LAKE, or LAQUE, a preparation of different ſubſtances into a kind of magiſtery for the uſe of painters, dyers, &c. One of the fineſt and firſt invented of which was that of *gum lacca* or *lacque;* from which all the reſt, as made by the ſame proceſs, are called by the common name *lacques.* See LAC or LACCA.

We may obſerve more generally, that all vegetable colours, which are ſoluble in water, are found to have a certain degree of affinity for ſome earths and metallic oxyds. Theſe combinations are called lakes. Thus, if a ſolution of alum is added to an infuſion of madder, a mutual decompoſition takes place, and part of the alumine falls down intimately united with the colouring matter of the madder: the ſeparation is much aſſiſted by the alkali. They are chiefly of two colours only, red and yellow: the red owing their colour to madder, Braſil wood, or cochineal; and the yellow to the different yellow infuſions uſed in dyeing. Both are generally uſed for water colours, and in oil painting as tranſparent colours. Theſe pigments are almoſt invariably compoſed either of alum, or ſometimes the ſolution of tin, and ſome other watery ſolution of a colouring matter.

Of the red lakes, that made with cochineal is the moſt beautiful, and of the greateſt value. It is called *carmine*, from its being applied to imitate the colour of the fleſh. For the method of preparing it, ſee COCHINEAL. See alſo CARMINE.

On the receipt for making carmine, introduced under the article COCHINEAL, a correſpondent has made the following obſervation.

The carbonat of ſoda and alum, added in the firſt inſtance, would be mutually decompoſed, and the alumine, with the colouring matter, would be precipitated with the dregs, which are afterwards ſeparated from the clear liquor; ſo that when the white of egg came to be added, the earth of the alum and a portion of the colouring matter, ſaid to be carried down by the albumen, cannot be preſent. Should the proceſs here given have any analogy to that which is practiſed, it would appear that the ſolution of cochineal in water has the white of egg added to it, in the firſt inſtance, if it is at all neceſſary, for the purpoſe of clearing the coloured ſolution, a property for which that ſubſtance is remarkable. That after the liquid becomes clear, and is ſeparated from the dregs, the carbonat of ſoda and alum are added, when a precipitate, conſiſting of the alumine united with the finer parts of the colouring matter, may be expected. The remaining colouring matter, which is of leſs beauty, is then uſed for the red lake.

Inſtead of uſing cochineal for making carmine, a much clearer colour may be extracted from the refuſe of ſcarlet cloth. The bits of cloth are boiled in a ſolution of potaſh, which extracts the colour, and holds it in ſolution. If to this a certain portion of alum be added, the colouring matter will be precipitated with the alumine, of a greater or leſs intenſity, proportionate to the quantity of this earthy baſis. In Doſſie's Handmaid to the Arts, we are told that the beſt of the lakes commonly ſold is made from the colour extracted from ſcarlet rags, and depoſited on the cuttle-bone; and that it may be prepared in the following manner: diſſolve a pound of the beſt pearl aſhes in two quarts of water, and filter the liquor through paper; add to this ſolution two more quarts of water, and a pound of clean ſcarlet ſhreds, and boil them in a pewter boiler, till the ſhreds have loſt their ſcarlet colour; take out the ſhreds and preſs them, and put the coloured water yielded by them to the other: in the ſame ſolution boil another pound of the ſhreds, proceeding in the ſame manner; and likewiſe a third and fourth pound. Whilſt this is doing, diſſolve a pound and a half of cuttle-fiſh bone in a pound of ſtrong aqua-fortis, in a glaſs receiver, adding more of the bone, if it appear to produce any ebullition in the aqua-fortis; and pour this ſtrained ſolution gradually into the other; but if any ebullition be occaſioned, more of the cuttle-fiſh bone muſt be diſſolved as before, and added, till no ebullition appears in the mixture. The crimſon ſediment depoſited by the liquor thus prepared is the lake: pour off the water, and ſtir the lake in two gallons of hard ſpring water, and mix the ſediment in two gallons of freſh water; let this method be repeated four or five times. If no hard water can be procured, or the lake appears too purple, half an ounce of alum ſhould be added to each quantity of water before it be uſed. Having thus ſufficiently freed the lake from the ſalts, drain off the water through a filter, covered with a worn linen cloth. When it has been drained to a proper dryneſs, let it be dropped through a proper funnel on clean boards, and the drops will become ſmall cones or pyramids, in which form the lake muſt be ſuffered to dry, and the preparation is completed.

Lakes are alſo made from madder and Braſil wood. The former is much more permanent than the latter, but does not poſſeſs the ſame beauty of tint. In order to make theſe lakes, ſtrong infuſions of theſe ſubſtances are firſt obtained. The Braſil wood infuſion is beſt made by boiling the chips in pure water, and filtering the ſolution. (See BRASIL *Wood.*) The infuſion of madder (ſee MADDER) is beſt made in cold water, by which the pureſt part of the colour is only diſſolved. To each of theſe ſolutions are added a clear ſolution of alum, and then as much of an alkali as will precipitate ſo much of the alumine as will make the colour of the precipitate of proper intenſity. A ſmall quantity of muriate of tin increaſes the brilliancy of theſe lakes.

A beautiful lake, it is ſaid (*ubi infra*), may be prepared from Braſil wood, by boiling three pounds of it, for an hour, in a ſolution of three pounds of common ſalt, in three gallons of water; and filtering the hot fluid through paper, add to this a ſolution of five pounds of alum in three gallons of water. Diſſolve three pounds of the beſt pearl aſhes in a gallon and a half of water, and purify it by filtering; put this gradually to the other, till the whole of the colour appear to be precipitated, and the fluid be left clear and colourleſs. But if any appearance of purple be ſeen, add a freſh quantity of the ſolution of alum by degrees, till a ſcarlet hue be produced. Then purſue the directions given in the firſt proceſs with regard to the ſediment. If half a pound of ſeed-lac be added to the ſolution of pearl aſhes, and diſſolved in it before its purification by the filtre, and two pounds of the wood, and a proportional quantity of the common ſalt and water be uſed in the coloured ſolution, lake will be produced that will ſtand well in oil or water, but it is not ſo tranſparent in oil as without the ſeed-lac. The lake with Braſil wood may be alſo made by adding half an ounce of anotto to each pound of the wood; but the anotto muſt be diſſolved in the ſolution of pearl aſhes. There is a kind of beautiful lake brought from China; but as it does not mix well with either water or oil, though it diſſolves entirely in ſpirit of wine, it is not of any uſe in our kinds of painting. This has been erroneouſly called ſafflower. Handmaid to the Arts, vol. i. p. 61, &c.

In making yellow lakes, the coloured infuſions muſt be ſuch as to make the moſt permanent dye. (See DYEING.) The precipitation of the colour is performed preciſely in the ſame way, and by the ſame ſubſtances, as the red lakes. A very excellent yellow lake may be made from the infuſion of *quercitron bark*. That from *turmeric* is very beautiful, but is not permanent. The proceſs for the making of this is as follows: take a pound of turmeric-root in fine powder, three pints of water, and an ounce of ſalt of tartar; put all into an earthen glazed veſſel, and let them boil together over a clear, gentle fire, till the water appears highly impregnated with the root, and will ſtain a paper to a beautiful yellow. Filtre this liquor, and gradually add to it a ſtrong ſolution of roch-alum in water, till the yellow matter is all curdled together, and precipitated; after this pour the whole into a

ſtire of paper, and the water will run off and leave the yellow matter behind. It is to be waſhed many times with freſh water, till the water comes off inſipid, and then is obtained the beautiful yellow, called *laque of turmeric*, and uſed in painting.

In this manner may a laque be made of any of the tinging ſubſtances that are of a ſomewhat ſtrong texture, as madder, logwood, &c.; but it will not ſucceed in the more tender ſpecies, as the flowers of roſes, violets, &c. as it deſtroys the nice arrangement of parts in thoſe ſubjects, on which the colour depends.

A yellow lake for painting is to be made from broom-flower in the following manner: make a ley of pot-aſhes and lime reaſonably ſtrong; in this boil, at a gentle fire, freſh broom-flowers till they are white, the ley having extracted all their colour; then take out the flowers, and put the ley to boil in earthen veſſels over the fire; add as much alum as the liquor will diſſolve; then empty this ley into a veſſel of clear water, and it will give a yellow colour at the bottom. Let all ſettle, and decant off the clear liquor. Waſh this powder, which is found at the bottom, with more water, till all the ſalts of the ley are waſhed off; then ſeparate the yellow matter, and dry it in the ſhade. It proves a very valuable yellow.

All the lake colours are changed by acids and alkalies. An acid renders the red lake more ſcarlet, and the yellow paler; while an alkali gives a purple tint to the red, and an orange or brown tint to the yellow. Artiſts ſometimes take advantage of this property to change their colours. The acid uſed for this purpoſe ſhould be the muriatic diluted, and the alkali aqua ammonia.

Lake, *Orange*, is the tinging part of anotto precipitated together with the earth of alum. This pigment, which is of a bright orange colour, and fit for varniſh painting, where there is no fear of flying, and alſo for putting under cryſtal to imitate the vinegar garnet, may be prepared by boiling four ounces of the beſt anotto and one pound of pearl-aſhes half an hour in a gallon of water; and ſtraining the ſolution through paper. Mix gradually with this a ſolution of a pound and a half of alum in another gallon of water; deſiſting, when no ebullition attends the commixture. Treat the ſediment in the manner already directed for other kinds of lake, and dry it in ſquare bits or round lozenges. Handmaid to the Arts, vol. i. p. 119.