the sand，and also the gravel，should be washed．
3．Dr．Youmans says：＂Beach sand will attract dampness．＂How is this？A．Because of the salt with which it is more or less impregnated．4．In the absence of broken stone and the like，will
gravel and sand do？A．Yes，if the gravel is of gravel and sand do？A．Yes，if the gravel is of good size．5．Will such a wall be damp？Iî so， would it need fur ing，or sin his tork hollow，＂Mortar and Cements＂？A．Yes，it would need to be pro－ tected on the inside in some way against the condensation of water from theair in winter． 6. How are the parts proportioned，by weight or measure？A．By measure．7．Drs．Chase and
Youmans recommend freshly burnt lime；you Youmans recommend freshly burnt lime；you do，no one will use ement or cang cheaper， It think，is the same）．Suppose we take $2 / 3$ freshly burnt lime and $1 / 3$ water lime，how will that do？ A．Pure cement of the best quality should be ＂water lime．＂No common lime should be mixed with it if you want a permanent wall．8．In using slaking or after？A．Before caps，and cornices made？A．These may be cas in molds．
（29）S．A．\＆S．ask：What will prevent the forming of vitriol crystals on the outside of tel－ egraph battery jars？We use stone jars，which
become entirely coated on the outside in a short space of time．A．A good way to prevent the luid from creeping aver the tops or the Jars and the jars for half an inch．
（30）R．S．asks：What is the solution used by sugar refiners in the centrifugals to give to
sugar the bright yellow straw color？A．Thiscol－ or，we believe，is obtained during the bleachin process，and sometimes by the addition of smal （31）W．R says：I In a Holtz inductio （31）W．R．Says：I．In a Holtz induction by a thick glass plate，held horizontally betwee two insulated plates，of what material is it best to make the axle of the revolving plate？A．Wood and glassare frequently used．Perhaps an ebon－ stituted for this horizontal glass plate，can as rood electrical results be obtained？A．We be－ frence．3．If coatings of paper or foil be at－ tached to the sector plate，and these have pro－ jecting rows of pin points，and the edges that hold these pin points are opposite collecting combs of conductor，is it necessary to have win－ bund electricity？A．In the improved H $\odot i t z$ machine neither windows nor armatures are used． Two plates are mounted horizontally and both re－
velve，the direction of one being opposite that of the other．Four collecting arms are placed，a equal distance apart，around the plates，two above the upper and two below the under plate upper arm the next is under，and so on．＇The first upper and under arms are connected metallically， as are also the third and last．Sometimes also an extra arm is used，which brings an upper and un－ ler arm together in one place．This arrangemen appears to improve the action of the machine．4． circumference rest or turn in srooved pulley fastened on the small wooden pillars or posts that upport the sector plate，these posts passing from horizontal supporting plates to sector？A Grooved pulleys are best，unless，as is often done with the old style machines，the fixed plate is per－ mounted on an axis passing through it．
（32）D．W．W．asks：What substance can use to illuminate the dial of a watch sufficiently to show the hour in the dark？Will the small glass tube with phosphorus and oil do？A．We
do not consider it practicable nor advisable to at－ empt the application of the phosphor lamp in the way you mention．
（33）N．S．W．asks．Is the first six months furnished bound？If so，price？A．We furnish the first volume of Scientific American Supple－ MENT，stitched in paper covers，for $\$ 2.50$ ．In
boards，$\$ 3.50$ ．Probably few persons appreciate the great scope and remarkable cheapness of the Work we are carrying on under the title of our is illustrated by over 1,000 engravings and figures， covering all the most recent and interesting sci－ entific information of the day．It includes the history and progress of the Great Exlibition．The contents of the SUPPLEMENT are arranged in such compact form，and embrace such an enormous book form they would occupy 3,600 pages or 7 volumes of 500 pages each．In the domain of Science，nothing comparable to the Scientific American and Supplement，in the matter of
economy of price，has heretofore bzen given to the public．
（34）P．F．asks：How can I dissolve soda in cept in the fatty oils，containing free glycerin o acids，it is nearly insoluble．In any case，an ele
（15）W．E H inceas：A solubility
（35）W．E H．says：A friend of mine re－ cently bought me a piece of glass tubing of $9 / 8 \mathrm{inch}$ foot in length．He stated that it formed part of a gage tube to show the hight of water in a mill fiume，and that，getting dirty，the engineer in charge took it down to clean it，which he accom－ plished by wiping with waste and emery fiour on the end of a pine stick．The tube，which had been in use for years，was then laid down in the engine spontaneously into a dozen pieces．The fractures
are nearly all alike，running a short distance
lengthwise and then directly around the tube，cut－ ting it off．I took the piece he gave me；and after cleaning with water and drying it，I laid it on a
bench with a piece of iron wire and another of brass wire laid loosely through the tube．In a ew hours it broke into three pieces，and in the all the fractures having the direction as stated above，and some of the pieces being interchange able on account of the striking similarity of the ends．To ascertain whether imperfect annealing inches long under the blowpipe and heated it so hot that it fiattened by itsown weight，without an endency to fiy to pieces．A．These tubes ar
usually made of the hardest glass，and carefull annealed；but from the fact of your ability to often the tube as you represent，it appears to have been otherwise in this particular case There may have been haws in the glass，which were further aggravated by the careless use o mery or otherwise，but we think it probable that liar breakage which you have failed to discove or meation．
（36）J．I．asks：What is the best cheap sol
（87）R．M．says：I take water by siphon first laid $1 / 2$ inch lead pipe，through which th water fiowed nicely for a year or more，when th pipe was burst by frost．After repairing it I could
never get it to work satisfactorily．With a view to improving it，I substituted a $3 / 4$ inch pipe from the well，$A$ ，to the lowest part of the siphon，$B$ ing in good condition I now find that by fllin the pipe by either force or suction，the water will continue running for from $1 / 2$ an hour to 12 hour when itstops．I sometimes imagine that it run only long enough to allow what water there may be in the pipe from upper part of siphon to th outlet to fiow out．I wish to ascertain if you can
suggest where the defect is，and give the remedy The pipe is perfectly airtight．I have thought that by using a $1 /$ inch pipe from well to the hirl

est point of the siphon，$X$, the difficulty might be
overcome．The water has to rise from bottom well to this point about 13 feet．I have a fall of feet from bottom of well to the highest point of discharge，E．I have experimented and thorough－ and now apply to you．Can you tell me what urther means I can try with it？A．The end of the pipe at the strainer in the well may be stoppe
up with dirt，or there may be some obstruction up with dirt，or there may be some obstruction
in the end at the house．If this is not so，it would seem to imply that the pipe is not airtight；this point should be tested thoroughly．Sometime ir bubbles from the water will collect at th highest point of the siphon，and trap it there，bu probability is that the pipe either leaks or is stopped up．
Minerals，etc．－Specimens have been re eived from the following correspondents，an oxamined，with the results stated：
E．C．－No． 1 is a piece of slate with chalcopyrite sulphide of copper，and protoxide of copper．N
2 is coal．－G．V．H．－It is iron pyrites in clay．

J．C．M．says：I have seen a musical in strument in which the sound was produced by crank in the end of the instrument，the notes be ing produced on keys along the side．How is the
inside of the instrument arranged ？－J．G．W asks：What is the construction of the Langstroth

## COMMUNICATIONS RECEIVED．

The Editor of the SCIENTIFIC AMERICAN ac riginal papers and contributionsupon the follow ing subjects：
On Ornamental Machinery．By E． On a Theory of Electricity．By J．N．L．
On a New Electric Battery．By W．R．H． Also inquiries and answers from the following ： W．B．A．－G．B．－E．B．－A．L．F．- W．G．－C．H．C．
C．H．B－E．B．－G．W．B．－F．S．D．－－H．S．－G．H．
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HINTS TO CORRESPONDENTS．
Correspondents whose inquiries fail to appea nay conclude that，If not then published，the declines them．The address of the writer shoul always be given．
Enquiries relating to patents，or to the patenta bility of inventions，assignments，etc．，will not be
published here．All such questions，when initial only are given，are thrown into the waste basket， as it would fill half of our paper to print them all； but we generally take pleasure in answering briefiy by mail，if the writer＇s address is given．
Hundreds of inquiries analogous to the following Wre sent：＂Who makes carbons for batteries？
Who sells gutta percha？Who sells incubators？
the cheapest photographce apparatus？＂，All such served，in the column of＂Business and Person－ al，＂which is specially set apart for that pur－ pose，subject to the charge mentioned at th head of that column．Almost any desired infor－
mation can in this way be expeditiously obtained．
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INDEX OF INVENTIONS

## Cetters Patent of the United States <br> July 18，1876，

AND EACH BEARING THAT DATE．
A complete eopy of any patent in the annexed lis， urnished from this oflice for one dollar．In ordering， please state the number and date of the patent desired Alarm，electric burglar，H．A．Brooks． Atomizer，T．J．Holmes．

## Bale tie，R．De Gray．．． Bale tie，buckle，J．M． Basket，coal，C．Hager

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## Brick machine，E．F．Andrew

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| 9, 394.-Type.-J. M. Conner, Greenville, n. J. |  |
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|  |  |
| 9, 397.-CARPETs.-J. Hamer, Dutchess county, N. Y. | ENGINES AND BOILERS |
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| 9, 01 .-Type.-A. Little, New York city. |  |
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We therefore recommend any person who is about to purchase a patent, or about to comlicense, to have the patent carefully examine by a competent party, and to have a research made in the Patent Onice to see what the condition of the art was when the patent was issued. He should also see that the claims are so worded as to cover all the inventor was entitled to when his patent was issued; and it is still more essen-
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