

subject, the nervous control of pupillary movements. A review of the work done on the question of the course of the pupillo-dilator fibres is given. These fibres pass from the cervical sympathetic as a separate tract along the carotid towards the Gasserian ganglion, and run thence with the ophthalmic division of the trigeminal along the nasal branch to the long ciliary nerves, thus avoiding the ciliary ganglion. The final portion of the lecture is devoted to a discussion of the cortical localisation of pupillary movements. We agree with Mr. Parsons that a very critical spirit is necessary in dealing with this subject. Here, more than anywhere else, is to be found the "elusive factor" which upsets all hypotheses. The term "synkinesis" seems to have a sufficiently useful application in neurological nomenclature to justify its invention. The limits of this notice do not allow of more detailed criticism. We must, however, congratulate Mr. Parsons on the singularly lucid, though necessarily inconclusive, fashion in which he has dealt with subjects of great complexity and importance.

The Twentieth Century Atlas of Microscopical Petrography. Part ii. With four plates. (London: Thos. Murby, 1904.)

SINCE the note on this work appeared in NATURE (vol. lxxi. p. 38), we have been informed that the "editor" of it is Mr. E. Howard Adye, who is, in fact, responsible both for the text and for the very delicate plates. The second part includes two igneous rocks from Edinburgh, the Carboniferous oolite of Clifton, and the beautiful green quartzite of Ightham, described by Prof. Bonney in 1888. This last rock, we believe, usually contains altered glauconite in addition to the minerals mentioned by the author. We fancy that Mr. Adye is familiar with biological writing, which makes his descriptions rather more severely technical than is customary among English geologists. We thus read of a "dark brown fenestrated region at the periphery," "hypo-odontoid outgrowths," "biogenetic formation," and so forth. We do not know, moreover, what degree of extraordinary accuracy is suggested by the phrases "completely polarised light" and "fully-crossed Nicols." The text, however, is usually clear and graphic. The four rock-sections accompanying the part, and issued through the laboratory of Mr. J. R. Gregory, are absolutely perfect specimens of an art rarely cultivated in the British Isles. G. A. J. C.

Abbildungen der in Deutschland und den angrenzenden Gebieten vorkommenden Grundformen der Orchideen-arten. 60 Tafeln nach der Natur gemalt und in Farbendruck ausgeführt von Walter Müller (Gera) mit beschreiben dem Text von Dr. F. Kränzlin (Berlin). Pp. xiv+60+plates. (Berlin: R. Friedländer und Sohn, 1904.) Price 10 marks.

THIS is a series of sixty coloured plates representing the orchids which occur in Central Europe. The introduction and the text are from the pen of Dr. Kränzlin, who tells us at the outset that the book is not intended for professed botanists, but for those who take an interest in botany, or who possess a love of flowers. For this reason it is, we suppose, that the minutiae of anatomical structure and the details of physiology are but lightly touched on. The reader, however, has put before him in a very clear way the principal points in the morphology of this most interesting group, together with an account of the conformation of each species.

A general statement is made as to the geographical distribution of the several plants, but no precise indications of particular localities are given. Most of

our European orchids are terrestrial and have tuberous roots, but *Liparis Loeselii*, a species very rare in Britain, has a distinct pseudo-bulb such as characterises most of the tropical epiphytes of this order, and a similar form of stem occurs in *Microstylis monophyllos*, so that the formation of a pseudo-bulb is not correlated solely with the epiphytic habit. Both the tuber and the pseudo-bulb serve as food stores for the growing plant. In *Goodyera repens* there is a creeping underground stem which also recalls that of its tropical congeners. These points and others of a similar character are well represented in the plates. These illustrations were executed from life by Mr. Walter Müller, and they are so truthful that we may commend them to the notice of orchid lovers. Our field botanists will find all the British species represented, as well as a few others that are not members of the British Flora.

Intensification and Reduction. By Henry W. Bennett. Pp. xv+124. (London: Iliffe and Sons, Ltd., 1904.)

THIS issue, No. 15 of the *Photography Bookshelf Series*, will form a useful addition to an already valuable set of handbooks. The author has wisely restricted himself to setting forth in a clear and concise manner the better methods employed in intensification and reduction, and has not burdened the beginner with an elaborate index to all possible methods past and present. The processes dealt with are treated in some detail, so for this reason the reader should gain a good working knowledge of the manipulations he has in hand. The distinctive qualities of each method are clearly brought out, making the selection of any one for a particular negative quite an easy matter.

LETTERS TO THE EDITOR.

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Slow Transformation Products of Radium.

IN a recent number of the *Philosophical Magazine* (November, 1904), I have shown that radium, after passing through four-rapid changes, finally gives rise to two slow transformation products, which, on the scheme of changes there outlined, were called radium D and radium E.

These two products can be separated from each other by suitable physical and chemical methods. Radium D, which is the parent of E, gives out only β rays, while E gives out only α rays. It was calculated that D should be half transformed in forty years, and E in about one year. Evidence was also shown that radium D was the active constituent in the radio-active lead of Hofmann, and that radium E was the active substance present in both the polonium of Mme. Curie and the radio-tellurium of Marckwald.

Later work has confirmed these conclusions. I have examined the rates of decay of the activity of radium E and of radio-tellurium, and have found them to be identical. Each loses half its activity in about 150 days, instead of the calculated period of one year. The specimen of radio-tellurium was obtained from Sthamer, of Hamburg, in the form of a thin film deposited on a polished bismuth rod. I find that the same value for the decay and activity of radio-tellurium has recently been obtained by Meyer and Schweidler (*Akad. d. Wiss. Wien.*, December 1, 1904).

I was, unfortunately, unable at the same time to determine accurately the decay of the activity of polonium. A specimen of polonium (radio-active bismuth) had been in my possession for three years, and had during that time lost a