the spirit either to the spirit or to the feints receiver, as the case may be, to control the strength and quality of the product in much the same manner as does the pot-still distiller.

*Industrial Alcohol.—*By industrial alcohol is understood spirit which is employed for other than potable purposes. Alcohol is largely employed in the industries and arts, and for domestic purposes. It is chiefly used for the manufacture of varnish, fine chemicals and dye-stuffs, for pharmaceutical purposes, and in the form of ordinary methylated spirit for lighting and heating. Ordinary methylated spirit for domestic purposes is prepared in the United Kingdom by adding 10 parts of wood naphtha and a small quantity of mineral naphtha to 90 parts of strong spirit. This spirit may be employed duty free for any purpose, except that it may not be purified in such a manner as to produce pure alcohol or a potable spirit. Up to the year 1906 British manufacturers were forced either to use this spirit or to pay the full duty if they wished to use any other variety. As a result of the recommendations of the industrial alcohol committee of 1904-1905 the Revenue Act of 1906 contained provisions modifying this undesirable state of affairs. Manufacturers may now use a special “ industrial methylated spirit,” which consists

of alcohol 95 parts and wood naphtha 5 parts, and they may also, under certain conditions and restrictions, employ pure alcohol. It is generally considered that the most satisfactory way of methylating or “ denaturing " spirit intended for technical purposes is that which consists in adding one of the ingredients which would ordinarily be used in the course of manufacture, or some other ingredient which does not interfere with the manufacture of the specific article in question. In the year 1906 the total quantity of “ industrial methylated spirit " em­ployed in the United Kingdom was 2,041,373 proof gallons. The quantity of pure alcohol employed in the same year was 435,915 gallons; for the same period the total quantity of ordinary methylated spirit produced was 6,055,285 gallons. On the con­tinent of Europe and in America alcohol is used in the industries to a greater extent than is the case in the United Kingdom.

The raw materials generally em­ployed in making industrial alcohol are the sugar beet, and beet or cane molasses, potatoes, maize, rice and similar starchy materials. The manu­facture of spirit for industrial pur­poses in many respects resembles the process for manufacturing potable spirit, but, broadly speaking, it may be said that the raw materials em­ployed need not be of so high a class, and that the main object of the dis­tiller in this case is to produce as high a yield of alcohol as possible. Taste and flavour are secondary con­siderations, although in the case of industrial alcohol employed for some purposes—for instance, for pharma­ceutical preparations—a very fine spirit is required. When beets or molasses are employed for making alcohol, the process is a comparatively simple one. If beets are used the sugar is extracted from them in much the same way as is the case in the manufacture of sugar itself (see Sugar), although in recent years a process for steaming the beets under pressure in much the same way as in the preparation of potato mashes has been employed. ' The sugar present in the beet and in molasses is not directly fer­mentable. It is generally rendered so by the addition of a small quantity of mineral acid. The saccharine solution is then pitched with yeast and fermented in the ordinary way. Potatoes, maize, rice and other starchy materials are generally treated under pressure with steam in a close vessel termed a converter. This method entirely disrupts the starch cells, and so renders the starch very readily convertible. When the pressure “ cooking" is completed the mash is run out of the converter into the mash tun proper, where it is treated with a minimum quantity of malt at the most suitable temperature. The wort obtained is, after (as a rule) removing a part of the husks and skins by means of special machinery, pitched with yeast and fermented.

We have seen above in the paragraphs dealing with the general features of distillery operations that the method of converting starch into sugar by means of malt possesses very serious