



For the Scientific American.

On Gilding Paper, Parchment and Leather.

The gilding to be used with water colors may be either with the leaf gold or powder which last when mixed with the proper vehicle, is called shell gold. The leaf gold is necessary in all cases when a shining appearance is wanted and it may be laid upon the designed ground either by ising-glass or gum water. This should be weak and not laid too freely on the ground and a proper time given for the requisite dryness and the management of the gold, the same as described below, and burnished in the same way.—When colors are to be laid on the gilding, it is a good plan to brush it over with the gall of a beast, as they take more kindly afterwards.

When gold powder is used along with paintings in water colors, it is previously formed into *shell gold*. This is made by tempering the gold powder with weak gum water and adding a little soap suds of pure white Castile soap to make it work freely. This gum water is made by dissolving three-fourths of an ounce of gum-arabic and one-fourth of an ounce gum senegal and adding a little white sugar candy, about a quarter of an ounce.—Isinglass water is made by boiling one-half ounce in a pint and a half of water till the isinglass is dissolved when it must be strained through a linen rag and an equal measure of hot water added.

TO GILD BOOKS, OR PAPER.

This is laid on by book binders with the tools using the gold size, and Dutch gold is frequently employed for this purpose.

EMBELLISHMENT OF MANUSCRIPTS

This is done most easily by the *gold ammoniac*. Take *sal ammoniac* and powder it and then dissolve it in water impregnated with a little gum arabic and some juice of garlic.—The *sal ammoniac* produces a milky appearance from whence in medicine it is called *lac ammoniacum*. With this prepared draw with a pencil or write with a pen on paper, or vellum, the intended figure or letters of the gilding. Suffer the paper to dry, and then breathe on it till it is moistened and lay on the leaves of gold and press it down with a ball of soft leather. When the paper becomes dry, which will soon be the case, the extra gold can be gently rubbed off with a fine pencil, or linen rag, when the writing will all appear perfectly gold.

On old manuscripts that are highly ornamented letters of gold often rise above the surface and others have a high polish. The one is done by friction with a solid piece of gold, the other by leaf gold. The solid gold method is as follows: take crystal and reduce it to powder and temper it with strong gum water till it be of the thickness of paste, and with this form the letters. When they are dry rub them with a piece of gold of good color as in the manner of polishing, and the letters will appear as if gilt with burnished gold. These embossed letters are made by means of a stamp in words or letters and when the stamp is to be used each letter must be moistened with oil and as the letters are concave they are filled with the above mixture of crystalline and struck gently on the paper, which must have something soft under it. The letters will then be left in their proper places, and can be rubbed with the gold. Leaf gold cannot be used in the above way, but can be used for embossing in the following manner: take white of eggs and beat them to an oily consistency, then thicken them like paste with vermilion and form the letters with a stamp as before directed, and when they are become dry moisten them and no more, with strong gum water, and when this is the right dryness (clammy) put on the leaf gold and press it to every part of them with soft leather and after this is properly dry it may be polished by an agate burnisher.

Isinglass, alcohol, a little honey, and sugar candy, and a little bole ammoniac well powdered and added together is a good size for gilding the leaves of books: or *sal ammoniac* and sugar candy of equal parts well powdered and white of eggs beaten to an oily consistency is a good cement and fit for use. The paper should be well cut, and polished on the edges, and strongly screwed down by the press and the above cements applied and suffered to dry. It should then be moistened with water and is in a fit state to receive the gold and the leaves may be then laid on, being cut according to the breadth they are to cover and pressed closely down with a cotton ball and after being thoroughly dry it is burnished with an agate burnisher.

GILDING LEATHER.

In bookbinding the operator lays on the leaf and presses the figures in by steel stamps made hot, when the redundant gold may be afterwards brushed off. When skins are to be gilded the firmest and softest only are chosen and after being tanned are softened for some hours in water frequently stirred, and then taken out held by one corner and beaten against a flat stone, like flailing, afterwards they are spread on the stone and rubbed over with an iron instrument resembling a blade, holes are patched up by pieces glued with glover's size, and then the whole is sized over with very strong glover's size, stiff like jelly. The side on which the hair grew is that used for the size or silvering and the size is spread or rubbed with the hand quickly and carefully twice over with a short interval between the coats. The leaves of silver are then laid on, and this requires great art and the whole skin must be covered with leaf after leaf, like shingling, when the leaves are then pressed down by a ball of fox tail. The skins when they are thus silvered are hung to dry on cords held by clothes pins and left to dry. They must be kept free from dirt; when dry they are fit to be burnished.

For the Scientific American Alloys of Metals.

Gold is the most ductile metal for wire, with the exception of platinum, of which wires are made finer than a spider's thread. Zinc draws better than either tin or lead. The following alloys for engineering purposes are now extensively used in the arts.

To one pound of copper previously melted as described in our last article, add one and a half ounces tin and half an ounce of zinc.—This is a very strong and tenacious alloy. For wheels add one and a quarter ounces of tin and two ounces of brass. For articles requiring turning add 2 ounces tin and 1 1-2 ounces brass. For bearings, nuts, &c. add 2 1-4 ounces tin and 1 1-2 ounces brass. A composition for general purposes, used by an engineer of eminence, add 1 7-8 ounces tin and 1 7-8 ounces zinc.—For bearings to resist great strains, add 2 1-2 ounces tin and 1-2 an ounce of zinc. For an extremely hard metal, almost too hard for the file, add 2 1-2 ounces tin and 2 1-2 ounces zinc. For hard white button metal, add 1 ounce of tin and 2 ounces zinc. For common metal for ditto, add 1-2 an ounce tin and 1 1-2 ounces zinc. 10 lbs. tin, 6 lbs. copper, 4 lbs. brass, constitute white solder.

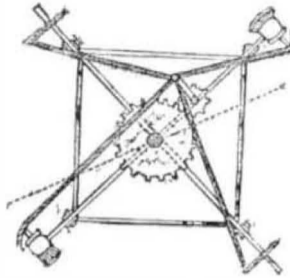
To Make Sweet Almond Oil.

Select those almonds which are sound fresh and not worm-eaten, rejecting all such as are rancid, and after the careful separation of all foreign matters, introduce them into a bag, and shake up well and frequently, to detach the fine yellow dust adhering to the cuticle. This done, they are taken out, sifted to remove this dust and reduced to a paste in a mill. With this paste you fill up canvas squares or bags, and submit them to a gradual, but strong pressure between slightly heated plates, for experience proves, that if they or too hot the oil is liable to rancidity. The oil thus obtained, must be filtered and carefully preserved from contact with air, for on the filter is deposited a part of its mucilage. Fontinelle is said to have obtained it free from mucilage, and capable of being preserved for a longer time, by the use of three or four times its weight of water, holding in solution one twenty-fifth of white table salt. The oil of sweet almonds, well prepared from fruit which is not bitter, is of a bright yellow

color, and has a slight and mild odor of the almonds, becomes easily rancid, and thickens. To obtain a handsomer and whiter product, first scald the almonds and stir them about until their peels are detached, then drain them in a basket, douse them with cold water, pick out the skins, dry the almonds and proceed with them as before directed.

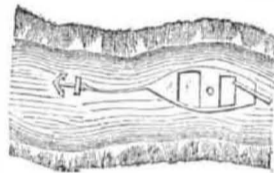
MECHANICAL MOVEMENTS.

Rotary Gymnastic Wheel.



The above is an apparatus contrived for amusement by Marcel Cardinet, an ingenious Frenchman. The people to be amused seated themselves at the extremity of each arm, and by pulling the ropes connected with the crank of the small wheel produced to themselves a rotary motion round the large wheel. The whole framing of the arms was supported on an axis below. And the principle is the very same as that displayed in the old rotary turnpike bars.

Action of a Stream.



This a method of passing a boat from one shore to another and is in common use in many countries. On the Rhine in Germany and on some of our North-eastern rivers, we believe the same system is practised. The effect of the stream upon the rudder placed at a certain angle with the prow of the boat carries the boat across the stream. In the centre of the stream is an anchor, whereby the boat is held from being carried away down stream.

To Make Good Cheese.

The Stilton cheese is made by putting the night's cream without any portion of the skimmed milk, to the milk of the following morning; but those who wish to make it very fine add a still greater quantity of cream, and of course the richness of the Cheese depends on the amount which is used.—Butter is also said to be sometimes mixed with it. The rennet is then added without any coloring; and when the curd has come, it is taken out without being broken, and put whole into a sieve or drier, where it is pressed with weights until completely cleared of whey; when dry, it is put with a clean cloth, into a hooped chessant (or mould) and placed under the press, the outer coat being first salted; when sufficiently firm to be removed from this mould the cheese is placed upon a dry board, and tightly bound in a cloth, which is changed daily, in order to avoid all danger of cracks in the skin, until this is found to be tolerably well crusted; after which it is no longer used, and the cheese requires no other care than being frequently turned upside down, and occasionally brushed.

Human Hair.

Among the different kinds of human hair, only that which is straight approximates to the cylindrical form, while the varieties which are curly are more or less flattened the compression being apparently in proportion to the curvings. Even in the straightest Caucasian hair there is a slight deviation from roundness, and in some instances at least, a little longitudinal groove is perceptible. The crisp hair of the negro has this groove deeper and presents a transverse section of the form of a bean. It was suggested that the curl or twist of the negro hair may be connected with a greater tension of the fibres along the groove, for each hair is an assemblage of innumerable minute parallel fibres. The hair of the Bushman who was recently in this city, is much more minutely curled and closely

matted together than the negro hair; and when seen by the aid of a microscope appears quite flat or ribbon shaped, four or five times broader than it is thick. It shows no groove but very delicate parallel strice of fibres,

These differences have much interest in their bearing upon the question of the unity of origin of the different races of man. Have these races all sprung from a common parentage, or are they as some naturalists contend derived from distinct sources, and only in that degree of relationship to each other which subsists between closely allied species among inferior animals? It is well known that the hair of the mammalia is analogous to or represents the feathers of birds and the scales of fishes. Differences in the form, structure and distribution of the feathers are among the indications which separate the species of birds, and Prof. Agassiz has classified fish by the difference in the scales. Yet there is an indubitable test of the oneness of the human family.

Amusements of Chloroform.

A practice has assumed the form of a mania in Edinburg, Scotland, certainly not less exciting than the railway mania. It consists in converting fashionable evening parties into a species of pharmaceutical association for experimenting on the effects of chloroform, and other substances of similar properties. One of these exhibitions is worthy of notice. A number of ladies and gentlemen were invited to an evening party in the house of a respectable medical practitioner. At ten, instead of music and dancing, the learned doctor entered with flask and sponge, and every guest was treated to a trip to the realms of insensibility. Some of the ladies were foolish enough, while there, to utter such speeches as, "Oh! my beloved Charles, come to my arms," at the same unwittingly extending them to receive the dear creature. Some of the gentlemen, not having taken the precaution to swallow a sedlitz on a carminative previous to their first appearance, committed slight breaches of etiquette not very amiable.

Danger of Sleeping near Burning Lime Kilns.

During the process of lime burning, carbonate of lime is decomposed by means of heat, and carbonic acid driven off. Hence the fatal effects which have resulted from persons incautiously lying down to sleep near burning kilns.



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