

more than one notebook into his various classrooms, because, provided he is careful to turn over the page when he comes to a new subject, he can take out the loose leaves at his leisure and sort them into suitable receptacles. A student will also find as he pursues his study that he acquires further information supplementing his previous notes. By writing upon loose leaves he will be able to sort the new matter into its proper place.

Conscientious students are inclined to waste much time in making a fair copy of the notes they have taken at lectures: such copying often becomes mechanical, so that nothing is learnt during the process. The loose-leaf method should make this mechanical work unnecessary, at all events when the original notes are intelligible.

The loose leaves relating to any given subject should be so arranged as to make reference easy. For this purpose the author gives several examples of classification in which registration letters and numbers are employed. As to the significance to be given to these letters and numbers, we would advise the student to consult one of the comprehensive works of reference, such as, in the case of science, the International Catalogue of Scientific Literature, and to adopt, so far as possible, the plan there set forth.

*An Historical Atlas of Modern Europe from 1789 to 1914, with an Historical and Explanatory Text.* By C. G. Robertson and J. G. Bartholomew. Pp. 24+36 maps. (London: Oxford University Press, 1915.) Price 3s. 6d. net.

THIS is an atlas on new lines, for it deals only with modern Europe, and, except for a few general maps, makes no attempt to illustrate the historical evolution of the British Empire. The size of the atlas is a distinct advantage, as it allows of plates  $12\frac{1}{2} \times 9\frac{1}{2}$  in. Most of the maps are of this size. Central Europe and the Balkan lands are specially well shown, as would be expected, but we miss a separate map of the Iberian peninsula. No doubt, however, the question of expense entailed the omission of the less necessary maps.

A map of Europe is the only orographical map given. The other maps either show no relief or show it in the old caterpillar fashion. That is disappointing, and certainly lessens the value of the larger-scale maps. There is, of course, a difficulty in showing relief by contours on a map with political colouring, but that might be overcome in many plates by omitting the political colouring and indicating boundaries by red lines. Most of the plates are otherwise admirably executed, but a few—Russia in Central Asia and the ethnographical map of south-eastern Europe—scarcely come up to the high standard of technique which we expect from the firm of Bartholomew.

The introduction is an excellent commentary on the maps, and keeps the geographical standpoint in view throughout. The atlas is good value for the money and can be highly recommended.

R. N. R. B.

#### LETTERS TO THE EDITOR.

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#### A Question of Albedo.

THE past summer in the Kashmir Valley has been one of extraordinary dryness, with continuous blue skies and hot sunshine. These conditions have extended into the autumn, and during the month of October even the surrounding mountains, so often clouded, have been entirely clear. The snow-line, instead of descending to lower elevations with the advance of the season, has steadily risen, until at the date of writing only a few isolated patches of white can be seen on the Pir Panjal range on the south-west side of the valley, and no snow at all on the mountains towards the east. It was with a distinct shock of surprise, therefore, that at sunset on the date October 22 we noticed a beautiful dome of snow just topping the eastern mountains, which were still brilliantly illuminated by the sun. For a few moments the only possible explanation seemed to be that one of the higher peaks of the central Himalayan ranges had made a prodigious upward thrust of several thousands of feet! However, the earth's rotation movement rapidly transformed this snowfield into the familiar features of the full moon.

The question I would ask is: Why does the moon appear so white if it is composed of rocks similar in reflecting power to those on the earth? The average albedo of the moon must have been determined, and it is no doubt well known how it compares with Venus or with Jupiter when these are reduced to unit distance from the sun. The rock surface of the moon should reflect far less light than the cloudy surfaces of these planets, and it would be of interest if those who know would explain the apparent whiteness of the moon as seen in daylight.

A direct comparison of the moon with terrestrial rock surfaces illumined by sunlight is possibly to some extent vitiated by the superposed blue light scattered by the intervening air, which may affect the colour of the moon. Yet it is very difficult to believe that this can convert the greys and browns of rock surfaces into an almost pure white. On several occasions in this valley I have compared the waning moon, setting behind the Pir Panjal mountains, and, of course, in full sunlight, with extensive snowfields. These snows are perhaps fifty miles distant, and there is a considerable amount of blue scattered light superposed on the snow, although less than on the moon; also the light absorbed by the atmosphere is approximately, and may be exactly, the same for each, if one considers the whole path of the light from sun to snow and thence to the observer. When the air is transparent enough to see the moon clearly, it appears to me to be distinctly whiter than the snows, which seem dull and yellowish in comparison.

The daylight colour of the moon suggests, in fact, that Parmenides was right when he considered it to be composed of earthy material mixed with celestial fire, only I should say that the celestial fire greatly predominates!

One does not hear much nowadays of the glacial theory of the moon's surface, but it would be interesting to learn whether the daylight aspect of the moon has been considered by those who believe its surface to be composed of rocks.

J. EVERSHED.

Srinagar, Kashmir, November 2.