

Arts, Manufactures and Machinery.

Copying by Turning.—*Impressions from the same piece of Copper plate.—Stereotyping and multiplied Copying.*

The Art of turning might perhaps itself be classed among the Arts of Copying. All work which is executed on a mandril partakes in some measure of the irregularities of that mandril, and the perfect circularity of section which ought to exist at every part, can only be ensured by an equal accuracy in the mandril and its collar.

Some very singular specimens of an Art of Copying, not yet made public, were brought from Paris a short time since. A watch-maker in that city name of Gonord, had contrived a method by which he could take from the same copper plate impressions of different sizes, either larger or smaller than the original design. Four impressions of an Eagle were examined by a late artist equally distinguished for his skill and for the many mechanical contrivances with which he enriched his Art. The largest was four times the superficial size of the smallest, and no lines were detected in one which had not corresponding lines in the others. There appeared to be a difference in the quantity of ink, but none in the traces of the engraving. The processes by which this regular operation was executed have not been published, but two conjectures were formed at the time which merit notice. It was supposed that the artist was in possession of some method of transferring the ink from the lines of a copper plate to the surface of some viscous fluid, and also of transferring the impression from the fluid to paper. If this could be accomplished, the Print would be exactly the same size as the copper from which it is derived; but if the viscous fluid were contained in a vessel having the form of an inverted cone with a small aperture at the bottom, the liquid might be lowered or raised in the vessel by gradual abstraction or addition through the apex of the cone; in this case, the surface to which the printing ink adhered would diminish or enlarge, and in this altered state the impression might be retransferred to paper. It must be admitted, that this conjectural explanation is not without considerable difficulties, for although the converse operation of taking an impression from a liquid surface has a parallel in the Art of marbling paper, the possibility of transferring the ink from the copper to the fluid requires to be proved.

Another and more plausible explanation is founded on the elastic nature of the compound of glue and treacle, a substance already in use in transferring engravings to earthenware. It is conjectured, that an impression from the copper plate is taken upon a large sheet of this composition; that this sheet is then stretched in both directions, and that the ink thus expanded is transferred to paper. If the Copy is required to be smaller than the original, the elastic substance must first be stretched, and then receive the impression from the copper plate: on removing the tension it will contract, and thus reduce the size of the design. It is possible that one transfer may not in all cases suffice, as the extensibility of the composition of glue and treacle, although considerable, is still limited.

Perhaps sheets of Indian rubber of uniform texture and thickness may be found to answer better than this composition. As it would require considerable time to produce impressions in this manner, and there might arise some difficulty in making them all of precisely the same size, the process might be rendered more certain and expeditious, by performing that part of the operation which depends on the enlargement or diminution of the design only once; and, instead of printing from the soft substance, transferring the design from it to stone thus a considerable portion of the work would be reduced to an Art already well known, that of Lithography.

Stereotype plates are Copied, by the Art of casting, from moulds formed of plaster of Paris.

Those moulds are themselves Copied by casting the Plaster in a liquid state upon the moveable type set up by the compositor.

[It is here that the union of the intellectual and the mechanical departments takes

place. Through how many stages of repeated Copying the matter which is here delivered to the reader may have travelled, we shall leave involved in a veil which his sagacity may be penetrated; merely observing, that in numerous instances the metal far outruns the mechanical Copyist.]

These moveable types, the obedient messengers of the most opposite thoughts, the most conflicting theories, are themselves Copies, by casting from moulds of copper called matrices.

The lower part of those matrices bearing the impressions of the letter or character intended, are Copies from punches on which the same character exists in relief.

These steel punches are not themselves entirely exempted from the great principle of Art. Many of the cavities which exist in them, such as these in the middle of the punches for the letters *a, b, d, e, g,* &c. are produced from other steel punches in which these parts are in relief.

In every department of Manufacture, the principle of Copying contributes to the uniformity and the cheapness of the work produced.

For the Scientific American, The West and Rural Villages.

The Western Prairies are vast rolling plains which indicate the certainty of alluvial deposit, and seem to favor the idea that the northern part of our globe was not so elevated at one period as it now is. There can be no doubt but the valley of the Mississippi was once the bottom of a boundless inland sea, and was prepared gradually to lift its head above the waters, to afford a place for man to dwell on and rear up cities more mighty than those on the plains of ancient Asia, or modern Europe. The Prairies are rich in agricultural productive qualities—generally having a soil three and four feet deep. The State of Illinois alone, has agricultural capacities to feed comfortably 60,000,000 inhabitants. It will no doubt be long before she has such a population, if ever, but if ever she has, they will not need to starve, if the sun shines and the rain falls. At present the population on our prairies is sparse, but every year there cometh new settlers to break up the fallow ground. It is really a curiosity to see a new settler enter with his plough upon the unbroken bosom of the broad prairie. A break up plough is a huge strong machine adapted by Yankee ingenuity for the very purpose of "clearing the way." Five and six yoke of strong oxen are attached to the huge instrument. The mould board is about an inch thick, the share of the thickness of a two inch bar of iron, and the other parts in proportion. The coulter is strong enough to cut through the root of the most stubborn shrub, of which there are thousands and some bearing the most beautiful flowers. It has a foot knife on it, in the rear part of which the plough point is inserted so as to stiffen the machine, and the coulter thus cuts horizontally and perpendicularly at the same time. The plough cuts only about 6 inches deep but lays over a flat sod 18 inches broad, which is left to rot and decay under a summer sun. The breaking up of a prairie, is the only expensive part of a farmer's business, after stocking his farm.—In three years, he will have a farm, more easily wrought than the oldest in the Eastern States. With health the West is the place for a man to make a living and it is there where rural sillage of mechanics and farmers would prosper well. But every one must have his own vine and fig tree to sit under, and as Emerson hath it, "Each sit on his own throne." Republican hamlets of this description might be a great blessing to our own city population, and societies of working men might contribute and lay up a fund for this purpose, but it must be reciprocal, it must be equal, each must pay alike, each must share alike, each must have his own, and the fund should only be a collective treasury to gather in, or as inducement to pay in money that might be thrown away carelessly by many mechanics. Much good might in this way be done, but there must be no risk, and this can be avoided. The qualifications of the settlers must be honesty, intelligence and industrious habits, and the ability of making cloth, building houses, making tools, and raising food, and with

these qualifications, all the necessaries and comforts of life can be easily secured, along with a perfect republican independence.

These ideas are not Utopian, nor do they savor of novel impracticable philosophy, but are thrown out as hints to develop more and more the benefits of a free government in the formation of minor republican institutions which will strengthen and beautify the general federacy as drops of water tend to form the great ocean. G. R.

Patent Fish Hooks.

Many of our readers are aware, that some trouble about Fish Hook Patents was experienced in this city by the purchase of part of a patent by a Mr Marsh from Connecticut, who came here with \$500 to speculate, but who unfortunately, (for we believe him to have been deluded or demented) lost both his money and his freedom. We do not know whether fish hook inventions are worth a single red cent or not, we at least prefer the old hook without spring or *sockdologer*. Knowing that the following claims of the patentees, for the patents granted last week, will be of some interest to some of our readers, we here present them.

To D. Ellis and C. F. Grilley, of New Haven, Conn., for improvement in Spring Fish Hook. Patented August 15, 1848. Claim.—What we claim is the application of a catch or dog, attached to a fulcrum on the main bar or shaft of the spring fish hook, in such a manner that when the hook is set, one end of the catch or dog may rest in a notch or hole in, or against the projection on the heel of the shaft of the striking hook, or gaff, so as to secure it firmly in its position, and not allow of its being sprung by any strain on the line or cord, by either the weight of the hook and bait, when casting it into the water, or the motion of a live bait while in the water; and the other end in such a position, near to, and a little below, the point of the baited hook, as to allow the mouth of the fish readily to press it back, and spring the hook.

To William P. Blake, of New York City, for improved Spring Fish Hook. Patented August 15, 1848. Claim.—What he claims is the construction of an expanding spring hook with a catch without moveable joints, bearings or slider; and in such a manner that when set it occupies about the same space as an ordinary hook, also the confining of the hook in a set state, (so that the biting of the fish will spring it) by means of a notch or projection on one limb or shank of the hook into or on which the opposite limb or shank catches.

Hunting the Hippopotamus.

The hunters contrive various ways of taking these huge animals. Sometimes they dig a ditch into which they fall when they come upon the land, and sometimes they shoot them in the water.

A traveller, who went into Egypt, says that some men having seen two of these animals go out of the river Nile to feed on the land, he succeeded in taking them in the following manner. Thinking they would go into the water where they went out, he sent some men to dig a large ditch near the bank of the river at that place. This ditch was covered with thin boards, not strong enough to bear these animals, and over the boards was strewed some dirt, so that they could not see their danger. In the evening as the animals were returning to the river, they both fell into the ditch. The traveller being told of this, went to the place with several men and destroyed these huge creatures with a small cannon. Their skins were preserved in salt, so that they might be sent to Europe, and it took four hundred pounds of salt, for each skin on the back, was an inch thick, and when dried were so hard that that neither a sword nor a ball from a gun would go through them.

It is very ridiculous for gentlemen to change sides with ladies at every corner, so as to give them the wall side of the walk, and to file out of a pew at church to let a platoon of women march up to the other end, but while the custom exists, women should go early to church. The former custom should be struck down at once, it is so foolish.

Changes in the Relative Level of Sea and Land.

The observations of science have demonstrated the fact, that the Island of Great Britain has been submerged in the ocean, to the height of at least 1700 feet above the present sea level. Mr. Robert Chambers has recently produced an interesting work on this subject, in which he advances and very ably maintains the theory, of the recession of the sea, in opposition to that of the upheaval of the land. The following extract presents a condensed summary of the author's reasoning on the numerous data furnished by observation and of the inference deduced therefrom:

"It has been my task to examine the heretofore known examples of ancient sea margins, with a view to ascertain if they bore any relations to each other; to follow out a chain of research amongst similar, though less obvious markings at higher levels; and to ascertain if these also stood in any natural relationship; the final object being to determine as far as possible the questions above cited regarding the mode and circumstances of the shift of relative level.

The general result is that the superficial formation bear the marks of former levels of the sea at various intervals up to at least twelve hundred feet, thus involving the Glenroy terraces; and that the markings in the several districts examined, as well as in the adjacent coasts of France and Ireland, do all of them fall into such conformity as to prove that the shift of level has been effected from at least that height with perfect equality throughout. This conformity in the levels over so large an area is, of course, favorable to the idea of a recession of the sea, as opposed to that of an elevation of the land; since it is precisely what would result from the former operation, while there is an obvious difficulty in supposing that so large a portion as the crust of the earth could be subjected to repeated upheavals, and yet to preserve, from first to last, the original relation of the levels of its various parts to the centre of the earth, that between Paris and Inverness not a vertical foot of derangement could be detected."

Mr. Chambers also refers to certain terraces in America, and had he viewed them with his eyes, his opinions would have been doubly strengthened. There are abundant evidences throughout this State at least, of the receding of waters, not the upheaval of land, among which the Ridge Road from Rochester to Lockport 60 miles in length, is good evidence. But we hold to the doctrine of an elevating cause too,—there are as strong evidences of the one as the other.

The Guiltibility of Mankind.

Man is considered but a creature of merchandise, in every sense of the term. Deception is the ruling practice for securing either wealth or power. The quack-doctor has a cure for every ill. There is no use of any man dying now-a-days,—the resurrection pill has settled that question; and it is common to see advertisements at the doors of dry good stores, "Selling off below cost," "selling off at cost," &c. These men are exceedingly benevolent to the public. They take the trouble to lay out their money, buy goods, ship them, pay store rent, and retail them *all at cost*, so that the public might get cheap goods. Such charity ought to have its reward. Your *great men* too, are exceedingly benevolent. Not one of them who has labored hard to be elected to some important office, but does it all in order that they might "do the State some service." When making a speech, after being elected it is always "I thank my fellow citizens for the high honour conferred upon me in electing me to represent your interests in the Congress of our country." He never looked to his own interests—charitable man.

Camphene Lamps being filled while lighted are supposed to explode in consequence of the liquid touching the flame. This is an error. They explode without bringing the liquid in contact with the flame. The liquor gives out a gas which takes fire and causes the explosion. The lamp should never be opened or filled while burning. A number of very afflicting accidents have occurred by people filling a camphene lamp without blowing out the light.