

external swellings or eruptions on the body, it is the blood which is principally affected, and there is congestion of various internal organs, especially the spleen. The onset of the disease is sudden, and its progress rapid. The animal becomes excited, with quivering of the muscles, the breathing is quickened and distressed, and there is generally a little bloody coloured mucous discharge from the nostrils. The animal suddenly becomes weak, staggers, falls and dies generally in convulsions, often within an hour from the time when it was first observed to be amiss. Very often the first evidence of the presence of the disease is the sudden death of one or two animals before they were known to be sick—this form is called splenic apoplexy or miltziekte proper.

The other form of anthrax is characterised by external swellings or eruptions on different parts of the body, but most frequently on the lower parts of the chest, abdomen, sheath, and around the anus. Some of these swellings are small and almost unnoticeable, while in others they cover the whole of the under surface of the chest and abdomen, in some cases the head is enormously enlarged, the swellings are somewhat hard to the touch, and when opened emit a clear amber-coloured fluid. The submaxillary, and large lymphatic glands are generally slightly swollen. The pulse is quick and weak, but the heart's heat is struggling, and the temperature high from 105° to 107° Fah. This variety of anthrax is most frequently seen in the horse in this colony, the great majority of the cases, which occurred in the Griqualand West districts during Mr. Borthwick's visit took this form—called malignant pustule, the result of cutaneous inoculation. It is called gift-ziekte by the farmers, and is often seen in cattle also in that territory.

Post-mortem Appearances.

In splenic apoplexy or true miltziekte, decomposition sets in early, the body swells and beads of a brownish-coloured serum will often be seen exuding from the skin, more or less of a bloody-coloured mucus generally flows from the mouth, nostrils and anus; the mucous lining of the latter is generally protruding a little, and is of a dark purple colour. The same discolouration may be seen on the mucous lining of the mouth and nostrils. If the carcass is skinned, the superficial blood vessels will be engorged with black tarry-looking blood which does not coagulate or form caste of the blood vessels. There may also be a little amber-coloured effusion in some parts of the areolar tissue under the skin. But the most characteristic *post-mortem* appearance is the condition of the spleen or melt. This organ is enlarged to three or four times its natural size, is of a dark blue colour externally, thick and soft to the touch, and when opened its contents are simply a mass of black pulpy-looking blood. The blood vessels of the whole of the internal organs are congested, and there are dark spots, ecchy-mosis—on all the serous membranes. In that form characterised by cutaneous eruptions the principal *post-mortem* appearance is the quantity of a dark amber-coloured fluid effused into the areolar tissue under the skin at the site of the swellings. Flugge says:—

"That in this form of the disease bacilli are not usually given off from the affected body, and after death the carcass may become a prey to putrefactive bacteria without the passage of virulent anthrax bacilli into the surroundings.

"In such cases, for example, in animals artificially inoculated with anthrax, it is evident that healthy animals do not easily become affected, even when they live in close contact with the diseased ones. On the other hand in intestinal anthrax quantities of dejecta containing anthrax spores, are poured out on the meadows from which healthy animals obtain their food, and thus it is easy to understand how the disease spreads, by the spores which are preserved in the grass."⁷

Treatment.

Internal anthrax, or splenic apoplexy, runs its fatal course so rapidly in the lower animals that there is very little time or

opportunity for curative treatment. Almost the best thing to do with such cases, as soon as they are recognised, is to get them removed from the rest of the herd to the burial ground, so as to prevent the further dissemination of the germs of the disease in the byre or pasture. In cases that linger for some time, experience points to repeated doses of carbolic acid as about the most hopeful remedy to try.

For the external form, or malignant pustule, Mr. Borthwick obtained very good results from the following treatment:— He administered a laxative such as a pint of raw linseed oil— followed by carbolic acid 40 to 60 drops combined with chlorate of potash—a tablespoonful dissolved in a quart bottle of water. He repeated this dose twice a day. Unless the swellings were very large, he did not open them, but hypodermically injected around their borders, one to two drachms of pure carbolic acid. Out of 25 cases so treated 20 recovered,

Preventive Remedies

Consist in isolating all the sick at once, and removing the unaffected away from the tainted pasture or water, if it is known. As a means of checking the development of the disease in those which may have already become inoculated, drachm doses of carbolic acid may be given, well diluted in water, twice a day.

It is a matter for serious consideration whether preventive vaccination should not be resorted to by owners of stock, who are situated in localities where this disease causes considerable loss annually.

Two vaccines are used, a mild and a stronger one—the latter twelve days after the first, and the operation requires to be repeated annually, but the trouble and expense would be fully compensated for, if the operation gave immunity from the disease.

D. HUTCHEON,
Colonial Veterinary Surgeon.

Stamping out Rinderpest.

In all countries where rinderpest has raged in the past the only effective plan for staying its ravages and getting rid of it has been killing all diseased cattle and all others which were at all likely to have become infected.

We have, therefore, obtained from Veterinary Surgeon Soga the following reports of some cases where the method has been adopted in South Africa, with some other interesting particulars:—

"*Case No. 1.*— On the 15th of April a Mr. Cowan, manager for a syndicate owning extensive properties near Mafeking, re-ported to me that a native tenant was desirous of our services relative to a disease which had appeared amongst his cattle. Several had already died. Dr. Hutcheon and myself found rinderpest among 119 head in all, with five diseased. These cattle were shot and at once buried, and all people, Europeans and natives, were disinfected before returning to Mafeking. In a few days the disease again made its appearance in the adjoining kraal, where a dun ox was found suffering; this was killed likewise with the rest of the herd, and buried. A cordon of police was placed round the spot, and natives could go into town after due disinfection. Yet rinderpest did not attack the adjoining eight (8) kraals. These remained free until the disease became general, months after. This outbreak was traceable to cattle coming from the Transvaal into a native location termed Kalifeni. This is to my mind distinct proof that by prompt destruction and burial of the cattle, diseased and healthy, rinderpest cannot spread.

"*Case No. 2.*—Mosita Native Reserve. Acasowas discovered by the police at the side of the road, 300 yards from the Police Camp, and undoubtedly this and other animals had

come from the Molapo River. Four hundred odd head of cattle were destroyed, and yet, again, no further outbreak in the adjoining herds.

Case No. 3.—Disease was reported on Mr. Homan's farm, south 25 miles from the Molapo River. In tracing it out this must have been brought by Mr. Homan himself from the junction of the Molapo and Setlagoli Rivers, or by a wagon and oxen from the Setlagoli. However this may be, I destroyed the whole, had the diseased buried, the non-infected, for want of labour, were shot in a kraal of 20 yards in diameter, and securely fenced in. Still again from here no spread. It was imputed by those who did not know the circumstances that rinderpest was spread by the non-burial of Mr. Homan's non-infected cattle to another outbreak and adjoining farm Witgatboom.

Case No. 4.—The true origin of the Witgatboom outbreak was due to a native, George Mfosi, who received a pass from the Mabula Police to visit a native on this farm. He off-saddled at Mr. Byteveldt's homestead on the 13th June. Within 14 days a valuable cow took ill. These cattle were also destroyed; yet again no further cases.

Case No. 5.—Whilst stationed at Logaging one of the Dutch specials reported on the 23rd May that a cow and calf had been found dead. I proceeded at once and found rinderpest. These cattle had crossed the line, and had re-turned to their old feeding-ground, being owned by one Tolimfana. On our arrival eight others were found affected, with two dead, which were promptly destroyed and buried. Four hundred of Morok's cattle had mixed with these, or at least had gone over the infected ground and drunk at the same water; but the cattle did not get the disease until the general outbreak, which I shall explain. Mr. John White's cattle, which were in close proximity to these, remained perfectly free. I examined these carefully daily, but no development.

These five cases occurred behind the line organised by Dr. Hutcheon and formed by the Police. This was in the month of May. The great influx of disease occurred months after, not from the northern line but from the east. And could it be expected that other would be the case? The Chief Moshet, in the Setlagoli Native Reserve, abandoned the Transvaal owing to his fear of being commandeered during the Jameson Raid, and came into the Reserve with all his people. Disease being rife in the cattle that he had left in the Trans-vaal, many of his servants distinctly drove cattle, and naturally for food carried rinderpest biltong. (I may state that biltong is greatly made in these parts, the cold winter being favourable to its keeping. This biltong for easy carrying is pounded, or ground, and carried thus in small compass.) This was our great danger. The disease then broke out at Phorsstad. Many cattle were ill when Dr. Hutcheon visited the place, and within a fortnight so infected was the Setlagoli Native Reserve that it was quite apparent to any sane man that the best plan was to abandon. The natives absolutely refused to have their cattle shot, and would in no way render assistance; instead they threatened to shoot Dr. Hutcheon and myself. This was four months after the outbreak behind the Molapo line of defence. Another case, perhaps, which will be of interest to show how the line was guarded, and to let people see that the disease is only carried by families. On the 4th of May I preceeded, with Dr. Daly, to visit a native's kraal just on the border, but yet in the Native Reserve. Here I found a most horrible state of affairs; 80 cattle were lying dead in the kraal and over 130 sick outside, and very few were well. A cordon of Police was immediately placed around the pasture (infected). I placed the Police under Trooper O'Connor myself upon Dr. Hutcheon's instructions; and although only two miles separated Harriet's ferry and Ron Koquarries (the native mentioned), with due precaution, no disease spread to the Basuto natives' cattle at Sofafing."

Should the disease unfortunately break out south of the Orange River, and in defiance of the protective cordon, there is no reason for fright or despair. For experience has taught us that the first invasion of the plague is not like a wave or a flood through the bursting of a dam, but by single cases, through some perhaps unknown cause of infection, and possibly miles away from the barrier.

If this case or outbreak is promptly reported, and properly dealt with, there will be no centre of infection established, and there the evil will stop, and in the same way all other succeeding cases could be stamped out.

At the time rinderpest raged in England it invaded Ireland three times, and each time it was immediately stamped out. This happened, too, in several of the English counties.

When rinderpest was again introduced from the Continent into England in 1872 and 1877, it was soon disposed of with the loss of a few score head of cattle on each occasion, and before it could spread farther than the few cases where it was first discovered. The like success has attended the adoption of this stamping-out plan in Belgium, France, and other continental countries. In fact, no other method has ever yet been found effective. When the rinderpest, or cattle plague, invaded England in 1744, it devastated the country for ten years. Those were the days of *certain* remedies and sure cure men.

As what may be done even in extreme cases the stamping-out of rinderpest in England is monumental evidence of success, and, as described on page 496, the disease had spread to nearly ten thousand farms and cow-sheds, and yet in a few months after the Proclamation on May 9th, 1866, making imperative the destruction of all diseased and infected cattle, the disease rapidly died out, and in six months it was confined to a few occasional cases, and then disappeared altogether.

Of course, it will be a grand thing if a cure or preventive is discovered, but till this is done our wisdom is to accept the teaching and experiences of all other times and countries. We cannot afford to have the disease played with, and risk the spread of infection by making all kinds of experiments all over the country, but adopt the only plan that has hitherto been effective, and on the prompt carrying out of which depends our escape from the terrible calamity of the devastation of the entire colony.

IRRIGATION.

Results of Boring for Water with Government Drills.

Continued from page 624.

Middelburg,

Application No. 1.—Water was found in one hole from which it flowed at the rate of 17,000 gallons per diem. The applicant reports: "I am quite satisfied with the result and manner in which the work was carried out."

Application No. 2.—Water was struck in one hole from which, according to the foreman, 12,000 gallons flowed per diem. The applicant reports: "Although thoroughly satisfied with the manner in which the work was carried out, the water is of very little use to me, as it did not rise to the surface. However, I am convinced that there is any quantity of water on the farm judging from the lay of the country, but only I have not hit on the right spot, therefore I shall be greatly obliged if a competent man could be sent to inspect the place, both for coal and water."

Application No. 3.—Water was found in one hole from which the foreman reports a flow of 75,000 gallons per diem.