irritation, and in this case it is certainly within the range of probability that some irritant gained access to the peritoneal cavity through the *os uteri*, or from some existing ovarian tissue.

The serous membrane of the peritoneal cavity, particularly on the left flank, was studded with nodules, isolated or grouped, white in colour, and varying in size from a rape seed to a walnut. They were attached to the serous membrane by long slender pedicles, and apparently did not involve the underlying tissue. The smaller nodules retracted on their own bases, and presented a round, flattened, sessile appearance, while the larger, owing to their greater size and weight, overhung, and showed in greater or less degree their mode of attachment. They were intersected by fissures, more or less deep, which gave some the appearance of several nodules springing from one pedicle, after the manner of a cauliflower.

After *rigor mortis* was complete, the majority of the nodules were soft, tough, non-elastic, somewhat translucent, and homogeneous, while the others were firm and slightly elastic, owing to the infiltration of fat in their tissues. The nodules in which the infiltration was excessive were rotund, and the intersecting fissures were more or less obliterated. Delicate blood-vessels ramified over the surface of many of the nodules. In some instances cysts had formed, the largest being of the size of a hazel-nut. Their surface was uneven, owing to the attachment of septa, which subdivided them in compartments. The limiting wall of these cysts was thin and transparent; their contents were watery in consistency, clear or slightly turbid in appearance, and alkaline in reaction, and on the addition of acetic acid a cloudy precipitate was thrown down.

The nodules on section were seen to be composed of white and somewhat translucent materials arranged alternately in wavy lines of unequal thickness. A few delicate blood-vessels were present. The cut surface was moist. Areas of fat were present in the tissues of all the larger nodules. The fat was deposited either as round masses or lines. In the early stages the line of demarcation was indefinite, but later it was sharply defined. The fat was normal in appearance, and similar in colour to ordinary adipose tissue.

Similar nodules were attached to the serous surface of the stomach, liver, spleen, kidney, fat, omentum, mesentery, intestines, and bladder.

Microscopical examination confirmed the opinion formed on macroscopical examination—that these nodules were composed largely of adipose tissue, and were, in fact, lipomata.

NOTE ON THE OCCURRENCE OF "MARGINAL POINTS," OR A NEW INTRACORPUSCULAR PARASITE, IN THE BLOOD OF CATTLE IN SOUTH AFRICA.

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THE following account of two cases of a newly recognised blood disease may prove of interest, although I regret that, in the absence of a *post-mortem* examination or any experimental inoculation work, it is necessarily very incomplete.

I am at present stationed at Umzimkulu, East Griqualand, which is on the Cape-Natal border, and my duties necessitate many diagnoses being made by means of the microscopic examination of blood films taken from sick or dead animals with a view to the early detection of East Coast fever, should it unfortunately cross over from Natal into the Cape Colony. It is to this constant resort to the microscope for diagnostic purposes that I am indebted for stumbling upon the cases now to be described.

Case I.—On 2nd October I was called to see a calf, three months old, said to have been sick for about seven days. It had fallen off greatly in condition, but still sucked the cow and fed a little on the veldt when turned out. I found it looking thin and hollow, but fairly cheerful; temperature 105° F. at 5 P.M.; the mucous membranes of the mouth and eyes faintly icteric; fæces fœtid, very dark brown, and fluid from a dose of oil given on the previous day. Urine normal.

The fever and jaundice symptoms induced me to take a blood smear from the calf's ear. Microscopic examination after fixing and staining the film by Giemsa's method revealed marked blood changes, consisting in poikilocytosis, polychromasia, and basophilia, and the presence of many normoblasts. The blood anæmia had evidently existed for some time, yet no piroplasm or trypanosome was seen either now or later. Attention was soon drawn, however, to the presence within a considerable number of the red cells of one or more tiny spherical violet-black or blue-black spots, whose protozoic nature was indicated by their staining reactions. These spots or points varied in size, but were never more than one-thirtieth to one-twentieth the size of the red corpuscle, sometimes situated on the edge of the cell, sometimes in its substance, but generally towards its margin. Often there were two points, placed close together and looking like a dividing coccus, or more widely apart, at opposite sides of a red cell. Even three such bodies were occasionally seen in a red cell, and a very few appeared to be free in the plasma. In staining reactions these points closely resembled the nucleus of a normoblast, but their tiny size made them at once readily distinguishable.

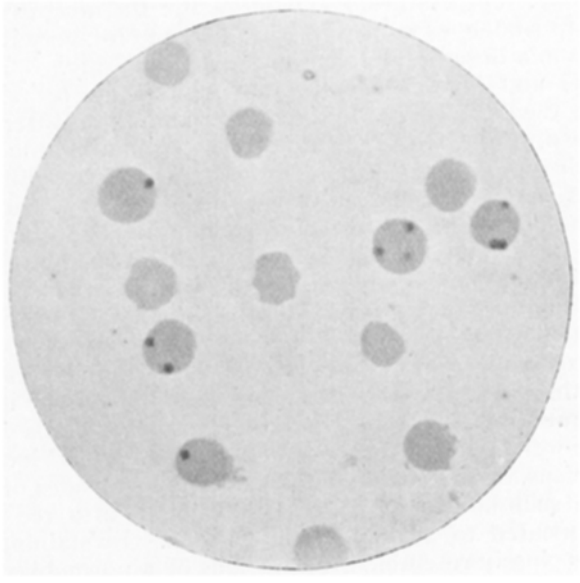
On 6th October the calf was slightly better; mouth pale but less jaundiced; conjunctiva paler, with slight yellow tint; fæces still pultaceous, dark, and fœtid; temperature 104·2 at 10 A.M. Microscopically the blood showed less polychromasia, less basophilia, and fewer normoblasts, but "marginal points" were about as frequent as before.

On 9th October the calf was much better. The blood showed no basophilia now, no nucleated red cells, less anisocytosis, and less polychromasia. "Marginal points" were still seen, mostly of full size and single in a red cell.

On 10th November, one month after recovery, the blood appeared normal microscopically, but a few points, always single, some marginal, others nearer the centre of the red cell, could be detected.

Case II.—27th October. Bull calf, three months old; thin and stunted, but looks cheerful; had been doing badly for past two months. Owner for years past has bred ten to fifteen calves *per annum*, scarcely one of which he has reared. Some time before this date I had opened one, aged one month, and found its stomachs full of straw, hair, and filth, with ascarides in the abomasum. I was

therefore inclined to believe that the calf mortality was due to bad management. This calf looked as if something similar might be wrong, but, strangely, its temperature registered 105° at 6 P.M. I therefore made blood films from its ear. These showed a very heavy infestation of the red cells (*see* annexed fig.), with "marginal points" in singles, twos, threes, and even fours. A very few were found free in the plasma as singles and pairs, and one bunch of five looked just like micrococci. These points varied much in size, but were always spherical. Although perhaps 30 per cent. of the red cells were attacked, the blood showed no changes due to anæmia; the attack must therefore have been quite recent in its onset.



Microphotograph (×1500) of blood from Case II., stained with Giemsa's solution. Of the thirteen red corpuscles in the field five contain one or more "marginal bodies." (Photo by Mr A. L. Sheather, M.R.C.V.S.)

On 29th October the calf looked sicker; and, in marked contrast to their appearance two days ago, the mucous membranes were now blanched and pale yellow in colour, even the mouth and tongue showing this change. The temperature was 105·6 at 6 P.M. Blood taken from the ear showed many points, as singles, twos, threes, and fours in the red cells; slight anisocytosis, polychromasia, and basophilia. Medicinal treatment in the shape of 10-grain doses of sulphate of quinine was begun the same night.

31st October. Calf weaker; hind quarters sway during progression; bulimia; temperature 104·2 at 5.30 P.M. Ears so cold that no blood would flow when attempts were made to take a smear. Calf was turned out the same night into a small camp and left to suckle at will, the cow being no longer hand-milked.

1st November. Calf shows no change; temperature 102·2° at 5 P.M. Blood smears were obtained by inserting a hypodermic needle into the jugular vein. A final dose of 10 grains of quinine was given,

making total up to 60 grains in all. The blood looked very anæmic to the naked eye, and microscopically showed marked anisocytosis, poikilocytosis, polychromasia, and basophilia, nucleated red cells being fairly frequent. "Marginal points" in singles and pairs were still frequent, though much less numerous than before; they were also more nearly uniform in size and larger, possibly because they had ceased to divide and increase in numbers. A point was seen occasionally in a cell showing punctate degeneration, but was easily distinguished from the blue stippling of the red cell by its larger size and violet tint.

5th November. Calf brighter and stronger though still slightly icteric; urine clear and watery; a little mucus on fæces; suckles cow better; temperature 104° at 2 P.M. on a cool day. Blood films from ear showed polychromasia, but less anisocytosis, poikilocytosis, and basophilia; a few nucleated red cells were still present. The stippling of the red cells was now finer and less marked. Only single points were seen, about one in a field, and these were hardly ever on the margin of the red cell.

10th November. Calf stronger, gay and doing well; mucous membranes pale, but no longer icteric. Blood nearly normal, but still showed slight anisocytosis, basophilia, and a few points.

In May last I first saw this parasite in the blood of a case of mutans piroplasmosis affecting a yearling heifer. I did not then recognise it as a separate entity, but thought it might be a phase in the life-history of piroplasmosis mutans.

I have only been able to find two references in literature to this disease. In an article entitled "Diseases, Ticks, and their Eradication," published in the *Transvaal Agricultural Journal* of July last, Dr Theiler mentions having frequently met with the parasite, and says he is convinced that it represents a disease of its own, though he has not sufficient evidence for an absolute proof. His very brief description of the parasite makes me practically certain that the organism which I have endeavoured to describe is identical with his. He says that, on *post-mortem*, yellow discoloration of the whole body is marked, the liver is enlarged and yellow, and the gall bladder contains a thick, green bile. He believes that the disease is carried by ticks, some of his experiments having implicated the blue tick (rhipicephalus decoloratus), and he adds that the immune animal retains the infection in the blood. The second reference to this parasite occurred in the June number of this *Journal*, Dr Theiler mentioning its presence in the blood of some experimental cases of mutans piroplasmosis.