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An Attempt to Produce Mutations in Mucoraceae by Means of Ultraviolet Rays.*

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The possibility of producing mutations by ultraviolet rays is still under discussion. Since the indecisive results of Guyénot[1] on *Drosophila ampelophila,* experiments have been undertaken, amongst others, by Altenburg[2] on *Drosophila melanogaster,* by MacDougall[3] on *Chilodon uncinatus,* and by Stubbe[4] on *Antirrhinum majus.* While the attempts of Altenburg gave completely negative results, MacDougall described several new hereditary forms of *Chilodon* produced by ultraviolet radiation and Stubbe found a percentage of mutants almost as high with ultraviolet as obtained with X-rays, 85.71 and 87.012 respectively.

Since the spores and mycelia of the *Mucoraceae* are sensitive to a small quantity of ultraviolet radiation and present a relatively simple unicellular structure they seem particularly promising for the study of the present problem.

Ten generations of *Rhizopus nigricans* were irradiated for periods of time a little less than sufficient to kill them.

The fungus was cultivated on agarized Coon's medium in Petri dishes uncovered during exposures. The spores collected from the culture of one generation by means of a soft wet brush were spread on the surface of the medium used for the following generation. The latter was irradiated either immediately after the absorption of the water brought in by the brush or after 15 hours, the mycelia having developed. (22°C.)

I used the total radiations of an arc mercury lamp, working with 4 amperes and 60 volts on direct current. The distance between the lamp and the culture was 30 cm. The time of exposure for the spores was 35 seconds and 20 for the mycelia. (Lethal doses were 25 and 15 seconds, respectively.)[5]

* This work was done under a Seessel fellowship grant. The ultraviolet lamp was provided by Hanovia Company, through the Committee of the National Research Council on the Effects of Radiation on Living Organisms.

[1] Guyénot, E., *Bull. Sc. France et Belg.,* 1914, **48,** 160.

[2] Altenburg, E., *Am. Nat.,* 1928, **62,** 540.

[3] MacDougall, M. S., *J. Exp. Zool.,* 1929, **54,** 95; 1931, **58,** 229.

[4] Stubbe, H., *Z. Ind. Abstm. Vererb.,* 1930, **56,** 1.

[5] Luyet, B., PROC. SOC. EXP. BIOL. AND MED., 1930, **27,** 668.

A careful examination of the morphological and physiological behavior of the 10 irradiated generations did not show the least difference between them and the control cultures. Attention has been paid especially, besides the morphological characters described by systematists, to the germination power, the rate of growth, and the sexual behavior.

In order to have my conclusion controlled by a specialist, I sent a complete set of cultures to Miss Satina of the Carnegie Institution, who was kind enough to examine the irradiated cultures. Her conclusions were in exact keeping with mine.

In connection with these negative results I should like to emphasize a fact which, although well known, is not given sufficient attention by biologists; that is, the distance between the wave lengths of ultraviolet and X-rays is proportionately greater than that separating ultraviolet and short electric waves, and one does not usually expect the same results on living organisms from electric waves and ultraviolet radiations.

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Spirocheta Hispanicum (Variety Marocanum). Application in Fever Therapy and Diseases of Central Nervous System.*

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The objectionable features of malaria therapy in general paresis and neurosyphilis have suggested the use of an organism that will produce a self-limited infection for which no specific therapy is needed to cure the disease induced for therapeutic purposes. In other affections of the central nervous system, such as multiple sclerosis, dementia precox, and the like, inoculations with malaria-infected blood from another syphilitic patient are not desirable.

In the treatment of the diseases mentioned, Remlinger and Bailly,[1] Nicolle and Anderson,[2] and others have used the *Spirocheta hispani-*

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[1] Remlinger, P., and Bailly, J., *Paris Médical*, 1930, **1**, 447.

[2] Nicolle, C., and Anderson, C., *Arch. Inst. Pasteur de Tunis*, 1930, **19**, 27.