

a gas is disengaged which burns with a beautiful green color. Nitric oxide gas passed into the benzine gives it a fine green color; when lighted the flame of the gas has a broad green coat and a purple center. Hydrogen gas passed over the surface of benzine burns with a flame emitting considerable light. The petrol-benzine cannot be mixed with water nor with wood naphtha, but readily and to any extent with absolute alcohol, oil of turpentine and bisulphide of carbon. In common ether it produces a turbidity, caused probably by a percentage of water. Sulphur and phosphorus dissolve only in small quantities in it.

#### FLAX DRESSING.

The attention of a large portion of the agricultural and manufacturing community is at this time turned towards the production and treatment of flax; the former endeavoring to produce it in sufficient quantities to answer the demand, and the latter, in connection with the inventor, seeking to put it in the market at such prices that it can at once be obtained by all classes. Very little difficulty has been experienced in growing flax, but insurmountable obstacles have attended the dressing of the straw as economically as is demanded. Many flax-breaking machines have been invented, but few of them, however, have been found desirable in all respects. We are gratified to observe that one—the Mallory & Sanford machine—performs its work with a thoroughness that augurs well for its popularity and adaptability to the end desired.

Most persons are aware that flax is nothing but a series of fibers concealed in a wooden case or stem, and that, in order to liberate the flax, the shoot or wooden part must be removed, and this without injuring the quality or character of the staple. Although an apparent simple and easy duty, to the superficial observer, it is in reality a very serious task and has had an amount of ingenuity expended upon it that seems surprising, unless the character of the work be considered. The machine that we have alluded to performed its work very handsomely, and makes not a particle of tow. We were informed, and can readily believe, that the proprietors cannot keep pace with the demand for their machine.

We allude to this machine in the belief that it is destined to work a revolution in the art of dressing flax; and that in view of the manifold interests springing from the successful treatment of flax fiber, it behooves all interested in its manufacture to adopt every means which promise a successful prosecution of their labors. For printers and publishers generally the benefits likely to ensue from a supply of flax stock to the paper-maker, in lieu of cotton, are not to be over-estimated, both as regards the better quality of the paper and the reduced cost at which it is believed it can be afforded. Also, for belting, warp for carpets, felting, calicoes, &c., the adoption of flax for cotton, which is now rendered feasible, promises to inaugurate a new era which will be hailed by all who desire to be independent of a stringency of cotton occasioned by any cause whatever. The whole Western country teems with flax straw which has hitherto been burned or thrown into rivers, after being deprived of its seed, for want of flax machinery to reduce it to a condition fit to be worked, the seed alone paying for the cost of raising. This machine (an engraving of which and testimonials from those who have used it are presented on another page of the present number) is not exclusively a power machine, but is made of a suitable size to work by hand, so that any farmer owning but an acre or two of land can dress his little crop with the utmost celerity. Hand machines are provided, which accomplish in a proportionate degree all that the more ponderous power machines can. The actual value of such a machine to the growing demands of society, for linen clothing, housekeeping and the arts in general, is very great, and we expect to see linen in our markets rivaling in quality that of Ireland and at much lower prices.

WHEAT FOR A BARREL OF FLOUR.—The question is often asked, how much wheat does it take to make a barrel of flour? At the annual fair of the Dubuque County Agricultural Society, in 1860, James Pratt & Co., of the Rockdale Mills, entered one barrel of winter and one of spring wheat, accompanied with

the statement that sixteen bushels of winter wheat yielded three barrels and 103 pounds of flour—at the rate of four bushels and fifteen of wheat to the barrel. Of spring wheat, fifty bushels yielded eleven barrels of flour, being four bushels and thirty-two pounds per barrel. The wheat used was of a fair quality, and no more.

#### THE MECHANIC ARTS AND THE FINE ARTS.

Shortly after the death of President Taylor we spent an evening with the celebrated painter, Vanderlyn, and the Commissioner of Patents at the house of a mutual friend in Washington. A portrait of the deceased President, by Vanderlyn, had just been disposed of, by raffle. After expatiating awhile on "art and high art" and giving incidents connected with the production of Vanderlyn's famous pictures of Marius, Ariadne, the landing of Columbus, &c., the conversation slid into an amusing debate on the relative importance of the mechanic arts and fine arts, and the social standard of their professors. Vanderlyn was insulted at the comparison and poured forth scathing remarks on the ignorance and presumption that would raise the anvil and forge to a level with the easel and palette. The Commissioner laughingly replied that his position justified, if it did not require, him to uphold the dignity of mechanical professions. "Mechanicians and artists" he observed, "are both children of inspiration, differing only in the medium of their manifestations—one portrays his thoughts on canvas, the other casts them in workshops, and places the things themselves, instead of their pictures, before you. There is some difference between a steamship and the finest painting of one. Had the Greeks (whom you, Mr. Vanderlyn, worship) honored the mechanic arts more, and those which ministered to the vanity of their leaders less, they had left a brighter history. Some of their great thinkers were sensible of the error and have left a memorable proof of their conviction."

"What in the devil's name is that?" exclaimed Vanderlyn.

"Why, this—instead of awarding the goddess of beauty to the patron of the fine arts, they gave her to a blacksmith; and, as if to mark the moral with the keenest emphasis, that blacksmith was a homely, awkward and limping one! Such a decision may excite disgust in painters and sculptors, proud of their profession; but there is no getting rid of the fact that, on the sole ground of mechanical talent, an artisan—deformed, halting on a broken leg, his face and breast blackened with smoke and his hands hardening into horn—is represented as bearing off the great prize of beauty in the face of the handsome and all-accomplished Apollo himself!"

There was no reviving Vanderlyn's good humor after this; nor would he offer any other reading of the riddle.

#### VALUABLE RECEIPTS.

DYEING MIXED GOODS BLACK.—Cloth made of a mixture of cotton and wool or flax and wool has become very common, and in order to obtain black goods of this composition, the practice formerly pursued was to dye the cotton warp first, then the wool of the filling or weft afterwards. It is very difficult to dye fabrics composed of mixed vegetable and animal fibers. They are so different in their nature that different processes are generally required to dye them the same color. Difficulties having been experienced in dyeing mixed cloth black by the old mode of coloring the cotton first, and a superior and more convenient mode has been desired. This is secured by coloring the wool in the piece of cloth first, and the cotton afterwards. The wool is prepared by boiling it first in a mordant of the bichromate of potash, then in a bath of a decoction of logwood, in the usual way now practiced of dyeing black on wool. After the cloth is washed it is steeped for about six hours in a weak decoction of sumac—one pound of sumac being sufficient for ten pounds of cloth. The sumac liquor must be cold or it will tend to make the wool brown in color. After this the piece of cloth is run through some weak lime-water, then through a weak solution of the sulphate of iron, aired and washed. After this it is again run through a weak liquor of logwood, washed, dried and the processes are complete. The acetate of iron is superior

to the sulphate of iron for treating the cloth in the second process, and is to be preferred when it can be obtained. Black on cotton soon fades, and becomes a slate color when exposed to sunlight and rain. This is one reason why some mixed woolen and cotton goods soon become faded in appearance. The sulphate of copper is sometimes used for dyeing black on wool, especially for homespun cloth. It is an objectionable substance to use for this purpose, as the light acts upon black thus dyed, and it soon fades into a dirty drab shade. The same process that is pursued to color cotton will also color flax. Fast blacks are dyed on cotton for the cloth of Scotch gingham designed for umbrella covers, by dyeing it first a dark indigo blue, then a black on the top of this with sumac, copperas and logwood. A fast black can also be dyed upon cotton and flax with madder as a substitute for logwood, but these fast blacks are very expensive. It is not generally known that the dyeing of vegetable fibers, such as cotton and flax, involves far more intricate processes, more skill and expense than the coloring of wool and silk. Aniline colors have not yet been applied to dye cotton except for very light shades, they being too expensive for cheap fabrics.

CLEANING KID GLOVES.—When kid gloves are stained with grease and dirt they may be cleaned with a composition of benzole containing a few drops of ether. The gloves are to be laid upon a board, then rubbed with a sponge containing the fluid, after which they are dipped in the fluid, squeezed, rubbed with the sponge dry upon the board, then expanded by blowing into the opening for the hand, and when all the fingers are opened full they are hung up to dry. This cleaning operation will not restore faded colors. Common burning fluid, composed of four parts of alcohol and one part of turpentine, will answer for cleaning kid gloves nearly as well as the benzole fluid. In using such fluids care must be exercised to conduct the operation at a distance from fire, as the vapor which is generated is very combustible, and will explode if ignited.

#### THE ABUSE OF FILES.

There are by far too many files wasted and misused in ordinary work, and the abuse is one that should be checked at once. To judge from the treatment some persons bestow on these costly tools, they are as common as pins and about as valuable. A new file is used for fitting a Babbitt metal box to a shaft, or a file for brass-work is used alike on iron and brass; and then another must be procured when the workman desires to finish brass again. And so the interchange goes on, until the consequence is that the workman guilty of such carelessness has no file of any kind, fit for any purpose in his drawer. Hard steel makes no difference to a file-abuser either. Apparently there are some individuals who think that because a diamond will cut another diamond, so a file must bite another file; they pursue this theory and rasp away on the scale of cast-iron, or over the black places in forgings, with an utter disregard of their employers' time and money. A fifteen-inch flat bastard file costs from a dollar to a dollar and a half, but we have seen one of these tools placed *hors du combat* in five minutes by the blundering stupidity, not to say criminality, of the person using it. If the individual had been obliged to buy it himself, it is hardly to be supposed that he would have treated it in such a manner. It contributes in no wise to the reputation of any workman to be careless of tools that he uses but is not obliged to purchase, and it would be much better for all parties if a little more consideration was given to this matter.

#### Vessels on the Lakes.

The immense amount of capital invested in the commerce of our great lakes, is hardly realized by the public outside of business circles immediately interested in the trade.

The following statement of sail and steam vessels now engaged in this business is compiled from the "Marine Register" for 1863, just issued by the Board of Lake Underwriters:—Steamers, 134; propellers and tugs, 253; barks and barkantines, 191; brigs and brigantines, 79; schooners, 1,030; sloops, 14; barges, 60. Total, 1,761.