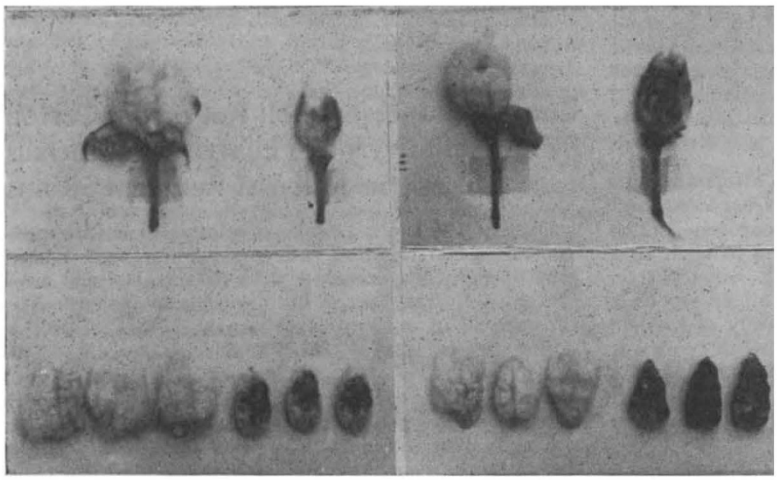
the most virulent. *Nematospora* sp. have not yet been found.

Then a series of inoculation tests were made on a total of 160 plants, selected from the best strains of the Plant Genetics Department. Four bolls from each plant were artificially infected, each one with a different micro-organism. The work was conducted in the laboratory after taking off the bolls from tagged plants and by submerging the peduncle of the bolls in water to keep them in good condition for an eight-day period. For inoculation, the technique of Dr. Steyaert was followed with minor modifications and proved to be very useful.

Examination of artificially inoculated cotton bolls after eight days showed in a large percentage that their contents were completely rotted. However, a few plants (twelve) from four strains showed 'resistance' to infection, especially the strain No. 16–38 (LM # 7–35 group), as demonstrated by the accompanying photographs.



Upper photographs: COTTON BOLLS ARTIFICIALLY INOCULATED WITH PURE CULTURES OF *Acremonium* SP. (LEFT) AND *Alternaria* (RIGHT). RESISTANT PLANT ON LEFT OF EACH PAIR. *Lower photographs:* LINT FROM BOLLS INOCULATED WITH PURE CULTURES OF *Acremonium* SP. (LEFT) AND *Alternaria* (RIGHT). RESISTANT PLANT ON LEFT OF EACH PAIR.

This investigation was begun on April 13 and continued until the end of the month. It will be continued in the next cotton season, toward the end of the year, with the four strains which were apparently 'resistant' to infection.

Comparing the results obtained by Dr. Steyaert, who worked with American varieties of cotton (*G. hirsutum*, L.) and those obtained by us, working with Peruvian varieties (*G. barbadense*, L., var. *peruvianum*, Cav.), it may be assumed that the latter varieties are genetically more 'resistant' to infection by fungus producing internal rot of the cotton bolls, transmitted by the "arrebiatado" punctures, than the former varieties.

A very interesting field of investigation appears to be opened up by the preliminary results mentioned here for the control by plant selection of cotton stainer damage.

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April 30.

[1] Steyaert, R. L., *Pub. Inst. Nat. Etude Agron. Congo Belge.*, Serie Scient. No. 16 (J. Duculot, Gembloux, 1939).

Inheritance and Acquired Characteristics

IN his recent book, "Habit and Heritage" (Kegan Paul, 1944), Wood Jones has again directed attention to the subject of hair-tracts in mammals with special reference to direction of growth and scratching habits in hairdressing. He points out that in certain marsupials, the habits of which have been observed and recorded in detail, the characteristic adult deviations from the primitive cranio-caudal direction of the body pelage are already established in the pouch-young. The inference to be drawn from the obvious correlation between direction of growth and scratching habits of these species, and their predetermined appearance in the pouch-young, is that the modified direction, originally induced through habit, has become inherent in the genetic constitution during the course of evolution.

I am indebted to Mr. Albert Hochbaum, director of the Experimental Duck Station at Delta, Manitoba, Canada, for directing my attention to the following analogous, yet essentially different, case in ducks. All adult ducks have well-developed pterylæ (feather-tracts) and do their preening as systematically as mammals do their scratching, running their bills along only certain defined lines of the contour plumage in conformity with the distribution of the pterylæ. Preening is, in fact, not a random operation, but determined by the extent of the tracts and directions of the feathers. At the time of hatching, however, the duckling is clad in down which exhibits no pterylosis, being evenly distributed over the body as in the supposedly primitive arrangement of adult Ratites and the *Sphenisci*. The contour feathers make their first appearance as sprouts at three weeks and are not fully developed until much later. As early as the age of five *hours* the ducklings (incubator-hatched) may commence to preen. From the start they go through the specific adult motions, although these are quite meaningless during the period of weeks in which the uniformly distributed coat of down is their sole covering. In this case it is not a morphological structure that precedes the appearance of a controlling habit, but a habit that precedes the development of a morphological character, to the topography of which the practice appears to be directly adapted.

Mr. Hochbaum has also pointed out that a young duckling, incubator-hatched and isolated from grown birds, when stretching, does it in the familiar adult fashion as if the primaries were already present; yet it then possesses merely rudiments of wings and no wing-feathers against which to press its outstretched leg. The leg nevertheless goes through the motions appropriate to the adult state.

I should point out that while these facts emanate from Mr. Hochbaum, he is not to be held responsible for the suggested interpretation.

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