rabbits. This evolution of sensitivity: (1) does not increase with the administration of larger amounts of the hormone than the active dose; (2) is not peculiar to œstrin, but can also be obtained with testosterone (1–10 mgm.), progesterone (1–10 mgm.), desoxycorticosterone (1–10 mgm.), or with a mixture of œstrin and progesterone initiating the classical transformation of the uterus mucosa described as 'dentelle'. The reaction of the uterus to the transmitters seems, however, more marked after the administration of testosterone or œstrin than after that of desoxycorticosterone.

But this apparent uniformity of response hides very complex cell changes. When the rabbit uterus is immersed in Tyrode solution for 15–90 min. in the presence of oxygen and at a temperature of about 37°, it gives off a substance which is capable of decreasing the muscular tone of an isolated intestine preparation. This tone can be increased by the fluid obtained in the same circumstances from the uterus of an animal which has been treated with testosterone. The latter effect may also be observed, though generally to a lesser extent, with fluids obtained from rabbit uteri treated with progesterone alone or combined with œstrin. The liquid obtained after desoxycorticosterone sometimes provokes an amplification of the spontaneous intestinal movements. We conclude from these results that sex hormones are capable of creating modifications in the biochemical reactivity of the receptor cells of the uterus which may result in the secretion of substances capable of influencing in a more general way the tone of unstriated muscles, and of acting by this indirect mechanism on the humoral agents of the autonomic nervous system.

These results, however, do not explain why the same transmitter, adrenalin, causes the uterus of the rabbit to contract and the uterus of the guinea pig to relax, that is, of animals of the same species presenting analogous hormonal levels. We therefore administered a small dose of adrenalin to the isolated rabbit uterus and transferred, after contact varying from 15 to 40 min., the surrounding fluid to an isolated guinea pig uterus. This fluid produced a contraction of the guinea pig uterus which originally reacted to the administration of adrenalin with relaxation. The effect is not reciprocal in character; fluid obtained after the action of adrenalin on the guinea pig uterus still has a contracting effect on a rabbit uterus. On the other hand, when the fluid containing adrenalin after having been in contact with the rabbit uterus is transferred to the isolated intestine, it causes the usual inhibitory action of adrenalin on that organ, and a fluid containing adrenalin after having been in contact with the small intestine continues to produce contraction of the isolated rabbit uterus.

These findings suggest the presence of a special agent in the rabbit uterus conditioning the paradoxical action of adrenalin on that organ. They suggest in a more general way that the biological analysis of isotonic liquids which have been in contact during various periods and under various conditions with isolated organs may constitute a profitable method for the study of the behaviour of effector cells.

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A Nemestrinid Parasite of *Schistocerca gregaria* (Forsk.)

During dissections of an immature male specimen of the desert locust, *Schistocerca gregaria* (Forskål), a yellowish larva of Nemestrinidæ was found feeding on the testes and the surrounding adipose tissue. It was 1 cm. long. Its posterior end was surrounded by a chitinous cup leading to a slender respiratory tube *c.* 2 cm. long, which was constricted transversally along its whole length (these constrictions disappear when pressed during the preparation). The respiratory tube went longitudinally along the midgut and then was bent at right-angles towards the spiracle of the first abdominal segment. The tube was more or less uniform in width, becoming dilated at the cup surrounding the posterior spiracle of the larva. The end of the tube entered the meeting place of the tracheæ, which was considerably expanded. The chitin of this end was blackish-brown, due to pathological changes.

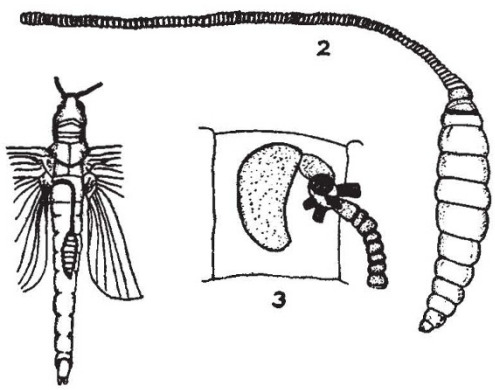

Fig. 1. *Schistocerca* dissected showing the Nemestrinid larva with the respiratory tube. ½ Nat. size
Fig. 2. Nemestrinid larva with the respiratory tube. × 3
Fig. 3. The spiracle, tympanal organ and the respiratory tube shown from inside

Potgieter[1] has described a Nemestrinid *Simmictus costatus* (Lw.) developing inside the body of *Locustana pardalina* (Wlk.) in South Africa. Noble[2] described larvæ, pupa and adult of *Trichopsidea æstracea* (Westw.) from *Chortoicetes terminifera* (Wlk.) in Australia. Fuller[3] has given a full description of *Trichopsidea æstracea* (Westw.) on various grasshoppers there. Crouzel and Salavin[4] described in detail two species of *Neorhynchocephalus*, *N. sulphurous* (Wied.) and *N. vitripennis* (Wied.) parasitizing the Acrididæ *Trigonophymus arrogans* Stal. and *T. elongatus* Giglio-Tos.

Unfortunately, our larva remained unidentified, as the attempt to transfer it into the body of another grasshopper failed. According to Dr. B. P. Uvarov (in correspondence), this is the first record of a Nemestrinid parasite of *Schistocerca gregaria*. I wish to express my thanks to Dr. Uvarov for his help and criticism in the preparation of this note.

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[2] Noble, N. S., *Agric. Gaz., N.S.W.*, **47**, 383 (1936).
[3] Fuller, M. E., *J. Coun. Sci. Indust. Res. Aust.*, **11**, No. 2, 202 (1938); *Proc. Linn. Soc., N.S.W.*, **63**, 95 (1938).
[4] Crouzel, S. I., and Salavin, R. G., *An. Soc. Cient. Argent.*, **136**, 145 (1943).