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THE INDIAN VETERINARY JOURNAL

(The Journal of the All-India Veterinary Association)

A Monthly Record of Veterinary Science

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PUBLISHED MONTHLY

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A Monthly Record of Veterinary Science
Devoted to the cause of the
Veterinary Profession

★

EDITOR

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The Indian Veterinary Journal

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THE

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Editorial

THE MADRAS PAY COMMISSION

We are happy indeed that the Government of Madras have finally made up their mind to appoint a Pay Commission to go through the question of the adequacy or otherwise of the existing pay structure, allowances and retiring benefits of their employees both gazetted and non-gazetted. This is a step which was long over due. We note with supreme satisfaction that this Commission consists of officers of acknowledged merit, who can be expected to do the job entrusted to them, without fear or favour. Let us hope the day of deliverance of the services from the existing economic distress is not far off.

We have often been pleading in these pages against the extremely inadequate nature of the pay structure of the Animal Husbandry Department, Madras—a Department which has come in for a good deal of appreciation both from the public and the Government. Minister after Minister has been openly acknowledging the good work of this Department.

The achievements of this Department are very great indeed. The complete eradication of Rinderpest from the State stands out foremost amongst them. The significance of this achievement is yet to be properly assessed. Crores of rupees have been saved to the ryots in this state annually by the eradication of this deadly disease. The livestock development work as it stands to day is a source of supreme joy to the ryots in their every day life, through improved cows and calves, high-laying poultry and better yielding sheep and goats. The increased national income through such improved livestock is again a matter that should await proper appraisal in due time. The profession has therefore established its claims for better recognition, on the merits of its own record of work.

It would thus be seen that the profession is well poised for good work ; but several factors militate against its rapid development. The number of students seeking admission to the Madras Veterinary College is on the decline from time to time. We drew the attention of the Government to this serious matter in our September 1957 issue under the caption "Pay structure and College admissions", giving every possible detail. And the best amongst the student population do not care to look at this College, as is evident from the fact that very few 'first class' students apply for admission to this College. They prefer naturally professions which offer better pay and prospects. The College therefore plods on as best as it can. The high standard of education that is imparted at this College, naturally claims a heavy percentage of failures—nearly 62 to 65 per cent every year. This is neither fair to the students nor to the College authorities. They are merely victims to the existing state of affairs. With the institution of a number of advanced courses of studies, a stage has been reached in the life of this magnificient college, when it has become highly imperative to attract the best amongst the student population, if the interests of higher realms of science are to be served properly and well. How is this to be done, if the basic pay is kept so low ? We are afraid the progress in future will become static, if this serious flaw in recruitment is not attended to immediately.

Nor are the subsequent prospects in the Department attractive enough to draw men of high calibre. This is very necessary for the future development of both the profession and the country. The spade work has been exceedingly well done and what is now required is higher research and more advanced scientific work. This is possible only if the Government take proper steps to recruit right type of men on higher rates of pay.

The present strength of the Department is round about 400 and the total number of gazetted posts not requiring additional qualifications is only 18 ! There are of course other gazetted posts, which require additional qualifications such as post-graduate degrees, Animal Husbandry training, etc., and they are 86 in number including the posts of Professors, Lecturers, etc., at the College. Thus the total number of gazetted posts in the entire Department is only 104. This means, barely 25 per cent of the men recruited can ever hope to rise to a gazetted rank. The remaining 75 per cent must be satisfied with the grade of Rs. 150-5-200-10-300. This is their existing pay and prospects !

Nobody seems to question why the same Inter-Science men, after a similar course of 4 years and one term of intensive professional studies like the medical men, get only Rs. 150/- in the Animal Husbandry Department. This is a disparity that should be removed. A Veterinary Doctor is as much a scientific man as his medical counterpart and nothing is gained by treating him lower in rank. In fact, science stands to lose much by such an invidious distinction. We therefore plead that the same scale of pay as is fixed for a medical graduate, should be granted to a Veterinary graduate and with the same gazetted status from the very beginning. This, we feel is the barest need of the hour. The good that is bound to ensue such an act of justice, is full of possibilities both to the country and the Science.

Finally we wish to add that an All-India cadre of Veterinary Services will certainly enhance chances of promotion to higher ranks of service and place them on a par with other All-India services. This is again a matter which deserves the careful consideration of the Pay Commission.

Mrs. L. H. SHIRLAW ON AYURVEDIC VETERINARY LITERATURE

The ancient *Ayurvedic* literature of the Hindus has been a fascinating field to many a Western scholar from very early times. Since we wrote about Dr. Smithcors' book on the "Evolution of the Veterinary Art" in our February 1959 issue, we have had occasion to come across an admirable article by Mrs. Leslie Hamilton Shirlaw on "A short history of Ayurvedic Veterinary literature" published in the Indian Journal of Veterinary Science and Animal Husbandry, 1941 (Vol. X). It is a piece of research work undertaken purely from a love of "digging up the past" and is a masterly survey of the entire literature on the subject.

The closing lines of the authoress are quite inspiring. She says "The writer is only too conscious of its (article's) inadequacy and possible inaccuracies. If, however, it should succeed in stirring up interest in this great and practically un-explored Indian heritage: *if it should succeed in persuading Indian Veterinarians to undertake the translation of some of the works mentioned and to conduct more accurate research on the subject ;* if indeed, it should only succeed in fanning the flames of controversy regarding the accuracy of the writer's facts, she

will feel herself amply compensated for her labours" *(Italics are our's)*.

It is for the Indian Veterinarians to take up the challenge and "to conduct more accurate research on the subject". Foreigner after foreigner has sung the praises of our *Ayurvedic* literature and it is to stimulate interest in the sons of the soil that we often return to this subject. It is time that something is done to restore the past glory of this ancient system of medicine.

We are aware that a critic in the eleventh century had described this system as a mixture of "pearls and dung". 'Take the pearls and throw the dung away' is our only advice to workers in this field. But don't discard the whole thing on that score. In the article under reference, Mrs. Shirlaw traces how the *Vedas* were the principal repositories of this early medicine and though spells, charms, incantations and prayers were the order of the day during *Rig* and *Yajurvedic* times, Veterinary practice began to crystalise in *Atharvavedic* times, when names of certain herbs, plants and grasses are mentioned as specific for certain diseases. Names of diseases are listed and their symptoms described. Names of different kinds of fever, consumption, gynaecological diseases, calf-slipping, etc., are all mentioned. A knowledge of helminthology is all too apparent, when descriptions of several helminths are recorded. Some of them, Mrs. Shirlaw quotes are highly suggestive of *Taenia medinensis, Taenia solium*, and *Taenia saginata*.

Amongst the early authorities on 'Horse medicine', the names of Salihotra, Nala, Ippocaras the Indian and Jayadatta Suri are said to be prominent. The learned authoress lists a number of works (manuscripts) by these men and the field covered by those works is something stupendous and unbelievable for those early days. Palakapya, was considered as an ultimate authority on the science of Elephantine medicine and surgery. His work *Hasti-ayurveda* runs to twenty thousand *slokas*. He was Veterinary Adviser to King Ramapada of Campa (modern Bhagalpur), a contemporary of King Desaratha of of Ayodhya, the father of Rama, the hero of the great Indian Epic Ramayana. From the details given, it is evident that this is a work which remains un-surpassed even to this day.

Mrs. Shirlaw points out that "It is a curious fact that in a country where the cow has throughout history been of enormous economic and religious importance, there is only a very limited indigenous literature on bovine medicine and no authority on the subject

in any way comparable in importance to the Masters of *Asva-ayurveda* (Equine medicine) and *Hasti-ayurveda* (Elephantine medicine).

She hastens to record that there are innumerable references throughout Sanskrit literature, to the care and treatment of cattle but nothing so outstanding as the works of Salihotra on horses and Palkapya on elephants. But what is available appears to be far in advance of those early times.

Coming to later periods, Mrs. Shirlaw points out how a highly organised Department of Livestock, flourished under Chandragupta Maurya (322–298 B. C.) Selective breeding is indicated when a horse is described as 'mighty through his dam and eminent through his sire'. Special cattle Registers were kept "in which the cows were divided into different classes and their birth and manner of death recorded". There were Government regulations on the growing of fodder! How far behind we are to-day in this field! It is also suggested that for a model hospital, "a cow should also be kept yielding copious milk, of quiet disposition, healthy, having all calves living, well tended with food and drink and kept in a fold that is properly cleaned." How many Colleges of Veterinary Science and Animal Husbandry can to-day claim this distinction of owning a dairy of their own for teaching purposes? Again the Ayurvedic Practitioners of old "discovered early that goat is refractory to consumption". "Theory without practice" they said "is like a one-winged bird that is incapable of flight". Truly this modern age appears to be a dark age compared to those days of misty antiquity!

Mrs. Shirlaw has covered in this single article the whole ambit of Ayurvedic Veterinary literature. It is indeed a remarkable effort considering the fact that she had to do it remaining in the fastness of a Himalayan hill station - Mukteswar. The references given and the extracts quoted are so copious that they are sufficient to stimulate interest in the subject. She has done a distinct service to this country. It is a magnificient article, which deserves to be more widely known and read.

PLEASE NOTE

As already announced, the *I. V. J.* is now released on the 20th and 21st of every month.

Editor, I. V. J.

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Studies on the Foot and Mouth Disease Virus (Type A) by Plaque Assay Technique

By Dr. K. S. Khera

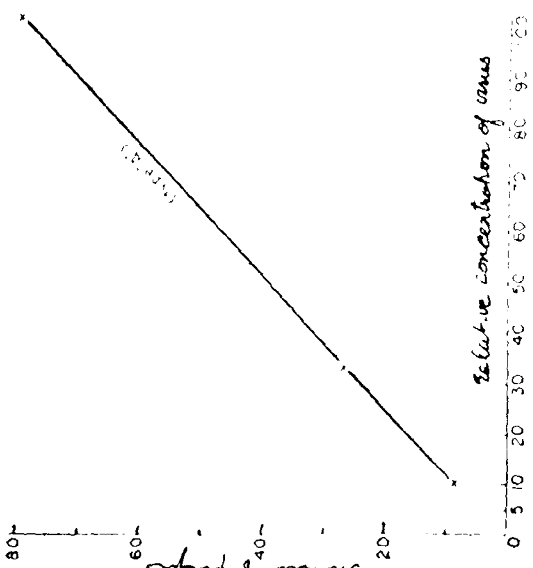

Fig. 2

Linear relationship [illegible] FMDV type A. [illegible] Table II.

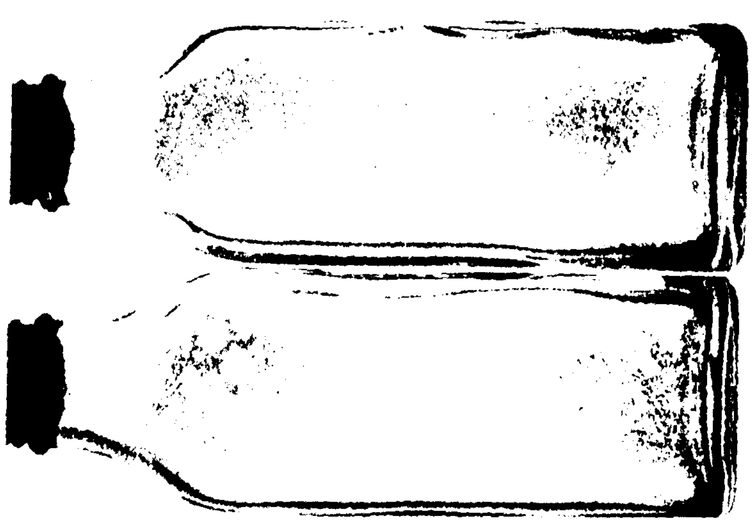

Fig. 1

Showing plaques after [illegible] hours [illegible] along with a bottle of control [illegible].

General Articles

STUDIES ON THE FOOT-AND-MOUTH DISEASE VIRUS (Type A) BY PLAQUE ASSAY TECHNIQUE
(With a brief review of Literature)

By

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Gey and Bang (1951) noted that Eastern equine encephalitis virus when grown in static cultures composed of thin colonies of rat sarcoma calls produced focal necrotic lesions, who then suggested that it might provide a means for titrating the virus. This method has been adapted by Dulbecco and co-workers as a quantitative technique for titrating the virus and antibody. Dulbecco (1952) used a monolayer of chick embryo fibroblasts which was inoculated with virus and finally layered with agar; any necrotic lesions produced, were localized by the agar and the danger of secondary lesions was thus abolished. On staining intravitally these lesions stood out as greyish circular plaques against a reddish background of living cells. The technique of producing plaques with the virus on the monolayer cultures opened the possibility of studying animal virus-host system along lines similar to those followed in bacteriophage study. This method, with slight modifications in the technique has been successfully applied to the following viruses: Western equine encephalitis, Newcastle disease (Dulbecco, 1952), Vaccinia (Noyes, 1953), all the three types of poliomyelitis virus (Dulbecco & Vogt, 1954; and McClain & Schwerdt, 1954), Herpes-B virus (Black and Melnick, 1954), Fowl plague virus (Hotchin, 1955), a number of strains of Influenza virus (Ledinko, 1955), Rift valley fever virus (Takemori *et al*, 1955), Coxsakie and Orphan (Echo) viruses (Hsiung and Melnick, 1955), Foot-and-Mouth disease virus (Seller, 1955; Bachrach *et al* 1957; and Khera & Maurin, 1958), and Herpes simplex virus (Kaplan, 1957). As with the chick chorio-allantoic technique, the method can be adopted to the titration of virus or antibody and to the selection of pure virus clones (Dulbecco & Vogt, 1954a). By this technique each tissue culture gives a direct estimate of the number of infective units of virus in the inoculum, and with quite small numbers of replicate cultures the error of the method can be calculated and included in the findings. The precision of the plate assay method

* This work was done under the guidance of Dr. P. Lépine, Director of the Virus Divison at the Pasteur Institute, Paris.

depends on the number of plaques counted. According to Dulbecco (1955), if 100 plaques are counted, the highest and lowest should differ by a factor of not more than 1·5, for a deviation from the mean of not more than two standard errors. By the 50% end point technique on tissue culture tubes calculated by the Reed and Muench method, an assay covering a similar range would require at least four groups of cultures, at two-fold dilution steps: and to achieve the same degree of precision, approximately 125 cultures would have to be used at each dilution step.

The sensitivity of the plaque technique if compared with other methods of titration is very variable: Western equine encephalomyelitis virus gave about the same infectivity titre by the plaque technique as by titration of its lethal effect following inoculation on the chick chorioallantois (Dulbecco, 1952), Vaccinia gave one-sixth the number of plaques *in vitro* compared with the number of pocks on the chick chorioallantois (Noyes, 1953), Poliomyelitis virus gave a higher plaque titre than the titre given by intra-cerebral inoculation of monkeys (Dulbecco & Vogt, 1954) Fowl plague virus gave a plaque count one tenth to one-hundredth the infectivity titre in eggs (Hotchins, 1955), the plaque titration with influenza has been reported as being sensitive in some cases (Ledinko, 1955) and insensitive in others (Granoff, 1955), Newcastle disease virus gave the same plaque titre as the infectivity titre on chorioallantoic membrane (Levine and Sagik, 1956), Foot-and-Mouth disease virus gave varying results; with some strains the plaque titre was high, with others same, while with still others low, in comparison with the infectivity titre in suckling mice (Seller, 1957), in case of FMD virus type "C", the plaque titre, tube titre and the titre on the suckling mice closely corroborated and was practically the same (Khera & Maurin, 1958), with Herpes simplex the plaque titre was ten to hundred times higher than the titre on the chorioallantoic membrane of chick embryo (Kaplan, 1957).

It has been shown for a large number of viruses when grown on the chorioallantoic membrane of developing chick embryo that there is linear relationship between the number of pocks and the dilution of virus utilised (Burnet and Lush, 1936; Keogh, 1936; Burnet, 1936). The relationship was demonstrated to hold good for bacteriophage as well (Ellis and Delbruck, 1939). A similar proportion between the dilution of virus and number of plaques was found with tissue culture technique by Dulbecco (1952) for Western equine encephalomyelitis. From statistical theory it means (Luria, 1940; and Dulbecco and Vogt, 1954) that plaques are initiated from individual infective virus particles. A linear dependance of the number of plaques on virus concentration was obtained with several viruses; the proportionality,

however, was only approximate in some of them which probably might be due to inhomogeneities in cell susceptibilities and state of adaptation of the virus to *in vitro* propagation.

Material and Method.—The Foot-and-Mouth disease virus type "A" had passed several serial passages in tissue cultures before it was utilized for this study.

The technique of growing single cell layered cultures, from swine kidney, method of infecting and covering them with agar etc. has already been described in detail in a previous communication (Khera & Maurin, 1958).

Present Observation

1. Characteristics of plaques.—In an infected culture, the plaques appeared as pale circular areas of irregular sizes surrounded by the living cells intravitally stained by neutral red (Fig. 1.). Both the aspect and the number of plaques varied with duration of incubation; they could be seen macroscopically after 44 hours incubation and on further incubation their number increased upto 68 hours and thereafter it remained constant. Their size increased progressively till all the plaques became confluent and finally they were extinct due to total destruction of the cell layer. The border of the plaques was ill-defined and irregular. A microscopic study of the plaques revealed that irregularity of the outline of the plaque was probably due to the reason that the cycle of release and absorption of the virus on to the cells at the borders did not take place at uniform intervals and the cells so affected were not necrotized simultaneously.

In Table I are shown the mean size, standard deviation etc. of the plaques produced by the three types of the foot-and-mouth disease virus basing the observation on at least 50 plaques of each type.

TABLE I

Showing the mean size, standard deviation etc., of the plaques produced by the three types of FMDV.

Duration of incubation	Type of virus	Mean size of plaque	Standard deviation	Coefficient of variation
After 44 hours ...	A	3·93 mm	0·90 mm	23%
	O	3·20 mm	0·66 mm	21%
	C	3·44 mm	0·67 mm	19·5%
After 68 hours ...	A	6·1 mm	0·97 mm	16%
	O	4·2 mm	0·90 mm	21·4%
	C	5·1 mm	1·07 mm	21%

From the study of the above Table it is clear there is no marked difference in size or morphology of the plaques so as enable one to distinguish and isolate type "A" from other types of the FMDV.

The reasons that the plaques are due to the specific activity of the virus are,

(1) the plaques were absent in the cultures from which virus was witheld,

(2) the plaques were absent in the cultures receiving the virus previously neutralized by its specific antiserum,

and (3) several attempts to isolate the virus from individual, well seperated plaques were always successful.

II. *Validity of plaque assay method for the titration of the virus.*— A plaque forming unit(PFU) is the smallest quantity of the virulent material necessary for the formation of a plaque In fact a PFU is constituted by a certain number of particles whose presence is necessary for provoking infection of a cell. In order to find the relationship between the number of the PFUs and dilution of the virus suspension, several experiments were carried out and the results of one such experiment are reported in Table II.

TABLE II

Titration of the Foot-and-Mouth disease virus (type A) on swine kidney monolayer cultures by plaque assay technique; number of plaques at each dilution.

Dilution of virus (0·1 ml)	Number of plaques in each bottle	Average number of plaques	Titre of virus PFU/ml
10^{-2}	confluent	—	
10^{-3}	confluent	—	
$10^{-3\cdot5}$	83—76—74—55	72	
10^{-4}	33—25	29	
$10^{-4\cdot5}$	7—7	7	$2{\cdot}7 \times 10^{6}$
10^{-5}	3—2—2	2·3	
$10^{-5\cdot5}$	2—1—0	1	
10^{-6}	0—0—0	0	

Results of these experiments showed that the relation between the number of PFUs and concentration of the virus is in fact linear (Fig. 2).

It may be recalled here that Ellis and Delbruck (1938), Luria (1940) and Dulbecco & Vogt (1954, A) resorting to the statistical calculations showed that if the number of lesions (vesicle or plaques) has a linear function with the concentration of the virus, *one* lesion is

produced by *one* infective particle of the virus. Application of this theory might be justified for FMDV type A that we have studied.

III. *Comparative titration of the virus.*—The comparison of titres obtained on tissue culture tubes, on suckling mice and by plaque assay technique allows to interpret the relation that exists between the results obtained by the three procedures. The method followed for the titration of the FMDV on tissue cultures has already been described (Khera, 1958) and infective dose for 50% of the tissue culture tubes (I.D.T.C. 50%) is calculated. The infectious titre on suckling mice was determined following the technique of Skinner (1951) and the results were interpreted according to the method of Reed and Muench (1938). The virus type A gave a plaque titre and titre on culture tubes higher than that on the suckling mice (Table III).

TABLE III

Comparative titration of the FMD Virus (type A) on tissue culture by plaque assay technique, and on suckling mice.

I. D. T. C. 50% on culture tubes	Titre PFU/ml	Infective dose for 50% of suckling mice
$10^{-4\cdot2}$	9×10^{4}	$10^{-1\cdot9}$

Summary

Literature on the plaque assay technique utilised for the study of animal viruses is reviewed. From the results of experiments with foot-and-mouth disease virus (type A) it may be concluded that

(1) plaques are attributable to the specific activity of the virus.

(2) from the size and morphology of plaques, it is not possible to distinguish and isolate the type A from other types of the FMDV.

(3) the relationship between the number of plaques and concentration of virus is linear, and

(4) as regards the comparative value of titration of a given viral suspension the "plaque titre" is higher than that in suckling mice.

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OTITIS EXTERNA IN CANINES - ITS MEDICINAL AND SURGICAL TREATMENT

By

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and

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Either from a professional stand point or from a purely humanitarian view point, the ear diseases deserve a serious consideration. Apart from being acutely painful and distressing they lead to serious complications and often cause irrepairable damage, if neglected. It is not rare to find animals with ear troubles being passed on from clinician to clinician as these diseases are often extremely refractile and the ordinary orthodox methods of treatment usually fail to evoke any response.

In the authors' experience, the commonly employed drugs like alcohol, ether, and hydrogen peroxide, etc., cause more damage than good because of their irritant action aggravating the already oedematous condition.

One of the earliest surgical approaches to the problem was by Formaton and Mecunn (1931) who described the establishment of ear drainage at the apex of external ear canal in dogs and cats. This method, however, did not prove very efficacious. Afterwards Lacroix improved upon the technique which was described in detail by Schnelle (1941). Zepp (1949) described a surgical technique for the establishment of drainage of the external ear canal by deflecting and grafting ventrally a section of lateral conchal cartilage. Henderson and Zaimbert (1950) reported encouraging and satisfactory results with the Zepp's method of Aural resection.

The authors employed Schnelle and Lacroix technique from 1951 onwards but adopted the mode of operation described in the present article since 1955 after senior author's visit to Sweden and association with Mr. Manson of the Surgical Department, Royal Veterinary College, Stockholm, Sweden.

Methods and Materials.—The present study involves the observations of treatment of 60 cases of Otorrhea in the Canine, 32 having been treated medicinally and 18 surgically. Of the 18 cases that underwent surgical interference, 14 were of partial resections and the rest complete.

Out of 4 complete resections, 3 had originally been treated by partial resections. It would thus appear that of 17 partial resections, 14 made uneventful recovery and 3 cases recurred due to necrotic condition of the vertical canal and hence total resection had to be resorted to. The 18th case which was operated on both ears simultaneously, one for partial resection and the other for total resection, died of surgical shock as due to its involvement, one of the parotid glands had to be completely extirpated.

Medicinal treatment.—All the cases when presented are carefully examined to assess the nature and degree of ear infection. All acute complicated cases are treated as follows :—

Hair from the external ear is removed by clipping. Both external ear and the ear canal are then cleaned first by washing with soap and water and then swabbing with dry sterile cotton, depending upon the severity of the condition. One of the following preparations, (1) Terramycin otic solution (2) Chloromycitin topical (3) Terramycin in oil, is then instilled into the canal every day for a period of one to two weeks. Topical applications, are supplemented by parentral administration of Dicrysticin, for 5–7 days.

The response in all acute cases thus treated, is excellent and recovery complete.

In chronic cases the conservative treatment with topical application and parentral administration of antibiotics does not produce the desired results. Recurrence of symptoms after apparent recovery with discontinuance of treatment usually follows. Such cases always lead to chronic thickening of the canal with ulceration and formation of granulation.

In such cases the owners are advised radical treatment.

Surgical procedure.—(*a*) Preparation of the patient. The hair round the ear is shaved. The ear canal is thoroughly cleaned with soap and water. Antibiotics like Terramycin otic solution or Terramycin in oil etc., are instilled into the ear canal 2 to 3 days prior to the operation in combination with injections of Dicrysticin. Prior to operation the patient is fasted for 12 hours.

(*b*) Technique of operations :—

(i) Anaesthesia - The anaesthetic of choice is Nembutal (Singh and Rao, 1953).

(ii) Surgical technique.

(A) Partial Resection

The anaesthetised patient is placed in lateral recumbance with the affected ear uppermost and the head slightly propped up.

After the usual surgical toilet the head is draped leaving the affected side of the head and ear exposed.

A straight artery forceps is introduced into the ear canal and kept held with its point slightly raised by an asistant standing behind the head of the animal, to serve as a guide for the ventral extremity of the skin. (Fig. 2).

Incision.—Standing in front of the head of the patient, a 'U' shaped incision is given in the skin starting from the conchal cartilage (any side) along the ear canal proceeding downwards to the point of the artery forceps. Fig. 3 (A C B). The skin is then released from the underlying tissue starting from below upwards. Fig. 3 (A C' B). Haemorrhage is controlled as it occurs. The reflection of the skin tissue over the cartilage is carried out by blunt dissection up to the proximal part of parotid salivary gland. Unless the parotid gland is infected, excision of any portion is not required. The chances of cutting the facial nerve or its branches are remote. Pushing the muscles all around by blunt dissection, the vertical canal of the conchal cartilage is exposed.

Changing the position to behind the head, the conchal cartilage is incised first posteriorly and then anteriorly dividing the vertical canal

Otitis Externa in Canines - Its Medicinal and Surgical Treatment

By
G. B. Singh and M. M. Rao

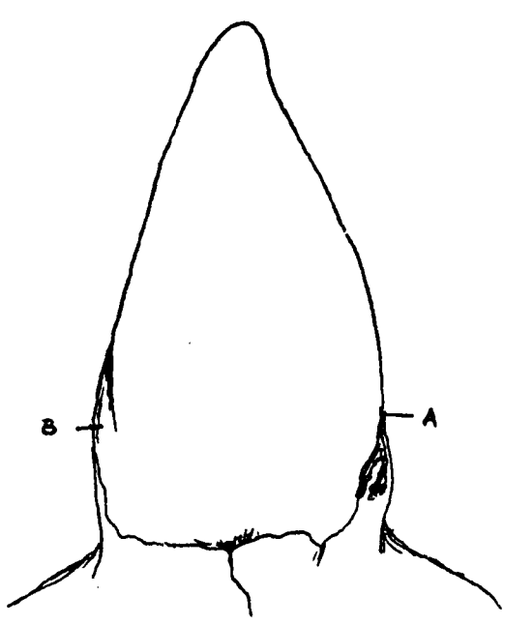

Fig. 1. The ear of the dog showing demarcation of incision at A & B.

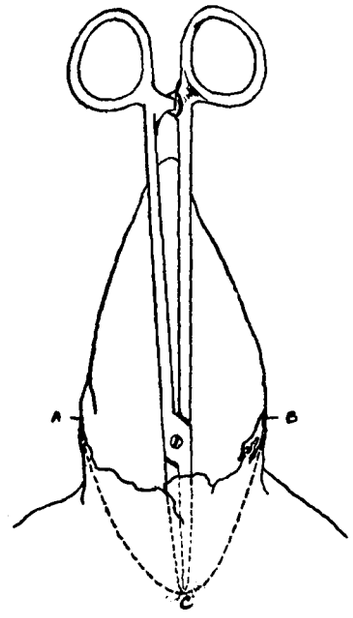

Fig. 2. An artery forceps kept held in the vertical canal as a guide for demarcating the ventral incision. The dotted line A B C indicates the line of incision.

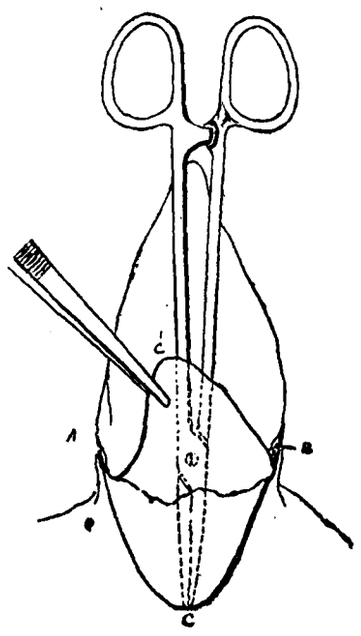

Fig. 3. Shows the reflected portion of the skin A B C'

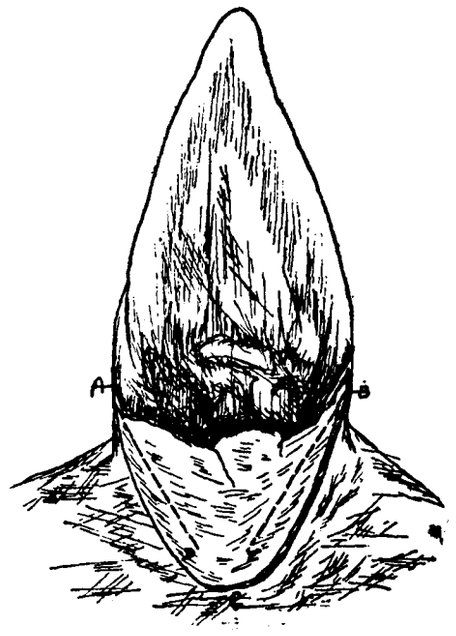

Fig. 4. Shows the lines of incisions A D and B E over the cartilage after the incision of the skin A B C.

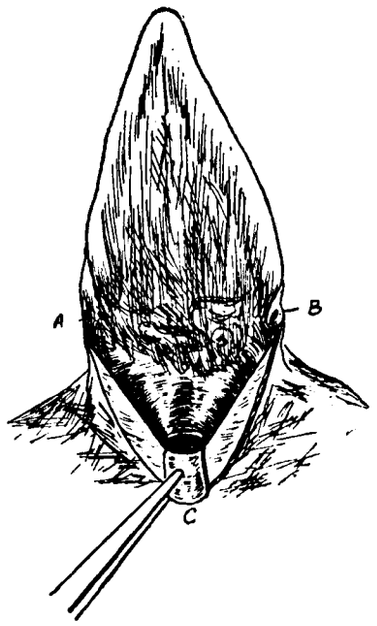

Fig. 5. Shows the ventrally deflected portion of the vertical canal.

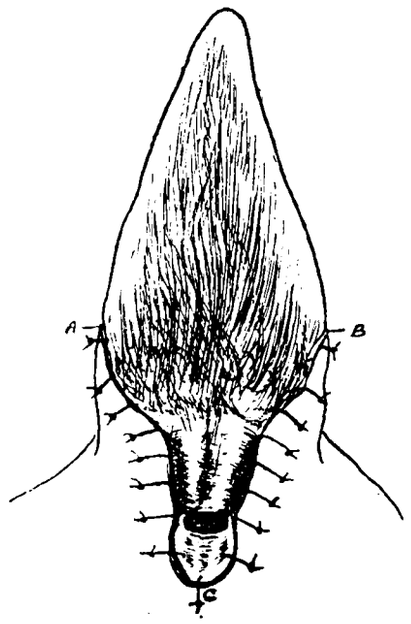

Fig. 6. Shows the grafting of the lateral cartilages and ventrally deflected vertical canal.

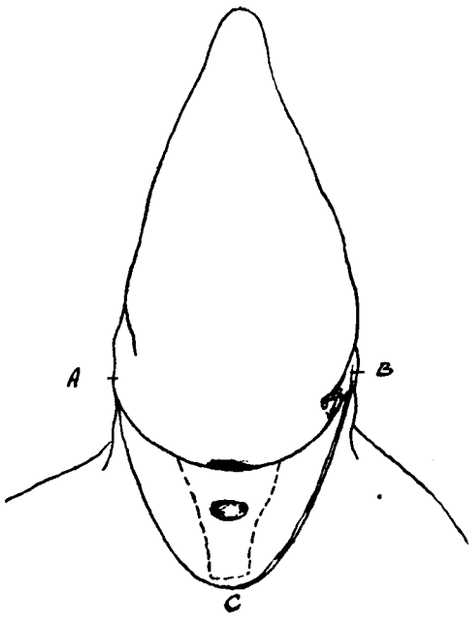

Fig. 7. Shows the excision of the base of the conchal cartilage at the arc A B.

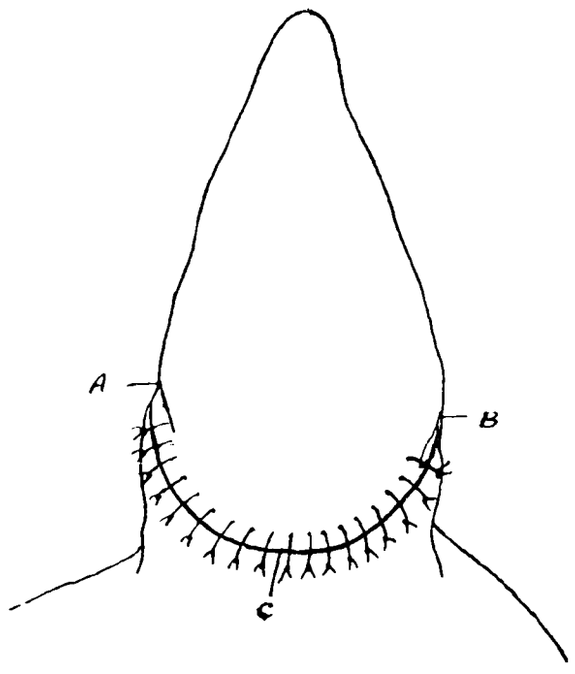

Fig. 8. Shows the suturing of the base of the conchal cartilage A B to A C B which obliterates the canal.

into two equal halves. Incision on both sides is started with a very sharp knife and finished with a pair of straight scissors. Incisions on both sides are further extended downwards to the point where the vertical canal turns horizontal. (Fig. 4 & 5.). The cartilage ventral to the meatus is then reflected ventrally and trimmed to give it a shape of (an arc).

This reflected portion of the cartilage is then grafted to the skin ventrally by 3 straight matress sutures. (Fig. 6).

The cut edges of the lateral cartilages are grafted on either side likewise with straight matress sutures. Whilst suturing, care is taken to ensure that the cut edges of the cartilages are well covered with skin. (Fig. 6).

(B) Complete Resection

Complete resection is a desperate measure and taken as a last resort. It is performed only in such cases where partial resection fails to evoke a favourable response and in those cases where the chronic otitis externa is complicated by necrosis, fibrosis or granulation of the canal membranes.

The techinque employed is the same as for partial resection upto the separation of the vertical ear canal. The base of the conchal cartilage is incised along with the level of the ear canal. (Fig. 7) (A B). At this juncture, an incision is made in the conchal cartilage to release the canal from dorsal side with a Mayo's scissors then the canal is dissected away from all the sides, till it is quite clear upto its junction with horizontal canal. With a blunt curved scissors, it is then released from the horizontal canal and removed.

After thorough cleaning, Terramycin in oil or Terramycin otic solution is instilled into the horizontal canal, the cut edge of the base of the conchal cartilage is sutured to the skin ventrally, completely obliterating the canal. (Fig. 8).

After care.—A thick sterile gauze pad is placed in the ear with three retention sutures. The ear is then turned over the head and lightly bandaged.

A light head mask of aluminium or zinc is applied over the head to prevent any interference by the dog. The patient in given Dicrysticin or Omnomycin postoperatively for 7 days.

After 2 or 3 days, the ear is dressed daily with Antibiotics or sulphanamides. The stitches are removed by the 10th - 12th day by which time healing is complete.

Results and discussion.—Antibiotic treatment produced excellent results in all the 42 cases of acute uncomplicated otitis externa.

Out of the 17 partial resections, 14 had uneventful recovery and 3 cases recurred. Total resection was finally resorted to in these cases and recovery was complete.

One case (an Alsatian) which was operated on both the ears simultaneously (one for partial and the other for total resection) died of surgical shock as one of the parotid glands was involved and had to be removed.

Summary

(1) Successful treatment of acute otorrhoea in 42 cases of canines with antibiotics and sulpha has been discussed.

(2) Uneventful recovery of 14 cases of partial resections and 3 cases of complete resections have been described.

(3) Death of one case due to surgical shock consequent upon bilateral operation with removal of one infected parotid gland is recorded.

(4) The successful results obtained by this operation are
Partial resections ... 78%
Total resections 75%

Acknowledgment

Our thanks are due to Sri M. Mohanty, B.V.Sc., Veterinary Assistant Surgeon, Bhubaneswar for preparing the enclosed figures under our personal guidance.

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USE OF DIETHYL STILBOESTROL IN VETERINARY PRACTICE

By

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Knowledge of hormone therapy is as yet very uncertain for various reasons. There is no yardstick to measure the normal amounts of hormone circulating in the body, especially in the cow where the quantity is very small. Assay methods are not yet so accurate to help in the correct estimation of its level in the body. Besides there exists differences amongst animals regarding the sensitivity and response which make it impracticable and uneconomic to investigate and treat cases according to individual results. Laborious laboratory experiments cannot be employed and consequently the Veterinarian generally takes up treatment of several cases based on his own findings of a clinical examination.

The use of hormones in cattle has yielded not very satisfactory results. Treatment in selected cases might have been beneficial, but when this therapy is employed on a mass scale, it has been proved statistically that the results do not vary significantly in the group of animals treated with hormones as compared with the untreated group. This evidently leads to the conclusion that the use of hormones in the treatment of impaired breeding in cattle is just a 'hit and miss' policy of cure rather than a method of certainty. Nature has its own course of treatment and it cannot be ignored that a certain amount of spontaneous recovery form reproductive disorder observed after hormonal treatment may be just a time factor and the percentage of recovery in any controlled experiment does not generally exceed the number of cases which may be observed in cases of spontaneous recovery. Experiments conducted abroad particularly in Sweden under the leadership of Professor Lagerlof have given sufficient proof that infertility due to certain forms of under-development of sexual organs like hypoplasia of testicles, ovaries and endocrine disturbances like that of cystic ovary, unpronounced oestrous, predisposition to disturbances in ovulation or nidation leading to early embryonic death etc are hereditary in nature. Any attempt to restore fertility by the use of hormones in such cases is likely to spread widely the undesirable character to the future generation. Heriditary factors were also found to be responsible in bulls suffering from weak sex desire and poor quality or quantity of semen. Improving fertility in such cases with the help of hormones is considered undesirable, particularly in the

breeding stock lest wide dissemination of undesirable character in the progeny should take place which may be harmful to the breed as a whole.

Another important factor which cannot be lost sight of is the essential knowledge of reproductive physiology and experience of palpating the reproductive organs for the correct diagnosis of the disease and rightly assessing the value of the hormone therapy on the merit of an individual case. At present it is being used unscrupulously like pencillin in any febrile disease of human beings, where scientists have time and again cautioned the practitioners against its misuse. It is evident that such practice, if continued, may do more harm than good to the reproductive efficiency of live-stock.

During the past few years, market has been flooded with different proprietory preparations of hormones. Veterinarians have been using quite extensively the gonadotrophic hormones for combating various forms of infertility in cattle. Pregnant mare serum (P.M.S.) has yielded favourable results in some hands in doses of 1000–2000 I.U. intra-venously or subcutaneously in true cases of anoestrous. Complications like cystic ovaries or multiple ovulation resulted when the presence of corpus luteum was overlooked. The most common preparation used is Diethyl-Stilboestrol, which is a synthetic preparation and is widely used in the country to bring an anoestrous (inactive condition of ovary) cow in heat. These injections have been found to be quite popular in certain areas with the farmers for getting their animals into heat with the hope that she would conceive.

Planned experiments on a limited scale were conducted in the Indian Veterinary Research institute, Izatnagar to judge the efficacy of this drug as a gonadotrophic harmone to induce ovulation. The hormone was injected in 15 anoestrous buffaloes with doses varying from 15–35 mgs. and the animals were slaughtered and examined 5–6 days later. In no case ovulation oestrous could be induced. It is, therefore, quite evident that although symptoms of oestrous could be observed in the treated cases, yet it failed in inducing ovulation which is an important factor to get the animal in-calf. It is, therefore, obvious that more harm may be caused by its widespread use for this purpose. Cases might have been observed to have conceived after the administration of this hormone, but it cannot be ruled out that such cases might not be true types of anoestrous which could only be confirmed after the rectal exploration. Probably these animals might have become pregnant even without the help of additional dose of oestrogen.

Use of this drug in high doses in lactating animals has also been found to affect adversely the daily milk yield. This gives an additional

factor to consider its application in cases where the lactating animals fail to exhibit symptoms of heat for a fairly long time after calving.

Diethyl-Stilboestrol, however, is quite efficacious in certain other conditions as the evacuation of the uterine contents and can be safely used in cattle in the following cases :—

(i) *Retention of placenta.*—It is effective in this condition and a dose of 15–25 mgms. intra-muscularly is found useful. Smaller doses at shorter intervals are recommended by some workers with or without the administration of post-Pituitary extract in doses of 2–5 cc. This is advisable to counteract the expected fall in the milk yield due to Stilboestrol. It helps in sensitising the uterine muscles to the effect of oxytocin which gives tone and contraction to the uterus, loosens the afterbirth and cleanses the uterus.

(ii) *Pyometra.*—It is found to be very useful in this condition as it helps in the evacuation of pus. A dose from 25–40 mgms. intra-muscularly is found to be effective. The treatment may have to be repeated after 24–48 hours since prolonged action is necessary.

(iii) *Mummified foetus.*—It is found useful in the expulsion of the mummified foetus. 25–40 mgms. dose is found to be quite effective. The dose may be repeated, if necessary, after 24–48 hours. The cow usually comes in heat in about 24 hours and the foetus is expelled within a couple of days later.

Stilboestrol has an effect for inducing lactation and thus has been used experimentally in sterile cows to yield milk. For this purpose 1–2 gms. are used for the subcutaneous implantation, from which 3–7 mgms. may be absorbed daily. Tablets are removed 60–100 days after implantation. Growth of mammary glands is observed and the animal starts yielding milk within a couple of weeks. Similar results have been observed in sheep and goats. The quantity of milk yield depends upon the inherent capacity of the animals. Animals yielding good quantity of milk in previous lactations before getting sterile or coming from a good stock have responded satisfactorily to this treatment. The untoward effect of this treatment is that the animals receiving treatment are always in heat and there are chances of their becoming nymphomanic.

Consumption of such a milk, is, of course, not advocated as certain amount of oestrogenic contents are secreted in the milk which may be harmful to the consumer.

In cases of misalliance in bitches, the recommended dose of Diethyl Stilboestrol is 1-3 mgm. injected within 72 hours of mating or later larger amount upto 1 mgm. per lb. body weight. For pyometra and retention of placenta, the dose prescribed in bitches is 1-2 mgm., I/m.

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A NEW SHEEP BREEDING RESEARCH STATION AT CHINNASALEM

By

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A new Sheep Breeding Station at Chinnasalem was inagurated by Sri M. Bakthavatsalam, Minister for Agriculture, on 11-11-1958.

This Sheep Farm is located at Chinnasalem, 6 miles from the village of Chinnasalem on the Salem—Cuddalore main road. The farm extends over an area of 1501·14 acres of land of which 886·88 acres of land are in Salem District and the remaining 614·26 acres are in South Acrot District. The breeding of black woolly sheep has been prevalent in this area for sometime past but due to lack of knowledge in modern methods of sheep husbandry there has been a deterioration both in the quality and quantity of wool obtained. It was therefore considered necessary to improve this black woolly variety of sheep in the area where manufacturing of rough *cumblies* as a cottage industry is a source of income to the shepherds. The main object of this farm is therefore to improve the quality and quantity of wool from the sheep in and around the area and also to educate the sheep breeders of the locality in the modern methods of sheep husbandry.

As all the lands comprising the farm remained dry, waste and uncultivated for a long period of years, it was not surprising that the entire area presented an appearance of desert at the time of taking over. Considerable precautionary measures were therefore necesssary before resorting to large scale cultivation of fodder grasses. As a preliminary to the commencement of agricultural operations, specimens of all available grasses in the area were collected and subjected to

identification by the Systematic Botanist, Agricultural College, Coimbatore. Some representative soil samples were also collected and analysed. An analysis of the local grasses has revealed that awns are produced at maturity and that they cause much damage to the sheep especially to the eyes. It has therefore been decided to eradicate all the local grasses completely and replace instead nutritive and harmless grasses such as Kolukattai, Blu Baffal, Love grass etc. With this object in view an experimental plot of land was carved out in the area and the cultivation of Kolukattai and the Blu Baffal commenced. The results are very encouraging and are bound to prove fruitful. Besides the above, an area of 80·23 acres has been brought under cultivation under rainfed conditions. Maize, Fodder, Cholam and Horse-gram have been raised in the area. Unfortunately there is not a single good well in the entire area to meet the requirements of water supply for the livestock. An old well has been further deepened and it is being used now for irrigating the experimental plot of land for growing different types of grasses. With the availability of an engine and a pump-set and by renovating two other wells in the area it is hoped to bring a large area under cultivation so that the farm can be made self sufficient so far as the fodder requirements are concerned.

Since there are no trees in the whole area, efforts are being made to plant avenue and fodder trees on both sides of the newly formed road and so far about 5,000 trees have been planted. Internal road to a length of about 3 miles has been laid.

The length of the farm boundary is about ten miles and live fencing on the raised bunds with *Kalli* and *Kiluvai* plants have been introduced to an extent of 3,200 metres. In addition *Prosophis juliflora* has also been introduced in the area as live fence. The lie of the land in the farm is very undulating and even the little rains that are received are drained off, causing considerable soil erosion. In order to prevent soil erosion and to conserve soil mixture, gully ploughing, contour trenching and bunding have been taken up. At present ten big deep gullies have been plugged up, contour trenches to a length of 488 metres have been dug up and bunds to a length of 1,334 metres have been raised. There were no buildings whatsoever in the area at the time of taking over. The farm is situated in the driest part of the district. To tide over the consequent extreme heat, four temporary sheds have been constructed to house the sheep at present. Plants and estimates for the construction of pucca buildings have been drawn up and the construction work is in progress.

Livestock : Since the sheep breeding Research Station, Chinnasalem is in the centre of Black Wooly sheep breeding area of South

Arcot, Salem and Tiruchirapalli Districts, 255 ewes from the above districts have been purchased as foundation stock, mainly to study the behaviour and adaptability of different strains of black woolly sheep from different breeding tracts stationed at this farm. In addition, for grading up work 4 Bikanir rams from the Livestock Research Station, Hosur, have also been introduced for mating the ewes. There are at present 79 graded lambs consisting of 314 ram lambs and 45 ewe lambs at this farm in addition to the foundation stock.

At present the local sheep get only grazing in the farm area. Concentrates are supplied only to the Bikanir rams. The concentrates consist of rice bran and groundnut cake. Sterlised bone meal and common salt are also given as a supplement.

A few young and literate workers in and around the area are being picked out and trained in dosing, working, shearing and cleansing of wool and sent out as flockmen to other areas. The shepherds from the surrounding villages frequent the farm and obtain information regarding sheep husbandry and fodder production. The creation of this farm has undoubtedly whipped up the enthusiasm of the shepherds in the area and it is hoped that before long the farm will become the nucleus for breeding of excellent quality of black woolly type of sheep.

SEX REVERSAL IN A *DESI* HEN

By

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In the common type of sex reversal, apparently normal females develop the comb, wattles and spurs of the male. They may retain female plumage or have a mixture of male and female plumage or more rarely have entirely male plumage. Such birds will crow and usually exhibit various degrees of male sexual behaviour. Many such birds are reported in the literature (Boring and Pearl, 1918; Crew, 1923; Forbes, 1947). The extreme limit of sex reversal was reported by Crew (1923 a; 1923 b) in a Buff Orpington hen which was a good layer and a mother and at 3½ years began to assume male characters and a year later became the sire of two chicks. After death the bird was found to have two large testes and vasa deferentia and an ovary almost completely destroyed by disease. Arnsdorf (1947) reported a similar sex reversed female which became the sire of two chicks. The author is not aware of any record of sex reversal in a *desi* hen.

The author came across a nine year old *desi* hen which was a good layer and mothered many broods of chicks. The hen became seriously ill, was poor in eyesight and was almost given up for lost. It, however, rallied round after some time and the comb and wattles grew larger. The spurs became enlarged and the bird developed the plumage of a cock. After about three months the bird starting crowing. The bird has been in the author's possession since the last eighteen months. The crowing which was shrill at first has become clear and cocklike and the spurs also have become larger. When mixed with hens, the bird starts clucking, strutting and makes advances to the hens. It has not so far mounted any hen. When mixed with cocks it gives a fight for a little while before retreating. Its plumage is cocklike. Every morning it regularly crows. The bird is kept in the company of other hens but has so for not mounted any. It is still under observation to determine whether the process of sex reversal will be carried to completion.

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INCIDENCE OF NATURAL DOCKED TAIL IN PUPPIES

By

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Taillessness and natural docked tail condition were reported by some workers and the mode of inheritance sought to be determined (Gossweiler, 1930; Leinhart, 1932; Rcheulishvilli, 1938; Steiniger, 1940; Stockard, 1928; and Uray 1937). The general consensus of opinion appears to be that short tail is dominant or incompletely dominant to normal tail length but the gene is lethal in the homozygous condition so that natural-docked puppies which survive are always heterozygotes (Burns, 1952). Leinhart (1932) however, found in Breton Spanielsthat the tailless gene had no lethal effect and that the inheritance of this condition was due to multiple factors. Incidence of natural docked condition has not so far been recorded in this country and it is, therefore, considered worthwhile to record a case that came to the author's notice.

The author came across a case of a Springer Spaniel which gave birth to docked tailed puppies. The four year old Spaniel

was itself born with long tail and gave birth to two previous litters in which all the progeny had long tails. On these occasions the bitch was crossed with a Spaniel dog. On the third occasion the bitch was crossed by an unknown mongrel dog and seven pups were born. Of the seven pups, six were born with docked tail while the seventh had a normal long tail.

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INCIDENCE OF NASAL SCHISTOSOMIASIS IN BUFFALOES IN ANDHRA PRADESH

By

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The incidence of this affection in a large percentage of buffaloes was reported from many states (Rao-1935; Sen-1949; Biswal—1956; Biswal and Das-1956; Rao and Naik-1957). While infected buffaloes do not show manifestations of the disease, Rao (1933) and Rao and Mohiyudeen (1955) have described clinical symptoms and lesions in them.

As there are not many records of nasal schistosomiasis in buffaloes in Andhra Pradesh, to investigate the incidence, the village 'Thummalagunta' in Chittoor District 2 miles from Tirupati was selected, as a number of cattle were suffering from N.S. in that village and they were coming up for treatment to the Veterinary clinic attached to the Andhra Veterinary College, Tirupati. The village is a small one and all the cattle and buffaloes drink water in a nearby stream. At the time of my visit on 16-8-'58 the stream was practically dry and the small intermediate hosts could not be collected. Due to scarcity of water the cattle and buffaloes were being given well water. Hence the animals might have acquired the infection sometime back when the intermediate hosts were in plenty in the stream.

On 23-8-'58 I again visited the village to examine the buffaloes. 36 buffaloes were available and all of them were examined. All the buffaloes were apparently quite normal in health and the symptoms as exhibited by cattle were absent except irregular areas of congestion and

small pimple like eruptions. In 10 buffaloes besides these lesions, there was profuse nasal discharge. Scrapings of the nasal mucosa of the former and the nasal discharge of the latter were collected and examined microscopically. All the 10 buffaloes showing profuse nasal discharge and 22 of the former were positive for eggs of *S. nasalis*. The eggs were well developed and indistinguishable from those seen in cattle. 15 samples of dung of the infected buffaloes were also examined for eggs of other schistosomes by acid-ether technique and the dung in all cases was negative.

Conclusion

Incidence of N. S. in a large percentage of buffaloes has been recorded in 'Thummalagunta' village, Chittoor District; profuse nasal discharge was seen in a few infected buffaloes.

The reasons for the symptomless infections and for the absence of nasal granuloma have been explained by various workers. Ananthanarayana Rao (1935) explained it, as being due to an immunological factor on account of the prior infection with *S. spindalis*. But during my investigation into 15 samples of dung examined from the affected buffaloes, none revealed ova of any other schistosome. Abdussalam and Sarwar (1953) suggested that a factor other than infestation with *S. nasalis* is required for the causation of nasal granuloma, Rao and Naik (1957) are of opinion that the parasite and the host are able to get on together attaining 'complete compatibility'. These differing opinions point to the need for investigation about the cause of the symptomless affection in buffaloes.

Acknowledgment

Grateful acknowledgment is recorded to Sri P. S. Rajulu, Principal, Andhra Veterinary College for suggesting the investigation and Sri V. S. Alwar, Reader in Parasitology, Madras Veterinary College for his valuable help and guidance.

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Clinical Articles

*ASPERGILLUS FUMIGATUS INFECTION IN GOATS

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Introduction

The Aspergilli are ubiquitous in nature and have a world wide distribution. They are troublesome common laboratory contaminants.

Some species are definitely pathogenic, e.g. *Aspergillus fumigatus*, *A. glaucus*, *A. candidus*, etc. *Aspergillus fumigatus* is responsible for causing brooders pneumonia in chicks[1]. It has also been reported from cases of abortion in cows[2], skin lesions in aborted bovine foetus[3], and inflammatory granulomatous lesion on the skin, external ear and nasal sinuses in human[4].

A case of skin affection in a calf has been described by K. Nagappa Pai[5], but the author does not give any indication either of species or the pathogenicity of the strain.

The present paper describes a case of inflammatory granulomatous lesion on the skin of a Black Bengal Goat caused by *Aspergillus fumigatus*.

History of the Case

A Black Bengal he-goat, aged about 18 months was presented by Capt. K. Bhattacharya, the then House Surgeon, Cattle Ward, Bengal Veterinary College, on 15—1—58. The goat was showing inflammatory, granulomatous lesion on the scrotum as well as on the contiguous parts of the inner aspect of the thighs.

This case was earlier treated with various dyes, Salicylic Acid ointment and Antibiotics for three months, but did not show any improvement; on the contrary, the lesion maintained a progressive character.

Methods and Materials

Direct Examination :—Skin scrapings from the lesion were taken and treated with 10% KOH, solution. Then a loop-full of the material

* The abstract of the article has been published in the Proceedings of the Indian Science Congress, 46th Session 1959.

was withdrawn on a slide and cleared with lactophenol and cottonblue and examined. Broken fragments of fructifying hyphae with small (2-3μ) dark green, round spores were seen in the material.

Cultural Examination :—A portion of the material (skin scrapings) was first treated with absolute alcohol for 2 hours, then with ether, and the material was cultured in Sabouraud's maltose agar (ph 5·6; with 20 units of penicillin and 40 units of streptomycin per ml. were added to the medium to inhibit bacterial growth) and maintained at room temperature.

Colonies were first visible after 4 days as white downy growth. On direct microscopic examination of the colonies, filaments were observed on the surface of the medium, with narrow (1·5μ - 2·5μ in diam.), evenly outlined, branching, septate mycelium which took a dark bluish-green colour as sporulation occured, and the characteristic spores were seen by laying the culture tube on the stage of the microscope and examining the edge of the slant undisturbed with low and high power objective.

Microscopic preparations were made by teasing a bit of aerial growth in a drop of lactophenol cottonblue, and examined under a cover glass and it was observed that from the mycelium aerial hyphae or conidiophores were thrown up. After some time these conidiophores grew slightly thicker and developed a clubbed end known as a 'Collumella'. Budding of Collumella gave rise to sterigmata, whose tips bore the typical fragile spores of *Aspergillus fumigatus*.

Both direct and cultural examination of the materials from the same site was repeated for at least 3 times at an interval of 15 days each and identical results were obtained.

The identical nature of the fungus collected at three different times was established by the fusion of their mycelia.

Pathogenicity

Approximately 2500 spores included in ½ ml. of NSS was injected s/c into the inner aspect of the thigh of Black Bengal goat and after a few weeks an inflammatory granulomatous lesion appeared round the the site of injection.

Skin scrapings from the site of lesion were taken and were subjected to direct and cultural examination including fusion of mycelium. The fungus proved to be of identical variety, and it was identified as a strain of *A. fumigatus*.

Acknowledgment

The author gratefully acknowledges the valuable directions and encouragement given by Prof. M. S. Das, B.Sc., M.R.C.V.S. (London)

Professor and Head of the Department of Pathology and Preventive Medicine, Bengal Veterinary College.

The author is also indebted to Capt. K. Bhattacharya, the then House Surgeon, Cattle Ward, B. V. College, for his kind co-operation.

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(1) Gaiger and Davis' Veterinary Pathology and Bacteriology, 3rd Edn. *P.* 414.
(2) Austwick *et al* (1957) *Vet. Rec.* Vol. 69, No. 18, *P.* 488 ;
(3) Peterson (1953.)
(4) Manual of Clinical Mycology, Conant *et al*, 2nd Edn, *P.* 203.
(5) K. Nagappa Pai, (1958) *I.V.J.* Vol. XXXIII, No. 2, Sept. *P.* 150-151.

FOREIGN BODY IN THE RUMEN

By

M. S. Gupte, G.V.Sc.,

Principal, Extension Training Centre, Tharsa.

Rumen is a veritable reservoir of various articles which gain access to food of cattle. It is a common sight to see in post-mortem examinations such articles as wire-nails, hair pins, pieces of bones, etc., in the rumial contents. Very often these foreign bodies penetrate the diaphragm and cause traumatic pericarditis or they find their way out through abscesses behind the elbow.

Recently one bull-calf aged about one year and nine months, was brought for treatment to the Veterinary Dispensary of this Training Centre. The animal had an abscess about the size of a cricket ball behind the elbow. The abscess was fully ripe and therefore it was incised. While cleaning the cavity a hard metallic object was felt inside. It was slowly pulled out with the help of pincers. When the whole object came out, it was found to be a common iron spoon used in villages for cooking purposes. The dimensions of this spoon are given below :—

1.	Total length	... $8\frac{1}{2}$"
2.	Diameter of the rounded end	... $1\frac{1}{2}$"
3.	Depth of the round end	... $\frac{1}{2}$"

The history of the case revealed that the animal became "sick" in the village about 7 months ago and the village quack advised that an iron spoon smeared with oil, salt and turmeric should be rubbed on the tongue. During the process the spoon slipped from the hand and the animal swallowed it. After about 4 months the animal suffered from indigestion and was being treated by the village quack. Subsequently the animal developed the abscess behind the left elbow and was brought to the dispensary for treatment. It is the size of the foreign body that makes this case report interesting.

Abstracts

Pulmonary Tuberculosis in a cow due to the Avian type of Tubercle Bacillus:—By J. K. L. Pearson and D. McGowan, *The British Veterinary Journal, Vol. 114, No. 12, December, 1958.*

Avian tubercle infections in cattle are probably much more common than are generally realised. In support of this statement the authors referred to a survey by Plum (1952) in which tubercle infections from 1524 naturally infected cattle were typed as 21% avian, 78·4% bovine and 0.5% human. Several other references on this subject have also been quoted by the authors. The subject of this note was a 9 year old Fresian cow in an Attested, self-contained herd of 25 cattle which was found to have acute clinical pulmonary tuberculosis. Sputum was grossly infected and contained beaded and well staining acid-fast bacilli. Biological and cultural tests on the sputum and lung material confirmed the infection to be avian type of tubercle infection. Tuberculosis was confined to the left lung and was not found elsewhere in the animal. Comparative and Stormont tuberculin tests on the herd showed that avian sensitivity was pronounced in the remaining cattle. Tests on deep litter poultry on the farm were negative. No pigs were kept in the farm.

A. Mukerji.

A Study of Penicillin Tolerance of some Organisms Infecting the Bovine Mammary Gland:—By B. T. Throop and E. W. Swanson, *Journal of American Veterinary Medical Association, Vol. 133, No. 9, November 1, 1958.*

Widespread and frequent use of antibiotics for the treatment of mastitis in dairy cattle is inadvisable because this practice may develop antibiotic resistant pathogens in the udder. Data for an evaluation of this problem have been obtained from a long-term study at the University of Tennessee. It was found that Streptococci isolated from infected udders in a herd which had been intensively treated with Penicillin did not show unusual resistance to Penicillin *in vitro*. By culturing organisms isolated from mastitic glands in increasing concentrations of Penicillin, resistance was developed *in vitro*. Infection with a strain of *Streptococcus uberis* from an udder which had not been cleared by repeated Penicillin treatment was easily controlled in another experimentally infected udder. Micrococci and enterococci from infected udders showed much greater tolerance to Penicillin than did the usual mastitis Streptococci.

A. Mukerji.

Tissue Vaccines in the treatment of Bovine Pappillomas:—By J. K. L. Pearson *et al*, *The Veterinary Record, Vol. 70, No. 18, November, 1958.*

(Author's Summary).

The use of a glycerol-saline growth suspension in the treatment of cattle with benign skin Papillomas is described. In a 2-year period autogenous and non-autogenous vaccines were used for the inoculation of 233 cattle, 2 subcutaneous injections of 10 ml and 15 ml at a 14-day interval being recommended. The results obtained on 197 cattle show that 87% of cattle with Papillomas on the general body surface responded to autogenous vaccine, and 76% to non-autogenous vaccine. Teat wart vaccines were of value in only 4 out of 12 cattle treated. Bull penis growths disappeared after autogenous vaccination in 4 out of 5 cases. Uninoculated control cattle were kept on 15 farms where autogenous vaccines were used and showed virtually no change in skin tumour condition in a period during which vaccinated cattle showed regression of lesions. At the end of 2 years, 21 practices were using Papilloma vaccines.

A. Mukerji.

Susceptibility to Respiratory Infections of Animals Exposed to Ozone. 1. Susceptibility to *Klebsiella pneumoniae*:—By S. Miller and R. Ehrlich, *The Journal of Infectious Diseases, Vol. 103, No. 2, Sept.—Oct., 1958.*

The primary objective of the studies described in this paper was to determine the effect of exposure to ozone on susceptibility of laboratory animals to respiratory infection caused by inhalation of *Klebsiella pneumoniae* aerosols. The experiments revealed that *exposure* to ozone significantly reduced the resistance of mice to subsequent respiratory infections due to *Klebsiella pneumoniae*. Various ozone exposure conditions studied produced this reduction in resistance, but the extent of the reduction varied. Statistical evalution of the data indicated higher mortality, shorter survival time and a low LD_{50} for animals exposed to ozone as compared with controls. The effect of ozone on the resistance of hamsters to infection caused by *Klebsiella pneumoniae* is similar to the effect observed in mice. Hamsters exposed to ozone showed a higher mortality and a reduced survival time as compared with control animals. The difference in mortality is statistically significant at the 1% level for ozone exposures to 1 and 4 ppm for 3 hours, and 1 ppm for 100 hours.

A. Mukerji.

News and Views

The Eternal Pilgrim:—A double the life-size statue of Mahatma Gandhi in bronze, was unveiled by Prime Minister Nehru on the Tamil New Year day (14-4-59) in the Marina, the world famous sea-shore of Madras, just opposite to the Office of the Inspector-General of Police. This is bound to prove one of the rare 'sights' of this City of Gardens. It depicts "the determined march of Gandhiji to achieve the freedom of the country". Speaking on the occasion Mr. Nehru said "When I think of him, the eternal striver after truth, many pictures come to my mind, many of his writings, many of his sayings; but the picture that comes most often to my mind is Gandhiji with his staff".

* * *

Praising the artist-sculptor, Dr. Roy Choudhury, he said "He has brought into this work of his, some of the glimpses of what Gandhiji was - that eternal pilgrim marching forward with his staff, ever walking, ever going forward in his loin cloth, representing the millions of India, working for the millions, steeped in the morass of poverty, striving to lift them out of their poverty". He was not only a pilgrim of India but he was a great pilgrim of the humanity at large, showing them the correct path of righteousness, justice and fair-play. Gandhiji belongs to the world and not to India alone.

* * *

Madras beach has been beautified by two powerful statues and they are 'The Triumph of Labour' and 'The Eternal Pilgrim'. They cannot but evoke feelings of human dignity in th on-lookers.

* * *

Religion and Idlers:—Mr. Nehru while at Hardwar recently criticised "idle and useless persons hiding behind the veil of religion". He called them parasites shielding themselves behind religion and finished by saying "I prefer a person who *does* something wrong to one who *sits* idle. The intention behind the wrong deeds, should of course be honest".

* * *

No Alternative:—Again while in Madras Mr. Nehru said there was "no alternative to hard work, if the country is to be redeemed from chronic poverty". Let every man and woman in India, in whatever sphere of work he or she may be working, realise this fact and help the motherland.

* * *

Co-operative Farming and Animal Husbandry:—Dr. Punjabrao Deshmukh, Union Minister for Agriculture said recently "The very large number of cows and bullocks that had to be maintained, competed with the human population for food with the result that neither was adequately fed. The Services Co-operatives of cultivators, if formed

would do ultimate good to the nation in finding a solution to this problem ". Let us hope the pious wish of the Hon'ble Minister would materialise!

* * *

Calf Subsidy Scheme in Madras:—The Government of Madras have sanctioned one lakh of Rupees as subsidy in 1959-60, " to give an incentive to cattle-owners in areas covered by the Key Village Scheme to rear all the calves born, up to maturity and make them available for breeding purposes. A subsidy of Rs. 10/- per calf per month is paid under the scheme." We know something of this scheme in actual working. Unless it is worked honestly and sincerely at every level, the scheme may prove a big camaflouge.

* * *

The Madras Veterinary Council:—The Madras Veterinary Council under the Veterinary Practitioners Act (Madras Act No. XXI of 1957) was inaugurated at a special function held at the Madras Veterinary College on 30-3-59. It was a happy idea on the part of the Director of Animal Husbandry, as the first President of the Council, to have arranged for such a public function. Members of both Legislatures and other invitees were present in large numbers. The President and a few other members of the Madras Medical Council were also present. The attendance of members of the Veterinary profession was quite large.

* * *

Dr. A. L. Mudaliar, the Vice-Chancellor of the Madras University, who was intimately connected with the raising of the standard of Veterinary Education in the State from very early days, inaugurated the Council and the Hon'ble Minister for Home and Agriculture presided over the function. Dr. D. Pattabiraman, the Director of Animal Husbandry welcomed all those present. He traced the efforts of the profession to bring into existence a statutory Veterinary Council to regulate the work and conduct of the members of the Veterinary profession and thus place it on a par with other learned professions. He gracefully acknowledged the great help he has received both from the Hon'ble Minister and the Vice-Chancellor in the matter.

* * *

Dr. T. Vinayaka Mudaliar, President of the Madras Veterinary Association and Editor of the *I.V.J.* in proposing a vote of thanks said the profession has done everything possible to make the future Veterinary Surgeon of the land a honoured member of the society, through his high academic qualification, his thorough efficiency and his devoted service to the cause of science. With this object in view, the early pioneers, the old G.M.V.C's brought into existence a professional Association and a professional Journal and began asking for a four-year-course of studies leading to a degree in Veterinary Science. They

asked in addition for Post-graduate courses of studies with facilities for specialisation. They knew fully well that they as ' Diploma holders' will be wiped out in the bargain, but yet they wanted the profession to prosper; they wanted the future Veterinary Surgeon of the land not to suffer from any inferiority complex but to be assured of a honoured place in society. They asked also for a Veterinary Council from the very beginning and that day's function marked the culmination of their desires.

* * *

He said that " this race of old G. M. V. C's, is a fast vanishing race; it is a dynasty that is fast dying out. They were preparing themselves for this day of '*Hari-Kri*' after having played their part nobly and well, to raise the status of the profession. And now when the bell tolls, they were leaving with a smile on their face, conscious of the fact that they were leaving the profession in better hands and very much better than they found it". He also added that they have made the labourer worthy of a better hire and that it is up to the Government and the Madras Pay Commission to realise this fact and do justice in the impending revision of pay and prospects. The function was hailed as a highly successful one and the new Council could not have had a better start. The entire credit goes to the Director of Animal Husbandry, Dr. D. Pattabiraman and to the Principal of the Madras Veterinary College, Dr. I. D. Mantramurti. The Madras Veterinary Association came forward to meet all the expenses incurred in connection with this function. All honour to them!

Block Development Corner

[*Articles under this section, should be more in the nature of simple 'talks' to rural folks and village level workers, on Animal Husbandry matters and not loaded with scientific terms and theories.*]

COW PEA—A VALUABLE FODDER CROP

By

J. S. Saxena,

Farm Manager, Cattle Breeding Cum Dairy Farm, Kalsi (Dehra Dun).

During the summer months, the livestock owner is confronted with acute shortage of green fodder which is of vital importance for optimum performance of animals. The *Rabi* annuals *viz.*, Berseem and Oats, last upto the end of April or the first week of May under irrigated conditions and thereafter they wither out. Provision of green fodder of high nutritive value, curtails considerably the expenditure on costly

concentrates, which are needed to balance the ration. For a dairyman, it is essential to ensure continued supply of succulent fodder particularly for the milch stock and the sucklings.

Perennial grasses and legumes are excellent for scarcity periods but in view of the limited holdings of the cultivators, it is difficult to allocate some area exclusively for the fodders. The cultivators generally arrange the cropping programme in such a way that cash crops are given primary importance and fodder crops are grown through inter-space cultivation so as to fit in with their economy.

Legumes are of more economic utility to the stock owner from the nutritional stand point as they excel in protein and calcium content, the two major essentials in Cattle feeding.

Cow pea is quite rich in protein and about 10 lbs. of the green forage equal one pound of concentrate mixture of 15% digestible protein content. The protein is also of a superior quality and acts as a corrective for the deficient protein in cereals. Cow pea can be sown at the end of March, at 5–6 seers per acre. It can be either grown singly or in conjunction with maize to provide a balanced feed for livestok. Due to nitrogen fixation in the soil, the soil fertility is renovated and one can expect a luxuriant subsequent crop without any extra addition of manure.

Cow pea is a plant with broad tender leaves and gives many sinuous vines which trail on the ground. It is so prolific in growth that it covers the soil, thereby, minimizing moisture losses due to evaporation and thus resist drought to a considerable extent.

Cow pea was sown in the inter-plantal space of the orchard belonging to the Cattle Breeding *Cum* Dairy Farm, Kalsi in the first week of April 1958. The soil was rocky and of a low nutritive status and hence some farm yard manure was applied before sowing. The first harvest was taken towards the end of May and it yielded 105 maunds of green fodder in the first cutting. Soon after the harvest, the plot was irrigated. The plants began giving new shoots and we could get quite a luxuriant second cutting in the second week of July. The results were quite encouraging and supply of green forage during the summer months could be conveniently managed with limited irrigational facilities. The fodder was also very much relished by the cattle. The Cow pea fodder should be harvested early and not left far too long lest the stems should become too fibrous. After the second harvest, the plot was ploughed and kept fallow to maintain the reserve of nutrients for rabi crop. Instead of leaving the area fallow, the cultivator can put in any of the Kharif crops.

Nutritional studies conducted in the State have revealed that Cow pea can form a maintenance ration for adult cattle without any supplement of concentrates which are getting costlier day by day.

From the foregoing, it would be evident that Cow pea can serve as a valuable crop during summer and two cuttings can be easily taken from it. Feeding of Cow pea will not only keep the animals in perfect health but will obviate extra expenditure on concentrates.

A SHEEP SHOW IN RAJASTHAN

By

Madhukar Bhosrekar, B.V.Sc.,
i/c Key Village Scheme, Masuda.

Sheep in India play an important role in the economy of rural life. In some parts of India, sheep-breeding and the sale of wool are the only means of livelihood to some classes of people. Rajasthan can rightly claim to possess the highest concentration of wool-yielding sheep-its contribution being nearly one-third of the total production of wool in India. Some of the important breeds found in this tract are Chokla, Sonadi, Magra, Jaisalmer, Nali, Malpura and Marwari. Herds varying from fifty to one thousand are maintained by the sheep-breeders. They migrate from place to place in search of fodder and go even as far as Madhya Pradesh and some northern districts of Bombay State. This habit of migration has brought in its train quite a lot of admixture of blood. This is a feature which needs to be carefully guarded against.

The Government of Rajasthan are doing every thing possible to foster this industry by concentrating works of improvement in particular areas. They supply the breeders with superior types of rams of the same breed, give subsidies and grant loans to recognised breeders. Sheep shows are held from time to time, when highly useful articles such as shawls, blankets, improved appliances, etc., are given as prizes to the winners. A number of consolation prizes are also given. One such show was held on 9—1—59 at Masuda, in Ajmer District. The area involved maintains the famous Marwari breed of sheep, which is highly picturesque as could be seen from the description given below.

The " marwari " sheep are a sturdy, long legged and squarely built animals. The colour of the face is black extending down below to the jowl and including both the ears. The body is completely white and forms a triangle over the forehead. No black spot of any kind is to be

found on the body nor on the legs even. It has a prominent 'roman' nose and the ears are short, about 3 inches in length, hanging downwards. The wool is white, coarse, yielding about two pounds per sheep. This breed is quite resistant to adverse environmental factors and can travel long distances.

About 4000 sheep were collected at this show. Great enthusiasm prevailed. Judging commenced at 11 A.M., and continued till 3 P.M. The standard of exhibits was so good that there was a keen competition and judges had a very difficult task. Three prizes under each were given to the following classes :—

1. Rams 2 to 4 teeth
2. Ewes - do -
3. Ram lambs
4. Ewe lambs
5. Champion exhibit
6. The best Flock-owner.

Popular talks on nutrition, proper maintenance of sheep, breed characteristics, points of excellence in each breed, pitfalls to be avoided, improved appliances etc., were all explained. The show was an unprecedented success and the ryots were immensely pleased and felt highly benefitted.

To our Subscribers

We request once again, that arrears, if any, till the end of December 1958 may please be cleared, as otherwise the supply of the journal is likely to be discontinued.

* * * *

Due to difficulty in securing printing paper, we are forced to reduce the number of pages in each issue — This 'cut' will be removed as soon as the position improves. We request our subscribers to bear with us.

Editor, I. V. J.

Association News

The All-India Veterinary Association

THE RESERVE FUND

An event of great importance to the Veterinary profession in India, took place in August 1924. It was the birth of the *Indian Veterinary Journal.* Circumstances were positively hostile and yet the profession took that bold step and the lion-heartedness of the early pioneers cannot be too highly praised. Ever since then, the *I.V.J.* has toiled hard under very adverse circumstances. The *I.V.J.* lives to-day so that the profession could prosper and science advance.

And now the hat is sent round so as to place this journalistic venture on a sounder and firmer basis. The *I.V.J.* is a priceless possession of our profession. It has placed the Indian Veterinary Surgeon, on the map of the scientific world. Just pause and ponder over, how much we owe to the Journal both individually and collectively. Is it too much then to expect the profession to respond to the appeal issued for a Reserve Fund ? We hope not.

Some enquiries have come to us asking us to indicate the extent of help expected. We do not want to put the members of the profession to any undue financial strain in these hard days. At the same time, a certain amount of sacrifice is needed to make this fund a great success, so as to make it worthy of our profession. So we feel that the following scale of contribution will be quite reasonable. It could even be paid in two or three instalments.

Class I Officers	...	**Rs. 100/- and above.**
Class II Officers	...	**Rs. 50/- and above.**
All others	...	**Rs. 25/- and above.**

It is our ambition that no Veterinary Surgeon in this land should remain without contributing to this fund. Brick by brick, this great edifice of our's should begin to rise higher and higher. On the success or otherwise of this venture, the solidarity of our profession depends. "*Pay and Prosper*" is the slogan we pass on to the members of our profession.

Jai Hind !

T. VINAYAKA MUDALIAR,
Editor, The Indian Veterinary Journal.

THE I. V. J. RESERVE FUND

LIST OF CONTRIBUTORS

		Rs. nP.
Amount acknowledged in April 1959 issue	...	3,993·31
Dr. V. Satchidanandam, M.V.C. Madras.	...	30·00
,, C. S. Namjoshi, V. O. Malegaon, Bombay State.	...	15·00
Total	...	4,038·31

Cheques, money orders and all correspondence should be addressed to the Editor, *The Indian Veterinary Journal*, Madras-17.

THE MADRAS VETERINARY ASSOCIATION

From Dr. M. Ranganathan, B.V.Sc., Treasurer, Madras Veterinary Association. To The Principal, Madras Veterinary College, Madras-7.

Sir,

Sub: Funds-Panikkar Memorial Fund and Kailasamier Memorial Fund-Amounts transferred to Principal, Madras Veterinary College.

The Madras Veterinary Association has resolved to transfer the amounts available with it, under the above two funds, to the Principal, Madras Veterinary College for purposes mentioned against each.

Accordingly, I am herewith enclosing two crossed cheques for Rs. 669/- and Rs. 163/- being the amounts available under Sri M. R. V. Panikkar Memorial Fund and Sri K. Kailasamier Memorial Fund for utilisation as indicated below.

(1) The Panikkar Memorial Fund: (Rs. 669/ Rupees Six Hundred and Sixty-nine only) to be added on to the corpus of the Fund already available with the Principal. Madras Veterinary College.

(2) The Kailasamier Memorial Fund: (Rs. 168/- Rupees One Hundred and Sixty-eight only) for giving a prize to the best student working in the wards of the College Hospital every year.

I, therefore, request you to accept these two cheques and carry out the wishes of the Madras Veterinary Association.

The cheques may please be acknowledged.

Yours faithfully,
(Sd.) M. Ranganathan,
Treasurer,
Madras Veterinary Association.

The above letter is released for the information of members.

T. Vinayaka Mudaliar,
President.

Obituary

M. K. Garudachar, G.B.V.C., P.G. (Edin.)

PASSES AWAY.

We deeply regret to record the sad demise of Sri M. K. Garudachar on 27—3—59 at the residence of his son at Mandya in Mysore State.

After passing his old F. A. examination, he joined the Bombay Veterinary College as a Mysore State scholar and took his Diploma. He began his service in the then Civil Veterinary Department, Bombay in 1911 and served in various capacities in several places. His main place of stay was Sirsi in North Kanara District, where he served for twelve years. He donated the operation theatre at the Veterinary Hospital, Sirsi, in memory of his father. He instituted a gold medal in the name of his wife, to be given every year for the best student in Hygiene at the Bombay Veterinary College.

In 1929, he went to Edinburgh for a Post-graduate course of studies in Hygiene and Bacteriology. On return he was taken as a Lecturer in Bombay Veterinary College, where he served for eight years. Later he worked as a Disease Investigation Officer and finally retired as Divisional Veterinary Officer, Southern Division, Bombay.

He was a scholar of some merit in Sanskrit and had made a deep study of Valmiki Ramayana. He delivered a course of lectures on Ramayana at the *Asthika Samaj*, Bombay. He was a great admirer of the ancient Ayurvedic literature and even sent a special report to the Government of India to adopt the Ayurvedic system in Veterinary practice in India.

He was one of those early pioneers who worked hard to found and stabilise the All-India Veterinary Association. He was a pillar of strength in Bombay State in those difficult days. He was a humorous speaker and had only to get up on the platform to evoke mirth and laughter. A cheerful personality who was as deeply religious as he was earnest, he was highly popular both with the public and his colleagues. He was 79 years of age at the time of his death and to the last day he was receiving the *I. V. J.* and reading it. We had occasion to make a pilgrimage (so to say) to meet this old friend at Mandya about two years ago. He was as keen on all our Association matters, as he was about 30 years ago.

We mourn the loss of this good friend and offer our heartfeft condolences to the members of his family.