'Bull-Dog' Calf in African Cattle

THE achondroplasia-like condition which gives rise to the 'bull-dog' calf is not uncommon in certain breeds of cattle, notably in the Dexter, in which it has been shown to have a definite genetic basis and to be due, possibly, to a retardation in the functioning of the pituitary during foetal life (Crew¹). In the Norwegian Telemark breed, Wriedt² has described a very similar condition which, however, is different genetically. It has also been reported in the case of the sheep (Crew and Roberts³).

The purpose of this note is to record the fact that the 'bull-dog' calf occurs in cattle indigenous to Africa. The first case came to my notice in April 1929 and occurred on one of the few farms in Uganda owned by Europeans. Since then no fewer than twelve other monsters have been born, all of which presented the same characteristic abnormalities which justify the appellation 'bull-dog'. The specimens examined by me were quite typical of the condition as described by Crew, and every one of them occurred in Nganda cattle which are of a definitely fixed type and, so far as I can ascertain, breed true. They are supposed to have originated from a cross between the Ankole and the Eastern Province cattle. The Ankole cattle are characterised by their enormous horns, up to 6 ft. in span, leggy stature, and by the absence of hump, whilst the Eastern Province animals are typical zebus of small size. The Nganda cattle have medium-sized horns and a small hump. Buganda, the area in which these Nganda cattle are to be found, lies between Ankole on the western side and the Eastern Province to the east of the Nile. Although the owner of the farm on which these 'bull-dogs' occurred had cattle of all three types (Ankole, Eastern Province and Nganda) it was only the latter breed which produced them. Of the twelve which have been born since 1929, all save one were first calves. One of them was born alive but was killed after a few hours.

The Bahima, the pastoral tribe of the Ankole district in the west of Uganda, are employed as herdsmen, and unquestionably it is known to them that such 'bull-dog' calves are not uncommon. But it is impossible to obtain any information as to their incidence in the tribal herds for the reason that the monster is regarded as an omen of bad luck to the herd and to its owners. Some of the herdsmen would not even look at the 'bull-dog' calf, and the opinion prevails that if a woman of the tribe sets eyes on it she is bound to become bewitched and to produce a similar abnormality herself. So it is that, though the 'bull-dog' calf is probably fairly common among the cattle of the Western and Buganda Provinces, one hears nothing of them. They are got rid of quickly and never mentioned. This is the reason why the 'bull-dog' calf is never encountered in herds owned by natives: it was only because these cattle were owned by Europeans that I am able to record their occurrence in Nganda cattle.

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¹ Crew, F. A. E., "The significance of an achondroplasia-like condition met with in cattle", *Proc. Roy. Soc.*, B, 95, 228-254; 1923.

² Wriedt, Chr., "Letale Faktoren", *Z. Tierz. Zücht.*, 3, 223-230; 1925.

³ Crew, F. A. E. and Fraser Roberts, J. A., "The genetics of the 'sheep'", *Bibl. Genet.*, 2, 263-286; 1925.

Distribution of Nitrates in the Soil and Root Development in Coffee

IN the course of some preliminary investigations, after rains, upon the distribution of nitrates in the lower levels of a Kikuyu lateritic red loam, upon which coffee was growing, it was found that the curve showing distribution with depth was always of the form shown in Fig. 1. As the surface soil dried with drought, the nitrate content decreased, in some cases to so little as five parts per million, but the general shape of the curve remained the same, rising, generally, to a level of about forty parts per million, samples being taken at every foot to a depth of 8-12 ft.

FIG. 1.

Comparing the curves of nitrate distribution with graphs of root distribution, it appears that the zone of low nitrate concentration coincides with the zone of vigorous development of root growth, that is, the coffee bush does obtain a substantial part of its nitrogen requirements from the lower levels of the soil. This investigation is being extended, but in the meanwhile it would be interesting to learn if any similar observations have been made in connexion with other fruit trees or crops. No references can be found in our limited library.

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Neutron, Proton and Positron

THE neutron is usually looked upon as an aggregate of a proton and an electron. If it were so, there ought to be a strong tendency for hydrogen atoms to be converted spontaneously into neutrons, and the number of neutrons present in the universe should be much higher than it is assumed to be. I suggest that *the proton be considered as an aggregate of a neutron and a positron*. The neutron would be looked upon as an elementary material corpuscle without electric charges altogether. The proton would be able to dissociate into a neutron and a positron.

The very small number of neutrons and positrons met with in the universe would then be easily explained by the fact that the dissociation of protons requires a large quantity of energy and is by no means spontaneous.

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