always furnish perfect products, even though performed by an unskilled hand.

It is proper to remark that reference is made to the manipulations advised by Mr. Campbell, rather than to his extensive use of glycerin. While glycerin is a valuable solvent, and, doubtless, highly useful in many cases, the writer is by no means willing to admit its indiscriminate employment, as proper or desirable.

The opinion has been expressed by several experimenters, and some positive testimony has been given that Mr. Campbell's process will not exhaust the generality of drugs in the proportion of sixteen troy ounces to the pint of percolate. The evidence in favor of its being capable of yielding fluid extracts of the strength proposed, is entirely satisfactory, inasmuch as no experiment has yet been published, where the proportionate amount of percolate requisite for complete exhaustion of the drug, exceeded *twenty-two fluid ounces for sixteen troy ounces of the powder.*

To recapitulate, the advantages to be secured by the proposed method are as follows: complete exhaustion of the drug, independent of the greatest degree of skill on the part of the operator; the utmost facility of preparation, with but little expenditure of time and attention; economy in the use of the menstruum; the use of powders properly prepared by the druggist himself; the absence of special or expensive apparatus; the avoidance of the deleterious effects of heat and evaporation, and collectively the much desired result—the manufacture by apothecaries of their own fluid extracts, to the exclusion of the inferior commercial substitutes that now flood the market.

On the Technical Analysis of Soap.*

BY M. GASTON TISSANDIER.

The name of soap is given to true salts formed by combining fatty acids (oleic, margaric) with alkalies, such as soda or potash. The quality of a soap is ascertained by determining the proportion of fatty acid and alkali which it contains, and also the foreign substances—such as chlorides, alkaline sulphates, moisture, &c.—which always occur in varying proportions.

Fatty Acids.—Dissolve 5 grms. of the soap in question in ½ a litre of distilled water heated in a porcelain capsule; when dissolved, add a slight excess of dilute sulphuric acid, and let it boil for some minutes, so that the fatty acids may become separated and float upon the liquid. To weigh the fatty acids, cool them, and they will form a cake of grease, which must then be fused, in order to dry them, in a small tared porcelain capsule; this capsule, when again weighed, will give the amount of fatty acids corresponding to 5 grms. of soap.

Wax may also be used to facilitate the weighing. After the first part of the operation has been performed, and the fatty acids are floating, add 7 grms. of white wax, which will melt and mingle with them; cool the whole, take out the cake of wax, and weigh it, previously drying it between double filtering papers. The excess of weight gives the proportion of fatty acids.

Ash,—Soda.—Calcine, at red heat, 5 grms. of soap in a platinum capsule. Weigh the ash thus obtained, and dissolve it in 200 c. c. of distilled water; determine the proportion of soda in 100 c. c. by means of normal sulphuric acid (alkalimetric standard), evaporate to dryness, and notice the action of bichloride of platinum upon the residue dissolved in water, to ascertain whether it consists of potash or soda. The estimation of the soda may be verified by directly taking the alkalimetric standard of the soap (5 grs.)

Chloride of Sodium.—Estimate the chlorine in 50 c. c. of the solution with the standard silver solution.

Sulphate of Soda.—The sulphuric acid is estimated in the remaining 50 c. c. of the solution with chloride of barium.

Non-Saponified Fatty Bodies.—These also occur in soap, and may be detected as follows:—Dry 5 grms. of soap at 110°, after which treat it with common ether. Agitate it with that liquid in a flask, filter it, wash with ether, and evaporate the solution at 100°; the residue will be the non-saponified fatty bodies. The ether may, perhaps, dissolve a little of the soap; it must, therefore, be ascertained that the residue is really fat—melt it, and try whether it will soil glazed paper.

Non-Saponified Carbonate of Soda.—Cut 5 grms. of soap into small fragments, and treat them with boiling alcohol, which does not dissolve carbonate of soda. Filter and treat the insoluble residue with alcoholic acetic acid, which dissolves the carbonate of soda without acting on the sulphate of soda and chloride of sodium. The acetic solution, evaporated to dryness and calcined, leaves, as a residue, carbonate of soda. Weigh it, and, if verification be required, take its alkalimetric standard.

Glycerine.—Dissolve 5 grms. of soap in boiling water, decompose it with dilute sulphuric acid, and separate the isolated fatty acids by decantation. The liquid, which is completely neutralised by the carbonate of soda, is now evaporated to dryness over a water-bath at 100° C; the residue, composed of sulphate of soda and glycerine, is taken up by alcohol, which dissolves only the latter; it is then filtered and evaporated to dryness, when the residue will be glycerine. This is again taken up by alcohol, re-evaporated, and the residue again weighed, after ascertaining that it possesses all the properties of glycerine.

Water.—Cut the soap into thin slices; weigh 5 grms., and dry them on a stove at 120° C.

Composition of various kinds of Soap.

Substances estimated.	I.	II.	III	IV
Water	46.12	24.76	17 55	14 09
Soda	4.98	7.30	8.48	9.01
Fatty Acids	37.99	64.50	71.45	74.68
Chloride of sodium	6.30	3.12	2.12	2.00
Sulphate of Soda	0.72	0.32	0.40	0.22
Fatty Bodies	1.00	—	—	—
Glycerine	2.89	—	—	—
Total	100.00	100.00	100.00	100.00

*From the Moniteur Scientific in Chemical News.

On Baume's Arcometer.*

BY M. BAUDIN.

Sundry divergences occur in Baumé's arcometer, according to different authors. Upon examining this instrument, I found the figure given for 85 parts of distilled water and 15 parts of well-dried chloride of sodium to be 1·111 absolute density at 15°. Francœur found 1.109; Soubeiran, 1·116; Terlach, 1·114; and M. Coulier, Professor of Chemistry, gives 1,110725. The work of the latter may be considered as the most important of those upon the subject.

Repeated experiments have convinced me that the figure of density 1·111 is most correct; I have therefore, employed it to reconstruct the actual scale of Baumé. The figure, 1·116, given by Soubeiran, does not correspond with Baumé's formula (85 parts of water and 15 of salt) and indicates that the instrument marks 66° in a sulphuric acid whose point of concentration is undefined; this arbitary scale is by no means that of Baumé. Serious results arise from these discrepancies—manufacturers are uncertain as to which Baumé-arcometer they should trust, and endless disputes ensue. Brisson's densimeter should be the only one employed, as any one can manage it.

Comparison of Baumé's Scale (Acidimetric) with the Scale of Density.

Baume. Degrees.	Francœur. Density.	Baudin. Density.	Soubeiran. Density.
0	1000	1000·0	1000
5	1034	1034·4	1036
10	1070	1071·3	1075
15	1109	1111·0	1116
20	1151	1153·8	1161
25	1196	1200·0	1210
30	1245	1249·9	1262
35	1299	1304·2	1320
40	1357	1363·5	1383
45	1420	1420·4	1453
50	1490	1500·0	1530
55	1567	1578·9	1615
60	1652	1666·6	1711
65	1747	1764·6	1819
70	1853	1875.0	1942

*From the Chemical News.

Self-Mutilation.

It is stated that a youth named Jacob Harnish, seventeen years old, deliberately cut off his foot on Saturday last, in Lampeter, Penn, and when asked why he did it, replied that we are told if our hand or foot offend us, we should cut it off. He had struck three blows, and picking up the foot, hurled it some distance from him. The mutilation proved fatal.

Some years ago we knew of an instance in which a man castrated himself on the same principle. Suppose every one was as conscientious in thus giving the words of our Saviour a literal interpretation, how many "lame, halt and blind," and otherwise mutilated would be met in our daily walks (or limpings?) and what a harvest there would be for surgeons—if indeed, they were not all in the same boat!—*Med and Surg. Reporter.*

Writing Prescriptions.

Dr. Monod in the *Bulletin de Thérapeutique* urges physicians to use no abbreviations or figures in writing prescriptions, but to write everything out in full. Instead of

Tinct. op. deod., ... ℥iss,

he would have

Deodorized tincture of opium, one-and-a-half fluid drachms.

He adds: "I am certainly not the first to express the wish that prescription be written so as to avoid errors; God grant that I be the last." To which if there were any hope of it, we would say, Amen!—*Med. and Surg. Reporter.*