

The Mechanic Arts.

The following are condensed extracts taken from an address delivered by Lewis Kirk, Esq. Superintendent of the Machine Shop of the Reading Railroad, Pa. It was delivered at a complimentary supper given to Mr. Kirk by the workmen, and it was first published in the Reading Gazette.

An occasion like this—met as we have for social converse—may not be an inappropriate one for a brief allusion to the progress and present condition of the Mechanic Arts—a subject of peculiar interest to us connected as it is with the chosen business of our lives, and one in which we all feel a just pride.—And well may every mechanic be proud of that employment which has enlarged the boundaries of human knowledge and added infinitely to the comfort and happiness of the world!

It is by Mechanical improvements that the moderns excel the nations of antiquity.—In the fine arts, in statuary and painting, in poetry and oratory, we have no superiority, of which to boast. But the extent of our improvements in more important, because more practical branches of knowledge, no one knows, but he who will trace their progress through the dark ages, down to the present time, when the discovery of steam power gave a new impulse to the arts and general civilization. It is now but about seventy five years, since the first rude and clumsy Steam Engine was added to the labor-saving machinery of the world. Rude it was, it is true, and costly in its working, but it gave to the world a power which has produced effects which no calculation can estimate, no imagination grasp.

This is emphatically an age of improvement in the mechanic arts. In the year 1807, the first steamboat was put in successful operation. An American gave it to the world.—Forty one years after, and behold its power and usefulness. The locomotive made its appearance but thirty years ago—the same mighty power differently harnessed.

Discovery after discovery has been crowded upon us until the age of miracles seems almost returned, and no attainment seems too extravagant. Had we been told a few years ago that in 1848 the Air would be filled with Aerial vehicles crowded with passengers and pursuing their flight with the directness of a bird to their points of destination, or that by some contrivance, thoughts and words should be transmitted from Montreal to New Orleans in an instant of time, and answers as speedily returned, which prediction would have seemed the most extravagant?—And yet one has become of daily occurrence and has almost ceased to excite surprise.

What then does the future contain? Shall some mighty power be discovered which like a sleeping giant lies waiting its time—a power before which even steam shall be insignificant? Shall our common roads become thoroughfares for locomotives, or shall the air be filled with travellers passing high over the mountain tops? Who shall venture to limit science? Who shall say this can be done and nothing more? No one dares do so. All experience teaches us that the march of science is onward—that upon time and space she is daily making encroachments and that whilst the human intellect continues to work the empire of the mechanic must ever enlarge. In this great work our country stands in the foremost rank. American skill—American ingenuity, are known throughout the world.

And now let me do justice to our fellow-workmen abroad. It is the impression of some that in the manufacturing of machinery our country claims precedence of the world. It is not necessary to her glory that she should urge such an extravagant claim. In all the solidity that liberal expense can give, the elegance which wealth creates, regardless of cost; in that which unbounded capital and long experience can offer, we must acknowledge superiority abroad. But it is well to know that whatever America wishes to do she can do: that there can be no demand upon her mechanical resources that she is not ready and able to meet, and that in ingenuity and inventive skill she may defy competition of the world. But in one important branch of

mechanical skill, America can more than compete with the rest of the world. There is one machine second to none in usefulness that has been brought nearer perfection in America than in any other country. I mean the Locomotive. Among the eighty-three on this road may be found those which for adaptation to the purpose for which they were intended (the drawing of heavy loads) have probably no equal in the world; and as for speed the engines from your own workshops have certainly no superiors in America.

There is nothing more gratifying to the American abroad than to discover that the invention of his native land have found their way in to the workshops of other countries.—A part of my experience in mechanics, was in the superintendence of extensive manufacturing establishments in St. Petersburg, Russia. Under my charge were workmen from every nation. They were there from England, from Ireland and Scotland, France, and Germany and Denmark and Italy and their representatives. There were Tartars and Moguls—but among them all—the American had no superior.

Nineteen miles from St. Petersburg, at Boulpany, the Emperor has established a depot for the collection of all the useful and interesting mechanical inventions of the world. It is the school for the young Russian mechanic, and we might search the world in vain for its equal. Whatever the representatives of that empire abroad, its ministers or consuls, find of interest, is here brought together, and weeks might be spent, and profitably too, in examination and studying the vast collection. No American can walk through these extended rooms without feeling proud of the mechanics of his native country. There stands the cotton gin, the spinning frame, with all the American improvements—the various nail machinery, the machine for turning lasts and gunstocks, Whitmore's card setting machine, models of ships, steamboats, locomotives, and a great variety of other productions that American skill and ingenuity have given to the world.

But there are improvements in the Mechanic Arts which only the mechanic can properly appreciate. Every one can admire the mighty steam engine, the huge steamboat, or the locomotive, which rushes along with its thousand tons, and speed which defies the swiftest courier. But the mechanic finds in the humble means for constructing these proud monuments of human intellect and skill, he discovers in the improvements made in the tools of the workshop, evidence of genius equal, perhaps greater, than that displayed in the ultimate result of all this contrivance. Little indeed could we accomplish if the machine shop were thrown back to the limited resources of a period but a few years past.—The mechanic will comprehend me when I call to his mind the fact that the whole system of sliding lathes has had its origin, and attained its present perfection during a period within his recollection. We have ceased to regard with wonder the operations of the lathe, the boring machine, the screw cutting machine, or the horizontal and vertical planing machine, and yet go back but a few years and these most ingenious and valuable inventions were unknown.

There is much that I might say, did time permit, of our favorite pursuit; much that I would urge upon the consideration of the American mechanic. But I have trespassed longer upon your patience than I intended.—Remember that your calling is an important one; the position you hold equally important. The mechanics of this Nation have it in their power, by their numbers and intelligence to make themselves felt as they always must be respected. Let the aim of every working man be to elevate his moral and intellectual character as he advances in the knowledge peculiar to his occupation, and the world shall daily have new cause to appreciate the dignity of labor.

The Gold Mines in Virginia promise to rival those of California. One panful of the ore last week produced \$125 of pure gold, and Commodore Stockton with three negroes, pounded out six pounds, worth \$1000, in two or three days.

The Raspberry.

The following valuable information relative to this delightful fruit, condensed from the *Macon, Geo. Journal* will we know be found exceedingly interesting to many of our readers.

Scarcely any fruit is more easily cultivated, more agreeable to the taste, or more healthful than the raspberry. It should find a place in every garden, especially those which are too limited in size for the culture of fruit trees. It will grow in the shade as well as in exposed positions, and is an abundant bearer.

Although there are several American varieties, they are as much inferior to the new improved European sorts as a persimmon is to the most delicious peach. The European Raspberry, derives its name from Mount Ida, in the south of Europe, whence it was supposed first to have been brought. It is now, however, naturalized all over Europe, is cultivated everywhere, and may be found wild in the forests. It is a shrub, rising from four to six feet high. The shoots are slender, but not climbing as is the case with most of the American varieties. The roots are perennial, the shoots only being biennial, that is, the shoots which sprung up last year from the root, will bear fruit this year and then die in the autumn. Those which sprung up this year, will bear fruit next year, die, and so on.

Although they will thrive well in almost any soil, still they will do best in a rich or well manured land, mixed with a good deal of leaf mould, or rotten wood; and a moist situation is preferable to a dry one.

In making a plantation, dig trenches six feet apart, not less than twelve inches wide, and sixteen or eighteen inches deep. Fill them with a mixture of rich earth, leaf, mould, or any kind of decayed vegetable matter, and particularly rotten wood, of which they are very fond. Plant them in the fall, two feet apart, prune and water them immediately, in order to settle the earth around the fine fibrous roots. In the spring give them a little dressing of manure, and scatter saw-dust, or rotten wood on the surface clear of weeds. The plants produce a small crop the first year; and a plantation made in this way, will, by good treatment, last for ten years.

Every autumn cut off the dead stems, thin out and regulate the young shoots, and in the spring before the buds expand cut off about a foot of the top, and tie up the shoots, where they need it.

The fruit is a very agreeable sub-acid, exceedingly juicy, and has a peculiar flavor. Besides the use of the berries in a fresh state for pies and tarts, the expressed juice is excellent for jelly, and boiled with sugar and vinegar will form the celebrated raspberry vinegar which when put into bottles will keep for several years. The raspberry vinegar is deemed so wholesome, that a spoonful of it, mixed with a tumbler of water, is by all European physicians, recommended as the very best beverage for allaying thirst in fevers. This fruit dissolves the tartar of the teeth, and never produces any acetous fermentation in the stomach, besides it is highly recommended to all rheumatic patients.

The best kinds are the red and the yellow Antwerp. The Falstaff, and the Queen Victoria, both red, raised lately in England, and recently introduced into America, are widely celebrated as the finest kind known. The Queen Victoria Raspberry, in England, ripens through the whole summer, from July to December.

On the Silk-Worm.

Some curious observations have been just published by Mr. Murray, on the "Cultivation of the Silk-Worm," from which we copy the following interest account of this lady-adorning insect.

"The insect, from which the silk is procured reposes motionless for the period of nearly six months, in a minute round body, called the ovum, or egg. From thence it springs, under the form of a little elongated animal with eight pairs of feet, a caterpillar, or larva. This caterpillar, improperly called silk-worm, feeds on the leaves of the mulberry. It increases rapidly in size; so much so, that its skin in six or seven days after birth cannot contain the internal organs. In its turn, this skin bursts,—and the little insect comes forth

in a new dress advancing toward another stage of maturity for seven days more. There are altogether, under this state of being, four distinct changes of skin. When the silk-worm feels that it is about to quit its fifth skin, it looks out for a secure and retired situation, and there constructs a dormitory, where it may be safe from external contingencies. It then spins its silken web, disposing it in such a manner as to leave an oval cavity. This ball is called the cocoon. The larva casts off its last skin in this abode, to become a being of another, and altogether different from the appearance it had before assumed. In this singular form, in which it somewhat resembles a child in swaddling bands, it is called *crysalis*, *aurelia*, or *nympha*. In twenty days after the transformation of the larva, or caterpillar, into the *crysalis* or *aurelia*, entirely effected within the cavity of the silken cocoon. This is the imago, or winged state of the animal, called *phalena*, or moth—the most perfect state of this strange microcosm. The moth soon lays eggs; these (about six months after) in their turn again produce larvæ. This larva spins the cocoon, and the same interesting circle of changes is thus repeated.

Henrietta Rhodes in a communication to the 'Society of arts, manufactures and commerce,' says, that a fibre of silk, unwound from the cocoon, extends 404 yards; even dry, it weighs three grains. One lb. avoirdupois is equal to 525 miles in length, and 47 lbs. would encircle the globe! The silk, as spun by the insect, is in the form of fine threads, or fibres, which vary in color, from white to reddish yellow. It is very elastic: possessing considerable strength, and covered with varnish, to which its elasticity may be imputed. This varnish being soluble in boiling water, but not so in alcohol, has somewhat the nature of gum, or perhaps rather of a nature intermediate between gum and gelatine. The silk imported from China is always white, and apparently of a stronger, rougher, and coarser consistency than that from Bengal, which is yellow. The Italian silk is generally yellow.

When to Speak.

A man of sense regards time as well as matter in what he says. There is a time to speak, and a time to keep silence; and for want of understanding the latter many persons expose a degree of ignorance which operates much against them; when, if they had held their peace, they would have passed for wise men, and in fact their silence would have been an evidence of wisdom. If a person knows but little he should be sensible of that fact, and say but little. He then may pass very well among wise men; but if he open his mouth, others will get an insight to the emptiness of his skull. But persons of really weak minds are very apt to be the most talkative, and by thus spreading out all their wares at once they show how limited their stock is. A person who has but little of a good thing should try to make it go a good ways, by using it sparingly. A few words of sense will go much farther than a volume of words without ideas. If therefore one has nothing to say, he had better be silent.

Oaks.

Prof. Beck says the oaks of the forest are known with tolerable certainty, to attain the ages of 800 or 900 years, and are the most aged trees that we possess. Pines are stated by Dr. Williams, in his history of Vermont to live from 350 to 400 years. Of the oaks comprised under the Linnæan genus *quercus*, botanists are acquainted with more than 440 species, of which upwards of one-half belong to America. In this State there are fifteen various species, as follows:—Mossy cup, post white, swamp white, swamp chesnut, yellow rock chesnut, dwarf chesnut, willow, black scrub, black, red or scarlet, pin and red oak. The white oak is the most valuable of all being extensively employed in ship building. In England, in 100 years' time, the price of ship building advanced 100 per cent. Sinclair, in his Code of Agriculture states that a 75 gun ship requires 200 loads of wood, the produce of 50 acres, each tree standing 33 feet apart. Hence the importance of cultivating the oak and where the young trees are raised, the ground should be cultivated for 20 years at least.