

when the plate, J, has driven the pins into the paper, the flattened end of the rod, O, falls in front of one of the teeth, e'. After the pins are stuck and the lever, L, drawn back, the rod, O, operating on the ratchet, moves the slide, W, back a given distance. This operation is repeated till the rod, O, traverses the whole length of the rack, at the end of which is a bevelled piece of metal which throws it above the rack, and against the side of the slide, W. The slide is then moved forward on rails, and another sheet of paper is inserted. When the slide has reached the desired point forward, the point of the rod, O, strikes a lever, O', at the end of the rack, and is again thrown into its place in the rack; it is kept in the rack by one end of the lever, R, which is made to press against it by the spiral spring, m, attached to the other end of the lever. The end of this lever prevents the slide, W, from being thrown back beyond a given distance each time. The operation is conducted with great dispatch, and the process is a very different thing in respect to the facility and simplicity of action in comparison with a description of the parts. Fig. 2 will show how the pins are carried into the grooves.

Foreign Correspondence.

LONDON, 27th Feb., 1851.

Some demurrers had been entered with respect to the strength of the Crystal palace, but the commissioners of the building have, I think, clearly demonstrated its entire fitness for the purpose designed, as it respects strength. The different parts have been fairly tested to prove this, and the last experiments were those of testing the strength of the galleries, the results of which I hereby send.

From various experiments which have been made by Mr. Brunel and by other engineers, it has been found that the average weight of a number of persons standing together in a confined space rarely exceeds 50 lbs. per square foot; that by packing men as closely together as possible it might be brought up to 70 lbs. or 80 lbs.; and that not by even picking heavy men, and squeezing them into the smallest compass, could an average of 1 cwt. per square foot be obtained. One hundred weight was therefore assumed as an amount certain to cover any unforeseen combination of circumstances. On this assumption no bay of gallery 24 feet square could possibly be called upon to carry a load equal to 30 tons.

As it was ingeniously contrived by the arrangement of the flooring that this weight should be distributed over four girders, and every girder had been submitted, on the ground, to a pressure of 15 tons (that being only half the maximum weight that each was capable of supporting), applied exactly at the points upon which the floor would have to be borne, it will be manifest that a very large margin had been left to provide for contingencies arising from any motion which it was possible might be communicated to such a load.

The immediate object of the experiment was to assure by various tests of the severest character, to what extent oscillations could be conveyed to the gallery by the regular motion of a living load, and to ascertain whether the provision which had been made to meet contingencies was sufficient.

The preparations made for the experiment consisted of the construction of a perfect bay of gallery, with its floors, binders, girders, and connecting pieces, in every respect complete, and similar to the actual gallery, supported upon four points, bedded on temporary foundations. Rows of planks the full width of the platform, led up to it, and down from it, so that a row of men as wide as the gallery might be able to march up and down in close column. Three hundred workmen were first assembled by the contractors, and allowed to cover the platform and the planks connected with it. They were then compressed into the smallest space upon which they could stand.

The load borne on the planks represented the share of pressure which would be produced by the crowding of adjacent bays of gallery. The amount of deflection produced by this load was inappreciable. The men then walked regularly and irregularly and ran over it. The elasticity of the floor, allowing play to

the timbers and the wrought-iron work, was admirably developed by this test, and it became apparent that this quality of elasticity was of the greatest value in protecting the cast-iron girders from sudden shock.

Thus, in the severest test which could possibly be applied—when the men, standing closely packed together, continued jumping simultaneously for several minutes, although in the regular vibration of the floor the binders played up and down—the extreme deflection of any of the girders did not exceed a quarter of an inch.

As the contractors' men were unable to keep military time in their step, and it was considered desirable to ascertain the effect of perfectly regular oscillations, the whole of the corps of Royal Sappers and Miners on the ground, set in close columns, were marched over and over, and all around, and were finally made to mark time in the most trying manner. With the results of this last test the eminent scientific men present expressed themselves highly gratified, observing that while at the climax of vibration, the motion did not exceed that common in ordinary London houses at evening parties.

When it is remembered that the arrangements for the exhibition in the galleries require passages only six feet wide on the sides of the galleries, counters for light goods occupying the central portion most liable to strain; and when it is borne in mind that the galleries are of such extent as to render the uniform vibration over any considerable proportion of their whole area impossible, the results of the experiments we have described cannot but be regarded as calculated to relieve the apprehensions of the most timid.

There are arrivals every day of articles from foreign countries, and a keener excitement among the masses is perceptible respecting what is to be seen at the great raree-show. Some wonderful things have already arrived from distant places. Scotland and Ireland; have sent up some rare curiosities, among which there are from Edinburg, model of modern Jerusalem; sculpture in freestone and plaster of Paris; imitation of Mosaic tables; model of John Knox's house; design of Free Church College; Plaster of paris models of Arthur's Seat, Salisbury Craigs, air-tight vessels to support persons in the water in case of shipwreck, land cultivator or digging machine, model of a steam plough, paper cutting machine, paper folding ditto, model of high-pressure steam boiler for preparing bone manure and steaming food for cattle, model of steamship, fire escape, machines for sowing and dressing corn, railway signal lamps, model of house, illustrating a simple mode by which ordinary rain water may be rendered available in cases of fire, model of a carriage constructed so as to prevent horses from running away, a portable shower bath, a set of miscellaneous acting level crossing gates for railways, a locomotive and economic sheep dipping apparatus, model of a patent slip for hauling up vessels for repair, sheep washing apparatus.

The Scotch are great upon steam and agricultural improvements. From Belfast, Ireland, a most wonderful curiosity in the shape of pictures by needlework, the handiwork of an Irish lady of Colrairie, have been presented. The style is novel, and so are the materials employed. Held at a short distance from the eye, they have all the effect of the best and boldest line-engravings, of which, indeed, they are clever imitations; but when closely observed, they are discovered, to be exquisite specimens of needlework. One of them, a view of the Giant's Causeway from the East, is wrought with the ravellings of black crape, upon a ground of the finest Irish linen. Another, an Italian landscape, is wrought with the same kind of thread, upon fine white silk; a third, a view in the Arctic regions, is traced with white and black threads, upon dark-grey silk to represent the sunless sky, and upon white silk to represent the snow-clad foreground. Vain would be the attempt to convey an adequate idea of the admirableness—the absolute perfection—with which the faintest, as well as the deepest, shades are managed by this process, from the finest pencilings of the sky tints to the broadest masses

of color in the foreground. Even where figures are introduced, the folds of the draperies and the lines of the countenances are touched off with surpassing delicacy.

I await with no little restraining of my curiosity bump, for the display of Shan and Yhan from China, along with my countrymen from Canajoharie, Scoharie, Canesota and Minesota. EXCELSIOR.

New Process of Daguerreotyping.

We learn by the able correspondent of the Philadelphia Ledger (W. H. Fry), that the following improvement in the process of Daguerreotyping has just been discovered by Niepce, the first discoverer of the art. The engraving is to be submitted to vapor of iodine (at a temperature of 15 or 20 degrees) during about ten minutes; a longer time is necessary if the temperature be less elevated; ten grammes of iodine to be used per square of 4 inches. The paper intended to receive the impression is to be covered with a coat of paste, taking care previously to have it moistened with water containing one degree of pure sulphuric acid. The proofs, after being pressed with a linen cloth, present a design of admirable purity. Those impressions, taken on paste will, however, in drying, become vaporous; but if taken on paper prepared with one or two layers of starch, the design will not only be clear, but will preserve much better. What is most extraordinary is, that many impressions may be taken from the same print without submitting it to a new preparation—the last proofs being always the clearest. Designs of various colors may thus be obtained according as the paste is more or less boiled, or according to the quantity of acid used. Proofs may also be taken on different metals by observing the following precautions. In submitting the engraving to the vapor of iodine, care should be taken to have it perfectly dry, in order that the white portions of it may become impregnated. In this case it should be exposed but a few minutes to the vapor. Let it be afterwards applied, without wetting it, to a plate of silver, and then placed under a press; at the end of five or six minutes there will be a most faithful reproduction of the original. By afterwards exposing the plate to the vapor of mercury, a proof similar to that of a daguerreotype is obtained.

Soundings Obtained at Sea.

Professor Bache, writes to the National Intelligencer as follows:

The following interesting information is from a letter addressed to me by Lieut. John R. Goldsborough, U. S. Navy, formerly assistant in the Coast Survey: it is dated "U. S. ship Saratoga, Cape town, Cape of Good Hope, December, 26, 1850."

"During our voyage from Rio de Janeiro to Saldanha Bay, Cape of Good Hope, being in latitude 28 deg. 21 min. S., and 29 deg. 17 min. W., we sounded and obtained bottom at the depth of 3,100 fathoms. Our sounding apparatus was a thirty-two pound shot, slung with wire and attached to a small line 5,000 fathoms long, and sufficiently strong to bear a weight of sixty pounds.

The soundings were as good and fair as any I have ever seen obtained—the line up and down as taut as it could be, and when attempting to haul it on board, after procuring soundings, it parted about fifty fathoms from the surface. The time occupied in sounding was one hour and nine minutes."

Correction.

The Auburn Advocate has started an article in relation to the invention of an improved printing press, which is calculated to give a wrong impression. Mr. J. L. Burdick, of this city, has invented a press, and has one in operation, on which he is *experimenting*, which he claims will do as good work when perfected, as any press now in use, and save the labor of one pressman, and be offered at a cheaper rate. He does not claim that it will do work *faster* than any other cylinder presses. When he gets his press perfected, we will give further information.—[Baptist Register, Utica.]

This is the press to which we referred on page 196. This places the matter in the proper light.

Steamboats, Railroads, and Telegraphs.

The steam engine is the pointer of social reformation; it occupies, or nearly so, the position which the printing press did about four hundred years ago. The steam engine is already on its road from the West, approaching the frontiers of Turkey; while at the same time it is starting from the East, and projecting the course from Calcutta to Hyderab, and so forward. These two will meet at no distant day at the station house at Bussorah! A belt of semi-civilization will soon bring about enlightenment on both sides. Ignorance and intolerance, and long-cherished national antipathy will be placed between two fires—those of science and peaceful and profitable intention, and will soon yield to a better state of things. It is only a question of time, and that probably a short one. But the great plan agitated in Europe is the connection of Vienna—to which there is nearly a continuous road from Ostend—through Pesth, Constantinople, Asia Minor, Persia, Beloochistan, with India—still further, with China. We are quite aware that political questions may, and most likely will arise, the prominent one being the old rivalry about the Saxon power in the East. These questions will, however, have to be settled some time or other, and we do not see any difficulty in their settlement if entered upon with a proper spirit. We already anticipated the time when either Great Britain or Russia will be announced as the head of the Board—as chairman or manager of the "Asia Minor, Euphrates, Persia and Beloochistan Railway and Steam Company." Colonel Chesnep, in his account of the Euphrates expeditions, says that science might so far remove existing impediments, and at no immoderate expense either, as to bring Bombay within eighteen days and a half of London by sea, and fourteen days and a half by a route through the Continent; whilst messages might be conveyed by the aid of the electric telegraph, when practicable, in eight days and ten hours! When we remember that Boston and New York are now within ten days from Liverpool, and that the works now going on through the isthmus connecting North and South America will bring about results which we dare not at present attempt to enumerate, we feel that mind is really triumphant over matter, and that time and space are reduced to nonentities when encountered by science; and when a railroad is built across our continent to San Francisco, and steamers running from that port to China; why, an Englishman will be enabled to leave London on the first day of one month, and be in Canton in 24 days. At present it would take him 84 days, and that a pretty quick passage to perform such a trip.

Liabilities of Railway Companies in England.

A case of considerable importance to railway companies and the trading public was recently tried at the Liverpool County Court. The question was, whether the London and Northwestern Company were responsible for the loss of a parcel of silk entrusted to them for conveyance from Liverpool to London, but which was stolen on the road. The owners of the silk were Messrs. Jeffrey & Morrish, the large firm of silk-mercers and drapers of Liverpool. They were the plaintiffs, and the London and Northwestern the defendants. The silk was the value of about £17, (\$82.45). The County Court jury did find and return a verdict for the plaintiffs; thus in the teeth of the statute, throwing the loss upon the company, and, of course, declaring that the robbery was the act of the company's servants and none other.—[Ex.]

All carriers are liable for the goods committed to their trust. If this were not so the goods might disappear, and those who owned them might whistle for remuneration.

The manufacture of salt has been commenced at the newly located town of West Columbia, on the Ohio River, in Mason County, Va. About 80 barrels are turned out daily. The town has sprung up with astonishing rapidity, having been in existence less than two years. It numbers 61 houses, a foundry, a flouring mill, a saw-mill and five stores.