Scientific American.

Scientific Museum.

To Obtain the Metallic Lead from Sulphate of Lead.

There are several processes in the arts in which sulphate of lead is produced as a residuum: amongst other processes may be mentionod that of the manufacture of accetate of alumina, for calico printers. For this purpose a solution of sulphate of alumina is mixed with a solution of acetate of lead, and the resulting decomposition gives acetate of alumina, in a fluid state, and sulphate of lead, precipitated in the form of an insoluble sulphate. M. Schnedermann's process for reducing the sulphate, and obtaining the metallic lead which it contains, is as follows. He makes an intimate mixture of sulphate of lead, chalk, charcoal, and fluate of lime (felspar), and submits the mixture to a white heat. Sulphate of lime, and carbonate of lime, is first formed, which is subsequently reduced by the charcoal. As the sulphate of lime is infusible at the temperature employed, the lead does not unite together in a button, but remains in a divided state, scattered through the mass, unless the precaution of adding fluorspar has been taken. This last named substance possesses the property of rendering the sulphate of lime fusible, thus allowing the particles of metallic lead to unite in one mass at the bottom of the crucible. The proportions employed are the following :- Sulphate of lead, dried in the air, 8 parts; chalk, 53 parts; charcoal, 1 to 14 like parts; X' is the surface of upper level; parts; fluate of lime, 3 parts. After keeping the whole at a white heatfor one hour, in a Hessian crucible, M. Schedermann obtained a button of metallic lead perfectly free from sulphur. The porous scorice contain a few particles of the metal; these may be separated from the scorice by washing and decantation, and thus the whole of the lead contained in the sulphate may be recovered.

Use of Chloroform.

Mr. Skey one of the surgeons of St. Bartholomew's Hospital, London, makes the following statements in a work recently published about the use of chloroform in surgical operations :-

"The records of St. Bartholomew's Hospital point to its successful administration in upwards of 9,000 cases, in not one of which, including the aged and the young, the healthy the infirm, and the asthmatic, has it its employment left a stain upon its character, as an innocuous agent of good. Under all circumstances, its careful employment may be unhesitatingly resorted to in all cases, excepting only such as are marked by determination to the brain of an apoplectic type; secondly, under circumstances of great and serious exhaustion from loss of blood; and thirdly, in diseases of the heart. In these conditions of the system, it is perhaps better avoided.

Against the occasional objections or convictions of others to its employment, I place the strong, and, to my own mind, the unanswersble fact, that it has been successfully used in so large a number of cases in St. Bartholomew's Hospital since its introduction; that these cases have been indiscriminately taken; and that its objections have not yet made their appearance before the observant eves of the medical staff of that institution, either by promoting danger during the operation, or protracting the recovery of the patient after

With the exceptions above mentioned, I cannot hesitate in strongly recommending its administration in all cases of large surgical operations, believing its discovery to be the greatest blessing conferred on the profession of surgery during the last century; and although I have seen its employment pushed, on many occasions, to the apparent verge of apoplexy, I cannot say, even in such examples, that the good has not largely predominated."

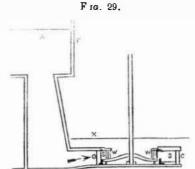
Gypsum in Agriculture.

Academy of Sciences the result of a number of experiments with the plaster of Paris, which and watered it every day with pure water, revolution in the spinning and weaving manu- bushel in bulk.

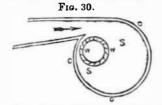
After a few days it germinated like other seed sown in ordinary soil, but the plants were sickly, and after flowering, completely faded away. In a mixture of gypsum (plaster of Paris) and marl, the seed did better, but not so well as in ordinary soil. Seed sown on manure, covered with gypsum, germinated rapidly, and the plants obtained a most extraordinary vigor.

By experiment he discovered that the gypsum decomposed the ammoniacal salts, and by such a combination it acquired fertilizing properties, but pure gypsum of itself had no fertilizing quality.

> For the Scientific American Hydraulics (Continued from page 184.)



PARKER'S WATER WHEEL -The accompa nying engravings are those of a water-wheel erected at Mr. Attwood's Foundry, Troy, N, Y. Figure 1 is a vertical section, and figure 2 is a plan view. The same letters refer to X is the surface of lower level; F is the fountain head, the arrows indicate the water course; C is the flume case; S S the spiral flume, and W W the wheel, which is a centre discharge re-action wheel; this wheel was put up in 1847, and we were invited to witness some experiments with it, but were prevented. Afterwards, however, Mr. Parker gave us a description of the same, and also published an account of four experiments. The wheel was 34 inches in diameter, with 8 inches width of bucket rim. It had 16 issues, amounting to 230 square inches: the water went in from the involute sluice at the outside. The motion of the water in the involute coincided with the motion of the wheel. The fall of water was 8.62 feet; it used up 1119 cubic feet of water per minute, made 138 revolutions, and gave out 62 per cent. of power. One peculiarity observed was, the nearly uniform quantity of water discharged, irrespective of velocity. When it made only 84 re-



volutions it used up 1104 cubic feet of water, only 15 feet less than when it made 54 revolutions more. The theoretic discharge of 230 square inches under a head pressure of 8.61 feet, is 2,249 cubic feet per minute, while the actual discharge was only about one half. The motion of the water in the volute, or that direction given to it before it acts upon the wheel on passing through the buckets, is very important, as an auxiliary to the power, because direction is everything in this case.

Flax --- Cotton.

The Paisley and Renfrewshire (Scottish) Reformer, of Jan. 11, speaking of Mr. Slack's invention recently noticed by us, says Mr. Slack has gone on quietly but perseveringly completing his experiments in dveing, animalizing and improving the materials upon which he operates, and specimens of the proceeds of these have been sent to our office, and to experienced parties all over the country We have now before us, we may mention, the product of a piece of coarse hemp bagging, in the various forms of fine flax, flax cotton M. Mene has communicated to the Paris thread, and animalized dyed flax, and we are sure that a glance at the articles referred to will be quite sufficient to satisfy any unprejuhas heretofore been considered a fertilizer. He diced observer, that the invention, when fully sowed some seed of wheat in pure gypsum, developed, is calculated to effect a surprising tory in Cincinnati, at the rate of \$1,30 per

factures of this country. In addition, we have also had handed to us a piece of fine lawn ranslin, figured with the flax cotton, and it is no exaggeration to say, that the flowers have all the lustre and glossy appearance of silk. This, we believe, is the first time on which the | it, to the required thickness of the crust. flax cotton has been used for the purpose of Then put in the prepared pumpkin as usual figuring fine muslins, and the result, we understand from practical parties, is most satisfactory and conclusive.

Beneficial Effects of Tea.

Tea is more and more becoming a necessary of life to all classes. Tea was first denounced as a poison and then as an extravagance. Cobbett was furious against it. An Edinburgh reviewer, in 1823, keeps no terms with its use by the poor :-- "We venture to assert that when a laborer fancies himself refreshed with a mess of this stuff, sweetened by the coarsest black sugar, and with azure blue milk, it is only the warmth of the water that soothes him for the moment; unless, perhaps, the sweetness may be palatable also." It is dangerous even for good reviewers to "venture to assert." In a few years after comes Liebig with his chemical discoveries, and demonstrates that coffee and tea have become necessaries of life to all nations, by the presence of one and the same substance in both vegetables, which has a peculiar effect upon the animal system; that they were both originally met with amongst the nations whose diet is chiefly vegetable; and, by contributing to the formation of bile, their peculiar functions have become a substitute for animal food to a large class of the population whose consumption of meat is very limited, and to another large class who are unable to take regular exercise. Tea and coffee, then, are more especially essential to the poor of all nations.

Corruption of Words. Take, for example, the word kerchief .-There is no doubt that this word is derived from the French couvre chef, and obviously meant a covering for the head. Erevity converted couvre chef into kerchief. This was well enough for colloquial purposes, and no great harm done. By degrees, however, having occasion to enlarge the application of the word for our convenience, we flung etymology to the winds, and coined the word handkerchief-which, broken up in its constituent parts, means literally a head-cover for the hand. The force of absurdity would seem to be incapable of going beyond this; but worse remains behind. Having reconciled our consciences to handkerchief, there was no difficulty in finding kerchiefs in like manner for all possible purposes; and accordingly we have manufactured a pocket handkerchief, which means a head-cover for the hand to go into the pocket, and a neck-handkerchief, or head cover for the hand to be tied round the

Coal of Puget's Sound.

A specimen of coal taken from Puget's Sound, where it is so convenient for our Pacific Marine, has been analyzed by Prof. Walter R. Johnson, who says, "It has a specific gravity of 1.315, and will weigh in the merchantable state from fifty-one to fifty-five pounds per cubic foot, according to size of lumps, and will require on board a steamer about forty-two and a quarter cubic feet of space to stow one gross ton. It is of a brilliant lustre, wholly free from liability to soil. It is composed of volatile matter, 40:36 per cent; fixed carbon, 56.84 per cent; earthy matter, 2 80 per cent; -100 per cent.

burns with a bright glow, and leaves a light brick-red or deep salmon-colored ash.

In coking, the coal scarcely increases in bulk, has no tendency to agglutinate, and consequently preserves an open fire, burning freely, and does not cover itself with ashes to such a degree as materially to obstruct the

Castor Beans.

The St. Louis Intelligencer says: We learn that 5,000 bushels of castor beans were purchased at Shawnetown on Friday last, by a merchant of this city, for the use of an oil fac-

Cheap Pie Crust.

A Crust for pumpkin pies may be made in the following manner. Rub a thin coating of lard over the plate in which the pie is to be baked, and then sprinkle dry Indian Meal over when the crust is laid over the plate. The meal will form the crust, and it may be said too that it is better than some we have seen which made more pretensions.

Grease for Coarse Boots.

Take a coal made of white pine of the size of a hen's egg, well burnt, pulverize it finely, mix it with enough of clean melted tallow to make it of the consistence of thick paste. Two or three applications will make the leather soft, and will keep the water out.

LITERARY NOTICES.

THE OLD RED SAND STONE: by Hugh Miller.—We welcome right gladly such works as the above, and Messrs. Gould & Lincoln, of Boston, the publishers, have conferred a favor upon science and our people ure-publishing it. The work treats of phenomena which occurred in the earlier formation of the earth's crust. It is the production of a working man, who, from a laborious occupation has arisen to be one of the most scientific geologists, philosophic authors, and able editors in the world. We wish this book to be in the hands of every workingman. be in the hands of every workingman.

PRINCIPLES OF ZOOLOGY : Revised Edition .- This is another valuable book by the same publishers. The authors of it are Agassiz, the well known philosopher and pupil of the world-renowned Cavier, and himself also world-renowned, and the other joint auhimsell also world-renowned, and the other joint author is Mr A A. Gould, our able and well-known countryman. This new edition is much improved from the previous one, and is written up, in respect to the subjects it treats of, to the present day. Hugh Miller's "Old Red Sand Stone," and his other able work, "The Foot Prints of the Creator," cannot be read intelligently by a novice in Geology, he must first read and study the principles of Zoology. This work is written in a clear and interesting style. It is for sale by L. Colby, No. 122 Nassau et., N. Y.

Shakspeare's Dramatic Works; No. 33; Phillips, Sampson & Go., publishers, Boston, Mass.; Dowitt & Davenport, Agents, Tribune Buildings. This number contains "Titus Adronicus," embellished with a portrait of "Lavinia." This beautiful work is rapidly approaching completion.

SARTAIN'S UNION MAGAZINE, for March, contains thirty-six original articles and 23 embellishments—
"Twice Clipping the wings of Love," engraved by Mr. Sartain, is superbly rich. The continuation of "Scenes in the Life of our Saviour," by Dr. John Todd, are exceedingly interesting and suggestive. For intrinsic merit this serial has no superior.

PRTERSON'S LADIES' NATIONAL MAGAZINE, for March, is a good number. "The Wreck" is a sterling picture. "We School Boys" is life-like and interesting. The contributions are excellent, and are from some of our first authors.

INVENTORS MANUFACTURERS.

The Best Mechanical Paper

IN THE WORLD! SIXTH VOLUME OF THE SCIENTIFIC AMERICAN.

SCIENTIFIC AMERICAN.

The Publishers of the SCIENTIFIC AMERICAN respectfully give notice that the Sixth Volume of this valuable journal, commenced on the 21st of September last. The character of the Scientific American is too well known throughout the country to require a detailed account of the various subjects discussed through its columns. It enjoys a more extensive and influential circulation than any other journal of its class in America. It is published weekly, as heretofore, in Quarto Form, on fue paper, affording, at the end of the year, an ILLCSTRATED ENCYCLOPEDIA, of over FOUR HUNDRED PAGES, with an Index, and from FIVE to SIX HUNDRED ONIGITAL ENGRAVINGS, described by letters of reference; besides a vast amount of practical information concerning the progress of SCIENTIFIC and MECHANICAL IMPROVEMENTS, CHEMISTRY, CIVIL ENGINEERING, MANUFACTURING in its various branches, ARCHITECTURE, MASONRY, BOTANY,—in short, it embraces the entire range of the Arts and Sciences.

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any other weekly journal in the country, viz., an Official List of PATENT CLAIMS, prepared expressly for its columns at the Patent Office,—thus constituting it the "AMERICAN REPERTORY OF INVENTIONS."

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PREMIUM.

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