



THE DUNSTON OR SCOTCH SUBSOIL PLOUGH.

The subsoil plough, of which the above is an exact engraving, is now extensively used in Scotland and England, and no doubt is destined to work a great reformation in the business of ploughing, wherever it shall be known. We extract the following remarks by Mr. Phiney, on subsoil ploughing, from the *New Genesee Farmer*, which we hope will be sufficient to explain the use and value of the subsoil plough.

"The plough from whence the above drawing has been made, was brought to this country and deposited in the Franklin Institute by the late James Ronaldson, Esq. It is a gigantic implement, measuring 12 feet 6 inches in length, constructed throughout of wrought iron, weighing upwards of 300 lbs., and capable of rooting up stones of two hundred pounds weight; it is intended for a team of 4 or 6, or even eight horses or oxen, when it be let down to the depth of the beam. But, much of the soil of our country would be effectually worked with an instrument of far less magnitude, constructed chiefly of wood and properly ironed, the *sole* or *share*, probably, being of cast iron; the length of the handles being in proportion to the weight of the plough to be raised by means of their *Leverage*.

"Subsoil ploughing has formed in Europe—as it is destined to do in this and every other country—a new era in agriculture; it is applicable to all soils, and even in the most sandy will be found of superlative import-

ance, preventing the disease called the *stod* in wheat, which is supposed to rise from a superabundance of moisture which cannot pass away, by reason of some impervious substratum, until it has chilled and deadened the roots of the plants and brought on a mortification of their sap-vessels: the disease is in some parts known as the *stunts* or *stuned*. It is understood that the subsoil plough does not turn the furrow—it passes along the open furrow made by the common plough, rooting up the bottom to any depth it might be put to, thus leaving it stirred and pulverized, to form a bed of loosened soil, into which the lower or tap roots of the plants might penetrate, when they will easily find moisture in seasons of the greatest drought, and from whence it is pumped up by them for the supply of the lateral roots, which are destined to seek food in the upper stratum of the earth."

The subsoil plough will be found to be of immense value in this country where so much of the land is low, the soil wet, and specially where the subsoil is of a cold hard nature. In most cases where the surface is wet, the soil cold and sour, the subsoil plough will answer the place of draining. If it should be generally applied in this country on those kinds of land which we have mentioned above, no doubt that an increase of thousands of bushels of grain annually would be produced and a thorough improvement of the soil effected.

## MECHANICS AND AGRICULTURE.

From the Louisville Journal we extract the following article, which entirely expresses our views of the *New York Mechanic*, and also of *Mechanic Arts and Agriculture*. He says:

"Among the many valuable papers which we receive, there are few possessing more substantial merit than the *New York Mechanic*. It is a weekly paper published in New York by Rufus Porter & Co. and, as its title indicates, is devoted to the diffusion of information on subjects connected with the arts and sciences—notice of the progress of mechanical and other improvements, discoveries, and inventions, scientific essays, philosophical experiments and general miscellany. Each number contains plates illustrative of some new invention or improvement in machinery, with accurate and copious explanations, calculated to keep the mind of the reader well informed of the progress of the useful arts.

The success of a paper of this kind is a cheering evidence of the increasing interest of the reading community in whatever tends to develop the genius and unfold the resources of our people, as well as of the growing intelligence and enterprise of the mechanics of the country. In times past, no class of society has been so poorly represented in the world of letters, as the mechanics and farmers. Literary periodicals are everywhere to be found—political papers have multiplied until their name is legion—even until every political party and fragment of a party has its horde of stipendiaries, performing its behests with a blind and heedless devotion—theology has its champions—law its advocates—medicine and surgery their defenders, and even phrenology, animal magnetism, and Graham's system of sublimating the mind on bran bread and Taun-

ton water, have secured the aid of the press, which, with its thousand times multiplied voices, has heralded the merits of each all over the land, and compelled the public eye and ear to entertain its claims to attention.

"But the interests of agriculture and the mechanic arts, and the beautiful and glorious sciences in the midst of which they spring into life and usefulness, have scarcely been deemed worthy a place in the archives of the age. It has been deemed enough for the farmer to plough, sow and reap, as his father did before him; and for the mechanic to learn his trade and pursue it in the beaten and unimproved track that his master trod—as tho' labor were the only means on which to rely for success and experience—interchange of opinions—diffusion of knowledge—intellectual cultivation and generous emulation, out of place or not worth the pursuit.

"Of late, however, those classes on whom the prosperity, wealth, and glory of our country so much depend, have assumed a more commanding position. A newspaper devoted to the interests of the mechanic and the cultivator of the soil, and conducted with taste, ability and effect, is now no strange thing. We see no surer mark of the progress of society than the elevation of the laborer to his proper dignity, wherein his moral power is brought into action as well as his physical strength.

"Of all the varied employments of men, there are none so well calculated to unfold the powers of the mind and lead it from discovery to discovery—from invention to invention, as the cultivation of the soil and the pursuit of mechanical science. The mind has always a fund of fresh materials to work upon, capable, by a thousand changes and combinations, of being improved without limit,

yet without ever reaching absolute perfection. The chemical properties of soils—their adaptation to particular crops—the cultivation of the fruits of the earth, and the rearing of the useful animals, afford a never ending series of instructive lessons. And the mechanic arts, how noble—how useful—how well calculated to enlist the inquiring mind in the pursuit of those improvements which, while they develop its own powers, enlarge the sphere of human happiness, and strengthen the domination of the intellectual over the material world."

**TO CAST IMAGES IN PLASTER.**—For this purpose a model of the figure that is to be cast, must be provided, and suspended by a rod or staff, one inch in diameter, and fixed in the top of the head. This model may be of wood, or chalk, or any other substance that is smooth, and sufficiently cohesive to support itself.—This being prepared, mix fine sulphate of lime with water, to the consistence of soft putty, and having brushed some olive oil over the model, cover it completely with the plaster, which must be applied and spread over it with the hands, to the depth of two inches or more. When the plaster is nearly dry, divide it into several parts with a thin blade, so as to take it off from the model without breaking any part. When the several parts of the mould are dry, oil them inside and put them together as before, and bind them with pieces of tape or twine; set the mould upright and fill it with a fresh mixture of sulphate of lime and water, of as much consistence as may be poured in through the aperture at the head. This plaster should be poured into the mould as quick as possible after being mixed, otherwise it would become too stiff and be spoiled. The plaster in the mould will soon cohere, so as that the mould may be taken off, and the figures set up to dry; and the mould being oiled and put together again, is ready for another cast.

**BEST METHOD OF TRACING OR COPYING A PICTURE.**—Perhaps the most simple method of copying the outlines of a picture is to place the picture against a window with the paper over it on which the copy is to be drawn: the principal lines of the picture will be seen thro' the other paper, and may readily be traced with a lead pencil. But the usual manner of copying in landscape painting, and which will answer for pictures of any size, is to rub over the back of the picture with plumbago, or red ochre; then lay the picture on the ground that is to receive the copy, and trace the lines with a smooth pointed steel, or piece of hard wood. The ground will thus be very accurately and distinctly marked by the plumbago or red ochre adhering to the ground in the lines that are traced. When several copies are to be taken from the same pattern, (which frequently occurs in ornamental painting), the outlines of the first copy may be perforated by some pointed instrument, so that being laid on the other grounds that are to receive the copies, and brushed over with a little fine dry whiting, or red ochre (as the case may require) the whiting or ochre will penetrate the perforated lines of the pattern, and thus mark the ground on which it is laid.

**COMPOSITION OF VARIOUS ALLOYS.**—Brass is composed of two parts of copper to one of zinc; or copper and calamine (an ore of zinc) equal quantities. Pinchbeck consists of from five to ten parts copper and one of zinc. Bell metal is composed of three parts copper and one of tin. Gun metal, nine parts copper and one tin. Tombac, sixteen parts copper, one part zinc and one of tin. The composition of pewter is seven pounds of tin, one of lead, four ounces of copper and two of zinc. That of type-metal is nine parts lead, two parts of antimony and one of bismuth. Solder, two parts of lead with one of tin. Queen's metal, nine parts of tin, one of bismuth, one of antimony, and one of lead. Jewel gold is composed of twenty-five parts gold, four parts silver, and seven parts fine copper.