Recent Foreign Inventions.

PRINTING ON METALLIC PLATES—Messrs. Adams and Gee, printers, London, have found that metallic plates of the thickness of ordinary sheet tin may be printed upon with the usual printing type, if the plates be first coated with a composition, the secret of the inventor. If sheets thus printed be afterwards subjected to a certain japanning process, an even lustrous surface is produced, which cannot be acted upon except by a sha p steel instrument. [A specimen of metal print is to be seen at the office of this journal.] It requires no great consideration to discover that this invention is of a very important character. It may be applied in any instance where printed matter is either to be exhibited, or even handled, for any length of time; and may be most advantageously substituted for the hitherto mounted paper lessons. However soiled a copy of the metal print may become by exposure to dust of every kind, it can be cleaned and washed, even without being taken off. The various tickets and signatures to be placed on covers, casks, or other parcels, can now be affixed in the same way.—[London Mining Journal.

SOAP—W. Gossage, chemist, of Lancaster, England, has obtained a patent for making soaps as follows: First, causing solution of soluble glass, or solution of silicate of soda, to be combined with soap produced by the union of tallow, resin, oil, or other such substances with soda, either by the method of working known to soap manufacturers as "close boiling without separation of lyes," or by the method of working known as the "cold process." Second, the manufacture of compound soap by causing resin, or such acid compounds as may be obtained from fats or oils by well-known means, to become combined with a solution of soluble glass, or with solution of silicate of soda, without requiring that resin or such compounds shall be previously in the state of combination with alkali. Third, the manufacture of compound soap by causing resin to become combined with soda, and adding to the product such a proportion of wheaten flour, or other farinaceous substance, or of some finely-divided argillaceous or silicious substance (such as China clay or ground flints) as will be sufficient to give such a degree of firmness to the compound soap produced as to render it suitable to be used as a hard soap for ordinary detergent purposes.

J. F. Anger, of London, has secured a patent for an alloy of metal which he describes as follows:—

"I melt in a crucible," says the inventor, "100 parts of good copper, and while in a perfect state of fusion, I add 17 parts of zinc, 6 parts of magnesite, or substance of a like nature, though perhaps differing in name, 3·6 parts of ammonia or salts of ammonia, 1·8 parts of quick lime or other calx, and 9 parts of crude tartar. The crucible is then covered, and the whole allowed to come to a complete state of fusion." The metal resulting from the above combination is said to resemble gold in several of its properties.

The Right Man for the Right Place.

It is related that a department of the French government, being desirous of making an extensive series of calculations connected with the decimal system, had formulas so prepared that large columns of addition, multiplication, and division could be worked to their results by persons whose knowledge was insufficient to comprehend the bearing of these processes on the general plan, and who had in fact but little more education than was necessary to accomplish their respective results. This saved the time of a higher class of mathematicians, who prepared these formulas, and accomplished thus each his portion of the plan conceived by the master spirit, who had struck out the whole. The immediate saving of expense was very great.

But the saving of expense was not the only advantage. The work was found to be better and more accurately performe . Those whose minds were at home in the higher processes of mathematics were often impatient of the details of long simple sums, and not fixing their minds exclusively upon them, frequently made mistakes, which persons who were doing the best they could would never have fallen into.

The principle involved in all this is one of the utmost importance in other things; indeed, all departments of the political economy of every-day life, in that each man will work best at the highest employment of which he is thoroughly capable—that which will call for the full stretch of his powers. It is a great mistake to engage a man merely because he can do it easily, and taking it for granted that he will be more likely to do it well. On the contrary, he will be less likely, as feeling no interest in it. It may be too easy.—[Philadelphia Ledger.

[There is a vast amount of philosophy in the above remarks.

Expanding Flying Bridge.

The London *Artizan* gives an account of a bridge, the model of which was recently exhibited by M. Lavancy, before the meeting of the Institute of Civil Engineers. It had been tried at Paris by being fixed upon a boat in the canal for permitting the passage of the troops. The boat yielded considerably to the weight of the men brought upon it, but the bridge remained stiff, and the commanding officer had reported well of its properties. The principle was that of a number of strips of iron or wood pinned together transversely at such points, so that they should form a series of equilateral parallelograms, the extension being obtained by the motion upon the connecting pins, on the principle of what was called "lazy tongs." A bridge of this description could be made very light for any ordinary span, and be conveyed upon a boat to be projected to both banks of a stream; be used for the center, or any portion of a long floating bridge of boats; be carried upon a pair of wheels with a regiment, or used for numerous civil purposes.

Preparation of Gun Cotton for Collodion.

M. Delahaye has communicated to the *Societe Francais de Photographie* a method he employs for obtaining invariably gun cotton for collodion, which is perfectly soluble. He immerses the cotton immediately, on its being removed from the mixture of nitrate of potash and sul phuric acid, in monohydrated nitric acid of 48 degrees. The immersion must be as complete as rapid, as the cotton cannot remain in the nitric acid without undergoing some modification; it must be instantly removed and thrown into the washing trough. In this operation M. Delahaye prefers distilled water, in order to avoid the saline substances contained in ordinary water, which always interfere with the collodion.

M. Delahaye bases his process upon this principle: that it is impossible, on a large scale, to make a gun cotton which shall be perfectly soluble by immersing the cotton in the usual manner, as the whole of it cannot fix such an amount of nitric acid as to form the compound C.24 H.17 O.17, 5 N.O.5, the formula necessary to give a perfect collodion.

Tunnels.

The United States has 67 tunnels on canals and railways, the longest of which is about 1 mile.

England has 48 canal tunnels of an aggregate length of 40 miles, the longest being over 3 miles, on the Huddersfield Canal. She has also 79 railway tunnels, 49 of which amount to 33 miles, the longest being 3 miles.

The longest tunnel of which record is one in the district of Schemnitz, in Hungary. Its length is variously stated at from 10 1-2 to 11 1-2 miles. It is used to drain an extensive series of mines, and also for the transportation of ore on railway cars.

In France there are 56 tunnels on railways, and 8 on canals, 36 of which are an aggregate length of 45·4 miles. The largest of small size is 7·45 miles, and that of large dimensions 3·5 miles. The Rouen and Havre road has 8 tun nels; Paris and Lyons also 8.

On the German railways are 10 tunnels.

In Sardinia there is a tunnel 2 miles long, through Mt. Giovi, on the Genoa and Turin railway. On this road, in 25 miles through the Apennines, are 9 tunnels.

Medals to Scientific Men.

The Council of the Royal Society, London, has awarded the Copley Medal this year to M. Leon Foucault, for his various researches in Experimental Physics; and the two Royal Medals to Mr. John Russell Hind, for his discovery of ten Planetoids, the computation of their orbits, and various other astronomical discoveries; and to J. O. Westwood, Esq., President of the Entomological Society, for his various Monographs and papers on Entomology.

Who was the Inventor of Steam Locomotives?

MESSRS. EDITORS—I begleave to take exception to the following extract from the communication signed "Agathodemon," that appeared in the SCIENTIFIC AMERICAN of Nov. 10, 1855: "And again, but slightly turning the ever-changing kaleidescope, we see a Trevithick and a Vivian steaming their way o'er the iron-ruled earth," which, I suppose, means that the world is indebted to Trevithick and and Vivian for the invention of the locomotive. To support his position, "Agathodemon" will no doubt quote the great mass of English writers on the steam engine.

The editor of the first American edition of the second English edition of "Nicholas Wood's Treatise on Railroads," published by Carey & Lea, Philadelphia, 1832, at page 122 comments as follows upon Trevithick and Vivian's claim to the locomotive: "It is scarcely necessary to mention to the American reader, that the claim respecting the invention of high pressure steam engines, and of locomotive engines in Great Britain is entirely without foundation. The application of steam in this manner and to these purposes had, indeed, been contemplated, but not reduced to practice. Oliver Evans, of Philadelphia, commenced his experiments on high-pressure steam in Philadelphia in 1784. On the 21st of May, 1787, he obtained a patent for his engines on this plan, one of which was erected in Philadelphia in 1801. The patent, in addition, particularly describes the application of his engine to wheel carriages, which could be used even on common roads. A curious machine of the latter description was constructed by him for the corporation of Philadelphia in 1804. It was named *Oructer Amphibolos*. As no railroad then existed in this country, it traversed the streets of the city until it arrived at the Schulykill, a distance of one mile and a half; it was then placed on board of a boat, to which a wheel was attached at the stern, and it propelled this vessel to the mouth of the river, and thence to the Delaware front of the city, a distance of sixteen miles. It was subsequently employed as a dredging machine, being the *first application of steam* to this important, and now common purpose. In 1794–5 Mr. Evans sent Mr. Joseph S. Sampson to England with the drawings and specification of his steam engine, &c. They were exhibited to numerous engineers, and his plans were copied by Messrs. Vivian and Trevithick without any acknowledgment! The latter persons acquired fame and fortune, while the ingenious but eccentric Evans died poor, neglected, and broken-hearted.

Fitch, Fulton, and Evans exhibit a singular coincidence in their history. Posterity, at least, will render them the tardy recompense of justice.

America may, therefore, claim the invention of locomotive engines with even more propriety than the application of steam to navigation—inventions which are destined to revolutionize the commerce and defence of nations. See the "Young Steam Engineer's Guide," by O. Evans, Philadelphia, article on steam engine, American edition of "Ree's Cyclopædia," and also the "Edinburgh Encyclopædia," "Renwick on the Steam Engine, &c., American edition." In addition to these authorities, Olinthus Gregory, member of the Institution of Civil Engineers, and Professor of Mathematics in the Royal Military Academy, in his work entitled "Mathematics for Practical Men," London, 1833, at page 359, speaks of the high-pressure steam engine as "constructed upon a principle in which simplicity and power are blended, as far as possible, and in which the parts are arranged in such a manner as seemed best calculated to facilitate the comprehension of these machines to such as have not already had an opportunity of examining them carefully. The construction is due to Oliver Evans." And yet, strange to say, at page 366 of the same work, he states that the locomotive was invented by Mr. Trevithick, of Cornwall, forgetting that the locomotive is constructed upon identically the same principle as the high-pressure steam engine, which was brought into being through the efforts of Oliver Evans to obtain a motive power for his steam carriage. Dr. Lardner, more consistent, though far less scrupulous than Professor Gregory, claims both the high-pressure steam engine and locomotive for Trevithick. The greatest concession by English authority to the claims of America to the locomotive, appears in the *Mechanic's Magazine*, published at 115 Fleet street, London, in the number dated Sept. 25th, 1830, under the heading "The first projector of steam traveling," appears the following: "At a time when traveling by steam is coming so much in vogue, and there are so many rival pretensions to the honor of devising and promoting this new mode of conveyance, we think we shall be rendering a service to the cause of truth, and doing justice to the memory of a most ingenious and worthy individual by re-publishing the following interesting piece of autobiography. It will be seen that there is but little now accomplishing in this branch of improvement which was not half a century ago anticipated, and even practically accomplished by Oliver Evans, an American citizen." The editor then gives almost the entire exposition made by Oliver Evans of the difficulties attending the introduction of the high-pressure engine and steam carriage, the prejudices he was forced to combat, &c., &c., all of which is, no doubt, familiar to you, Messrs. Editors.

I will close this communication with remarking that among some of our citizens, holding a high rank for general intelligence, the most deplorable ignorance exists with respect to the history of the steam engine and locomotive. About four years ago, a gentleman *eminent* for his legal acquirements, while presiding at a railroad convention, spoke of Robert Fulton "as the great father of steam machinery." Very many respectable people believe Fulton to be all this gentleman represented him, and that to him is due the locomotive, steamboat, &c., and look upon those as mere envious detractors who advance the claims of Fitch, Rumsey, and others. These persons would, by giving credit to the true authors of great inventions, not only be rendering a service to the cause of truth, but the claims of semi-barbarous America, (in the eyes of some Europeans,) to the invention of the locomotive in the land that gave birth to those great adjuncts of civilization—the steamship and the magnetic telegraph. JUSTICE.

Philadelphia, 1855.

[In 1784 Wm. Murdoch took up the idea of a steam carriage suggested by James Watt, and built a Liliputian working locomotive, which he run for amusement on the highway; this small locomotive is still in existence. D. K. Clarke, in his work on railroad engineering, gives Trevithick the credit of the introduction of the steam engine on *railways* in 1804, and no doubt this is correct; he was also the inventor of blast in the chimney. Europeans have not denied the just claims of Oliver Evans. On page 321 Herbert's History of the Steam Engine, published in London in 1832, we find the following: "The party who first attempted to put them (steam carriages) in practice by mechanical arrangement of his own is entitled to the reputation of *the inventor*. Mr. Oliver Evans, of America, appears to us to be the person to whom this honor is due."

Life at the Bottom of the Deep Sea.

The U. S. ship *Vincennes*, of the North Pacific Expedition, in its recent exploration off the coast of Kamschatka, obtained bottom at a depth of 1700 fathoms with the line, and took up some very minute specimens of sea infusoria on it. These, when submitted to the microscope, appeared to have been living but a few moments before, and were supposed to have died when brought near the surface, and relieved from the immense pressure of the superincumbent water. These infusoria give evidence that they were designed to live under circumstances which, hitherto, have been supposed fatal to all animal organisms. The manner these infusoria were taken was as follows: Bands of four goose quills, open at both extremities, were inserted in the end of the iron rod which pierces the bottom; a small valve permitted the water to flow through them a they went down, but closed as they came up. These quills pierced the bottom, and were filled with the adhesive fine clay of the ocean bottom containing the minute organisms.