

The author, a square, confesses that he is at a loss what course to pursue when one of his own hexagonal grandsons pleads as an excuse for his disobedience that a sudden change in the temperature has caused an unequal shrinking in his perimeter, and that the blame ought to be laid, not on him, but on his configuration, which can only be strengthened by abundance of the choicest sweet-meats.

The women in Flatland are straight lines. As they have no angles, they have no intellect; and as they have nothing to say, and no constraint of wit, sense, or reason to prevent their saying it, their conversation is a great bore. To such an extent has the system of female non-education or quietism been pushed, that they are no longer taught to read, nor to master arithmetic enough to count the angles of their husbands or children. The author fears that this policy has been carried so far as to react injuriously on the men, who are obliged to lead a bi-lingual or even a bi-mental existence. They must be able to speak not only the female language of emotion, but also the male language of science, in which 'love' becomes 'the anticipation of benefits,' 'duty' becomes 'necessity' or 'fitness,' and other words are correspondingly transmuted. In the presence of women, moreover, the language used implies the utmost deference for their sex; but behind their backs they are both regarded and spoken of as being little better than 'mindless organisms.' The strain of this dual existence, it is believed, has some tendency to enfeeble the male intellect, and on that ground alone the author appeals to the authorities to reconsider the regulations of female education.

LETTERS TO THE EDITOR.

The sun-thermometer during the recent eclipse.

At mid-day, just before the commencement of the eclipse, Draper's self-recording sun-thermometer of this observatory indicated a sun-temperature of 92° F., while the self-recording thermometer in the shade at the same time indicated 33° F.

When the obscuration was at its maximum, 1.30 p.m., the sun-temperature had fallen to 69°, while that in the shade was still 33°.

At the end of the eclipse, 2.50 p.m., the sun-temperature had risen to 82°, and that in the shade to 34°.

It is interesting to note from the above facts, that one-half of the difference between the sun-temperature and that in the shade, at the beginning of the eclipse, is 29½°; while the actual fall of temperature during the eclipse, as shown by the sun-instrument, was 23°. This is as it should be, for only about one-third of the sun was obscured. It is probable, that, if the eclipse had been total, the readings of the two instruments would have been the same.

DANIEL DRAPER, Ph.D., *Director*.
New-York meteorological observatory,
Central Park.

An attempt to photograph the corona.

It occurred to the writer that the late partial solar eclipse would be an excellent chance to repeat Huggins's experiments on photographing the corona. A three-inch refractor of about forty inches focal length was employed. A drop-shutter was attached to the lens, giving an exposure which was estimated at about a fifth of a second. A piece of deep-violet glass was procured, which could be inserted just in front of the plate, or removed, at pleasure. By its use a negative image of the sun's disk was obtained, but without it the plate gave a reversed image; the sun being a positive and transparent, while the surroundings remained negative and were dark, the appearance being strikingly similar to that of a photograph of a total solar eclipse. Both bromide and chloride plates were provided; but, as with Mr. Huggins, the latter proved to give much the better coronal effects. A ferrous-oxalate developer was employed, which contained a large proportion of potassium bromide. The weather throughout the eclipse was wholly favorable; and we began photographing at ten o'clock, two hours and twenty minutes before the eclipse began, and continued at work until five minutes past four, or an hour and ten minutes after it had terminated. Photographs were taken every half-hour, with extra ones interpolated at the more interesting phases, making twenty-nine pictures in all.

Very corona-like effects were certainly produced, faint rays here and there shooting out perpendicularly to the sun's surface. But unfortunately no two of the pictures were alike, and the corona in front of the moon was quite as well marked as that on the other side of the sun. Indeed, the most corona-like ray produced, appeared in one photograph stretching directly towards, and terminating at, the centre of the moon. Nine photographs taken in succession showed one side of the halo stretching to a greater distance than the other; but in one of these the darkening was carried so far out, that it became nearly separated from the rest of the corona, and appeared as a distinct dark circle of the same size as, and by the side of, the image of the sun. This, of course, showed it to be merely an internal reflection of that image, and nothing more. During the course of the experiments, the object-glass was revolved about its optical axis, photographs being taken in four positions. No effect, however, was discernible upon the plates.

The conclusions I should draw from my experiment are, 1°, that, though it is very easy to obtain a corona-like image, one may readily be deceived in such matters, and the same effect be obtained by our atmosphere, without the aid of the solar corona, combined with little defects in the gelatine film (this, I think, is conclusively shown by the extension of the pseudo-corona in front of the moon); 2°, that chloride

plates are more suitable than bromide for obtaining an atmospheric corona, just as Mr. Huggins has claimed that they are more suitable for taking a solar one; hence I think one must not rely too much on the ultra-violet region sensitiveness of the chloride plate for a separation of the two; lastly, though my experiments fail to corroborate Mr. Huggins's results, they do not, of course, show that his corona may not be solar, but merely indicate that under very favorable circumstances I could obtain no trace of it.

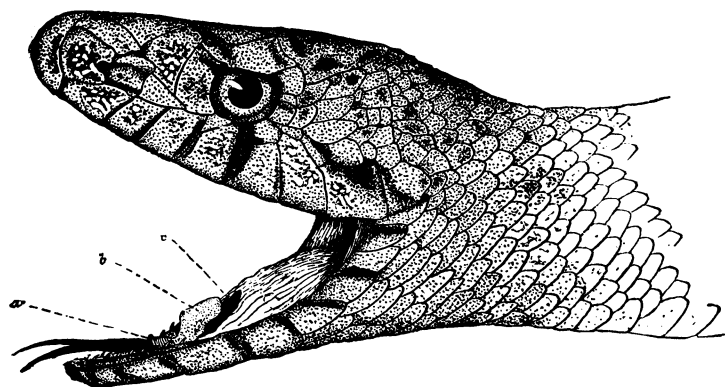
I have before me a print made from a negative by Dr. O. Lobse in October, 1878, showing effects very similar to those obtained by myself, except that his view was not taken during an eclipse. He considers that the halo is wholly atmospheric, and not coronal.

W. H. PICKERING.

Photographic laboratory, Mass. inst. technology.

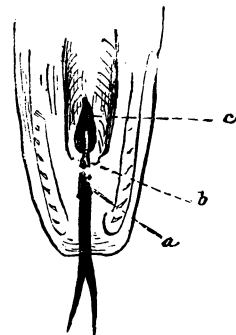
The voice of serpents.

The interesting observations presented by Prof. C. H. Hitchcock on this subject, in No. 104, and the additional experiments made by Mr. H. H. Nicholson upon a specimen of *Pituophis Sayi*, and recorded in No. 109, open a very interesting field for research.



LEFT LATERAL VIEW OF THE HEAD OF *PITUOPHIS SAYI* BELLONA, LIFE-SIZE.

(From *American naturalist*.)



THE MOUTH PARTS FROM ABOVE.

a, tongue-sheath; b, epiglottis; c, rima-glottidis.

If it has not already met your correspondents' eyes, it may not come amiss for me to invite their attention to a very interesting and important article relating to this subject, contributed by Dr. C. A. White to the January number of the *American naturalist* for 1883. Dr. White here very concisely describes the peculiar structure of the vocal organs of *Pituophis*, which, so far as I am aware, he is the first to have noticed.

The character of the voice of the bull-snake is well known; and Dr. White clearly shows in his article how the peculiar form of the epiglottis contributes to its production.

It may not be out of place to reproduce the drawings here, that I was permitted to make for Dr. White, illustrating this structure of the epiglottis in *Pituophis*. They may be of interest to those who have the opportunities of seeing the pages of *Science*, where the *Naturalist* may not be available.

In again calling attention to this structure and its situation, it may induce others to make further investigations into a very inviting subject.

R. W. SHUFELDT, U.S.A.

Fort Wingate, N.Mex., March 19.

The Indians are the mound-builders.

In No. 108 of *Science* there is a review of 'Prehistoric America,'—a work by the Marquis de Nadaillac,—and at the end of the review an editorial note which has challenged my attention. You say that the review "seems to maintain the identity of all peoples that ever inhabited the American continent up to the advent of Europeans," and base this upon the opinions of the reviewer, that the mound-builders were no other than the Indian tribes found in the country in post-Columbian time, and their ancestors. In this respect I most heartily agree with the opinions of your reviewer. There has never been presented one item of evidence that the mound-builders were a people of culture superior to that of the tribes that inhabited the valley of the Mississippi a hundred years ago. The evidence is complete that these tribes have built mounds within the historic period; and no mounds or earthworks have been discovered superior in structure or contents to those known to have been built in historic times. The theory that the country was inhabited by a people highly organized as nations, and having arts of a higher grade than those belonging to tribal society, is wild and

baseless; and the fruit of that theory is nothing but exaggeration and false statement.

All this being granted, your own conclusion, which is not found in the statements of the reviewer, is altogether inadmissible. "The identity of all peoples that ever inhabited the American continent, up to the advent of Europeans," is not and can not be held by any intelligent anthropologist, except in some very broad sense; as, for example, that they belonged to the human race, or that they occupied one continent. In respect to mythologies, languages, and institutions, there are, and have been, many distinct peoples; and in respect to arts there is much diversity, though arts travel from people to people with the greatest ease. At the present time we cannot have fewer than seventy distinct peoples among the tribes of North America, and in antiquity the number may have been greater. The mound-building peoples did not constitute a distinct race. Many peoples have built mounds on this continent, and some continue to build mounds to the present day. The writer has seen a tribe of Indians erect a mound.

J. W. POWELL.

Washington, March 24.