AN ISOLATED OUTBREAK OF CATTLE TRYPANOSOMIASIS
NEAR THE VICTORIA FALLS, RHODESIA.

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The first cases of cattle trypanosomiasis to be recorded during this century amongst resident stock in the Victoria Falls area, (as far as can be ascertained from existing records), occurred in June, 1970, amongst those Wankie Tribal Trust Land animals which were inspected at the centre Katchetchete. Two cases were recorded, both involving Trypanosoma congoense. Very occasionally cases have been noted near Kazungula, to the west, but only amongst cattle in transit from Botswana to Zambia. It is very probable that cases had occurred previously in the vicinity of the inspection centres Sidobe and Mwutu dips, since there had been an abnormally high mortality amongst cattle at certain kraals during April and May, the accompanying symptoms of which, when described by the owners, who obviously knew their animal husbandry, albeit of a primitive nature, strongly suggested trypanosomiasis.

The appearance of the disease in this locality came as a shock to the staff of the Tsetse and Trypanosomiasis Control Branch of the Department of Veterinary Services, since, as has already been implied, tsetse flies had been completely unknown in the Victoria Falls region from before the turn of the century. In fact, according to Jack (1914) and Chorley (1938), their information being based on the records of early travellers, it was probable that the Victoria Falls fly belt had disappeared before the great rinderpest epizootic of 1896. Furthermore, the nearest known tsetse pest belts to this locality were the Sebungwe belt in this country, (135 km), the Sinaongwe, Kafue and Mashi belts in Zambia, (respectively 160, 110 and 265 km distant), the Kwando belt in the Caprivi Zipfel, South West Africa, (265 km), and the Okavango-Chobe belt in Botswana (195 km). The problem was made even more puzzling by the fact that the cattle which were involved had been resident in the area for a very long time and there were no records of any recent entries from other areas, let alone from those where the disease was known to occur.
It was necessary, in the first instance, to determine the magnitude of the outbreak of the disease, both from the point of view of the number of cattle affected and the extent of the area involved. The Veterinary Field Branch and the Tsetse and Trypanosomiasis Control Branch therefore carried out an extensive inspection exercise of all the African and European owned cattle in the surrounding area, to some considerable depth, during July and August of last year, resulting in the following additional cases being discovered: five at Sidobe dip, fourteen at Katchetochete dip, one at Mvutu dip and seven at Siamwele dip, in every case the causative parasite being identified as *Trypanosoma congoense*. No cases were found amongst the European owned cattle. Since that time all the cattle in the area in question have been inspected monthly, with few exceptions, the results of this work being as follows: a single case at Sidobe dip in October and a single case at Mvutu dip in November, both of which were identified as mixed *T. congoense/ T. vivax* infections, followed by two cases in April of this year, another in May and yet another in June, all at Mvutu dip and all identified as *T. congoense* infections. It is noteworthy that in many of these infections the level of the parasitaemia has been exceptionally low and when the parasites in such cases were viewed in the wet smear preparation they were generally somewhat slower in their movement than normal. It is considered that these unusual factors may have attributed to the late diagnosis of the disease in the area (see the reference to abnormally high mortality at certain kraals in April and May above). Regrettably, the distribution of the cases to date has not really demonstrated any obvious pattern from the point of view of locating the vector, other than its apparent association with the Lukunguni drainage.

Surveys to determine the tsetse species involved and its distribution, utilising oxen as attractants, were instituted in October last and have continued without interruption until the present time. Initially two survey teams were employed on the work but in January it became necessary, for reasons of economy, to reduce the number of teams to one. No tsetse were caught or seen until 6th February when a single *Glossina morsitans* Westw. male was taken mid-way between Sidobe dip and the Victoria Falls airport. Following on this a further three
one on the 12th April and the other on the 21st April and the third fly was caught at a point 3.8 km to the south of the airport, again on the 12th April.

The suitability of the area for G. morsitans from the points of view of both habitat requirements and the availability of food hosts is considered to be quite adequate. Generally the extensive Kalahari sand caps or ridges, which are a feature of the area, are covered by a well developed Baikiaea plurijuga - Brachystegia spp. - other genera woodland; the long and frequently wide, open vleis, which lie between the ridges, are fringed by the edge of this woodland, which in the wetter situations thickens into an almost riverine associates, particularly on the drainages between the airport and the railway line, (some of the species recorded in one of these almost riverine associates were tall tree Acacia sieberina, Combretum imberbe, Ficus sp. and Lonchocarpus capassa and medium and small tree Combretum hereroense, Grewia sp., Friesodielsia (Popowia) obovata and Ziziphus sp.); and the basalt outcrops, which protrude through the Kalahari sand caps, near the edges, are covered by a scrubby, open bush of Colophospermum mopane - Commiphora spp. - Terminalia spp. - other genera. This last mentioned situation is rather arid. It has been suggested over the years, by various authorities, that the Kalahari sand woodland associates is not suitable for G. morsitans, but observations in the Mzola section of the Sebungwe tsetse belt and in the vicinity of Gokwe would suggest that at least the edge of this woodland is very favourable. It is noteworthy that all four tsetse flies taken by the survey teams in the area to date have been captured within the Kalahari sand wood-land. Hosts for the tsetse are readily available. Cattle are numerous, there being about 6,700 head of African owned cattle depastured on the Lukunguni drainage, which graze well into the Fuller Forest Area and are reputed to water along drainages near the railway line in the late dry season. Fairly frequent signs of kudu, zebra, sable, warthog and duiker have also been recorded and elephant are known to visit the area.

In considering the origin of the vector one obvious aspect, particularly when studying the aerial photographs in the first instance, was the proximity of the Victoria Falls airport to the affected area. The Lukunguni drainage rises on either side of it. The carriage of tsetse in varying numbers by aircraft had been recorded many times from the von der Decken.
members of the Branch when taking off in aircraft from both the Branch's Lusulu and Sengwa airstrips and as aircraft flew daily from the heavily infested Kariba airport, this seemed a likely line of investigation. The regular inspection of aircraft originating from Kariba airport was therefore instituted in September last, initially at the Victoria Falls airport, but more recently at the new Wankie National Park airport, since most aircraft proceeding from Kariba to Victoria Falls land at the Wankie National Park airport en route. Results however, have been disappointing, with only four *G. morsitans* having been taken to date. Of these one old male was taken in the cabin of a Vickers Viscount on 2nd February of this year at Victoria Falls airport, two old males were taken in the cabin of the same type of aircraft on 9th April at the new Wankie National Park airport and the fourth an old female, was caught on 5th May, again at the new Wankie National Park airport, after it had flown out of the cabin of the aircraft, the same type as before, and had alighted on the arm of an air hostess, as she stood momentarily at the top of the gangway, before proceeding down the steps to the tarmac. That tsetse have been recovered from these aircraft is of considerable interest, but it is felt that for tsetse to become established, (as it is believed has occurred in the Victoria Falls airport region), as a result of such carriage, the number of tsetse so transported would have to be very much greater than has been demonstrated to date, certainly, at least, several each day. Other possibilities in the context of carriage of tsetse by aircraft were (1). the small aircraft belonging to the various hunting safari organisations originating from the Okavango swamps area (Khewi River Lodge airstrip and certain bush airstrips, all of which, it is understood, are heavily infected with *G. morsitans*), which land during the hunting season at Victoria Falls airport, but which, because of the lateness of the year when the inspections were instituted, have not been adequately sampled i.e. the 1970 hunting season was virtually at an end; and (2). the considerable

a. and b. In view of the capture of these three *G. morsitans* a survey was mounted early in May in order to examine the surrounds of the old Wankie National Park aerodrome, where aircraft from Kariba, en route for Victoria Falls airport, had landed for a number of years prior to the opening of the new Wankie National Park airport in February of this year. The survey
movement of Airforce and Police aircraft in the area during the period February/March, 1970, for certain security reasons, many of which probably originated from Kariba airport after standing with open doors and hatches on the cleared fringe of the airstrip for possibly some days or longer. (It is noteworthy that the period of this activity fell just prior to the commencement of the outbreak of the disease). However, according to the Civil Aviation authorities at the Victoria Falls airport the activity of the various safari companies aircraft is very much less this year and it therefore seems unlikely that a satisfactory sample of these aircraft will now be obtained and in the case of the security aircraft, it is probably that a similar situation to that which occurred last year will not recur.

The possibility of an incursion from beyond this country's borders cannot be disregarded in seeking a solution to the origin of this Victoria Falls airport tsetse focus. In particular tsetse advances from Botswana, a country which has great tracts of land which are uninhabited or at the most only sparsely settled, could well pass undetected, despite the vigilance of the Botswana authorities, as has been the unhappy experience of this Branch itself, in certain areas of Rhodesia, in recent years. In March of this year a particularly high incidence of trypanosomiasis was recorded by veterinarians of the Field Branch of this department amongst cattle belonging to the Witwatersrand Native Labour Association camp near Kasane, in Botswana, (fifteen of the eighteen animals in the herd were infected with T. congoense). This outbreak gave cause for considerable alarm here in Rhodesia but was attributed by the Botswana authorities to carriage of tsetse by aircraft from Khwai River Lodge airstrip to Kasane, a new daily service having been initiated between the two places early this year. In the light of this explanation and the distribution of European owned cattle within Rhodesia, to the west of the Victoria Falls, it seems reasonable to discount, at least temporarily, the existence of an advance from this direction. In the south-westerly direction, however, it is another matter altogether. There is a particularly extensive drainage line called the Ngwezumba, which runs from the Rhodesia - Botswana border, from between Stoffels pan and the Kazuma depression, towards the Savuti channel - Mababe depression complex, lying
which, it is believed, tsetse could advance. The vegetation is suitable and a wide variety of game animals, in considerable numbers, are present. In view of this the area between the Victoria Falls airport and the international border will shortly be surveyed. In the case of incursions from Zambia, particularly from the north and north-east, the information gleaned to date from certain authorities, would suggest that the position is reasonably stable in that direction. Finally, within Rhodesia itself, the area lying between the western tip of the Sebungwe belt and the Victoria Falls airport is reasonably well stocked with African owned cattle, all of which come under regular monthly surveillance by the Field Branch of the department and on present evidence this source can be discounted as well.

The seriousness of this Victoria Falls outbreak must not be underestimated. Should tsetse become properly established and expand within the Matetsi - Victoria Falls region the control of the problem could be very difficult indeed, particularly in the light of the land utilisation plans for the area, which have been proposed by the inter-departmental committee set up by the Minister of Lands in 1969, known as the Matetsi Committee, (1970). These will involve to quite a large degree the exploitation of wild life. The proximity of international borders could also pose a problem with the possibility of four territories becoming involved. Action, to date, other than local surveys, has included (1). the recent application, (June, 1971), of residual insecticide to all trees lying within 0.8 km of Kariba airport in order to try to reduce the risk of carriage of tsetse by aircraft from this source and (2). the Director of Civil Aviation has issued instructions to all aircraft operating companies, (including Airforce personnel through the appropriate channel), to ensure that aircraft are cleansed of tsetse after take off from infested aerodromes and airstrips). Other than these measures it is not considered practical to carry out local control until the origin of the focus has been elucidated and the extent of the infestation delimited.

ACKNOWLEDGEMENT

This paper is read with the permission of the Director of Veterinary Services, Department of Veterinary Services,
Ministry of Agriculture.

SUMMARY

The paper describes a recent outbreak of cattle trypanosomiasis in the Victoria Falls region. According to existing records this is the first occurrence of the disease in this locality since the turn of the century. Surveys to determine the vector have revealed Glossina morsitans Westw. in low density within the Lukunguni drainage, in the vicinity of the new Victoria Falls airport. The origin of this tsetse focus is uncertain. Carriage of tsetse by aircraft from infested airstrips is considered to be a possibility, (tsetse have been recovered from aircraft), but an incursion from beyond Rhodesia's borders cannot be discounted, particularly Botswana. The suitability of the area for G. morsitans is discussed. Brief mention is made of control measures already instituted and attention is drawn to the difficulties of control in this area should tsetse become properly established.

REFERENCES


