all those interested in the production, chemistry, sanitation and control of foods. They will serve also as interesting and informative reading sources by those who are not food specialists.

ARTHUR W. THOMAS
COLUMBIA UNIVERSITY

FATS AND OILS

Fats and Oils (An Outline of Their Chemistry & Technology). By H. G. KIRSCHENBAUER. 154 pp. New York: Reinhold Publishing Corporation. 1944. $2.75.

THIS book represents one of the first attempts to present briefly both the chemistry and technology of the vegetable fats and oils. Of the 140 pages of written material, about one third is given to an outline of the structure of fats and fatty acids and to analytical methods; about 35 pages are used for descriptive notes and general characteristics of the more important fats; and the remainder of the book deals with technological aspects such as methods of production, purification, hydrogenation, hydrolysis, distillation, spoilage, detergents and lubricants. Although such a condensed treatment offers very little new material and information not previously available in the accepted references and monographs, it does provide a satisfactory introduction to the extensive field of fats and oils. Its use will be of very limited value to those engaged in either chemical or technological work with fats and oils.

HERBERT E. LONGENECKER
UNIVERSITY OF PITTSBURGH

SPECIAL ARTICLES

NEW STRAINS OF PENICILLIUM NOTATUM INDUCED BY BOMBARDMENT WITH NEUTRONS[1, 2]

MODERATELY heavy spore suspensions in normal saline in test-tubes of a stable variant isolated from a strain of *Penicillium notatum*[3] were bombarded with neutrons from the 42-inch cyclotron of the physics department. Tubes were removed after 1, 2, 3.5, 4.5, 5, 6 and 7 hours on the first day when the beryllium target (other targets were also used subsequently) was being bombarded by 10 mev deuterons. On succeeding days, after increasing the total time of operation of the machine, additional tubes were removed from time to time.

RESULTS

Approximately 100 new strains or mutations have been isolated from cultures of the bombarded spore suspensions. This was done by comparing colony characteristics such as color, size and texture with those of controls which received no neutron bombardment.

Some of the new strains isolated have been cultured simultaneously in large batches on the surface of medium in half-gallon milk bottles by the well-known methods. Under identical conditions such as medium, time and temperature there have been found marked differences with respect to rate of sporulation; yields of antibiotic activity when compared by the cup assay method; and color and texture of the mats among some of the strains isolated.

As a typical example the results of quadruplicate cup assays of composites of several gallons each of surface-culture metabolism liquor from two different strains isolated after neutron bombardment are given in Table 1.

TABLE 1

Green Mat	Buff Mat
86	153
90	128
60	143
86	143
Aver. 80.5	142 Oxford units

Although the eventual yield of antibiotic activity by the buff mat strain was superior to the green mat strain by 76 per cent., the rate of sporulation of the green mat was much faster than in the case of the buff mat strain during the early stages of culture.

Preliminary experiments indicate that the antibiotic activity produced by many of the new strains does not differ qualitatively from that produced by the parent strain with respect to inhibition of growth of various bacterial species. Work is being continued to rule in or out the possibility that new antibiotics are being produced by the mold as the result of neutron bombardment.

The number of new strains which appears is in some measure proportional to the amount of bombardment. Thus only a few new strains were found in cultures of spores removed during the first day of bombardment, whereas new strains were very numerous in cultures of spores bombarded by neutrons each time the cyclotron was in operation (approximately 5 days each week) over a period of 4 months.

At present we are exposing suspensions of spores

[1] This study is a contribution from the Departments of Chemistry and Bacteriology of the Ohio State University under fellowships sponsored by the Wm. S. Merrell Company and administered by the Ohio State University Research Foundation.

[2] Experimental method.

[3] Obtained from the Northern Regional Research Laboratory.