ſeveral talents ; and thus they became more valuable than if finiſhed by either of them ſingly. Snyders died in 1657.

SOAL-fish, in ichthyology. See PleuronecTES.

SOAP, a compoſition of cauſtic, fixed alkaline ſalt, and oil, ſometimes hard and dry, ſometimes ſoft and li­quid ; much uſed in waſhing, whitening linens, and by dyers and fullers.—Soap may be made by ſeveral me­thods, which, however, all depend upon the ſame prin­ciple. The ſoap which is uſed in medicine is made without heat. See Chemistry, n⁰ 1026.

In manufactures where large quantities of it are pre­pared, ſoap is made with heat. A lixivium of quicklime and ſoda is made, but is leſs concentrated than that above referred to, and only ſo much that it can ſuſtain a freſh egg. A part of this lixivium is to be even di­luted and mixed with an equal weight of oil of olives. The mixture is to be put on a gentle fire, and agita­ted, that the union may be accelerated. When the mix­ture begins to unite well, the reſt of the lixivium is to be added to it ; and the whole is to be digeſted with a very gentle heat, till the ſoap be completely made. A trial is to be made of it, to examine whether the juſt proportion of oil and alkali has been obſerved. Good ſoap of this kind ought to be firm, and very white when cold ; not ſubject to become moiſt by expoſure to air, and entirely miſcible with pure water, to which it com­municates a milky appearance, but without any drops of oil floating on the ſurface. When the ſoap has not theſe qualities, the combination has not been well made, or the quantity of ſalt or of oil is too great, which faults muſt be corrected.

In ſoft or liquid ſoaps, green or black ſoaps, cheaper oils are employed, as oil of nuts, of hemp, of fiſh, &c. Theſe ſoaps, excepting in conſiſtence, are not eſſentially different from white ſoap.

Fixed alkalis are much diſpoſed to unite with oils that are not volatile, both vegetable and animal, ſince this union can be made even without heat. The com­pound reſulting from this union partakes at the ſame time of the properties of oil and of alkali ; but theſe properties are modified and tempered by each other, according to the general rule of combinations. Alkali formed into ſoap has not nearly the ſame acrimony as when it is pure ; it is even deprived of almoſt all its cauſticity, and its other ſaline alkaline properties are almoſt entirely aboliſhed. The ſame oil contained in ſoap is leſs combuſtible than when pure, from its union with the alkali, which is an uninflammable body. It is miſcible, or even ſoluble, in water, to a certain de­gree, by means of the alkali. Soap is entirely ſoluble in ſpirit of wine ; and ſtill better in aquavitae ſharpened by a little alkaline ſalt, according to an obſervation of Mr Geoffroy.

The manufacture of ſoap in London ſirſt began in the year 1524 ; before which time this city was ſerved with white ſoap from foreign countries, and with grey ſoap ſpeckled with white from Briſtol, which was fold for a penny a pound ; and alſo with black ſoap, which ſold for a halfpenny the pound.

The principal ſoaps of our own manufacture are the soft, the hard, and the ball ſoap. The ſoft ſoap is ei­ther white or green. The proceſs of making each of theſe ſhall now be deſcribed.

*Green ſoſt ſoap.* The chief ingredients uſed in ma­king this are lees drawn ſrom pot-aſh and lime, boiled up with tallow and oil. Firſt, the ley of a proper de­gree of ſtrength (which muſt be eſtimated by the weight of the liquor), and tallow, are put into the copper to­gether, and as ſoon as they boil up the oil is added ; the fire is then damped or flopped up, while the ingre­dients remain in the copper to unite ; when they are united, the copper is again made to boil, being fed or filled with lees as it boils, till there be a sufficient quan­tity put into it; then it is boiled off and put into caſks. When this ſoap is firſt made it appears uniform ; but in about a week’s time the tallow ſeparates from the oil into thoſe white grains which we ſee in common ſoap. Soap thus made would appear yellow, but by a mixture of indigo added at the end of the boiling, it is rendered green, that being the colour which reſults from the mixture of yellow and blue.

*White ſoap. Of* this one fort is made after the ſame man­ner as green ſoft ſoap, oil alone excepted, which is not uſed in white. The other sort of white ſoft ſoap is made from the lees of aſhes of lime boiled up two diffe­rent times with tallow. Firſt, a quantity of lees and tallow are put into the copper together, and kept boil­ing, being fed with lees as they boil, until the whole is boiled sufficiently ; then the lees are ſeparated or diſcharged from the tallowiſh part, which part is removed into a tub, and the lees are thrown away ; this is called the first *half-boil :* then the copper is filled again with freſh tallow and lees, and the firſt half-boil is put out of the tub into the copper a ſecond time, where it is kept boiling with freſh lees and tallow till the ſoap is produced. It is then put out of the copper into the ſame fort of calks as are uſed for green ſoft ſoap. The common ſoft ſoap uſed about London, generally of a greeniſh hue, with ſome white lumps, is prepared chief­ly with tallow : a blackiſh fort, more common in ſome other places, is ſaid to be made with whale oil.

*Hard ſoap* is made with lees from aſhes and tallow, and is moſt commonly boiled twice : the firſt, called the *halſ-boil,* hath the ſame operation as the firſt half-boil of ſoft white ſoap. Then the copper is charged with freſh lees again, and the firſt half boil put into it, where it is kept boiling, and fed with lees as it boils, till it grains or is boiled enough ; then the ley is diſcharged from it, and the ſoap put into a frame to cool and harden. Com­mon ſalt is made uſe oſ for the purpoſe of graining the ſoap ; for when the oil or tallow has been united with the ley, after a little boiling, a quantity of ſalt is thrown into the maſs, which diſſolving readily in water, but not in the oil or tallow, draws out the water in a con­ſiderable degree, ſo that the oil or tallow united with the ſalt of the ley ſwims on the top. When the ley is of a proper ſtrength, leſs ſalt is neceſſary to raiſe the curd than when it is too weak. It muſt be obſerved, that there is no certain time lor bringing off a boiling of any of theſe forts of ſoap : it frequently takes up part of two days,

*Ball ſoap,* commonly uſed in the north, is made with lees from allies and tallow. The lees are put into the copper, and boiled till the watery part is quite gone, and there remains nothing in the copper but a fort of ſaline matter (the very ſtrength or eſſence of the ley) ; to this the tajlow is put, and the copper is kept boil­ing and ſtirring for above half an hour, in which time