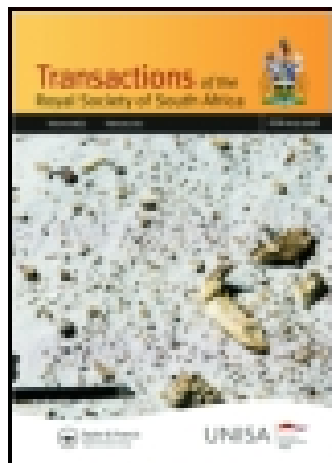


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A SHORT NOTE ON THE OCCURRENCE OF A LEUCOCY-
TOZOON INFECTION. HOST: THE OSTRICH.

By J. WALKER, M.R.C.V.S.

(Read May 15, 1912.)

(Plate II.)

In November, 1911, the writer was requested to investigate the cause of the mortality occurring amongst ostrich chicks on a farm in the Middelburg District, Cape Province. The percentage of deaths on a number of farms, of ostrich chicks of about 6-8 weeks, is large, and from the following particulars furnished by the owner the losses have also been considerable on this farm.

In 1910 out of a total of 745 hatched 351 were reared.

In 1911 out of a total of 784 hatched 295 were reared.

In 1909 the losses *were small*, 360 were reared of a total of 365 hatched.

The cause of death was attributed by the owner to, in some instances, parasitic infection (intestinal) and liver disease, and in many cases it was unknown.

A number of sick chicks of about 6-8 weeks old were examined; the *symptoms* noted were disinclination to feed, loss of condition, stunted growth, paleness of the buccal mucous membrane, skin of body and around eyes bluish, inability to keep up with the rest of the brood when driven; chicks were noticed sick some days before death.

A number of post-mortems were held, with the result that death, in some instances, was found to be due to parasitic infection (*Strongylus* *Douglasi*, and *Tænia*). The absence of intestinal parasites was, however, noted in some cases, and the cause of death had thus to be disassociated with wire-worm and tape-worm infection. It was found that the usual method of rearing and feeding chicks had not been departed from, and the particulars furnished and observations made pointed to the existence of a disease of a specific nature.

A microscopical examination of the organs showed no constant

changes, but on examination of the blood the presence of a *Leucocytozoon* was frequently noted.

So far in South Africa a similar parasite had only been observed in some species of wild birds, *e.g.*, a hawk, and consequently from an economic point of view its presence was not considered of much importance. It will now, however, be necessary to ascertain whether it enters into the etiology of some of the at present unknown diseases of ostrich chicks.

MICROSCOPICAL APPEARANCE OF THE PARASITE IN STAINED BLOOD-SMEARS.

In dried blood-smears fixed with methyl alcohol and stained with Giemsa, two main types of parasites, which apparently correspond with male and female Gametocytes, have been noted.

The Female Gametocyte occurs most frequently.

The shape varies. Sometimes it is more or less rounded, but it may be irregular, probably due to distortion caused in making the smears.

The size varies from 11–15 microns in length and 9–13 microns in width, the rounded form being generally from 14 to 15 μ in diameter.

The protoplasm of the parasite stains deeper than in the case of the male gametocyte, and scattered throughout it are a number of meta-chromatic granules, which appear more distinctly in some of the parasites than in others. A number of small clear spaces occur throughout the protoplasm. Situated in various positions, generally at the centre or near the edge, is an aggregation of small chromatin granules which represents the *nucleus*.

In most instances a large chromatin granule, situated in the mass of the chromatin granules or at the side of or some distance from these, stands out distinctly.

The nucleus of the host cell is always altered in shape. In most cases it is elongated and enlarged and situated at the margin of the parasite.

The Male Gametocyte, as stated above, occurs less frequently than the female.

The shape varies. It is usually more or less rounded.

Size. The rounded forms average 9 to 10 μ in diameter.

The protoplasm stains less densely than in the case of the female.

The chromatin granules of the *nucleus* are generally scattered throughout the cell, and sometimes they are large and widely separated, in which case they are very distinctly seen.

The nucleus of the host cell is irregular in shape but less elongated and smaller than in the case of the cell invaded by the female. It is found at the edge of the parasite.

A Short Note on the Occurrence of a Leucocytozoon Infection. 37

Contrary to what has been observed in *Leucocytozoon* infection of other birds, in some species no *spindle-shaped* formation of the host-cell has so far been observed in stained blood-smears of infected ostriches.

OCCURRENCE AMONGST OSTRICHES AND AGE OF BIRDS AFFECTED.

For the purpose of ascertaining to what extent the infection occurs amongst ostriches, a number of blood-smears from chicks and adult birds were collected from various farms, with the result as shown in the following table:—

No.	Farm.	Date.	Number of Smears Examined and Ages of Birds.	Result.	Remarks.
1	B.H.	31/1/12	<div> <div>12 × 7 year old ostriches</div> <div>6 × 3 " "</div> <div>12 × 18 months old ostriches</div> <div>12 × 2½ " "</div> <div>12 × 6 weeks " "</div> </div>	<div>Negative</div> <div>"</div> <div>"</div> <div>9 leucocytozoon infection</div> <div>11 " "</div>	Mortality amongst chicks on this farm heavy this year and previous years.
2	P.	12/2/12	<div>11 × 7 year old ostriches</div> <div>17 × 2 " "</div> <div>7 × 2 months old ostriches</div>	<div>Negative</div> <div>"</div> <div>"</div>	Little or no mortality this year amongst chicks on this farm.
3	C.	31/1/12	<div>4 × 6 year old ostriches</div> <div>6 × 15 months old ostriches</div> <div>6 × 7 " "</div> <div>15 × 2 " "</div> <div>2 × 6 weeks " "</div> <div>4 × 2 " "</div>	<div>Negative</div> <div>"</div> <div>1 leucocytozoon infection</div> <div>4 " "</div> <div>2 " "</div> <div>Negative</div>	Losses have occurred this year and also in previous years.
4	G.	21/1/12	<div>8 × 1 month old chicks</div> <div>1 × 5 " "</div> <div>4 aged ostriches</div>	<div>Negative</div> <div>"</div> <div>"</div>	Mortality heavy on this farm this year.
5	T.	18/1/12	<div>4 × 18 months old ostriches</div> <div>1 × 5 " "</div> <div>5 × 4 " "</div> <div>1 × 2½ " "</div> <div>2 × 3 " "</div> <div>6 × 2 " "</div> <div>7 × 2 days old ostriches</div>	<div>Negative</div> <div>"</div> <div>4 leucocytozoon</div> <div>Negative</div> <div>"</div> <div>3 leucocytozoon infection</div> <div>Negative</div>	Mortality heavy on this farm during this year and previous years.
6	B.H.	17/11/11	<div>1 × 3 months old ostriches</div> <div>2 × 7 weeks old chicks</div> <div>4 × 6 " "</div> <div>1 × 5 " "</div> <div>1 × 4 " "</div>	<div>Negative</div> <div>Leucocytozoon infection</div> <div>" "</div> <div>" "</div> <div>" "</div>	Mortality heavy on this farm during the year and some previous years.

CONCLUSION.

A leucocytozoon infection has so far been observed in ostrich chicks aged from 4 to 7 months. The examination of a number of smears collected from adult ostriches on farms on which the infection is common amongst chicks, gave negative results.

Since this parasite has so far not been recorded, I propose that it be named *Leucocytozoon struthionis*.

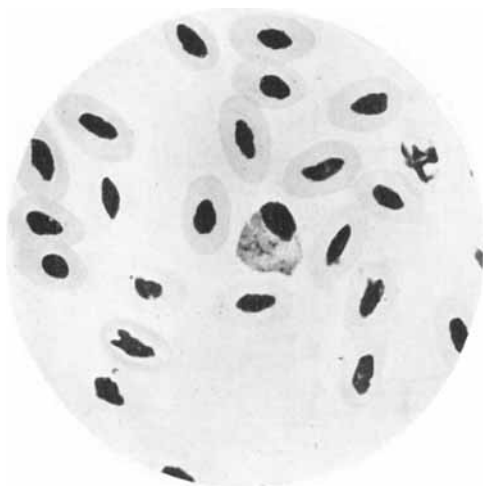


PLATE 1.
FEMALE GAMETOCYTE.
(Magnified $\times 900$ approx.)

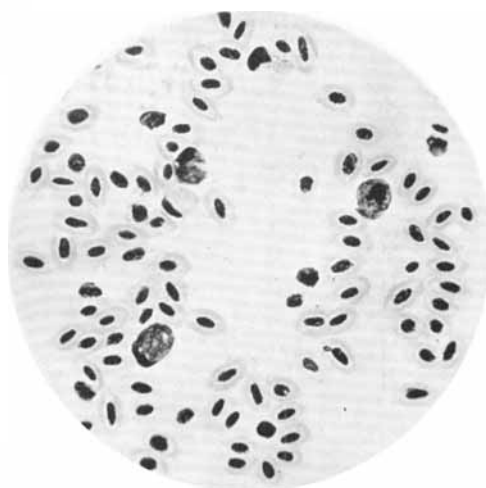


PLATE 2.
MALE GAMETOCYTE.
(Magnified $\times 900$ approx.)

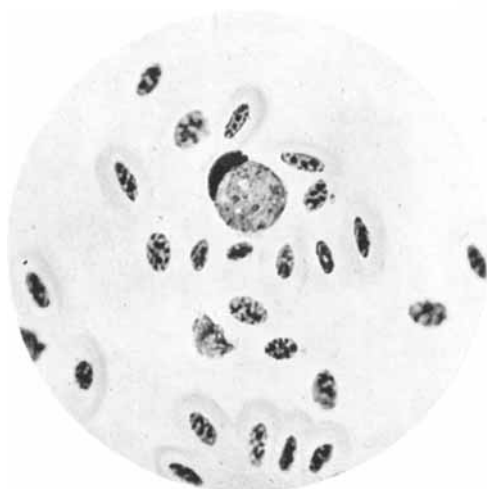


PLATE 3.
FIELD SHOWING MALE AND FEMALE GAMETOCYTE.
(Magnified $\times 500$ approx.)

West, Newman proc.