

vironment, not to be described as use or injury, but broadly classed as excess or defect of heat, light, strain, moisture, chemical constituents of food, may set up in an organism changes of growth, structure, and function of the most striking and obvious character, greatly in excess of the apparent magnitude of the responsible factor. Take, for instance, such cases as that of the rest-harrow grown in dry upland as contrasted with that grown in moist meadowland.

I also objected (and do so again) to the loose use of the word "stimulus" in this connection by Dr. Reid. A particular, definite, measurable agent setting up by its action on living matter a reaction is, in biological terminology, said to stimulate that living matter, and both it and its immediate action are called "a stimulus." The exact nature of the stimulating activity, whether set up by this or that chemical substance, by this or that fluctuation of light, heat, or by electrical conditions, is stated with precision, and its amount and duration compared with the effect on the living matter. To call the nutrition—the normal, persistent nutrition of a growing seed or young plant—"a stimulus" is inadequate and misleading. A good deal of analysis is omitted by so doing. When nutrition, the necessary normal supply of chemical materials in the presence of which a seedling grows and unfolds or develops its specific qualities, is described baldly as "a stimulus," whilst a slicing cut, removing a man's ear and leaving a growth of scar tissue in its place, is also dismissed as "a stimulus," it is obvious that two things profoundly different in character and importance are confused under a common heading. The first is the absolutely essential and widely distributed condition for the continued existence of a living thing; the second is exceptional—an abrupt change with correspondingly exceptional result. Neither is correctly described as "a stimulus," though many stimuli of different nature occur in connection with both.

Dr. Reid says he will admit that he is quibbling about the meaning of the term "acquired characters" if I will indicate how an inborn trait is more inborn and less acquired than an acquirement. The term "inborn trait" has nothing to do with the matter, as I have explained above. The words "change" and "acquire" imply an existing standard from which there is change or to which there is addition. The fact that the standard is itself an acquirement when viewed in relation to another phenomenon, namely, a reproductive germ, is irrelevant.

Dr. Reid quotes passages from Wallace, Weismann, and Romanes which do not treat of the matter under discussion, and suggests that he "sins with them," and that they agree with his forced interpretation of the term "acquired characters." The suggestion seems to me to be devoid of justification.

Chiefly, however, I object to Dr. Reid's stating that I have called this "a historical discussion," implying that I attach historical importance to it. I have used no such words. This statement by Dr. Reid is erroneous, as is also his attribution to me of certain opinions about the muscular development of an ordinary individual and of a blacksmith. He says, "Sir Ray Lankester regards the former as normal and therefore inborn and inheritable, and the latter as abnormal and therefore acquired and non-inheritable." This is entirely imaginary. I never wrote a word on the subject of muscular development, nor have I stated that abnormal qualities are necessarily acquired and non-inheritable, or anything of the kind. I do not desire to continue a discussion in which fictitious words and opinions are attributed to me. Nor do I

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desire to obtain any "admission" from Dr. Reid. I am content to leave the matter to the judgment of your readers.

April 5.

E. RAY LANKESTER.

Clouds and Shadows.

ON the evening of Easter Monday I noticed in the western sky an effect which was unlike anything I had ever seen before. The sun was just setting behind a great bank of cloud, the rest of the sky being fairly clear, except for a thin veil of alto-stratus (it was not very high), which was moving at a good rate from the north-west, and stretched across the whole sky. This stratus was scarcely noticeable at first, as the sun's rays shining through it produced a milky kind of light in the sky. In startling contrast to this there appeared about halfway between the horizon and the zenith, to the south-west, what looked like an extraordinary "cloud," which compelled attention. It was obvious, however, that this was no cloud, as it remained quite stationary, while the stratus (which I now observed) and also a few small lower clouds were driven quickly across the sky.

I became greatly interested in the phenomenon, and watched it closely for half an hour or more, and the impression I got was that the apparent cloud was really a heavy shadow, cast upon the otherwise brightly illumined stratus by some unseen object away in the west, which was intercepting the sun's rays. The "dark patch" varied in shape and size, expanding and contracting, but preserving on the whole a shape somewhat like a fan, and keeping the same position in the sky.

After a time I noticed an exactly similar effect growing into shape, halfway between the first one and the point where the sun had set, so that a line drawn through them from the sun would be at an angle of about 45° with the horizon.

I made notes and rough sketches at the time, and could give more complete details as to the conditions existing, and the varying shapes and positions of the dark "shadows." It may be that this effect is not uncommon, and is easily accounted for; but although I have studied the skies for many years I have never before seen anything like it, and I feel confident that it must have been, at any rate, unusual.

While freely confessing ignorance of any scientific knowledge on such matters, I should be very glad to be enlightened as to the explanation of the phenomenon, and also to hear whether anyone else noticed the occurrence.

CHAS. TILDEN SMITH.

"Chisbury," Little Bedwyn, Wilts, April 15.

Winter in India.

I NOTICE that in NATURE of February 15 your reviewer quotes without comment a passage from "Freshwater Sponges, Hydroids and Polyzoa" (Fauna of British India Series) which implies that winter in India is the *driest time* of the year as well as the coolest. This must be a slip on the part of the author. Not only is there a considerable quantity of water in rivers, tanks, and pools in winter compared with the spring and early summer, but the relative humidity is very much higher. In cases where I have collected figures the mean relative humidity is at about the average of the whole year in December and January, and then drops continually up to the first half of May, but it would doubtless vary in different parts of the country.

H. H. H.

Camp, Central Provinces.