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TSETSE FLY.

(a) Research. Mr. Chorley continued his study of the parasites of Glossina at Salisbury, paying particular attention to the habits and bionomics of Syntomosphyrum glossinae. It was found that this species is both a primary and secondary parasite of Glossina, as it will also attack the parasite Mutilla glossinae in the body of the tsetse fly pupa. This fact considerably diminishes its value as an enemy of the fly because Mutilla glossinae is in nature considerably more important as a check than Syntomosphyrum itself, although the latter is more readily bred in large numbers in confinement.

Bombyliid parasites emerged in February from Tsetse Fly puparia collected on the Umniati river in October and November.

Parasites have also been bred from other Muscid flies and observations made on their habits.

(b) Operations against Game. Operations have continued in a defined portion of the Darwin District under the direction of the Native Commissioner. This is the second year of such operations and the Native Commissioner reports that last season only one kraal suffered an outbreak of fly disease amongst cattle. The previous year a considerable number of kraals were affected. The operations were concluded for the season in November.

Regular reports have been received in connection with these operations and the trooper in charge states that no tsetse fly were observed anywhere during the last few months. Tsetse Fly has, however, always been very scarce in this area and too much weight should not, therefore, be attached to this statement. The health/ ~~####~~ of cattle is the most delicate indicator of the presence or otherwise of 'fly'. It has not been possible for any member of the Entomological Branch to inspect this area during the year.

In the Lomagundi district the block of farms close to the Hunyani river, previously affected with an epizootic of Trypanosomiasis amongst cattle, suffered again this year. The infection also extended to several farms further south, including Allan Grange and Mcheringi. A great game drive northwards between the Angwa river and the Mvukwe Hills was advocated by the Native Commissioner, Sinoia, and approved. The project fell through owing to failure to obtain the natives in sufficient quantity. The drive was to have been followed by operations against game over the same extended area and these were carried out under the direction of the Native Commissioner, Sinoia, assisted by the Assistant Native Commissioner, Sipolilo. Unfortunately the area immediately on the west side of the Hunyani opposite the affected block of farms and north of the farms Mcheringi, also affected, was apparently left until the last and the operations in this area were consequently of short duration.

Messrs. Symes and Chorley proceeded to Lomagundi on the 21st July to study the distribution and density of tsetse fly in reference to the proposed game drive. Mr. Symes returned on August 15th on account of his acceptance of the proferred post of Medical Entomologist in Kenya Colony. Mr. Chorley continued his investigations until October 8th. Tsetse Fly was located on the Hunyani river considerably further south than last year and one was also taken on Mcheringi farm. A useful series of notes on distribution and density were recorded for future reference.

disease amongst cattle were recorded from the formerly affected section of the Gwasi river opposite the area of the Game Elimination Experiment. This region, which contains a considerable number of cattle, has apparently been free from infection since 1921.

The cordon of free shooting blocks was maintained round the southern limit of the Sebungwe Fly Area during the year, but the number of these blocks taken up was only four out of a total of thirteen available. The blocks taken up were numbers 6, 12, 14 and 15. Reports from the Bubi and Sebungwe districts do not indicate any advance of tsetse fly in these areas since 1922, when the cordon was first instituted. The Entomological Branch has not had any opportunity of examining the areas. The greatest amount of shooting under this system took place up the Shangani and Shangokwe rivers. Hunters in this region were very active in 1922 and 1923, but apparently less hunting has been carried out during the year under review.

(c) Transmission of Trypanosomiasis amongst Cattle in the Absence of Tsetse Fly.

The two experiments in the above connection mentioned in my report for last year were duly carried out, but the one undertaken by Mr. J.O.A. Fraser-Mackenzie in the Lomagundi district proved abortive, the animals exposed to Tsetse Fly infection failing to contract the disease.

In the Gatooma area the two exposed cattle both contracted the disease and one of the four animals bered in contact with them also became infected. Certain technical criticisms of this experiment have been put forward but the experiment in any case was not intended to yield results of more than a preliminary character.

Arrangements have been made with the Veterinary Department for three similar experiments in three different districts, namely Lomagundi, Hartley and Wankie, during the present wet season. The Chief Veterinary Surgeon informs me that experiments in the two first mentioned districts were under way at the end of the year. Certain difficulties and delays occurred in respect to that in the Wankie district and at the end of the year the exposure of two cattle to natural infection in the Fly area had not been carried out. In view of the flooded state of the rivers it is unlikely that this will be possible during the present season, but it may be possible to inoculate one or two of the animals with virus.

(c) General. An outbreak of Trypanosomiasis involving the loss of thirty pigs belonging to Mr. C. Waddell of Glenburn, Mazoe, engaged Mr. Chorley's attention for a week in January but no definite conclusion could be drawn. The blood sucking Stable Fly (Stomoxys Calcitrans) is suspected of being concerned in transmission but how the original infection reached this farm, far removed from any known fly belt, is a mystery.

Cattle near the Eastern border of the Melsetter district again suffered from Fly disease during the year. This area has been more or less subject to such outbreaks since 1914.

From various sources of information it appears that the fly in the Sebungwe district north of Gokwe have extended considerably of recent years and that the Sebungwe belt, the Umniati belt and the Northern belt, the latter lying in the Zambezi Valley in the Lomagundi and Darwin districts, are now approximately confluent. Mr. Bull, late of the Native Commissioner's officer, Gokwe, reports verbally that the Umniati Fly Area has extended northwards as far as the Mafutshi river and the Escarpment on the west side of the Sanyati River and that the few cattle formerly owned by the natives in that region have died. The approximate junction of this area with the big Sebungwe area to the west occurs in the region of Piganyinyemba on the Sumi River. The Native Commissioner, Sinois

south-west corner of the Lomagundi district, having crossed the Sanyati and Umfuli rivers. In this connection it may be stated that although the Hartley district north of the Railway line and the Umsweswe river has been open to free shooting since 1905 (closed for one season - 1908) little has taken place there during recent years and from all accounts the game has increased considerably. The decrease in hunting as pointed out in my last annual report has been associated with the low price obtainable for hides and biltong for some years past.

Events in the open area of the Hartley district need to be borne in mind in reference to suggestions as to throwing defined areas open to free shooting as a means of getting rid of tsetse fly.