Bramah's Planing Machinery.

The following is the specification of a patent granted to J. Bramah in 1802 for improvments in machinery to produce straight, smooth, parallel and cuvilinear surfaces on wood, &c. The description is very plain and was first reported for the Repertory of Arts.

"The principal parts of my invention are as follows: that is to say, to shorten and reduce manual labor, and the consequent expenses which attend it, by producing the effects stated in my patent by the use of machinery, which may be worked by animal, elementary, or manual force; and which said effects are to produce straight, true, smooth and parallel surfaces in the preparation of all the component parts of work, consisting of wood, ivory, horn, stone, metals, or any other sort of materials or composition usually prepared, and render them true and and fit for use by means of edge tools of every description. I do not rest the merits of this my said invention on any novelty in the general principal of the Machinery I employ, because the public benefit I propose will rather depend on new effects, produced by a new application of principles already known, and Machinery already in use for other purposes in various branches of British Manufactory. This Machinery, and the new manner of using it, with some improvements in the construction together with sundry tools and appendages never in use before, are particularly described and explained hereunder.

"I mean to use and apply for the purposes above stated every kind of edge tool or cutter already known, either in present shape, or with such variations and improvement as the variety of operations I may encounter may severally call for. But the tools, instead of being applied by hand, as usual, I fix, as judgment may direct, on frames driven by Machinery, some of which frames I move in a rotary direction round an upright shaft, and others having their shaft lying in a horizontal position, like a common lathe for turning wood, &c. In other instances I fix these tools, cutters, &c., on frames which slide in stationed groves or otherwise, and like the former, calculated for connexion with, and to be driven by Machinery, all of which are hereafter further explained and particularized.

'The principal points on which the merits of the invention rest are the following. First, I cause the materials meant to be brought true and perfect as above described, to slide into contact with the tool, instead of the tool being carried by the hand over the work, in the usual way.

Secondly, I make the tool, of whatsoever cutting kind it be, to traverse across the work in a square or oblique direction, except in some cases where it may be necessary to fix the tool or cutter in an immovable station, and cause the work to fall in contact with it by a motion confining it so to do, similar to the operations performed on a drawing bench.

Thirdly, in some cases I use, instead of common saws, axes, planes, chisels, and other such instruments usually applied by hand, cutters, knives, shaves, planes, and the like, variously, as the nature of the work may render necessary; some in form of bent knives, spoke shaves, or deep cutting gauges, similar to those used by turners for cutting off the roughest part. I also apply planes of various shapes and construction, as the work may require, to follow the former in succession, under the same operations; and which latter I call finishings.

Fourthly, these cutters, knives, &c, I fix on frames of wood or metal properly contrived for their reception, and from which they may be easily detached for the purpose of sharpening and the like: thes I call cutter frames. These cutter frames I move in cases like those on which the saws are fixed in a sawing mill, and sometimes to reciprocate in a horizontal direction, confined and stationed by grooves or otherwise, as may be found best calculated to answer the several works intended. In other instances, and which, I apprehend will generally have the preference, I fix cutter frames on a rotary upright shaft, turning on a step and carrying the frame round in a direction similar to the upper millstone; and sometimes I cause the frames to turn on a horizontal shaft, just resembling the mandrel of a common turning lathe or those Machines used for cutting logwood, &c., for the dyer's uses. When these frames are mounted in any of the foregoing directions for cutting, planes, &c., are fixed so as to fall successively in contact with the wood or other materials to be cut, so that the cutter or tool calculated to take the rough and hilly part operates the first, and those that follow must be so regulated as to reduce the material down to the line intended for the surface. These cutter frames must also have the property of being regulated by a screw or otherwise, so as to approach nearer the work, or recede at pleasure, in order that a deeper or shallower cut may be taken at discretion, or that the Machine may repeat its action without raising or depressing the materials on which they act. The manner of thus regulating the cutter frames, when on an upright shaft, is particularly described below. These cutter frames may be made of any magnitude and dimensions the work requires, only observing to make the diameter of those on the rotary plane so as to exceed twice the width of the materials to be cut, as the said materials must slide so as to pass the shaft on which the cutter frames revolve, when on the principle.

(To be continued.)

Paper Hangings Prepared by Means of Nitrate of Silver and other Salts.

Mr. Larocque presented a paper to the Academie des Sciences, Paris, explaining a new process for colouring and designing paper hangings. He observes, that nearly all the salts are volatized under the influence of vapour from water or saline salutions and that the nitrate of silver, among other salts, on account of its easy reduction, would furnish a great variety of shades of color; and by means of reserves made in the paper, any designs in white may be obtained. The following is the process employed:—Take of pure nitric acid, sp. gr. 1.50, two parts; and distilled water, one part. Place the mixture in a porcelain capsule and heat it, throw in about two ounces of silver, and continue to apply heat until the action of the acid on the metal has ceased; with this quantity of silver 700 or 800 sheets of paper may be colored. In this operation but a very small loss of silver will be found, for the residue can be formed into nitrate of silver and sold; or, if calcined at a red heat in a crucible with carbonate of soda, the metallic silver may be obtained and employed for a new operation. In order to obtain good designs, it is necessary to operate in a place well lighted and out of currents of air.

The plan of M. Larocque is just a modification of common photographic paper.

Charcoal.

Charcoal, graphite, and the diamond are well-known examples of the same element existing in different states. Each of these bodies are forms of carbon, yet how different in character! Charcoal is readily inflammable, graphite less so, and the diamond burns only at the highest temperatures. Graphite, like the diamond, is crystallizable, but one crystalizes in forms which cannot be referred to the other. The specific gravity of the diamond is much greater than that of either graphite or charcoal. Graphite and coke are conductors. There are no two distinct elements which differ more from each other than these modifications of the same element. No doubt the peculiar conditions of the compounds of carbon,—carbonic and oxalic acids, and also, in all probability, mellitic and croconic acids,—are dependent upon these allotropic condition of the same element.

Chromium, obtained from its oxide by fusion with charcoal at a very high temperature, is a pale grey metal, which cannot be oxidized at a red heat or by the action of boiling nitro-muriatic acid; but the chromium obtained from its combination with chloride, by the action of potassium, is a pulverulent mass which takes fire at about 400° of Fahrenheit, and is converted into green oxide of chromium, and it dissolves readily even in muriatic acid.

The State of Massachusetts granted within the past year $10,000 for the establishment of agricultural schools.

New Method of Inlaying and Coating Metals with various Substances.

M. Cyprian M. T. Dumotay, a French gentleman, has lately invented and patented a new mode of inlaying and coating metals with various substances, which articles have when finished the appearance of being richly ornamented with inlaid work, and has been called by the French "Damasquererie."

He first covers the article, while in a heated state, with a varnish of bitumen and virgin wax, spreading the said varnish by means of a ball of silk or fine leather as is practiced for etching. When the varnish is dry, the parts which are to be acted upon are laid bare by a point, as in ordinary etching operations.

When the inlaying of one metal is required the metal is first cleansed and then immersed in a bath of the metal to be deposited by the galvanic current, and when the metal has been deposited to a thickness equal to the depth of the hollow parts of the design, it is withdrawn from the solution, washed in water and dried in saw dust. The damaskened surfaces are then laid bare by means of free stone, or emery, or by filing and scraping, so as to remove the superfluous deposited coating and show the inlaid work. In this manner successive layers of all kinds of figures may be deposited in metal. Incrustations of silver may have fillets of copper, &c.

This is a branch of electrotyping, and for ornamental metallic workmanship, it opens up a wide field. We perceive in it a fine substitute for the present mode of silvering, or chasing arms with gold. By the old mode silver and gold wire are driven into seams checkered at the bottom, and then all smoothed off, thus producing by much trouble and at much expense, the silver ornamented pistols and fine fowling pieces that we often see.

Wheat and Bran.

According to Mr. John Donaldson "100 lbs of wheat bran contains 48 lbs. of nutritive matter"—"100 lbs. of wheat chaff contains 60 lbs. of nutritive matter"—"100 lbs. of wheat contain 95 lbs. of nutritive matter; so that 200 lbs. of bran, 160 lbs. of wheat chaff, and 100 lbs. of wheat, must be of equal value as food." The error is almost as great in putting the bran below the chaff as it is in putting the wheat itself so little above it. There are similar mistakes as regards the relative value of the green crops, and, in fact, it must be obvious that the theory is in error by which the merits of these different kinds of food have been estimated. It was all very well for the time of Sir H. Davy, or Mr. Sinclair, to suppose that all of (and none but) the dry substance of any vegetable which hot water would dissolve, and take with it through filter paper, was "nutritive matter;" but practical men soon proved this idea erroneous, and scientific men have long since erected a better theory of nutrition.

Facts About Digestion.

Wheat is most nutritious of all substances except oil; containing ninety-five parts of nutriment to five of waste matter. Dry peas, nuts and barley are nearly as nutritious as wheat. Garden vegetables stand lowest on the list, inasmuch as they contain when fresh a large portion of water. The quantity of waste matter is more than eight-tenths of the whole. Veal is the most nutritious, then fowls, then beef, last pork. The most nutritious fruits are plums, grapes, apricots, peaches, gooseberries and melons. Of all the articles of food boiled rice is digested in the shortest time—one hour. As it also contains eight-tenths of nutritious matter, it is a valuable substance of diet. Tripe and pig's feet are digested almost as rapidly. Apples, if sweet and ripe, are next in order. Venison is digested almost as soon as apples. Roasted potatoes are digested in half the time required by the same vegetable boiled, which occupy three hours and a half—more than beef or mutton. Bread occupies three hours and a half—an hour more than is required by the same article raw. Turkey and goose are converted in two hours and a half—an hour and a half sooner than chicken. Roasted veal and roast pork, and salt beef occupy five hours and a half—the longest of all the articles of food.

Mode of Preparing Tannate of Iron

A very pure sulphate of iron is made by the action of dilute sulphuric acid on iron filings: from this sulphate, by means of carbonate of soda, a carbonate of iron is precipitated which is washed several times, and then dried on the stove. It is now pulverized and thrown by small portions at a time into a boiling solution of very pure tannic acid in a porcelain vessel—the proportions used being very nearly five parts of the carbonate to one of the acid, or 440 parts of carbonate to ninety of the tannic acid. The fluid is to be stirred constantly till the effervescence ceases. It is afterwards exposed to a heat equal to the boiling point of water, till it acquires the consistence of thick soup. It is then withdrawn from the fire and poured on proclain plates, and dried with the assistance of heat. The tannet of iron thus obtained is of a crimson colour, insipid, insolvable, uncrystalized. It may be administered either suspended in syrup, or still more conveniently in the form of pills. The dose is from eight to thirty grains a day. It acts more rapidly in persons of sanguine temperament.

Tannate of Iron in the Treatment of Chlorosis.

Dr. Benedetti asserts that the tannate of iron is the most efficacious of all remedies in the treatment of chlorosis. In evidence of this he cites cases from his own practice and from that of Dr. Majocci, affirming that the treatment by the tannate of iron is successful in the severity of the case.

The Carrot.

The Carrot, says an eminent physician, "is a most wholesome culinary root; it strengthens and nourishes the body, and is very beneficial for consumptive persons." Carrots are generally served boiled, with meats, yet they make an excellent ingredient in soups, and form, we are told, a very agreeable pudding. As an agricultural root, they are not surpassed for feeding cattle; horses will do more work and look better on them than any other feed.

This vegetable is supposed to have been introduced into Europe from the Island of Crete, since which it has greatly improved. Some half dozen leading varieties are cultivated for supplying the kitchen regularily at all seasons of the year.

The Beet.

The Beet is a native of the sea-coast of the south of Europe. It takes its name from the shape of its seed-vessel, which, when it swells with the seed, has the form of the letter Beta of the Greek Alphabet. There are several varieties in cultivation for culinary purposes, of which the most essential sorts are the Long Blood and the turnip Rooted. The last is the earliest variety, and takes its name from the form of the root, its quality being decided by the richness of color and closeness of the grain. There are several other sorts which come more under the notice of the agriculturist, such as Sugar Beet, Mangel-Wurzel, &c.

Stockings.

The first knit stocking sent to England was during the reign of Henry VIII. And Queen Elizabeth received a pair of knit silk stockings as a very valuable present. It is said that this stately queen pressed her royal feet on fresh hay (in her palace chamber) instead of carpets, which probably were not invented till about the time of her death; the stocking-loom not having been invented till 1589, by William Lee, of England, then very imperfect and not in general use for a length of time.

Last year it was quite common to see a Nottingham stocking weaver plying his trade on his portable stocking loom, in some of the public streets of London. At first, it was novel and many was made by it, but a lately patented loom to be driven by steam will soon throw the hand stocking loom out of the market.

New Diamond.

A new kind of diamond has been discovered in large quantities in Siberia. The stone resembles the diamond very much, but is lighter and not so hard, although harder than granite. Specimens have been deposited in the Imperial Museum at St. Petersburg.