

sarily meagre, whereas such matter as a list of photographic chemicals required, with the prices—information that can be obtained from any trade catalogue—might easily have been omitted. On the whole, however, the object of the book is fulfilled, and it will form, to those who have a microscope of simple construction, or who, having a camera, wish to apply it for microscopic work as well, a most useful guide. The illustrations are in all cases of a high order, and have been selected, not merely as pictorial examples of photo-micrographic work, but, so far as possible, to bring home to the student the difficulties to be encountered and the results to be attained.

J. E. BARNARD.

LETTERS TO THE EDITOR.

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The Inheritance of Acquired Characters.

IN reviewing Prof. Eigenmann's book on the cave vertebrates of America (NATURE, November 11, p. 40), the reviewer quotes the author's opinion that "The bleached condition of animals living in the dark, an individual environmental adaptation, is transmissible, and finally becomes hereditarily fixed. . . . Natural selection cannot have affected the coloration of the cave forms, for it can be of no consequence whether a cave species is white or black." Your reviewer further dismisses Romanes's supposition that colour may be correlated with other structures which are subject to selection.

Is it not probable that the mere cessation of natural selection with regard to colour would produce this colourless condition quite apart from light or other environmental factor?

In the silkworm moth, *Bombyx mori*, we have a similar absence of colour in both moth and larva, solely, I take it, because no attention has been paid to the colour of either during the many centuries that the species has been selected for its silk-producing qualities alone under semi-domestication.

While on this subject, I may perhaps refer to Mr. Wm. Wood Smyth's letter in NATURE of May 6 last (vol. lxxx., No. 2062, p. 277), with reference to the drone breeding habits of some workers of the hive bee affording a possible channel for use inheritance in regard to neuter characters.

I had hoped that this important point would have been the subject of further correspondence by the acknowledged authorities on apiculture.

I thought that this feature of egg-laying workers was, as a rule, confined to queenless hives that were more or less in *extremis*. Presumably the habit would be subject to heredity, and if, as I understand, it is not only a detriment but a source of danger to any community of bees to have any number of egg-laying workers, it seems reasonable to suppose that in wild stocks such a habit would be so stringently restricted by natural selection as to deprive its occasional occurrence in domesticated stocks of any significance in the production of the structural differences or special habits which differentiate workers from queens. It would be of very great interest to know if neuter ants of any species retain the power of laying occasional eggs.

A. BACOT.

MR. BACOT's suggestion with regard to the cessation of natural selection in relation to the bleaching of cave animals has been fully dealt with by Prof. Eigenmann himself in the work under review. It will be only fair to Prof. Eigenmann to quote his own words:—"Panmixia can not account for the discharge of the colour, since it returns in some species when they are exposed to the light and disappears to a certain extent in others when kept in the dark.

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Panmixia, Romanes thinks, may have helped to discharge the colour. In many instances the colour is a protective adaptation, and therefore maintained by selection. Panmixia might in such instances lower the general average to what has been termed the 'birth-mean.' *Proteus* is perhaps such an instance. But in this species the bleached condition has not yet been hereditarily established, and since each individual is independently affected, 'the main cause of change must have been of that direct order which we understand by the term climatic.' Since, however, the bleached condition, which in the first instance is an individual reaction to the absence of light, has become hereditarily established in *Amblyopsis* so that the bleaching goes on even when the young are reared in the light, it is evident that in *Amblyopsis* we have the direct effect of the environment on the individual hereditarily established."

If Mr. Bacot will read the notice again he will see that the reference to "Romanes's supposition that colour may be correlated with other structures which are subject to selection" is a quotation. The reviewer still considers, however, that Prof. Eigenmann has made out a strong case.

ARTHUR DENDY.

Radio-activity and the Rocks.

MR. F. P. MENNELL, in NATURE of November 18, raises the question whether the more strongly active of the rock-forming minerals owe their activity to thorium. I have a considerable number of data on this subject obtained by direct experiment, estimating radium and thorium by their emanations. I find, by this method, that zircon, sphene, and apatite usually contain some thorium, but that it generally contributes less to the activity than the substances of the uranium-radium series.

R. J. STRUTT.

Imperial College of Science, South Kensington,
November 20.

The Auroral Display of October 18.

THE aurora of October 18 was observed at Allegheny Observatory under conditions somewhat similar to those mentioned by Mr. Ernest Baty in NATURE of October 28 (vol. lxxxii., p. 518). Here, however, the whole sky was dull, hazy, and cloudy at the beginning of the display, gradually clearing toward midnight. No stars whatever could be seen in the region covered by the aurora, which was very bright. This fact might lead us to think that it had its origin in the lower layers of the atmosphere.

The aurora consisted of the usual arch, from which arose streamers at various points, some of them extending to an altitude of about 45°. These drifted westward and gradually diminished in brightness, while they were followed by others in rapid succession. The streamers had at times a reddish tint.

The aurora was still faintly visible at 1 a.m., by which time the sky had become perfectly clear.

F. C. JORDAN.

Allegheny Observatory, Allegheny, Pa.,
November 9.

Large Flying-fish.

A FLYING-FISH flew on to the lower deck last night about 8.30 p.m. The deck is 20 feet above the water-line, and the railing is 4 feet 6 inches above the deck, but it is possible for it to have flown through the railing; the fish measured 17½ inches from tip of nose to tip of tail. I forgot to weigh it before it was cooked. It was the largest flying-fish I have ever handled. Could any reader of NATURE kindly inform me what is the largest size known? We were about fifty miles north of Tenerife when it came on board. The species up here appear to be larger than those in the tropics and near South America. I have seen large ones in the Gulf of Aden, but never caught one, though I am inclined to think this was a larger species. The longest flyers always appear to be the largest fish; the longest flight I have seen has been about 400 yards.

C. HOWARD TRIPP.

S.S. *Kaipara*, October 15.