

## The Art of Dyeing—No. 6.

**BLUE ON COTTON—INDIGO**—The oldest method of dyeing blue on cotton is with indigo. It is believed that the Greeks and Romans were unacquainted with the use of indigo, but it has been used from time immemorial in the East. The first indigo employed for dyeing in Europe, was brought by the Dutch from the East Indies. It was also used by the Mexicans upon the arrival of the Spaniards, as mentioned by Clavigero. The best indigo is now raised in Bengal, but as good can be cultivated in the United States. It makes the richest blue color on cotton, but is expensive. The coloring of indigo-blue is a branch of dyeing peculiar in itself, and requires much experience. There is so much dependent on the skill of the eye, that no amount of word instruction can enable a person to conduct the business, still the way to dye the color can be taught, and a number of useful hints given to all. A work recently published in London by David Smith, named the Dyer's Instructor, is worse than useless to any person who desires information on indigo dyeing, more especially on the blue vat.

The bath for dyeing indigo blue on cotton is called "the blue vat." The most common vessels used are large wine casks, five of which are called a set, each capable of handling ten pounds, that is for yarn. Many vats are made of cast iron, well bolted, and rendered water tight at the seams. These are made of a rectangular form, and capable of handling about from twenty to twenty-five pounds of yarn at once. They are made very deep, so as to allow the sediment to lie undisturbed on the bottom, when the yarn is being handled. Pieces are dyed in these cast iron vats by using a frame with rollers, and making the pieces, which are sewed with their ends together, dip down and turn over a roller sunk in the vat to a certain depth. It is also a common thing to suspend a screen down in the vat, to prevent the disturbance of the sediment.

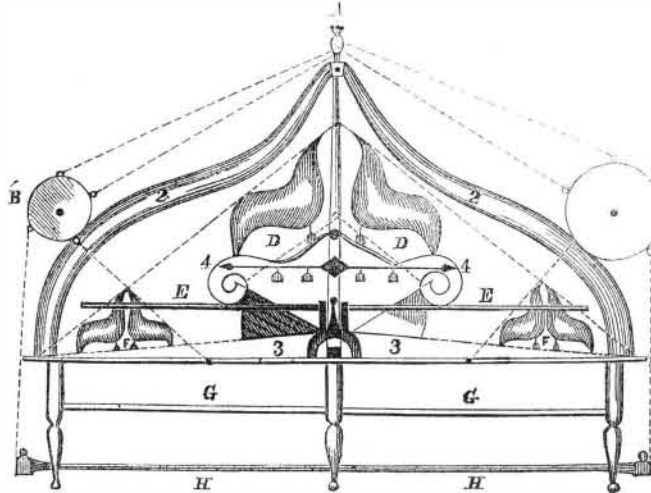
A blue vat may be set with more or less indigo, so as to make it strong or weak. The best proportions are for ten pounds of indigo good quality—ground in a mill, until no grit is felt when rubbed between the finger and thumb—sixteen pounds of powdered quicklime, and fourteen pounds of the sulphate of iron (copperas,) that is for a ten pound vat. These are stirred up occasionally for two days, in the water in the vat—which is filled to within four inches of the top—with an iron rake, which is a disk of thin plate steel set on the lower end of a long shank, to reach the bottom. Care must be taken to rake well from the bottom, until no hard lump is felt sticking to it. When the liquor assumes a deep rich green color, with a violet froth floating on the top, it is a sign that the coloring matter of the indigo has been given out to the water, and the vat ready for working, after it has completely settled. A thin crust of the carbonate of lime gathers on the surface of a blue vat, and this prevents the admission of air. When this is broken, by handling the goods in dyeing, the vat has always to be raked up, and allowed to settle before it can be worked again. This takes about ten hours. Only part of the indigo is given out to the liquor, at first, and as the vat is worked, it has to be mended with lime and copperas, from time to time. The wants of the vat are known only by its appearance. As the indigo is worked out, the color of the vat becomes a lighter green. It takes five ten-pound vats to work out the indigo economically, each for ten pounds. They are worked out and made up in rotation, which takes about four weeks, working every day. The yarn, to attain the deepest shade, gets five dips, commencing with the weakest vat and finishing with the strongest, wringing and scutching the yarn after every dip. The cotton comes out of the strong vat a deep green color, and becomes blue as it is exposed to the air by absorbing oxygen. The business of indigo blue dyeing is on this account very unhealthy. A little pearl ash added to the vat makes it produce a clearer color.—When fifty pounds of yarn are dyed at a batch regularly, it requires twenty-five ten-pound

vats to work the indigo economically. It is scarcely possible to maintain all the vats at one particular strength; there is generally a difference of two or three shades in five ten pound bundles. These are examined and compared with one another before the last dip, and are handled in the vat such a length of time as will bring all to the same shade when finished. After being dyed the goods are run through a tub of diluted sulphuric acid, then washed, wrung, and are ready to be dried. The sulphuric acid *blooms* the color, makes it look richer, and the goods cleaner. In emptying indigo vats, when they are worn out, to be set again, the sediment only is

thrown out, and the clean liquor retained, to be used in place of water. Large vats cannot be so economically worked as small ones.—The blue vats in calico print-works are thrown out long before the indigo is so completely worked up, as in the establishments for dyeing yarn in New York and Philadelphia.

Great care must be exercised in the selection of good copperas. The best has a dirty green appearance, not a red rusty look, which some mistake for the genuine. If bad copperas is used, the blue vat, as it gets old, will float—that is, the sediment or sludge will not sink—and in that state a vat is unfit for use.

## SPIRITUAL MACHINE.



This figure represents a machine for spiritual manifestations, which appeared in the *Spiritual Universe*, published in Cleveland, Ohio, and sent to us by one of our subscribers, marked as follows: "New Machinery. What do you think of it? The persons describing it are well known, and as truthful as any citizens of Cleveland." The following is a description of this machine, taken from the *Universe*:

"Strange and interesting accounts having been given us of the Spiritual Manifestations made at the Spirit rooms of Jonathan Koons and John Tippie, in Millfield Township, Athens County, State of Ohio, we recently devoted a few days to visiting the rooms and witnessing for ourselves the wonderful manifestations there made.

From Cleveland we went to Columbus by railroad, thence to Millfield, a distance of seventy miles, by private conveyance, over roads quite rough and hilly. On the third day from Columbus we reached Millfield. Here we found two log houses fitted up as Spirit rooms. These houses are about three miles apart, and are each composed of a single room about twelve by fifteen feet in size. One house is on the farm of Mr. Koons, the other on the farm of Mr. Tippie, and both were built under directions of Spirits, and are used only for Spiritual demonstrations. We staid two days and nights at Mr. Koons', and two days and nights at Mr. Tippie's, and carefully examined each of the rooms and their contents, to prevent any collusion or deception. In each of the Spirit rooms stands a table, on which is placed what is called "Spirit Machines," of which the above cut is a very fair representation. The table is about six feet long by two and a half feet high. The table and the wood portion of the machinery is cherry, which is stained and varnished. A is a glass knob; B a small drum; C a large drum; D D double plates, fastened together, one plate of copper the other of tin; E E a steel bar about half an inch square; G G drawers to the table; H H an eight-sided wooden bar suspended under the table by copper wires, with a number of wires running the whole length of the bar; 2 2 a wood frame resting on each end of the table; 3 3 double plates of tin and copper; 4 4 a bar of wood with three glass knobs attached wound with wire and ending with a scroll resting on the steel bar, E E; F F double plates of copper and tin attached to the wires. The drums are firmly secured to the machinery and to the table by wires. This machinery was constructed under direction of Spirits,

and is used by them for collecting and retaining electricity, and is charged at every circle before any demonstrations are given. On the table, and by the side of the machinery, lies a violin, an accordeon, a triangle, two drumsticks for the large and two for the small drum. There is also on the table a common sized dinner bell, an harmonica, a tambourine, and a tin trumpet about two feet in length. In front of the long table stands a round table about four feet in diameter, and of the usual height. Circles are held in each of these rooms almost every evening, and occasionally in the day time, and are composed of Mr. Koons and wife and eight children in one room, and Mr. Tippie and wife and ten children in the other room, who set in the form of a semi-circle around the round table, the two ends of the half circle connecting with the opposite corners of the long table. Back of the circle are two benches, usually occupied by about twenty strangers and neighbors as spectators and listeners. We attended four circles on four different evenings, and had a few sittings in the day time. At these circles we were allowed to arrange the furniture, and to seat the persons present in such order as we pleased; and every facility for carefully investigating the Spiritual phenomena was afforded us."

So much for the description of this queer piece of mechanism, with its leg-of-mutton tin and copper plates. We would present the whole account (as printed in the *Universe*,) of the physical feats performed by this Spiritual machine, but as it is too long for our columns, we are reluctantly compelled to present only some brief extracts of it.

"When the circles were formed, and the company seated," says the *Universe*, "the lights were extinguished and the room darkened, and in about five minutes the presence of the invisibles was manifested by several very strong blows on the table, ceiling, and walls." The sounds are stated to be like those produced by drumsticks. The violin was then tuned, during which process the keys slipped, and also the bridge, and fell on the floor. During the tuning, which was slow, one of the company found fault with the act—that it was not in concert with the pitch, and on giving it, (the violin,) in the hands of the Spirits, was soon tuned, and a number of airs played on it. "This violin was carried by *invisible hands* (true no doubt) around the room, passing near the head of the circle." They also heard "speaking, whistling, and singing, through the tin horn." The *horn* appears to be the chief medium of

Before using this horn for speaking by the spirits, it would be raised in the air, then a sentence would be distinctly articulated, then it would fall to the table. When any questions were asked, the horn would rise up and answer them.

One of the parties stated that they had been told that, "the spirits had the power to show a *spirit hand*, so as to be distinctly seen by natural eyes." No sooner was this mentioned, than "a piece of sand paper was covered with phosphorus, producing a strong, clear, and steady light, which revealed a hand entirely disconnected with any mortal body." The witness's science is clearly a little out of joint, as phosphorus does not produce a strong, clear, and steady light when rubbed on a piece of sand paper. The piece of paper it seems was carried through all parts of the room. This same hand, still holding the phosphorous paper, came and took a pencil out of the hand of a female circleist and wrote a letter to friends in Cleveland, and then it shook hands with all in the room. The *Universe* says, respecting this hand shaking, "the sceptic and the believer alike received the proffered hand. It was a hand as perfect as our own, as tangible and as real a human hand, and yet we had the most unmistakable proofs that it was not human."

We have given enough, we think, of the spiritual feats performed in this room to convince any one that they are sublimely nonsensical. When a machine is invented by a human being, it can do something—has a relation and an arrangement of parts, and although it may have some defects, it evinces design, mind, and genius. But here is a machine constructed under the direction of Spirits, who are claimed to be higher intelligences, and yet it exhibits the grossest ignorance of all science. But then it is like everything else connected with pretended spiritual revelations that we have read. It has no point, no aim, and has produced, according to the *Universe's* own statements, no result but what can be witnessed in any juggling legerdemain establishment in Gotham. It is a wonder to us that any grown up men and women in our country, where we boast so much intelligence, can suffer themselves to be deluded with such nonsense.

## The Wind of a Ball.

A French officer near Sebastopol was knocked down by the wind of a cannon ball, and received a shock so severe as to cause a paralysis of the tongue, preventing his speech. He was restored by repeated shocks of electricity.—[Exchange.]

[The above is certainly a singular case so far as relates to the effects produced, and the means by which this French officer was cured, but the wind of a ball has produced as curious effects before. Sir Gilbert Blane mentioned an instance which occurred in a battle in the West Indies, of a ball passing close to the stomach of a sailor and producing instant death; and another man in the same ship was prostrated from a like cause, and remained for a long time without sense or motion. In the engagement between the American and British fleets on Lake Champlain, in 1814, Capt. Downie, a British officer, while animating his men, fell dead instantly by a large shot passing close to him.

## The Unfortunate Great Republic.

This ship, after being burned down to the water's edge last spring, has been rebuilt, and is now taking in her cargo for sea. As if built under some unlucky star, the boiler of a small portable engine, with which she is furnished for hoisting, exploded last week, doing considerable injury to a number of those engaged on board.

## Hand Trucks.

The patent granted on the 16th ult. to Parley Hutchins, of Chester Village, Mass., for an improvement in hand trucks, consists in furnishing the truck with an elevator, working in suitable guides in the side pieces of the truck, and connected with a windlass for the purpose of raising the load to place it upon a cart, or any scaffold elevated above the ground. It is a very convenient and useful improvement.