

to observing "moraines," "ice-action," "boulders," and "*bloc perchés*" in the same region.

My object in sending these lines to NATURE is to ask for notes of localities where glacial traces may be seen, as an aid to those who hope to examine more closely into the glacial phenomena of Central France.

W. S. SYMONDS

Pendock Rectory, Tewkesbury, March 25

Metachromism

A FEW words of explanation may seem necessary after Mr. Ackroyd's observations (NATURE, vol. xiii. p. 385) on my previous letter regarding the above subject.

The question as to whether a change of composition can be said to *produce* or to *accompany* changes of physical properties, is a matter of words which the chromium series does not affect, as the relative number of atoms of the two elements is the test of arrangement followed.

With regard to the two colour scales—one co-existent with alterations of composition, the other with alterations of temperature—I never wished to "criticise" Mr. Ackroyd's results, but solely to point out a resemblance which I had observed a few years ago, and which I was not aware that that gentleman had noticed. The two series need not necessarily be similar; and, whatever other reasons may exist for placing white in the ultra-violet, the question in hand is not whether the ultra-violet rays produce the same sensation on our eyes as a mixture of all the colours, but, Do the white compounds in question, when spectroscopically examined, *only* show the ultra-violet, leaving the rest of the range in darkness, or do they show a complete spectrum? If the first, then of course their place of classification would be in the ultra-violet; but if they give a whole spectrum (as the compounds do to which I referred), then they must be classed as having an average refrangibility greater than yellow light (because they have blue in addition to it), and less than blue light (because they have yellow also), for the centre of luminosity (on each side of which the total of light rays is balanced) falls in the green.

If we had only to deal with monochromatic substances, then of course the usual *pan-spectral* white would not need to be considered, and green (as Mr. Ackroyd says) would be the only appearance to be classed between blue and yellow.

Thus "the assertion that white comes between yellow and blue" does not "rest upon the colour relation found to obtain between the oxides of the alkali metals," though it is in accordance with the rule given on p. 347, in the six sets of the oxides and chlorides there mentioned; the sole case not agreeing with it being that of the chromium chlorides, which, however, may be accounted for.

As to the orange colour of Na_2O_2 , as Miller does not mention any colour, Turner was referred to; and if he is in error, that one instance may be laid aside; in any case it does not affect the relative natural order of blue and white.

Bromley, Kent

W. M. FLINDERS PETRIE

Socotra

WHEN I wrote the letter to the *Times* about Socotra, alluded to in NATURE, vol. xiii. p. 414, I was not acquainted with the excellent topographical memoir on this island by Lieut. J. R. Wellsted, published in the Geographical Society's Journal for 1835 (Journ. R. Geog. Soc. v., p. 129). After perusing it I am more than ever of opinion that Socotra is well worthy of the attention of the naturalist, and may probably possess many most interesting indigenous plants and animals. Unless matters are very different from what they were in 1834, there can be little difficulty in exploring the island, and if, as we are told, it has really become British property, I trust we may not have to wait much longer for some information about its zoology and botany. "Socotran Aloes" and "Dragon's Blood" are at present almost its only known natural products, and Lieut. Wellsted mentions but one native animal—a species of Civet.

P. L. SCLATER

11, Hanover Square, W., March 27

Coloured Solar Halos

SOLAR Halos such as described by Dr. Frankland (NATURE, vol. xiii, p. 404), may be seen on about seventy-five or eighty days in the year, here, and are commonest in the spring, but it is extremely rare for them to be brightly coloured. I speak

of the ordinary solar halo of about 22° radius, but the great halo of about 46° radius, is always distinctly coloured, though not a common phenomenon. It is not the "murky atmosphere" of London that hides the colours of the ordinary halo; they usually do not exist, except dull red and orange, and perhaps a faint tinge of blue. This is owing to the great breadth of the halo, which causes the colours to overlap and mix together; here it is very seldom that the halo is narrow and the colours consequently bright, as they seem to have been when seen by Dr. Schuster (p. 394). I doubt whether the name "parhelia," which he gave them, is correct; I understand that term to mean mock suns (or a bright small portion of a halo), a phenomenon visible here on thirteen days in a year on the average.

I may add that though I am rather easily dazzled, I find no difficulty in seeing halos with the naked eye.

Sunderland, March 28

T. W. BACKHOUSE

"Euclid Simplified"

MR. MORELL'S defence is a curious one, and amounts to this: "If my book is a bad one I am not to be blamed, because I have copied from Amiot, Legendre, and others. If I have made blunders in derivations, &c., again I am not to blame, but to be pitied, because I could not employ better printers." As in our former notice we limited our remarks to a few only of the objectionable features in "Euclid Simplified," so, in our present notice, we shall select a few only of the points put forward in Mr. Morell's letter, though we may observe in passing, that we see no reason to retract any of our previous comments. We think that our readers will agree with us when we state our belief that Mr. Morell has utterly failed in most, if not in all cases, to appreciate the force of our objections. Mr. M. correctly quotes Dr. Wormell (pp. 78-81), but fails to see that his own statement is widely different; had he written "perpendicular to the straight line A A' through its centre" (p. 41), "perpendicular to A B through its middle point" (p. 42), we should not have found fault with him. Again, the reference to Mr. Gerard (p. 310) is not to the point; we can understand what is meant by a "segment capable of a given angle," but we still object to the term "capable angle." The revised definition of a *parallelogram* is now (see text and letter), "a quadrilateral of which the opposite sides are equal and parallel!" We did not object to the term *lozenge*, which is a well-known one, but to the way in which it was introduced.

We turned to Dr. Wormell's definition of *circumference* with some curiosity, and found that (with the exception of "plain" being printed for "plane") it was perfectly right, and that Mr. Morell had again failed to see the point in our citation of the schoolboy's definition. We contend that Amiot's sentence, as quoted by Mr. Morell, does not mean what Mr. M. makes it to mean. Dr. Wormell's use of G. C. M. is perfectly legitimate, but does not warrant, so far as we can see, the use of *R* for *right angle* (seeing it is conventionally applied to another purpose) unless, indeed, it be explicitly stated in the text that *R* is so used.

We said (p. 204) that in Theorem VI., p. 148, the reasoning is defective. Mr. Morell replies it "only errs by excess of proof." We will reproduce the "proof," and leave the decision to our readers. "The area of a trapezium A B C D is equal to the product of its height B E by the half sum of its bases A C and B D. Drop the perpendicular B E on A F, and *bisect it by line G H*. Produce the base A C to F, making C F = D B. Then the two triangles D H B and F H C which have for bases the base D B of the trapezium or C F = D B, and which have also the same height, $\frac{1}{2}$ B E, are equal. The area of triangle F H C = $\frac{1}{2}$ D B or F C \times $\frac{1}{2}$ B E; that of triangle D H B = $\frac{1}{2}$ D B \times $\frac{1}{2}$ B E. These triangles, having equal angles, are therefore equal. But," &c. Upon this we remark, we are not told *how* G H is drawn—the pupil is to infer that it is parallel to B D. Now we must suppose H connected with B and F, and cannot assume that B H F is a straight line, hence, though triangles H F C, B H D are equal, it does not follow that angles F H C, B H D are equal, hence too we cannot assume A B F to be a triangle. But really we must apologise for taking up space with such elementary details. For Mr. Morell's benefit we give the following:—Produce A C to F, making C F = B D, join B F, cutting C D in H, then triangles C H F, B H D are equal, and triangle A B F = A B D C, &c.

Enough has been written on this, in its present form, objectionable book. At any rate we hope that any one who has