ſcrubbed out or taken off ; the hides are then put into a pit of ſtrong liquor called *ooze* or *wooze,* prepared in pits called *letches* or *taps* kept for the purpoſe, by infusing ground bark in water ; this is termed *colouring ;* after which they are removed into another pit called a *ſcowering,* which consiſts of water ſtrongly impregnated with vitriolic acid, or with a vegetable acid prepared from rye or barley. This operation (which is called *raiſing),* by diſtending the pores of the hides, occaſions them more readily to imbibe the ooze, the effect of which is to aſtringe and condenſe the fibres, and give ſirmneſs to the leather. The hides are then taken out of the ſcowering, and ſpread ſmooth in a pit com­monly filled with water, called a *binder,* with a quantity of ground bark ſtrewed between each. After lying a month or ſix weeks, they are taken up ; and the decayed bark and liquor being drawn out of the pit, it is filled again with ſtrong ooze, when they are put in as before, with bark be­tween each hide. They now lie two or three months, at the expiration of which the ſame operation is repeated ; they then remain four or five months, when they again un­dergo the ſame proceſs ; and after being three months in the laſt pit, are completely tanned, unleſs the hides are ſo re­markably ſtout as to want an additional pit or layer.—The whole proceſs requires from 11 to 18 months, and ſometimes two years, according to the ſubſtance of the hide, and diſcretion of the tanner. When taken out of the pit to be dried, they are hung on poles ; and after being compressed by a ſteel pin, and beat out ſmooth by wooden hammers called *beetles,* the operation is complete ; and when thorough­ly dry, they are fit for ſale. Butts are chiefly uſed for the ſoles of ſtout ſhoes.

The leather which goes under the denomination of *hides* is generally made from cow hides, or the lighter ox hides, which are thus managed. After the horns are taken off, and the hides waſhed, they are put into a pit of water ſaturated with lime, where they remain a few days, when they are ta­ken out, and the hair-ſcraped off on a wooden beam, as be­fore described ; they are then waſhed in a pit or pool of wa­ter, and the looſe fleſh, &c. being taken off, they are remo­ved into a pit of weak ooze, where they are taken up and put down (which is technically termed *handling)* two or three times a-day for the firſt week : every second or third day they are ſhifted into a pit of freſh ooze, ſomewhat ſtronger than the former ; till at the end of a month or six weeks they are put into a ſtrong ooze, in which they are handled once or twice a-week with freſh bark for two or three months. They are then removed into another pit, called a *layer,* in which they are laid ſmooth, with bark ground very fine ſtrewed between each hide After re­maining here two or three months, they are generally taken up, when the ooze is drawn out, and the hides put in again with freſh ooze and freſh bark ; where, after lying two or three months more, they are completely tanned, except a few very ſtout hides, which may require an extra layer : they are then taken out, hung on poles, and being hammered and ſmoothed by a ſteel pin, are, when dry, fit for sale.

Theſe hides are called *crop hides ;* they are from 10 to 18 months in tanning, and are uſed for the ſoles of ſhoes.

*Skins* is the general term for the ſkins of calves, seals, hogs, dogs, &c. Theſe, after being waſhed in water, are put in­to lime-pits, as before mentioned, where they are taken up and put down every third or fourth day, for a fortnight or three weeks, in order to dilate the pores and dissolve the gelatinous parts of the ſkin. The hair is then ſcraped off, and the fleſh and excreſcences being removed, they are put into a pit of water impregnated with pigeon-dung (called a *grainer* or *mastring),* forming a ſtrong alkaline ley, which in a week or ten days ſoaking out the lime, greaſe, and ſaponaceous matter (during which period they are ſeveral timed ſcraped over with a crooked knife to work out the dirt and filth), ſoftens the skins, and prepares them for the reception of the ooze. They are then put into a pit of weak ooze, in the ſame manner as the hides, and being frequently hand­led, are by degrees removed into a ſtronger and ſtill ſtronger liquor, for a month or ſix weeks, when they are put into a very ſtrong ooze, with freſh bark ground very fine, and at the end of two or three months, according to their ſub­ſtance, are ſufficiently tanned ; when they are taken out, hung on poles, dried, and fit for ſale.

Theſe ſkins are afterwards dressed and blacked by the currier ; and are uſed for the upper-leathers of ſhoes, boots, &c.

The lighter sort of hides, called *dressing hides,* as well as horſe-hides, are managed nearly in the ſame manner as skins ; and are uſed for coach-work, harneſs-work, &c. &c.

As the method of tanning above described, and all others in general uſe, are extremely tedious and expensive in their operation, various ſchemes have at different times been suggeſted to shorten the proceſs and lessen the expence,— Though moſt of theſe ſchemes have ultimately proved unsucceſsful, yet it in a work of this kind it may be expected that we ſhould not paſs them over wholly unnoticed.

Some have imagined, and perhaps juſtly, that cold water alone is not an adequate menſtruum for extracting the reſinous qualities of bark, however aſſiſted by the mucilage of the bark and of the skin ; a decoction, inſtead of ſimple infuſion, has therefore been recommended as a more effectual mode of obtaining thoſe properties.

The late Dr Macbride of Dublin having been concerned in a leather manufactory, publiſhed in 1778 a new method of tanning. His projected improvements may be briefly classed under two heads : the one recommending the uſe of *vitriolic* inſtead of *vegetable* acid, brewed from rye or barley : the other ſubſtituting *lime-water,* for the purpoſe of extrac­ting the virtues of the bark, inſtead of the *water* commonly uſed by tanners. With reſpect to the firſt, it is generally acknowledged that the vitriolic acid is very proper for raising or diſtending the pores of the hides intended for butts, as its operation is not only more ſimple and certain than the acid formerly uſed, but as it tends more effectually to render the texture of the leather firm and durable : it is therefore ſtill preferred by the moſt ſkilful tanners. As to lime-water in­ſtead of water, it has been found inefficacious ; and if the utmoſt care and attention be not obſerved, the leather is li­able to ſuffer much injury. Even the ſhortening of the time and lessening of the expence (which were its chief re­commendations ) being very problematical, it is now almoſt generally exploded.

A very ingenious chemiſt has obſerved, that it is necessary, on account of a chemical combination between the aſtringent principle and the animal ſubſtance in the proceſs of tanning, that tree access ſhould be given to the pure air ; and therefore suppoſes that the proceſs could not be conduct­ed properly in cloſe vessels @@@\*.

The methods of tanning in different provinces of France are ſo various, ſo complicated, and ſo contrary to the ac­knowledged principles of the manufacture, that it would be an endleſs and uſeleſs taſk to endeavour to detail them : we ſhall therefore content ourſelves with a general reference to M. de la Lande’s elaborate Treatiſe on this ſubject.

It has been ſaid, that every part of the oak tree contains a great portion of aſtringent, gummy-reſinous matter, and will therefore tan leather as effectually as the bark itſelf. This opinion, which was firſt publiſhed in 1674 by the Ho­nourable Charles Howard (Phil. Tranſ. vol. ix.), has since been countenanced by the celebrated Buffon ; who adds, that

@@@[m]\* Phil. Trans. vol. lxviii. Bartholet.