

gunning, is increasing, and shall increase so long as vegetable and animal life covers the surface of the earth. This is not the case where vegetation ceases to cover the surface, and the sun and wind get direct access to the surface; any soil that may have been formed there soon disappears. In such situations, until vegetation has again spread itself, all the earthworms that could congregate there would only add to the decaying animal matter, as live they could not, there being no food for them in the absence of vegetation and other animal matter.

Bonnington, Midlothian

JAMES MELVIN

I INCLOSE an excerpt from NATURE of January 3 (p. 213), which I saw in one of our daily newspapers. The observation there made is correct as to the absence of earthworms in the region mentioned, but the reason assigned is, I think, incorrect. It is well known to settlers on virgin soils in this country that in the first tillage of the ground they will see no earthworms. This is equally the case whether they settle upon prairie land which has been swept annually by fires, or upon wood land which has been cleared for cultivation and which has never been burned over. Even in the natural meadows called "beaver meadows," which one will chance upon in an otherwise completely forest-covered region, one will at first find no sign of the earthworm. Some sluggish stream is dammed by a colony of beavers, and the land flooded is cleared of trees by them. Alluvial deposits accumulate, and when the beavers have been killed or driven away the dam is destroyed by freshets, and the little stream regains its former dimensions, while the flooded ground, drained naturally, becomes a meadow covered with wild grasses nourished by rich depths of soil. But, until settlement and tillage by man, there is no trace of earthworms even in these most favourable localities. At first they are found about the stableyard, then in portions of ground enriched by stable manure, garden or meadow, till at length they may be found in all soils, either those cultivated or those pastured by domesticated animals.

For years I have been accustomed to go to Mukoka, in the Canadian Dominion, for shooting and fishing. This section is a wooded wilderness with numerous lakes and streams. It is still Governmental wild land, and in part unsurveyed for settlement. The frontier settlers there tell me that until a place has been inhabited for five years it is useless to search for the earthworm.

HY. F. WALKER

8, East Thirtieth Street, New York City, U.S.A.,

March 5

The Remarkable Sunsets

THE following extract from a letter written at Auspaki, province of Vitebsk, Russia, may be of interest:—

"February 26 (Old Style), March 9

"February has been the coldest and the pleasantest month this winter, particularly the latter part of it; frost from 5° to 12° Reaumur; bright sunshine. Now we have been able to see the roseate sunsets, which for at least three months have been hidden by clouds. We are, however, so accustomed to brilliant sunsets here, that we might not have remarked them if our attention had not been directed to them. Here, generally, when the sky is clear and the frost severe, the eastern horizon is a misty blue, above which is a rosy streak melting away into the clear blue above. But these latter sunsets have differed from that in a great measure. The west has often been blood-red, and the eastern horizon has been rosy, not so much in a streak but in patches, which have sometimes been visible over head. At the beginning of the month I was in Riga, and found the river open below bridge; indeed, the navigation has not been closed the whole winter. Snow there was none in Riga, and I saw them carting the most miserable ice for the ice-cellars; I think it was little more than six inches thick. We have been favoured here; we have retained our snow, and have had, and still have, good sledge roads. We filled the ice-cellar the day before yesterday, and the ice was more than a foot in thickness. . . ."

J. M. HAYWARD

Sidmouth, March 24

THOUGH we are no longer favoured with the gorgeous sunsets which marked the autumn and early winter, yet two phenomena are still frequently visible which seem referable to the same cause as those splendid displays.

The first is the unusual *white glow* in the western sky before

sunset which was an almost constant precursor of the brilliant and long-continued colouring of the past months. It was very marked on November 8, the occasion of the first remarkable sunset, and it is still to be seen on almost any fine evening before the sun sets, though it is no longer followed by the more striking phenomena.

The second is a decidedly unusual *pink tinge* occasionally visible for some ten to twenty degrees round the sun when shining in a somewhat hazy sky, the colour being brought out with great distinctness if light cumulus cloud happens to be passing across it. I first observed it about 1 p.m. on Sunday, March 2, and it was very marked last Thursday (20th) between 10 and 11 a.m., and again on Friday (21st) between 1 and 2 p.m., as well as on one or two other days which I have not specially noted.

May not both be due to the gradual subsidence to a lower level in our atmosphere of the particles which at a higher elevation caused the wonderful colouring of the past months?

Hampstead, March 24

B. W. S.

P.S.—Since first writing the above, I see in NATURE that it was from March 1 to 3 that the fall of dust was noticed at Killecraggan. Writing from the neighbourhood of London, it may be as well to say that the appearance is wholly different from any effect of London smoke (with which I have been familiar for nearly fifty years) both in colour and in being produced at a higher level than that of ordinary clouds.

"Curious Habit of a Brazilian Moth"

IN NATURE for May 17, 1883 (p. 55), appeared a letter entitled as above, by Mr. E. Dukinfield Jones, in which the author stated that he had observed a kind of moth in Brazil engaged in sucking up water in large quantity through its proboscis. I may say that this strange habit is not confined to *Panthera apardalaria*, as I have observed the same thing in two species of butterfly (*Papilio oricabus*, B., and *Appias saba*, F.), and imagine that the phenomenon is by no means rare. These two butterflies are very common by the sides of streams and damp places on the Anky plain in Madagascar.

One morning while sitting by the side of one of these streams I noticed the *Papilio*, which is an insect measuring about four inches from tip to tip of its wings, resting on the wet bank; and wishing to procure it as a specimen, I approached it as gently as possible, the creature being apparently so absorbed in what it was about as to be totally unconscious of my proximity to it. Noticing strange and unaccountable movements—sundry jerks and probings with its proboscis—I quietly sat down near it to watch it more closely. I observed that every second or two a drop of pure liquid was squirted (not exuded merely) from the tip of its abdomen. I picked up a leaf that was lying near, and inserted the edge of it between the insect's body and the ground so as to catch the liquid. Unfortunately I had no watch with me at the time, nor means of measuring liquids; but I reckoned that about thirty drops were emitted per minute. I held the leaf for about five minutes—as nearly so as I could reckon—and at the end of that time there was caught in it about a saltspoon full of what seemed to be pure water, without either taste or colour. After watching the butterfly for a time, I seized it by the wings between my thumb and fingers with the greatest ease, so utterly lost did it appear to be to what was going on near it.

In another spot I saw as many as sixteen of these large butterflies within the space of a square foot, all engaged in the same strange action. Some of them emitted the liquid more frequently and in greater quantity than others; and one of them squirted the liquid so as to drop fully a quarter or a third of an inch beyond the point on the ground perpendicular with the end of its body. It was at this spot that I saw the second of the butterflies alluded to also engaged in the same curious proceeding.

Antananarivo, Madagascar, January 3

R. BARON

Representation of Students

THE students in residence at Girton College are indirectly represented by the members elected by the "certificated students," but cannot themselves, whilst they are in the condition of undergraduates, elect a representative on the governing body.

The College Hall of Residence has advanced one step further in the same direction by offering direct representation to students *in residence*, and it is this new departure which was mentioned in NATURE (vol. xxix. p. 388).