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? Iì so, good size. 5. Will such a wall be damp? II so,
would it need furring, or should it be hollow, as ecommended by Gilmore, in his work on "Mortar tected on the inside in some way against th condensation of water from the air 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 do, no one will use cement or water cheaper, will I 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 used. We presume that this is what you mean by
"water lime." No common lime should be mixed with it if you want a permanent wall. 8. In using cement lime, are the proportions taken befor
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 egraph battery egraph battery jars? We use stone jars, which
become entirely coated on the outside in a shor space of time. A. A good way to prevent the
fluid from creeping over the tops of the luid from creeping over the tops of the jars and the jars for half an inch.
(30) R. S. asks: What is the solution used by sugar reffiners in the centrifugals to give to
sugar the bright yellow straw color? A. This color, we believe, is obtained during the bleaching process, and sometimes by the addition of small (31) W. R. says: I. In a Holtz induction (31) W. R. Says: I. In a Holtz induction by a thick glass plafe, held horizontally betwee two insulated plates, of what material is it best to make the axle of the revolving plate? A. Wood
and glass are frequently used. Perhaps an ebonite axle would answer best. 2. If ebonite be sub stituted for this horizontal glass plate, can as
good electrical results be obtained? A. We believe some experimenters give ebonite the preference. 3. If coatings of paper or foil be atceting rows sector plate, and these have prohold these pin points are opposite collecting combs of conductor, is it necessary to have win-
dows or holes cut in sector plate to relieve the bound electricity? A. In the improved Heltz 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, at equal distance apart, around the plates, two above the upper and two below the under plate,
and the orker alternating, so that if the first is an 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 under arm together in one place. This arrangemen appears to improve the action of the machine. 4. To steady the revolving plate, should its edge or
circumference rest or turn in grooved pulleys, fastened on the small wooden pillars or posts that support the sector plate, these posts passing from horizontal supporting plates to sector? A.
Grooved pulleys are best, unless, as is often done Grooved pulleys are best, unless, as is often done with the old style machines, the fixed plate is per-
forated at the center, and the revolving plate nounted on an axis passing through it.
(32) D. W. W. asks: What substance can I 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 glass tube with phosphorus and oil do? A. We
do not consider it practicable nor advisable to attempt 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 SuppleMENT, 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 scientific 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 r 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 baen given to economy of
(34) P. F. asks: How can I dissolve soda in
il? A. You do not state what kind of oil. Ex cept in the fatty oils, containing free glycerin o acids, it is nearly insoluble. In any case, an ele
(35) W
(35) WV. E H. says: A friend of mine recently bought me a piece of glass tubing of $3 / 8$ inch foot in length. He stated that it formed part of a gage tube to show the hight of water in a mill flume, and that, getting dirty, the engineer in charge took it down to clean it, which he accomplished by wiping with waste and emery flour 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 thetube,cut ling it off. I took the piece he gave me; and afte bench with a piece of iron wire and another a brass wire laid loosely through the tube. In a course of the next night into half a dozen 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 had to do with the breaking, I took a piece two inches long under the blowpipe and heated it so ot that it flattened by itsown weight, without any
tendency to fiy to pieces. A. These tubes ar tendency to fly to pieces. A. These tubes are
usually made of the hardest glass, and carefully annealed; but from the fact of your ability to soften the tube as you represent, it appears to have been otherwise in this particular case There may have been flaws in the glass, which were further aggravated by the careless use o emery or otherwise, but we think it probable tha iar breakage which you have failed to discove or meution.
(36) J. I. asks: What is the best cheap sol
(87) R. M. says: I take water by siphon
rom a well distant from my house about 950 feet Ifirst laid $1 / 2$ inch lead pipe, through which th water flowed 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 o improving it, I substituted a $3 / 4 \mathrm{inch}$ pipe fron 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 hours when itstops. I sometimes imagine that it runs only long enough to allow what water there may be in the pipe from upper part of siphon to th outlet to flow out. I wish to ascertain if you ca
suggest where the defectis, and give the remedy The pipe is perfectly airtight. I have thought that by using a $1 / 8$ inch pipe from well to the high

est point of the siphon, $X$, the difficulty might be
vercome. The water has to rise from botgom 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 thoroughy exhausted all the local hydraulic knowledge and now apply to you. Can you tell me what urther means cantre in the well A . The end of up with dirt, or there may be some obstruction in theend at the house. If this is not so, it would seem to imply that the pipe is not airtight; thi point should be tested thoroughly. Sometimes air bubbles from the water will collect at the 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 ceived from the following correspondents, and xamined, with the results stated:
E. C.-No. 1 is a piece of slate with chalcopyrite,
sulphide of copper, and protoxide of copper. No. 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 a crank in the end of the instrument, the notes be ing produced on keys along the side. How is the instrument arranged ?-J. G. w asks: What is the construction of the Langstroth

## COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acriginal 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.
R. R.-L. F.-A.T.-H.P.-W.S. V.-G. W. B.T. H. L.-W. E. F.-w. S.
1.C.R.-G. B. Y.-J. M. N.

HINTS TO CORRESPONDENTS.
Correspondents whose inquiries fail to appea nay conclud them. If not then published, the day conclude that, for good reasons, the Edito
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 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 y mail, if the writer's address is given.
Hundreds of inquiries analogous
Hundreds of inquiries analogous to the following are sent: "Who makes carbons for batteries?
Who sells gutta percha? Who sells incubators?
the cheapest photographc apparatus?" All such
personal inquiries are printed, as will be ob-
served, in the column of "Business and Person-
al," which is specially set apart for, that pur-
pose, subject to the charge rientioned at the
head of that column. Almost any desired infor-
mation can in this way be expeditiously obtained.
[OF FICIAL]
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