compact mass. On the 11th and 12th came freezing weather, and the fall of a small amount of very light snow. On the 13th the thermometer, toward noon, rose above freezing-point, with a stiff breeze from the south. This wind so acted on the surface-particles of the upper layer of uncompacted snow as to set some of them in motion. Each particle thus set in motion, owing to the soft condition of the surface-snow, formed a nucleus, which, as it proceeded, forced along by the wind, gathered the contiguous portion of the soft layer, and assumed the form of a cylinder, with a conical cavity at each end, and having a length about twice as great as its diameter. The size depended upon the inclination and smoothness of the surface traversed. The largest cylinders I saw were about three feet long, at which limit they acquired sufficient weight to indent the frozen surface of the under or main body of the snow. This, of course, stopped the further rolling of the mass. The only locality where they acquired the above large size was where the surface had a slight inclination to the north; and the snow was deep enough to cover all weeds, leaving a perfectly uniform and smooth surface for their formation. In many cases the balls were rolled up an inclination of as much as one foot in ten, when exposed to the unbroken force of the wind; but those thus formed acquired weight sufficient to resist the pressure of the wind, when about six inches in diameter. When the surface inclined toward or directly away from the wind, the balls traversed a straight path; but, when the surface declined to the north-east or north-west, the path was a curve; at its initial, approximately straight; but, as the ball acquired weight, its direction was a compromise between that required by gravity and that by the direction of the wind, until, in some cases, the ball obeyed gravity alone. The most curious part of the display was the abundance of the balls. While travelling three miles, I saw what I estimated at over a hundred acres dotted more or less thickly with the cylinders. In some cases there were twenty-five balls to the square rod; in others, only two or three; averaging, perhaps, eight or ten. I saw multitudes in the process of formation, which was as sudden as a flash; but they almost immediately assumed a slow rate of motion, about that of a mole taking his leisurely walk. In a few cases the cylinders would stop, and afterward be forced into motion again. The largest examples required for their formation the traversing of from two to three rods. SAM HUSTON.

Richmond, O., Jan. 16, 1884.

The wind performed a very pretty feat in some portions of northern Ohio on the morning of Jan. 13. Loose bits of snow were caught up as a nucleus, and rolled along upon the surface until balls of considerable size and peculiar shape were formed. The whole surface was strewn with the balls; but they were most abundant upon lawns and fields where the wind was not obstructed, every square yard, in some places, bearing a ball of greater or less size. The largest observed here were upon the college ball-grounds, where they reached ten inches in height, and a horizontal length of eighteen inches. Even these were swaying as the gusts passed over them; and their tapering track could be plainly traced back towards the south-west, twenty-five or thirty feet, to the apex where they started. Their shape was cylindrical, deeply hollowed at both ends, so that they looked like 'muffs,' and the spiral formed by the successive layers was finely regular and distinct.

The meteorological conditions which made the phenomenon possible were as follows. Two days before the occurrence a slight crust was formed upon the snow. On the following day an inch of light flaky snow fell upon this crust. Then followed the warm south-west wind on the morning of the 13th, which brought the upper layer of snow into the adhesive state, and rolled the balls before the crust was weakened; the crust sustaining the balls, and keeping them up to the wind, and at the same time furnishing a smooth floor upon which they could be propelled. The nuclei of the balls were obtained from chance foot-tracks, walk-borders, lumps blown from trees, etc., though often it was difficult to account for them. The balls were most abundant and perfect at about nine o'clock A.M. Before noon the crust had been attacked, and all sunk to rounded, insignificant clumps.

Oberlin, O. ALBERT A. WRIGHT.

[Similar snow-rolls were seen at Sharpsville, Mercer county, Penn., on the same day, by J. M. Goodwin.]

Halos round the moon.

On the evening of Jan. 12, at 9.20 (90th meridian time), my attention was called to a peculiar appearance about the moon. The sky was quite clear at the time, and there appeared around the moon several colored circular bands. The first was of a bright silver-gray shade, and about two diameters of the moon in width. The next was yellow, the next faint orange, and the next violet. The three bands were each about one-half a diameter in width. The outermost band was of a green shade, and about two diameters in width. At ten o'clock the innermost light band remained, but all the others had been replaced by a blue band lighter than the surrounding sky.

H. A. HUSTON.

Lafayette, Ind., Jan. 14, 1884.

Explorations in Guatemala.

Looking over the back numbers of your esteemed journal, I came across a slight error. In the article 'Lorillard City' it is said (ii. 412), "M. Charnay found the ruins of an ancient city, which he named after his generous patron. In his exploration here, he was assisted by a young Englishman, Mr. Alfred Maudslay, with whom he shares the honor of discovery," etc.

Neither Mr. Maudslay, who arrived at these ruins before Mr. Charnay, nor the latter, can claim this honor. In fact, Mr. Maudslay distinctly states (p. 196 of the *Proc. roy. geogr. soc.*, April, 1883) that they have been discovered by Mr. Edwin Rockstroh, tutor on the Lyceo nacional at Guatemala City. This gentleman made, during the first half of 1881, a geographical and archeological exploration in the northern and western parts of the republic, visiting Tikal, and navigating the Rio de la Pasion, Rio de las Salinas, Rio de los Gacandones, and the Usumasinta as far down as the ruins mentioned. He sent a short account of this voyage to Petermann's *Mittheilungen* (1881, p. 396).

In that account Mr. Rockstroh mentioned particularly the building described by Mr. Maudslay on p. 198 of the geographical society's proceedings; and (1882, on p. 435) he clearly states that Charnay's 'Lorillard City' is the same as that discovered by him in 1881. Mr. Rockstroh mentioned in his first letter to the *Mittheilungen* (July 19, 1881), that the Gacandones call these ruins 'Menche,' and promised in his last notice (1882, p. 435) an explanation of this name. I am not aware that he has furnished one.

I find in the 'Historia de la provincia de San Vicente de Chiapa y Guatemala,' by Antonio de

Remesal (Madrid, 1619), libro xi., cap. xviii.–xx., pp. 720–733, a province 'el Manché' mentioned as one of the provinces of Vera Paz, the Indians of which were converted in the years 1603 and 1604. Mr. Maudslay's map contains the Rio del Manché, an eastern tributary of the Rio Sta. Izabel, which latter, in its lower course, is called Rio de la Pasion. The province of Manché must evidently have been situated on the river of the same name, to the north of the village Cahabon, which was the starting-point of the Padres for their trip of conversion, as Remesal states.

Whether the name of this province, 'Manché,' has any connection with the word 'Menche,' as Mr. Rockstroh says the ruins on the Usumacinta (separated by a mountain chain from the central part of the Peten district) have, remains to be seen.

In regard to the notice in the same number and on the same page of *Science*, 'Explorations in Guatemala,' I beg to add, that the ruins of Tikal had been discovered in February, 1848, by Mr. Modesto Mendez, corregidor of the district of Peten, and by the gobernador Ambrosio Tut. Mr. Hesse, minister of Prussia in Central America, published the report of Mr. Mendez, dated March 8, 1848, in vol. i. of the 'Zeitschrift für allgemeine erdkunde' (Berlin, 1853, pp. 162–168), and added some general remarks, and two plates which he had carefully copied from Mr. Mendez's drawings. These plates contain the illustrations of four sculptures (in wood) and five monoliths discovered by Mr. Mendez in Tikal, and those of four monoliths discovered by him in 1852 in Dolores, — another town with ruins, to the south of Tikal, in the same district of Peten. The chairman of the Royal geographical society is therefore mistaken in stating (p. 203 of the Proceedings) that the ruins of Tikal were described for the first time by Mr. Maudslay.

The report of Modesto Mendez is mentioned by Mr. A. F. Bandelier in his Bibliography of Yucatan and Central America, in 'Proceedings of the American antiquarian society,' 1880, p. 92.

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Barn-owls in Missouri.

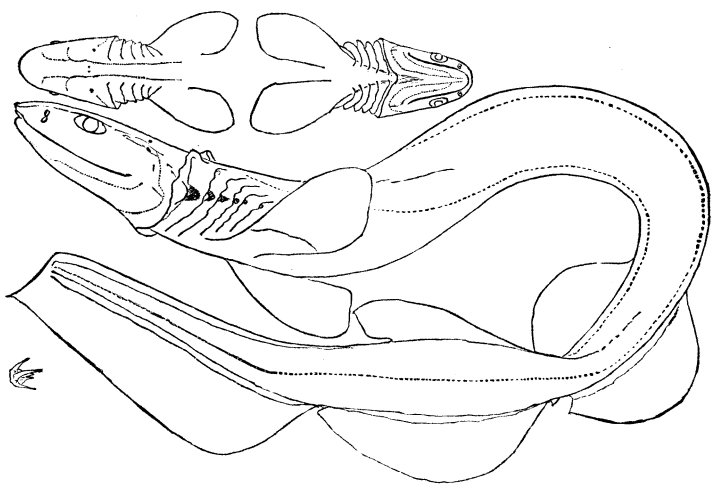
In *Science* for Jan. 11 the occurrence of the barn-owl in southern Ohio in unusual numbers the present winter is recorded. The same fact has been noticed here. Four have been caught in the city in as many different buildings, and a number took up their habitation in an unused chimney in one of the principal residences in the city. Another was killed a few miles out. They are so unusual here that no one knew what kind of owl they were when the first was captured.

F. A. SAMPSON.

Sedalia natural history society,
Sedalia, Mo.

A PECULIAR SELACHIAN.

THE outlines given here are taken from a shark recently discovered in Japanese waters. It is a form of more than ordinary interest on account of the respects in which it differs from the majority of its kindred. 'Is it a sea-serpent?' is asked by all who see it. Those who believe in the existence of the ocean monster may certainly derive some encouragement from the discovery. About the throat the appearance is decidedly fish-like. The body is long and slender, five feet in total length, and less than four inches in greatest diameter; it becomes compressed and thin toward the tail. The head is broad, slightly convex on the crown, and has a look about it that reminds one of some of the venomous snakes. The mouth is anterior and very wide. As in other sharks, the teeth are arranged in rows across



CHLAMYDOSELACHUS ANGUINEUS.

the jaws; they are all alike. Each tooth has three slender, curved, inward-directed cusps, and a broad base, which extends back in a pair of points under the next tooth, thereby securing firmness, and preventing reversion. In the twenty-eight rows of the upper jaws, and twenty-seven of the lower, there are three times as many rows of the fangs or cusps. Of the six gill-openings, the anterior are very wide. Unlike other Selachians, in this the frill, or flap, covering the first opening is free across the isthmus, as in fishes, and hangs down about an inch. On the body the slime-canals — shown by the dotted lines in the sketch — form continuous grooves, as if the skin had been cut with a sharp knife; they extend to the extreme end of the tail. The spiracles are so small as to be useless; but, being present, they point toward an ancestor, a bottom-feeder, in