

extension of it. In giving the latter the author speaks of "facets," "sheets," and "interfaces," without having previously defined them, thus leaving a student in some little difficulty as to their precise meaning. Considering the great analytical interest of the algebraical researches of Klein and Cayley in the polyhedral functions and the finite groups of linear substitutions, which represent geometrically the production of congruence of figure by the rotations of the corresponding polyhedra, we think it would add greatly to the interest of the book to show the elementary geometrical relations which interpret the algebraical operations. The mensuration and usual properties of the simple solids are worked out, the method of limits being freely employed. The third chapter is of "Solids of Revolution," and includes Pappus's theorems of mensuration, the extension of the modern geometry of lines and circles to planes and spheres, and an elementary account of surface spherics.

The appendix, which treats of the "Geometrical Theory of Perspective in Space," is from a paper in the *Quarterly Journal of Mathematics* for 1886, by Mr. Alexander Larmor, of Clare College, Cambridge; it contains ten important theorems in the subject.

Throughout the book great brevity of expression is employed with taste and discretion. It bears traces of careful compilation, and is certainly well and suitably printed and illustrated. Interesting theorems and problems are given as exercises at the end of each chapter.

The work may be safely recommended to students and teachers as a clear and precise introduction to the study of solid geometry.

Chambers's Encyclopædia: a Dictionary of Universal Knowledge. (London: William and Robert Chambers, 1888.)

THE process of revising and altering a work of this kind is no easy task. As the publishers tell us, "much has happened during the twenty years it has been before the public which necessitates a different treatment of many articles." This new edition has been thoroughly revised, new articles having been written, and the old ones gone over by eminent authorities, as may be seen from the following list: Alchemy and Atomic Theory, by Prof. Crum-Brown; Ant, by Sir John Lubbock; Alps, by Prof. James Geikie; Arctic, Antarctic, and Atlantic Oceans, by Mr. John Murray; and Atom, by Prof. Tait. While such well-known names as these will command universal respect and confidence, it is to be regretted that some of the subjects, such as that of Astronomy—to take an instance—should leave much to be desired in this particular.

The work is carried out on exactly the same lines as the original edition, the subjects being treated, not in great detail, but so as to afford information interesting to any more or less educated person.

American and colonial subjects are dealt with in this edition more than in former ones, the more important articles on American subjects being written by American authors especially for this re-issue.

The number of maps, both geographical and physical, has been increased, and the illustrations are more numerous, and supersede those of former editions. The printing throughout is excellent.

Messrs. Chambers are to be congratulated upon the issue of a work which, from its merits, deserves to find a place in every home.

Leitfaden der Zoologie für die oberen Classen der Mittelschulen. Von Dr. Vitus Gräber. Mit 502 Abbildungen im Texte (darunter 62 farbige) und einem Farbendruck bilde. (Wien: F. Tempsky, 1887.)

EVEN in these days of cheap books, it is surprising to find an octavo volume of nearly 250 pages, with

over 500 illustrations, published for the price of less than three shillings of our money. When we add that the information, though of necessity very much condensed, is not only good and exact, but in most cases quite up to date, we have said all that is needed to call our readers' attention to this little volume.

The coloured illustrations in the text are wonderfully effective; one gives a representation of one of Schulze's sections through a Sponge, printed in two colours, in which the horny framework is represented yellow, the pore-canal system blue.

It is interesting to note that at a time when in this country the study of biology is not encouraged in our schools, when it is omitted from the programme of our intermediate education examinations, it should be so taught in the intermediate schools in Austria as to call for the production of such an excellent and cheap introduction to its study.

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. No notice is taken of anonymous communications.]

"Coral Formations."

I SHOULD be trespassing too much on the kindness of the Editor of NATURE if I were to refer to all the numerous novel and interesting points in Mr. Bourne's description of Diego Garcia. The retrospective character of the account is something new in the instance of an atoll; and it is not often that a naturalist is able to add to his own observations the twenty-five years' experience of an observer like M. Spurs.

I am, however, at a loss to understand why Mr. Bourne is unable to assent to the theory of subsidence. Prof. Dana, who long since referred to the evidence of upheaval in the atoll regions of the Pacific, nevertheless did not regard such evidence as negating the theory he supported, nor, in fact, did Mr. Darwin himself. The testimony most required to overturn the theory of subsidence is the testimony which the supporters of that view will accept. I do not find such evidence in Mr. Bourne's paper.

I am also in doubt as to the position of the writer of the paper in regard to Mr. Murray's views. In disagreeing with the importance which Mr. Murray attaches to the agency of solution, he makes no attack on the main position of the new explanation, viz. the building up of the foundations of atolls by organic deposits. Does Mr. Bourne accept this view?

H. B. GUPPY.

I HAVE been much interested by the discussion on coral formations which recently appeared in NATURE, and I venture to send you an extract from a journal kept during my stay in Massowah.

"Massowah, February 1888.—The whole of the harbour is fringed with coral reefs formed by species of *Madreporaria* (*perforata*), extending in places a considerable distance from the high-water mark (Turtle Island, for example); in other parts the edge of the reef is quite close to land, and in each case there is less water immediately over the edge of the reef than there is a little way in shore. The outer edges of the reefs go down almost perpendicularly to a depth of 4 or 5 fathoms, while towards the shore the water deepens, at first rather quickly to 3 or 4 feet, then gradually becomes shallow to the beach. The bottom, inside the edges of the reefs, is composed of fine grayish mud—composed chiefly of a mixture of disintegrated coral and fine drift alluvial sand which is blown over from the mainland—while the bottom of the harbour is nearly black mud. Here and there, just inside the edges of the reefs, are found pieces of living coral broken off from the outer edges. Every evidence here shows that the land is rising.

"Large masses of coral much altered by the rain are to be found on the plains of Massowah, which extend three or four miles in south-west, west, and north-west directions. They show unmistakable signs of the undermining action of the sea,