

experience through the introduction of large classes to the use of the microscope in petrology. The style is clear, and sufficient optical theory is introduced to add interest to determinative methods. The philosophic processes by which minerals are determined, affording as they do an insight into crystalline structure, are of far more value in class-work than actual specific identifications. The beautiful series of photographs of minerals as they appear in thin rock-slices is a very welcome feature, and gives special distinction to the book.

As an "introduction to petrology" the microscopic method often fails; this is seen, for instance, where the author (p. 103) regrets the difficulty of distinguishing the triclinic feldspars present in a granite. Surely, in a coarse-grained rock, a fragment broken from the mineral will supply material for other than optical tests. We do not know, again, how "microscopic investigation should always enable the student to make the distinction" (p. 112) between foliation and bedding, seeing that the two so frequently coincide in schists. But Mr. Smith has given us the handiest and best illustrated introduction that we possess to an important aspect of rock-minerals, and has even included a coloured plate of Newton's scale. If the student remembers that every rock-section has its parent rock, he may well place himself at an early stage of his work under the guidance of these lucid pages.

G. A. J. C.

*Researches into Induced Cell-reproduction in Amoebae.* By J. W. Cropper and A. H. Drew. Pp. 112 + plates. (The John Howard McFadden Researches, Vol. IV.) (London: John Murray, 1914.) Price 5s. net.

THE investigations described in this volume were undertaken with the view of supporting the theory of H. C. Ross, that cell-reproduction is brought about by certain chemical agents termed "auxetics," and that their effect is increased by the addition of other substances known as "kinetics." The authors claim to have confirmed this theory, and to have shown that the mode of action of these substances is probably through the medium of enzymes. The presence of these agents in the environment is stated to produce variations in the morphology of the organism. Methods of cultivation of amoebæ and their examination by the "jelly method," are described. The encystment of an amoeba is stated to be due to the action of certain deleterious bacterial products, and it is claimed that the subsequent excystation is caused by other products which act on the cyst-wall from without, and are of the nature of ferments. A detailed account is given of the preparation of cultures of the amoeba with pure strains of different bacteria. The amoeba used in these researches was a species found by the authors living in a solution of sodium chloride (1 per cent.) and sodium citrate (3 per cent.) in the laboratory, and named by them *Amoeba ostrea*. A parasitic micrococcus, which was very deadly to the amoeba, was also isolated and investigated.

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*Song and Wings: a Posy of Bird Poems for Young and Old.* By Isa J. Postgate. With a Preface by the Rev. Canon H. D. Rawnsley. Pp. xi + 50. (London: Alexander Moring, Ltd., 1914.) Price 2s. 6d. net.

MISS POSTGATE'S pretty verse will serve a very useful purpose if, by arousing an interest in birds and bird-life, it assists in the arrest of the extermination of beautifully plumaged birds for the gratification of the desire for barbaric adornment fostered by modern fashion.

#### LETTERS TO THE EDITOR.

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#### Asymmetric Images with X-Radiation.

CONFIRMING our letter of July 16 on asymmetric haloes, we have found that the bands can be produced on one, two adjacent, three, or all sides of a square (lead), and when an obstacle is placed at or over one side the corresponding band only vanishes. These effects are independent of the incidence of the radiation. With V-shaped aperture, the apex resting on the plate, the bands on one side are sharply defined, and twice bent; on the other there are several, and they are diffuse and fainter.

The double bend is due to the fact that within a short range two edges contribute as in light.

With strips (steel), say, 4 cm. width, the white bands cross at various angles depending on the slope to the plate, but are afterwards dispersed at short distances from the edges they approach.

The diametric asymmetry excludes polarisation, and since it increases directly with the distance from the axis through the "optimum" (i.e. 15° from the direction at which light would be reflected) the rays must have some determination from the plane of the anti-cathode. In other words, they must be "polarised" in planes at successive angles to the direction of propagation. The continuance of the bands within the shadow beyond the range of light diffraction and their varying asymmetry show that X-radiation is something more than light of very short wave-length, or otherwise light itself must possess unequal polarity in its structure.

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#### Unit of Acceleration.

IT is a little surprising to find in Dr. Shaw's paper (December 16, 1913), ". . . He (Mr. Whipple) points out that we have no special name for the unit of acceleration." In NATURE of June 25, 1914, Mr. Whipple proposed the name "leo." So long ago as 1909 Wiechert used the term "gal" in the report for the Göttingen earthquake station for that unit, being the first syllable of Galileo, whence Mr. Whipple derives his "leo." Others, as well as myself, have used "gal," or rather "milligal," in analyses of earthquakes. A milligal is approximately a millionth of g. Dyne is the unit of force, gal the unit of acceleration.

OTTO KLOTZ.

Dominion Observatory, Ottawa, July 18.