

**Niello-Metallic Engraving.**

Ornamental art is by no means sluggish in its movements, it expands its arms in the most unheard of directions; and, despite the allegations of the world of grumblers, it becomes naturalized amidst the every-day scenes and processes of domestic life, where once its shadow never fell. Germany has just added another promising branch to the flourishing parent stem, which gives fair promise of a luxuriant growth. We refer to the new method of producing ornament on metal surfaces, by what is termed the Niello-Metallic manner. This invention, which is applicable to the production of ornament on a vast number of objects, is as follows:—The surface to be ornamented is first covered with an etching ground, as is ordinarily done in copperplate engraving: the design is then drawn with a needle point, and etched with an acid solution. The etchingground is then removed very carefully by a proper dissolving fluid, as oil of turpentine, or ether, and the object being washed perfectly clean, is submitted for a moment to the action of a weak acid solution. The next part of the operation consists in the depositing of the article in a galvanic plastic apparatus, until its surface is galvano-plastically covered: the etched lines being filled up with the metallic deposit. When this deposit is so thick as to reach as high or higher than the plain surface of the metal ground under process of ornamentation, it is removed, and the layer which has been deposited by the operation is ground or planed off to the natural level of the object, leaving the etched lines of the design full. A steel plate, with a galvano-plastic deposit of gold, gives a niello-gold ornament according to the etched design, and in like manner copper, or german-silver, may be treated. The process admits of the finest lines being etched, and inlaid close by broad planes in the galvano-plastic way, and with any number of different colored metals. If it is intended to produce a design in various colored metals, this may be readily accomplished by executing the etched design for each metal separately, the object being submitted in turn to the different galvano-plastic troughs of the ornamenting metals. In addition to this, if the etching is executed in broad lines, a variety of colored ornaments may be produced by one etching; so after the planing operation, the last deposit would appear as a single line in the middle, and the profiles of the first would represent fine borders. The invention possesses the grand merit of extreme flexibility, as its details may be modified so as to produce an immense variety of ornamental work. For such articles as watch-cases, gun barrels, swords, metal-boxes, and the generality of goldsmiths' wares, the facility and beauty of its applications are very obvious.

**Oxygen.**

It is a universal fact in chemistry, that when oxygen unites in excess with any number whatever, the product is always an acid, and it is for this reason that oxygen was formerly considered the only acidifying principle in existence. Now, it has since been found that hydrogen is as much of an acidifier as oxygen, and that acids may be formed without a particle of oxygen entering into their composition. We should, therefore, expect to find the acidity of the substances thus formed owing to oxygen, hydrogen, or some single universal cause. This is accounted for by considering oxygen an hydracid with a composition similar in its form to the hydrochloric or any of the hydracids. This view, while it satisfactorily explains all the conditions demanded, shows its true composition. If oxygen be an hydracid with an atomic weight of 8, it follows that the atomic weight of the substance united with hydrogen must be 7, and oxygen must be a compound, and may be ranked as an hydracid belonging to the same family with the hydrogen acids of chlorine, bromine and iodine.

**Worth.**

A compost of the dirt of trade, mixed with the sweat of labor. If spread over the surface of society it does good; but when amassed in heaps, it scorches every thing that it touches.

**Banvard, the Artist.**



The name of this distinguished artist is undoubtedly familiar to every one, as the author of the LARGEST PAINTING IN THE WORLD,—the great three-mile picture, the Panorama of the Mississippi. His eventful life is a lesson of perseverance amidst difficulties, which all who would rise in the world will do well to remember. Though still a young man of only 27 years, he has raised himself from a poor wandering boy, to the possession of a princely fortune and the reputation of having accomplished with his own hand, *the greatest work of art ever executed by a single individual.* Above we present his portrait: it is an excellent likeness, and a few lines of his history to accompany it will not be uninteresting. He was born in the city of New York where he received a good education, and is descended from an old French family who were driven to this country many years ago by persecution. When Banvard was fifteen years of age, his family met with a severe loss of fortune. His father lived just long enough to see his property, collected by frugal industry and perseverance, swept from him by the mismanagement of an indiscreet partner, and his family turned houseless upon a pitiless world. John then went to the West, poor and friendless. He arrived at Louisville, Ky., and procured a situation in a drug store. Instead of making pills, his employer would often find him with a piece of chalk or coal, sketching the likenesses of his fellow clerks upon the walls of the rooms, where they were putting up medicines. His employer told him he could make better likenesses than he could pills. John thought so too, and so "threw physic to the dogs," and left the druggist.—Time passed on and he dreamed of being a painter. He had read in some foreign journal that America could boast the most picturesque and magnificent scenery in the world, but that she had not yet produced an artist capable of delineating it. On this thought he pondered till his brain began to whirl; and as he glided along on the smooth surface of the river, gazing with wonder and delight upon the ever varied and beautiful shores, the boy resolved that he would take away the reproach from his country,—that he would paint the beauties and sublimities of his native land. His grand object, as he himself informs us, was to produce for his country *the largest painting in the world.* He determined to paint a picture of the beautiful scenery of the Mississippi, which should be as superior to all others in point of size, as that prodigious river is superior to the streamlets of Europe, a gigantic idea! The most serious difficulty in the way of commencing his great project was a want of money. After passing through a variety of curious adventures he finally became master of fifty dollars, which by several fortunate little speculations finally increased to several thousands, and he now determined to commence his painting. He started from Cincinnati in the spring of 1840 and descended the river in order to make the necessary drawings. For this purpose he had to travel thousands of miles alone in an open skiff, crossing and recrossing the rapid stream, to select proper points of sight from which to take his sketch; his hands became hardened with plugging the oar, and his skin as tawny as an

Indian's, from exposure to the rays of the sun and the weather. He would be weeks together without speaking to a human being, having no other company than his rifle. When evening began to approach, he would select some secluded sandy cove, draw out his skiff from the water and repair to the woods to hunt his supper. Having killed his game he would return, dress, cook, and from some fallen log would eat it with his biscuit, with no other beverage than the water of the noble river that glided by him. Having finished his lonely meal, he would roll himself in his blanket, creep under his frail skiff, which he turned over to shield him from the night dews, and with his portfolio of drawings for his pillow, and the sand of the bar for his bed, he would sleep soundly till morning. In this way he spent over four hundred days, making the preparatory drawings.

During the time this undaunted young man was transferring his drawings to the canvas. He had to practice the most rigid economy, lest his money should give out before the picture was completed. He could not even afford to hire a menial assistant to do the ordinary labor about his paint-room; and when the light of day would recede from the canvas instead of taking relaxation, he would be grinding his colors or splitting his wood for the ensuing day. Still, with all these self-denials and privations, his last cent was expended long before his last sketch was transferred to his last piece of canvas. He then endeavored to get credit for a few pieces of this material from the merchant of whom he had purchased the principal part for his painting, and with whom he expended hundreds of dollars while speculating on the river, but in vain. Still not discouraged, he laid his favorite project aside for a time, and sought other work. Fortunately, he obtained a small job to decorate Regalia for a Lodge of Odd Fellows, and with a light heart went cheerfully to work to earn the money which would purchase the material to complete his picture. With the avails he then procured the much needed canvas.

At last his great project is finished? the Mississippi is painted! and his country now boasts the largest painting in the world! But the trials of our persevering artist were not all passed. The history of the first exhibition of this wonderful production is curious, and furnishes another illustration of the necessity there is, never to despair.

The first night he opened his great picture for exhibition at Louisville not a single person thought it worth while to visit it. He received not a cent, the night was rainy. But he did not despair. The next day he gave away a great number of tickets to boatmen and others, until finally the great work excited admiration, and thousands rushed to see it. The painting was next exhibited at Boston, where for upwards of a year, the great artist reaped a golden harvest. His picture is now on exhibition at New York, and continues to be the wonder of all who have seen it. It is soon to be taken to Europe.

The fame of the artist is his country's property. "His genius and enterprise will be honored," as Governor Briggs beautifully remarked, "so long as the Great Father of Waters, and its numerous tributaries, continue to pour their flowing tides into the great ocean."

**For the Scientific American.**

**Baltimore Mechanics' Fair.**

Our Mechanics Fair just held has been exceedingly creditable to our mechanics. The iron work displayed could not be surpassed, at least I have never seen better and more highly finished articles at either the exhibitions of the Franklin or American Institutes.

The Treenail Machine of Mr. Mitchell, of Gardiner, Me., a cut of which appeared in No. 10, vol. 3 of the Scientific American, was exhibited and received much commendation from some of our clipper builders. An excellent and cheap knitting frame took my eye, as being just the thing for every farmer's family. It is worked by a crank, and a small girl can manage it very easily. It was exhibited by Mr. J. McMullen, of this city, and I believe the price is only \$15. It knits work exactly like that done by wires. Mr. Chandler's Mortic machine, a cut of which also appeared

in the Scientific American, was exhibited and received much attention. In fact, these machines seemed to be recognised at once, owing to their having been presented to the public through your paper, which is taken by such numbers of our very best mechanics, those who can and do appreciate its worth.—An excellent Grain and Flour Drier, the invention of Mr. Safford, of Cleveland, Ohio, was also exhibited and was respectfully noticed. This apparatus, if I am not mistaken, was also noticed in your columns. I was particularly struck with specimens of bronzed iron, from Messrs. Gilman & Collins's foundry, Conway st. this city, especially a unique cast iron chair. It is impossible for me to notice or enumerate all the useful and beautiful articles exhibited, from Fairbank's patent Scales to Broadbeck's fine Silk samples. Specimens of needlework, chemicals and jewelry were exhibited in great profusion, and I am confident that if this Fair is to be any guide to future exhibitions, Baltimore will not yield the palm in the exhibition of useful inventions to any other city in the Union. The Fair has been held in Washington Hall, and considering all things, the arrangement was very good.

My object in this letter is principally to call the attention of our mechanics to exhibitions of this kind, as I believe they tend to elevate our character both in our own eyes and in the eyes of other nations. I do not know but many improvements in the mode of exhibition may yet be brought out, but certainly our mechanics are made both wiser and better men by such exhibitions.

Yours, with respect, J. R. M.  
Baltimore, Md. May 25, 1848.

**For the Scientific American.**

Mr. Editor:—In my weekly examination of your valuable paper, I find in that of May 13th, that Mr. C. of Gardiner, Maine, has taken the liberty of answering through the medium of the Scientific American the inquiry of Mr. James Johnson of your city, in regard to my machine for turning irregular shapes or forms, in which he ventures some remarks, which lead me to the conclusion that he does not fully understand the principle of Blanchard's machine or my own. If Mr. C. will take the trouble to examine again the machine now building by Mr. Webber, he will readily perceive that Mr. Webber's machine is made up mostly of combinations, which are not original. He will also find, if I am not much mistaken, that the balance of Mr. Webber's machine is a multiplicity of extra combinations and additions. If Mr. C. will again examine the objections urged by him against Blanchard's machine, I will venture the remark that he will find them wholly erroneous and unfounded. Mr. C. mentions that Mr. Webber has an improved method of chipping from the block. This may be so, but if any person will take the trouble of examining his machine by the side of Blanchard's machine and my own, I have no doubt they could readily discover a close resemblance. I think that Mr. C. has misunderstood the opinion of the best mechanics when he asserts that in their opinion Mr. Webber's machine will accomplish the long desired object. On a strict enquiry of the mechanics who have been favored with a view of his machine, I find that the mechanics spoken of universally make one very appropriate qualification to Mr. C.'s remarks, viz. that if Mr. Webber will abandon his extra combinations and use only the principles of Blanchard's machine or my own, he will then be enabled to turn irregular forms. If Mr. W. will bring to light any new invention, anything valuable, even if it be a machine for turning irregular forms, on some new principle not before invented or in use, he shall have my best wishes (and if need be, my help in a cause so honorable to himself and beneficial to the public,) but I will defend what is my own by just right of invention.

W. M. DAVIS.  
Portland, May 15, 1848.

**Care of Fruit Trees.**

Do not forget to apply leached ashes, charcoal, and oyster shell lime to the roots of your fruit trees. See also that the moss and scaly bark is carefully removed from their trunks.