

## ANNUAL REPORT OF THE CHIEF ENTOMOLOGIST, 1927.

TSETSE FLY.1. Operations in the Lomagundi District.

The experimental operations inaugurated in 1925 have been prosecuted vigorously throughout the past year. The game fences have been maintained in good order, and elimination of game between the fences has proceeded unceasingly. The number of animals it has been necessary to destroy in the fenced area during the year has, however, amounted to a much smaller total than the number destroyed in the previous twelve months. The total reduction is to rather over one half, but in 1926 the larger antelope etc. formed nearly two thirds of the total whereas in the present year they form less than one half. The reduction in the number of warthog and bushpig is, however, slight. This reduction indicates the beneficial effects of the fences. Although a number of breakages have occurred it is clear that the fences interfere effectively with ordinary game movements and game paths along them in many parts show clearly enough that the wild game respects barbed wire in a considerable degree.

Close inspection carried out by three European inspectors during the year indicates favourable developments in regard to the distribution of tsetse fly. No tsetse at all has been met with south of the fenced zone although special attention has been paid to localities where the insect was found last year. No tsetse have been found on the formerly affected block of farms on the east side of the Hunyani river. Within the fenced zone the insect appears to have retreated appreciably and except close to and north of the northern fence no "fly" has been met with within about eight miles of the Hunyani river.

With the exception of the northernmost farm, Chiwe, all the formerly affected farms east of the Hunyani river have been free from Trypanosomiasis throughout the year. Between the Hunyani and Agwa rivers losses occurred, especially during the first part of the year, on four farms but it is doubtful in what degree these deaths are accounted for by infection previously contracted. The experience of the present wet season in reference to the health of the cattle in these localities is awaited before definite conclusions as to the effect of the operations are drawn.

In September hunting operations were extended to an area north of the fenced zone bounded by the Hunyani and Mvume rivers and the northern game fence.

In the Sipolilo sub-district, where driving back of the game has been continued under the direction of the Asst. Native Commissioner, the losses amongst native owned cattle are reported to have diminished considerably, viz. twenty-nine cases in 1927 as against one hundred and forty-one in 1926. It has not, however, been possible to follow the effect of these operations as closely as immediately around the fenced zone.

2. Operations, Gatooma Sub-district.

The game fence along the boundary of the occupied country as far north as the northern beacon of the Rhodesian Flystations was completed on April 30th. Since that date it has been extended northward to the Umfuli river and some twenty miles of a second fence ten miles to the west have been erected. The work has been greatly hampered by the necessity of cutting motor roads, the roughness of the country, lack of water and paucity of labourers.

The fences in this area consist of eight strands of wire with posts every ten feet and constitute more formidable obstacles to game than the Lomagundi fences.

Operations against game were commenced in September with twenty-two native hunters under the direction of an European ranger, the idea being that by disturbing the area before the western fence was erected the amount of game enclosed might be reduced to a minimum.

Notes on the prevalence of tsetse fly in the demarcated zone have been collected by a special inspector with a view to supplying data to give some idea of progress later. There are considerable numbers of tsetse fly in some parts of this area.

The health of the cattle in the neighbourhood gives little indication of the relative position compared with last year, as the areas chiefly affected have been largely depleted of cattle and mechanical traction substituted. Actually the affected area appears to have extended slightly further east in certain spots.

### 3. Recrudescence of Trypanosomiasis along Gwaai River.

Owing to reports received having indicated increase of both game and tsetse fly in the area of the former operations against game in the Gwaai-Shangani region I reported in January that there was reason to fear recrudescence of the disease along the Gwaai River. A few months later these fears proved to be well founded, herds of cattle between the Sikume river and Gwaai-Shangani junction being affected. The period of immunity presumably brought about by the operations has thus been limited to five years.

### 4. Effect of Organised Grass Fires.

In accordance with a pre-arranged plan Mr. Chorley proceeded to the Lomagundi district in July with a view to collecting notes on the tsetse fly to enable a more scientific test to be made of the effect of a deferred and organised grass fire. A premature fire in August unfortunately restricted the area available for the late burn. On September 29th the organised burn was carried out and was witnessed by the writer. From the point of view of a grass burn the operation was altogether successful being favoured by a very hot day, and a strong wind. The destruction of grass was practically complete over an area of about twenty-five square miles. With regard to effect on the fly, although some slight change in distribution was apparent, the average density appeared little affected. Figures collected indicated a comparatively small proportion of puparia destroyed but this was also apparent as a result of the earlier burn. The percentage killed is judged insufficient to produce any practical benefit. Effect on the vegetation apart from the grass was not conspicuous. There were practically no thickets to be destroyed and except for the scorching of the lower leaves of the trees (which bore young foliage at the time) and the bringing down of a number of old trees, there was practically no effect visible beyond the removal of the grass. It must, of course, be realised that no attempt was made to catch the flies after the fire, a proceeding which is hardly practicable on a large scale in this Colony. In point of fact, however, concentration of the flies following the burn was little in evidence.

A point of interest was the steady decrease in the density of adult flies throughout the period of the observations. This had the disadvantage of reducing the figures to be dealt with at the time of the later burn to somewhat unsatisfactory dimensions. The result of the experiment cannot, however, be said to be encouraging as far as can be judged at present.

Mr. Chorley incidentally secured further notes on breeding haunts, parasitisation and natural infection of the flies with

5. Inspection of Urungwe Sub-district.

A special inspection of the Urungwe sub-district was carried out by a temporarily employed European with the object of obtaining information on the distribution of Tsetse Fly in reference to land settlement activities in that region. It is difficult to judge whether the fly has spread during recent years as the map secured in the present instance is based upon actual observation of the flies themselves whereas maps previously supplied appear to have been based to a greater extent on the occurrence of trypanosomiasis in stock. There are indications that the latter is extending southward in some places, but we have never yet been able to demonstrate the presence of fly by actual observation over the whole area affected by this disease.

6. Study of Parasites of Flies Allied to Tsetse.

Mr. Cuthbertson proceeded to the Gatooma sub-district in November in order to commence a study of the parasites of flies allied to tsetse, the idea being to ascertain whether some of the species attacking tsetse were at all active as parasites of allied flies. Two species known also to attack tsetse were secured up to the end of the year and the investigation is still proceeding.

7. Outbreak of Trypanosomiasis in Lupane Valley.

An outbreak of Trypanosomiasis occurred early in the year amongst native cattle in the Lupane Valley far removed from any known fly area. Mr. Roberts and a cattle inspector proceeded to the area in August but failed to find any tsetse fly. So far there is no apparent explanation of the outbreak.

8. Copper Queen Road.

In view of anxiety expressed by a certain section of the Lomagundi farmers concerning the effect of traffic through the fly infested country along the Sinoia-Copper Queen road I visited the Copper Queen Mine early in September and spent several days exploring the road and vicinity and gathering local information. As a result it was judged that the infestation of the road was too indefinite to constitute an appreciable danger. Actually I saw no Tsetse Flies in several motor runs along the road and learnt that only occasional flies had been seen at long intervals and none at all for several months. The country south and west of the Copper Queen was, however, very definitely infested.

9. Forest.

Observations have been continued concerning the effect of ring-barking on the common Brachystegia of the Savannah forest of the colony and study of the forest flora in relation to tsetse fly has been continued.

GAME PRESERVATION.

At the beginning of the year I was directed to gather all necessary information and to submit recommendations on the subject of Game Sanctuaries. In connection with this project the district officials throughout the colony were circulated and a mass of information concerning the present occurrence of game in the different districts accumulated, together with suggestions as to suitable areas for reservation. An effort was made to coordinate this information and definite suggestions were submitted to the Honourable the Minister in due course. The great difficulty in reference to creation of game sanctuaries lies in the fact that practically all the suitable areas are situated in what is known or thought to be potential "fly" country. In point of fact only one area amongst those apparently deserving of serious consideration is free from this objection.

Mr. E. Davison has acted as ranger in the fenced area in Lomagundi during the year. Mr. J.W.J Strubbers has been appointed ranger in connection with similar operations in the Gatooms area. Five other Europeans have been employed temporarily to carry out inspection work in reference to Tsetse Fly. Two others have been engaged in erection of the game fences.