

his wife, and at least six children over the age of eight years, will be provided with a cottage and milking sheds, and put in charge of 80 cows and land sufficient for the pasturing of the animals. All the family are supposed to take part in milking the cows, the children doing their share before going to school in the morning, and when they return in the evening. The man takes the milk to the company's creamery in the cart lent him for the purpose, and is paid for the milking at the rate of one penny per gallon, a remuneration which may bring in over £200 per annum. In the case of a farmer who has seen better days, and does not want to become a "hand," he can have a lease of both land and cattle, and either receive the market value of the milk or have it credited to him in the books of the concern until, in course of time, the amount is equal to the value of the cows, which then become his property, having been paid for by their own milk. Last year the company dealt with 2,300,000 gallons of milk, from which 950,000 lbs. of butter were made."—*Melbourne Leader*.

## DISEASES OF ANIMALS.

### Heart Water.

On page 61 of the current volume of this Journal there is a short report of investigation and treatment of this disease by Veterinary Surgeon J. F. Soga and a promise of a fuller account later on. In the Annual report of the Colonial Veterinary Surgeon and Assistant Veterinary Surgeons we have the following notes.

Mr. Soga writes:—

"I left for the Komgha coast, to investigate the disease, heartwater in sheep. As it is a difficult matter on the coast to get accommodation I accepted the valuable offer of Messrs. Colin and Gerald Featherstone to stay at their camp, to whom during the time I was stationed there I cannot express too much thanks for services rendered. I considered that we could not have had a more favourable opportunity, as I was in close proximity to 10,000 sheep, of which the Messrs. Featherstone had 3,000. It had been reported that sheep were dying on the Government Kei Mouth Reserve, consequently I lost no time in proceeding, arriving at Sand Flats farm on Thursday, the 13th June."

Mr. Soga remained for some time in the neighbourhood of Kei Mouth engaged in investigation of the nature of the disease, dosing the sheep and taking such other measures likely to be useful, and we learn that on 29th June—

"I made six *post-mortem* examinations. Visited Sand Flats, *dry flocks*, placed 42 *yearling rams* for experimental purposes into ram camp which had been so virulent, took temperatures, being rambling, indeed variable. These animals were specially sent down from Stutterheim, so that there would be no fear of contracting heartwater, great care was taken on their passage down, the feeding ground was also carefully selected. The temperature was taken daily between the hours of six and seven a.m. So variable was it that I feel satisfied temperatures in health as a guide are next to useless. One morning the rise would be 106° Fah., another following 101° Fah., or perhaps 102° Fah. However there is this to be said that when an animal was really ill, temperature remained high even up to 108. None of these 42 sheep took heartwater up to the termination of our experiment, they being duly returned to their owner on the 31st July. On further enquiry I ascertained that up to the date of their leaving, the middle of August, they remained immune.

Systematic dosing of lime and salt was kept up every eighth day, and a change of pasture where practicable was given.

"It was noticeable that sheep which were pastured on old grass and reaped fields invariably took the malady first, those *essentially on brandts* not taking it so readily; and a fact also worthy to relate was that the majority of farms where young grass was wanting heartwater prevailed. What the cause of the malady is it is difficult to imagine, unless it be due to one of the fungi. Underneath the rather long patches of grass (ordinary pasture grass) in the morning a wet circle here and there was noticed; this I felt was the infecting medium. Not having any means of making infusions I left the matter until further investigation could take place, of which there will be more; after slight moist rains the malady would make its appearance with renewed vigour. The atmospheric conditions most noticeable were moist, damp nights, somewhat similar to those conditions seen when horse-sickness is prevalent. The *post-mortem* appearances are similar if not identical with Cape horse-sickness. I injected thoracic fluid 80 minims. into 12 of the experimental sheep subcutaneously with no result, 60 minims. were injected into the thoracic cavity with no result, also with 12; 30 minims. into 12 directly into the trachea also with no results; six I reserved. A juice of the liver and stomach was also given to two others, but also with no result. Unfortunately I neglected to inject blood subcutaneously. The *ante-mortem* appearances briefly were—segregation from the flock, head stretched out, ears dropped, elbows flexed, hurried respiration, and occasionally a quiet, almost imperceptible, cough. As the case becomes worse the animal lies down with head extended on the ground; on an attempt being made to raise the animal it proves fruitless; death usually supervenes. The majority of deaths take place within a few hours after being noticed; those that lingered were amenable to treatment, or in other words had a better chance of pulling through. Many sheep take the affection in a very mild form, noticeable also in goats. Within a very short space of time one would imagine that every animal was affected.

"On making a *post-mortem* upon a full grown animal when the sternum (breast bone) is removed, it is astonishing to see the enormous quantity of fluid in the chest cavities; in many cases I took 30 fluid ounces. In no case of sudden death did I find adhesion of the pleural surfaces, only finding flocculent masses of lymph, which accounts for the adhesions always found in old standing cases. Most peculiar, again, the adherent portions, also the most apparent seat of lesion, was the left anterior lobe; the amount of interlobular effusion was enormous.

"The liver had a distinctly congested appearance; kidneys appeared slightly congested; heart flabby, sometimes having petechiæ; slight pericardial effusion in 16 cases, I took 11 drachms from each. So that as far as the disease is called heartwater I think it is a misnomer.

"The appearance of the carcass after skinning is markedly stained red, the blood having a peculiar red colour, staining paper, differing from normal blood. In general the healthiest animals of a flock become affected; rams of a plethoric condition die rapidly. As an instance, out of 196 rams 108 were left. With goats, fat kapaters and good-conditioned ewes die most rapidly. Those animals which had a slight attack generally shed the wool in a few weeks' time, the shedding in many cases being partial.

"The carcasses were eaten with impunity by the natives, no bad results supervening.

"By instructions I again left East London for Witmoss, Mr. Horatio Collet's farm, there to investigate a disease fatal in the extreme. After thorough investigation I came to the conclusion we had heartwater to deal with, similar in all respects to that of the sheep. Yet in this case the virulence seemed more severe, hence my wire relative to its apparent contagiousness, more really for the owner's satisfaction.

"The apparent cause of this virulence to my mind was that wherever the animals got the contagion, these goats having herded generally in a clump, it would necessarily throw them into the thick of it (if I may so express it), whereas with sheep in the Eastern Coast Districts they are not so usually herded, but are allowed to run free and scattered, hence the prevalence of cases among goats.

"The treatment adopted at once was lime and salt, a proportion of one to three, one to four, and one to five, as a preventive repeated every eight days, with the result that after the second dosing there was a complete abatement of the disease.

"To those that were affected I gave a mixture of turpentine one drachm, pure olive oil one ounce, thoroughly shaken together, and given carefully. Each herd was provided, and on detecting a sick animal on the veld a dose was immediately given. By this 'field treatment' many cases recovered which otherwise would, I think, have ended fatally, as at least eight hours were gained by this early dosing in the veld. No food was given, indeed were the animal inclined to eat it was placed in a kraal. Two doses morning and evening for two or three days were given. On the latter day a change was noticeable, the temperature generally falling; when rumination was noticed our case was generally safe. In goat heartwater as in sheep, the carcass was eaten with impunity by servants and relished, the offal by dogs without any deleterious result.

"It seems to me that we shall have to supply a natural want in our stock animals, of which our pastures are deficient—I mean lime and phosphates. It stands to reason that weak constitutioned animals, or I rather might say 'well bred,' cannot now feed on pastures denuded of Nature's remedies. Tons upon tons of valuable manure have been stored on homesteads, being practically useless, and a source of possible infection to young stock, having come from hitherto valuable pastures. This course of supplying Nature will really be in the future the simplest method of preventive treatment, until such time that the pasturage has regained itself, which can only be done by such a process or a free distribution of animal matter by labour."

### Rinderpest.

The Colonial Veterinary Surgeon, Mr. Duncan Hutcheon, describes the present position as follows:—"The proclaimed boundaries are the Bechuanaland Protectorate and Transvaal borders. The Transvaal border is guarded throughout its whole extent, and as far as possible a clear space of about a mile is kept free of stock on the colonial side of the border. Where this is impracticable on account of the situation of the farms or the places where the stock come to drink, special care is exercised in guarding such positions. With respect to the Protectorate boundary it is at present guarded from the Transvaal border along the Ramathlabama Spruit to its junction with the Molopo River, where it stops, there being no guards now along the Molopo River from that point to a point about six miles east of Mabuli, from the latter point a very strict guard is maintained both by police and native guards all along the river boundary as far as Captain Styles' being practically as far as there are any cattle watering at the Molopo River.

"With respect to the belt of country extending from the junction of the Molopo with the Ramathlabama Spruit to Mabuli, a distance of over forty miles, and which has been practically abandoned, the disease having been allowed to run its course; it is hemmed in and guarded by a free belt which separates it from the rest of the colony. The eastern belt extends from the junction of the Ramathlabama Spruit and the Molopo River due south to a point called Moudasia

Petsia on one map, from that point the free belt extends due west through an open dry bult to Mr. Daly's farm 'Harriet's Berg,' thence along west to about five miles beyond Mabuli where another clear belt is formed preventing the native cattle from coming near the cattle belonging to Messrs. Combrinck & Co., which graze on Daly's pan and farms to the west. From the southern point of this west cross belt the free belt extends west to the borders of the Mafeking and Vryburg districts behind the farms Nimrod's Vlei, Senegal, Redmond's Hoek and Blackheath. You will see therefore that the infected area of country is surrounded east, south and west by a clear belt separating it from the colony. There is no necessity or advantage in preventing free intercourse between that infected area and the Protectorate, as the cattle are affected on both sides of the river.

"Returning to Moudasia Petsia, a free belt extends in a south-easterly direction through the farms Leighland, Dover, Uplands, Tilney, Buccleugh to Kgaba, south of all the natives' cattle. At Kgaba the belt turns north-east between Kgaba and Kliprani, a space being cut off from each, crosses the Madibi Spruit about three miles, and then extends in an easterly direction, maintaining about three miles north-east of the Transvaal border. I met Matuba, Chief, at Rietfontein, and he agreed to move his people, or rather their cattle kraals, that distance back from the spruit. Montsion's people have also agreed to be all moved back this week. Our clear belt will then be complete and fully equipped all the way from the Transvaal border to the border of the Vryburg district south of Captain Styles.

"With respect to the area surrounding Mafeking, you will observe that it is still guarded although it is north-east of the Molopo River. The disease first appeared within that area at Sunnyside, but was promptly stamped out. It more recently appeared amongst a native's cattle about six miles south-east of Jan Massibi between the main road to Mafeking and the river and has been arrested. It subsequently appeared amongst a block of natives' cattle situated a little above the main road from Mafeking and midway between the latter and Jan Massiba's (introduced by inoculators). The disease has been arrested there also, and at the present moment there is no disease known of in this area around Mafeking. The outbreak which occurred at Clober farm on the 25th ultimo was due to certain cattle which strayed away from the Molopo belt before the police camps were established behind that area, they were discovered on the upper border of the farm Clober, and immediately shot, but before they were discovered one lot of cattle belonging to a native had evidently come into contact with them, because this native's bull became affected. I visited the place immediately, and after obtaining all the information in possession of the police I had this lot of cattle shot, and also another lot of cattle which had been observed to be grazing over the ground where these sick cattle were discovered. As a large number of cattle on this portion of Clober drank at the same pit I considered it necessary to place the whole lot under strict quarantine and close observation morning and night. The several herds were to graze separately and come to the pits at separate times so as not to mix. I left instructions with Mr. Soga, who was left in charge, and if the disease appeared in any of these herds that such herds were to be destroyed immediately. One herd was so destroyed on the 5th instant; the full report has not yet come to hand.

"No re-appearance of disease has occurred at Masita or at Homan's farm, and although it is quite possible that some more cattle may require to be shot at Setlagoli before the disease is entirely arrested, I do not anticipate any difficulty in stopping its spread from that centre.

"It is the water question which makes it so difficult to arrest the spread of the disease by the slaughter of one herd of cattle, so many different herds always drinking at one place and all more or less liable to contract the infection when it