

Science and Art.

Another New Metal.

A recent number of the *Siecle* (Paris,) under the head of "Transmutation," publishes an article upon the new discovery of turning paving stones into a substitute for silver, by M. Plee. He starts from the necessity of producing an equilibrium between the two metals, gold and silver, and says that such an equilibrium, wanting totally at the present moment, since the influx of gold from California and Australia, is of the utmost importance for trade; and remarks that the advanced state of science will assuredly not leave us in the impossibility of supplying the void left by the insufficient yield of silver; and that we shall end either by extracting silver elsewhere than from the silver mines, or by discovering new metals to take its place. "There are, for instance," he observes "new metals noble and beautiful as the old ones, hitherto held to be not reducible, which are now perfectly reduced, and which, for the fabrication of every object till now fabricated in silver, would be a complete equivalent for it, and thus allow it to be exclusively consecrated to the monetary circulation." M. Plee follows up his assertion by the ensuing details:—"Take a thick lump of quartzose silice, reduce it to powder, mix this silice, when pulverized, with a sufficient quantity of alkali, fuse it, and you will obtain a soluble glass that you can dissolve so as to precipitate the silice it contains in the shape of a jelly. You then take this last product and have it filtered, then re-dissolved a second time in a cyanurated lixivium, so as to produce a compound cyanuret.—This operation will give you a fluid from which to extract the metal called silicium. Plunge into this liquid your utensils, whether of copper, zinc, tin, or lead, bring the electric process to bear upon them properly, and they will instantly be covered with the adherent plating of silicium, which is white as silver, and attains to the highest degree of luster under the polisher's hand." M. Charles Junot is the inventor of this new metal, and he has, according to the account given by M. Plee, spent years in indefatigable research; nor does the silicium appear to be the only substitute for silver he has discovered. Two or three others are equally mentioned by M. Plee. The silicium, however, seems to be so difficult to distinguish from silver, that a learned French chemist has already presented to the Academy of Sciences a report on the necessity of devising fresh methods of analysis, in order to distinguish between the two metals. "Other chemists," he adds, "have other processes for the reduction of silicium, and all are setting to work at it. It is, therefore, to be expected that a complete transmutation will be effected. We shall from clay draw aluminum; from freestone, silice, and from sand, we shall extract silicium; these metals, given up to industry and fabrication, may replace silver for domestic purposes, and silver be thus entirely restored to monetary circulation."

The basis of silicon has been known to be a metal for a long time, but we have never heard of it being obtained pure before. It may therefore be called a new metal, with great propriety. We are of opinion that it may yet be obtained at a lower cost than silver, but this will all depend on the discovery of improved processes for its cheap reduction from its ore, which is one of the most plentiful on our globe.

Chemical Technology.

H. Bailliere, No. 290 Broadway, this city, has just issued Vol. 1 of "Chemistry Applied to the Arts and Manufactures," by Dr. E. Ronalds and Dr. Thomas Richardson.

We have much pleasure in bringing before the notice of the public this new edition of the first volume of Knapp's Chemistry. As the authors say in their preface: "during the few years which have elapsed since the publication of the first volume of our edition of Knapp, so rapid has been the growth, and so great the development of those branches of manufacture more intimately connected with fuel, that, in preparing a second edition, we have found it necessary to re-write much of the original so that it may with far greater propriety be called a new work rather than a second edition.

The elaborate researches undertaken at the instigation of the governments of the United States and England into the chemical nature of coal, more particularly with reference to its adaptation to the generation of steam, and the recent legislative measures towards the prevention of smoke in large cities, have invested this subject with unusual interest."

A peculiar feature in this work is the arrangement of the subjects into groups, comprising those branches of manufacture which are dependent upon each other, and necessarily connected in a commercial point of view. Thus, among the products obtained from dry distillation of fuel, will be found an account of the manufacture of pyroigneous acid and its salts, of ammonia and its salts, of coal-tar naphtha, paraffine, etc., etc.

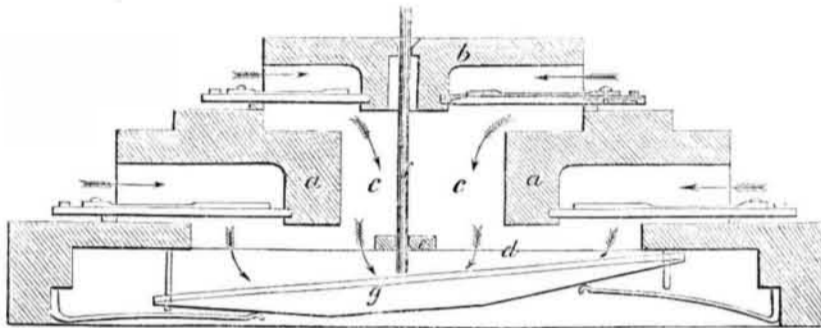
The first chapter is "Observations on the nature and properties of Fuel," followed by an article "On the effect of Heat upon Fuel," in the production of charcoal, coke, waste gases, etc., etc. "The application of Fuel to the production of Heat," for warming dwellings, &c. The latest inventions of stoves,

grates, hot-water apparatus, furnaces, &c., are illustrated with excellent wood cuts.

Three hundred pages are devoted to "The application of Fuel to the production of Light." This is one of the most important parts of the book, and is most extensively illustrated. The subjects treated are fats, oils, tallows, wax, gas, &c., &c., with their most approved modes of manufacture, and the different lamps, &c., in which they are used. The article on safety lamps is the most complete ever written, and contains forty-five delineations. Much useful information may be obtained from the statistical tables, and the tables of the relative value of the different kinds of coal found in Europe and America.

The authors, aided by several of the scientific men of England, have added a chapter on the subject, "What is Coal?" on the reply to which important interests depended, in the recent cause of Gillespie vs. Russell, in Scotland, and Gesner vs. Cairn, in New Brunswick. Two colored plates of the microscopic examination of the Nova Scotia, Allenheads, Bovey, German, and other coals, are inserted.

MELODEONS---HUNT'S PATENT IMPROVEMENT.



This engraving represents a vertical transverse section through the reed-board of a melodeon illustrating the improvement for which a patent was granted to George G. Hunt, of Wolcotville, Conn., on the 23d of October last.

The nature of the improvement consists in such construction of the "reed-board" that two, four, or even more sets of reeds may be added to the usual instrument, thereby increasing the quantity of tone or the fullness of the chords, or both, without requiring an additional rank of keys, and with but slight, if any addition to the heaviness of touch necessary in playing.

As commonly constructed, the melodeon has two sets of reeds, the one being tuned either a second above or in unison with the other, and both being sounded by the opening of one valve. To this, two other sets have been added by introducing another reed-board of precisely similar construction, having its rank of keys situated above and in the rear of the keys of the first sets. These are tuned to some other interval, or in unison, as desired, and all may be sounded by the lower key-board by merely coupling the upper one to it, as is well known. The touch, however, of the keys used, it is obvious, must be now doubled in its heaviness and stiffness.

According to this improvement the reed-board of ordinary construction is divided along its central line, and the two parts removed a short distance apart, say one inch, as shown at *a a*. Upon these is placed another ordinary reed-board, *b*, but having no pallets or valves

of its own, and in which the reeds are placed at the same distances apart as are those in the first board, whereby each pair of reeds of the upper board will be in the same vertical plane with a pair of the lower board. The divisions between the reeds of the board, *b*, must now be continued down through the intermediate space, *c*, to the lower surface of a board, *a*, as indicated at *d*, and in each of these spaces a block, *e*, is put, having a hole bored through to serve as a guide for the valve-rod, *f*. One valve, *g*, of usual construction, will now cover the slot in the lower reed-board, and this slot is just so much longer as the two parts, *a a*, have been removed asunder. Two other sets of reeds may be added by removing the parts, *a a*, still further, and dividing the board, *b*, as before described for *a*, when another reed-board may be placed upon that. The valve, *g*, is represented as opened, and the arrows show the direction of the currents of air in an instrument operated by an exhausting bellows. The valves, it will be seen, are not increased in number by any increase in the number of reeds, but are only slightly lengthened, and in an exhausting instrument the heaviness of touch is but very slightly increased for each additional set of reeds. Any one set of these may be shut off by stops, as usual, so that the quantity of tone may be reduced at will.

This appears to be a very excellent improvement. Other information relating to patent rights, &c., may be obtained by letter addressed to the patentee at Wolcotville, Litchfield Co., Conn.

Iodo-Nitrate of Silver.

This substance, the active principle in the collodion photographic process, has been found to be a definite compound of the iodide and the nitrate of silver, its composition being represented by AgO, NO5+AgI. It is blackened on exposure to light much more rapidly than either of its ingredients alone. It is unaffected by, and insoluble in absolute alcohol, but is decomposed by water. Its proper solvent is a concentrated solution of nitrate of silver. It may be obtained in regular crystals. Photographic silver baths which have been for some time in use, always contain a portion of this compound, the reason of their superiority to those more recently prepared.

Chloride and bromide of silver do not yield similar double salts, which explains why negative photographs on bromide of silver alone are deficient in intensity.

NITRATE OF SILVER STAINS—These stains may be removed by a solution of 8 parts per-

chloride of mercury, and 4 parts sal-ammoniac in 125 parts water, or one of 5 grms. cyanide of potassium, and 50 centigrms. iodine in 45 grms. water.—[London Artizan.

Japan Cotton.

Samples of Japan cotton recently received in this city, have a fine color, and the fiber has a greater number of barbs, so that it will draw with proper handling, into a very fine thread. It has apparently a great many natural crooks in each fiber (this appearance may be given to it in dressing,) which renders it easier to spin, and makes a bat of it very elastic. From this cause, and a natural harshness, owing to the number of barbs in the fiber, it feels to the touch very much like wool.

Pennsylvania now produces as much iron as was manufactured in Great Britain thirty years ago, and of a quality that compares very favorably.—[Exchange.

Literary Notices.

THE EDINBURGH REVIEW—The number for the present quarter of this able review published by Leonard Scott & Co., No. 54 Gold st., this city, contains eleven powerful articles on various subjects. The first is a review of the memoirs of King Joseph Bonaparte, and contains many incidents favorable to Joseph, and the reverse to his brother, Napoleon the Great. One article on the early Pilgrim Fathers of New England, is very unfavorable to their reputation as lovers of freedom. Essays to prove that the planets are inhabited, and vice versa, are not yet exhausted; one of the articles is a review of the recent pre-eminent works on this subject. It displays an intimate acquaintance with astronomy. Although this review is the oldest in Great Britain, this number shows that it is edited with the same vigor as when Jeffrey sat in the editorial chair.

VILLAGE AND FARM COTTAGES—Messrs. Cleveland and Backus Brothers, three of the most talented architects of which New York City can boast, are the authors of a new work entitled as above. It contains a large number of splendid engravings representing a great variety of exterior designs and internal plans for dwelling houses, with statements of their estimated cost. The buildings represented are chiefly those that are wanted by farmers, and residents in the country. Many of the designs, although beautiful in appearance, may nevertheless be realized for very moderate sums. Indeed, it has been one of the principal objects of the authors to acquaint the public with the fact that it is just about as cheap to build a handsome looking, convenient dwelling, as a mean and awkward one. In this volume there are designs for houses costing from \$500 to \$2000, which, for comfort and beauty are fit for princes to live in. The more costly designs are still more elegant. We believe that all who propose to build, whether their dwellings are intended to be small or great, will have their architectural ideas improved, and some of their money saved, by consulting the pages of this book. A portion of the work is devoted to information respecting the laying out of grounds, gardens, and the culture of fruit. New York, published by B. Ap-ton & Co.

TEN YEARS AMONG THE MAIL BAGS—This is a handsomely illustrated volume by Mr. J. Holbrook, a special agent of the U. S. Post Office Department. He narrates some of the most thrilling and remarkable circumstances connected with the discovery and detection of crime in the matter of mail robberies that we have ever read. Much light is also thrown upon the interior workings of the American postal system. The author's travels upon official business were very extensive, carrying him to all parts of the country, among all sorts of people. His descriptions of scenes and characters are vivid and life-like. Philadelphia, H. Cowperthwait; New York, J. C. Derby.

THE KANSAS REGION—by Max Greene.—The Author is an amateur traveler, fond of roaming and adventure. His volume is an easy, off-hand, interesting description of Kansas, through which country he has repeatedly passed. The book also contains directions to emigrants as to the best routes, localities for settlers, outfits required, usages of society, &c. Those who are looking Westward for homes, or who desire to inform themselves respecting matters and things in general out there, will do well to consult this new work. Fowler & Wells, publishers, 303 Broadway, N. Y.

NEW YORK HORTICULTURAL REVIEW—This is the title of a new monthly periodical, which has just appeared as a candidate for the patronage of all those interested in horticulture. It is edited by C. Reages, No. 208, Broadway, this city, and judging from this specimen number, he appears to be eminently qualified for his profession. The engravings in it are neat, and the subjects well chosen and skillfully treated.

"Mysteries of the Court of the Stuarts," by Wm. H. Ainsworth; T. B. Peterson, publisher, No. 132 Chestnut st., Philadelphia, Pa. Price 50 cents. Just issued.



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