soap is either run or ladled into large wooden moulds, and allowed to stand until quite cold. After standing for a day or so, the wooden frame is removed from the solid mass of soap, when it is divided into bars by means of a brass wire. The difference between *white curd* and *mottled* soap is caused by the addition to the fluid mass of soap of about four ounces of alum and green copperas to every 100 lbs. of soap, which gives rise to an alumina and ferruginous soap, which on being diffused through the mass by means of agitation, mottles or marbles the mass when cool. When well prepared this is the most economical soap, as no large quantity of water can be introduced to weight it, because this would cause the separation of the mottling material from the soap. *Fancy soaps* are prepared in the above manner, by the employment of a better quality of materials and the addition of various perfumes. *Rosin or yellow soap*, as its name implies, is one in which a portion of the fatty matters is replaced by rosin, which is added to the soap paste when there is but little solution of alkali left to dissolve it, so that the rosin can at once enter into the composition of the soap, instead of being dissolved in the alkaline lye and lost. Rosin soaps, nearly white, are now manufactured, owing to the discovery of Messrs. Hunt and Pochin, who have succeeded in obtaining nearly white rosin by distilling common rosin with the aid of superheated steam. *Silicated soaps* are much used in America, owing to their cheapness, which is due to the introduction of a certain amount of silicate of soda. *Transparent soap*, the method of making which was so long kept secret, is now known to be obtained by dissolving soap in alcohol and allowing a concentrated solution of it to cool slowly, when it is poured into moulds and allowed to solidify. One of the most useful and recent improvements in soap-making is that which enables the manufacturer to produce what is called *glycerine soap*, which is characterised by the retention of the glycerine of the fatty matter. Its manufacture only occupies a few hours, instead of several days, as is the case with ordinary soap. It is prepared by employing 63 parts of fatty matter, 33 of water, and 5 of alkali, which are heated to a temperature of between 350° and 400°, for two or three hours when the mass is entirely saponified, and then has only to run into moulds to be ready for the market. But the most important discovery connected with the saponification of fatty matters by means of alkali is that recently made by M. Mèges Mouries, for this gentleman has arrived at the remarkable result of saponifying fatty matter in the space of 12 hours, and, what is more extraordinary still, at natural temperatures. If we connect this fact with the one that caustic soda is now manufactured by tons, it appears highly probable that in a few years the fatty matters of Brazil and Monte Video, instead of being sent to this country as such, will be converted into soap there, and imported thence by us in that form. M. Mouries has discovered the fact that fatty matters are susceptible, under peculiar circumstances, of being brought into a globular state, and that when in that state they present new and peculiar properties. Thus, for example, fatty matters, when kept in a damp state, usually become rapidly rancid, whilst when in the globular state they may be kept for a very long period without undergoing that change. This peculiar state can be imparted to fatty matters by melting them at 113° and adding a small quantity of yolk of egg, bile, albuminous substance, or, what is best, a solution of alkali, composed of five to ten parts of alkali for every 100 parts of oil, at the same temperature, agitating the whole for some time to bring the fatty matter into a globular condition. If at this stage the action of the alkali is continued and the temperature is raised to 140°, it is found that intead of the fatty matters requiring a long time to saponify (as is usual even at a temperature of 212°) the saponification is most rapid, because each globule of fatty matter offers an immense surface to the action of the alkali, and it is found that in two or three hours the whole of the fatty matters are converted into soap. In fact saponification is so perfect that the mass of soap dissolves completely in water; and if the purpose is to liberate the fatty acids, this can be done at once by the addition of a little vitriol. The fatty acids produced by this comparatively cold saponification are so pure that when subjected to pressure the solid fatty acids have not the slightest odour and fuse at the point of 138°. As to the oleic acid prepared by this process, instead of being brown (as is usual with the commercial acid) it is colourless, and can be employed in manufacturing soap of good quality. When M. Mouries desires to make soap with the entire fatty matter, he acts at once upon the globular fatty mass, by adding salt, which separates the soap from the aqueous fluid; it is then melted and run into moulds. Whilst speaking of the mode in which alkalies can be made to act upon fatty matters, I ought to state that M. Pelouze observed the curious fact that large quantities of fatty matters could be split into their respective elements, viz., fatty acids and glycerine, by heating them for some hours with a small quantity of soap. This discovery of his, as we shall presently see, has been taken advantage of in the manufacture of stearic candles.

Permit me to state that *soft soaps* differ from hard soaps mainly in the substitution of potash for soda, and in the omission of the salting and clarifying processes, so that the soapy mass is not separated from the excess of water, and therefore after the fatty matter has been saponified by the alkali, the whole is evaporated to the required consistency. I cannot conclude better this hasty and imperfect sketch of the soap manufacture than by the following table of compositions, showing the per centages of the various elements in the following soaps:—

Names of Soaps.	Fatty acids.	Alkali.	Water.
Curd	62	6·0	32·0
Marseilles	60	6·0	34·0
White	60	6·4	33·6
White cocoa	22	4.5	73·5
Yellow rosin	70	6·5	23·5
Calico printers..	60	5·2	34·8
Silk boiling	57	7·0	36·0
Wool scouring...	55	9·0	36·0
Soft	43	10·0	47·0
Theoretical	63	6·4	30·6