

flame within a globular opal shade, placed at such a distance that the three images of it produced by the action of the prism (the centre image formed, of course, by the superposition of two, similarly polarized) just touch each other. Two of these images are then filled (like a lantern-disk) with the complementary ring-systems; and by a very slight motion of the crystal the rings pass from a given disk to the adjacent one, becoming complementary in so doing. (It is hardly necessary to explain, for no doubt Prof. Thompson did so fully, that the whole prism is precisely

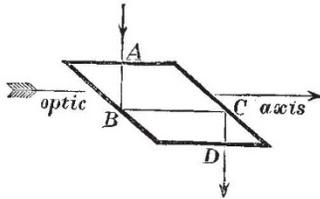


FIG. 2.

equivalent to a train of two double-image prisms with refracting angles of 45° , having between them a plate of spar with surfaces at right angles to the optic axis; a "Huyghens apparatus," in fact, with an interposed spar-plate instead of the usual selenitic film.)

I may add that I have found it convenient, in order to demonstrate the principle of the prism, to divide it into halves; or, more strictly, to cut a piece of spar so as to form one half of the prism only, as shown in Fig. 3. Then, if common light from

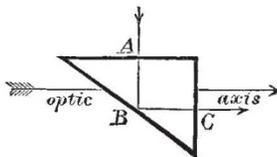


FIG. 3.

the lamp-shade (as described above) is allowed to enter the face A, and a tourmaline is held in the path of the rays emergent from C, ring-systems are seen just as when a double-image prism is used as a polarizer and a plate of spar held in front of it. Also, if plane-polarized light is allowed to enter C, and the eye is held close to A, ring-systems are seen side by side; that portion of the spar through which the rays pass after total reflection at B acting, of course, exactly as a double-image analyzer. In fact, the prism may, in this position, be used alone as a "Savart's polariscope" to detect traces of polarization in sky-light, &c. But for this application, the prism would possess, in the eyes of the true votary of science, the inestimable value of being of no practical utility whatever.

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Coral Reefs, Fossil and Recent.

DR. VON LENDENFELD'S account of the dolomites of the Italian Tyrol, in his letter on "Coral Reefs, Fossil and Recent," is a very valuable contribution to this interesting question; but I think he can hardly have fallen in with the new edition of Darwin's "Coral Reefs," or he would not have asserted that in the discussion "the structure of our Triassic limestone mountains has been left out of account." In the appendix (p. 332) I wrote:—"If those geologists are right who consider the Schlern dolomites as being to a great extent due to reef-building corals, we have, in the Triassic deposits of the Italian Tyrol, reefs thick enough to satisfy the most exacting requirements." I could not venture upon a more positive statement, because I knew controversy on this question was not ended, and I had not myself, though fairly familiar with the "Dolomites," discovered evidence which appeared to me conclusive (though I incline to the above opinion myself), and because I considered that the view advanced several years since by Richthofen required some modification—indeed, as to one detail, if I understand him rightly, I should differ from Dr. von Lendenfeld.

I am confirmed in my idea that he has not read this book, because I find that one of his chief arguments—that against the indefinite lateral extension of a coral reef on a talus of its own building—appears to correspond with one advanced by myself on p. 327, differing only in the addition of an arithmetical example;

one of which, indeed, I did work out, but afterwards suppressed as needless, the truth of the statement being obvious when it was once pointed out. T. G. BONNEY.

Bison and Aurochs.

IN regard to Prof. Newton's letter in your issue of the 8th, I beg to state that in restricting the name aurochs to the European bison, I have merely followed the general custom of English zoologists.

Citing a few authorities, I may first make the following extract from a paper by Prof. W. B. Dawkins, published in the Quart. Journ. Geol. Soc., vol. xxii. p. 394 (1866). There, after alluding to the Indian gaur, this author writes, "the term *Aurochs* has been restricted to the European bison by the authority of Buffon, Cuvier, and Prof. Owen; the term *Urox* or *Bos urus*, to the species under consideration [the extinct wild ox of Europe] by Julius Cæsar, Pliny, . . . also by Cuvier, Nilsson, and our great naturalist, Prof. Owen."

Again, in the article on Ruminants by the late Prof. Garrod in "Cassell's Natural History" (2nd ed., p. 35), the term aurochs is applied to the European bison. Finally, we find in Prof. Flower's "Catalogue of Mammalia in the Museum of the College of Surgeons," p. 232 (1884), the animal in question mentioned as the *European Bison* or *Aurochs*.

I find, however, that modern German zoologists (see Brehm's "Thierleben," vol. iii. p. 386) consider it proved that the name *Aurochs* belongs properly to the extinct *Bos primigenius*; and they term the bison, as Prof. Newton states, the *Wisunt*. If this be really correct, English zoologists must accept the emendation. R. LYDEKKER.

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The Haunts of the Gorilla.

CONCERNING Mr. Du Chaillu's saying (see NATURE, May 1, p. 19) "that, so far as he is aware, no white man has been able since his time to penetrate to the haunts of the gorilla and bring home specimens killed by himself," I beg to remark that Herr von Koppenfels, in the years 1873-80, killed personally a number of gorillas in the environs of the Ogowé, and sent 3 large specimens, with their skeletons, to the Dresden Museum, some of which I described in the *Mittheilungen aus dem königl. zoologischen Museum zu Dresden*, vol. ii. 1877, p. 230 seq. The Museum in Stuttgart also contains several specimens killed by that intrepid traveller; and other museums, I believe—American museums, for instance—possess some. (See also his remarks in the *American Naturalist*, vol. xv. p. 447; and *Die Gartenlaube*, 1877, p. 416 seq., with plate; as well as mine in *Der zoologische Garten*, 1881, vol. xxii. p. 231.) Herr von Koppenfels, who died in the year 1884 in Erfurt, in consequence of diseases acquired in the tropical climate, says (*l.c.*) that the haunts of the gorilla in West Africa are in the forests between the mouths of the Mimi and the Congo Rivers, *i.e.* between 1° N. lat. and 6° S. lat. How far the region extends into the interior is even yet unknown. A. B. MEYER.

Royal Zoological Museum, Dresden, May 7.

Flat-fishes.

MR. GULICK, in NATURE, vol. xli. p. 537, has raised a puzzling point about the flat-fish. In the case of his two Japanese species, it might appear that the ancestor of them both varied in the two directions as to the position of its eyes, &c., and that by the segregation of each form, *neither of which had any advantage over the other*, two species eventually were evolved. But this is not so clear in other cases, apparently. On the American coast of the Pacific, there is a flat-fish, *Paralichthys californicus*, Ayres, which is said by Messrs. Jordan and Goss to be almost as frequently dextral as sinistral. Here, then, is the same sort of variation exactly, yet we see no evidence of segregation and the formation of new species. In the whole sub-family *Soleina*, the eyes and colour are on the right side: now, if the "dextral" soles segregated themselves, having no advantage in being dextral rather than sinistral, what has become of all the sinistral ones? If there was no natural selection at play, ought we not to get some sinistral species of *Solea*? Perhaps it may be said that *Solea*, as such, never varied in this way, and was always dextral. But this cannot be so, since we have it on Day's authority that the common sole has a reversed aberration. But, after all, the allied *Cynoglossina* are sinistral soles.