

some twenty-four pages of part 1; it is necessarily treated very summarily, and much of the information is given by diagrams. This makes it essential that these should be accurate and self-explanatory. Fig. 2 is open to the criticism that it fails to show the great differences between the interplanetary spaces; the orbits are represented as equidistant, and Saturn's period is given as twelve years. Fig. 11 quite fails to show the sun's pre-eminence compared with the planets. The letter-press under the portrait of Prof. J. C. Adams is disfigured by the substitution of Neptune for Uranus as the perturbed planet. Fig. 6 (the total solar eclipse of 1919) is described as being taken at Greenwich, instead of Sobral, Brazil. On p. 23 it is stated that "mutual friction raises at least a large part of them (the meteors forming a comet) to white heat." This is quite improbable, since the meteors are travelling on parallel paths with practically equal velocities. In the large diagram illustrating the spectroscope the luminous body appears to be a star, since the sky is dark and other stars are shown. However, no object except the sun could throw a large, bright spectrum on a screen, and in this case a slit (absent from diagram) would be essential for showing the Fraunhofer lines.

There are several excellent reproductions of solar, lunar, planetary, and nebular photographs, and a bold coloured drawing of a gigantic solar prominence. The descriptive matter is attractively written, and includes a short exposition of the theory of giant and dwarf stars, and of the Moulton-Chamberlin planetesimal theory, which, however, postulated the approach of but one star to our system, not one for each planet, which latter would be utterly improbable.

A. C. D. CROMMELIN.

*Die Ursachen der diluvialen Aufschotterung und Erosion.* By W. Soergel. Pp. v+74. (Berlin: Gebrüder Borntraeger, 1921.) 18 marks.

IN translating the title of this suggestive work we are troubled by the term "diluvial," which has, we fear, become fixed in German terminology; also by the fact that we have no equivalent for the expressive word "Aufschotterung." The author refers the formation of the true Schotter, the boulder-beds, to epochs of cold semi-arid climate, when frost acted on a surface free from vegetation. Weathering was then mechanical. Valley-erosion, on the other hand, indicates a humid climate, when vegetation protected the rocks from block-denudation, when weathering was chemical, and when the free flow of water worked havoc with the preceding products of "Aufschotterung." Herr Soergel shows how even so large a cause as upheaval or subsidence of the land is unlikely to promote regional erosion or aggradation in a network of valleys running in different directions. The tilting or buckling of the land-surface in such a case leads to changes that vary from one district to another. Hence the author sees in the regional features of "diluvial" times in Europe evidence of repeated

climatic change, and he finds support in the animal remains that are associated with deposits formed respectively in epochs of erosion and glacial aggradation. The "monoglacial" view is thus rejected; boulder-beds connected with epochs of erosion are merely local and do not indicate a continuity of the cold conditions that produced the great "Aufschotterungen."

G. A. J. C.

*Flora of the Presidency of Madras.* By J. S. Gamble. Part 4, *Rubiaceae to Ebenaceae*. Pp. 579-768. (London: Adlard and Son and West Newman, Ltd., 1921.) 10s. net.

THE present instalment of this handy little flora is mainly occupied with the two large families Rubiaceae and Compositae, the former including representatives of forty-five genera, and the latter of sixty-two. The Rubiaceae include plants of widely varying habit; small-flowered, creeping, erect, or climbing herbs recall the development of the family in temperate climates, and shrubs or trees represent the tropical development. The latter include handsome flowered species, as in the *Ixoras* and *Gardenias*. *Hydrophylax maritima*, a succulent creeping herb, is a useful sand-binding plant on the dunes of the east and west coasts. Many genera familiar in temperate regions occur among the Compositae in the hill districts; the Dandelion is an introduced weed both in the Nilgiris and the Pulney Hills. The nineteen species of the genus *Senecio* include, besides herbs of our ragwort type, several shrubby climbers; and *Vernonia*, with twenty-nine species, includes herbs, shrubs, and small trees.

In contrast with the rich development of the Ericaceae and Primulaceae in Northern India the Madras Presidency is very poorly represented. Ericaceae comprise only one *Gaultheria* and one *Rhododendron*, and Primulaceae six species in all, one of which, *Anagallis arvensis*, the pimpernel, occurs only in the blue-flowered form. The genus *Primula* is absent; but there are six genera of the allied family, Myrsinaceae, one of which, *Aegiceras*, is a constituent of the mangrove forests of the sea-coasts and tidal creeks.

*A Handbook of Laboratory Glass-blowing.* By B. D. Bolas. Pp. vii+106. (London: George Routledge and Sons, Ltd.; New York: E. P. Dutton and Co., 1921.) 3s. 6d. net.

ALTHOUGH it is without doubt desirable to have a professional glass-blower attached to a physical or chemical laboratory, a knowledge of simple glass-blowing is essential to students generally. While Mr. Bolas carries the subject rather further than the simple repair of apparatus, for he describes also the construction of glass laboratory ware, he gives clear and concise instructions for the manipulation of glass which should prove of considerable service to laboratory workers. Most of the operations are illustrated by clear line drawings of the various stages through which the material passes before it assumes its final form.