

## The appearance of *Gonderia ovis* in the blood of Splenectomized Sheep.

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Up to the present *Gonderia ovis* has not been identified in the blood of sheep in South Africa. Piroplasms have been described by several investigators to occur in the blood of sheep and goats in various centres outside South Africa. The following are some of the more important references *re* the appearance of Piroplasms in sheep:—

Schellhase (1), in German East Africa, found Piroplasms in the blood of sheep. They were small, and in form and shape resembled *Piroplasma mutans* of bovines. Ring forms as well as bacillary types were seen.

Bevan (2) mentions the presence of Piroplasms in the blood of Rhodesian sheep, showing some resemblance to *Theileria* of East Coast fever. He, however, does not mention anything about the occurrence of blue bodies; probably these parasites were *Gonderia*.

Sergeant, Parrot, and Hilbert (3) maintain that *Gonderia ovis* is of common occurrence in Algerian sheep, and these parasites do not appear to possess any pathogenic properties. Very few of the corpuscles are invaded with parasites. *Theileria ovis* was detected twice, and Koch's blue bodies were seen in the smears prepared from organs.

The parasites present in the erythrocytes in the latter instance closely resemble *Gonderia ovis*. Two per cent. of the corpuscles were invaded.

In 1924 Lestoquard (4) was able to identify three distinct forms of Piroplasms occurring in the blood of Algerian sheep, viz.:—

*Babesiella ovis* (Babes, 1892), *Gonderia ovis* (Du Toit, 1918), and *Theileria ovis* (Littlewood, 1914). In the case of *Babesiella ovis*, jaundice and haemoglobinuria were observed, the mortality was 5 to 10 per cent., with marked destruction of erythrocytes; the parasites were small, and the majority were ring-shaped, whereas pear-shaped forms were scanty. In some cases Anaplasma-like forms appeared in the blood, before characteristic parasites made their appearance.

In 1925 Lestoquard (5) described five different viruses associated with the blood of Algerian sheep, viz.:—*Piroplasma ovis*, *Babesiella ovis*, *Gonderia ovis*, *Theileria ovis*, and *Anaplasma ovis*.

There appears to be no doubt that the Piroplasms observed in the splenectomized sheep at Onderstepoort were of the type *Gonderia*. For observations, etc., see a later article of De Kock and Quinlan (6). These parasites only appeared in the case of splenectomized "carriers" of *Anaplasma*, and were in every instance at one time or another associated with *Anaplasma* in the blood. Not all

"carriers of *Anaplasma*" after splenectomy showed the presence of *Gonderia*. Only a certain number of the splenectomized sheep were infected, e.g. sheep 8430, 8427, 8428, 8451, 9119, 10511. It is not certain whether these sheep were infected before or after treatment with blood containing *Anaplasma*. These parasites usually made their appearance in the blood about 10 to 16 days after splenectomy. They were as a rule preceded by the presence of *Anaplasma* in the blood, but in the case of sheep 10511, *Gonderia* were observed before *Anaplasma* had made its appearance. *Gonderia* were distinctly rare, and in the majority of cases, only a few parasites were seen. In case of sheep 10511 they were the most frequent, and on one day about 5 per cent. of the corpuscles were affected (see micro-photographs, Plate I).

Transmission experiments were made to susceptible sheep and "carriers" of *Anaplasma*, all with negative results. An attempt was made to infect a splenectomized bovine, namely, 711, by the injection of blood, but this proved to be negative. Bovine 711, subsequently treated with blood infected with *Gonderia mutans*, readily reacted, with numerous parasites present in the circulation.

All the forms typical of *Gonderia* were seen, e.g. cross-forms (distinctly rare), bacillary-forms (not frequent), and ring-shaped forms (most frequent). These parasites, although very rare in the blood of sheep, appeared in the circulation of splenectomized sheep for many months. In the case of sheep 8427 and 8428 they have been observed from time to time for more than eighteen months.

It would appear that these parasites produced no changes in the blood, nor did the sheep show any visible symptoms which could be directly attributed to the presence of *Gonderia*.

#### SUMMARY.

1. *Gonderia ovis* was noticed in the blood of splenectomized "carriers" of *Anaplasma*.
2. They were not observed in the blood of non-splenectomized sheep.
3. All transmission experiments to susceptible sheep, and in some instances to splenectomized susceptible sheep, failed.
4. Transmission experiment to a bovine failed, although this bovine was still susceptible to *Gonderia mutans*.
5. *Gonderia ovis* in South African sheep, and even in splenectomized sheep, appear to be harmless parasites.

#### REFERENCES.

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- (2) Bevan, "Piroplasmosis of Rhodesian Sheep," *J. Comp. Path. and Ther.*, Vol. XXVIII, Part I.
- (3) Sergent, Parrot; Hilbert, 1922, *Bull. Soc. Path. Exot.*, Vol. 15.
- (4) Lestoquard, 1924, "Piroplasmosis of Sheep in Algeria," *Bull. Soc. Path. Exot.*, Vol. 17, No. 2.
- (5) Lestoquard, 1925, *Bull. Soc. Path. Exot.*, Vol. 18, No. 2.
- (6) De Kock and Quinlan, "Splenectomy in Domesticated Animals—Its Sequellae, with Special Reference to Anaplasmosis in Sheep," Eleventh and Twelfth Report of the Dir. Vet. Res. and Ed., Union of South Africa.

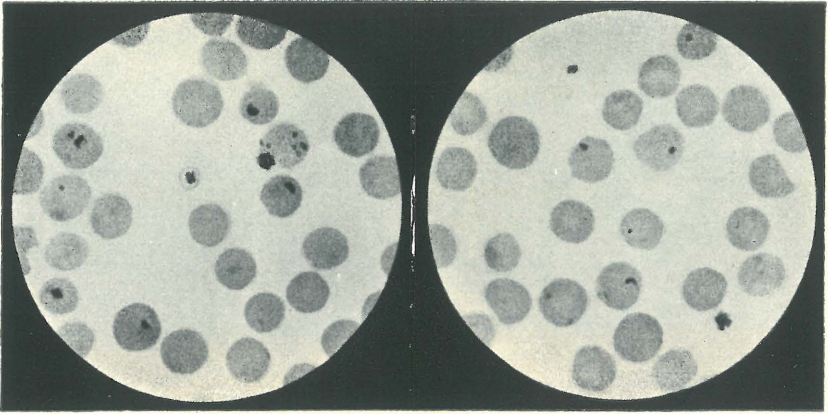


Fig. 1.

Fig. 2.

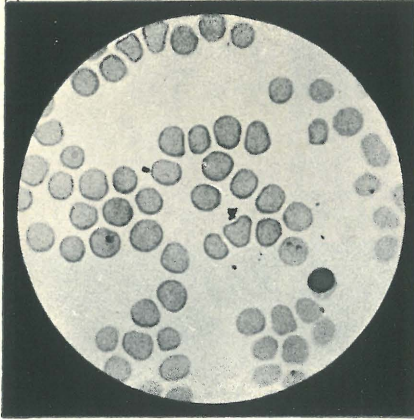


Fig. 3.

*Plate I.*]

"GONDERIA OVIS" IN SHEEP.

[*De Kock and Quintan.*