the eyes. The oldest son is no longer bothered, except a local irritation at the time of the stinging. On April 9 he was stung in several places on the back which caused severe irritation, but no systemic complications followed.

In the experience of this particular family, over a space of nearly ten years, the very young children appeared to be only slightly affected by the stings of *Epyris*. As they grew older there was a period, from 5 to 10 years of age, when systemic complications arose, followed by a marked decrease in these symptoms.

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MUCIFICATION OF THE VAGINAL EPITHELIUM OF MICE AS A TEST FOR PREGNANCY-MAINTAINING POTENCY OF EXTRACT OF CORPORA LUTEA

IN August, 1931, we set forth in SCIENCE[1] the possibility of the use of histological changes in the vaginal mucosa of mice as a practical test for potency of extract of corpora lutea. This suggestion was based upon the fact that "Histological changes of the vaginal mucosa, comparable to those occurring during pregnancy, were found when normal, adult, unmated female mice were treated, just after oestrus, with an extract of corpora lutea, . . . with daily injections of extracts for periods ranging from 3 to 14 days." The histological changes referred to consisted of a mucification of the vaginal epithelium giving a "picture characteristic of pregnancy."

This view, however, was disputed by R. K. Meyer and W. M. Allen this year in SCIENCE[2] as follows: "The production of vaginal mucification by corpus luteum extracts which maintain pregnancy in ovariectomized pregnant animals, as described in a recent article in SCIENCE by Harris and Newman, is, we believe, not a test for progestin but a test for the small amount of oestrin which the extracts used by them undoubtedly contain."

The position taken by Meyer and Allen was based upon the fact that they were able to produce mucification "in one adult guinea-pig, new-born guinea-pigs, mice, and rats with Parke, Davis and Company's theelin (crystalline oestrogenic preparation from the urine of pregnant women)."

It should be noted that while Meyer's and Allen's results are of considerable interest, they scarcely seem to justify, *a priori*, the application which these experimenters made of them to our results, inasmuch as Meyer and Allen state that, "The method we have used in general is to castrate adult rats, mice, and guinea pigs," while we[3] definitely specified the use of "normal" mice

The practicability of any biological assay depends, of course, upon careful adherence to the described method in respect to all variables. Certainly, in the present instance, the presence or absence of ovaries in the test-animals might well be considered a variable of the greatest importance.

In actual tests, such seems to be the case. While we do not question, in any respect, the facts of Meyer's and Allen's results, we do find that when we use "normal," *i.e.*, not ovariectomized, mice we are unable to produce vaginal mucification typical of pregnancy by daily injections of Parke, Davis and Company's theelin. In these tests (14 animals) we used doses ranging in individual cases from 0.05 r.u. per day for 8 days (the optimum dosage for the production of mucification in ovariectomized mice, according to Meyer and Allen) to 0.5 r.u. per day. Save for the fact that we used normal mice in all cases, whereas the workers cited used ovariectomized animals, the variables, as far as we can judge, were under as similar control as could be expected in two different laboratories.

Thus, from our work it appears that the injection of an oestrin preparation into otherwise normal mice does not bring on mucification of the vaginal epithelium.

As a result of this work, we are inclined to deny the implication of Meyer and Allen in respect to our previous publication.[1] Though one may still maintain that the corpus luteum "hormone" in our extract so conditions the test-animals that it permits "the small amount of oestrin which the extracts . . . undoubtedly contain" to have the same reaction as it would on an ovariectomized animal, the important fact for the moment is that the extract is a crucial factor in the reaction, and that our test as described[1] still seems to be practical for the purpose originally set forth.

It is, perhaps, timely to recall that the end results of many biological assays are often producible by wholly different substances, the end result being of test-significance only when variables are controlled as indicated, and oftentimes even then only when the experimenter has a fairly good notion of what substance he is testing.

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[1] Reginald G. Harris and Dorothy M. Newman, "A Practical Test for Potency of Extract of Corpora Lutea," SCIENCE, 74: 182, 1931.

[2] Roland K. Meyer and Willard M. Allen, "The Production of Mucification of the Vaginal Epithelium of Rodents by the Oestrus Hormone," SCIENCE, 75: 111, 1932.

[3] With the technical assistance of Dorothy M. Newman.