MISCELLANEOUS.

Inventors—The Scientific American.

The objects of mechanical inventions are to furnish the comforts and conveniences of life, and this object has been accomplished successfully in most of the departments of mechanism. Inventors have done much, but it is their duty to do more; we are far from having approached that perfection which is attainable; the field for improvement is a great field, it is yet unbounded, and we have no doubt but inventors will yet change nearly the whole face of the mechanical world. They are a class of men whose perseverence and energy are alike notorious; their business is like digging for gold, and their work like that of the miners—some valuable improvements being the result of accidental discovery, but a far greater number requiring a great ammount of thought and experiment. before they are brought before the public Bacon says—"Antiquity attributed divine honors to inventors, but conferred only heroic honors upon those who deserve well in civil affairs, for the benefits of inventions extend to all mankind, but civil benefits only to particular countries; and these civil benefits seldom descend to more than a few ages—whereas inventions are perpetuated through all time." And Dr. Herschel remarks, "that any accession to our knowledge of nature is seen sooner or later, to make itself felt in some practical application. And a benefit conferred on science by the casual observation or shrewd remark of even an unscientific or illiterate person infallibly repays itself with interest though in a way that might never at first have been contemplated."

He should be deemed as great a benefactor who brings into existence an article or machine which will make us wiser or happier, as he who confers a benefit upon the community in any other way. But inventors owe a duty to themselves, while they benefit the world, for many valuable improvements which have cost them hours of toilsome mental and perhaps physical labor, have been appropriated to public use, and the inventor left without the least remuneration for his services. We believe "the laborer is worthy of his hire," —and he is not the less entitled to it who labors for the general good in the field of invention, instead of laboring for individual advantage. Our laws have given to inventors an opportunity of protecting themselves and obtaining a remuneration for their services, and they should do it; but to secure their rights they must seek to protect them in season—as soon as their inventions are complete, or even as soon as valuable ideas are conceived, is the time to claim their protection; we shall render inventors all the aid in our power in perfecting their inventions by imparting to them the requisite information, and in protecting them from piracy. The increased circulation of the Scientific American renders more attention to this department of our business indispensable, but notwithstanding this, we are still fully prepared to carefully examine every case that comes under our superintendence The number of examinations of new inventions has also increased so as to require an additional examining force in order to attend promptly to all the numerous cases under our charge. No case is, however, permitted to leave the office until it has passed the ordeal of our criticism. This is perhaps one of the principal reasons of our great success in obtaining Letters Patents for new inventions We sometimes fail, but never for want of that care with which business of this kind must be transacted. This extensive Patent Office business enables us to furnish the readers of the Scientific American with a great amount of valuable information.

Our readers are aware that we labor for their interests, and they in turn labor for us A long list of subscribers is frequently forwarded to us, with the assurance of approbation and many thanks for the Scientific American, which weekly finds its way to their homes and firesides, loaded with new improvements, new illustrations, and suggestions, in short, all that is valuable collected from our immense resources, the whole scrutinized, criticised, and prepared for practical application. We have every inducement to prosecute our enterprize with energy, to make the Scientific American the repository of science and truth, and a journal of correct information in regard to the mechanical news of the day—a publication which dare speak out and expose humbugs, inconsistencies, and false theories, of which the present age is remarkable, as well as remarkable for its great improvements and discoveries.

Recent Foreign Inventions.

Hat to Fit every Head.—Andrew Fulton, of Glasgow, patentee.—This improvement consists in adapting to hats, helmets. and other coverings for the head, a flexible padded lining which adapts itself readily to the exact contour of the head of the wearer, and thus secures a good fit, while it also ensures all the ease and comfort derivable from the wearing of an easy cap. The lining is held to the sides of the head by gentle springs and does not come so close to the interior, but that a space is left at certain parts for the admission of air for ventilation.—[London Mechanics Magazine.

[We commend this subject to the attention of our hatters, it is an invention of a most desirable character, and the hatter who first introduces such an improvement among us should, and no doubt would, receive a very liberal patronage.

Improved Process for Refining Gold.—A patent has been recently taken out by Mr. Petrie, of London, for an improvement in what is termed the "parting" process by refiners, and which is said to promise very important results. The refiners alloy, consisting of one part impure gold and three parts silver, granulated in the usual manner, is placed in a number of small cells or cylinders, placed upright on an incline, between two parallel rails, which may, if desired, form flues, whereby the cells are warmed while in action—Hot nitric acid is kept continually dropping from a tap into the highest cell, and having passed through the mass of alloy, and through a false bottom, ascends on the other side of a diaphragm, and overflows into the next cell; from thence it flows into all the cells in succession. From time to time the upper cell is removed, and another, containing fresh alloy, is placed at the bottom of the series, the whole being moved up the incline. By the time the nitric acid reaches the granular surfaces, and as each cell is raised it comes constantly in contact with more energetic acid, until, on arriving at the top, and before removal, the whole is dissolved, and the gold left pure in a spongy state. There is also an arrangement for condensing the nitrous fumes, which are conducted by stoneware tubes through an apparatus called a gas collector into an oxidator. They are afterwards drawn off by pneumatic suction, are condensed into fresh strong nitric acid, which flows out in a continuous stream for further condensation, or for immediate use.

Artificial Blocks for Hydraulic Purposes.—The material called hydraulic lime, generally used for engineers work under water, is a silicate of lime, in a somewhat nascent state. A discovery has been made by M. Berard, of Paris, of a most valuable process for manufacturing blocks for hydraulic purposes, and particularly submarine ones.—The commonest argil is employed by the inventor, which is a silicate, with a base of alumina; a block of any required dimensions is, therefore, constructed of unburnt bricks, taken from the field and stratified in layers, with the fuel on some piles of bricks forming a grating. An outer casing of unburnt bricks a short distance all round the block is filled with charcoal dust, the fire is placed at the base of the block, it soon rises, and heats the mass to a temperature which will soften argil, the contraction causes sinkings and vacancies, which must be filled up as they occur. When sufficiently burnt, the outer casings, which will then be burnt bricks, may be taken down, and the block removed to its destination. It will be seen that blocks may be made of any shape or size, having no limit but the possibility of carriage; and, when the operation is properly conducted, the solidity of the substance is remarkable; it requires great force to break them, iron instruments will not scratch the surface, steel scarcely mark them; and as concentrated nitric or sulphuric acid, or the most energetic alkaline solutions will not have the least effect on them, they will be indestructible under the action of sea or any other water.

Desilverization of Lead by Zinc.—Dr. Karsten, a German chemist, several years ago made some experiments with lead and zinc, and found that when a mixture of these metals was allowed to cool very gradually, lead with a minute trace of zinc was found at the bottom of the crucible, and zinc with a small amount of silver at the top. If the lead contained silver, it was almost entirely transferred to the zinc. Hearing that in Carmarthen silver is withdrawn from lead by means of zinc, he resumed his examination of the subject.

He found that silver may be entirely separated from lead by zinc, and that the following method gives the best results:—A tube of cast-iron 1½ inch in diameter is fitted to the crucible, so that the desilverized lead may be let off from the bottom. One end of this tube, dipping nearly to the bottom of the crucible, is furnished with a slide moving in grooves at the edge of the crucible, so that it can be shut when required by means of a rod. In this way the stream of melted lead may be regulated, and the fall of level gradual and uniform. In the crucible were put 25 cwts. of lead, containing seven-eighths of an ounce of silver to the cwt, and 4 cwt. of zinc. The whole was then fused, and stirred together for one hour at a bright red heat. This large amount of zinc was used because it was intended to attempt a process of concentration in which the same quantity of zinc should serve to desilverize subsequent charges of lead. After the stirring apparatus was withdrawn, and the melted mass kept for four hours at a red heat, the lead, perfectly freed from silver, was drawn off until only about 6 cwts. of metal remained in the crucible. To this residue a second 25 cwt. of zinc were likewise added, for reasons given below. A fourth, fifth, and sixth charge of lead were introduced and treated in like manner, 2 cwt. of zinc having again been added to the fourth charge. The lead drawn off, in each case, was entirely freed from silver.—But when a seventh charge was introduced without an addition of zinc, the lead, when drawn off, still retained silver to an extent of ⅛ths of an ounce to the cwt. The desilverizing of 150 cwt. of lead in this manner requires 8 cwt. or 5⅓ per cent. of zinc, a quantity differing widely from that indicated by former experiments—namely, 1½ per cent.

An addition of 1½ per cent. of zinc is quite sufficient for the perfect desilverization of lead when only one charge is worked. Thus 25 cwt. of lead may very well be freed from silver 42 lbs. of zinc, but the difficulty of separating the small quantity of argentiferous metal from the desilverized zinc is so great that this plan is not practicable. On the other hand, there is a certain limit to the size of the crucible, which cannot be exceeded, and recourse must, therefore, be had, to a process of concentration. The silver is separated from the lead very imperfectly, if twice or thrice as much zinc as is required for one charge of lead is added at once, with the view of making it serve for several charges. It is likewise imperfect when, on introducing into the crucible the several charges of lead, the 1½ per cent. needed for desilvering the lead is added with each charge. It, therefore, with reference to the above example, the first melting is made with 25 cwt. of lead, and 42 lbs. of zinc, the second, third, fourth, &c., charges (added to the residue in the crucible) must also consist of 25 cwt. of lead and 42 lbs. of zinc. The cause of the unfavorable result of the process attempted by the author lies in the necessity for stirring the melted metals The oxidation of the lead and zinc at the surface of the mass is very disadvantageous.

The argentiferous zinc obtained by this process always retains a portion of lead sufficient for the refining of the silver after the zinc has been separated from the mixture; and the alloy of silver and lead remains in the distillation muffle. If the per centage of lead is not sufficient for this purpose, more must be added, in order that in the distillation vessels the silver may be accumulated in the lead, which is afterwards cupelled. The distillation does not present any difficulties when suitable muffles are employed. The author had muffles constructed which, except a slit ⅛ of an inch in diameter, were quite closed for a height of 4 inches from the bottom. The slit could be closed and re-opened in the usual manner, when the distillation being completed, it was necessary to draw off the remainining argentiferous lead. Such a muffle was charged for each distillation with 1 cwt. of the metallic alloy of zinc, lead, and silver. The product of four distillations of a mixture which, according to the most careful assays, contained 47¼ ozs. of silver, was 242 lbs. of lead and 44 9-44 of silver. The loss of silver amounted, therefore, to 3 1-22 oz.; this is owing chiefly to the scattering of small globules in the muffle, and it partly remains in the scum, from which it may be again recovered by subsequent distillations, washings, &c.

To Coat Iron with Tin.—The tin is first melted, with a stratum of chloride of zinc and sal ammoniac on its surface, and the iron or metal to be coated is immersed in the molten metal until sufficiently covered.

Great Industrial Railroad Excursion.

One of the greatest and most interesting industrial entertainments came off on Thur day, the 16th inst., which we have for a long time noticed. It was given by the distinguished firm of Rogers, Ketchum, & Grosvenor, of Patterson, N. J., to their workmen. This firm is the most extensive locomotive engine builders in the United States, and employ 800 hands steadily in the construction of engines, &c. There appears to be a kindly good feeling existing between themselves and their workmen, which should especially characterise all such manufacturing establishments. At the time of the said excursion, the numerous intelligent and hardy machinists, engineers, &c., had just completed a large and beautiful locomotive engine, one of the best upon the continent; it was got up with despatch, and in a manner so highly satisfactory, that the proprietors, upon its completion, proposed that the builders in person should make a practical test of its power and operation; nine cars were accordingly selected, to which the new engine was to be applied, and Mr. Hobbs, superintendent of the Union Road, placed in charge. The arrangements of the day were planned and carried out by the workmen of the company, and they were carried out with decided satisfaction. The procession repaired at an early hour to Congress Hall, the boarding place of Mr. Rogers, who was most enthusiastically greeted as the "Pioneer of New Jersey, in the locomotive line, and from thence to Jersey City."

The whole proceedings of the day evinced the most spirited, social and enthusiastic feeling which New Jersey perhaps ever witnessed. It was a great day for the mechanics of Paterson. It does us good to hear of a festival of this kind, as it speaks the feelings of the employers and the employed toward each other. Such generous noble acts are not lost to the company, they are duly appreciated, and will be returned four fold by diligence, enterprize, and confidence. Holidays of this kind might with advantage be much more frequent.

The locomotive first above referred to, was manufactured for the Camden and Amboy Railroad Company. The locomotive engine works of Rogers, Ketcham, & Grosvenor manufacture on an average two locomotive engines, and from twenty to twenty-five cars for passengers per week. This is an immense business, unequalled by any firm in the United States.

Notice to Engineers.

On our advertising page will be found an advertisement of an engineer who wants a situation. We know him to be a man of experience, well acquainted with marine engines, knows how to plan and construct them. For a long time he has superintended the construction of marine engines, especially those for propellers, respecting which his knowledge and experience are very extensive.

The New York and Erie canal enlargement is now to go on until completed—this canal has been in a half hanged state for ten years, owing to the machinations of interested parties