Scientific American.

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Failure of the Steam and Ether Engines.

Many of our readers will remember the flattering accounts that were published in various papers, respecting the wonderful success of the combined steam and ether engines of M. Du Tremblay, of Paris; and how their application to some steamers engaged in the Mediterranean trade had, by their superior economy of fuel, enabled their proprietors to pay a dividend of forty per cent. in January 1855. A correspondent at Marseilles, in a letter to us, on page 251, Vol. 11 SCIENTIFIC AMERICAN, corrected some of the extravagant stories then in circulation, yet he also stated that the combined ether engines were a success,—that they saved 60 per cent. of power with the same fuel,—that they had been applied to several steamers, and that four more were then in the course of construction. We had expressed the opinion that we could not see how such a gain of power, and such profits, could be realized, and stated, in our remarks at the end of that correspondent's letter, that, taking all things into consideration, simple steam engines were preferable.

We learn by the last number of the *London Artizan*, that two of these steamers—*Le Jacquard* and *l'Arago*—belonging to the Franco American Company, were lately taken to one of the Graving Docks, at Southampton, for repairs, and were objects of curiosity to English engineers. The combined engines, were well made, and the whole machinery unexceptionable in construction, but *Le Jacquard*, which was first afloat, used the ether cylinders only during three or four voyages between Marseilles, and the Crimea, then gave them up, and used the steam alone; while *l'Arago*, which was launched afterwards, never used its ether cylinders at all. Thus the ether engines are a dead loss,—entirely useless, while the simple steam engines alone are now used to propel these vessels.

It is stated that the cause of the failure of ether engines arose from the difficulty in keeping the ether vapor from escaping through the stuffing boxes. The loss is stated to have been about thirty-eight and a half gallons of ether daily, valued at ninety dollars,—a loss far too great to be compensated by the reputed economy of fuel, and no wonder it was abandoned.

It is, however, still asserted that the ether cylinders economised about 60 per cent. of the power, and that, were it not for the loss by the escape of vapor, they would effect a great saving; these views are presented by a correspondent of the *Artizan*. We believe that, although there was not a particle of loss by the escape of the ether in such engines, the simple steam engine is still preferable. The economy of power said to be effected in *Le Jacquard* when the ether engines were used, is based upon the work now executed by the steam engines on board that vessel. This is not a fair comparison, for the steam cylinders employed were designed to work steam of 35 lbs. pressure, to be exhausted at the end of the stroke into the ether vaporizers; they are consequently too small to work the same amount of steam alone, to advantage. If the small steam cylinders of 64 inch bore were taken out and new ones of 80 inches bore put in, and the steam cut-off at half stroke, they would be found to work as economically with respect to a saving of fuel, as the ether and steam cylinders combined. When it is taken into consideration that beside a steam engine in each vessel, there was an ether vaporizer, resembling a large flat tubular condenser, and two ether cylinders, with all their connections, valves, and rods, the great loss sustained by this company in adopting them—now that they are abandoned—may be conjectured.

Mexican Emigration.

Since the appearance of our article on the Colonization of Mexico, we have had several letters of inquiry from young men, as to the propriety of emigrating to that country. Such letters should not be addressed to us, as we are unable to answer them. Our notice was based upon a pamphlet issued by a Mexican official, who has quite recently returned to his own country.

Bitumen—Its Uses.

This is a name employed to denote various inflammable substances found in the earth. There are a number of different kinds of it, most of which pass into one or other, from petroleum—the most fluid—to asphalt, which is sometimes too hard to be scratched with the finger nail. Extensive magazines of it are found in various parts of the world. "Elastic bitumen" is of a brown color, and erases pencil marks like india rubber, hence it is called mineral caoutchouc. "Compact bitumen," or asphalt, is extensively disseminated, and is found in great abundance in some of the West India Islands, and New Brunswick, N. A. It is black, and of a hard resinous appearance. The Pitch Lake of Trinidad yields bitumen in all conditions. Petroleum is fluid bitumen; it is of a dark color, and oozes from certain rocks and crevices in the earth, and becomes solid by exposure to the atmosphere. Naphtha, or mineral oil is another variety of it, which becomes petroleum by exposure to the air. Petroleum is common in various parts of the United States, such as at Kenawha, Va., Scottsville, Ky., Oil Creek, Pa., Liverpool, O., Hinsdale, N. Y., and it was at one time collected by the Seneca Indians and sold in the market as a lotion for rheumatic affections and bruizes. It is in the form of petroleum that bitumen is most common in our country, and but very little use is made of it, owing, we suppose, to its pungent smell. In Burmah it is used for fuel and illumination; and mixed with soap, is said to form an excellent remedy for many cutaneous diseases, a protective against the prickly-heat of warm countries: and was supposed, at one time, to be a remedy against cholera.

It is a remarkable fact in the history of the useful arts, that asphalt, which was once so generally employed as a durable cement, should have almost fallen into disuse for thousands of years. It resists the passage of air and moisture, and has therefore a most valuable quality for lining cisterns and the interior of deep cellars. Bricks or stones coated with hot bitumen resist moisture, and are rendered proof against decay by changes of weather. Possessing these valuable characteristics, it is wonderful that it is so little used. Some attempts have been made in this city to make a concrete pavement of it, such as at the building on the corner of Beekman and Cliff streets, but for this purpose it is evidently not equal to stone flags, because it has had to be relaid, and now huge cracks are again seen in different parts of it. On the other hand some beautiful mosaic asphalt pavement, has been laid down in the streets of Paris, and is said to be perfectly successful. All the volatile oil and water should be expelled from bitumen by boiling before it is applied as a cement, or it will not resist the changes of heat and cold well. Many failures in the employment of pitch and bitumen for cement have been caused by neglecting to boil it thoroughly. It is our opinion that iron pipes, coated inside and out with hot bitumen, especially the elastic kind, will prevent incrustation inside, and render them very durable. And may not this substance be so manipulated, that it can become a substitute for india rubber and gutta percha? These vegetable resin gums are becoming dearer year after year, and are only obtained in limited quantities and at considerable expense. On the other hand bitumen is found in exhaustless quantities, and is very cheap. Can it not, by some chemical process, be rendered as elastic as these gum resins, and as capable of vulcanization. Here is a field, we think, of great extent for chemical experiment, to which we invite attention.

Commissioner's Report for 1855.

We are indebted to the Hon. Chas. Mason, Commissioner of Patents for copies of his Annual Report for 1855. The work is published in two volumes of equal size, and contains the claims of all patents granted for that year, together with outline diagrams of their prominent features of novelty. The general plan and arrangement of the Report is excellent and the execution good.

Great Exhibition of the American Institute at the Crystal Palace, New York.

FIFTH WEEK.

The Fair continues to attract thousands of visitors from all parts of the country. The day fixed for the closing was October 25, but we presume the time will be extended until the public attendance materially diminishes.

During the past week the Annual Cattle Show of the American Institute has taken place, the locality selected being Hamilton Square, a large open lot in the upper part of the city. The New York *Tribune* intimates that the award of prizes was influenced by bribery. The judges give a list of the successful competitors; but no statement of the reasons for their decisions is made public. This Cattle Show appears to have been attended with no special result.

We continue our usual reports of the novelties on exhibition. Besides those annexed, it will be observed that our illustrations this week, are nearly all taken from objects at the Palace. Another noticeable fact is, that nearly all of the most prominent objects, in the mechanical line, in the Exhibition, have been illustrated and described in the SCIENTIFIC AMERICAN.

Printed Muslins.

The Dunnell Manufacturing Company at Providence, R. I., exhibits a case of well-executed calicoes, and the Manchester (N. H.) Print Works display a case of fine muslin de laines and calicoes; but the Pacific Mills, Lawrence, Mass., make the greatest show of printed goods. Fine lawn muslins, manufactured at the Portsmouth Steam Mills pleased us both on account of the quality of goods, and the elegance of their design; the checked organdis, calicoes, and delaines exbibited by this company give evidence of good taste and the variety of work they execute. There is no branch of art connected with manufactures, which embrace more varied skill, knowledge, and taste, than calico printing. The bleaching, dying, and color-making departments, demand great chemical experience; the patterns require great taste in designing, and skill in engraving, and the machinery for executing the various kinds of work, is complex and ingenious. It affords us pleasure to be able to pay a compliment to the printed goods displayed at this Fair. They undoubtedly show a great improvement in design and coloring in comparison with the flashy vulgar daubs that were fashionable a few years since. It is our opinion, that the public taste has not been improved by the abundance of coarse mixed goods, half cotton half wool, now so common; a finer quality of fabric, all cotton, is not only more beautiful, but more durable. The superior qualities of calicoes, manufactured in France, Belgium, and England, are beautiful fabrics; we wish that some of our manufacturing and printing companies would pluck up spirit enough to produce as good fine calicoes as the foreign, before the expiration of another year.

Spring Beds.

Messrs. Lippencott & Co., 1180 Broadway, N. Y., exhibit Wright's Patent Sectional Spring Bed. The elasticity is obtained by the employment of a series of spiral springs, composed of strong wire, each spring having a round seat and a head of wood. These springs form a cheap, durable, and comfortable bed. For engraving and description see SCIENTIFIC AMERICAN, Vol. 11, page 340.

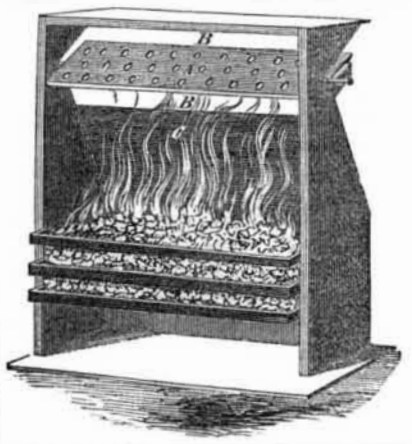
Wagstaff & Co., 499 Broadway, exhibit specimens of Howe's patent spring beds. The springs are single boards, shaped somewhat like one half of an elliptical carriage spring. They are stretched across the bedstead. Cheap and simple.

Steel Pens.

The great seat of the steel pen manufacture is Birmingham, Eng.; there the art originated, and there it is still carried on to an immense extent. This peculiar manufacture, after repeated efforts, may be said to have attained to success among us. The American Steel Pen Manufacturing Co., of New York, exhibits a case of excellent pens in the South Gallery. Each pen has a stamped medalion likeness of Washington on it, for which a patent was obtained, as a design, on the 15th of April last. We have tried these pens, and can give them a good recommendation; still, we have used some English pens which were better. Our steel pen manufacturers will, no doubt, soon produce pens unsurpassed, if not superior to the best Gillott.

Grate Damper.

Messrs. Jacob Cohen & Co., exhibit in practical operation, one of their improved grate dampers, illustrated in the annexed cut.



A is the damper, which, it will be seen, swings on pivots, and is perforated with a number of small holes. With the exception of the damper, the grate is constructed in the ordinary manner. In lighting the fire, when a strong draft is necessary, the damper A is opened. But after the fire begins to burn well, the damper is turned so as to close the openings into the chimney, B, and present a reflecting surface to the caloric, of similar angle to the back piece, C. When closed, the damper, A, throws out all the heat of the fire into the apartment, but the gaseous products of combustion are drawn off through the perforations, and pass up the chimney.—We are told that this damper effects a saving of fifty per cent. in fuel, and gives the highest satisfaction wherever used.—Price $3 and upward, according to size. Further information can be had at 407 Broadway, N. Y., or at the Palace.

Improved Grooving Plane.

Mr. John P. Robinson, of Matteawan, Dutchess Co. N. Y., exhibits his patent Grooving Plane, which is shown by the accompanying engraving.

Fig. 1

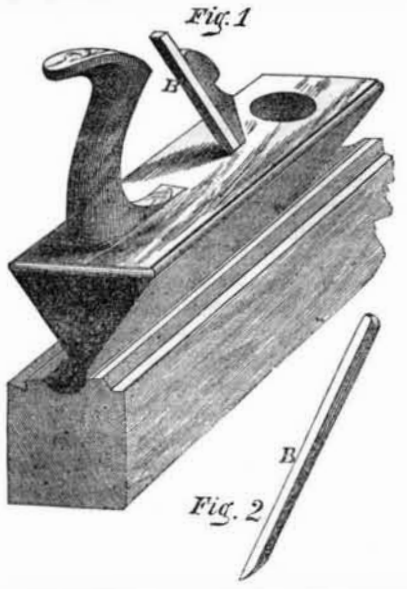


Fig. 2

The plane stock, A, it will be seen, is made of triangular shape, and the cutting tool, B, which is quite narrow, projects at the apex of the angle. The plane is moved like the ordinary tool.

Every variety of groove, square, angular, or round, of the same dimensions or tapering in form at the pleasure of the workman, can be cut, with the utmost facility and rapidity. No circle is required to be struck, and a saving of 50 per cent. in time is gained. The plane is chiefly intended for the use of pattern makers in working out core boxes. It is in use in the pattern shops of the Novelty Works, in this city, at Starbuck's, Troy, &c., where it gives the highest satisfaction. Price $2·50. For further information address the inventor as above. Patented Dec. 18th, 1855.

Woolen Cloths.

Marked improvements have been made in the manufacture of woolen cloths during the past few years: even the satinets are more like broadcloth than those so common a few