upon the resistance of the oil used to oxidation. Irradiation in vacuum must be carefully controlled in order to yield infallible results. Few oils are entirely free from loosely bound oxygen and even after exhaustive evacuation at low pressures they contain enough oxygen to autoxidize actively when sealed in vacuum.[8] Ethyl ether, due to the presence of peroxides, is not a safe reagent to use in work upon vitamins. Water and alcohols have a protective action to autoxidation[11, 12] and have been shown to have a protective action upon vitamins in diets.[6]

In view of vitamin destruction through oxidation the practice of administering materials to be tested admixed with easily oxidizable oils is apt to yield inconsistent and unreliable results.

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MODIFICATIONS IN CHILODON UNCINATUS PRODUCED BY ULTRA-VIOLET LIGHT

USING a Cooper-Hewitt mercury vapor quartz lamp, run on three and a half amperes, rapidly dividing and conjugating cultures of *Chilodon uncinatus* were exposed to ultra-violet light. The distance from the light to the top of the cultures was twenty-two centimeters. The cultures were exposed for two minutes at intervals of two and three days, depending upon the state of the cultures. There were eight exposures in all.

One ex-conjugant, not fully reorganized, was used to start a culture, and eight subcultures were made from this, two being used as controls, and six exposed to ultra-violet light.

In five of the cultures, no important changes were observed. In the sixth, a culture in which an epidemic of conjugation was occurring at the time of the last two exposures, many abnormalities were found, and three distinctly different types of animals.

(1) The normal *Chilodon uncinatus*. This type has four chromosomes in the diploid count, easily determined during conjugation. The controls show this same number.

(2) A larger animal having the same features as the controls, but which, when isolated and cultivated, was found to have eight chromosomes. This has been checked up through three conjugation epidemics. The form is, therefore, a tetraploid form.

(3) The third type of animal is very different from the other two, as it shows characteristics of both *C. uncinatus* and *C. cucullulus*. The macronucleus has moved from the posterior end of the animal to the middle. In appearance, this macronucleus is much more like that of *C. cucullulus* than *C. uncinatus*, the shape being elliptical, and the portion surrounding the endosome is much less granular. The micronucleus, as in *C. cucullulus*, is not in the posterior portion of the macronucleus, but on the left side near the anterior end.

One vacuole has changed position. In *C. uncinatus*, there is a vacuole on the left side near the margin at the anterior end, and one on the right side near the margin about one fourth of the distance from the posterior end. In the new form, this last vacuole has moved to the posterior end in the center.

The pharyngeal basket is shorter, and is more anterior. The average number of trichites seems to be twelve.

In general shape, the animal looks more like *C. cucullulus*, but the ciliation is more like *C. uncinatus*, the only difference being that here the usual short marginal rows are a little longer than in the original.

Though this animal has been kept alive in pure cultures since the last week of August, 1927, it has never conjugated. In cultures where the animals are fairly abundant, encystment has occurred regularly, the whole culture sometimes encysting within a few hours. The length of time elapsing before animals are recovered from the cysts is very variable. Seven days is the shortest time in which they have been observed to emerge, and three to four weeks is more usual.

A more detailed description, with figures, will appear in a later paper.

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THE NATIONAL ACADEMY OF SCIENCES

THE National Academy of Sciences will hold its annual meeting in Washington on April 23 and 24. The following papers will be presented:

MONDAY, APRIL 23

Morning, 10:00

WILLIAM DUANE: *X-radiation from Mercury Vapor* (illustrated).

EDWIN H. HALL: *Electron Free Path and Supra-conductivity in Metals* (illustrated).

W. A. NOYES: *Reactions of Compounds having Odd Electrons; Nitric Oxide and Nitrogen Trichloride.*

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