ALCOHOL AND ETHERS.

ALCOHOL.

Take of Rectified-spirit, one pint.
Lime, eighteen ounces.

Break down the Lime into small fragments: expose the Spirit and lime together to a gentle heat in a glass mattrass till the lime begins to slake: withdraw the heat till the slaking is finished, preserving the upper part of the mattrass cool with damp cloths. Then attach a proper refrigeratory, and with a gradually increasing heat distil off seventeen fluidounces. The density of this alcohol should not exceed 796: If higher, the distillation must have been begun before the slaking of the lime was finished.

AETHER SULPHURICUS.

Take of Rectified-spirit, fifty fluidounces.
Sulphuric acid, ten fluidounces.

Pour twelve fluidounces of the Spirit gently over the Acid contained in an open vessel, and then stir them together briskly and thoroughly. Transfer the mixture immediately into a glass mattrass connected with a refrigeratory, and raise the heat quickly to about 280°. As soon as the etherial fluid begins to distil over, supply fresh Spirit through a tube into the mattrass in a continuous stream, and in such quantity as to equal

that of the fluid which distils over. This is best accomplished by connecting one end of the tube with a graduated vessel containing the spirit,—passing the other end through a cork fitted into the mattrass,—and having a stop-cock on the tube to regulate the discharge. When forty-two ounces have distilled over and the whole spirit has been added, the process may be stopped. Agitate the impure ether with sixteen fluidounces of a saturated solution of muriate of lime, containing about half an ounce of lime recently slaked. When all odour of sulphurous acid has been thus removed, pour off the supernatant liquor, and distil it with a very gentle heat so long as the liquid which passes over has a density not above 735. More ether of the same strength is then to be obtained from the solution of muriate of lime. From the residuum of both distillations a weaker ether may be obtained in small quantity, which must be rectified by distilling it gently again.

SPIRITUS AETHERIS SULPHURICI.

Take of Sulphuric ether, a pint.
Rectified-spirit, two pints.

Mix them. The density of this preparation ought to be 809.

SPIRITUS AETHERIS NITRICI.

Take of Rectified-spirit, two pints and six fluidounces;

Pure nitric acid (D. 1500) seven fluidounces.

Put fifteen fluidounces of the spirit, with a little clean sand, into a two-pint mattrass, fitted with a cork, through which are passed a safety-tube terminating an inch above the spirit, and another tube leading to a refrigeratory. The safety-tube being filled with pure nitric acid, add through it gradually three fluidounces and a-half of the acid. When the ebullition which slowly rises is nearly over, add the rest of the acid gradually, half a fluidounce at a time, waiting till the ebullition caused by each portion is nearly over before adding more, and cooling the refrigeratory with a stream of water, iced in summer. The ether thus distilled over, being received in a bottle, is to be agitated first with a little milk of lime, till it ceases to redden litmus-paper, and then with half its volume of concentrated solution of muriate of lime. The pure hyponitrous ether thus obtained, which should have a density of 899, is then to be mixed with the remainder of the rectified spirit, or exactly four times its volume.

Spirit of nitric ether ought not to be kept long, as it always undergoes decomposition, and becomes at length strongly acid. Its density by this process is 847.

SPIRITUS DILUTIOR. See *Spirits*.