

instance *terra japonica*, cutch, catechu, and dividivi, produce their effects in half the time, but the leather is said not to be so durable. With sumach light skins may be tanned in twenty-four hours, and with the aid of alum even in one hour; but the resulting manufactures are not preferred to the old processes. Atmospheric and hydrostatic pressure have been used to hasten the absorption; the refined laws of Endosmosis and Exosmosis have been called in to accelerate the process; heavy rollers have squeezed the solution through the pores; but all these methods have at the best but a doubtful success. Leather-manufacturers meet men of science by the well-founded assertion that the resulting leather is too porous, too hard or too soft, or not sufficiently durable; and they revert to their old traditional modes of preparation. I allude to these failures the more especially to show that there is a wide chasm between the chemist's laboratory and the workshop,—a chasm which has to be bridged over by the united aid of the philosopher and the manufacturer. One without the other does not suffice; but both, working together, may achieve great results. Yet, in bridging over this chasm, they must act on a common plan. If the manufacturer build his half without understanding the principles of construction employed by the other, the sides of the bridge may indeed meet, but they are not constructed to receive the binding influence of the keystone, and the arch must give way and tumble down.

Having thus shown the comparative failure of Chemistry in revolutionizing this important manufacture, let me take one or two instances from it to prove that, in the details of the working, it has been of use in economizing time and labour, and in affording new uses to comparatively valueless objects. In removing the hair from the hides, previous to tanning, it was customary to shave it with a knife. This process was tedious and imperfect, and the following simple one is now used. Lime-water dissolves the bulbous root of the hair, when the hides are immersed in it for some time, and the hair may then be readily removed by a blunt instrument. By this simple process one man can remove the hair from a hundred kid-skins in an hour. Still the immersion requires several weeks, while the addition of red orpiment to the lime, as practised by the sheep-skin manufacturers of France, reduces the time to a few hours.

When goat-skins are tanned for morocco leather it is necessary, in order to adapt them for dyeing, to remove the lime absorbed by the last operation. A solution of *album græcum* cleanses the pores effectually, leaving them so spongelike that air can readily be forced through them. Hence the process of tanning is rendered much easier, being in fact completed within twenty-four hours; while the leather is rendered fit to assume the colours so characteristic of morocco. About fifty persons are employed in London to collect the sweepings of dog-kennels for this purpose, and many more in applying them; and I am informed, by Mr. Bevington, that the sum annually paid to the collectors and workmen employed in using this apparently worthless substance, is not less than 5000*l.* in the metropolis alone.

The currier shaves leather to render it of equal thickness, and the shavings were treated as waste, scarcely fit for the manure-heap; but Chemistry has shown that they contain much nitrogen, which renders them well adapted for the formation of the beautiful colour known as Prussian blue.

SOAP.—Soap is probably not older than the Christian era, for the soap of the Old Testament seems to have been merely alkali. Profane history, previous to Christ, does not allude to soap; and in all the detailed descriptions of the bath and of washing, it is never mentioned. Pliny describes its manufacture, but ascribes to it as singular a use as that given to the potato by Gerard, who, in his "*Herbal*," assures us that it "is a plant from America, which is an excellent thing for making sweet sauces, and also to

be eaten with sops and wines;" so Pliny, in regard to soap states, that its main purpose was to dye the hair yellow, and that men used it for this purpose much more than women. Gradually its use became more extensive, and its manufacture considerable. Soap generally consists of a fatty acid, combined with the alkali soda. This soda was imported from Spain under the name of *barilla*, itself the ashes of plants grown near the sea. As these plants derived their soda from the sea, near which they flourished, Chemistry—though singularly enough in the person of Napoleon Bonaparte—suggested that it might be artificially made from sea salt. A process for this was perfected, and soda derived from salt has now replaced *barilla*. From 1829 to 1834 the average annual import of *barilla* was 252,000 cwt.; it is now almost nothing. But besides this substitution, the cheapness and comparative purity of the soap, and consequently of soda, is enormously increased, and probably exceeds ten times the largest quantity of *barilla* ever imported in one year into this country. Its cheapness and excellence have also had a prodigious effect on the manufacture of glass.

Chemistry has thus produced great economy and increasing power of production to the manufacturers of soap, by furnishing them with soda prepared directly and artificially from salt, instead of through the organism of plants. This, however, is only one of the benefits conferred on this manufacture by Chemical Science. The fiscal regulations of foreign countries rendered their tallow and fats expensive to British industry. Russia, with almost a monopoly of tallow and linseed oil, thought it good policy to sell them at high prices. But Chemistry pointed out that vegetables, as well as animals, produce similar fats. The fat of beef and mutton exists in cocoa beans; human fat in olive-oil; that of butter in palm-oil; and horse fat and train-oil are in many oily seeds. Was it, then, necessary to submit to the high prices of Russian tallow? Now, palm and cocoa-nut oil largely replace the fat of the Russian oxen and sheep, although the cheap importation of similar fats from Australia and South America has rendered the substitution less necessary.

CORRESPONDENCE.

Natural History Society of Montreal.

We have great pleasure in giving insertion to the accompanying communication from Major Lachlan, vindicating the Natural History Society of Montreal, from imputations which he considers to have been cast upon it by our introductory remarks to this Journal, page 2. That the gallant President misunderstood the tenor of the passage he refers to, will be evident to any one who dispassionately considers it; far from any disrespect being intended by our enquiry, the contrary is expressly stated. His own Address to that Society, in March, 1852, commented in much stronger terms than a stranger would venture to do, upon its "non-success," and on the spirit of indifference which appeared to have fallen upon it. Such a fact in the previous experience of a Canadian Society, was too important to be left out of view, in considering the probable prospects of the Canadian Institute; but we really thought we had alluded to it in terms to which the most sensitive could attach no offence. We are, however, too well aware of the ardent support which the gallant Major has given for many years, to every proposal having in view the development of scientific pursuits in Canada, to be surprised that such an allusion to a society presided over at present by himself, should meet with a warm response: and too well pleased to have the character and condition of our brethren in the Lower Province, placed in a favorable light before our readers, to feel the smallest hesitation in making the fullest *amende* for any thing unjust in our remark. In fact, the expression "at neither the Natural History Society of Montreal, or the Literary and Historical Society of Quebec, have practically exercised any influence in Upper Canada," does appear to be somewhat too strong: the former by its prizes and