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Notes & Queries

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters, or no attention will be paid thereto. This is for our information and not for publication.

References to former articles or answers should give date of paper and page or number of question.

Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.

Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.

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Minerals sent for examination should be distinctly marked or labeled.

(5427) C. H.—Answer by Professor Riley.—The peculiar masses described by you are, from the description, not determinable with absolute certainty. It is possible that the description might apply to a variety of forms of fresh water larvæ, such as an aggregation of egg masses of some crustacean, or, more likely, a fresh water polyzoan, or some form of fresh water sponge. Fresh water sponges are of gelatinous structure, and lack almost entirely the silicious filaments which form the spongy substance of most salt water species. This would, therefore, in a measure correspond with the description of your correspondent, but more particularly since they develop what are known as winter buds or gemmules, viz., small oval bodies surrounded by a shell of silicious structure, similar to the sponge structure of the larger species. On the drying up of ponds, on the approach of winter, the chief spongy mass disintegrates and disappears; but these buds or circular masses survive the winter or the drought and develop under more favorable conditions of renewed moisture on recurring summer. The eggs of frogs are frequently discovered in similar masses, and being more or less surrounded and inclosed by a jelly-like mass, would perhaps offer an explanation of the phenomena described. If more accurate determination is desired, it can be readily furnished if the circular bodies mentioned be forwarded for examination.

(5428) Hercules, New Haven, asks: Do you consider it safe to pile about 600 tons of pig iron in a space of 60 feet by 6 feet within 3 feet of the foundations of a five-story factory building, the three upper stories running light machinery? The building is built on filled-in ground, and is piled throughout its 600 feet in length. A. The space occupied is 360 square feet and the load one and six-tenths tons to the square foot, not an unsafe load for the ground. As you say the factory is on piles throughout its length, the piling, if properly done, should carry the pressure of the walls of the building far below the influence of compression by the load of iron not in contact with the building. If the filling in is clean earth or sand, no harm can come from the load as stated.

(5429) E. R. P. writes for explanation of the following phenomenon: Pine Bluff, Ark., Sept. 29.—A tremendous rain poured down here this evening, and with it came millions of small frogs. They got into many stores, and the principal streets in the business part of the town were so covered with them that it was difficult to walk. A. The appearance of frogs and other small animals during heavy rain storms may be due to two sources, either lifted from shallow ponds or marshes by a tornado or waterspout, and distributed along the path of the storm, or that the excessive rain has driven them from their burrows and hiding places to the surface of the ground. If in the above statement the animals were really frogs, they may have fallen as stated. If they were toads, they were probably driven from their holes by the rain. We think the millions would be nearer the truth if much divided.

(5430) J. C. asks: 1. Can carbon be obtained absolutely pure in its elementary state? If not, why? Charcoal, even diamond, is not pure carbon, because it leaves ashes after burning. Can CO_2 be decomposed, leaving the carbon in the elementary state? A. Diamond is almost pure. It is impossible for man ever to get anything absolutely pure. His best is an approximation. CO_2 can be decomposed by heated magnesium, sodium, or potassium. 2. How is the carbon of electric arc lamp prepared? Leave any ashes in the lamp after burning? Is it analogous to ordinary combustion? A. Various methods are used. The powdered charcoal or carbon is mixed with sirup and water or other agglutinant, is moulded and baked. It produces ashes, and slowly burns. 3. The astronomers say that comets belong to the solar system; if this is correct, why don't they revolve around the sun, like planets? Where are the centers of their orbits? Does any comet really cross the orb of any planet, or is it simply theory? A. Comets and their orbits are still mysteries. They undoubtedly enter the planetary area. 4. Are the tides of the oceans due to the attraction of the moon. Is this a theory or determined fact? A. Though a theory, it is without the least doubt a true one. 5. Can the phosphate from bones be extracted without boiling (as in making soup)? If I grind the bones to fine powder, and then throw over boiling water (as in making tea or coffee), can I obtain a solution of phosphate for making soup? If not, is there any other way without boiling? A. Bone phosphate is insoluble in water. For fertilizing purposes it is made soluble by treatment with acid. 6. If any food substance, such as beans, or any starch compounds, is burnt accidentally upon the bottom of the pot, what shall I use to take off the burning flavor from the remainder? A. You cannot remove the flavor. You should use a double saucepan or water bath.

(5431) C. A. B., Iowa, writes: 1. While riding in the river bottom one day this fall, I noticed that the corn on one side of the road was badly frozen, while that on the other side was comparatively unharmed. Quality of ground seemed to be the same in both fields, and the elevation of the frozen field was a trifle greater than the other. Should judge not more than four or five feet. What caused this phenomenon? A. The causes tending to produce frost in certain fields or localities can not be exactly defined. Unequal radiation in places near together or a slight difference in elevation may make just enough difference in radiation between adjacent fields to produce frost in one and not in the other. In the case cited the difference of a few feet elevation probably allowed the ground fog to be drifted toward the low land by the slow movement of the air, and thus protect it from loss of heat by radiation, while the higher field would be covered by a clearer surface atmosphere, which would increase radiation to the frost line of temperature. 2. Can you tell me how to remove wheels and collars from shafts, upon which they have been shrunken, without injury to either of them? A. If convenient to heat the shaft and wheel or collar to a low red, or possibly a black heat, just below the red and slowly cool it, so as not to injure the parts, the shaft may often be driven out of a wheel or collar without injury.

(5432) G. H. L. writes: 1. I noticed in a recent issue of SCIENTIFIC AMERICAN, a query by E. F. P. (No. 5377), in which he asks why a current of 1,800 volts taken from a primary battery would not have the same effect on the human body as a current of the same number of volts taken from a dynamo. Now, what interests me is, supposing a circuit breaker making and breaking the circuit many times per second were put in the battery line and both terminals grasped, what would be the effect? A. An interrupted current is much more severe on the human system than a steady one. The circuit breaker would greatly increase its severity. 2. How would you advise a person without necessary funds, interested in scientific researches (especially electrical), both experimental and inventive, to get an education in that line? Would such a person be able to procure a situation in some prominent laboratory? A. Go into an electric light station, work at anything to start, and then work up. Laboratory positions are hard to get.

(5433) M. C. asks whether a common filar micrometer could be used on a telescope with equatorial mounting not driven by a clockwork attachment. A. Good work can be done with a filar micrometer, even without any screw movement, by a little practice with the eye in transiting objects for both position and distance. It is in common use on simple equatorial mountings, which, when provided with tangent screws and handles, makes micrometrical work a pleasure.

(5434) F. M. M. writes: 1. I want to make simple motor (SUPPLEMENT, No. 641), and wind it for current from 2 cells storage battery, to be charged with 8 gravities. Should I use coarser wire in winding? If so, what number, and how much on field and armature, respectively? A. Make no change. 2. Would 12 plates to each cell, each plate 8×10, be large enough, or what would be the best size? A. Yes. 3. What horse power would above two cells develop in motor? A. ⅛ horse power.

(5435) Subscriber writes: You recently published an invention for a cockroach trap. Permit me to suggest a more simple and effective mode for the nuisance. Use empty wine bottles with the smallest quantity of wine remaining in them. These pests are hardly able to get out. The fumes of the wine are too much for them. I have seen bottles of them thrown overboard.

(5436) F. R. asks: 1. How many cells of storage battery will be required to light eight sixteen candle power twenty volt lamps? A. Eleven cells in series. 2. Where can the lamps be obtained and price? A. Address Edison Lamp Co., Harrison, N. J. 3. What size plates shall I use? A. About 6 by 8 inches. 4. Will gravity batteries in which the copper and zinc each has an active surface of eighteen inches do for forming and charging? A. Yes. 5. Can storage batteries be charged in sets of say three? If so, how many gravity cells will it take? A. Yes; charge with five cells of gravity to two of storage, all in series.

(5437) N. F. Library, Newton, Kans., asks if water can be lifted from the bottom of a well 100 feet deep, 85 feet of water in it, by putting a check valve every 16 feet in the pipe, a foot valve at the bottom of pipe, the pipe filled with water. Or is it possible to lift it over 33 feet? A. The check valves are of no value in adding to the lift of the pump, but rather a hindrance, by their weight. Water in solid column can only be lifted possibly 33 feet, but practically about 28 feet from the pump bucket.

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AND EACH BEARING THAT DATE.

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