tions. Not only will a perfectly clear distillate be obtained, but the bumping will also be considerably diminished.

On distilling unknown preparations with alkalies, tannin should always be used to precipitate any volatile alkaloids.

On closing my report, I would extend my thanks to Mr. Otto Stockinger and Mr. Geo. E'We for their valuable help and suggestions.

SUMMARY.

Chemist	Wine	Elixir	Pycno-meter	Westphal	Plain %		Neutral %		Alkaline %		Average %
M. Becker	—		—		—						17.3
"		—	—		—						25.0
C. S. Brinton	—		—			$CaCO_3$	17.71				
"		—	—			$CaCO_3$	17.73				17.72
						$CaCO_3$	25.54				
						$CaCO_3$	25.56				25.55
G. E'We	—	—	—	—	18.4			KOH	18.22		18.31
"		—		—	25.3			KOH	25.91		25.635
L. Griesmer	—		?	?	—						18.36
"		—	?	?	—						25.57
M. Hilts	—		—			$CaCO_3$	17.66				
"		—	—			$CaCO_3$	17.68				17.67
						$CaCO_3$	25.55				
						$CaCO_3$	25.55				25.55
Prof. LaWall	—		?	?				Tannin	18.28		
"		—	?	?				Tannin	18.12		18.20
								Tannin	25.83		
								Tannin	25.70		25.765
H. B. Meade	—		?	?							
"		—	?	?				$NaHCO_3$	17.90		17.99
								$NaHCO_3$	25.78		25.78
C. Roberts	—			—	—						17.39
"		—		—	—						25.35
H. M. Sechler	—		—		—						17.50
"		—	—		—						25.54
O. Stockinger	—			—	—			KOH	17.65		
								KOH	17.4		17.525
"	—			—	17.6				15.5		17.63
"		—		—	—			KOH	25.4		
								KOH	25.4		25.4

ANALYTIC LABORATORIES, H. K. MULFORD, Co., March 12, 1911.

APPARATUS FOR THE DISTILLATION OF ALCOHOL IN PHARMACEUTICAL PREPARATIONS.

M. BECKER.

In order to overcome the principal physical differences encountered in the estimation of alcohol in preparations the apparatus shown in the accompanying illustration was devised. By its use the need for redistillation due to frothing and bumping is eliminated, consequently saving considerable time and labor.

NOTE.—Since Mr. H. L. Bernegau presented his contribution, no systematic co-operative work has been made by the committee, but Mr. M. Becker, in the Analytic Laboratory of Smith, Kline and French Co., has designed a suitable apparatus for the distillation of most pharmaceutical preparations.

It consists of an elliptical bulb (a) three inches in height, and two and a half inches in width, having a neck (b) three-fourths of an inch long, the opening of which is three-fourths of an inch. The lower end of the bulb (a) terminates with a gradually tapering stem (c) two inches long. The opening at juncture of bulb and stem is three-fourths of an inch and the opening at end of the stem is a quarter of an inch. The interior of the bulb contains a small curved tube (d) blown in at the bottom and extending one and three-quarters of an inch upward and curved so as to almost reach the side. At the base of bulb, slightly lower, and directly under the curved tube (d) is a small opening (e) to permit the

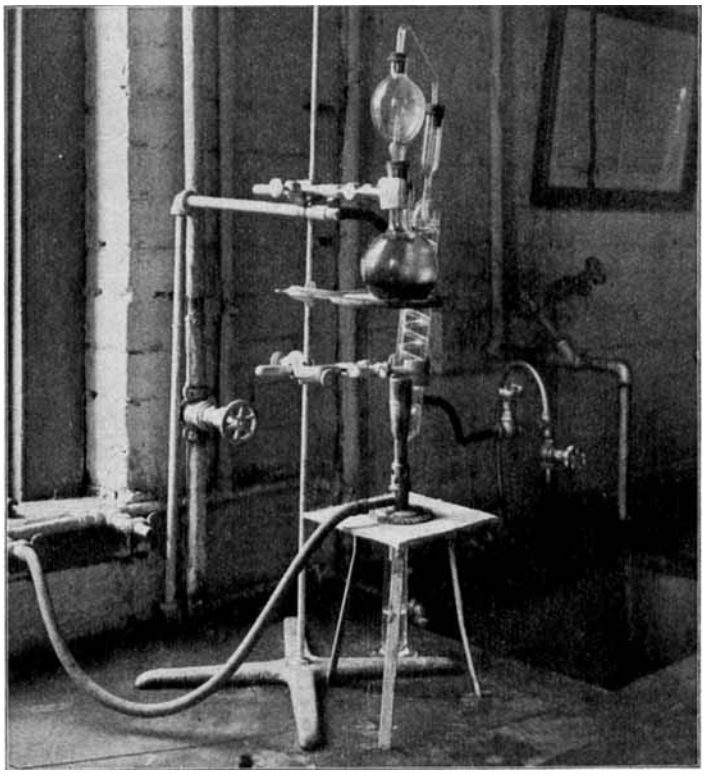

FIG. 1.—From Photograph.

passing of the condensed liquid back into the distilling flask. The stem (c) enables the apparatus to be fitted to an ordinary distilling flask. The neck of bulb was made short in order to more easily admit the tube (g) which is beveled at the end at an angle of 50 degrees and curved in an opposite direction to tube (d) below. This tube (g) is connected to the vertical condenser and can easily be made by the operator. For economy and convenience in cleaning this piece was made separately. It will be noticed that the opening (e) is directly under the curved tube (d) which prevents foam or liquid caused by any active bumping that may occur from passing over into the distillate. The curve in the tube (g)

having the beveled end is intended for a similar purpose, but it is not absolutely necessary.

If during a distillation there is such an active boiling and foaming that the distilling flask and part of the bulb are filled with foam, the curved tube (d) permits the passing of vapor from the flask, and relieves the pressure by allowing substances in bulb to return to the distilling flask through opening (e). In some cases the foam rises to the center of the bulb, but it is not carried over, and soon runs back into the distilling flask.

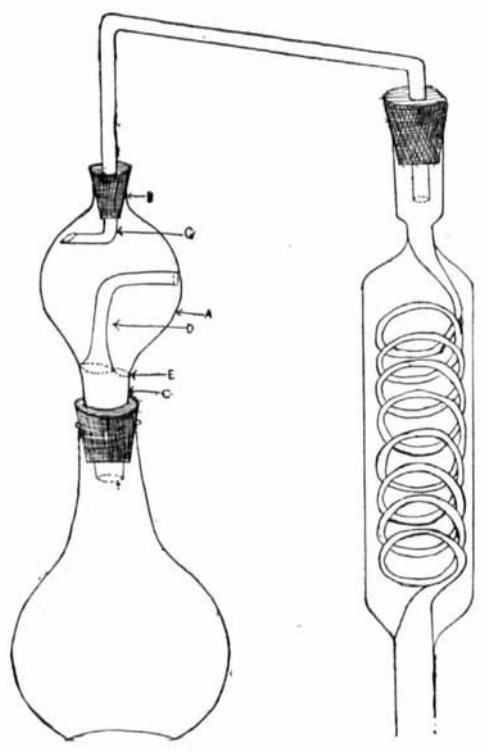

FIG. 2.—Showing Details of Distilling Bulb.

We have given this apparatus the most rigid tests and have never had occasion to make a second distillation. Under ordinary conditions considerable time is required for some fluidextracts, but with this apparatus we have never found it necessary to reduce the flame when estimating the alcohol in such difficult fluidextracts as Rose, Sarsaparilla, Jumbul, Gilead Buds, Soap Bark, Grindelia, White Oak Bark, Kava Kava.

Those interested in making alcohol determinations, where interference by bumping or frothing occurs, will find a great convenience in the use of this apparatus, and will be spared the necessity of redistillation.