## siruntifir Myturyunt

## To Obtain the Metallic Lead from Sulphat

 1 Lead．There are several processes in the arts in which sulphate of lead is produced as a residu－ um：amongst other processes may be mention－ od that of the manufaeture ol acetate of alu－ mina，for calico printers．For this purpose a solution of sulphate of alumina is mixed with a solution of acetate of lead，and the resulting decompositiongives 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 sul phate，and obtaining the metallic lead which it contains，is as follows．He makes an inti－ mate mixture of sulphate of lead，chalk，char－ coal，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 subsequentlyreduced by the charcoal． As the sulphate of lime is infusible at the temperature employed，the lead does not unite toget，her 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 pro perty of rendering the sulphate of lime fusible， thus allowing the particles of metallic lead to unite in one mass at the bottom of the cruci ble．The proportious employed are the follow． ing：－Sulphate of lead，dried in the air， 8 parts；chalk， $5 \frac{1}{3}$ parts；charcoal， 1 to $1 \frac{1}{4}$ parts；fluate of lime， 3 parts．After keeping the whole at a white heatfor one hour，in Hessian crucible，M．Schedernarnn obtained a button of metallic lead perfectly free from sul phur．The porous scorice contain a few par－ ticles 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．

## Cse of Chloroforn

Mr．Skey one of the surgeons of St．Bartholo－ mew＇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 up－ wards of 9,000 cases，in not one of which，in－ cluding the aged and the young，the healthy， the infirm，and the asthmatic，has it its em－ ployment left a stain upon its character，as an innocuousagent of good．Under all circum－ stances，its careful employment may be unhe－ sitatingly 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 ex haustion 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 convic－ strong，and，to my uwn mind，the unanswera ble fact，that it has been successfully used in so large a number of cases in St．Bartholo－ mew＇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 eyes of the medical staff of that institution，either by promoting danger during the operation，or protracting the recovery of the patient after it．

With the exceptions above mentioned， 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 al many occasions，to the apparent verge of apo－ many occasions，to the apparent verge of apo
plexy，I cannot say，even in such examples that the good has not largely predominated．＇

Gypsum in Agricultare．
M．Mene has communicated to the Paris Academy of Sciences the result of a numbe of experiments with the plaster of Paris，which 15 has heretofore been considered a fertilizer．He and watered it every day with pure water

After a few days it germinated like other seed sown in ordinary soil，but the plants were sick－ ly，anil 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 gyp－ sum decomposed the ammoniacal salts，and by such a combination it acquired fertilizing pro－ perties，but pure gypsum of itself had no fer－ tilizing quality．

## For the Soientific American．

Hydraulics．
Fig． 29.


Parker＇s Water Wheel－The accompa nying engravings are those of a water－whee 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 like parts；$X^{\prime}$ is the surface of upper level ； $X$ is the surface of lower level；$F$ is the foun－ tain 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 ex－ periments with it，but were prevented．Af terwards，however，Mr．Parker gave us a de－ scription 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 mo－ tion 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 revoln－ tions，and gave out 62 per cent．of power One peculiarity observed was，the nearly uni－ form quantity of water discharged，irrespec－ tive 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 revolu－ ions more．The theoretic discharge of 230 quare inches under a head pressure of 8.61 eet，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 tha direction given to it before it acts upon the wheel on passing through the buckets，is very important，as an auxiliary to the power，be cause direction is everything in this case．

## Flax－．．Cotton．

The Paisley and Renfrewshire（Scottish） Reformer，of Jan．11，speaking of Mr．Slack＇ invention recently noticed by us，says Mr Slack has gone on quietly but perseveringly completing his experiments in dyeing，ani－ malizing and improving the materials a upon which he operates，and specimens of the pro－ ceeds 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 hread，and animalized dyed flax，and we are sure that a glance at the articles referred to
will be quite sufficient to satisfy any unpreju－ diced observer，that the invention，when fully developed，is calculated to effect a surprising
factures of this country．In addition，we have also had handed to us a piece of fine lawn ramslin，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 flax cotton has been used for the parpose o figuring fine muslins，and the result，we under－ stand from practical parties，is most satisfac－ tory 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 Edin－ burgh 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 warmen of the water that soothes him for the moment；unless，perhups， 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 diseoveries，and demon－ strates that coffee and tea have become neces saries of life to all nations，by the presence of one and the same substance in both vegeta－ bles，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 mest is very limited，and to another large class who are unable to take regular exercise． Tea and coffee，then，are more especially es－ sential to the poor of all nations．

## Corruption of Words．

Take，for example，the word kerchief． There is no doubt that this word is derived rom the French couvre chef，and obviously meant a covering for the head．Erevity con－ verted couvre chef into kerchief．This was well enough for colloquial purposes，and no great harm done．By degrees，however，hav ing occasion to enlarge the application of the word for our convenience，we flung etymology to the winds，and coined the word handker－ chief－which，broken up in it．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 con－ sciences to handkerchief，there was no diffi culty 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 neck．

## Coal of Puget＇s Sound

A specimen of cual taken from Puget＇ ound，where it is so convenient for our Pacitic Marine，has been analyzed by Prof．Walter R ohnson，who says，＂It has a specifio gravity f 1.315 ，and will weigh in the merchantable state from fifty－one to fifty－five pounds per cubic foot，according to size oflumps，and will equire on board a steamer about forty－tw and a quarter cubic feet of space to stow on 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， $2 \mathbf{8 0}$ per cent -100 per cent．
After the luminous flame ceases，the cok burns with a bright glow，and leaves a light rick－red or deep salmon－colored ash．
In coking，the coal scarcely increases in bulk，has no tendency to agglutinate，and con sequently preserves an open fire，burning free y，and does not cover itself with sshes to such a degree as materially to obstruct the combustion．

Castor Beans．
The St．Louis Intelligencer says：We learn that 5,000 bushels of castor beans were pur－ chased at Shawnetown on Friday labt，by a merchant of this city，for the use of an oll fac tory in Cincinnati，at the rate of $\$ 1,30$ pe bushel in bulk．

A Crust for pump Pie Crust．
A Crust for pumpkin pies may be made in the following manner．Rut a thin coating of lard over the plate in which the pie is to be
baked，and then sprinkle dry Indian Meal over it，to the required thickness of the crust． Then put in the prepared pumpkin as usual when the crust is laid over the plate．The meal will form the crust，and it may be нaid too that it is better than some we have seen which made more pretensions．

Grease for Coarse Boots．
Grease for Coarse Booss．
Take a cosil marle 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 leath－ er soft，and will keep the water out． LITERARY NOTICES．
THE OLD RED SAyD SToNe ：hy Huph Miller－We－We
welcome right gladly such works as the above，and welcome right clady such works as the above，and Messrs．Gisuld id Lincoln，of Boston，the publishers，
have conferred a tavor upon soience and cur people iuve puldisting it．The work treats of phennmena
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