miles about due south from the western arm of that lake. To state the case is to prove its absurdity. So much for Mr. Pearce Giles's latest version of 'Lake Glazier.' HENRY D. HARROWER.

753 Broadway, New York.

Glaciers and glacialists.

Mr. James D. Dana, in *Science* for Aug. 20, says, "the memoirs of the Museum of comparative zoölogy, founded by Mr. Alexander Agassiz, and not by his father." In 1863, Prof. Louis Agassiz got a first grant of ten thousand dollars from the legislature of Massachusetts for the publication of those memoirs. The first paper is by Theodore Lyman, and was issued in March, 1865. The title is "Memoirs of the Museum of comparative zoölogy, at Harvard college," vol. i., Cambridge, 1864–65, 4°; contents, illustrated catalogue, etc. More than twelve volumes have been issued, the first three during Louis Agassiz's life.

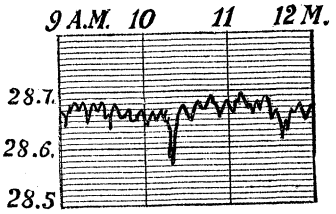
As to the accusation of 'Mr. Marcou's charge against Mr. Alexander Agassiz,' etc., it is almost superfluous — at least for those who have read my paper — to say that I have made no charge of any sort against Mr. Alexander Agassiz, and that his name is not even referred to. JULES MARCOU.

Cambridge, Sept. 11.

[The series was commenced as 'Illustrated catalogue,' and not as 'Memoirs,' each number independently paged; these numbers were not collected into volumes until after Louis Agassiz's death, when the closing number (9) of the second volume, published in 1876, was entitled 'Memoirs,' and the titles to the first three volumes (the third volume consisted of Nos. 7 and 8) first printed and distributed. — ED.]

Barometer exposure.

In accordance with 'Gan's' suggestion in *Science*, viii. p. 255, I herewith present a copy of the barograph record of Blue Hill observatory for the three hours from 9 A.M. to 12 M of Feb. 27, 1886.



The barograph from which this is taken is a Draper barograph, and multiplies three times. Its readings usually differ less than one one-hundredth of an inch from the readings of an adjacent standard Hicks barometer, with which its readings are compared every day. The barograph is situated in the lower room of a two-story tower. The air passes freely from this lower to an upper room, through a register-opening. In the top of this upper room is a trap-door opening out on the roof. The roof is flat, with a low turret around it, and the trap-door opens a little to the north of the centre. A picture of the observatory will be found in *Science*, v. p. 440.

The wind movement during the three hours given on the diagram was 55, 60, and 64 miles respectively, as shown by a Draper anemograph. The wind-velocities were quite large all day of the 27th; and the portion of the curve given in the above diagram is but a sample of the whole barograph curve of that date, only the oscillations at an earlier hour, when the wind-velocity was greater, are more rapid and slightly larger, excepting the sharp depression at 10.20 A.M. This portion of the curve was selected in order to exhibit this sharp depression, which was coincident with the opening of the trap-door in the tower. The barograph was observed immediately before and immediately after the opening of the trap-door. The exact interval between opening the trap-door and observing the barograph is not known, but was probably less than a minute; and I feel no doubt whatever of the coincidence of the fall of pressure with the opening of the trap-door.

Several similar depressions, though not so decided, because the wind-velocity was less, were noted at a later date, when one observer watched the barograph while another opened the trap-door; and the fall of pressure coincident with opening the door was undoubted. The depression shown on the diagram at 11.35 A.M. is found to be coincident with a marked increase in the wind's velocity, lasting several minutes, followed by a more permanent increase after noon.

The following note was written on the barograph sheet of the 27th, immediately after it was removed from the instrument: "The sharp depression at 10.20 A.M. was caused by opening hatch on tower; the other sharp depressions correspond with severe gusts of wind." On this date the up-and-down oscillations of the mercury in the standard Hicks barometer were so rapid that it was almost impossible to set the vernier accurately. Mr. F. V. Pike informs me that he had the same difficulty in reading his standard barometer at Newburyport, Mass. Such oscillations of the barograph as those on the diagram are quite common on Blue Hill. They begin to be noted with wind-velocities of about thirty miles, and increase in range with increased velocity of the wind, though winds from certain directions seem to have more influence in producing them than from other directions. This is probably owing to the position of the apertures. A rapid increase or decrease of the wind's velocity as much as ten miles is, I think, always accompanied here by a corresponding decrease or increase of pressure, which leads me to believe that even small wind-velocities affect the barometer readings; but the small oscillations spoken of above do not occur, because the difference between the velocity of a gust and of a succeeding lull is not great enough to produce them. I see no reasons for believing that the barometer is any more affected by the wind here than elsewhere. 'Gan's' statement that he found small oscillations of the barograph with wind-velocities of about twenty miles, a similar statement by Mr. E. B. Weston of Providence, R. I., and the statement of Mr. Pike that he had found rapid oscillations of his barometer during the high wind of Feb. 27, convince me that the effect of the wind on the barometer is universal. H. HELM CLAYTON.

Blue Hill meteor. observ., Sept. 23.

These serrations furnished by Mr. Clayton are certainly very extraordinary. It will be noticed that the trap-door is not upon a broad, flat roof, and also that there is only one of the effects which can be regarded as .05 below the general trend of the pressure trace. It seems probable that the barometer suspended by long steel springs has a tendency to magnify the effect. If it can be shown that the total

effect here given is due to the actual formation of a partial vacuum produced by the wind blowing across the trap-door, and not to a fault in the barograph, I will accept it. Certainly any such effect as this could have been easily learned long ago by the watching of an ordinary barometer. I have watched the barometer, both mercurial and aneroid, in very high winds, and have never seen any thing at all like this effect. GAN.

Oct. 1.

Constitution of the earth.

Reading yesterday the address of the president at the British association for the advancement of science at the recent meeting in Birmingham, it seemed to me, that, in discussing the geology of the Atlantic and the constitution of the earth, too much is ordinarily attributed to original action of sedimentary deposition.

In the *Scientific American* of June 19, 1885, is a section of the earth on a scale of five inches to its diameter. Upon this, in a greatly exaggerated vertical scale, are figured the heights of mountains and the depths of the ocean. But in a smaller figure the author shows that the thin line used to describe the circumference would, in its thickness alone, include the whole of the departures of the mountain-peaks and deepest seas from the true circle or ellipse which should represent the outline of the globe. If we suppose a five-inch globe of terra-cotta (red and well-burned clay) to be dipped for a few moments into a muddy ditch, when it comes out with a film of water adhering to its surface, this thinnest film filled with animalcules, adhering but so quickly evaporating, will, on this scale, represent all the water contained in all the oceans and lakes; and the small quantity which the slightly porous terra-cotta globe has absorbed will represent a greater quantity of water than all that is contained, or ever has been contained, in the depths and caverns and fissures of the earth itself.

The microscopic Desmidiaceae, Pleurosigmae, wriggling vibriones and bacilli, so well known to modern science, and playing such important parts in life and death of man, will, swimming in the adherent film, be greatly magnified representations of the huge monsters which crawled in the slime of morasses, and swam in the oceans of primeval chaos, when the earth first took form, and ceased to be void. The almost infinitesimal film of water will represent all the water that ever constituted a part of this world in which we live: for science tells us that no violence has ever been able to project a stone beyond the sphere of the earth's attraction, and that no vapor of water, no gas, can float in the thin ether which surrounds or penetrates our fifty miles of atmospheric depth. What part, then, in the constitution and formation and changes of the matter forming the depths of the earth can this very small proportion of water's sedimentary deposits play in the general construction of the globe? To us infinitesimal bodies, the surrounding rocks are immense. Seen from the planet Mars in connection with the whole mass of the earth, what are they? A skin, an envelope, thinner than the model's adhering watery film. Certainly we are more directly interested in the superficial strata which we can see and feel than in the deep masses of which we can learn so little that we speculate as to whether they are solid or fluid without reaching certainty. But the depths in the general plan and constitution of matter far outweigh the surface formations. And fire (for they are certainly hot) has had much more to do in moulding the earth than water and its sediments. M. C. MEIGS.

Washington, D.C., Sept. 25.

The excessive voracity of the female Mantis.

A few days since, I brought a male of Mantis carolina to a friend who had been keeping a solitary female as a pet. Placing them in the same jar, the male, in alarm, endeavored to escape. In a few minutes the female succeeded in grasping him. She first bit off his left front tarsus, and consumed the tibia and femur. Next she gnawed out his left eye. At this the male seemed to realize his proximity to one of the opposite sex, and began to make vain endeavors to mate. The female next ate up his right front leg, and then entirely decapitated him, devouring his head and gnawing into his thorax. Not until she had eaten all of his thorax except about three millimetres, did she stop to rest. All this while the male had continued his vain attempts to obtain entrance at the valvules, and he now succeeded, as she voluntarily spread the parts open, and union took place. She remained quiet for four hours, and the remnant of the male gave occasional signs of life by a movement of one of his remaining tarsi for three hours. The next morning she had entirely rid herself of her spouse, and nothing but his wings remained.

The female was apparently full-fed when the male was placed with her, and had always been plentifully supplied with food.

The extraordinary vitality of the species which permits a fragment of the male to perform the act of impregnation is necessary on account of the rapacity of the female, and it seems to be only by accident that a male ever escapes alive from the embraces of his partner.

Westwood quotes from the *Journal de physique*, 1784, an instance in which the female of the European species — Mantis religiosa — decapitated the male before mating; but I know of no record of a similar occurrence with M. carolina, nor of the further mutilation described above.

Riley, in his 'First monthly report,' p. 151, says, "The female being the strongest and most voracious, the male, in making his advances, has to risk his life many times, and only succeeds in grasping her by slyly and suddenly surprising her; and even then he frequently gets remorselessly devoured."

In Packard's 'Guide,' p. 575, we find, "Professor Sanborn Tenney tells me he has observed the female after sexual union devour the male."

L. O. HOWARD.

Washington, D.C., Sept. 27.

A mummified frog.

My letter which appeared in your issue of Sept. 24, describing the specimen of a mummified Hyla, contained an error, which I here wish to correct. The frog was taken from the McLean county coal-shaft of Illinois, and not of Pennsylvania, as stated, and the newspaper account was published in Burlington, Ill. There is, however, a McLean county in Pennsylvania, and it was through this fact that the slip in question occurred. R. W. SHUFELDT.

Fort Wingate, N. Mex., Sept. 29.