Unlike cotton, the adventitious root formation, in the cut shoots of the two experimental tomato varieties, was found to be stimulated as a response to the metabolic activity of either the specific or the non-specific *Fusarium* species; the presence of the active principle—responsible for root stimulation—is only restricted, however, to the solutions of precipitates. Although adventitious root formation was induced in both tomato varieties, yet their development in 'North Dakota' was not so vigorous as that of the 'Pritchards' tomato variety (Figs. 2 and 3).

The fungal metabolic products responsible for root stimulation seem to be thermolabile and filterable through a Berkefeld filter. Further detailed studies concerning the possible nature and detailed properties of these substances are still in progress.

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Blood System of the Gut of *Arenicola marina*

DURING the course of my present investigation into the functional anatomy of the gut of *Arenicola marina*, I have found that Ashworth[1] describes the sub-intestinal blood vessels (sinuses) along part of their length only. He states that these vessels "commence just behind the heart and may be traced to the level of the twelfth setæ, behind which point they disappear". In dissection, with the use of a binocular microscope, it is possible to trace out these vessels, which have been renamed the sub-enteric vessels, along the whole length of the gut. Indeed, they are visible with the naked eye. This observation I believe to be of importance as it shows that the same basic pattern underlies the blood system in all parts of the gut. Serial sections have confirmed this point.

The blood system of the gut of the lugworm appears to be as follows.

The dorsal vessel runs along the dorsal surface of the gut, starting as a network of vessels near the anus and dividing into several branches under the prostomium. Along its entire length this vessel gives off branches to the complicated blood-sinus system lying in the walls of the gut.

The ventral vessel runs underneath the gut beginning as a plexus of vessels surrounding the proboscis and breaking down into a plexus near the anus. This vessel, unlike the dorsal vessel, has no connexion with the blood sinus of the gut.

Four definite longitudinal tracts can be distinguished in the blood plexus in the gut wall: (*a*) two sub-enteric vessels; (*b*) two lateral enteric vessels. The former are very fine and run along the gut from the œsophagus to the anus on either side of the mid-ventral line. The latter are confined to the œsophagus and the front half of the stomach. In segment 7 the lateral enteric vessels are enlarged to form the 'auricles' which pulsate. The enteric vessels communicate on either side with the ventral blood vessel by two thick-walled muscular ventricles.

The four longitudinal tracts are linked to each other and with the dorsal vessel by means of primary transverse tracts, which lie between the rows of pouches in the stomach region. The primary tracts are linked with one another by finer secondary tracts.

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[1] Ashworth, J. H., L.M.B.C. Monograph "Arenicola" (1904).

Extrafloral Glands of Cucurbitaceæ

I HAVE already pointed out[1] that quite a good number of species of Cucurbitaceæ are provided with well engineered devices for exudation of surplus water and waste substances. These plants, being primarily moisture loving, have structures especially suited to exudation of aqueous fluids which are absorbed in quantity in excess to the requirement, physiological conditions being very favourable for rapid absorption. The genera *Coccinia*, *Luffa*, *Lagenaria*, *Momordica*, *Cucurbita*, etc., develop extrafloral nectaries. In *Coccinia cordifolia* (Linn.) Cogn. a few glistening glands are present on the lamina round about the basal region of the midrib on the adaxial leaf surface; in *Luffa acutangula* (Linn.) Roxb. and *L. cylindrica* (Linn.) Roem. these glands are often found scattered all over the lamina besides a special fleshy glandular probract being developed at the base of the peduncle of the male and female inflorescences; in *Lagenaria vulgaris* Ser. (*Lagenaria leucantha* (Duch.) Rusby) two bilateral glands are present at the remote end of the petiole and in *Momordica cochinchinensis* (Lour.) Spreng. a few are found at the petiole end or on the lateral marginal costa at the leaf-base; in *Cucurbita pepo* Linn., *C. maxima* Duchesne and *C. moschata* Poiret minute club-shaped glands do develop at the abaxial leaf surface.

The structure of the extrafloral glands is well planned for efficient discharge of waste substances. The essential parts of a gland are the: (1) supply tissue (Figs. 1 and 2, *ST*), (2) filter tissue (Figs. 1 and 2, *FT*), and (3) external excretory tissue or osmotic tissue (Figs. 1 and 2, *ET*). The conducting elements—the vessels and the tracheids—are arranged all round the glands for translocation of catabolic substances in solution to the vital supply tissue. This supply tissue is made of somewhat elongated cells with a distinct nucleus in each cell. As the supply tissue is charged with sufficient fluid, it filters through the single-layered lignified bilaterally thickened

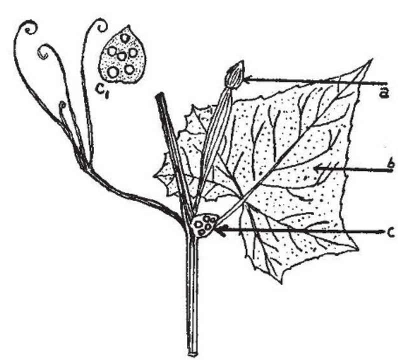

Fig. 1. Portion of a flowering branch of *Luffa acutangula* (L.) Roxb. (*a*) Female flower; (*b*) leaf; (*c*) glandular fleshy probract (× 1); (c_1) probract (× 2)