

the assistance of C. E. von Baer and H. Rathke, and in the second edition, 1835, with the same assistance, and, besides them, with E. Meyer and J. Valentin, and in a French translation of the same work, § 237 gives an account of Sprengel's discoveries. "If he should have gone a little too far in some cases it would be without importance; the same occurs with every scientist who makes a great discovery, and becomes with it enthusiastically excited." I know personally that Burdach's well-reputed assistants were thoroughly acquainted with Sprengel's observations.

Prof. H. Burmeister had studied in Greifswald and in Halle, and published his "Handbuch der Entomologie," 1832; an English translation by F. Shuckard. He speaks (vol. i. p. 303) about Sprengel's and Koelreuter's observations at some length, also as well known and of the highest importance. Prof. Burmeister will be indeed best able to state if he became acquainted with the facts in Prof. Hornschuck's lecture on the physiology of the plants, "naturæ mysteria nobis aperire expertus est" ("vita" in Prof. Burmeister's dissertation), or in Halle by Prof. Carl Sprengel, the nephew of Rector Sprengel, or somewhere else. I know personally that in Berlin, Link, Lichtenstein, Klug, Erichson were entirely acquainted with Sprengel's discoveries. Prof. Kunth was a very old friend of Heim (Life, ii. p. 9), and beyond doubt acquainted with the facts, though he has not brought it forward in his lectures after Dr. F. Müller's statement. I was assured by scientific friends that Treviranus in Bonn and Nees von Esenbeck in Breslau were well acquainted with Sprengel. I confess that I am entirely at a loss to understand how it happened that Sprengel was unknown to scientists in England, where Kirby and Spence's "Introduction," &c., had seven editions from 1815 to 1867, the last of 13,000 copies. There would be no difficulty to find in German libraries more publications to corroborate my views, but I believe those quoted are sufficient to prove what I intended to state in my former note.

H. A. HAGEN

Cambridge, Mass., March 24

Salt-water Fish-Types in Fresh Water

MR. HARDMAN's observations on the occurrence of "sea-fish in fresh-water rivers" (NATURE, vol. xxix. pp. 452-53) are not by any means unique, as he has supposed. On the contrary, cases similar to those he has recorded are so frequent as to justify him in believing that "some caution must be observed in the classification of strata as fresh-water or marine on the evidence of fish alone." The incursion and confinement of the two types specially mentioned—the "sunfish" and "shark"—in fresh water have many parallels. For instance, in NATURE, vol. xiii. p. 107, Messrs. W. W. Wood and A. B. Meyer have recorded that "near Manila is the Lacuna de Baij, a large sheet of water" whose "water is quite fresh, and, after settling, perfectly potable," but in which live a sunfish (*Pristis perottelli*) and a small shark. Further, in Lake Nicaragua, whose mean height above mean tide in the Pacific and Atlantic Oceans is 107'63 feet, are likewise found a sunfish—apparently *Pristis antiquorum*—and a peculiar shark—*Eulamia* (or *Carcharias*) *nicaraguensis*. The last have been especially noticed in a "Synopsis of the Fishes of Lake Nicaragua, by Theodore Gill, M.D., and J. F. Bransford, M.D., U.S.N.," in 1877 (*Proc. Acad. Nat. Sci. Phila.*, pp. 175-91). Therein it is also urged that "these instances, supplemented as they are by many others, are sufficient to convey a caution against too extensive generalisation of the physiographical conditions hinted at by fossil remains of aquatic types."

THEO. GILL.

Washington, April 1

"The Axioms of Geometry"

MR. ROBT. B. HAYWARD has written to me that some of the statements in my article, "The Axioms of Geometry," in NATURE, March 13 (p. 453), are too sweeping, and that in particular Euclid I. 16 does not necessarily hold for the geometry of the eye-being, or, to use the more familiar language of spherical geometry, that this theorem does not hold unless the median line of the triangle on the side on which the exterior angle lies is less than a quadrant.

Mr. Hayward has also pointed out that the error lies in the assumption that a terminated straight line "may be produced to any length."

All this is clear enough, and I was conscious of it when I

wrote the article. In fact I meant to add, but somehow omitted to do so, that every figure considered has to be limited to less than a hemisphere, or to less than half the space round the eye-being. If this is done, and if by the whole figure is understood the given figure together with any addition required for the proof, then my statements will hold, but with one exception. I was wrong in saying that Legendre's proof, given by Mr. Casey, can be treated in the same manner as Sir Wm. Hamilton's. For in this proof a series of triangles is constructed with sides which increase till they become infinite. The reasoning is therefore not applicable to the sphere. But neither is it to the plane. We have no right to reason about infinite figures as we do about finite ones.

O. HENRICI

Wild Duck laying in Rook's Nest

A WEEK ago to-day six wild duck's eggs were taken out of a rook's nest about four miles from here. The rookery is situated on the banks of the River Test. The nest from which these eggs were taken (the bird flew off as the nest was approached) was in a horse-chestnut tree, and was about thirty feet from the ground; the tree was about twenty-five yards from the river, and was surrounded by others, mostly elm. An instance of so unusual a situation for wild duck's eggs might, I thought, interest some of your readers.

JOHN H. WILLMORE

Queenwood College, near Stockbridge, Hants, April 3

[Our correspondent has sent us one of the eggs referred to, which we have submitted to a well-known oologist, who is of opinion that the egg is most likely a wild duck's.—ED.]

The Remarkable Sunsets

I LEARN from Mr. Frank Atwater, a teacher in the Native College here, that he observed the "glow" at 5 a.m. on September 5, when landing from the steamer at Maalaea, thirteen miles south-east of this. He had arrived in the islands only two days before, and marvelled much if such were the sunrises here. He is the only person I have met who observed it prior to the evening of that day. Mr. Atwater's date is verifiable by the regular movements of the steam-packet.

Lahaina, Hawaiian Islands, March 14

S. E. BISHOP

Cats on the District Railway

WITH reference to Mr. Vicar's letter last week (p. 551) about the cats at Victoria Station, I beg to state that there are cats all over the District Railway both in and out of the tunnels, and many of them—familiarily called "Stumpy" by the men on the line—can testify by the shortness of their tails to the hairbreadth escapes they have had from passing trains. Those I have seen are mostly full-grown cats, and only once have I seen a kitten walking on the rails, and that was at night after the traffic had ceased. At one signal-box which is built on a platform over the line, and the only access to which is by a steep iron ladder, down which no cat could climb, there are two full-grown tabbies—toms I believe—and I have often seen them asleep behind the signal bells or even on the handrail of the platform, utterly callous to the trains rushing by underneath. As a rule the men are very kind to them, and give them milk, &c.

I would add that until quite recently there was a small fountain and circular basin near one of the pumping-engine houses wherein were two fish which had been there for about twelve years. One died last year, and now I see the basin has been converted into a flower-bed by the man in charge.

E. DE M. MALAN

Victoria Station, District Railway, April 14

THE GEODETIC SURVEY OF THE UNITED STATES¹

WE would congratulate Prof. J. E. Hilgard, the Superintendent of the Survey, on his first general Report on the work of his department, which gives an account of the Survey for the fiscal year ending June 1882. We are unable to gather why its issue has been deferred until now, but its arrival at the present time is not the less opportune, particularly as the programme of

¹ "Report of the Superintendent of the Survey," Washington, 1883, 556 pp., 4to.