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ARTISTS AND ARTISANS.

It is gratifying to notice our progress in refinement, as shown in the desire of our engineers and mechanics to consider the beautiful, as well as the useful, in their productions. It is only within a few years that any attention was paid by them to beauty of form, while they consulted safety, strength, necessity, and durability in their works. Indeed, a strong prejudice deterred the mechanic from embodying his ideas of beauty and harmony in forms of strength and utility. A bridge was simply a structure to permanently connect two points, and if the ends of strength and durability were attained, the design of the builder was fully answered. A machine was simply an agglomeration of masses of metal and wood—looking only to the utilitarian, and offensive to the eye and the taste. The gratification of taste was deemed a weakness.

As the demands of the world increased the products of the mechanic, educated taste revolted at the permanent divorce of the useful and the beautiful, and an attempt was made to reconcile the two by adding to the misshapen structure an overlay of meretricious ornament—carving, painting, and gilding. The radical deformities were thus brought into more repulsive relief, and the eye, offended, turned to less pretentious structures, which assumed to fulfill only the object of utility.

A new element of beauty has, however, been introduced into our mechanical progress. It is that of form rather than of ornament. An unadorned structure, possessing a graceful form, is more pleasing than an uncouth mass decorated with inharmonious gewgaws. A church, fashioned like a barn, may be commodious and answer the purpose of congregational worship, but however plain it may be, there is no reason why it should not possess distinctive characteristics to denote its uses and not offend the eye. The lines of a bridge need not be ungraceful. A tall chimney need not be uncouth. In fact, the architect, the engineer, and the mechanic may be artists and in no way detract from their usefulness. It is their duty to consult the requirements of correct taste as well as to follow the rules of mechanical construction; for every work of art subserves the purposes of education, and a love of the beautiful is implanted in our nature for a wise and benevolent purpose. To be sure, there is a beauty in the perfect adaptation of the means to the end.

There is a satisfaction in witnessing the operations of a machine which answers the end proposed by the builder, apart from the form which the material is made to assume; but beyond this is the gratification of taste in viewing a perfect union of the useful with the beautiful. And there is no valid excuse for the designer if he wantonly neglects this higher demand while endeavoring to subserve the lower requirements of use; for in the hands of the mechanic all materials become plastic, and he is false to his better tendencies if he forces them to assume outlines offensive to the eye, when this object of symmetry can be attained without sacrificing utility. And certainly, the cases are few where both these objects may not be attained.

Viewed rightly, an invasion of the sphere of the artisan by the artist is no degradation of the latter. It is not necessary to refer to the example of some of the greatest artists to illustrate this fact; nor is it puerile for the artisan to study the specialty of the artist, and endeavor to catch and fix the spirit of beauty in his works. We look for a rapid improvement in this matter now that it is not thought beneath the dignity of institutions of learning to recognize the mechanical engineer as a proper object to wear their honors. When the mechanic is conceded his proper place he will rank with the discoverers in science, the masters in literature, and the ministers of the beautiful, and with them be considered as an educator of the race.

TOOLS FOR SPECIAL AND FOR GENERAL USE.

Possibly it is prejudice, but we confess we always look upon a combination tool with a certain degree of suspicion. Yet the genius of our inventors seems to be guided in the direction of constructing appliances for work which are intended to be capable of performing several very distinct and differing branches of labor. Sometimes the combinations are successful, but oftener not. A machinist's lathe will turn a shaft or cut a screw with equal facility; but let the same lathe be used indiscriminately for turning wood and iron, or for chucking, boring, drilling, and turning, and it will soon be found that it fails to do one, perhaps all these differing processes, with the exactness and nicety required. The results of the work done by the planer and the milling machine are frequently very similar, but what machinist does not know that the latter is invaluable even when he possesses one of the best of the former. Again, the milling machine is but a modification of the gear cutter, yet the latter is necessary for accuracy. The shaping machine, working with adjustable crank, with quick return motion, is but a miniature and restricted planer; yet both are necessary to rapidity and perfection in doing work.

Probably no tool used by mechanics generally is capable of so many diverse applications as the lathe, and because of this it is often greatly abused. Take a well-adjusted screw-cutting turning lathe, and screw on the live arbor a massive universal, or scroll chuck, which receives a pulley or gear weighing fifty or one hundred pounds. Then apply the drills and reamers, or the resistance of a turning tool against the rim of a wheel as large as the lathe can swing. How long will it be before the lathe cannot be depended upon to turn a shaft or cut a fine screw? The intelligent manager, knowing that this application of one tool to varying purposes is seldom successful, furnishes his shop with "special tools," and in this he is right and reasonable. Let the screw lathe, the chucking lathe, the drilling lathe, each do its legitimate work, and be confined to its specialty. Let the planer be restricted to planing, and never forced to do the work so much better performed by the milling or the shaping machine, and the employer, customer, and workman will be gainers. We have seen a mechanic calling himself a workman planing in a lathe. Cutting a key-way by means of the carriage of a lathe may be a bright idea, but it is not a profitable one.

We prefer to see a machine or tool specially designed for a particular department of labor, and confined to that use; and where this plan is followed, we may be sure the work turned out will be of the best quality; at least the fault will not be because of imperfect tools.

It may be that commonly-used implements can be adapted to two or more purposes. We know of

such cases, but they are when the tool is one that cannot be injured for one class of work by using it for another. Still, in the general use of tools, those will be found to be most servicable which have a particular work to perform, and are not diverted to strange and unnatural uses. Every shop or mechanical concern should be furnished with tools perfectly adapted to the specialty of its business. It is well enough for small manufacturers to utilize the means at their hand, and compel their tools to do double duty; but when in a position to avail themselves of tools specially designed for the different departments of their work, they are blind to their own interests if they waste the time necessary to convert a tool or machine from its legitimate purpose, and adapt it to a new one, and risk the injury to tools and the unfinished state of a job, together with their reputation, for this false economy.

ENGINES OF THE STEAMSHIP "RISING STAR."

The magnificent paddle wheel steamship *Rising Star* made her engineer's trial trip on the afternoon of the 11th, running from the foot of King street, North River, to below the outer Quarantine and returning. She is a noble vessel, unusually strongly built, and fitted up in the most complete and thorough manner. She was intended originally for the New Orleans route, but is, we believe, to run on the Atlantic route to Aspinwall, under the auspices of the Pacific Mail Steamship Company.

The main boilers are 30 feet long by 15 feet 9 inches diameter, of Smith's pattern, with a double tier of furnaces. The fire surface has 12,500 square feet, and the grate surface 400 square feet. The cylinder is 100 inches diameter with 12 feet stroke. The wheels are 36 feet diameter and 12 feet face, the paddles divided and graduated, and one wheel set in advance of the other, designed to prevent that unpleasant jar usually noticed in paddle-wheel ships. That this object was attained was evident to all who accompanied the ship on her trial trip.

She has a tubular condenser with a surface of 5,000 square feet. The cylinder is provided with a super-heating steam jacket, the steam for the jacket being supplied by an independent boiler, at a pressure of about ten pounds more than that of the steam supplied to the cylinder from the main boilers. The steam in this auxiliary boiler is made from salt water, and after circulating in this hollow cylinder head, the jacket, and cylinder bottom, enveloping the working cylinder, it passes to the main boilers, thence to the piston, performing its work, when it is condensed and used to supply the main boilers. By this means these boilers are supplied with comparatively fresh water—a great desideratum which has never yet been fully realized on any sea-going vessel. This jacket of high steam is hotter than the steam used in the cylinder, preventing any loss of power by radiation.

The rims of the wheels are planed to an edge before being formed into segments, so that the peripheries between and outside the paddles offer but little resistance in passing through the water.

The pillow blocks are peculiar, being arranged to admit of the removal or repair of the brasses without the usual labor and cost of disconnecting the engine, and also admitting of the "lining up" of the engine without disturbing the fastening of the pillow blocks. Practical engineers will see at once the advantages of this arrangement.

The engine was built at the Etna Iron Works, this city, from the designs and under the direction of Erastus W. Smith, A. P. D., assisted by Mr. Thomas Main, engineer for the builders.

The *Rising Star* was commanded on her trial trip by Captain Horatio Nelson, and in all respects the test was a most satisfactory one, the engine, during a portion of the time, making 18 turns per minute with perfect ease and without jar.

THE nineteenth annual exhibition of American manufactures and the mechanic arts of the Maryland Institute will be opened at the hall of the Institute, at Baltimore, on Tuesday evening, Oct. 2, 1866, and continue to Oct. 30th. Exhibitors intending to compete for the premiums must enter their goods by the 27th September. For further information address the Actuary of the Institute.