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Industrial Fairs.

It is the duty of every mechanic and artisan to study and show himself to be a good workman. Whatever a man does let it be done well; a slovenly, careless workman is a disgrace to his race and country. There is room for the display of taste and talent in every trade and art, and a man who wishes to excel—a laudable ambition—will embrace every opportunity of extending the boundaries of his knowledge in all that relates to his trade, art, business, taste or interests. It was a happy day for the progress of the arts, when the first Industrial Fairs were instituted. We do not intend to present a history of their rise and progress, we only wish to present a few ideas respecting the benefits which necessarily flow from them. Let us take, for example the last Fair of the American Institute which has just closed. What were the articles exhibited which will conduce to greater excellence in construction, or in originating superior ones? We cannot tell specifically, but we do say, that much was exhibited which must produce good effects in exciting to greater effort, those who were exhibitors, and many more who were only spectators. Every one who appears at a Fair believes he has something more than common to show; he does not go there with a palpably inferior something which will make him appear ridiculous. No, he believes that the work of his hands and head has some merit in it, and he is proud to show it. This is the reason why so many things of beauty, skill, and ingenuity are collected at such exhibitions. Some visitors go to Industrial Fairs for pleasure, such as to see the curious and pretty things, but a large number of all classes go to see what is new, and pick up what is useful. "There," said an inventor in our hearing, "is the very thing that has bothered my head for years; it always baffled me, and here it is, and so simple, too." He really felt some relief, and was a gainer by coming to the Fair. It is a wise provision of some German corporations, which compels a mechanic to travel and work for some time in different shops before he will be permitted to set up business in his native place. Practice leads to perfection, but then a person must have a model—a standard of excellence to practice upon. The excellence of one artist stirs up the spirit of emulation in another to excel, and certainly the more masters in the arts, who exhibit, the more instruction will the spectators receive. Men accustomed to view the same round of things continually, move in very circumscribed circles, their knowledge is as limited as that of the islander who believes that his own puny isle in the ocean is the only dwelling spot in the world for man.

The great utility of industrial fairs is their economy to visitors who go to see for instruction. Here mechanics, without travelling to any great distance, can see excellent machines from all parts of the country; manufacturers can also see a great variety of manufactured goods from various near and distant places. A wide field for comparison and healthy stimulation to excel is therefore presented at such Fairs. The products are so various that all the world might come even to a small Fair, and find something of a superior character to interest every one of the vast crowd. There is not a solitary individual who attends our Industrial Fairs, if he has any powers of observation at all, but learns something. The endless variety of objects presented, from needles and pins, boots and coats, knives and spoons, shirts and frocks, &c., to reaping machines, spinning frames, and steam engines, cannot fail to impart new ideas, and expand the mind. We therefore look upon Industrial Fairs as a grand element of civilization, of progress, and good to the human family. Wherever an industrial exhibition is held, it is the duty of our citizens to give it all the patronage and encouragement they can, and it is for their own interest to do so. The great "World's Fair" has given an impetus to such exhibitions, which, we trust, will exert a permanent influence for good, and not pass away like a thing of foible and fashion.

Shawls.

From the earliest ages up to the present date, shawls have been worn as a graceful article of apparel by the inhabitants of almost every nation. It is worn by both male and female in oriental countries now, and it was worn by the young maidens and warriors of Palestine, in the days when Israel's Shepherd King tuned his harp to the noblest strains that ever fell upon the ears of man. The shawls of ancient oriental nobles, were enriched with the famous purple dyes of Tyre, and the royal sisters of Macedonia's hero, no doubt worked with their own gentle fingers the embroidered scarf that waved from the shoulders of the conqueror of Persia. The shawl is the most distinguished article of dress, and ever has been, and it is no wonder that the very manufacture of it has conferred fame upon nations, districts, and cities, the inhabitants of which have become distinguished in its production. Who has not heard of the beautiful crape shawls of Canton, the fine woolen shawls of Cashmere, the camel hair shawls of Bokhara, the woolen and silk shawls of the city of Lyons, in France, and those of the city of Paisley, in Scotland. In America, England, and among the most of the inhabitants of Europe, except Scotland, the shawl is not an article of male apparel, but the passion for shawls is prevalent among the females of almost every land, our own among the number.

The camel hair shawls of Bokhara are the finest and dearest in the world. They are woven in the simple oriental loom by hand (for the natives there have not yet learned the use of the *fly pin*), in strips of about eight inches wide, and these are sewed together with the needle, and done so cunningly, that the joinings cannot be discovered by the eye. These rude artisans weave most beautiful and chaste patterns, which are copied direct from flowers or leaves placed beside the weaver; they copy nature, and our best artists are distinguished as they approach nearest the works of this teacher. Some shawls are very expensive, and at the court of Russia, the ladies judge of the grandeur of one another by their shawls as by their diamonds.

The finest shawls manufactured in Europe are those of Lyons. The French have for a great many years been distinguished for their fine taste in patterns; but the pine-leaf of the oriental shawl forms the most prominent and beautiful radiating figure in all shawl patterns. It has at least become to be regarded as such; no shawl of flowery pattern, therefore, seems to look well without it.

Paisley, in Scotland, has long been distinguished for beautiful woven shawls. The great improvement in their weaving, however, is due to that ingenious Frenchman, Jacquard, the inventor of the Jacquard loom, indeed, it is strictly true, that the fine silks and woolen shawls now made in Britain were introduced by Frenchmen—the Hugenots who were banished from France by the Revocation of the Edict of Nantes. The Paisley woven shawls are the kind most commonly worn in America; some of them are very beautiful, and as it respects price, no shawls of the same quality can compete with them. Shawls of the Scotch character have been manufactured for some years in the Bay State Mills, Mass., and at the West Troy Mills, N. Y. We have seen some very beautiful shawls which were made at both of these establishments, and at the recently closed Fair of the American Institute, some very excellent shawls made at West Troy were exhibited. They were of the tartan pattern (checked) and appeared to good advantage. This kind of pattern belongs apparently to the Celtic tribes, but especially those of the Scottish Highlands, where men as well as women wear them.—The shape of the Paisley shawl, and the tartan (commonly called the plaid) is rectangular, long, and graceful, and made so as to double over on the shoulder. We have seen accounts of the gentlemen's plaid shawl having become a common article of dress in many places in England, and it is now seen not unfrequently in France. It is beginning to be worn by American gentlemen, and is not now a subject of wonder in our streets; it is also for sale in all our large stores, and as it is a most convenient and comfortable article of apparel, it may yet become (not fa-

shionable we would say) consistently common sense, and common to wear them. It appears to us that these shawls can be profitably manufactured in the United States; we would therefore be glad to see a more extended market opened for them. The shawls of Britain are made from Australian wool, some of which is very fine, and it is furnished at a very moderate price. Our country offers a wide field for the growth of wool, which must not be neglected if we desire to become distinguished for the manufacture of shawls. We see by the London Mechanics' Mag., that a patent has lately been taken out by a Paisley weaver for making two piled shawls out of one, and using no wires in the weaving. A double piled shawl is woven with the pattern on both sides, and then it is split open to divide it into two. But there is one kind of shawl to which we would wish to direct the attention of some of our manufacturers, we mean the fine woolen printed shawl, which is produced by block printing of many beautiful patterns, and in great numbers in Lyons, France. The woven shawl looks heavier and richer than the printed one, but for light shawls we prefer those that are printed. Every kind of pattern can be produced by block printing, at one-fiftieth of the cost required to produce the patterns on the woven shawls. The shawls for block printing have but to be woven plain, then washed, stretched, and made ready for the printing; the colors are printed on them with blocks, of any pattern, and after this they have but to be steamed in a box where they are covered with rice husks to raise the colors, after which they are soon ready for the market. The woven shawl has its pattern punched in cards, then laced in the harness of the loom, and then woven with yarn of various shades and colors, a tedious and expensive operation. Some harness for looms cost an enormous amount of money; one shawl exhibited at the World's Fair, was so intricate and beautiful in pattern, that the harness for weaving it cost \$2,500. After the woven shawl is out of the loom, it has to be clipped, singed, pressed, &c. Now all this tremendous amount of operations have to be performed to produce the pattern, this can be done by block printing in as many seconds as it requires days—and for some patterns weeks and months,—to produce a woven pattern. Long shawls are the most fashionable and the best; we do not know whether Cooper's "Skimmer of the Seas," the hero of the "Indian Shawl," wore a long shawl or a short one, we only know that it was a rich and beautiful one, and the time will come, we believe, when they will be more commonly worn by both sexes, instead of only one, as is now the case in our country.

Latent Ingenuity—Railroad Prizes.

It is well known to our readers that F. M. Ray, of this city, offered prizes amounting to \$3,000 (the advertisement was published on page 159, 7th Vol. Scientific American), for improvements in machinery, &c., for the prevention of railroad accidents, &c. One prize was \$1500 for an improvement to prevent the loss of life by collisions, and the breaking of axles. Another was \$800, for the best method of excluding dust from Railroad Cars. Another was \$400, for the best brake. Another \$300 for the best sleeping or night seat for cars. These premiums were open for competition, and the competitors had their inventions on exhibition at the late Fair, the judges being chosen by a committee of the Institute. The offer of these prizes has impressed us deeply with the conviction that such prizes are of the greatest consequence to our country; they have drawn forth an amount of ingenuity which took us by surprise. We expected to see quite a number of competitors for the said prizes, but we did not expect to see so many. The number of improvements, their variety, and the ingenuity displayed by the majority of them, proclaim this great fact, "there is an amount of latent ingenuity in our people, which, if called out by the offer of large prizes for certain definite improvements, would greatly advance the prosperity, and honor of our country."

We understand that the committee appointed to examine the railroad inventions in competition for the prizes, do not wish to decide upon the merits of any of them, without sub-

mitting them to a fair test on a large scale. It is easy to test some of the improvements exhibited, such as a chair; but many of the exhibitors, we suppose, have not the means to put their inventions in operation on a large scale. To them, unless some good generous patrons do it for them, the prizes have been offered in vain. The Committee, in coming to this decision, have acted, as appears to us, in a most prudent manner; but when the advertisement, offering these prizes, was presented to the public, these conditions for testing the said improvements should have been made known. It is scarcely fair to advance new conditions for testing an invention after it has been presented.

It would be well for the interests of every Mechanics' Institute, every Agricultural Society, and every association for the advancement of Art, to offer one or two large prizes every year, for some new improvements, to accomplish such and such results. We believe that a great amount of good to our country, would be accomplished by such a course of policy, for such improvements confer benefits upon all classes. The reward of a medal prize is all very well, so far as it goes, but we want something more. According to the value of a prize are the natural passions of acquisitiveness and love of distinction excited to win it; a greater amount of genius will therefore be stirred up to win such a prize, and the mental faculties of every inventor will be intensely concentrated to carry off the noble reward.

We present these few remarks for the purpose of directing general attention to the duty of impressing upon every one of the Institutions we have mentioned, the importance of carrying into practice the policy we have recommended.

A Large and Small Wheel.

We have received a letter from a brother editor in Muncy, Pa., stating that a mathematical question had been mooted in that place, which caused more excitement than the general election. The question is this, "Take two wheels of six feet in diameter, and one of three feet, and secure them fast on an axle—putting the small wheel in the centre of the other two, and then make three tracks for them to run upon, elevating the centre track to the small wheel, so that all will have an equal and proper bearing on the three several tracks to revolve on the same axle; will they revolve alike?" This question, he says, has been referred to him for solution, and his opinion is, that "wheels made fast on the same shaft will all revolve alike." This decision has been contradicted by others, who assert that, "although the three wheels are fixed on the same axis, the small one must slide part of the time, while the large ones revolve." He sends the question to us to give the why and wherefore. We have a great number of such presented, but we seldom do anything more than look them over, because such questions must necessarily take a great deal of time for examination—more than we have to give away, but as this comes from a brother chip, we will present it clearly. The three wheels will revolve in the same time, and the small one will not slide. The circumference of each large wheel is $6 \times 3 = 18.14159 = 18.84954$, that of the small wheel is $3 \times 3 = 9.42477$. One revolution of the large wheels will describe a straight line on the track of 18.84954 feet, while one revolution will make the small wheel describe a straight line on its track of 9.42477. If the small wheel slides, and yet makes one full revolution, it must describe a line of greater length than this. Well, the question is now put upon those who dispute the decision of our correspondent, to prove how much it slides.—This is altogether a different question from that of the power required to propel wheels of different sizes, and their *vis viva*.

Machinery for Cuba.

Very few persons are aware of the large amount of machinery that is annually shipped from the United States, particularly from Boston, to Cuba. On account of the large crops which have been produced there the last few years, and the large demand for molasses and sugar, machinery has been, and is now, in constant demand, for the manufacture of it.