symons (1924) also tried Tryparsamide without much success. Sterling (1927) found repeated injections of Tryparsamide to give highly satisfactory results. Rao (1928) tried Mercurochrome, Icthargan, Antimony Tartarate and Sobita oil in the treatment of *B. gibsoni* infection without satisfactory results and Novarsenobillon, Neosalvarsan and Tryparsamide, prophylactic as well as curative, in hounds, with benefit. Trials were carried out at the Imperial Veterinary Research Institute, Mukteswar (1932-33) with the proprietary drug "S. U. P 36," (1934-35) Tryparsamide, (1935-36) Atebrin, Trypaflavine and Acaprin and in no case could a complete sterilization of the circulating blood be obtained. Novarsenobillon and Quinine hydrobromide were also tried by the Institute (1933-34) with varying results. Shetty (1934) tried 'Sulfarsenol' in two cases with success.

The author gave a fair trial to Novarsenobillon, Sulfarsenol and Tryparsamide and the detailed observations of their trial are recorded in the present article.

HISTORY OF THE PRESENT OUTBREAK

In an outbreak of tick fever in Darbhanga kennels in 1940, 65 valuable animals out of a total of 106 were lost in the course of a few months. These represented the following breeds:—Great Danes, Alsations, Grey Hounds, Spaniels and Terriers. Of the remaining, 27 were at Darbhanga and 14 at the Veterinary College, Calcutta, when I took charge of the outbreak. The

*The author was working as Disease Investigation Officer, Bihar, when these experiments were carried out.

disease was diagnosed at the North Bihar Range Laboratory as *B. gibsoni* infection and I was able to demonstrate the parasites in all the 27 cases which were used for the following experiment :—

[This was the second outbreak of this nature in these kennels, the first one having occurred in the year 1937-38 in which 20 dogs were attacked and of these 10 recovered and 10 died. That outbreak started about August and continued right up to October and on investigation yielded evidence suggestive of a chronic form of tick fever due to *Piroplasma canis*.]

The present outbreak started in December, 1939, and in July, 1940, the experimental treatment as described in this article was undertaken.

SYMPTOMS

The condition of the dogs was extremely poor. Mange, tick, lice infestation and poor diet contributed greatly to this. All were running temperature and were emaciated. Dullness, depression, inappetance, dry nose, rough and staring coat, constipation and in some cases diarrhoea were present. Teeth were dirty, black, gums, bleeding and the breath foul. Some dogs have sinuses on the outside of their hocks as a result of some previous treatment. Some of the dogs were nothing more than a bag of bones. No meat or bone was included in their ration.

The ticks on examination proved to be *Rhipicephalus sanguineus* and the lice were identified as *Haematopinus piliferus*.

TREATMENT

Before subjecting the animals to specific treatment the following measures were adopted : The dogs were deticked and their lice removed by naphthaline solution in spirit. Kennels were thoroughly cleaned, white-washed and the channels filled with phenyle lotion rendering them tick-proof. Mange-dressing containing sulphur was applied to the affected animals. Teeth were cleaned with 1% hydrochloric acid. Wounds were dressed with Acriflavin solution in spirit ($\frac{1}{2}$ gr. to 1 oz.). Diet offered included egg flip in the morning, meat broth in the evening, with 2 dessert-spoonfuls of Glucose 'D' twice a day.

Specific :—The dogs were divided in 3 groups of 11, 11 and 5. First batch was given Novarsenobillon 0.45 gm. per 40 lbs. body weight intravenously (vide Table I). Second batch was given Sulfarsenol subcutaneously 42 centigramms per 40 lbs. body weight (vide Table III). Third batch was given Tryparsamide intravenously at the rate of 0.5 gm. for small dogs, gm. for medium sized and 1.7 gm. for large sized dogs (vide Table II). Injections were repeated after 5 days till 4 doses were given.

The blood smears from all cases were examined before the start of the treatment and all cases showed *B. gibsoni*. During the experiment, temperature of every animal was recorded morning and evening and those showing high temperature were subjected to blood examination.

TABLE I
Novarsenobillon Group

Sl.No.	Name of the dog	Breed	Weight	Dose given	Remarks
1	2	3	4	5	6
1	Dandie	Bull Terrier	16 lbs.	0.2 gm.	Recovered
2	Maty	do	do	do	do
3	Queen	Spaniel	20 lbs.	0.225 gm.	Died after the third injection
4	Grey pup	Grey Hound	14 lbs.	0.2 gm.	Recovered
5	Brown pup	do	do	do	do
6	Adhia	do	28 lbs.	0.3 gm.	do Treatment discontinued after third injection
7	Dane pup (small)	Great Dane	24 lbs.	0.25 gm.	Recovered
8	Dane pup (big)	do	do	do	do
9	Sella	do	40 lbs.	0.45 gm.	do
10	Pexi	Alsation	30 lbs.	0.3 gm.	do
11	Peter	Bull Terrier	20 lbs.	0.225 gm.	do

Note:—All injections were given in 10 c.c. of double distilled water intravenously at intervals of 5 days.

TABLE II
Tryparsamide Group

Sl. No.	Name of the dog	Breed	Weight	Dose given	Remarks
1	2	3	4	5	6
1	Epic	Grey Hound	25 lbs.	1 gm.	Died 2 days after the 3rd injection.
2	Nero	do	30 lbs.	do	Epistaxis was observed on the 4th day after the 2nd injection and was stopped by Neo-haemoplastin.
3	Hunting girl	do	28 lbs.	do	Recovered completely.
4	Silver queen	Spaniel	do	do	Temperature ranged between 103°—104° after full course of treatment.
5	Bansli	Alsation	32 lbs.	do	Epistaxis 2 days after 2nd injection and was stopped by Neo-haemoplastin. Temperature as above.

Note: All injections were given in 10 c. c. of double distilled water intravenously repeated at intervals of 5 days.

TABLE III
Sulfarsenol Group

Sl.No.	Name of the dog	Breed	Weight	Dose given	Remarks
1	2	3	4	5	6
1	Lion	Great Dane	70 lbs.	70 cgm.	The blood showed no parasites after the 2nd injection but the temperature ranged between 102°—103° even after full course of treatment.
2	Jill	Grey Hound	20 lbs.	20 cgm.	Recovered completely.
3	Toto	Pekingese	7 lbs.	7 cgm.	do
4	Sally	do	do	do	After showing remarkable improvement it died 4 days after the 2nd injection.
5	Camal	do	do	do	Showed corneal opacity after first injection. It cleared away after the second injection. Recovered completely.
6	Alice	do	do	do	Corneal opacity as above clearing after 2nd injection. Parasites and temperature as against No. 1.
7	Bonner * Shell	Grey Hound	30 lbs.	30 cgm.	It was given in addition 5 c.c. Prontosil subcutaneously. It died a day after the first injection.
8	Gadigirl *	Alsatian	20 lbs.	20 cgm.	This also received 5 c.c. Prontosil subcutaneously on alternate days. Recovered completely.
9	Moti *	do	40 lbs.	40 cgm.	do
10	Pup (Male)	Cocker Spaniel	14 lbs.	14 cgm.	Temperature ranged between 102°—103° after full course of treatment. No parasites seen.
11	Pup (Female)	do	10 lbs.	10 cgm.	do

* It had fistulae on its legs.

Note:—All injections were given in 10 c.c. of double distilled water and repeated at an interval of 5 days. The first 2 injections were given subcutaneously, the 3rd intramuscularly and the 4th intravenously. Sloughing at the site was observed in the first two routes.

OBSERVATIONS

Novarsenobillon group: After the first injection 10 cases showed a gradual fall of temperature and in the 11th dog the decline started on the 4th day of the first injection. The dose of the drug varied from 0.225 gm. to 0.45 gm. After the 2nd injection the temperature of all except 3 came down to normal. The blood smears from these 3 cases, however, showed no parasites at this stage. On the day of the 3rd injection all were normal except one. On the day of the 4th injection one dog which was still running a temperature was found dead and the rest normal. At the post-mortem, lungs showed venous congestion and spleen was 3 times the normal size. Smear from the heart blood and spleen were negative. The treatment of the rest was discontinued after the 4th injection.

Sulfarsenol group: In 3 cases only there was improvement after the first injection. In this group 3 dogs had ugly ulcers and sinuses on the outside of their hock joints and were given in addition 5 c.c. Prontosil subcutaneously. Their condition was so poor that they could hardly stand. One of the latter died a day after the first injection. Post-mortem examination revealed a greatly enlarged spleen, enlarged liver, gall bladder full of pitch-dark bile, the mucous membrane of the gastro-intestinal tract was congested and the lumen of the intestine contained large quantities of mucus. Smears from spleen and blood proved negative. Out of 10, 7 cases showed no improvement. After the 2nd injection temperature of 5 showed a fall. Opacity of cornea was observed in 2 Pekingese and sloughing at the site of subcutaneous inoculation in all. The opacity might have been due to parasites and exaggerated by this treatment. There was no solution for the cause of sloughing. The only advantage this drug seems to possess over others is the ease with which it can be administered painlessly by subcutaneous and intramuscular routes without causing any inflammatory reaction at the site of injection. It was then decided to give the drug intramuscularly. The site selected in each case was the gluteal region. A day before the third injection one Pekingese died. Its temperature had come down after the first injection went up again after the 2nd injection which was most probably due to an abscess formation in the intra-maxillary space. Lancing of the abscess brought down the temperature, but it shot up again on the day it died. No post-mortem was performed on this animal. After the third injection the opacity cleared away. Six showed marked improvement and 3 though looking bright still showed a temperature of 102°—103°. This time again, in spite of the site of injection being thoroughly massaged after inoculation sloughing took place and the 4th injection was given intravenously. Five days after the 4th injection, 5 showed normal temperature, and 4 recorded between 102° and 103° when the treatment was discontinued.

In Tryparsamide group 4 out of 5 showed no change in temperature after the first injection. After the second injection 3 showed marked improvement while the other two were still running a temperature of 105°. The blood smears of the latter showed a few parasites. Two dogs developed epistaxis, one 2 days and the other 4 days after the 2nd injection. This could not be made out whether it was due to treatment or some other cause. This was arrested by Neo-hæmoplastin given subcutaneously. After the 3rd injection one died, one showed normal temperature and the other three were running 103°-104°. Post-mortem showed an enlarged spleen—twice the normal size. Blood smears were negative. Smears from spleen showed some degenerated parasites. Five days later, the 4th injection was given. There was only one recovery in the whole batch. For lack of time and medicines the treatment of the rest was discontinued.

GENERAL CONDITION

After the third injection the condition was greatly improved. In the first two groups meat diet, and large bones were included in the ration. After the 4th injection, eggs were cut out except in the third group. Glucose 'D' reduced to $\frac{1}{2}$ and dog biscuits included in the diet. Dogs were deticked again and lice removed and kennels disinfected. Each animal gained in weight and became lively. Their teeth were now in good condition.

SUMMARY AND CONCLUSIONS

1. Out of the 3 drugs tried Novarsenobillon proved the best, the dose being 0.01 gm. per lb. body weight. Ten out of eleven cases treated recovered completely.
2. Sulfarsenol was not so effective as the former, the dose was 1 cgm. per lb. body weight. Five out of eleven in this group recovered completely.
3. Tryparsamide gave the poorest results. The dose in this case was 1 gm. for medium sized dogs. Only one out of five recovered completely.
4. Opacity of cornea was observed in some of the cases treated by Sulfarsenol but it disappeared after 7 to 8 days.
5. Sloughing at the site of inoculation occurred in case of Sulfarsenol given subcutaneously or intramuscularly.

ABSTRACT

In an outbreak of tick fever due to *Babesia gibsoni* 27 dogs were treated with Novarsenobillon, Sulfarsenol and Tryparsamide. A course of 4 injections was given in each case. It was observed that Novarsenobillon proved the best, the dose being 0.01 gm. per lb. body weight. Ten out of 11 cases treated recovered completely. Sulfarsenol was not so effective as the

former, the dose was 1 cgm. per lb. body weight. Five out of 11 in this group recovered completely. Tryparsamide gave the poorest results. The dose in this case was 1 gm. for medium sized dogs. Only one out of 5 recovered completely.

During the treatment opacity of cornea was observed in some of the cases treated with Sulfarsenol but it disappeared after 7-8 days. Sloughing at the site of inoculation occurred in all cases treated with Sulfarsenol subcutaneously or intramuscularly.

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TREATMENT OF BOVINE PIROPLASMOSIS WITH 'EUFLAVINE'

BY

S. RAMANABAYANAN, G.M.V.C.,
Veterinary Assistant Surgeon, Coonoor

In an earlier article on "Bovine Piroplasmosis in Coonoor and surroundings of the Nilgiris District" published in this *Journal*, the writer has dealt with in detail on Piroplasmosis of cattle as it occurs in the Nilgiris and the efficacy of Acriflavine in its treatment. Of late, Euflavine (May and Baker)—a dye of the class of Acridines—in 1% freshly prepared sterile aqueous solution has been used with good results in doses of 10 c.c. per 100 lbs. body weight. No ill or after-effects were observed as a result of the treatment.

A few of the cases treated are here recorded.

Case No.	Kind of Animal	Symptoms and blood examination results	Treatment	Result
1	Cross bred-cow, aged 5 years	Coffee coloured urine, off-feed and rumination. Temperature 104°. <i>Babesia bigemina</i> present	75 c.c. of 1% aqueous solution of Euflavine intravenously	Cured
2	Kangayam Bullock, aged 6 years	do Temperature 105.2° <i>Babesia bigemina</i> present	75 c.c. of 1% aqueous solution of Euflavine intravenously on the 1st day, followed by 45 c.c. on the next day	Cured. The necessity for a second dose was because the full initial dose was not given owing to the general weakness of the animal.
3	Cross-bred cow, aged 3 years	Impaired feeding, reduction of milk yield. Temperature 106° <i>Babesia mutans</i> present.	55 c.c. of a 1% aqueous solution intravenously	Cured.
4	Cross-bred heifer, aged 3 years	Off-feed and rumination. Salivating, laboured breathing, slight swelling of cheek. <i>B. mutans</i> present	50 c.c. of 1% solution intravenously	Cured.

A CASE OF RUMINITIS IN A BULLOCK

BY

P. MATHEW KURUVILLA, G.M.V.O.,

Veterinary Assistant Surgeon, Piler, Madras.

Subject:—A bullock, Hallikar breed, aged six years.

History:—11-1-42. The animal was having intermittent appetite and irregular rumination.

12-1-42. In addition to the above symptoms, the animal was standing with back arched; the bowels were not regular.

13-1-42. It went off-feed and rumination and began to vomit liquid ingesta through the nostrils and mouth. The owner gave some irritant country medicines and the rumen got bloated up. The animal was removed with great difficulty to the veterinary dispensary from a distance of four miles.

A CASE OF RUMINITIS IN A BULLOCK

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Symptoms:—The rumen was highly tympanic. The animal was uneasy and was moving backward and forward, stamping and kicking. It was passing every now and then semi-fluid excreta and small quantities of urine. Respirations were laboured, head extended, nostrils dilated, mouth open and tongue protruded; pulse accelerated and temperature 105°F.

It was vomiting every now and then; and liquid ingesta was coming both through the nostrils and mouth.

Treatment:—The stomach was punctured by a trocar and cannula immediately and the gas was allowed to escape from the rumen. Examination of the mouth and oesophagus did not reveal any choking. The vomiting was diagnosed as due to ruminitis. After the removal of the gas an antizymotic was administered through the mouth, which the animal at once vomited. No further attempt was made to drench the animal for the day. The cannula was kept in position for the night to facilitate the escape of gas.

14-1-42. The temperature came down to 101.6°F in the morning. The animal was vomiting every now and then. One ounce of turpentine and 10 oz. of Oleum Lini was administered through the cannula into the rumen. By evening the animal passed normal dung. The cannula was removed and no further formation of gas occurred. Rice gruel was administered through the mouth. The animal vomited the liquid food also.

15-1-42. The temperature was normal. The animal was passing normal dung and urine. It drank a little water by itself; but this was also vomited both through the nostrils and mouth.

One dram of Liq. Iodine in one pint of water was given every two hours. After the first dose the head was held up to prevent vomiting; but on releasing the animal again vomited.

It did not vomit the second and third dose.

16-1-42. The animal was drinking and retaining rice-gruel, passing normal dung and urine. But it was not ruminating and eating green grass. An electuary containing Sodium Chloride, Pulv. Nux Vomica, Pul. Zingiberis, Pul. Gentian and jaggery was prescribed to be given twice a day. By evening the animal began to ruminate and take green grass. It attended the dispensary for two more days, when the treatment of 16-1-42 was continued.

The animal got cured and was discharged.

A CASE OF TRAUMATIC PERICARDITIS IN A BULL

By

D. A. HAFFIZ, G.M.V.C.,

Veterinary Assistant Surgeon, Ichchapur, Madras.

Subject :—Local bred bull, aged three years, in fair condition.

History and symptoms:—The animal was brought to me on 1-2-1942 with the history that it had a cough, a slight nasal discharge and slight lameness of both the fore limbs for two weeks. The bull was not feeding well and it got easily fatigued even after a short walk. Its breathing was difficult and there was a tendency to lie down frequently. Respirations were shallow and abdominal. Lameness of the right fore limb was very slight but the exact site could not be located.

Treatment:—It was treated symptomatically with expectorants and sedatives internally and stimulating liniment over the shoulder of the right leg.

On 25-3-1942, I was called in to see the bull, as it was unable to move out of the stall. On examining the bull in the stall, the appearance of the limb was very suggestive of Radial Paralysis, viz. inability to extend the limb, the scapulo-humeral angle very open, the elbow dropped, and the leg appearing too long for the body. When forced to move, it walked dragging the toe with great difficulty. The animal was in great pain and off-feed. There was no history of any trauma.

Treatment:—A blister (Ung. Hydr. Iodidi Rubrum. 1 in 10) was applied on the right shoulder and the arm and internally digestives were administered. Next day it was noticed that the blister had acted well. A course of Pot. Iodide with Hydr. Iodidi Rubrum in small doses was prescribed. The animal was seen again after a week. Its condition was no better. A thorough examination after casting and securing the animal, revealed an abscess in the right axilla. This was incised, when pus mixed with blood escaped. On exploring the wound with the little finger I detected a small needle. This was removed and the wound dressed antiseptically. The dressing was repeated for about five days when the wound healed. The lameness also disappeared. The needle was very fine and rusty.

Remarks:—The initial symptoms must have been due to the passage of the needle from the reticulum towards the pericardium through the diaphragm and this might have been the cause of the cough and the respiratory distress.

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The subsequent symptoms must have been due to the presence of the needle in the axilla. The blister hastened the passage of the needle into the subcutaneous tissues and also the development of the abscess.

I am thankful to the District Veterinary Officer, Vizagapatam, for his help in sending the case report for publication.

RABIES IN A BULL

BY

C. A. VAIDYANATHA AYYAR, G.M.V.C.,

Veterinary Assistant Surgeon, Tellicherry, Madras.

Subject:—Sindhi Breeding Bull No. 12, under Government of India Scheme.

History:—The animal was in the custody of a ryot in Mananteri village about 14 miles from Tellicherry from 1-4-1942 to 22-7-1942 when it was removed and kept in the Government Veterinary Dispensary, Tellicherry. It improved in condition in the dispensary and served six cows during the period from 22-7-42 to 16-9-42. There was no history of the animal having been bitten by any stray animal as jackal or dog, either at Mananteri or in the dispensary.

On 16-9-42, the animal rejected a portion of his evening feed. On close observation I noticed that the animal had developed a staring look and was kicking with his hind legs occasionally. He was eating grass though not as much as usual. The animal was kept in the shed well secured, suspecting that he may develop rabies.

Next day, he started butting anyone approaching him, was completely off-feed, and refused even water. Any slight noise excited him. Rumination was suspended, the bowels were constipated and there was straining during micturition. I diagnosed the case as rabies and immediately sent a message to the District Veterinary Officer, Calicut, about it. He arrived in the evening and after examining the case, confirmed my diagnosis.

18-9-42. The animal did not take food or water this day also. It never lay down but maintained a standing posture from the morning of 17-9-42.

19-9-42. The condition of the animal was much reduced.

20-9-42. This day there was dribbling of saliva from his mouth and he began butting the manger post, etc, in the shed. He attempted to drink water kept before him, and occasionally he swallowed a little. He became very restive. The standing posture was maintained all through.

21-9-42. The condition remained the same. This day he drank much water but was not able to eat anything.

22-9-42. This morning he began to bellow and lay down paralysed. At about 11-30 A.M., he died.

The brain on examination by the Director, Pasteur Institute, Coonoor, was declared to be positive for Rabies.

Our Mail Bag

J. N. Nagar, L.V.P., Amritsar, records the incidence of Rickets among puppies in Amritsar. He observes that the puppies which are kept indoors get the disease more often than those kept out in the open. He also observes that the pups are purchased when they are of small age and are hand-fed on faulty diets. There is no special sex significance in the incidence of the disease and the complaint is frequently met with in winter, only very few cases being seen in summer. Constitutional debility, enlargements of the ends of bones of the limbs, mostly the front ones, loose bowels and "Causeless crying" when the pups were moved from one place to another—these were the prominent symptoms. In treating the cases Calcium Lactate, Osteo-Calcium pills, Cod-liver oil or Kepler's Malt Extract are given internally and the animals were exposed to sunlight. Meat diet could not be recommended as the owners of the animals were strict vegetarians.

P. K. Dakshinkar, G.B.V.C., Warora, C. P., records a single case of Haemorrhagic Septicaemia in a bullock clinically diagnosed but not microscopically confirmed as such, successfully treated with intravenous injection of 20 c.c. Lugol's Iodine on two consecutive days and an external application of jaggery and lime over the swelling.

K. S. Prakasa Rao, G.M.V.C., Bezwada, writes about Ascites in dogs. 16 dogs were treated during the course of eight months out of which 15 had tick infestation and anaemia. One bitch developed Ascites two weeks after whelping. All the dogs showed more or less similar symptoms—general weakness, pallid mucous membranes, abdominal distension with fluid, inappetence and constipation. In the case which occurred after whelping the mucous membranes were jaundiced in addition.

In the treatment of these cases, tapping of the abdomen was not done at all, and the ascitic fluid was got rid of by the administration of a mixture containing the following for a dose:—

Pot. Iodide grs. v, Spts. Ammon. Aromat. ms. x., Liq. Ammon. Acet. ms. xxx Sodi Sulph Exsic. grs. xxx, Mag. Sulphas. $\frac{1}{2}$ I, Tr. Digitalis ms. v. Glycerinum $\frac{1}{2}$ I, Syrup $\frac{1}{2}$ I, in one ounce of water thrice daily.

Needless to say the dogs were deticked and fed on proper diet.

P. S. Narayanaraj, G.M.V.C., Kodaikanal, writes of a very interesting case in a dog diagnosed to be suffering from Sciatica and treated successfully with Sag. Mulph. in 5 gr. doses for two weeks and continued for one month twice a week. The dog was getting lame on left hind leg in the beginning but later on began to howl with pain at intervals, with inability to place weight on the limbs. Rheumatism and Avitaminosis were first suspected and the case treated with Sodii Salicylas, Iodide and Benerva tablets—all with no result. Then the above mentioned treatment was adopted resulting in a successful cure.

S. A. Razzaque, G.B.V.C., Bargarh, reports about cases of Necrosis of horn in cattle and their successful treatment with Formalin internally and externally after amputation of the horn. One dram of the drug is given internally in a pint of water for a week while externally it is used in a 5% solution soaked in gauze. In his experience, these cases "do generally go from bad to worse in rainy weather but in winter the Formalin treatment gave marvellous results."

Association News

CEYLON VETERINARY ASSOCIATION

Proceedings of the Second Annual General Meeting

The Second Annual General Meeting of the Ceylon Veterinary Association was held on Saturday the 31st October 1942 in the Bacteriological Institute Hall, Colombo, with Mr. R. J. Little, M.R.C.V.S., D.V.H., the President in the chair.

A notable feature of this year's meeting was an address to the members of the veterinary profession by the Governor of the Island,

Sir Caldicott, K.C.M.G., C.B.E. Incidentally it is of interest to note that Sir Caldicott is the first and only Governor so far to be the Patron of a Veterinary Association in the East.

During the course of the meeting the following office-bearers were elected for the year 1942-43 :—

<i>Patron :</i>	Sir Andrew Caldicott, K.C.M.G., C.B.E., Governor of Ceylon.
<i>Vice-Patrons :</i>	{ Hon. Mr. George E. de Silva, M.S.C., Minister for Health. Hon. Mr. D.S. Senanayake, M.S.C., Minister for Agriculture.
<i>President :</i>	{ R.J. Little, M.R.C.V.S., D.V.H. M. Crawford, M.R.C.V.S.,
<i>Vice Presidents :</i>	{ T. M. Z. Mahamooth, G.B.V.C., M.R.C.V.S. G. N. G. Walles, G.B.V.C. C. W. Pate, G.B.V.C.
<i>Hony. Secretary :</i>	Hector C. Perera, G.V.Sc.
<i>Hony. Treasurer :</i>	{ L. A. P. Brito-Babapulle, B.Sc., M.R.C.V.S., D.T.V.M. S. Alalasundaram, G.B.V.C. Eric P.A. Fernando, G.B.V.C., Asso. I.D.I. J. Habaragoda, G.B.V.C. M. Lawrence, G.B.V.C.
<i>Committee :</i>	{ A. V. De Croos, G.V.Sc. L. P. P. Goonetilleke, G.B.V.C. J. C. A. Prins, G.V.Sc. S. Saravanamuttu, G.B.V.C. D. Senaviratne, G.B.V.C. W. Witharne, G.B.V.C.

Over a dozen papers were submitted to the meeting for discussion. They included the following :—

1. An Introduction to Ray Therapy and Electro Therapy in Veterinary Practice—By L. A. P. Babapulle.
2. Transfusions for Animals—By John Brunt.
3. Dairy Farming—By C.W. Pate.
4. City Milk Supply—By Eric P.A. Fernando.
5. Renal changes in Overfed Dogs Deprived of Physical Exertion—By Dr. H. O. Gunawardene.
6. Blood Transfusions and Blood Grouping—By Dr. C. D. P. Babapulle.
7. Prophylaxis Against Tetanus—By Leslie Rupesinghe.
8. The Clinical and Microscopical Examination of Rabies—By A. V. de Croos.
9. Filaria in the Animal—By J.C.A. Prins.
10. Livestock Cattle Breeding—By D.W. Amarsinghe.
11. Notes and Abstracts—By Dr. P. R. Thiagarajah.

12. Tuberculosis Among Cattle—By Hector C. Perera,

13. Artificial Insemination in Ceylon—By T.M.Z. Mahamooth,

At 5 P.M. His Excellency Sir Andrew Caldicott, accompanied by his Private Secretary, arrived at the Bacteriological Institute. At the entrance he was received by the President and other members of the Committee. After the members of the Committee were introduced to His Excellency, he was conducted to the Hall. Associated with him were the President, the Vice-Chancellor of the University of Ceylon, Dr. Ivor Jennings and Sir L.W.A. de Soyza, one of the leading agriculturists of the country.

Mr. Little's Speech of Welcome

Mr. R. J. Little, the President of the Association, in welcoming His Excellency said :—

Your Excellency and Gentlemen,

Allow me on behalf of the Veterinary Association of Ceylon to extend to you a very warm welcome. We trust that your visit will be as great a source of pleasure to you as it is to ourselves. May I congratulate you on the interest you show in the welfare of our Society by attending its 2nd Annual General Meeting. We are all aware of the many calls you have and other more important affairs which you have set aside to be present to-day. It may be that the advantage gained may not be fully appreciated, but at a meeting such as this one we all enjoy the opportunity of getting to know each other, and perhaps we are able to gain a truer perspective of the veterinary profession as it exists in Ceylon.

This Society, as the name implies, represented the combined interests of the veterinary profession throughout the Island, and although of only recent birth has already begun to assert itself and to attract attention.

The objects of the Society are the promotion and advancement of veterinary and allied sciences as well as the maintenance of the honour and interests of the profession. These are no doubt very excellent objects and their desirability is not to be questioned but their attainments can only be achieved by the co-operative action of its members.

Individuals by their own personal efforts may advance the profession to some degree, but united efforts are necessary for its general advancement and true elevation, and in the establishment of this Society, which I may point out is not only the first Colonial Veterinary Society but the first Veterinary Society to have a Governor for its Patron, with the guidance of the Minister of Health and the Minister of Agriculture with their experience, the task of gaining our objective is made correspondingly easier. But the supreme achievement of the Society, which is the pursuit of the well-being of the profession, can only be gained by collective action.

The ideals of a professional Society should be based on altruistic principles, and its code of ethics—a code of ethics, shall I say, for the guidance of the unsophisticated, and the restraint of the venturesome,—there are no doubt shortcomings and omissions in the recognition of professional ethics, which may lead to rupture of friendly relations amongst members, and do much to destroy the fraternal feelings that is so desirable and so essential for the advancement of a profession, but as to the spirit of the profession in Ceylon I think one need have no apprehension, as we enjoy advantages not usually extended in other countries.

The History of Veterinary work is old. We find the earliest work was written by Vergetus in 425—450 A.D. and covers a great deal of Veterinary subjects. He quotes that 'No work is humble and lowly and contemptible, that is of benefit to the advancement of the State.'

I am not a Bible Historian, but we know that Moses was the first Meat Inspector—he laid down what meat should be eaten and what should not. He pointed out some of the diseases which could be transmitted from animals to man, also pointing out that although this meat should not be eaten, there was no reason that it should not be sold to the stranger 'without the Gate.'

I have no intention of lauding the veterinary profession, but its worth can be found in many places in commerce—in progress, it was due to the united efforts of one Medical man and two Veterinary Surgeons who made possible the Panama Canal.

It is only a few years ago that the medical and veterinary professions were working in their own watertight compartments, but now with the gradual exchange of ideas on many subjects of mutual benefit, particularly those of sanitation and disease which are transmitted from animals to man, that they are working together.

There is no line of demarkation between the Veterinarian and the Agriculturist and it would seem that without one the other cannot exist, and if I may say, as a practical agriculturist myself without butting in on some one else's estate that after all wars come a period of depression affecting an agricultural country perhaps more than any other.

Such a depression is bound to come to Ceylon and it behoves us all to be prepared by the selection of the best of animal material for breeding for future requirements. And now before I conclude there are two points which I would like to bring to your notice.

(1) That as there will be in the near future more veterinary surgeons required in Ceylon, I would advocate a school of veterinary medicine and surgery affiliated to the University and the granting of veterinary degree.

(2) As this Association is composed of only qualified veterinary surgeons, it is their desire that they become a registered body with the advantages and privileges extended to other professional bodies, and in conclusion, may I again thank Your Excellency and gentlemen for your encouragement in the welfare of the Veterinary Society and to a greater public appreciation of the value of Veterinary Science.

GOVERNOR'S SPEECH

After the President had finished his speech of Welcome, H. E. the Governor Sir Andrew Caldicott, rising amidst cheers, said:—

"I am very honoured to be the Patron of your Association and to have the privilege of addressing your Annual Meeting and Conference. I shall be very short because only thing I know about the cure of animal diseases is that the wise owner invariably calls in the Vet as soon as possible.

I have used the monosyllabic word Vet. and I am glad to see that it appears on the first page of the supplement to your second annual report. It has there been placed between inverted commas, but there is no need at all for such apologetics. The Oxford English Dictionary recognizes the abbreviations as a word in the English language since 1862. It is an interesting fact that directly a polysyllabic thing becomes indispensable to the nation's life the English language likes to prune it of unwanted syllables. The surgeon is now surgen; the cinematograph a cinema; a perambulator a pram; a bicycle a bike; an omnibus, a bus; a taximetered cabriolet a taxi-cab or just a taxi; Zoological Gardens a Zoo; the aeroplane a plane; and so on and so on. You can safely take the shortening of your professional designation as a gauge of the public recognition of your importance, and may be proud to be called Vets.

Another fact emerges from a consideration of the name of your profession. The word Veterinary originally meant "appertaining to draught animals" only. In the seventeenth century, when the word was first used, draught animals, i.e., horses, mules, ponies, donkeys and oxen were in fact the only animals which, as then affording man his only means of rapid terrestrial locomotion or heavy transport, suggested to their owners the advisability of medical and surgical attention. The enormous subsequent expansion in the field of Veterinary science will be readily seen from pages two to five of your annual report. It is not exaggeration to say that veterinary science and scientific veterinary practice is one of the essential things at the base of a country's internal economy. It is especially so in the case of Lanka whose economic future and food supply depends upon a renaissance of agriculture and of animal husbandry. I said just now that the shortening of your professional designation betokened public appreciation of your importance. The uses in modern English idiom of the verb "to vet" indicate

also a general sense of your reliability. If, for instance, it is stated, that statistics have been thoroughly "vetted" it means that they have been thoroughly "doctored," there is of course a different implication; due may be to the consideration that a doctor makes one feel so much better than one was before we called him in.

It remains for me now to congratulate the Association on an annual report which evidences its past, present and future great usefulness. It is very sad that it should necessarily contain an obituary notice of the Association's first Vice-Patron, the late Mr. W. de Silva. The privilege was given to me to get to know Mr. de Silva really well as my Minister for Health, and I can testify to the fact that Lanka will never have a straighter, harder worker, more public spirited, fairer minded or more generously handed patriot than he. I remember when I first came to Ceylon listening to a conversation about our leading men, in the course of which one of the speakers remarked that all he knew of Mr. de Silva was that he had had a wonderful way with animals. Gentlemen, when one learns of a man that he has a wonderful way with him in regard to the prime purposes of his profession one knows that he is ipso facto in the first class. I can wish none of you greater honour than that it may be said of you, as it was said to me of Mr. de Silva, that you have a wonderful way with animals. In that lie the purpose, the pride and the power of the great profession which this Association represents in Ceylon.

Dr. Ivor Jennings, the Vice-Chancellor of the University of Ceylon, called upon to speak, said that unlike His Excellency, he had no notice of the obligation of making a speech. He was not quite certain in which capacity he was to be present. He believed that in these times a man should have two jobs one for which he was paid and the other for which he was not paid. He did not know in which capacity he had been summoned whether in his paid or unpaid capacity. Perhaps, he could speak to them in both capacities.

In his unpaid capacity he was happy to say that the Civil Defence Commissioner thanks the Association from the immense amount of work put in, in the production of the A. R. P. Booklet for Animals and for the organisation of the A. R. P. Service for Animals. He could assure them that their work was very necessary. To him the most vivid recollection on the Easter Sunday Air Raid was that black and white bull breathing in agony at the corner of Prince of Wales Avenue. Eventually Dr. Little had to come on the scene and do something to relieve the animal of its suffering. That he said was really a very important function. When people see an injured animal in an Air Raid they were also apt to become panicky themselves and it was very desirable that these animals should be promptly looked after from the point of view of the population.

In his paid capacity, he was glad to hear the remarks of the President on the subject of making provision for veterinary education in the Ceylon University. It was true that such requests were a mark of the confidence the people had in the University but the University was being asked to deal in things ranging from National Dress to parasites.

He assured them that the problem of veterinary education would not be overlooked. In fact he was looking up a memorandum on the subject that very morning. He hoped that they would remember that it took 21 years to get their ordinance in the State Council and that it might take 21 months when the University was complete.

They did recognise the urgent need under present conditions for making provision for veterinary education and he hoped that in less than 21 months proposals could be made to that end, unlike the university question.

He was extremely grateful for the honour they had done him, and he was glad to see present there that evening two persons representing the Faculty of Medicine and the Faculty of Science respectively.

Mr. C. W. Pate proposed a vote of thanks to His Excellency the Governor.

The function came to a close with a garden party where a large and representative gathering was present.

Among those present were Dr. Ivor Jennings, Vice-Chancellor of the University of Ceylon, Prof. W.A.E. Karunaratne, Dean of the Faculty of Medicine, Sir Wilfred de Soya, Sir J. P. Obeyesekere, Dr. L. Nicholls, Director of the Bacteriological Institute, Dr. V.E.P. Seneviratne, Secretary, British Medical Association (Ceylon Branch), Prof W.C.O. Hill, Dr. N. Brito Babapulle, John Brunt, R. N. Dr. Sivalingam, Dr. L. B. Seneviratne, Dr. H. S. Christoffels, and Messrs. David de Silva, Clement A. M. Dias, R. J. Little, T. M. Z. Mohamooth, A. Chinniah, D. Seneviratne, C. W. Pate, Clement A. Dias, L. A. P. Babapulle, D. W. Amerasinghe, S. Ala Sundrum, A. V. de Croos, J. C. A. Prins, Claude M. Fernando, L. P. P. Goonetilleke, J. Habaragoda, Pat M. Fernando, M. Lawrence, Leslie Rupasinghe, Eric P. A. Fernando, S. Saravanamuttu, K. Thurasingham, Walter Witharna, R. R. de Silva and Hector C. Perera.

College News

MADRAS VETERINARY COLLEGE

B. V. Sc. DEGREE EXAMINATION RESULTS

The following is the list of successful candidates at the B. V. Sc. Degree Examinations held in October 1942 :—

Preliminary		
Bank	Register No.	Name of candidate
1	1	Krishna Murthi, A. S.
2	2	Krishna Reddi, P.
	4	Venkaswami Rao, S.
Intermediate—Part I		
1	7	Chandran, K.
2	9	Narayanaswami, S.
	6	Abdul Majid Khan, W.
	8	Narayana Rao, P. L.
	11	Ramakrishnan, M. A.
	12	Satyanarayana Rao, K.
Intermediate—Part II		
1	15	Nilakantam, P. R.
2	16	Ramamurti, V. P.
	18	Venkateswara Rao, S.
	19	Visvanathan, C. B.
Final—Old Regulations		
	20	Annamalai, C.
	23	Muhammad Azizuddin, I.
	24	Nagaraja Rao, G. V.
	29	Sitarama Rao, H.
	31	Venka Reddi, K.

MADRAS,
17—12—1942

K. S. NAYAR, G.B.V.O., M.R.C.V.S., D.T.V.M.,
Principal,
Madras Veterinary College.

PANIKKAR MEMORIAL FUND

List of Subscribers to the Fund from 3-11-42 to 4-1-43

(Continued from page 163, November 1942 issue of I. V. J.)

		Rs.	A.	P.
	Brought forward	407	2	0
98.	Sri C. V. Padmanabhan (further contribution)	2	0	0
99.	" M. K. Srinivasan (I. V. R. I.)	5	0	0
100.	" B. Uttariah Naidu	3	0	0
101.	" M. Madhava Rao	3	0	0
102.	" R. Srinivasan	1	0	0
103.	" K. S. Naik	1	0	0
104.	" N. Subramanyam	1	0	0
105.	" P. Abraham	1	0	0
106.	" P. A. Parthasarathy Naidu	5	0	0
107.	" A. Krishnamurti	3	0	0
108.	" K. Seshagiri Rao	2	0	0
109.	" G. Ramabrahmiaiah	2	0	0
110.	" C. T. Ramaswami	3	0	0
111.	" S. Ganapathy Iyer (I. V. R. I.)	5	0	0
112.	" Cheah Phee Phay	10	0	0
113.	" E. V. Babu	2	0	0
114.	" D. Mariappa	2	0	0
115.	" S. K. Natarajan	2	0	0
116.	" P. Ramachandran	2	0	0
117.	" Rao Sahib K. Kylasamier	10	0	0
118.	" Rao Sahib H. N. Chelva Iyengar	10	0	0
119.	" Bertie A. D'Souza	15	0	0
120.	" S. A. Sastri	10	0	0
121.	" S. Ramanarayanan	10	0	0
122.	" P. Kadambavanasundaram	5	0	0
123.	" T. L. Anantaraman	5	0	0
124.	" K. Ranganathan	5	0	0
125.	" S. M. Narayanaswamy Pillai	3	0	0
126.	" G. Balagurunathan	5	0	0
127.	Md. Barkathulla Sahib	5	0	0
128.	Sri V. S. Sankaran	5	0	0
129.	" K. Nagappa Pai	5	0	0
130.	" U. S. Aswathanarayanan	5	0	0
131.	" E. J. Ambrose	5	0	0
132.	" S. C. Sundarachari	5	0	0

	Rs.	A.	P.
133. Sri V. Muthiah	5	0	0
134. „ D. A. Victor	5	0	0
135. „ A. Ramaswami Iyer	5	0	0
136. „ V. R. Srinivasan, Compounder	1	0	0
137. „ T. P. Sreedharan Nair „	1	0	0
138. „ G. M. Fernandez „	1	0	0
139. „ V. Varadarajulu Naidu „	1	0	0
140. „ P. Anthony „	2	0	0
141. „ District Veterinary Officer, Coimbatore West	2	0	0
142. „ P. N. Sivaraman	2	0	0
143. „ S. S. Venkatesan	1	0	0
144. „ M. S. Rajendran	1	0	0
Total ...	597	2	0

R. SWAMINATHAN,
Lecturer,
Madras Veterinary College.

Service News

INDIAN ARMY VETERINARY CORPS

List of Veterinary Assistant Surgeons employed as V. C. O. for duration of war and 12 months thereafter subject to the proviso that their services will be so long required. Scale of pay Rs. 75—5—145 plus Rs. 125 emergency allowance, if Medical Category "A" or "B" plus free ration, Clothing, Medical, Attendance, etc., etc.

Regtl. No.	Open Markets Rank—Jemadar.
V-259	P. S. Kujur
V-260	Naq. Nawaz Khan
V-261	Leslie F. Gibson
V-262	Santokh Singh
V-263	S. Ayyaswami
V-264	E. H. David
V-265	B. N. Swamy
V-266	Bikramajit Singh
V-267	A. Ramamurti
V-269	K. Subramanian

INDIAN ARMY VETERINARY CORPS

Regtl. No.	Rank—Jemadar.
V-270	Faiyaz Ahmed Khan
V-271	R. De Sylva
V-272	P. B. Biswas
V-273	Mohd. Sharif Khan
V-274	H. N. Dorasamy Iyengar
V-275	P. V. Anantaraman
V-276	B. G. Waghmare
V-277	Qazi Maqbulur Rehman
V-278	V. N. Sarma
V-279	H. Malla Raj Urs
V-280	A. H. Pothnis
V-281	N. G. Ayengar
V-282	Mohd. Shafi
V-283	Suraj Narain Kapur
V-284	Amer Nath
V-285	S. K. Rehman
V-286	I. B. Mazumdar
V-287	Anup Singh Sidhu
V-288	Iqbal Nath
V-289	Inder Sain Malhotra
V-290	Inderjit Sarma
V-291	Jagdish Ram Sood
V-292	Trilochun Singh
V-293	P. C. C. Ratnatunge
V-294	Ajmer Singh Deol
V-295	Suresh Chandra Giri
V-296	Chandji Ram.

Civil Veterinary Assistant Surgeons

Regtl. No.	Rank—Risaldar P/A.
V-636	Alam Khan
V-637	M. A. Sadique
Rank-Jemadar	
V-626	M. S. Habib Ullah
V-627	Abdul Ghani
V-628	Mohd. Ali
V-629	Mehr Chand
V-630	M. Sharif Ahmed
V-631	Aimun Chand
V-632	Manoranjan Sircar
V-633	Modhun Singh
V-634	Abdul Ghaffar
V-635	Awtar Singh

Regtl. No.	Rank—Jemadar.
V.638	Sachchida Nand Sharma
V.639	Jagat Singh
V.640	Audhesh Kumar Singh
V.641	Mohd. Sadiq
V.642	B. S. Datye
V.643	Bashir Mohd.
V.644	Ram Rattan
V.645	A. K. Chakravarty
V.646	Mohinder Singh
V.647	Mohd. Abdullah
V.648	B. Hanumantha Rao Naidu
V.649	K. Sukumaran
V.650	Syed Khasim Sahib
V.651	Mahmood Hasan
V.652	Nanak Chand
V.653	Rattan Singh Dayal
V.654	Pall Singh Brar
V.655	P. Chakrabarty
V.656	B. Bhag Singh
V.657	G. W. Karandikar
V.658	G. K. Kulkarni
V.659	E. T. P. Nayar
V.660	P. N. P. Nayar
V.661	J. J. Palepu
V.662	V. Shanmugasundaram
V.663	C. T. Ramaswami
V.664	P. Soundararajulu
V.665	S. G. Dixit
V.666	Abdul Hamid Khatlaney
V.667	Fazal Hakim Gill
V.668	B. Benjamin
V.669	Gian Chand Sharma
V.670	P. Subramanyam
V.671	N. C. Roy
V.672	C. K. Subbu Singh
V.673	Karam Singh
V.674	G. Ayyavaru Sastry
V.675	Lekh Raj
V.676	M. K. Hawaldar
V.677	Jibananand Das
V.678	Syed Mansoor Ahmed Bokhari
V.679	D. Chatterjee
V.680	S. G. Hyder
V.681	Sh. Rifat Ali
V.682	D. John

AMBALA CANTT.

29th Dec. 1942

(Sd.)

Lt.-Col.,

Commandant, I.A.V.C. Centre,

(Record Office)

Correspondence

[Views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the I. V. J.]

A Distinguished Veterinary Surgeon from a Malayan Royal Family, in India

SIR,

I am not far wrong in guessing that our profession does not generally represent members from Royal families, though I have heard of one who was the head of the Civil Veterinary Department, Central Provinces and Berar some years ago and who was the first Indian to join the Imperial Service—a coveted and aristocratic appointment in those days.

Many of our readers are not aware that there is a Veterinary Surgeon from a distinguished Royal family of Malaya to join our poor crowd and who is, unfortunately, now in Poona as a refugee with his family. He is no less a person than His Highness Tungku Abubakar, M.A.C.V.S., second and most influential son of H. H. Sultan of Johore and the head of the State Veterinary Department. He is one of the wealthiest and the most popular among the Malayan Princes. In point of education, keenness of intellect and organising capacity he is second to none among the Malayan Officers. Within 25 years he was able to organise his department as a model to many other states and settlements. Simple in his habits, very courteous in his disposition, and democratic in his views, he occupies a unique position in all branches of administration in his State. As a member of the State and Executive Councils, and various other Committees and Advisory Boards he had a commanding position; and his speeches used to carry a great weight.

After finishing his general education in England where he went as a small boy, he joined the Royal Veterinary College, London, in 1915 and came out successful in 1918. Returning to his State he immediately found the necessity of a well-organised Veterinary Department for the benefit of his people, and with his influence and love for his profession he succeeded in dividing his State into 5 veterinary districts and placing in each one Indian qualified Veterinary Graduate. He fully believed that the status of this young department depended entirely on good salary of his subordinates. He therefore provided them with a motor car allowance to carry out their work efficiently, furnished fine quarters and decent offices and thus placed these officers in a status equal to any other sister district officers. The main work of these officers was to concentrate more on the improvement of the local animals, such as cattle, sheep, goats, buffaloes, pigs, etc., by selective breeding, rearing and feeding, inspection of meat, control movement of

animals by issuing export and import permits after examination, supervision, control and management of quarantine stations, inspection of grazing grounds reserved for animals and encourage cultivation of fodder grasses in different villages, inspection of estate animals and prevention and suppression of infectious diseases in the event of an outbreak. To carry such work efficiently and successfully a close and complete co-operation of the customs, police and railway departments were found essential and necessary. Centralisation of different activities of veterinary work in a district for convenience, economy and efficiency was one of the pet schemes which he very ably managed to build in many districts. As a result, quarantine stations for cattle, sheep, goats and dogs, slaughter houses and detention sheds, offices, quarters for officers and subordinates and an infirmary—all these are centred in one compound.

During tours of inspection in various districts, His Highness visited with his assistant some important cattle centres and discussed various problems of improvement to suit the local conditions of the ryots. Though a Prince, as the head of a Department or a Member of Council, he had not the slightest hesitation to mix freely with even a poor ryot and partake with him a cup of tea or even food. His treatment and behaviour with his subordinates in and out of the office was always with perfect equality and harmony. Officialdom, which is a curse in India, is entirely absent in him in spite of his position and birth, and in fact in my own experience of over 18 years in Malaya this was conspicuous by its absence in any officers—European or Asiatic. Dignity of labour is another thing that he used to hate, so much so, it was not surprising to see him working along with labourers in planting grasses, feeding cattle and even cleaning drains of his cattle sheds. His interest in the ryots was so deep that he used to carry in his own car bundles of special grasses to different villages for propagation.

Not satisfied with a Government cattle breeding farm that he recently started in his state, he opened breeding stations out of his own expenses to breed different animals not only for his own benefit but also for the benefit of his people. In this farm he set apart a large area for grass cultivation for his animals and also for distribution to various districts.

The important part played by him in such a short period in developing the department will always be remembered with feelings of gratitude by the coming generation. There are few Malayan Princes who have filled so many public positions of trust and responsibility with so much credit and win genuine respect and admiration of the people like our Highness Abubakar of Johore. As a keen sportsman in polo, riding, motoring, there is none to excel him in Malaya.

'Service was his motto'.

M. V. PILLAI, G.B.V.C.,
Retired Veterinary Surgeon, Johore, Trivandrum.

Animals and National War Front

SIR,

The present National War Front is a homogeneous effort of the nation to combat against the menace of enemy action. In the modern warfare, the fighting forces have a distinct sphere of action. The word "Civilian" or "Soldier" has only remained a name, though both are on equality, as far as the National War Front is concerned. A civilian pursuing his normal profession and discharging his duties as a citizen, is in no way contributing less towards the war efforts, because he is not on the war front. The pursuance of war mostly depends on supplies which are the efforts of the civil population. So in view of these facts, national war front is constituted in the field and home. It aims to educate the public, helps them to follow their normal trade and mostly prevents panic caused by alarming rumours from fifth columnists.

In respect of animals domesticated by man, they have been serving the mankind devotedly for ages and are his faithful friends. For the act of kindness of maintenance, they reciprocate their services in various ways. Milk is a vital food to infants and adults, and rich or poor all need it alike. In these days of petrol rationing, the mighty equine (horse) is coming back to prominence, with all his accompanied dignity. The slow and steady bovine (bullock) is an unfailing draught animal and is capable of doing heavy dragging on hard wheels (pneumatic). The vast species of animals have their own quota of services, be they fowls, goat, sheep, pig or dog. In these days of mechanisation the society has not been able to replace or to do away with the services of animals. Is there a more faithful friend than our animals, who serve you by work during life and by flesh after death? *Like a civilian* he aids the cause of war, assists in producing ammunition, carries them to distances and supplies them on the war front. Is this not the National Front by Animals?

Like a soldier he is ever ready to fight on any front. When petrol deficiency is deciding the fate of many wars, the cavalry mounts as well as the artillery horses have their own place in the modern warfare. "Certain kinds of reconnaissance in hilly, wooded or marshy country are best done on horse back. On good roads and in good weather the advantage of mechanical transport is not disputed, but they are tied to roads and depend on long and heavy train for fuel, oil and repair services. The advantage of animal transport lies on the elasticity of horses and mules which travel light." "How many of these brave men and gallant, I wondered, were setting out on their last journey. A picture such as the above cannot fail to bring home to us in this country, the vital part now being played by animals in the stupendous conflict now being waged on Russian soil. Far more than any other combatant Russia depends on her horses. They are not merely auxiliary but play

an integral part in her defences; and not in defence only, her many cavalry regiments are an invaluable fighting force. They can be used at the right moment for swift attack, and, as the Germans are daily finding to their cost, can be employed with unexpected and demoralising effect in cutting lines of retreat." Recently by the kindness of B.B.C., Sir Robert Gower appealed on behalf of the Russian horses. The R. S. P. C. A. under the lead of Mrs. Winston Churchill has asked the public for general support.

"Russia has a million horses, hundreds of thousands are at work on the battle fronts, hauling guns, munitions and supplies. Regiment after regiment of superbly mounted cavalry-men are rendering incalculable service in attacking the enemy's flanks and harassing his line of communication."

"No more than ever could we pride ourselves on our love for animals, hasten to do what lies in our power to assist those gallant creatures, who across the width of continent are fighting and toiling for us and all free people."

The above extracts are quoted only to bring home to the minds, the war front given by animals. This is only in relation to horses while other animals like dogs are far more faithful and useful. They are being used to drag the wounded back from the battlefields on little sledges after they have been found by First Aid men. Alsations are chiefly used for this work by Soviet army but Airdales have also been found capable. These dogs have many other war jobs such as guarding the post. They will to some extent replace sentries and their mobility and keen sense of hearing will make them of very great value. They are used as messengers in which capacity they excel anybody. The usual breeds of dogs of military value are Alsations, Airdales, Collies, Bull Terriers or crosses between these breeds. As First Aiders they carry food and medical materials to soldiers in the fields and during emergency they are harnessed with ammunition as well.

Hence, National War Front is not complete without the animals, be it in civil life or on a battlefield. The front presented by animals is as formidable as those of warriors. Hence we appeal to all, be he a Vet. or a layman, to aid in the cause of animal welfare. A. R. P. organizations for animals are cropping up all over and they depend on the response of the public for their organization. It is an urgent duty of all those interested in animal welfare to join those organizations, so that a dual front of Man and Animal can be presented, which I claim is impregnable.

K. R. ALUR, G.B.V.C., F.G.,
Bombay Veterinary College.

Obituary

We regret very much to record the demise of Mr. T. P. Swaminatha Aiyar, G.M.V.C., Veterinary Assistant Surgeon, (Retired) C.V.D., Madras, on 17th December 1942 at the age of 60, leaving behind him two sons, four daughters and a host of friends to bemoan his loss.

We offer our heartfelt condolences to the members of the bereaved family.

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