

THE Scientific American.

MUNN & COMPANY, Editors and Proprietors.

PUBLISHED WEEKLY AT
NO. 37 PARK ROW (PARK BUILDING), NEW YORK.

O. D. MUNN, S. H. WALES, A. E. BEACH.

American and Mexican News Company, Mexico, are Agents for the SCIENTIFIC AMERICAN.

Messrs. Trubner & Co., 60 Paternoster Row, London, are also Agents for the SCIENTIFIC AMERICAN.

"The American News Company," Agents, 121 Nassau street, New York.

VOL. XV., No. 8, [NEW SERIES.] Twenty-first Year.

NEW YORK, SATURDAY, AUGUST 18, 1866.

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SUBDIVISION OF LABOR.

It is claimed by some that the mechanics of twenty years ago were superior workmen to those who have graduated of late years. It is boldly asserted that mechanics, as a class, have deteriorated. We do not subscribe to this opinion, but we will point out briefly some of the reasons why the opinion is entertained.

Twenty years ago the apprentice to an industrial trade was taught all its mysteries, from the preparation of the crude material to the finish and ornamentation of the completed structure. The carpenter took the rough tree bole, and, by chalk line and broad-ax, marked out and hewed it to a square timber. With the common auger, mortising chisel, and mallet, he cut mortises and formed tenons. He framed and erected the skeleton of the building, covered it with boards, made the window-frames, the sashes, laid the floors, worked out the moldings, and finished the whole interior, even to lathing.

The blacksmith forged iron and steel, tempered tools, tired wheels, shod horses, ironed carriages, and repaired agricultural implements. The machinist sometimes chalked out designs, made patterns, and, perhaps, molded them, filed, chipped, planed, turned, bored, polished, estimated on work, built and repaired every sort of machinery, from a steam engine to a wheelbarrow, from a loom to a ship's pump.

All this is changed. No more do carpenters hew their timber; one machine mortises and another forms tenons. Houses are often erected without a single mortise or tenon. Joiners finish the interior. The doors, window-frames, and sashes are made at a factory. Even the glazing is done in large establishments devoted exclusively to that one branch. Lathers are an industrial community by themselves. The farrier shoes horses, the carriage smith irons carriages, the forger hammers away on a special class of work. He may manage the heavy jobs for marine and stationary engines, restrict himself to forging and tempering steel, or form the thousand and one shapes intended for cotton, flax, or woolen machinery; or he may confine himself to the business of forging and fitting tools for working the metals, and in this specialty he becomes an expert, as much above the man who forges and tempers stone drills and chisels as the machine forger is above the country blacksmith. The machinist is a "bench workman," a "planer" or a "turner." He may be

an excellent man in a manufactory of cotton machinery, and comparatively worthless as a builder of locomotives. He may understand thoroughly the construction of looms or the process of making a good spindle for spinning, and be unable to set a valve on a steam engine. The valuable man in a marine engine establishment would be almost worthless in a gun shop.

So there is no parallel by which the workman of twenty years ago can be gaged with the workman of to-day. The whole trouble of comparing the past with the present consists in the necessity which our mechanical progress has compelled of subdividing the departments of labor. It cannot reasonably be expected that those who have been educated to perform a certain work, or do a certain department of work, can be thoroughly booked up in other departments, which, perhaps, may be closely allied to their chosen specialty. In versatility of talent, undoubtedly, the men who learned their trade when the arts were comparatively young, have an advantage. They were compelled to prepare their work, and consequently are the sort of men who are invaluable in a crisis. They are fertile in expedients. They understand what should be done under trying circumstances. They can devise "make-shifts," but not always can they produce a good job.

But our mechanics have not deteriorated. Those who confine themselves to one branch are usually better workmen than those who have spent fifteen or twenty years in practicing at a dozen differing processes. The lather, who makes that his specialty, excels the carpenter who turns from hewing timber to lathing rooms. The forger of tools can work and temper steel better than the blacksmith, who, in one day, forges the crank for a saw mill, tires a wheel, and tempers a knife blade. The machinist who has spent years in the construction of engines, knows more about steam and its agents for transmitting power than he who never repaired an engine.

We look upon this subdivision of labor as a direct means in the improvement of mechanics, as well as a sure method of progressing in the value of our products. Let a man—an apprentice—after learning the general principles of his business, devote his time and energies exclusively to that branch of his trade for which he is best fitted by education and natural taste, and there will in time be no means of drawing a comparison between the mechanics of twenty years ago and those of to-day, to the damage of the latter.

ELEVATED RAILWAY FOR NEW YORK CITY.

The increasing business of this city, year by year, makes locomotion, on the level of the streets, either by public or private conveyances in the roadway, or pedestrianism on the sidewalks, a difficult and vexatious matter. A force of police is stationed at various points on our most crowded thoroughfares, generally at the intersection of cross streets, for the sole, or main, purpose of protecting pedestrians from the attacks of drivers of vehicles. It is a passage of terror, this crossing the streets of the metropolis. The managers of harnessed horses seem to assume that they have the exclusive right to the roadway, even on crossings, and at corners sometimes whisk around them in a way that endangers the lives and limbs of pedestrians. The only relief to this crowded state of our thoroughfares is a means of conveying passengers between different points without coming in connection with the press of vehicles on the streets. Two plans have been proposed: One that of subterranean travel by means of tunnels, and the other of elevating the roadway of passenger cars above the street.

To the first there are solid objections. Manhattan Island, especially at its upper portion, is a mass of rock, which extends so far beneath the surface that, even for sewers, water pipes, and gas conduits, it is necessary to make a way by blasting through the solid rock. The City Council have granted to the "West Side and Yonkers Patent Railroad Company" permission to erect a line of elevated railway on each side of Greenwich street and Ninth avenue, from the Battery to and across Harlem River, on certain conditions, one of which is that the company shall pay five per cent of its earnings, less the National, State, and local taxation, into the city treasury. The tracks will be laid on iron columns at least

fourteen feet high, placed along the curbstones of the sidewalk, twenty feet apart. A trial of the new enterprise will be made on Greenwich street; if this is successful, roads will be built on Broadway and the Bowery. The motive power will be a wire rope running over drums, which are to be driven by stationary engines at about half a mile apart. A device for gripping the rope attaches to the moving line, and allows the carriage to be started or stopped at will. Stations for passengers will be established at certain points in the second story of buildings, when possible, or by outside stairways. The principal designs for this railway were prepared at this office.

COUNSELING OUR ENEMIES.

We doubt very much the statement of the *Engineering*, in an article copied in this issue, that "Mr. Fox, the Assistant Secretary of the United States Navy, was ready to allow our whole fleet to hammer at the *Miantonomoh* for two days, provided we would afterward allow that vessel to work ten hours' havoc on our ships in return." However much we may be inclined to believe what we have heard stated, that the visit of Mr. Fox to Europe, in the *Miantonomoh*, was a private speculation, we cannot believe he was allowed such latitude as this.

We are well satisfied with the fact that we can build the most invulnerable gunboats, and manufacture the most effective artillery, without proving these facts, in time of peace, to the satisfaction of those who may be our enemies, and, in consequence of our own foolish demonstration, be enabled to fight us with our own weapons. In our issue of July 20th we deprecated such an exhibition as that contemplated by Mr. Fox, and from the remarks of our foreign—especially our English—exchanges, we feel pretty certain that we are throwing away all the advantages of our costly and repeated experiments by this free exhibition of one of our most effective ships, armed with our best guns.

Recently Sir S. Morton Peto stated in Parliament that while in this country he had free access to our navy yards, and had explained to him the minutiae of our naval architecture. Surely, it is enough that a foreigner—perhaps an agent of his Government—coming to this country, can be furnished a free pass to our shipyards and founderies, our fortifications, and other governmental institutions, and bear back with him the details of costly experiments, the results of which are invaluable. But, unsatisfied with this means of instructing the monarchies of Europe, we send to their own doors the completion of our exertions, and invite them to copy, and, if possible, improve on them.

This is an entirely new way of proving the *entente cordiale* between nations. The English Government do not open freely the doors and gates of their armories, founderies, and shipyards to the American traveler. Some of their processes are kept profound secrets; but, in our own case, the manner of fabricating our immense smooth-bore guns are minutely described in our journals, and the fact that a visitor is a foreigner is an *open sesame* to the establishments where the work is performed.

It is certain that we cannot hope to conceal, permanently, the results of our progress in naval and other warlike improvements; but, without this gratuitous advertising, they would become known only when we were engaged in a war, where they would be of service to us and of injury to our adversaries. Already the visit of the *Miantonomoh* has stirred the sluggish blood of our trans-Atlantic cousins, and we shall have plenty of copies of our monitors and big guns, all ready to operate against us when a rupture of our peaceful relations shall render it advisable.

REPORT OF THE REVENUE COMMISSION.—From the Secretary of the Treasury we have received the "Report of a Commission appointed for a Revision of the Revenue System." It is a valuable compendium of facts relating to nearly all branches of our industrial resources, obtained from persons directly interested in the business which they represent. Much information of an interesting character is also afforded in regard to the productions of other countries. The volume is a valuable addition to the industrial literature of the country, apart from its importance as a State document.