

able to support them and their progeny without great difficulty. Now a little consideration will show that the longer the life and the slower the reproduction of the trees, the greater will be the contrast. If the plant infested by the borers had been an annual herb, it might have contrived to perfect its seeds, and the death of the old stem would be but a natural and inevitable process, and fresh plants might have been produced in sufficient numbers to continue the species in spite of all insect-attacks. But in the case of trees—oak-trees especially, the rate of growth and reproduction is such that, unless the insect-borers can live in galls, they will destroy the plants entirely, and themselves in consequence. Indeed, I have no doubt, that if all the gall-makers now existing could suddenly be transformed into stem-borers, the genera *Quercus*, *Rosa*, and *Salix*, now so dominant, would shortly disappear from off the face of the earth. The other hypothesis—here assuming that the production of galls is due more to the tree than the insect—is this. Suppose an oak-tree with four branches, all attacked by internal-feeding insects. Two of the branches produce swellings in which the insects live, while the other two produce none, and the insects have to devour the vital parts. Now the two branches which produced no swellings would quickly be killed by the insects, but those which produced galls would live, and the more perfect the galls, the greater the insect-population they would be able to support. Hence the tree would finally, by the survival of its gall-producing branches, become purely gall-producing, and we may assume that its progeny would inherit the peculiarity.

I am aware that the above arguments will sound a little like those of the Irishman, who said he ought not to be hanged, because, "in the first place, he did not kill the man; in the second place, he killed him by accident; and thirdly, he killed him in self-defence,"—but I do not represent either of the above hypotheses as the precise truth of the matter, and I think they sufficiently illustrate the principles involved.

T. D. A. COCKERELL.

West Cliff, Custer Co., Colorado, March 16.

On the Use of the Edison Phonograph in the Preservation of the Languages of the American Indians.

THE present state of perfection of the Edison phonograph led me to attempt some experiments with it on our New England Indians, as a means of preserving languages which are rapidly becoming extinct. I accordingly made a visit to Calais, Maine, and was able, through the kindness of Mrs. W. Wallace Brown, to take upon the phonograph a collection of records illustrating the language, folk-lore, songs, and counting-out rhymes of the Passamaquoddy Indians. My experiments met with complete success, and I was able not only to take the records, but also to take them so well that the Indians themselves recognized the voices of other members of the tribe who had spoken the day before.

One of the most interesting records which was made was the song of the snake dance, sung by Noel Josephs, who is recognized by the Passamaquoddies as the best acquainted of all with this song "of old time." He is always the leader in the dance, and sang it in the same way as at its last celebration.

I also took upon the same wax cylinder on which the impressions are made his account of the dance, including the invitation which precedes the ceremony.

In addition to the song of the snake dance I obtained on the phonograph an interesting "trade song," and a "Mohawk war song" which is very old. Several other songs were recorded. Many very interesting old folk-tales were also taken. In some of these there occur ancient songs with archaic words, imitation of the voices of animals, old and young. An ordinary conversation between two Indians, and a counting-out rhyme, are among the records made.

I found the schedules of the United States Bureau of Ethnology of great value in my work, and adopted the method of giving Passamaquoddy and English words consecutively on the cylinders.

The records were all numbered, and the announcement of the subject made on each in English. Some of the stories filled several cylinders, but there was little difficulty in making the changes necessary to pass from one to the other, and the Indians, after some practice, were able to "make good records" in the instrument. Thirty-six cylinders were taken in all. One apiece is sufficient for most of the songs and for many of the short stories. The longest story taken was a folk-tale, which occupies

nine cylinders, about "Podump" and "Pook-jin-Squiss," the "Black Cat and the Toad Woman," which has never been published. In a detailed report of my work with the phonograph in preserving the Passamaquoddy language, I hope to give a translation of this interesting story.

Boston, U.S.A., March 20.

J. WALTER FEWKES.

Solar Halos and Parhelia.

A MAGNIFICENT display of solar halos and parhelia was witnessed here this afternoon, exceeding in beauty and brilliancy that observed on January 29, 1890, and described in NATURE, February 6, p. 330.

The phenomenon was similar to the one of January 29, except that the mock suns were distinctly outside the first circle or halo, at a distance of 5° or 6°, and were when first seen at 3 p.m. *above* the level of the true sun; a handkerchief stretched at arm's length from one to the other gave the blurred image of the sun several degrees lower.

At 3.49 the patch of white light appeared about 90° from the right mock sun and connected to it with a *curved* band of white light, concave side upwards. The right mock sun must then have been *below* the level of the sun, as the band appeared to pass upwards through it to the sun. This band only remained a few minutes; the right sun and zenith arc at the time were most intensely brilliant, with the colours exceptionally clear and vivid. The zenith arc, and the patch of white light, were the last to disappear at 4.22.

The cirro-stratus cloud during and after the display was rapidly advancing from the north.

Driffild, April 9.

J. LOVELL.

Cambridge Anthropometry.

I HAVE read with much interest, in NATURE of March 13 (p. 450), Mr. Venn's very interesting article on anthropometry at Cambridge.

There is in his tables one rather peculiar feature, of which I find no notice taken in the text. It will be seen on reference to the tables that, while the other physical characteristics increase from A to B, and from B to C (weight and height being irregular, however), the *breath* is highest in A, less in B, and least in C; thus falling with the intellectual fall.

It is true that the difference in this as in most of the other characteristics is so slight as to be—as Mr. Venn says—practically negligible; but still the fact that this should steadily *fall* instead of rising with the other physical characteristics strikes me as peculiar. I should be glad therefore to hear if Mr. Venn has any comment to make on this phenomenon, or any explanation thereof to suggest.

April 4.

F. H. P. C.

A Remarkable Meteor.

ON Thursday, April 10, at 10.40 p.m., I observed a meteor of extraordinary brilliancy shoot from a point just east of β Leonis. It travelled over about 10° in a north-westerly direction, and was visible for fully two seconds. Its apparent diameter, as nearly as I can judge, was about a quarter of that of the full moon; its colour, a very vivid pale green.

J. DUNN.

Much Marcle, Herefordshire, April 11.

Earthworms from Pennsylvania.

NEARLY twenty years ago, a very aberrant earthworm was described by a French naturalist, who obtained it from Pennsylvania. I should be greatly indebted to any naturalists or travellers who may find themselves in that part of the United States, if they would collect some of these worms and send them to me. The most convenient mode of transmission would be to pack the living worms in *moist* earth with moss or grass, in a tin box perforated at one end: this should be inclosed in a wooden box. Both small and large worms should be collected: some might be preserved in strong spirit, but living specimens would be the most useful.

W. BLAXLAND BENHAM.

University College, London, April 10.

Crystals of Lime.

SINCE the appearance of my letter on this subject (p. 515) I have found that similar crystals have been recently observed by Mr. J. Joly, and were described by him in the Proceedings of the Royal Dublin Society, vol. vi. p. 255.

H. A. MIERS.