waxes, 502; textile fabrics, 723; and candies, fruits and syrups, 406. This work the director of the laboratory undertook, in collaboration with his assistants in the Central Laboratory, Drs. Fabris and Rossi.

In many cases the official methods practiced by the Customs House are the same as those used by the chemists of the agricultural stations, and also coincide with those which have been presented by the International Congress of Applied Chemistry. Special methods, which have originated in the Central Laboratory, are given in great detail, and are submitted now for the first time to general scrutiny.

After each of the main subjects, there is appended a bibliography of the authors cited and the methods described. It is a rather remarkable fact, however, that among the official methods which have been adopted by the Italian Customs Service, as applied to agricultural products, no reference has been made whatever to the work of the Official Agricultural Chemists of this country. While the work contains references to individual investigators in this country, the official methods are not mentioned.

This work will be useful to those engaged in customs work, and especially to those interested in products which are to be imported from or sent to Italy, particularly in those products which must undergo examination before being admitted into that country.

H. W. WILEY.

ANALYSIS OF POTABLE SPIRITS. BY S. ARCHIBALD VASEY. London: Bailliere, Tindall & Cox. 1904. Price, 3 shillings.

This little book of 87 pages gives a resumé of the proposed methods for examining potable spirits. It is particularly intended for the guide of analysts in the examination of whisky, brandy, gin and rum. The art of manufacturing imitation whisky, known in this country as compounded or blended whisky, is evidently as far advanced in Great Britain as in the United States.

In regard to these artificial whiskies the author says: "The introduction of grain or neutral spirit was never demanded by public taste; it was dictated solely and simply by economical motives. The time required for maturing genuine whisky is thus saved, and the practice of blending is carried to an enormous, if not appalling, extent, with handsome profits to the blenders."

The author describes the chemical analysis of potable spirits and, briefly, the methods of preparation. He also calls attention to

the fact that the pot-still, that is a still without rectifying column, is the only one which can furnish the raw material which by proper aging becomes potable spirits. Scotch whisky is defined as being a pure malt whisky.

Chapter III treats of the standards used in analysis, most of the processes being of a colorimetric nature, especially in the determination of small quantities of materials found in both distilled malt spirits and in brandies.

The fourth chapter is devoted to the estimation of aldehydes and acids. The aldehydes are taken as existing in the form of acetaldehyde $CH_3COH$. In the colorimetric method of determining aldehyde the free aldehyde is prepared from the ammonia aldehyde $CH_3CHOHNH_2$.

Chapter V is devoted to the estimation of higher alcohols commonly grouped together under the term "fusel oil." The principal higher alcohols are propyl, normal butyl, isobutyl and amyl. The percentage of these bodies in fusel oil varies greatly, but normal butyl alcohol and amyl alcohol constitute the chief portions thereof.

The process of determining the higher alcohols consists in oxidizing them to the corresponding acids, and throwing these out as barium salt. Carbon tetrachloride is recommended instead of chloroform for dissolving the higher alcohols because carbon tetrachloride yields no mineral acid on oxidation with chromic acid.

The colorimetric methods, especially those of Girard and Cuniasse, are fully described, but these are more valuable as qualitative than quantitative processes.

The sixth chapter is devoted to the estimation of compound ethers, and the seventh to the estimation of furfural.

Chapter VIII describes the importance of taste in judging between genuine and imitation distilled potable spirits, and Chapter IX is given up to general considerations of the results of analysis.

The author is of the opinion that generally by the sense of taste and the results of analysis the genuine pot-distilled potable spirits can be distinguished from those compounded with neutral spirits, and artificial essences.

It must be admitted, however, that the skilled chemist might so compound these bodies as to make the analytical data very dif-

ficult of interpretation. In such cases the educated taste would be of great help.

The final chapter is given to descriptions of different colorimeters which are used.

This little work will be a great help to analysts, who do not have the larger works referred to by the author, and even those who have them at hand would find this compilation time saving. It is evident that much light may be thrown upon the composition of potable spirits by careful chemical investigations. Fortunately, however, in all civilized countries potable spirits are subjected to the strictest fiscal regulations, and by reason of this supervision it should not be difficult in any case to trace a sample to its origin, and to determine by the inspection of the public records whether it is a pure, straight pot-distilled liquor, or an imitation article made from neutral spirits, artificially colored and containing such substances as the compounder may see fit to use.

H. W. WILEY.

ELECTRICITY IN AGRICULTURE AND HORTICULTURE. By PROF. S. LEMSTROM. New York: D. Van Nostrand Co. Price, $1.50.

This book of 72 pages is devoted to a description of experiments in the application of electricity to agriculture and horticulture. The author conducted his original experiments with the old electrical machines of Holtz, and gives a number of data showing the effect of electrical influences upon vegetation. The object was not to produce an electric light in order that the period of work of the chlorophyll cells might be lengthened, but to subject the plants and the soil to the emanations of the ordinary Holtz electrical machine. The author has constructed a special electrical apparatus which is described in detail, to take the place of the Holtz machine. The experimental part is followed by a discussion of the question, "How does electricity exercise its influence on the plants?" The author draws the following conclusions: "The electric current produced by the influence machine when its positive pole is earthed goes from the earth through the plants to the points of the insulated wire-net, and back to the negative pole. This causes an ascent of liquid or juice in the capillary tubes of the plants, and produces in such a way an augmentation of the energy with which the circulation of the juices is going on."

It is hardly to be expected that the data and methods described