

pound toluene. From the latter is obtained the new substance known as saccharine, which is 230 times as sweet as the best cane-sugar, one part of it giving a very sweet taste to a thousand parts of water.

— Pleuro-pneumonia is reported to be raging with unprecedented violence among cattle in Montgomery county, Penn. Eighteen cases have occurred in one township.

— Recent evidence obtained in one of the ice-cream poisoning cases in Michigan, known as the Lawton case, confirms the views expressed by Dr. Vaughan, that it was due to tyrotoxin. It appears that the cream was frozen in an old wooden building, which had been previously used as a meat-market, but had been unoccupied for some time, and was in a most unsanitary condition, admirably adapted to pollute the cream and render it poisonous.

— Cholera appears to be on the increase in southern Europe. Our last report announced its presence at Pesth, where, since that time, numerous cases have occurred. Sardinia is now said to be infected.

— At a recent meeting of the state board of health of Michigan, an analysis was presented of five hundred deaths, at ages between eighteen and sixty-five, which occurred in the Michigan mutual life-insurance company during eighteen years. The chief causes of death, in order of frequency, were lung consumption, pneumonia, typhoid-fever, apoplexy, heart-disease, cancer, Bright's disease, and quick consumption. The average age of the decedents from typhoid-fever was 38.5 years; from lung consumption, 40.17; from apoplexy, 51.10; from cancer, 48.90; and from Bright's disease, 54.50. Those who died from consumption were of more than average height, of light weight, and had a small expansion of chest. The average height was 5 feet 11 inches, while the weight was but 139.45 pounds, and the expansion of the chest but 2.93 inches. This character of organization should lead its possessor to great care in his mode of life and surroundings. While, of course, it does not necessarily denote a tendency to tuberculous disease, it is at least a suggestion which is well worth attention and consideration.

— Some faint idea of the prevalence of small-pox in London last year can be gained by the statement that eleven thousand persons suffering with this disease or recovering from it were transported by steamer between London and Purfleet, where the floating hospital was located. This hospital had at one time four hundred patients within its walls for treatment, and not infrequently a hundred would seek admittance, being carried

from the city by one of the three steamers which were assigned to this service.

— The Massachusetts state board of health reports that their chemist has found the following adulterations: milk, adulterated by the addition of water and coloring-matter, and by the abstraction of cream; spices, addition of starch and other foreign powders; cream-of-tartar, substitution of starch, gypsum, and other cheaper substances; baking-powders, alum; honey, substitution of cane-sugar and glucose; molasses, addition of glucose and presence of tin; maple sugar and sirup, presence of glucose; confectionery, terra alba, poisonous coloring-matter, fusel oil, and arsenical wrappers; canned fruits, vegetables, and meats, presence of metallic poisons. Opium, cinchona, and other drugs have also been found adulterated. Since 1882, when the law was passed providing for the inspection of food and drugs, one hundred and seventy-five complaints have been made to the courts for violation of its provision.

— Prof. W. H. Pickering and assistants witnessed the eclipse of the sun, Aug. 29, at Grenada; and of that event the professor writes, "The eclipse passed off successfully, and we lost only 45 seconds out of the 226 through clouds. I had eighteen assistants selected from the islanders, and they all did very well. I think my results will be very satisfactory."

LETTERS TO THE EDITOR.

**.*Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

The source of the Mississippi.

IN the issue of *Science* for Sept. 24, Mr. Pearce Giles, in advocating Captain Glazier's claim to the discovery of the true source of the Mississippi, says,—

"There is nothing to be found in Schoolcraft's narrative to show that he penetrated south of Itasca. He speaks of an inlet to Lake Itasca leading from a smaller lake to the south, but clearly did not visit that smaller lake, and hence did not 'discover' it. Nor was it known to exist by Mr. Nicollet, who came after him. The latter explorer states that there are five creeks falling into Itasca. Captain Glazier discovered six, the sixth originating in a lake (not a lakelet) about five miles to the south of Itasca. This lake was not known to Nicollet. It lies nearly due south of the western arm of Itasca. He visited the others (which are mere ponds), but missed the most important one, probably owing to difficulty of access, the soil around it and for some distance from it being extremely swampy, and its inlet to Lake Itasca completely hidden by the densest vegetation. Such an inlet could not have been known to exist, except from the information of the Indian whose hunting-ground was in the immediate neighborhood. The 'infant Mississippi' flows from this lake, unknown until Captain Glazier forced his way into it in 1881."

Elsewhere Captain Glazier has told us that this lake is "about a mile and a half in greatest diam-

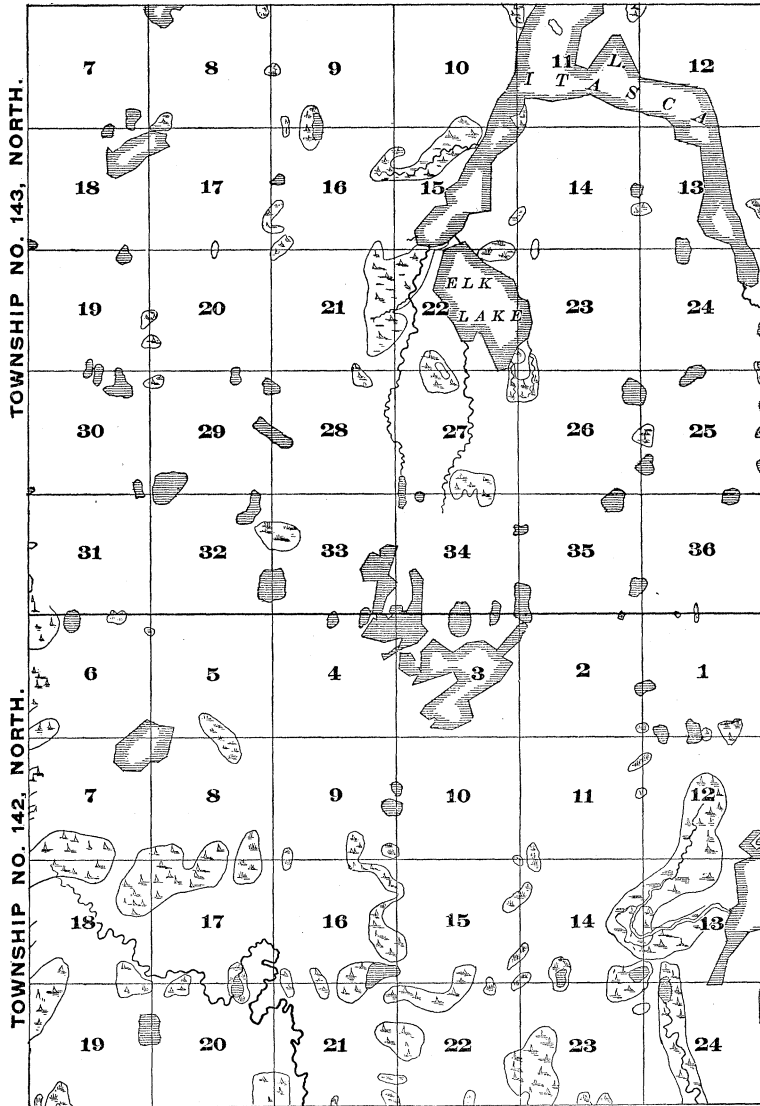
eter, and would be nearly oval in form but for a single promontory which extends its shores into the lake."

Then we are to look for Lake Glazier at the head

ence the course of the 'infant Mississippi' between Lake Glazier and Lake Itasca?

This map is a copy of the maps of two townships deposited in the government land office at Washing-

RANGE No. 36, WEST, 5th MERIDIAN.



**MAP OF LAKE ITASCA AND ELK LAKE,
AND VICINITY.**

Reduced from fac-simile tracings of maps of the surveys made in October, 1875, and deposited in the General Land Office at Washington, February, 1876. EDWIN S. HALL AND ASSISTANTS, SURVEYORS.

of a stream about five miles long, and lying nearly due south of the western arm of Itasca.

Now, will Mr. Pearce Giles be so kind as to point out on the accompanying map the exact location of Lake Glazier, and also trace for the readers of *Sci-*

ton. They were drawn from surveys made by Mr. Edwin S. Hall and assistants, who were in these two townships alone for over four weeks in September and October, 1875, six years before Captain Glazier stopped over night (July 21-22, 1881) in township

143, and spent a few hours the next day in making his great explorations. The accuracy of this map was fully verified by the late Mr. O. E. Garrison, who went carefully over the ground in July, 1880, in the service of the tenth U. S. census and of the Minnesota geological and natural history survey. Mr. Garrison travelled from south to north over the very line of Mr. Pearce Giles's 'infant Mississippi,' but he failed to find it; nor did he find any other stream flowing northward from any point more than two miles south of Itasca. The map is also certified to be correct by the land and timber agents of the Northern Pacific railroad, who have been over every quarter-section of these townships repeatedly since the official survey in 1875. I have now before me a copy of a letter from one of these hardy and intelligent woodsmen, written in October, 1875, describing a trip over this very ground, right on the heels of the government surveyors; and his report, while fully describing Elk Lake and Lake Itasca, makes no mention of any such lake or stream as Mr. Pearce Giles describes above.

The scale of the map is certainly adequate for Mr. Pearce Giles's use. Each small square represents a square mile, and the map thus shows us a stretch of fully seven miles south of Itasca.

It is due to "the majority of American geographers and map-makers," who, according to Mr. Pearce Giles, "now recognize Lake Glazier as the primal reservoir of the Great River," that he or Captain Glazier point out the exact location of his lake, since so many official and unofficial expeditions have failed to find it.

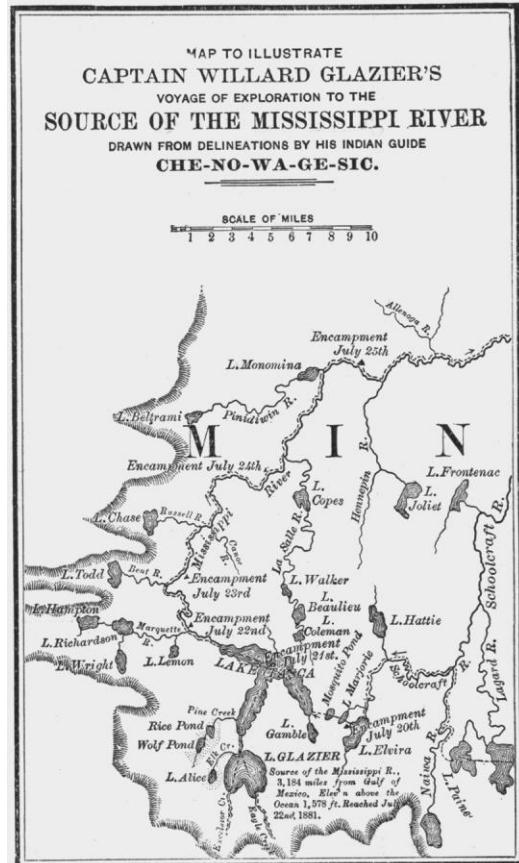
But really is not Mr. Pearce Giles claiming too much for Captain Glazier, in view of what has already been published by the captain and members of his party? This is the way one of the party, Mr. Bartlett Channing Paine, described the 'infant Mississippi' and 'Lake Glazier' in a letter to the *St. Paul Pioneer press*, dated Aug. 8, 1881:—

"We started for the upper end of the lake [Itasca] early next morning, finding when we reached it that it terminated in bulrushes and what seemed to be a swamp. Our guide, however, took us through the rushes, and we found that a small but swift stream entered here, up which with difficulty we pushed our canoes. *This stream is about half a mile long, and flows from one of the prettiest lakes we have seen on our trip. The shores are high rather than marshy, and covered with verdure; and the lake, which is nearly round, its regularity being broken by but one point, has a greatest diameter of a mile and a half, or perhaps two miles. Into this lake flow three small streams which rise in marshy ground from a mile to three miles from the lake. Having previously estimated the volume of water flowing into Itasca by all the streams contributing to it, and found the one from this lake much in excess of that of others, we held a little meeting on the point, and unanimously voted to call the new-found body of water Lake Glazier, in honor of the head of our party.*"

Every reader of this letter will agree with me in saying that Mr. Bartlett Channing Paine is describing, not a new-found Lake Glazier, but simply Elk Lake of the government survey of 1875;—that and nothing else. Further, Captain Glazier's own map, a facsimile of a part of which is here given, agrees with Mr. Paine, and shows Lake Glazier, as measured by the scale, less than a mile south of Lake Itasca. It is evident that Captain Glazier may have really

thought that he was the first white man to visit Elk Lake. ■

But that was not to be wondered at. People generally did not know about Elk Lake, and Captain Glazier had won a little temporary fame, which might be considered nothing worse than laughable. He might have acknowledged his blunder, and gone on making money lecturing on the 'Heroes of Mississippi exploration,' of whom he had ceased to be the chiefest and last. This, however, does not seem to suit the captain and his friends, and they are making a last desperate effort to distort the facts of geogra-



phy to suit their ambitions and conceits. The worthlessness of their actual discoveries being shown, they now propose to strike out five miles to the south over the crest of the heights of land, and locate a new Lake Glazier to suit themselves, which no mortal has ever set eye upon. Until water can be made to flow up hill, this latest Lake Glazier will not answer its purpose. The crest of the heights of land is only about three miles from the southern extremity of Lake Itasca. Yet Captain Glazier would have us believe that above Lake Itasca he found five miles of 'infant Mississippi,' one and a half miles of 'Lake Glazier,' and inlets of the latter reaching a mile or two farther south,—in all, a continuous water-course flowing into Lake Itasca from a point eight or nine

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.

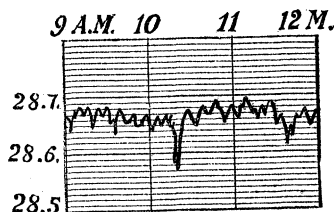
JULES MARCOU.

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