firmly united and still later they are again widely separated. The material was collected at the National Central University, Nanking, China, and was investigated at the Hull Botanical Laboratory, University of Chicago. The coalescence of the two rims of a single carpel is by means of close approximation, cell-division and cell-enlargement. Development of additional sutural tissue is brought about by the activity of the cells at either margins of the carpel, which meet and then divide tangentially to the suture. The two placental bundles are partly responsible for the fusion of the carpel margins. Coalescence of the stylar region takes place before pollination and later entire style withers and is broken off. Carpels open by mechanical breaking, thus rupturing the individual cells. The coalescence of carpels is ephemeral and exists only during the period of pollination as if the five distinct carpels are joined throughout their common stylar region. This may indicate also that the pistil is an intermediate stage between the apocarpous and the syncarpous conditions.

On Some Nematode Parasites of Goats and Sheep at Muktesar.

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THE goats and sheep that are used for experimental work at Muktesar appear to be very rich in their parasitic fauna which presents very interesting features. An investigation into these has been in progress for over a year and a detailed account of the different interesting parasites and the part they play in the economy of their hosts, is in the process of publication. The parasites were collected from four kinds of animals: Hill and Tibetan goats (*Capra sibirica*), hill sheep (*Ovis nahura*) and Tibetan sheep (*Ovis hodgsoni*). All these animals were used for maintaining the Rinderpest virus at this Institute.

The entire collection consists of several worms but it is not intended to refer here to them all. The remarks will be limited to such parasites only as are altogether new to science or to those that have not been recorded from India upto the present time. In one case are given some interesting variations in the structure of a very common parasite which, in spite of their frequent occurrence, are altogether unknown.

A nematode belonging to a new genus of the family Metastrongylidæ (and a new species), *Varestrongylus pneumonicus*, gen. et sp. nov. was discovered in the bronchi of the goats and sheep. This parasite is very interesting from the zoological standpoint in that the females possess a valve covering the vulva and the anus is situated at the posterior end, features hitherto unknown among the members of the family Metastrongylidæ. The males also possess many interesting features particularly in regard to the genital bursa, the spicules and some chitinous structures connected with them.

Besides the morphological interest of the parasites they have a very great economic value, since they were found in all animals which had died of broncho-pneumonia. The worms being present in the bronchi bring about the asphixiation of the animals. In the post-mortem examination, the bronchi are found filled with a frothy secretion. They also possess a very great capacity for laying eggs which fill up almost completley the whole of the lung tissue and bring about its congestion.

Experiments to evolve a successful treatment of this abominable scourge of these animals are in progress. Some of the drugs recommended strongly by some American and German authorities met with no success in this country.

A new species of worm, *Dictyocaulus uniqualis*, was found in the bronchi of a Tibetan sheep. The males of this species have a structure somewhat different from *D. filaria*, particularly in regard to the bursal rays. The animal from which this parasite was recovered had also died of broncho-pneumonia.

Two parasites of the family strongylidæ, *œsophagostomum venulosum* and *O. asperum* from the cæcum of hill goats have been obtained for the first time in India.

A new parasite, *Ostertagia orientalis*, has been discovered from the cæcum and abomasum of hill goats. This species appears to be somewhat less common than the species *O. circumcincta* which is found in almost 60 per cent of the goats at Muktesar. It is rather surprising to find that there exists no previous record of the occurrence of the latter species in spite of its very large incidence. This may, presumably, be due to the fact that these worms produce no pathological symptoms and for this reason their presence may have so far remained unnoticed. Only one male specimen of the species *O. occidentalis* was obtained from the cæcum of hill goats.

The species *Hæmonchus contortus* found so commonly among the goats and occasionally in the abomasum of cattle presents very interesting variations in regard to the structure or structures developed in the vicinity of the vulva. In all the text-books on helminthology this species is described to possess a well-developed linguiform process or flap overhanging the vulva, but the specimens at Muktesar exhibit various gradations of the development of this flap and in some cases it may be bi-lobed resembling the head of a bird. Occasionally, one or more cuticular bosses may be developed in the neighbourhood of the vulva and specimens are not wanting in which are developed neither the bosses nor the flap.