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The priest in the meantime, with arms extended, and eyes turned towards heaven, muttering something in a low tone of voice, when the man who had carried the ladder fell on his knees, and nine times prostrated his body to the ground, according to the custom of the Chinefe. Several women and children remained at a distance, as if forbidden to approach too near; though as priestesses are said to be common in this country, it is not probable there was any restriction on account of the sex.7 The Cochín-Chinese are extremely superstitious, and their devotional exercises, like those of the Chinese, are more frequently performed with a view of averting an ideal evil, than with the hope of acquiring a positive good; or, in other words, the evil spirit is more dreaded than the good one is revered. In various parts of the country are erected large wooden pillars, not only for the purpose of marking the spot where some great calamity may have happened, but as a propitiation to the evil spirit, by whose influence it is supposed to have been occasioned. So, when an infant dies, the parents are supposed to have incurred the displeasure of some malignant spirit, which they endeavour to appease by offerings that they imagine to be most acceptable to the angry divinity. Besides the spontaneous offering, which individuals conceive it necessary to make on various occasions, there is a yearly contribution levied by government, for the purpose of supporting a number of monasteries, in which the priests invoke the deity for the public welfare. This contribution consists of produce in kind, as rice, fruits, sugar, &c.; in lieu of which, in towns, are collected money, metals, and clothing. The priests here, as in China, are reckoned the best physicians, but their art lies more in charms and incantations, than in the judicious application of sanitary drugs.

COCHINEAL, Coccus cacti, Linn. See Coccus Cacti.

The substance known in commerce by the name of cochineal, which is the most precious of all our dyeing drugs, affords the scarlet crimson, and many other valuable dyes, and from which the finest carmine is generally prepared, is in the form of hemispherical shrivelled grains, about an eighth of an inch long, of a deep reddish-purple colour, and covered more or less with a white down: they are very light, and easily rubbed to powder between the fingers. The Spanish merchants distinguish at least two kinds, the belt, or domesticated, called grana fina, or fine grain, and the wild, grana fylveftra; of thefe, the latter is not more than half the size of the former, and is covered with a much longer down; on which account it always bears a much lower price in the market.

The cochineal insect is a native of Mexico, and was in common use among the inhabitants as a dyeing drug when the Spaniards first came into the country; since that period its use has become more and more general, not only in Europe, but in various parts of Asia, and, as almost the whole of this valuable commodity is still reared in Mexico, Peru, and the adjoining Spanish settlements, it becomes every year an object of more sedulous cultivation than before.

The belt and finest cochineal, and, indeed, by far the greatest proportion of that consumed in Europe, is brought to us from Mexico. The principal districts where it is bred are Oaxaca, Tlalcalia, Cholutla, Nevea Galicia, and Chiapa, in New Spain, but it is in Oaxaca that the greatest quantities are produced, where the cultivation of this little insect has long given employment and been an object of commerce to the native Mexicans. According to Ulloa it is likewise produced at Humbatia, Loja, and Tucuman in Peru. It has been introduced into St. Domingo, and the Brahis also.

The wild cochineal (grana fylveftra) feeds upon most of the species of cacti that are natives of Mexico, requires no particular care or attendance, and may be gathered six times
in the year, there being so many generations of this insect in a twelvemonth: the time of collecting the cochineal is just before the female produces its young, as the animal puffs immediately afterwards. The cultivated cochineal (grana fina), called alfo Melique from a Mexican province of that name, is the product of flow and progressive improvement in the breed of the wild cochineal, and is found only in the gardens and plantations of Mexico, where, provided with its chinked food and sheltered from the inclemencies of the seasons, it attains nearly double its original size. This feeds only on one species of cactus, the cochicles or nopal, and produces only three broods in the year. Its management is simple, but requires incessant attention. At the third annual gathering of cochineal, a certain number of females are left adhering to branches of the nopal, which are then broken off and kept carefully under cover during the rainy season; when this is over, the flock of cochineal, thus preferred by each cultivator, is distributed over the whole plantation of nopal, where they feast multiply with great rapidity. In the space of two months, the first crop is gathered by detaching the insects with a blunt knife, after which they are put into bags, and dipped in hot water to kill them, and finally dried in the sun, by which they lose about two-thirds of their weight. This kind is also much more abundant in colouring matter, in which, indeed, its superiority over other kinds consists; since, from the experiments of the French academicians, the grané syrèfles of Mexico, and the cochineal of St. Domingo, afforded colours equal in brilliancy, though not in quantity, to the melique or grana fina. The cochineal of Brazil also, according to Bancroft, is not inferior in quality to the fine grain of Mexico, though it contains only half the quantity of colouring matter. The proportion of colouring matter contained in equal portions of the cultivated cochineal, of the wild cochineal of Mexico, and of an inferior kind from St. Domingo, is, according to Berthollet, as eighteen, eleven, and eight.

In time of peace, the cochineal of Mexico is almost exclusively sent from Vera Cruz to Cadiz, whence it is diffused all over Europe; but in time of war a contraband trade is carried on to various parts of America and the West Indies, whence this country is chiefly supplied.

The quantities of fine cochineal imported into Spain in the years 1758, 1759, and 1760, amounted to 11,000 bags, weighing 200 lb. each, and making together 2,200,000 lb. weight; and between the 1st of January, 1791, and the 18th of October in the same year, the importations had exceeded 2,000 bags. From accurate calculations it appears that the average quantity of fine cochineal, annually consumed in Europe, amounts to about 3,000 bags, or 600,000 lb. weight, of which 1,000 bags, or 210,000 lb., may be considered as the present annual consumption of Great Britain; a greater quantity comes, indeed, into the kingdom, but the surplus is again exported to other countries. The attention of the East India company has been lately directed to the production of this insect, though hitherto with but partial success. It is very small, not very abundant in colouring matter, and inferior in quality to that of New Spain. It is used only for the coarsest goods, and sold from 3/- 6d. to 5/- per pound. From 8 to 10,000 lb. are annually brought to this country. See Coccus Cacti.

Cochineal retains some traces of its original form, even in its dried state; and though Europe for a long time considered it as the seeds of an Indian plant, it is easy to collect from a parcel some insects in which the round or convex back, with small transversal furrows and flat belly, are readily discovered. Its external or commercial characters differ considerably; it is distinguished by the dealers chiefly by its colour and size. 1. The large black, or deep purple, of the finest, is preferred by the French; its value decreases with its size and luster. 2. The large silver grey, though held in less estimation here, is, in general, equal to the former. It is preferred by the German buyers, to whom it is sold far below what the preceding, and from which it differs only in the slight removal of that white brilliant powder with which the insects, in their natural state, are covered. 3. The small white or silvery cochineal is held in little estimation, and sold at very inferior prices. Cochinese dull is sometimes found in the market, and also the small, or mutilated grains, separated by the sieve from the larger, and known by the name of Granilla. All these kinds are liable to adulteration with various substances, but more especially with a paste, which is sometimes managed so deviously as to deceive the best judges, without very particular examination.

The use of cochineal was known to the Mexicans before the invasion of the Spaniards. It was the beauty of its colour, as displayed in their furniture, ornaments, and cotton cloth, which first directed the attention of their conquerors towards this precious insect. From the reports made to the Spanish ministry on this subject, orders were issued to Cortes, in the year 1523, to take measures for multiplying this valuable commodity, and considerable quantities, raised by the industry of the natives, were soon afterwards sent to Spain. Although it was for some time supposed to be the berry or seed of a vegetable; it was at length, however, ascertained that these grains were the females of a particular species of insect, called by naturalists "Coccus cacti," and of the same genus as the "kermer" (Coccus illicis, Linn.). See Coccus.

It is probable that alum was the only mordant used for fixing the cochineal dye for some time after its introduction into Europe. The Mexicans also employed the same substance, as appears from the testimony of the Spanish historian, Herrera. The colour afforded by cochineal with the alum mordants is crimson, and, indeed, previous to the discovery of the use of tin, this seems to have been the only colour analogous to scarlet that was known. Drebels, or, as some say, Keller, or Keffer, a German chemist, first discovered the effect of the solution of tin in extracting the cochineal dye. He brought his secret to London about the year 1643; and the first establishment for dyeing scarlet in this country appears to have been at Bow, whence it obtained, for a long time, the name of the Bow-dye. The processes was known in Holland soon after the discovery was made, and in France also, where it was practised by the famous Gobelin, who received information from a Flemish painter, to whom it had been communicated by Keller himself. For the details of this operation, and the successive improvements down to the present time, we refer our readers to the article SCARLET-DYE.

Cochineal, when thoroughly dry, if kept in a dry place, and in close packages, may be preserved many years without alteration. Hellot tried some 130 years old, and found it equal in quality to the fresh insects.

The colouring matter of cochineal may be extracted either by water or alcohol. The alcoholic solution is a deep crimson colour, and, on evaporation, leaves a transparent residuum of a deep red, which has the appearance of a resin, and which affords by distillation the products of animal substances. The aqueous solution or decoction of cochineal is of a crimson colour, bordering on purple, when viewed by transmitted lights; and this, if evaporated slowly to the dryness of an extract, and then digested in alcohol, com-
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municates to this menstruum a colour similar to the preceding pavonisofus solution, a red from of the colour of wineless being left behind. This affords, by defluxive distillation, the products of animal substances.

The aqueous decoction of cochineal, if mixed with a little fulprute acid, affumes a red colour, inclining to yellowish, or orange hue, and a small quantity of a fine red precipitate is thrown down. Muratic acid produces nearly the same change of colour, but occasions no precipitate. A solution of tartar, and, indeed, all acids, change the cochineal decoction to a yellowish red, and a small quantity of a pale red precipitate is slowly deposited: the supernatant liquor is yellow, but on the addition of a little alkali it becomes purple, the precipitate being at the same time red-diffused. Alum brightens the colour of the infusion and gives it a redder hue; a crimson precipitate is deposited, and the supernatant liquor retains a tingel tinge. A mixture of alum and tartar produces a brighter and more lively colour, inclining to yellow; and a precipitate is thrown down, but much paler, and in quantity than where alum alone is used. Nitro-muriate of tin throws down a crimson sediment in considerable abundance, not a particle of colouring matter remaining in the liquor.

On adding a solution of tartar, and afterwards of tin, to the infusion of cochineal, a rose-coloured precipitate is formed more quickly than in the preceding experiment. The supernatant liquor retains a tinge of yellow.

Cochineal, boiled with half its weight of tartar, affords a decoction more inclining to red, and not so deep as when boiled with water only. With the solution of tin, however, it affords a more abundant precipitate, and of a more intense colour. The extraction of the colouring particles of cochineal, therefore, is favoured by the action of tartar, though the liquor appears much paler than the simple aqueous solution.

The sulphate of iron forms a brown-coloured purple, or brownish violet precipitate, and the supernatant liquor is of a dilute yellowish brown. The sulphate of zinc forms a deep purple, or deep violet; and the acetate of lead a purple-violet precipitate, less deep than the preceding; the liquor in both cakes being perfectly colourless.

The sulphate of copper changes the colour of the decoction to violet, and a small sediment of the same colour slowly settles.

Bertillon remarks a distinctive character in the colouring matter of cochineal, compared with that of madder, treated with the same re-agents. Both species of colouring matter acquire a yellow colour from acids; but if the particles of cochineal be separated by a fusible, which precipitates them from the acid liquor they are dissolved in, they reappear with their natural colour little changed, whilst those of madder retain a yellow or fawn-coloured hue. On this account the solutions of tin, which retain a great excess of acid, and are so eminently useful in exalting the colour of cochineal, are used with little success with madder; probably as Mr. Bertillon supposes, because the combination of the oxide of tin with the colouring matter of madder, retains a larger portion of acid than it does when combined with the colouring matter of cochineal.

We have hitherto observed, that the natural colour of cochineal is crimson, and that, till the discovery of the use of the solution of tin, the colour now called scarlet was unknown. The production of this colour was ascribed to the nitro-muriate of tin only, and more especially to the action of the niterous acid of that solution, with little or no reference to the agency of the tartar, which was always employed in the operation. We are indebted to Bancroft for the correction of this error, and for a series of experiments on the action of other metallic and earthy solutions, with the colouring matter of cochineal on woolen materials.

From these experiments it appears, that cochineal, with the nitro-muriate of tin, or common dyers' spirits, produced a crimson only, but with the addition of tartar a good scarlet.

Cochineal, with a solution of tin in muratic acid, dyed a beautiful crimson, and with a solution of that metal, by a mixture of tartar and muratic acid, a beautiful scarlet.

Cochineal, with tin calcined by the long continued action of sulphuric acid, dyed a salmon colour, and, with a recent solution of tin, a reddish salmon colour, inclining a little to the crimson. A solution of tin, in equal parts of nitric and sulphuric acids mixed, afforded a similar colour.

Tin, dissolved by the pure acid of tartar, dyed with cochineal a very beautiful scarlet, inclining a little to the aurora.

Tin very readily dissolves by pure citric acid, and even by lemon juice; and the solution, newly made, dyed with cochineal a most beautiful scarlet, inclining, like the preceding, a little to the aurora. The citric acid with tin acts, at least as efficaciously as that of tartar, in yellowing the cochineal crimson; nothing, says Dr. Bancroft, can exceed the beauty of scarlet dyed with the citrate of tin.

The solution of tin in vinegar afforded a scarlet inclining a little to the crimson.

The phosphate of tin produced an aurora, and the fluate of tin a very good scarlet.

With other bases, cochineal gave the following colours to woolen:

With nitro-muriate of platina, a red, and of gold a reddish brown.

With nitrate of silver a dull red, and with muriate of silver a lively reddish orange.

With the acetate of lead, a purple, inclining to violet; and with nitrate of lead, a delicate lively colour, between the red and cinnamon, but inclining more to the former.

With the sulphate, nitrate, muriate, and acetate of iron, cochineal produces a dark-violet, and even a full black, when employed in sufficient quantity.

All the preparations of copper appear to degrade the colouring matter of cochineal, as do those of mercury in a still greater degree; most of these, whilst they degrade the colour, seem to annihilate a portion of it.

With the nitrate and muriate of zinc, and various solutions of bismuth, cochineal produces different shades of lilac. Cobalt and nickel also afford various shades of lilac and purple. The sulphate of manganese an orange, and the nitrate of manganese a colour resembling a madder red.

It has been before observed, that, with the aluminous mordants, cochineal affords its natural colour, or crimson. Dr. Bancroft has also examined the effects of other earthy solutions.

Lime-water, with cochineal, dyes a purple, which took but slowly, and required long boiling. Sulphate of lime a full dark red, and nitrate of lime a lively red, approaching to scarlet, and muriate of lime a purple red.

The solutions of barytes and of magnesia, afforded various shades of lilac, and even the solution of silver in caustic alkali, precipitated by the addition of an acid, affords a full rich pleasing purple, which proved sufficiently durable.

The foregoing experiments repeated on silk gave less advantageous results. Cochineal, indeed, with the albuminous baths, dyes the crimson colour as well and as durably on silk as on wool. The modes of producing this are well known,
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known, and will be treated of hereafter; but in general, with
the other earthly and metallic bases, cochineal produced simi-
lar but much paler colours than on wool.

The little disposition manifested by the colouring matter of
cochineal united with cotton, and the celebrated experi-
ment of Mr. Dufay to illustrate this, are well known. He
cut a piece of cloth to be manufactured with a woollen
web and cotton wool, and having subjected it to the ordi-
inary process of dyeing scarlet, found that the wool had taken
a most beautiful scarlet, whilst the cotton remained perfectly
white. Subsequent experiments have shown that this effect
arises not from the total want of affinity between the colour-
ing particles of cochineal united to tin, and the fibres of
cotton, but from a striking and powerful difference in the
force with which the colouring matter is attracted by the
two substances. When cotton alone is subjected to the same
dyeing, it takes a scarlet colour more slowly, and
paler than that imbibed by woollen, yet sufficient to prove
its disposition to such union, when not counteracted by more
powerful affinities. When cotton and wool, however, are
jointly subjected to the operation of scarlet dyeing, the latter,
by its strong attraction, draws, and exclusively appropri-
ates itself, all the colouring matter in the vessel before
the cotton has had time to engage any part of it. It is
owing to this weaker attraction between the fibres of cotton
and the scarlet dye, that this latter is so much less perma-
nent on cotton than on wool; and it is also from this want of
sufficient attraction that the cochineal colour is found to
take most beneficially on cotton, when the cakes has first
been applied separately.

Cochineal is sometime used by calico printers in topical
dyeing, but more frequently in the preparation of those
colours for the pencil, which are described under the article
-colour making.

The mordants used for cochineal are those employed with
madder. The acetate of iron, or iron liquor for black, di-
luted solutions for various shades of purple or blue, and mix-
tures of the acetates of iron and alum for chocolates,
blooms, &c. &c.

With the common aluminous mordant, printed and rinfed
off the same as for madder red, cochineal affords a bright
and beautiful crimson. It is, however, much less fixed than
madder, and cannot support repeated washing and exposure.
It is applied chiefly on line cloth and delicate materials, when
the solidity of the colour is often times an object of less
importance than its beauty. An addition of one-twentieth,
or fifteenth, of galls to the cochineal, gives it greater flex-
ibility, but this permanency is gained at the expense of its
lucidity. The fine crimson disappears, and the colour ap-
proaches more to the red or middle hue. An advantage
attending the use of cochineal, is its little effect on the white
or unprinted part of the cloth, which acquires no influ in
the dyeing, but which is completely removed by simple washing
or, in some particular cases, by very gentle braining. From
two to three ounces of cochineal, according to the fulness of
the pattern, are sufficient for a piece of light ground. The
dark crimson grounds, with white objects, require from
four to five ounces. It must be finely ground, and inclosed
in a linen or cotton bag, suspend in the dye-copper, from
whence it can be occasionally taken and squeezed or wrung,
for the more complete extraction of the colour.

In dyeing with cochineal, the value of this drug renders
every precaution for economizing it use indispensible necessary,
and a considerable saving is made by diminishing as much as
possible the quantity of the dye liquor. It is well known,
that colouring matter of any kind, held in solution in the
dye-copper, can only be exhausted to a certain degree, even
by fresh and undyed goods; there is a certain point at
which the affinity of the water for colouring matter becomes
equal to that of the brownell mordants, and all that is thus
remained may be considered as totally lost, except when fresh
portions of colouring matter are added to the already ex-
hauasted liquor, and the operation of dyeing again renewed,
in which case the loss is inversely as the number of suc-
cessive operations performed in the same liquor. In dyeing
with cochineal, therefore, no more water should be used that
is barely sufficient to cover the goods when plunged down close
into the copper, with a brush as they come over the wicks,
and three inefficacious dyeings, at least, should be passed through
the same liquor before it is let off, and the copper replenish-
ed with fresh water. Long continued heat has a tendency
to injure the cochines crimson, and incline it too much to the
purple hue; each dyeing, therefore, should be withdrawn
shortly after it has attained the boiling point. The first
dyeings may be boiled three minutes; the second, one; the third
dyeing may be kept five or six minutes at the boil, if it conflicts
with darker colours, such as chocolates, dark purples, &c., &c.,
but if crimson, the colour, without boiling, will incline very
much to the purple hue, and be much inferior to the first,
and even to the second dyeings. On this account it is proper,
when the work will admit of it, to dye the pale crimson
grounds first, follow after with the stronger light grounds,
and, lastly, with the darker colours above-mentioned.

The use of tin vessels in dyeing scarlet or cochineal, where
the acid solutions used in that operation render them indis-
necessarily necessary has induced many calico printers to em-
ploy them in dyeing cotton, where no acid solution is pre-
sent, and where the good effects of tin may be superposed
on to apply. It is certain, however, that the hue of the pale
and delicate crimson grounds produced in a tin vessel is
much superior to that produced in copper, and the cause
of this difference is satisfactorily explained by the ex-
periments of Mr. Thompson. From these experiments,
which will be more fully detailed in another part of this
work, it appears that the colouring matter of cochineal poff-
fuses very distinct acid properties.

Turnings of pure lost iron digested in a strong decoction
of cochineal were dissolved, with dispengement of hydro-
gen gas. The solution, at first purple, gradually acquired a
more intense colour, approaching to black. Exposed to the
atmosphere, it gradually absorbed oxygen, and let fall a
precipitate. It communicated to cloth a dark grey or
purple colour, which was not removed by washing. With
the decocation of cochineal formed a beautiful crimson
foliati, and, with copper, a dull crimson inclining to
purple; both these solutions imparted their colour to cloth,
which rinsing did not remove. Hence it appears that the dif-
fence in the colours, produced in a tin and in a copper vessel,
arise from the action of the colouring matter on the sub-
stance of the vessel itself.

The colouring matter of cochineal also acts powerfully on
the earthy and metallic oxides, or on its own combinations with
them or cloth. A piece of calico impregnated with a weak
aluminous mordant, and dyed in a strong decoction of
cochineal, takes at first a dye which is, however, speedily
removed, and the mordant itself soon after carried off the
cloth. The same takes place with the dilute solutions of
iron. In dyeing with cochineal, therefore, in the way pre-
scribed above, some care is necessary in the management of
these goods, on which weak as well as strong mordants are
applied, lest with the treatment necessary to bring up the
latter to their proper strength and fulness, the former be
totally destroyed.

The beautiful pigment examine, used chiefly in miniature

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and water-colour painting, and sometimes under the name of rouge, to frehen the cheeks of pallid or faded beauty, is also a preparation of cochineal. It is a light, soft, velvety powder, of a mott rich and magnificent scarlet, inclining a little to crimson. It was formerly made from kermes, whence its pretentious name is derived.

The preparation of carmine, notwithstanding the numerous process detailed in various works, still remains one of those secrets which are reserved to the laboratories of a few. Its constitution, indeed, and the general nature of the processes for obtaining it, are well known; but excellence in colours of this kind often depending on particular hue, arising from minute but important conditions in the preparation, approved processes are guarded with religious care, confined to the work-shops that gave them birth, in which mystery and prejudice are detestable.

We subjoin the following formula without vouching for its merits; it is, however, at least, as good as any other published.

Four pounds of fine clear river water into a clean copper pan, and, when boiling, add two ounces of the belt grain cochineal, finely ground and sifted. Boil five minutes, stirring carefully the whole time. Add thirty grains of fine Roman alum in powder, and boil three minutes longer, after which withdraw it from the fire and let it cool a little. Decant off the liquor carefully from the grounds, and strain through a silk sieve fine enough to retain the undissolved grains. Pour the liquid into well-glazed porcelain dishes and suffer it to remain undisturbed three or four days, after which time again decant the red liquor into other dishes from off the sediment which has formed, and which, dried in the shade and free from dust, forms the fine carmine. Another deposition takes place at the end of a few days from the decanted liquor, which forms a good carmine of second quality, and there still remains colouring matter sufficient in the remaining liquor to afford a rich lake.

The following process, not very different from the former, has been recommended; and, if carefully pursued, will yield a pigment greatly superior to the carmine that is generally met with. Into a fourteen-gallon boiler of well-tinned copper put ten gallons of distilled or very clear rain water (spring water will not answer the purpose). When the water boils, sprinkle in, by degrees, a pound of fine cochineal, previously ground in a clean ilove mortar to a moderately fine powder; keep up a gentle ebullition for about half an hour, and then add three ounces and a half of crystallized carbonate of soda; in a minute or two afterwards draw the fire, and then add to the liquor an ounce and a half of Roman alum, very finely pulverized; stir the mass with a clean fitch till the alum is dissolved, then leave it to settle for 25 minutes, and afterwards draw off the clear liquor with a glass syphon, and separate the rest of the fluid from the sediment by filtering it through a close linen cloth. Replace the clear liquor in the boiler, and stir in the whites of two eggs, previously well beaten with a quart of warm water; then light the fire again and heat the liquor till it begins to boil, at which time the albumen of the eggs will coagulate and combine with the earth of the alum and the finest part of the colouring matter; this sediment is the carmine, and being separated by filtration, and well washed on the filter with distilled water, it is to be spread very thin on an earthen plate, and slowly dried in a stove, after which it is fit for use. The finest part of the colouring matter of the cochineal being thus separated, the residue may be employed in the preparation of red lake in the following manner: Add two pounds of pearl ash to the red liquor from which the carmine was precipitated, and return it into the boiler together with the dregs of the cochineal, and boil the whole gently for about half an hour; then draw the fire, and, after the sediment has subsided, drain off all the clear liquor into clean earthenware vessels. Then pour upon the sediment a second alkaline key, prepared by dissolving a pound of pearl ash in two gallons of water, and boil this also upon the dregs for half an hour; by which process the whole of the colouring matter will be exhausted. Separate by filtration the liquor from the dregs, and return both the alkaline solutions into the copper. When this bath is as hot as the hand can bear, add, by degrees, three pounds of finely pulverized Roman alum, observing not to add a second portion till the effervescence from the first has entirely subsided. When the whole of the alum has been put in, raise the fire till the liquor simmer, and continue it at this temperature for about five minutes, at which time, if a little is taken out and put into a wine glass, it will be found to consist of a coloured sediment diffused through a clear liquor; after standing quiet a while the greater part of the clear supernatant liquor may be poured off, and the residue being placed on the filter, will there deposit the coloured lake, which, after being accurately washed with clear rain water, may be covered with a cloth, and allowed to remain for a few days till it is half dry: it is now to be separated from the filter, to be made up in small lumps, and placed in a stove to dry.

By this management a pound of good Mexican cochineal will afford one ounce and a half of carmine, and about a pound and a quarter of red lake.

If the colour is required to incline somewhat towards scarlet, this may be effected by grinding along with the cochineal from a quarter to half an ounce of the belt annatto.

The French add to the infusion of cochineal a small proportion of autour, a bark containing yellow colouring matter, and also of clouan, a greenish yellow seed, both from the Levant. They serve to brighten the hue of the carmine, and incline it more to scarlet. Carmine has a slight taste, easily recognized as that of cochineal. It is sparingly soluble in water, to which it communicates its own colour. Mixed up with water it works fairly with the pencil and affords a poor colour. Ammonia dissolves it instantly, forming with it a deep transparent crimson-coloured solution, inclining much to purple. This is the tint of its purity, for the inferior or adulterated carmine is insoluble, and falls to the bottom. The painters generally grind or mix it with ammonia for the deep rich reds, and its solutions in that alkali afford most beautiful pink or rose colours.

Carmine appears to be a lake in which the colouring principle predominates very much over the basis; hence its solubility in ammonia, which the true or perfect lakes do not possess.