Test for the Purity of Olive Oil.

BY DR. RAMON C. LANGLIES.

In the numerous experiments we have made to ascertain the purity of olive oil, we have yet found no test giving better indications than that of Hanchecorne. With our experience of this we have adopted a process which will determine, in a positive manner, the presence of seed oils, cotton-seed oil in particular, in any sample of olive oil. The test employed is a mixture of three parts of pure nitric acid, forty degrees, and one part of water. The operation is performed in a test tube or vial: three grammes of the oil to be tested are mixed with one gramme of the test liquid, and the mixture is heated on a water-bath. If the oil be pure, the liquid becomes clearer, and takes a yellow colour, like that of purified olive oil; but if adulterated the transparency will be the same, but the colour red; with five per cent. adulteration the reddish color is characteristic, and with an adulteration amounting to ten per cent. it is decisive. The process occupies but fifteen or twenty minutes, and the coloration of the oil lasts for several days.—*Journal de Pharm et de Chimie.*

The Manufacture of Sugar of Lead.

In a recently published German book, entitled "The Dry Distillation of Wood," Mr. Edward Assmuss, among others, treats of the question, which of the various methods for the manufacture of sugar of lead is most advantageous? Druggists make a distinction between brown and white acetate of lead. For the preparation of the first, which is not much in demand, only rectified acetic acid is employed, while for the white product a perfectly pure acid is required. Both kinds are prepared, either by saturating the acid with litharge, or by treating granulated lead with acid. Among them Mr. Assmuss considers the use of oxide of lead, or litharge, as more advantageous than that of metallic lead, for although the latter may be less expensive than the litharge, and although a concentrated solution is obtained at once, which will not require any evaporation, it is true, on the other hand, that by this plan the lead must first be impregnated with acetic acid and then exposed to the air, so that oxide of lead may be formed, which, in order to produce a solution of acetate of lead, must first be dissolved by the acid. In this operation, which is to be repeated several times, a considerable amount of acid is lost by volatilization. This loss is more important, because if an equally concentrated solution is to be obtained, a strong acetic acid must be employed. In this case, the manufacturer would, on the one hand, gain by the cheapness of the metallic lead, as compared with the oxide of lead, but, on the other hand, he would lose double or triple the gain by the loss of acetic acid.

In the preparation of white sugar of lead from litharge, three methods are to be distinguished: 1, that with steam; 2, the one by direct fire; and 3, the one by acetic acid vapors. In the first, a wooden tub, lined inside with sheets of lead, is filled half full of acetic acid of 1.057 specific weight. An equal weight of well ground litharge is then stirred in, and finally steam is turned on. After having been heated in this manner for a while, the liquid ceases to yield an acid reaction; acetic acid is then added till blue litmus paper is slightly turned red; when it is again turned blue, fresh acid is poured in, until all the litharge is transformed into a neutral salt, whereupon the steam is cut off. The liquid is now filtered through felt into evaporating pans, or decanted after several hours rest.

In using direct fire, leaden pans may be employed, which should rest upon plates of cast iron of at least three-quarters of an inch in thickness; but copper pans are preferable, on the bottom and borders of which leaden stripes are fastened, so as to afford protection against the action of the acid. Both the evaporating and boiling pans are placed in the steam furnace, the latter being heated by the fire gases passing over the bottom of the evaporating pan. Into the former, equal parts of litharge and acetic acid are put, and agitated for some time with a stirrer in the form of a shovel. When the liquid is neutralized, it is drawn off by a stop-cock into the evaporating pan (first passing through a small filter,) until the pan is three-quarters full, when the boiling kettle is filled with fresh portions of acid and litharge.

In using acetic acid vapors, the acid being heated in a particular vessel, its vapors are conducted into chambers containing the oxide of lead. The generating vessel should consist of an upright standing cylinder of sufficiently thick sheeted-copper, holding about one thousand pounds of liquid. A bent copper pipe leads from the upper part into a wooden barrel, three feet in diameter and five feet high, lined inside with sheet lead. The pipe should enter at the top and come down to the bottom. The barrel is provided inside with four finely perforated bottoms of lead, of at most one-quarter of an inch thickness, from each of which, alternately at the right and left, should ascend a lead pipe of from two to three inches high and one and a half inch diameter, open at both ends. There should be three such barrels for one generator. Upon each bottom is then to be placed a layer of litharge of two or three inches thickness, after having previously been covered with a loose linen cloth. When the covers have been put on, the barrels are connected with each other by means of pipes that lead from the upper part of one to the lower part of the succeeding one, the third barrel being in connection with the vessel of condensation. In being evolved from the generator, the said vapors enter from below into the first barrel, ascend through its partitions, and pass from the top over into the second barrel, &c. On their way through the many layers of litharge, they take up lead, neutralizing themselves finally, till forming a perfectly basic solution. When the liquid condensed in the lower part of the barrels has been concentrated so far as to yield crystals in cooling, it is drawn off into the evaporating vessel.

In regard to the merit of the three plans, the advantage is decidedly to be given to the one last described, the employment of the steam being also superior to that of direct fire. The only disadvantage of the last method is that its product is not as white as that obtained by the employment of steam, which is to be accounted for from the fact that in evaporating over free fire the formation of brown carbonized oxide of lead cannot be prevented, which of course will impart to the liquid as well as to the salt a yellow appearance. As to the use of steam, the advantages are, that a proportionately larger quantity of leys may be evaporated by means of a small steam generator, which besides may yield steam for many other purposes. With respect to the manufacture of sugar of lead by means of acetic acid vapors, it is still more profitable from the fact that evaporation can be dispensed with, and, what is of especial importance, that the locality will always be free from lead vapors, which is not the case in the other methods. In fine, it is not necessary that a perfectly pure acetic acid be employed, as only the vapors come in contact with the oxide of lead.

Whether it would be desirable to the manufacturer to prepare his own oxide of lead, or to buy it in the form of litharge, it is to be considered that the litharge is generally only five per cent. higher in price than metallic lead, although it may contain so many impurities that only eighty-eight out of one hundred pounds are taken up by the acid. From this it appears to be more profitable to buy the metallic lead, and convert it into oxide. Where, however, litharge can be obtained at the same price as metallic lead, or even cheaper, it is evidently preferable, as the conversion of the latter into an oxide cannot be accomplished without expenditure of time and fuel.—*Journal of App. Chem.*

Mineral Water Syrups.

Mr. G. M. Hambright contributes the following formulæ to the Chicago *Pharmacist:*

SIMPLE SYRUP.

Take of White sugar, 14 lbs. (com.)
Water, 1 Gal.

Dissolve with the aid of a gentle heat, strain, and when cold add the whites of two eggs, previously rubbed with a portion of the syrup, and mix thoroughly by agitation. [The egg albumen is added to produce froth.]

LEMON SYRUP.

Take of Oil of lemon, 25 drops.
Citric acid, 10 drachms.
Simple syrup, one gal.

Rub the oil of lemon with the acid, add a small portion of syrup, and mix.

ORANGE SYRUP.

Take of Oil of orange, 30 drops.
Tartaric acid, 4 drachms.
Simple syrup one gallon.

Mix as above.

VANILLA SYRUP.

Take of Fld. ext. vanilla, 1 ounce.
Citric acid, ½ "
Simple syrup, 1 gal.

Rub the acid with a portion of syrup, add Ext. vanilla, and mix.

GINGER SYRUP.

Take of Tinct. ginger, 3 ounces.
White sugar, 7 pounds (com.)
Water ½ gal.

Heat the sugar and water until the sugar is dissolved, raise to the boiling point, then gradually add the Tinct. ginger, stirring briskly after each addition.

SYRUP SARSAPARILLA.

Take of Simple syrup, 1 gal.
Comp. syr. sarsap. *ad lib.*
Powd. ext. licorice, 1 ounce.
Oil sassafras.
Oil wintergreen, aa, 15 drops.
Oil anise, 10 "