wampum beads, the remainder of the belt being in dark purple. This probably belonged to the gens bearing the name of the calumet, and whose office it was to prepare and present the grand calumet in all the solemn assemblies.

The effect of the isolation of this tribe upon its language is also an interesting and important study. Through the courtesy of Superior Antoine and Père Burtin, I have obtained access to an invaluable collection by the French missionary Marcoux, which will furnish Mohawk synonymes for a dictionary of the six Iroquois dialects, for which thirty thousand words have already been gathered. ERMINNIE SMITH.

203 Pacific Ave., Jersey City.

Many snakes killed.

The number of snakes killed near this city during the late overflow of the Nemaha River is almost beyond belief. They were driven by the water from the bottom-lands to the higher grounds, and especially to the embankments thrown up across the bottom for the Burlington and Missouri and the Missouri Pacific railways. It is estimated that more than three thousand snakes were killed within a mile of this town. They were chiefly garter snakes; but water moccasons, blue racers, and rattlesnakes were also killed. A horse was confined in a pasture surrounded by a wire fence in the overflowed district, and, when released, it was found that several snakes had taken refuge in the long hair of his mane. Since my residence here, I have travelled nearly all over this county, a portion of the time engaged in geological explorations; yet, up to the time of the present June overflow, I had failed to see half a dozen snakes all told. The overflowed district along the Nemaha would not average over a mile in width; and it is astonishing where so many snakes found hiding-places. Undoubtedly, nearly all the snakes in this county are confined to the creek and river bottoms.

STEPHEN BOWERS.

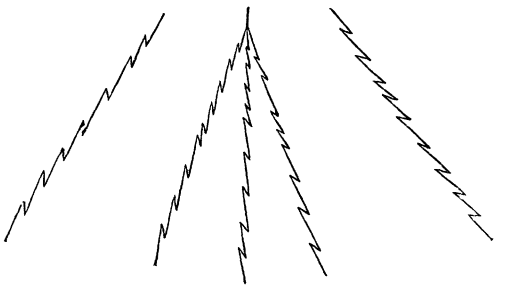
Falls City, Neb., July 10, 1883.

Swallows in Boston.

Has any one seen a swallow in Boston this summer? The old proverb says, 'One swallow does not make a summer.' Have we a summer and not one swallow? CARL REDDOTS.

Singular lightning.

On the evening of July 4, 1883, I noticed some lightning which differed from any that I have previously seen. About sunset a mass of very threatening clouds, accompanied by heavy rain and lightning of the usual character, rose in the north-west, and, following an easterly course, passed a little to the northward, giving us a few drops of rain from its ragged southern edge. It was quickly succeeded by a comparatively thin cloud-stratum, — apparently the after-birth of the main storm, — the course of which was directly overhead. During the passage of this cloud, rain fell briskly but not heavily for perhaps half an hour, and rather frequent flashes of lightning preceded and followed the first sprinkle. Owing to my position on the eastern side of a large building, I could not see the earlier flashes; but their light, thrown on the walls of neighboring houses, was noticeably rose-colored. At length, however, one came that could be accurately noted. It passed directly overhead, forking into five fine, thread-like lines of vivid yellow light. Each line was distinctly zig-zagged with sharp though not prominent angles. The divergence of the lines was nearly regular, but the outer pair branched at a greater angle than the inner three. The relative divergence was similar to that of the outstretched fingers of a human hand; but a still more accurate idea may be given by the following sketch.



The flash above described was followed, in a few minutes, by a second one, apparently similar, but less satisfactorily noted. After this the rapid passage of the storm carried the lightning beyond my limited space of observation.

I may add that none of the lightning from this cloud seemed to come to the earth, its course being on an apparently horizontal plane. The accompanying thunder was unusually deep and grand.

WILLIAM BREWSTER.

Cambridge, Mass.

Deflective effect of the earth's rotation.

In SCIENCE for March 2 (No. 4), Mr. W. M. Davis says, "A correct knowledge of the deflective effect of the earth's rotation is generally accounted the result of studies made within the last twenty-five years."

This correct knowledge, he says, is still disputed by some authors.

By transferring the axis of rotation to the tangent plane on which the body is supposed to move, and resolving the earth's rotary motion into two motions, — one around the meridian of the tangent plane, and the other around a vertical to that plane, — it is easily seen, without recourse to the equations of motion, that the angular motion of the tangent plane with respect to a fixed plane will depend upon the angular rotation of the earth and the sine of the latitude of the tangent plane; from which it follows that the deflective force is the same, in whatever direction the body is supposed to move on any given tangent plane.

But in resolving the actual motion into two motions, respectively around the vertical to the tangent plane and around the meridian of that plane, we have neglected the effect resulting from the latter, — a consideration of which would have introduced another term, containing a function of, and therefore varying with, the cosine of the angle contained between the meridian and the line of projection of the moving body; we have also neglected the effect of the centrifugal force resulting from the motion of the body, which is a minimum when the motion is in the meridian, and a maximum when at right angles to the meridian, and therefore also varies with the cosine of the angle contained between the meridian and the line of projection of the moving body. When the velocity is considerable, both these terms become sensible; and therefore the deflective force is least when the body moves in the meridian, and greatest when the motion is at right angles with the meridian.

This conclusion is in conflict with the 'correct knowledge' above alluded to; viz., that the deflec-

tion of the moving body depends 'not at all on the direction of its motion.' But I may remark, that Routh (see Rigid dynamics, p. 192) has also given the subject a rigorous investigation by means of the equations of motion, and finds for the deviation to the right, in north latitude, two terms, — the one agreeing with the above, as found from the component about the vertical; and the other, a function of the cosine of the angle contained between the meridian and the line of projection of the moving body.

J. E. HENDRICKS.

Des Moines, Io., July 16, 1883.

ALNWICK CASTLE ANTIQUITIES.

A descriptive catalogue of antiquities, chiefly British, at Alnwick Castle. Printed for private distribution. Newcastle-upon-Tyne, 1880. 11+210 p., 43 pl. 4°.

By the generosity of the Duke of Northumberland, the Boston public library has recently been made the recipient of a copy of this truly magnificent work, and of the companion volume descriptive of the important collection of Egyptian antiquities, also preserved at Alnwick. In no more satisfactory manner could the liberality and public spirit of the noble proprietor have been manifested than in thus sharing his treasures with the antiquaries and art-lovers of other countries. Such sumptuous volumes as these constitute a monument *aere perennius*, like those which illustrate the literary and artistic treasures of Earl Spencer at Althorp, or the magnificent publications in which the Archduke Ludwig of Austria has recorded his travels.

In its artistic and mechanical execution, this catalogue is beyond praise: never have we seen more beautiful or more faithful delineations of the various kinds of antiquities. If we cannot speak in quite such high terms of commendation of the accompanying letterpress, the fault should not be laid to the charge of Dr. Collingwood Bruce, upon whom devolved the task of preparing the work for the press. His competency as an antiquary has been sufficiently manifested by his able and thorough study of 'The Roman wall,' whose 'stations' have yielded to the explorer many of the objects described in the volume. It is to the untimely death of Mr. Albert Way, by whose assistance and advice much of the collection was gathered, who knew its contents thoroughly, and to whom the preparation of the catalogue had been originally intrusted, that any shortcoming must be attributed. Although several distinguished English antiquaries have lent their aid to the editor in their respective departments of knowledge, we miss the influence of one guiding mind, familiar with the results of recent archeological research in all its various branches, and capable of 'speaking the latest word' upon the many interesting and important topics suggested. Still the reader cannot fail to receive instruction from the accounts given of numerous relics of various periods in the ages long since past, while the beauty of many of the objects delineated goes far to justify the claim that, —

> "Not rough nor barren are the winding ways
> Of hoar antiquity, but strewn with flowers."

The expression 'chiefly British' in the title must be understood to mean that the greater part of the antiquities described have been found in Great Britain. Those first represented belong to the prehistoric periods of stone, of bronze, and of iron, and consist mainly of weapons and implements, such as axes and celts of stone, and swords and celts of bronze, or of a great variety of those rude, hand-made, sepulchral vases found in grave-mounds, in which was stored a supply of food for the dead. To the same remote ages are to be ascribed those singular markings found upon stones, known to archeologists by the name of 'cup-cuttings,' of which two remarkable examples occurring in Northumberland are represented. They are found in countries widely separated, and everywhere they closely resemble one another, and they have greatly exercised the minds of antiquaries as to their origin and significance. They consist of a series of shallow pits or cups, incised upon ledges, or, more frequently, upon bowlders. Of these, a central one is often found surrounded by one or more concentric circles; and a characteristic feature of such groups is a longitudinal groove extending from the central cup to beyond the outermost of the circles that surround it. That they are religious emblems is generally conceded, as the same kind of markings is found upon the slabs of stone of which ancient graves have been constructed. It is highly probable that they are a conventional representation of a primitive system of nature-worship that prevailed among our Aryan ancestors, symbolizing the mysterious origin of life. The whole subject has recently been treated in the most able and exhaustive manner by the learned archeologist of the Smithsonian institution, Mr. Charles Rau, in the fifth volume of Major Powell's 'Contributions to American ethnology.' We cannot help feeling surprised that the editor, while quoting largely from Sir James Simpson's 'Archaic sculptures,' makes no reference whatever to the late Professor Edouard Desor of Neuchâtel, whose various writings