occurring through the sickness, which followed its natural course, while as regards the oxen from Zalala the treatment by the emetic did not allow for the sickness to freely evolutionize.

And the cases of geophagia were noticed, and with great frequency, only among the controls of both kraals.

A fact was verified in connection with the third experiment, described later, which can be similarly explained. Only after the lapse of 45 days, during which the animals were in contact with the glossinas, did the appetite for bonemeal become apparent. Of course, at that moment, the slides of blood did not show yet the trypanosomas, but, knowing how difficult it is sometimes to discover the parasite in the slides, we may feel justified in assuming that the trypanosoma was already there, affecting the animals when the osteophagia started to manifest itself. If this assumption can be confirmed, the positive proof of the osteophagia, among the animals living in the areas where trypanosomiasis is endemic, and in the absence of glossinas, would be an indication that would considerably facilitate the premature prophilaxy of this zoonose, seeing that the isolation of the attacked animals is the measure which may grant the best results, when the transmission of the disease, by exclusively mechanical process, is feared.

Investigation should be carried on in connection with the relations, which may likely exist between the " pica " of the animals suffering from trypanosomiasis and the phosphorus metabolism among the same animal patients, as well as the comparative study of the chemical analysis of the bones of the animals dying from the sickness, and of healthy ones. But only with the indispensable aid of chemistry will it be possible to arrive at complete results in connection with this matter; unfortunately, however, this is beyond our scope.

* * * * *

To conclude the description of the observations carried on during this experiment, we may mention that we experimented, in four animals, the injecting of the emetic, either in its simple form or associated with Bayer 205, in the peritoneal cavity. The course of administering would have the advantage of reducing, still further, the labour in the treatment, in cases where a large number of animals would have to be injected. With a proper appliance for such injections, of great capacity, numerous animal patients might be quickly injected, provided they were made to pass through a " Manga " (a passage forcing the animals to pass one by one).

We have verified, however, that this form of administration has the inconvenience of causing a great prostration among the animals, which show the characteristic attitudes of the animal patient suffering from a violent inflammation of the abdominal organs, certainly caused by the irritation produced by the serum.

But this state does not go beyond twenty-four hours, and, provided the animals are allowed to rest on the day following the injection, this course may be utilized without much risk.

We advise, however, against the employment of any dilutions of emetic under 1 per cent. and Bayer 205 at less than 2 per cent., having them preceded by a dose of 20 cubic centimetres of camphorated oil at 10 per cent.

The doses of emetic and Bayer were equal to those employed through intermuscular injections.

3*rd Experiment* (Map No. 3): This included only six bovines, which were placed on the property of an agriculturist in the region of Mocuba, situated at a distance of 140 kilometres from Quelimane. This property is situated in the middle of an extensive zone of glossinas, which can easily be seen there during any season in the year.

The animals arrived at that locality on 16th June, and quite near the kraal built for them, near the forest, several specimens of glossinas of the species " morsitans " were captured on that occasion.

The Veterinary Department overseer of that area was entrusted to administer the treatment every week, whenever possible, but only after the infection had been diagnosed under the microscope.

Only on 8th September—83 days after their arrival there—did the first samples of blood show the parasite in three of the animals. (Ox No. III had died a few days before, from an accident resulting in fracture of the skull.)

The treatment by emetic and camphorated oil was then started on the live bovines, by injection also in the muscles of the hindquarters, the dose of emetic, however, being 1 gram only.

The infection was constituted by trypanosoma from the groups " Vivax " and " Congolensis," but the first group was predominant. Beyond the typical forms of any of these two groups, it was not infrequent to see forms of a difficult diagnosis, but possibly belonging to any of these groups, which lead us to the conviction that among these varieties of trypanosomas there does exist a polyformism often very accentuated.

The appearance is frequently noticed, in the samples of blood obtained from the same animal, of the predominant forms, sometimes of one and sometimes of the other groups, but the type " Vivax " is generally predominant.

Ox No. 1 died suddenly on 30th December, notwithstanding that, apparently, it presented an aspect of good health and a regular state of nutrition. It succeeded, however, in remaining alive for six and a half months in that region.

In almost all the animals, it was observed that, on the day following the last treatments during December, the trypanosomas were still existent in the blood. We, therefore, increased the dose of emetic to 1.5 grams, and we did not notice thereafter that the trypanosomas resisted this dose.

Towards the end of February, the four remaining animals were still alive, though in a bad state of nutrition. This experiment, on account of the diminutive number of animals involved, does not permit trustworthy averages.

It must be noted that these animals maintain, in association, an infection of the piroplasm " Mutans," acquired in the region where they were born, and they came from the stock of a herd where tuberculosis is frequent. It is presumed that the association of this piroplasmosis—though normally benign—and, possibly, of the tuberculosis with the trypanosomiasis, is the cause of the poor condition of nutrition shown, latterly, by all the animals, thus increasing the evils of this latter disease.

These animals are maintained under an exclusively grazing diet, and are kept at night in the kraal, to avoid being attacked by wild beasts, which abound in the neighbouring forest.

During the first six months, they had always placed before them, in the kraal, bonemeal mixed with common salt, but latterly, as supplies ran out, it was not given to them.

The reading of Map No. 3 will obviate the necessity for a more complete description of this experiment.

Interpretation of Results Obtained.

It would not be fair, at this stage, to draw final conclusions concerning these experiments and the methods employed, to justify us in advocating their generalization in the glossina regions wherein the cattle was intended to work. It will be necessary, before arriving at a sound judgment concerning the economical practice of the methods adopted by us, to repeat these experiments in several different glossina localities, and with the greatest possible number of animals. Only in this way shall we be able to verify whether, under different conditions and with any species of virus, the average percentage of resistance of the animals, in relation to their number and time, show compensating results.

We may, nevertheless, state that the results obtained under the two first experiments were satisfactory, if we take into consideration that in the Quelimane district the labour done by the bovines, during seven working months, gave a result 50 per cent. more economical than happens when native labour is exclusively employed.

It is likely that, had we been able to apply a more vigorous teatment, and had we shortened the intervals, the results might have been more favourable.

As soon as opportunity arises, we intend to verify also whether the treatment carried out, immediately after the arrival of the animals in the glossina zones, before any manifestation of the disease, and maintained with intervals of not more than fifteen days, will show greater advantages, as is reasonable to hope.

If the solution of the problem of trypanosomiasis is still far from being solved, the satisfactory results obtained by us, and future experiments, will bring important advantages to the agriculture of those glossina regions which are in identical conditions to the north of Mozambique.

The insignificant cost of the emetic, and the facility with which anybody, with a slight apprenticeship, will be able to treat a great number of animals, favour, considerably, this practice becoming a daily routine.

Date of Treatment and other Observations.	I.	II.	III.	IV	V.	VI.	VII.	VIII.	IX.
27.4.1927 Clinic aspect....	Some symps.	Organic misery	S. S.	S. S.	S. S.	S. S.	S. S.	S. S.	S. S.
Blood exam.....	0	Trypan.	Trypan.	Trypan.	0	0	Trypan.	Trypan.	0
28.4.1927 Clinic aspect....	Some symps.	Organic misery	S. S.	S. S.	S. S.	S. S.	S. S.	S. S.	S. S.
Blood exam.....	0	0	0	0	0	0	0	0	0
5.5.1927 Clinic aspect....	Some symps.	S. S.	S. S.	S. S.	S. S.	S. S.	S. S.	—	—
Blood exam.....	0	0	0	0	0	0	0	—	—
17.5.1927 Clinic aspect....	Some symps.	S. S.	S. S.	S. S.	S. S.	S. S.	S. S.	S. S.	S. S.
Blood exam.....	0	0	0	0	0	0	Trypan.	Trypan.	0
3.6.1927 Clinic aspect....	Some symps.	S. S.	S. S.	S. S	S. S.	S. S.	S. S.	S. S.	S. S.
Blood exam.....	0	Trypan.	Trypan.	0	—	0	0	Trypan.	0
13.7.1927 Clinic aspect....	Some symps.		S. S.	S. S.	S. S.	S. S.	Picacism	Picacism	S. S.
Blood exam.....	0		0	Trypan.	Trypan.	0	Trypan.	Trypan.	Trypan.
14.7.1927 Blood exam.....	0		0	0	0	0	0	0	0
1.8.1927 Clinic aspect....	Regular		Very thin	Regular	Regular	Fat	Thin	S. S.	S. S.
Blood exam.....	0		0	0	0	0	0	0	0
2.8.1927 Blood exam.....	0		0	0	0	0	0	0	0
1.9.1927 Clinic aspect....	Regular		Very thin	Regular	Regular	Regular	Very thin	Very thin	Regular
Blood exam.....	0		Trypan.	0	0	0	Trypan.	Trypan.	0
2.9.1927 Blood exam.....	0		0	0	0	0	0	0	0
27.9.1927 Clinic aspect....	Fat	Died on the 5th-7-1927 (32 days after the last treatment).	Thin	Fat	Regular	Very fat	Regular	Without sympt.	Fat
Blood exam.....	0		0	0	0	0	0	0	0

NOTE.—The expression used: "Some symptoms" or "S. S.," means tha

X.	XI.	XII.	XIII.	XIV.	XV.	XVI.	XVII.	XVIII.	XIX.	XX.	XXI.	Witnesses. XXII.	Witnesses. XXIII.
S. S. 0	S. S. 0	S. S. 0	S. S. 0	S. S. 0	S. S. 0	S. S. 0	S. S. 0	S. S. 0	S. S. 0	S. S. 0	S. S. 0	S. S. 0	Regular 0
S. S. 0	S. S. 0	S. S. 0	S. S. 0	S. S. 0	S. S. 0	S. S. 0	S. S. 0	S. S. 0	S. S. 0	S. S. 0	S. S. 0	— —	— —
— —	S. S. 0	— —	S. S. 0	S. S. 0	— —	— —	S. S. 0	— —	— —	— —	— —	— —	Regular —
S. S. 0	S. S. 0	— —	S. S. 0	S. S. 0	S. S. 0	S. S. 0	— —	S. S. 0	S. S. 0	S. S. 0	S. S. 0	— Trypan.	— —
S. S. 0	S. S. 0	— 0	S. S. Trypan.	S. S. Trypan.	S. S. 0	S. S. Trypan.	S. S. 0	S. S. 0	Died on the 9–5–1927 (49 days after the last treatment.)	S. S. Trypan.	S. S. 0	— Trypan.	— —
S. S. 0 0	S. S. 0 0	S. S. 0 0	S. S. 0 0	S. S. 0 0	S. S. 0 0	S. S. 0 0	S. S. Trypan. 0	S. S. Trypan. 0		S. S. Trypan. 0	S. S. 0 0	— — —	Regular 0 0
Regular 0 0	Regular 0 0	Regular 0 0	Very thin Trypan. 0	Thin Trypan. 0	Regular 0 0	Pica Trypan. 0	Thin 0 0	Regular 0 0		Thin 0 0	Thin 0 0	— Trypan. —	— — —
Regular 0 0	Regular Trypan. 0	Regular 0 0	Thin 0 0	Regular Trypan. 0	Regular 0 0	Thin Trypan. 0	Regular 0 0	Good 0 0		Died 31–8–27 (30 days after the last treatment).	Regular 0 0	— — —	Regular 0 0
Fat 0	Fat 0	Regular 0	Fat 0	Regular 0	Regular 0	Regular 0	Fat 0	Fat 0			Fat 0	Thin–Ulcers Died 21.11.1927	Fat 0

that the coat of the animals was brushy and without lustre, together with leanness and watery eyes.

Date of Treatment and other Observations.	I.	III.	IV.	V.	VI.	X.	XI.	XII.	XXIV.	XV.	XXVI.
21.3.1928 Clinic aspect....	Lean	Lean	Lean	Lean	Good	Good	Regular	Organic misery	Lean	Regular	Lean
Blood exam.....	—	—	0	—	—	—	0	0	0	0	0
29.3.1928 Clinic aspect....	Regular	Lean	Lean	Lean	Good	Regular	Regular	Very lean	Regular	Good	Regular
Blood exam.....	0	Trypan	0	0	0	0	0	0	0	0	0
6.4.1928 Clinic aspect....	Regular	Lean	Lean	Regular	Good	Good	Regular	Very lean	Regular	Good	Good
Blood exam.....	0	0	0	0	0	0	0	0	0	0	0
13.4.1928 Clinic aspect....	Regular		Very lean	Regular	Regular	Good	Fat	Lean	Regular	Fat	Regular
Blood exam.....	0		0	0	0	0	0	0	0	0	0
14.5.1928 Clinic aspect....	Lean		Lean	Regular	Fat	Good	Good	Lean	Regular	Good	Regular
Blood exam.....	0		0	0	0	0	0	0	Trypan.	0	0
5.6.1928 Clinic aspect....	Lean		Lean	Good	Good	Good	Good	Lean	Regular	Good	Regular
Blood exam.....	0		0	0	0	0	0	0	Trypan.	0	0
19.6.1928 Clinic aspect....	Lean		Lean	Good	Good	Good	Fat	Regular	Regular	Good	Regular
Blood exam.....	0		0	0	Trypan	0	0	0	Trypan.	0	0
8.7.1928 Clinic aspect....	Regular		Lean	Good	Good	Good	Good	Good	Regular	Good	Regular
Blood exam.....	0		0	0	Trypan	0	0	0	Trypan.	0	Trypan.
10.8.1928 Clinic aspect....	Lean		Lean	Good	Good	Fat	Good	Regular	Regular	Regular	
Blood exam.....	0		0	0	Trypan.	0	Trypan.	0	Trypan.	0	
11.9.1928 Clinic aspect....	Lean		Lean	Regular		Good	Good	Regular	Regular		
Blood exam.....	0		0	0		0	0	0	0		
15.10.1928 Clinic aspect....	Lean		Regular	Regular		Regular	Good	Regular	Regular		
Blood exam.....	0		0	0		0	Trypan.	Trypan.	Trypan.		
13.11.1928 Clinic aspect....	Lean		Regular	Regular		Regular	Regular	Regular	Good		
Blood exam.....	0		0	0		0	0	0	Trypan.		
10.12.1928 Clinic aspect....	Lean		Regular	Regular		Good	Good	Regular	Regular		
Blood exam.....	0		0	0		0	0	0	0		
20.12.1928 Clinic aspect....	Lean		Good	Good		Good	Fat	Regular	Good		
Blood exam.....	0		0	0		0	0	0	0		
28.1.1929 Clinic aspect....	Regular		Good	Good		Good	Fat	Regular	Good		
Blood exam.....	0		0	0		0	0	0	Trypan.		

Died on the 14-4-1928.

Died. Since 14.9.1928 it had not been treated. The reports from the man in charge of the animals say that the animal two days before death showed an intense blood discharge through the anus, this symptom being unknown in trypanosomiasis.

Killed for consumption on 12–8–1928, being too fierce for labour.

Died on the 7–8–1928 (30 days after the last treatment).

The clinic aspect to which we attached most interest was the condition of leanness or fatness presented by the animals. Thus for
The alternatives of clinic aspect frequently verified in the animals, must be interpreted, not only by motive of the disease proper,

XXVI.	XXVII.	XXVIII.	XXIX.	XXX.	XXXI.	XXXII.	Witnesses. XXIII.	XXXIII.	XVI.	XXXIV.	VII.	VIII.	XXXV.	XIII.	XXXVI.
Lean 0	Organic misery Trypan.	Lean 0	Regular 0	Regular 0	Lean 0	Regular 0	Regular —	Regular —	Lean —	Lean —	Lean —	Regular —	Good —	Regular —	Regular —
Regular 0	Very lean Trypan.	Regular 0	Regular 0	Good 0	Lean 0	Regular 0	— —	— —	— —	— —	— —	— —	— —	— —	— —
Good 0	Very lean Trypan.	Very lean 0	Lean 0	Regular 0	Good 0	Regular 0	— —	— —	— —	— —	— —	— —	— —	— —	— —
Regular 0	Lean 0	Lean 0	Lean 0	Regular 0	Good 0	Regular 0	— —	— —	— —	— —	— —	— —	— —	— —	— —
Regular 0	Regular Trypan.	Good 0	Regular 0	Good 0	Good Trypan.	Regular 0	Lean 0	Lean 0	Lean Trypan.	— —	— —	— —	— —	— —	— —
Regular 0	Regular 0	Good Trypan.	Regular 0	Good 0	Good 0	Good 0	— —	— —			— —	— —	— —	— —	— —
Regular 0	Regular 0	Good Trypan.	Regular 0	Good 0	Good 0	Regular 0	— —	— —			— —	— —	— —	— —	— —
Regular Trypan.	Good 0	Good Trypan.	Regular 0	Regular 0	Good 0	Regular 0	— —	— —			Very lean 0	Lean Trypan.	— —	— —	— —
Died on the 7–8–1928 (30 days after the last treatment).	Regular 0	Regular Trypan.	Regular 0	Regular 0	Regular 0	Regular 0	Lean 0	Lean 0	Died on the 15.6.1928.	Died on the 9.4.1928.	Lean Trypan.	Lean 0	Regular Trypan.	Lean 0	Regular Trypan.
	Regular Trypan.	Regular Trypan.	Regular 0	Regular 0	Regular Trypan.	Regular 0	— —	— —			— —	— —	— —	— —	— —
	Regular Trypan.	Regular Trypan.	Regular Trypan.	Regular 0	Regular Trypan.	Regular 0	Lean 0	Lean Trypan.			Lean Trypan.	Lean Trypan.	Regular 0	Lean 0	Regular 0
	Regular 0	Lean Trypan.	Good 0	Good 0	Regular Trypan.	Lean 0	— —	— —			— —	— —	— —	— —	— —
	Good Trypan.	Regular Trypan.	Regular 0	Regular 0	Good 0	Regular 0	Regular Trypan.	Regular 0			Regular Trypan.	Lean Trypan.	Good 0	Lean 0	Good 0
	Fat Trypan.	Good Trypan.	Regular Trypan.	Good 0	Fat 0	Good 0	— —	— —			Regular Trypan.	— —	— —	— —	— —
	Fat Trypan.	Regular Trypan.	Good Trypan.	Good 0	Fat 0	Good 0	Regular Trypan.	Fat 0			Regular 0	Regular Trypan.	Fat 0	Regular 0	Fat 0

s. Thus for lean we signify the animal with less than half-flesh; for regular, in a state of half-flesh, etc.
ease proper, but most principally according to whether the labour to which they were subjected were more or less fatiguing.

Date of arrival of the oxen at Macuba..... 16.6.1928
Date when oxen started on bone meal..... 2.8.1928
Date of appearance of tripanosomiasis..... 8.9.1928
Date of first treatment..... 17.9.1928

Dates of Treatment and other Observations.	I.	II.	III.	IV.	V.	VI.
8.9.1928..... Apparent state.....	Regular	Regular		Lean	Regular	Regular
Blood examination.....	Trypan.	Trypan.		Trypan.	0	0
10.9.1928..... Apparent state.....	Regular.	Regular		Lean	Regular	Regular
Blood examination.....	0	0		Trypan.	Trypan.	0
12.9.1928..... Apparent state.....	Regular	Regular		Lean	Regular	Regular
Blood examination.....	0	0		Trypan.	Trypan.	Trypan.
17.9.1928..... Apparent State.....	Regular	Regular		Lean	Regular	Regular
Blood examination.....	0	Trypan.		Trypan.	0	Trypan.
24 hours after..... Blood examination.....	0	0		0	0	0
1.10.1928..... Apparent state.....	Regular	Regular		Lean	Fat	Regular
Blood examination.....	Trypan.	Trypan.		Trypan.	Trypan.	Trypan.
10.10.1928..... Apparent state.....	Regular	Regular		Lean	Regular	Regular
Blood examination.....	Trypan.	0		Trypan.	0	Trypan.
23.10.1928..... Apparent state.....	Regular	Regular		Lean	Regular	Regular
Blood examination.....	Trypan.	Trypan.—Th. Mutans		0	Trypan.	Trypan.
1.11.1928..... Apparent state.....	Regular	Regular		Lean	Regular	Regular
Blood examination.....	Trypan.	0		Trypan.—Th. Mutans	Trypan.	Trypan.
24 hours after..... Blood examination.....	0	0		0	0	0
12.11.1928..... Apparent state.....	Regular	Regular		Lean	Regular	Regular
Blood examination.....	Trypan.	Trypan.		0	Trypan.	Trypan.
24 hours after..... Blood examination.....	0	0		0	0	0
27.11.1928..... Blood examination.....	Trypan.	Trypan.		Trypan.	Trypan.	0
30.11.1928..... Apparent state.....	Regular	Regular		Lean	Regular	Regular
Blood examination.....	Th. Mutans	Trypan.		Trypan.	0	Trypan.
24 hours after..... Blood examination....	Th. Mutans	Trypan.		Trypan.—Th. Mutans	0	0
10.12.1928..... Apparent state.....	Regular	Regular		Regular	Regular	Regular
Blood examination.....	Trypan.	Trypan.		0	0	0
24 hours after..... Blood examination.....	Trypan.	Trypan.		0	0	0
21.12.1928..... Apparent state.....	Regular	Regular		Regular	Regular	Regular
Blood examination.....	Trypan.	0		0	Trypan.	Trypan.
24 hours after..... Blood examination.....	Trypan.	0		0	Trypan.	0
3.1.1929..... Apparent state.....		Regular		Regular	Regular	Regular
Blood examination.....		0		0	Trypan.	0
24 hours after..... Blood examination.....		0		0	0	0
13.1.1929..... Apparent state.....		Regular		Regular	Regular	Regular
Blood examination.....		0		0	0	Trypan.
6.2.1929..... Apparent state.....		Regular		Regular	Regular	Regular
Blood examination.....		Trypan.		Trypan.	Trypan.	Trypan.
24 hours after..... Blood examination.....		0		0	0	0

Died 30-11-1928.

Died of accident and fractured the skull.