NEW METHOD OF OLIVE OIL EXTRACTION

In the current issue of the Italian oil industry journal (*L'Industria degli Olii e dei Grassi*) Professor Michele degli Atti points out that, in its general outline, the process of oil extraction from the olive has remained almost unchanged from the beginning; that is to say, it consists in first pulping the fruit and then extracting the oil by pressure. The same general method is followed in the extraction of fruit juices generally, such as the production of grape juice, for example. In such cases, however, one is dealing with the extraction of a homogeneous liquid, and with the mechanical aids now available the yield is comparatively high. But with the olive, conditions are somewhat different, since the juices contained in this fruit consist of two liquids of very varied consistency from the physical point of view. The first is an aqueous solution of salts, acid, etc., whilst the other and considerably lesser constituent is a fatty substance, more or less viscous, and certainly much less fluid than the aqueous solution. When subjected to pressure the watery content passes out readily enough, but the more viscous oily matter does so only with difficulty and tends to block the press, especially towards the end of the operation, when the percentage of oil in the pulp is much greater than that of aqueous solution. Ultimately at least 10 per cent of oil is left in the residue. Besides being inefficient, the process is costly, involving the use of high power and the necessity of subsequent extraction with solvents. Numerous attempts have been made to find a better and cheaper method, but so far, says Professor Michele degli Atti, with little success.

Variation of Constituents

Analysis of different samples of olives grown under different conditions shows that the main constituents vary within the following limits: water of vegetation (aqueous solution) 45 to 60 per cent, oil 25 to 30 per cent, solid organic matter 12 to 22 per cent. The total liquid portion therefore amounts to 80 to 90 per cent of the whole, and of this two-thirds is aqueous solution and one-third oil. After removing the skin or endocarp, the fleshy portion is completely ground up, the oil cells being thoroughly broken so that all the juice is set free, and an unstable emulsion of fatty matter and water, containing a certain proportion of solid particles in suspension, is formed. The separation of the oily material from such an emulsion may, of course, be effected without the use of power. Such separation is all the more perfect in proportion to the completeness of grinding. This disintegration, however, is not to be confounded with mere pulping, since this pulp is really a mass of minute particles, including a considerable proportion of unbroken cells. If the disintegration is sufficiently thorough the emulsion formed may be merely left to settle and the oil may be decanted off.

Another Method

Another method is to place the pulp in cloth bags, in which case the oily matter passes out readily enough, whilst the organic solid matter and aqueous residue remains in the bag in the form of a semi-fluid non-filterable substance. It was further observed that if any pressure is applied, however slight, water passes out with the oil, the amount of water being proportionate to the pressure. This is explained by the fact that without pressure the fatty matter is expelled through differences in density, the water remaining fixed to the solid particles forming a semi-fluid mass. But if pressure be applied, this adhesion of the water to the solid particles is neutralized.

The author has endeavored to apply these ideas in practice, and claims to have succeeded at least on a small scale; and notwithstanding the rough and ready methods employed he was able to obtain a yield of 18 per cent olive oil, calculated on the total weight of the olives, as compared with the yield of 12.6 per cent by the ordinary method. The advantages claimed for the new process are: (1) simplified mechanical means of low cost, (2) reduced labor cost, (3) production of perfectly pure filtered oil of uniform quality, and having all the qualities present in the original raw material, (4) high yield. It is hoped to publish further details. Meanwhile the cost of the experimental work of the last two years has been borne by the Ministry of National Economy and the Societa Nazionale degli Olivicoltori.—*The Chemical Age.*

DIGESTIBILITY OF HYDROGENATED FATS

A few years ago the United States Department of Agriculture made a study of the digestibility of some blended hydrogenated fats. Before that it had made similar studies on some fifty other fats and oils. These hydrogenated fats were found to be just as digestible as natural fats of corresponding melting points. Copies of the bulletin reporting this research on hydrogenated fats are still being distributed free. Requests should be addressed to the Office of Publications, United States Department of Agriculture, Washington, D. C., for Department Bulletin 1033, "Digestibility of cod-liver, Java almond, tea-seed, and watermelon seed oils, deer fat, and some blended hydrogenated fats."