

stance with relaxin-like activity is present in pregnant ewes' ovaries, and in very low concentrations in the blood serum. Interaction of oestrogen and relaxin may be necessary to effect marked changes in soft tissues at different dose-levels than those used here.

The mode of action of relaxin appears to vary markedly between different species. There is room for extensive study of the comparative physiology of this hormone.

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¹ Hisaw, F. L., and Zarrow, M. X., "Vitamins and Hormones", 8, 151 (Academic Press, Inc., N.Y., 1950).

* Bassett, E. G., Sewell, O. K., and White, E. P. (in the press).

Tolerance to the Maize Rust *Puccinia polysora* Underw.

THE maize rust disease *Puccinia polysora* Underw was observed in Nyasaland again in the 1953-54 growing season, its first appearance in the country having been in the 1952-53 season. At the Agricultural Research Station, Lilongwe, a replicated trial was carried out in which the use of a fungicide spray 'Blitane' (zinc ethylene bis dithiocarbamate) reduced the incidence of the fungus on the maize on sprayed plots as compared with those which were unsprayed. All plots were split into three varieties: (a) an imported hybrid; (b) a locally selected open-pollinated variety; (c) an unselected local native maize.

Scores were made for the number of open uredosori, the total possible for a severely infected plant being 9. Spraying did not prevent the incidence of the rust, but reduced the score for the sprayed plots by about one half as compared with those unsprayed. The unsprayed hybrid was given an average score of 3.5 per plant, and those of the local selected and unselected maize were 1.9 and 1.6 respectively. However, the yield of the hybrid was reduced by 17 per cent, whereas that of the local varieties was completely unaffected. Thus there are clear indications of differences in varietal susceptibility and of tolerance, although all three types have given the fully susceptible reaction to the method of testing for juvenile resistance in the greenhouse.

The tolerance of the local varieties—which yielded much less than the hybrid even when the latter was fully attacked by the rust—may be an indication that they do not express in the yield of their grain the full capabilities of their metabolism. This would allow for a reservoir which absorbs the inroads of disease, and until it is exhausted no loss in yield would be encountered. Native maize of this same type has been inbred, and hybrids produced, which will be grown here next season. If the foregoing hypothesis is correct, it may be expected that these, being more highly selected and yielding more nearly to their true capacity, will suffer greater loss in yield from the presence of the disease.

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A Method of rearing Individual Trombiculid Mites in the Field

THE taxonomy of the Acarina Trombiculidae requires stabilizing by the study of the non-parasitic post-larval stages. Fewer than sixty nymphs and adults are known out of more than five hundred species, and of these only very few can be identified with absolute certainty. Techniques for rearing nymphs from engorged larvae are widely known and practised, but a single host often carries several or many species of chiggers, and taxonomic studies make it necessary to identify each nymph by reference to the cast larval pelt. Although this is practicable in the laboratory, it is extremely difficult to do in the field especially when moving from place to place, because nymphs may take several weeks to emerge.

The following simple method was designed to allow the rearing of identifiable nymphs from chiggers collected during expeditions in Borneo and Malaya. It has also been used for rearing nymphs of related families of mites. It is worth noting that the larval pelts obtained are frequently complete except for disarrangement and some loss of body setae; and because they show no deterioration with age after mounting they are often of more permanent value than mounts of actual larvae themselves.

Collection of engorged larvae. Techniques must be modified for every occasion to suit local conditions and requirements, such as the need to preserve skins of hosts intact. It is economical to allow chiggers to become detached naturally rather than to pick them off individually. Scrapings, or better, fragments of infested skin, are placed in water in cavity blocks, or are pinned to the corks of 2 in. × 1 in. tubes, and left overnight for larvae to become detached. Engorged larvae are then selected for rearing. Full engorgement is not always necessary to allow development of the nymph. If time and space allow (for example, in the laboratory), chiggers may be placed on water in cavity blocks or Syracuse dishes and the emergence of nymphs awaited—the nymph usually sinks while the larval pelt remains floating.

Rearing in tubes. Use stout round-bottomed tubes, or simple lengths of tubing corked at both ends, and soft rubber corks; a good size is about 35 mm. × 8 mm. Cut cigarette paper into strips to fit the tubes, say, 25 mm. × 6 mm. When planting larvae, mark a small circle in pencil near one end of a strip, at the same time entering identification data and date. Place in a tube with the circle near the mouth and wet thoroughly. Plant a selected larva in the marked circle: it is usually held there by surface tension, and the optimum degree of wetness is soon learnt by experience. Flooding will allow the larva to move within the water film; if the size of the paper and the amount of water added is too small in relation to the volume of the tube, the paper will tend to dry out and the larva be released. Most papers have too rough a surface and hold too thick a film of water to be suitable. If conditions of work allow, it is better to allow batches of larvae to remain floating in water in cavity blocks for a few days and then to plant out the larvae which become akinetic. The corked tubes are inspected at intervals. When a nymph has emerged, it should be preserved in 50 per cent spirit together with identification data. The larval pelt is usually left stuck down by the water film in the circle on the paper slip; it can be floated off gently at leisure and mounted. It can nearly always be identified without trouble, but it helps to