LETTERS TO THE EDITOR

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Professor von Siebold and the Freshwater Fishes of England

THE object of the present letter is to appeal to naturalists throughout the British islands to assist Prof. von Siebold—the eminent zoologist of Munich—in his studies of the freshwater fishes of Europe. Prof. Siebold is preparing a new edition of his well-known work on that subject, and is exceedingly anxious to obtain specimens of some of our British freshwater fishes to compare with the specimens which he has collected from all parts of Europe. In spite of various attempts, he has, I am very sorry to have to say, failed to obtain specimens from English naturalists. I am sure that this can be only owing to the fact that he has not been able to make his wants known directly to those who could help him. I have not myself been able to do much in supplying the specimens of which he forwarded to me a list, but from the Thames at Oxford have sent him Dace, Bleak, Pope, Miller's Thumb, and Sticklebacks. The list to which I refer included the Graining and the Azurine fishes which have been obtained in or near Knowsley Park; and I have received a kind assurance from Lord Derby that efforts shall be made to procure specimens for Prof. Siebold. Specimens of these and of the Powan, the Pollan, the Gwyniad, and the Vendayce, are the chief desiderata which I am anxious to obtain for Prof. Siebold; his list also includes the Sharp-nosed and the Broad-nosed Eel.

If any naturalist who possesses specimens of these fish which he can spare for the purposes of scientific investigation, or who can by reason of local opportunity obtain such specimens, will forward them to me at University College, London, preserved in spirit, I will transmit them to Prof. Siebold, taking care that he shall know to whom he is indebted in each case.

A more difficult task, I am afraid, is that of procuring specimens of the Brine Shrimp, *Artemia salina*. Prof. Siebold has made an extensive study of specimens of Artemia and allied Branchiopoda from various European localities, and is anxious to compare English specimens with those from other localities. He wishes especially to obtain "gatherings" of these Crustacea in order to determine the absence, presence, and relative abundance of the male sex in different localities. Specimens from Lymington or from Guernsey would be very welcome.

I hope that through the columns of NATURE I may succeed in reaching those naturalists who, I am sure, are not few in number, who will be willing to contribute material for the valuable researches which Prof. Siebold has so long been carrying on.

E. RAY LANKESTER

March 5

Seasonal Flower Distribution and the Radiometer Vagaries

ALTHOUGH apparently so dissimilar, there is an intimate connection between the seasonal order of colour in flowers and the seeming erratic behaviour of certain radiometers.

Whatever be the cause of the mechanical action of light which is now exciting so much attention, the kind of light remaining the same, the experiments show that different surfaces produce dissimilar effects, the results with pith discs applying to pith only and being different from those obtained with mica, which strictly apply to mica alone. This is due in all probability to the difference in inter-molecular conditions presented by the two substances. When these conditions are thoroughly understood and a proper margin allowed for experimental errors, the observations which seem now at variance will most likely be reconciled. To acquire the needed knowledge, it is my humble opinion that some modification of the present method will be required, because many of the comparative experiments which have been tried hitherto in the domain of radiant light and heat are open to the objection that heterogeneous bodies having been dealt with, a difference of chemical constitution has been introduced for which no allowance could be made. To obviate this in the present instance, and ascertain the result of such differences, would it not be well to employ the following typical mode of procedure:—

In preparing the radiometer, let the discs be dipped into melted sulphur, or other convenient colour-changing body, and the completed apparatus inclosed in a jacket for the convenience of raising the temperature. A series of observations made at the normal temperature, when compared with a like series made at a high temperature, would doubtless reveal many interesting facts. There are many difficulties in the way which would take much experiment to overcome.

Now turn we to the flowers. The former question seems to depend probably upon the reflection of light, and the latter on absorption, the one being complementary to the other. I would here call the attention of your readers to the behaviour of inorganic coloured bodies when heated and to the laws of colour-change given in NATURE (vol. xiii. p. 298). There is here such an identity of relations as nearly to preclude the possibility of its being a mere coincidence. I shall speak more particularly of this in another note in a few days.

In reply to Mr. Rogers' query (p. 326), it may be remarked that *absorbed light* seems to be the active agent in vital work, *e.g.*, it is the light absorbed by the retina which, as motion of some kind, is transmitted along the optic nerve. This being the case, it would seem highly probable that to exclude from a flower such light as it reflects would not affect it at all, although of course the only sure answer to such a query is experiment.

Feb. 28 WM. ACKROYD

D-line Spectra

WITH reference to Prof. Stokes's courteous but rather theoretical explanation in NATURE, vol. xiii. page 247 (which I have been prevented from acknowledging before), I would ask him or yourself for a practical explanation of the following simple experiment:—

1. If platinum wire be reddened from a constant source of heat, as that applied to it by means of a blowpipe and a candle, we find the D-line spectra indefinitely produced until incandescence takes place by *additional* heat, or, in other words, that their permanency is in direct proportion to the *bulk* of the wire used, and in inverse proportion to the amount of heat applied. We can therefore, by using a *thick* platinum wire and the ordinary flame of a blowpipe, produce D-line spectra as long as we like, or as long as the fuel lasts.

2. Now if this D-line producing flame be due to sodium, its action for a long period upon a reagent so sensitive to sodium as is *Boric Acid*, ought to give a reaction by which the presence of that alkali would be detected. Thus, if a pin's head speck of pure cobalt oxide be heated by a blowpipe in a bead of pure boric acid, it forms within it a *black ball* which the minutest trace of any *sodium* salt partially dissipates, causing a *pink* suffusion round the ball.

3. A boric acid bead fused upon the ring of a thin or ordinary platinum wire, which has previously been made incandescent by a blowpipe flame, *i.e.*, from which the D-line producing property has been previously removed, is clear, colourless, and refractive as a diamond; but if the same boric acid be fused upon a *thick* platinum wire with the same degree of heat, the bead is *opaline* and *almost opaque;* and this phenomenon seems evidently and only referable to the above-mentioned permanency of the D-line spectra produced in the latter case.

4. To settle this point, however, let us fuse a clear colourless bead of boric acid on an ordinary platinum wire, and screw that in a geometrical pen, along with, but a little *behind* (that is, *away* from the source of heat) a *thick* platinum wire, so that the D-line producing flame from the thick, hot wire, impinges constantly and for some time upon the clear boric acid bead; we find opacity produced as in the former case. Now, supposing sodium to be in this case, the producer of the D-line spectra, we ought to have, in the opalised boric acid, a tangible result of the effect of applying to it (according to Prof. Stokes) "free sodium," but, on heating in it, as before, a speck of cobalt oxide, there is *no* dissipation of any part of the resulting ball, nor the least pink suffusion, but, on the contrary, a reaction, decided indeed, but *almost exactly* the opposite of that caused by adding sodium to the bead in any proportion.

5. Let us now screw a platinum wire ring containing a boric acid bead with a cobalt-borate ball inside, into a geometrical pen behind another platinum ring containing a bead of some soda salt, and heat both together with a blowpipe, so that the orange flame from the latter impinges upon the former. Instead of opalescence, similar to that caused by the orange flame from the thick platinum (4), we find the viscid boric acid made *more*