"Virgin" Olive Oil and the Ultra-Violet Ray

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FOR years, olive oil has played a definite role as a food, as well as having wide use in nutrition and for medicinal purposes. The necessity for placing definite standards and for fixing distinct tests to determine the presence of refined olive oil in "Virgin" olive oil has become necessary only with the advanced knowledge on the values of "Virgin" olive oil in comparison to the corresponding qualities of a refined olive oil. More particularly, the reliance placed upon "Virgin" olive oil in therapeutics and in medicine has hastened the need for this test. Taste cannot be relied upon as a method for distinguishing between these two oils. From the standpoint of flavor, 10% of a highly-flavored "Virgin" olive oil with 90% of refined olive oil may appear identical with a 100% average "Virgin" olive oil. The unrefined unsaponifiable matter, the enzymes, and other lipoidic constituents place "Virgin" olive oil upon a plane apart from all other oils and make it necessary—for information of the public as well as of the physicians who are daily prescribing olive oil—to define more clearly the term "Virgin" olive oil and to adopt a test for assuring the purchaser of its purity.

I have suggested to the Olive Oil Committee that the following definition for "Virgin" olive oil be adopted:

"Virgin Olive Oil (edible) is the first, cold-pressing of sound, properly matured fruit of the cultivated olive; clarified only by mechanical means; neither wholly nor in part chemically refined nor otherwise subjected to chemical or heat treatment, not bleached nor deodorized."

This standard is very similar to that of the United States Government Standard Specification No. 77 of the Federal Specifications Board which was originally prepared by Dr. Jamieson of the Bureau of Chemistry. It is interesting to note that in the Standard Specification No. 77, the olive oil referred to is "Olive Oil (edible grade)"; and although mention is not made of the word "Virgin," yet the specification as adopted relates particularly to "Virgin" olive oil.

For several years, we have been carrying on research in collaboration with outside laboratories, as well as in our own laboratory, for the purpose of determining whether the objections which have been raised to the ultraviolet ray test are justifiable or whether they are as a result of errors in obtaining authentic samples of olive oil or in the general procedure. Not less than twenty articles have been published within the past five years regarding the adaptability of the ultraviolet lamp as a means for distinguishing differences between "Virgin" and refined olive oils, and mixtures of the two. A number of articles have also been published on differentiating other "Virgin" oils from refined oils, butter from margarine, etc. In our research, however, we have paid particular attention to the use by means of which the ultraviolet lamp may be applied to "Virgin" olive oil. Inasmuch as we have found this test is unquestionably satisfactory in *all* cases, our next step was to determine the cause for the objections which had been raised in the past. We went very thoroughly into the method of pressing California olive oil, in view of the fact that the only sample which the Bureau of Standards originally received in 1927 (when its attention was called to this test) was of a California, supposedly "Virgin" olive oil, which, when placed under the ultraviolet lamp, showed an orange fluorescence, which slightly resembled that of refined olive oil.

We now know that the general method in use in California today for the expression of olive oil is one in which four pressings of the olive are made, which four pressings are allowed to run into one trough, there to be mixed and used as "Virgin" olive oil. In view, however, of the fact, that, primarily, such a mixture does not constitute first pressing, also, that in the third and fourth pressings the olives are subjected to heat and steam treatment—in order to obtain a higher yield of the oil; although this olive oil may be termed "crude," it cannot properly be called a "Virgin" olive oil. The oil, then, which was

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Margarine Consumption

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"Finally, with the increase in consumption of fresh fruits and vegetables in the form of salads throughout the year, goes an increased use of salad oil. This is in part olive oil, but largely carefully refined deodorized and decolorized cottonseed oil. Salad oil may be consumed as such, but a large part of the consumption is in the form of prepared mayonnaise and other dressings, and their manufacture has become a considerable industry. Altogether, the increased use of vegetable oils has contributed to diversification of the diet, to convenience in the kitchen and to some actual and more potential cheapening of the food fats as a whole. It has come about largely as a result of improved technology, supplemented by vast commercial advertising. Provided the nutritive deficiencies of vegetable oils are made up by other components in the diet, as is ordinarily the case, there are no offsetting dietary disadvantages."

Virgin Olive Oil

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forwarded to the Bureau of Standards had a fluorescence similar to that of a second pressing European olive oil obtained in very much the same manner. Moreover, although it was suggested at that time that one difficulty might be that California oils appeared differently fluorescent than European olive oils, we have obtained authentic samples of California olive oils which do appear identical with European oils. These California oils, in order to appear as "Virgin" under the lamp, must be taken from the first of the four expressions, or, if a machine is used similar in type to the Anderson expeller, the oil must be taken from the first part of the machine, and must have been cold-pressed.

Another objection raised more recently is to the effect that chlorophyll or other coloring constituents may be added to a refined olive oil to produce a "Virgin" oil type of fluorescence. We have obtained samples of five different chlorophylls, including those used by the Italian investigator who raised this question; but find that the blue fluorescence of a refined oil may not be covered by the deep green coloration of chlorophyll—no matter in how great quantities it has been added. We want to confirm our earlier reports that it is apparent the blue fluorescence of a refined oil is due to a destruction of the chlorophylls present rather than to oxidation, and that the only connection between the two phenonema occurs when, during the process of the development of rancidity, part of the coloring matter has been destroyed or changed — as indicated by the difference in fluorescence. Although it has been found in our laboratory that by the addition of a small quantity of annatto in oil to a refined olive oil there may be produced a fluorescence similar to that of "Virgin" olive oil, the usual chemical test for annatto is sufficient to detect the presence of this adulterant.

Kellogg & Sons Earnings

THE annual report of Spencer Kellogg & Sons, Inc., flaxseed oil, Buffalo, for the fiscal year ending September 28, shows net profits of $1,297,730, or $2.55 a common share, after depreciation, interest, and Federal taxes. The net profit in the preceding fiscal year equalled $3.59 a share. The decrease in the company's earnings is attributed largely to larger expenses of a non-repeating nature. The outlook for the present fiscal year is reported to be more optimistic. James L. Wickstead, treasurer of the company has been elected a director.