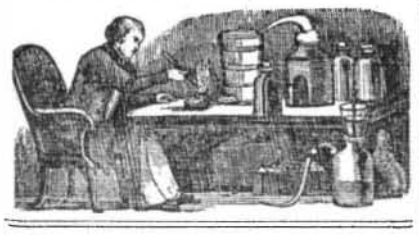


Manufacture of Quills for Writing.

These consist usually of the feathers plucked out of the wings of geese. Dutch quills have been highly esteemed, as the Dutch were the first who hit upon the art of preparing them well, by clearing them both inside and outside from a fatty humour with which they are naturally impregnated, and which prevents the ink from flowing freely along the pens made with them. The Dutch for a long time employed hot cinders or ashes to attain this end; and their secret was preserved very carefully, but it at length transpired, and the process was then improved. A bath of very fine sand must be kept constantly at suitable temperature, which is about 140° F.; into this, the quill end of the feather must be plunged, and left in it a few instants. On taking them out they must be strongly rubbed with a piece of flannel, after which they are found to be white and transparent. Both carbonate of potash in solution and dilute sulphuric acid have been tried to effect the same end, without success. The yellow tint which gives quills the air of age, is produced by dipping them for a little while in dilute muriatic acid, and then making them perfectly dry. But this process must be preceded by the sand-bath operation. The above is the French process.

Quills are dressed by the London dealers in two ways; by the one, they remain of their natural color; by the other, they acquire a yellow tint. The former is called the Dutch method and the principal workman is called a Dutcher. He sits before a small stove fire, into which he thrusts the barrel of the quill for about a second, then lays its root quickly below his blunt-edged knife called a hook, and, pressing this firmly with the left hand, draws the quill briskly through with his right hand. The bed on which the quill is laid to receive this pressure is called the plate. It is a rectangular smooth lump of iron, about 3 inches long, 1½ broad and 2½ thick, which is heated on his stove to about the 350th degree Fahr. The hook is a ruler of about 15 inches in length, somewhat like the patten maker's knife, its fulcrum being formed at the one end by a hook and staple, and the power of pressure being applied by the hand at the other end. The quill, rendered soft and elastic by the heat, endures the strong scraping action of the tool, and thus gets stripped of its opaque outer membrance, without hazard of being split. A skilful workman can pass 2000 quills through his hands in a day of 10 hours.

They are next cleaned by being scrubbed by a woman with a piece of rough dog-fish skin, and finally tied up by a man in bundles of one quarter of a hundred.

In another mode of dressing quills, they are steeped a night in decoction of turmeric, to stain them yellow; taken out and dried in warm sand contained in a pot, then scraped by the Dutcher as above described. The first are reckoned to be the best pens, though the second may appear more beautiful.

Crow quills for draughtsmen, as well as swan quills, are prepared in the same way. The quills plucked from well-fed living birds have most elasticity, and are least subject to be moth eaten. The best are those plucked, or which are spontaneously cast in the month of May or June, because they are then fully ripe. In the goose's wing the five exterior feathers only are valuable for writing. The first is the hardest and roundest of all, but the shortest. The next two are the best of the five. They are sorted into those of the right and the left wing, which are differently bent. The heaviest quills are, generally speaking, the best. Lately, steaming for four hours has been proposed as a good preparation.

The greatest degree of cold is obtained by the evaporation of liquefied carbonic acid gas, for the frozen carbonic acid thus afforded has a temperature of 100° degrees below zero.

Practical Receipts.

Prepared by a German Chemist for the Scientific American.

Fire-proof Clay for Crucibles.

Gaffart says in No. 564 of the l'Institut, that a fire-proof clay can be artificially produced where nature does not furnish it. The want of durability in the fire is caused by the presence of metallic oxides which vitrify the clay in the fire. These oxides, such as lime, magnesia, oxide of iron and potash, can be removed by treating the clay with crude muriatic acid. It is worked with the clay into a thin paste, and after giving to the acid sufficient time to produce the necessary reaction, it is brought to a boiling heat and after the application of heat the liquid is permitted to run off. The clay is then repeatedly washed with water and dried. Gaffart has made crucibles of a clay thus prepared in which he melted bar iron without changing or impairing them.

Method of removing the Stains of Nitrate of Silver or Indelible Ink.

Wet the part stained with a strong solution of hydriodate of potash in water, which will convert the black oxide of nitrate of silver into the iodide of silver, which is of a light straw color and will not be noticed without close inspection.

The iodide of silver is soluble in a solution hyposulphite of soda, and by washing in a strong solution of it the iodide of silver will be discharged altogether.

Copying Paper.

Make a stiff fointment with butter or lard and lampblack, and smear thinly and evenly over soft writing paper, by means of a piece of flannel, then wipe off the redundant portion with a piece of soft rag and dry it in a warm place. Place it on paper and write on it with a style or solid pen. By repeating the arrangment, two or three copies of a letter may be obtained at once. This paper forms the ordinary Manifold Writer.

Tracing Paper.

Lay open a quire of paper of a large size, and apply with a soft brush a coat of varnish, made of equal parts of Canada Balsam and oil of turpentine to each sheet successively and harg them on a line, and repeat the operation on fresh sheets until the proper quantity is finished. If not sufficiently transparent, a second coat of varnish may be applied as soon as the first has become quite dry. Then rub the paper with a mixture of equal parts of nut oil and oil of turpentine, and dry it immediately by rubbing it with wheat flour, then hang it on a line for 24 hours Both the above are used to copy drawings, writings, &c. If washed over with ox gall and dried, they may be written on with ink or water colors. The paper prepared from the refuse of the flax mill, and of which bank notes are made, is also called tracing paper, and sometimes vegetable paper.

To Distinguish Oxalic Acid from Epsom Salt.

Taste the solution first; Epsom salt is bitter, oxalic acid sour. 2d. Pour a little tincture of red cabbage into the solution, when if Epsom be present, the color will be unchanged—if oxalic acid be present, the color will be destroyed and turn of a yellowish shade. This is an easy mode of distinguishing between the two. Many accidents have occurred, from oxalic acid being given in place of salts, as the crystals of both look much alike.

When a person takes oxalic acid for salts, the best antidote is the white of eggs, it will immediately nullify the deadly effects of the acid.

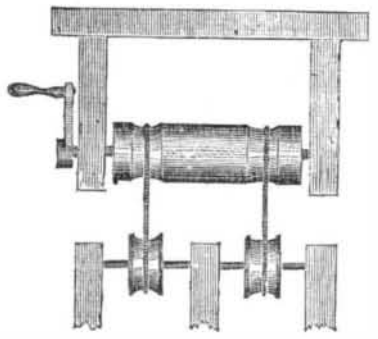
Rule to Calculate the Horse Power of an Engine.

Multiply the area of the piston in square inches, by the average *indicated* pressure of steam in pounds. Multiply the product thus obtained, by the speed of the piston in feet per minute. The result is then to be divided by 33,000, and 7-10ths of this quotient may be considered as the *effective* power of the engine, deducting for friction and loss.

This is the simplest rule known, and will answer for all engines. Brunton's divisor, however, is 44,000, but 33,000 is the universal divisor in this country.

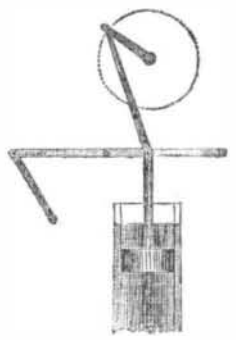
MECHANICAL MOVEMENTS.

Modification of the Windlass.



This cut displays a mechanical movement for conveying circular motion to distinct parts of the same shaft, and it also shows that from a circular motion a motion altogether different may be produced. The bucket that is lifted in a perpendicular direction from a well, is moved by the rotary motion of the simple windlass, and it is not a little worthy of our admiration that these movements are all governed by mechanical laws, and where two buckets are required to be moved up and down in a well or a mine by the windlass, it is a beautiful arrangement, common though it be, which by one shaft and the same motion enables one bucket to descend while the other is ascending, so as to assist in the raising up the more weighty bucket. It will be observed, that by the double drums or barrels on the lower shafts, each bucket is kept free from touching the other, and the arrangement is principally to keep the ascending and descending buckets very steady—any person will see this, which is very necessary in mining operations especially.

Circular from Rectilinear Motion.



It is well known that all the rectilinear motion produced from the pistons working in our steam engines, has to be changed into circular motion to propel shafts, &c. This is effected by a crank connected with the shaft and piston rod, or with the walking beam.—Many a rotary engine has been invented to communicate by the direct action of the steam, a circular motion to the shaft and obviate all reciprocating motion. That there are many unsound ideas relative to the loss of power by the crank, is a well known fact to all practical engineers, but as it is our intention to treat on this subject fully at some future period, we forbear to discuss it at present. Suffice it to say, that the above cut explains a mechanical movement, which any one can understand, and which is as beautiful as it is of universal application.

To Discover if Bread is adulterated with Alum.

The bread must be soaked in water, and to the water in which it has been soaked a little lime water should be added, when if alum be present the liquid will become milky, but if the liquid be free of alum, it will remain limpid. It is however not a common thing to adulterate flour with chalk or alum in America, but with inferior grain which can only be detected by those who are practically acquainted with the business.

To Detect Copper in Pickles and Green Tea.

Put a few leaves of tea, or some of the pickles cut small, into a phial with two or three drachms of liquid ammonia, diluted with one half the quantity of water. Then shake the phial and if the most minute portion of copper be present, the liquid will turn a light blue color.

How to Shoe a Vicious Horse.

A recent Continental traveller relates the following ludicrous mode of shoeing a horse in Germany:—"As soon as breakfast was over I generally enjoyed the luxury of riding about town, and in passing the shop of a blacksmith the manner in which he tackled and shod a vicious horse amused me. On the outside of the wall of the house two rings were firmly fixed, to one of which the head of the patient was lashed close to the ground; the hind foot to be shod, stretched out to the utmost extent of the leg, was then secured by the other ring, about five feet high, by a cord which passed through a cloven hitch, fixed to the root of the poor creature's tail. The hind foot was consequently very much higher than the head; indeed it was exalted, and pulled so heavily at the tail that the animal seemed to be quite anxious to keep his other feet on *terra firma*. With one hoof in the heavens, it did not suit him to kick; with his nose pointing to the infernal regions, he could not conveniently rear; and as a heavy hand was apparently pulling at his tail, the horse at last gave up the point, and quietly submitted to be shod."

The Great Burman Bell.

Next to the great bell of Moscow, which weighs 444,000 lbs., is the bell of Mengoon, mentioned by Mr. Malcom, who describes the Burmese as very famous for casting bells. —Their bells are, however, disproportionally thick, but of delightful tone. The raised inscription and figures are as beautiful as any bells in the world. They do not flare open at the mouth like a trumpet, but are precisely the shape of old globular wine glasses, or semi-spheroidical. There are several in the empire, of enormous size. That at Mengoon near Ava, weighs more than 444,000 lbs. It is suspended a few inches from the ground, and like other great bells, is without a tongue.

Preserving Pencil Drawings.

We have tried, says Dr. Holmes of the Maine Farmer, various methods of preserving drawings and writings, made by the common black lead pencil, but not with very good success until recently. By washing them over once with a solution of gun cotton in ether, we can fix them so firmly that India Rubber will not rub them out.

Animals which are destitute of eyes, are of inferior rank, or live under unusual circumstances, like worms.

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