

THERE is a curious error in Mr. Wallace's address which seems to deserve notice, as otherwise it will be often quoted without suspicion. He remarks (NATURE, vol. xiv. p. 407):—

"It must also be remembered, as Mr. Moseley has suggested to me, that a flower which had acquired a brilliant colour to attract insects might, on transference to another country, and becoming so modified as to be capable of self-fertilisation, retain the coloured petals for an indefinite period. Such is probably the explanation of the *Pelargonium* of Kerguelen's Land, which forms masses of bright colour near the shore during the flowering season, while most of the other plants of the island have colourless flowers in accordance with the almost total absence of winged insects."

Now the difficulty is that there is no such *Pelargonium*¹ in Kerguelen's Land, though it is true that the insects are apterous. The flora of Kerguelen's Land is enumerated in the *Journal* of the Linnean Society, xiv. pp. 389, 390. Of such a persistence as that alluded to by Mr. Wallace there is an instance in the case of *Pringlea*, of which Mr. Eaton detected some specimens with petals, though the coloration was, I believe very faint.

W. THISELTON DYER

Zittel's Palæontology

In the review of Prof. Zittel's "Handbook of Palæontology," which appeared in NATURE, vol. xiv. p. 445, it should have been stated, in connection with the occurrence of Radiolaria in pre-Tertiary beds, that Mr. W. J. Sollas, of Cambridge, met with specimens in coprolites from the Upper Greensand, some three or four years ago, *vide Geol. Mag.*, 1873, vol. x. p. 272. Prof. Zittel duly records this fact in his paper on "Radiolaria from the North German Chalk," and mention of it was accidentally omitted in the concluding paragraphs of the review.

Newcastle-on-Tyne, September 25 HENRY B. BRADY

Visual Phenomena

It is evident A. Mallock (vol. xiv. p. 351) and H. Airy (p. 392) describe two different, though allied, phenomena; the latter describes the appearance of rays of light, which, after entering the eye, meet at a focus, and diverge before reaching the retina; and the former, that of rays which reach the retina before meeting at a focus. For convenience, I shall call these respectively the "over-refracted radiance" and the "under-refracted." They differ in the following particulars in the case of my own eyes:—

<i>The Over-Refracted Radiance</i>	<i>The Under-Refracted Radiance</i>
(1) is diminished	is increased
	by concave spectacles.
(2) is increased	is diminished
	by convex spectacles.
(3) any given part may be cut off by advancing an opaque body in front of the pupil from the same side as	opposite side to the given part of the radiance.
(4) is green outside (or blue, if sunlight is used).	is red outside.
(5) consists chiefly of a more or less perfect ring surrounding indefinite rays. When the radiance is very large the rays disappear in the general brightness.	consists chiefly (when small, entirely) of well-defined rays, mostly forked.
(6) is not materially increased by increasing the size of the pupil; unless the radiance is very large, and even then it is increased much less than in proportion to the pupil.	is increased proportionately, or more than proportionately, to the size of the pupil.

The first four of these must evidently, from the theory of the mode of production of the two kinds of radiance, be constant for all eyes; but not knowing the cause of the last two, I cannot say whether they are so, or whether they are peculiar to some eyes. From H. Airy's notes, 4 and 6, it would appear that the latter is the case; for he is evidently short-sighted.

Though contracting my pupil to its smallest size has little effect

¹ There is a *Pelargonium* in Tristão d'Acunha (see Moseley, in *Ann. Linn. Soc.* xiv. p. 383.)

in reducing the over-refracted radiance, yet by placing still smaller diaphragms in front, I can reduce it almost to a point.

With my naked eye I see both kinds of radiance; No. 3 of the above differences supplying an easy means of separating them, viz., by covering half the pupil. All then that lies on the same side as the exposed part of the pupil, belongs to the over-refracted radiance; and that on the other side to the under-refracted. But as I am rather short-sighted, the over-refracted radiance (which makes a nearly octagonal corona) greatly preponderates; so that I was not previously aware that the other existed with my naked eye. The application of the weakest spectacles (convex or concave) completely abolishes one or the other.

A. Mallock is hardly correct in calling his "phenomenon A" a limiting form; he is probably what is often called "long-sighted"—I do not know whether there is any proper name for this peculiarity of vision—for the limiting form of both kinds of radiance is a point. This is what I. W. Ward sees (see p. 423), his eyes being neither too refractive nor too little refractive, but just right (he uses the word "long-sighted" in a different sense from what I have). As most people are either long or short-sighted, they see one or the other kind of radiance with the naked eye; but it also appears from my own case that a person may see both kinds together, and such cannot see a point of light free from radiance, no matter what spectacles he uses, unless he uses a diaphragm. I should be interested in hearing whether, when I. W. Ward looks through spectacles, the rays appear.

The brightness of the point scarcely affects the size of either kind of radiance; but a red glass between the eye and it cuts off the outer edge of the over-refracted radiance.

Unlike H. Airy, I have failed to discern any relation between the positions of the beams of the over-refracted and under-refracted radiances, except that I suspect that the beams in the one may in some degree correspond to the opposite gaps in the other.

It would appear from the foregoing description of the phenomena in question more probable that the "wedge-shaped" portions of the crystalline lens, alluded to by H. Airy, instead of having the least refractive power, as he suggests, really have the greatest. The question arises, do different eyes differ in this respect?

THOS. WM. BACKHOUSE

Sunderland, September 19

Antedated Books

THE writers who have called attention to this point in NATURE will have rendered an important service to students if they obtain an amendment in the lax system often followed in this country. But it is to be hoped that the reform may be made complete. It is perfectly easy to have the exact date of issue and the number and letters of the sheets contained in the part stamped on the wrapper or cover, and then by binding these wrappers with the parts, an exact reference to the date is always at hand. This is done with praiseworthy exactness by some of the foreign societies. For instance, I receive this morning a part of the *Annales de la Soc. Entomologique Belgique*, the wrapper of which bears "Tome dix-neuvième, fasc. i., signatures 1 à 13 et a à f. Paru le 16 Septembre, 1876." This it will be seen leaves nothing to be desired. Even in Spain, which we flatter ourselves is so far behind us, they manage this point accurately. The *Annales de la Soc. Esp. de Hist. Nat.* bears on the wrapper of each cuaderno the exact day of publication. Now that attention has been called to this point, let us hope that each society will instruct its secretary or editor, to see that the exact day of publication, and a summary of its contents, be stamped on the wrapper of every part issued.

Thornhill, September 19

D. SHARP

OUR ASTRONOMICAL COLUMN

THE BINARY STAR ϵ BOOTIS.—A satisfactory orbit for this fine star is still wanting. Elements founded upon measures to 1833 were calculated by Sir John Herschel (period 117 years); and an orbit, on an extension of measures to 1854, was given by Hind (period 169 years), but later observation has shown them to be inadmissible. The great difficulty encountered in this case undoubtedly arises from the errors which must exist in one or more of Sir W. Herschel's angles, as was pointed out by his son in the *Memoirs of the Royal Astronomical Society*, vol. vi.,