these solids they knew little, the theory of the sphere alone appears developed to a certain degree necessary for astronomical purposes. Of proportions and similar figures they knew nothing.

The succeeding chapters relate to Geometry in Greece. We shall only mention a few of the most striking differences between Prof. Bretschneider and his predecessors. That most of the anecdotes about Pythagoras—his long captivity in Babylon, for instance,—are rejected, need scarcely be mentioned. But many readers will be surprised to hear that Plato is not considered a very eminent mathematician as he himself did almost nothing to enrich this science, and most of the theorems usually believed to be due to Plato are his pupils'. Thus the conic sections were invented by Menaichmos. Again, the *reductio ad absurdum* is considered one of the simplest methods of demonstration and used long before Euclid thought of it.

One of the most important points in the book consists in a long passage out of Eudemos' "History of Mathematics" (about 340 B.C.), which Bretschneider was fortunate enough to discover in the commentary on Aristotle by Simplikios. It contains a critique on investigations on the problem of squaring the circle. Some of the methods here employed are exceedingly interesting, as they show what means were at the disposal of the mathematician. Antiphon, a contemporary of Socrates, inscribes a regular polygon in a circle, and then proceeds in the well-known manner to double the number of sides till these at last coincide with the circumference of the circle. He then considers the circle as a regular polygon, and says that it may be converted, like any other polygon, into a square. It appears, therefore, that Antiphon was the first who introduced infinitesimals into geometry, and thus became the forerunner of Archimedes. These methods were, however, far too much in advance of his time, and Eudemos rejects them as not exact. Hippocrates, known by his quadrature of the lunulæ, makes several attempts to extend this discovery, and to obtain similar results for other lunulæ and thence for the whole circle. Some of these attempts indicate great power, although they lead to nothing tangible.

The book contains many other important results, and all those who take an interest in the history of the development of science will feel indebted to the author for its publication.

OUR BOOK SHELF

Notes on the Natural History of the Strait of Magellan and West Coast of Patagonia, made during the Voyage of H.M.S. "Nassau," in the years 1866—1869. By Robert O. Cunningham, M.D., F.Z.S., &c., Naturalist to the Expedition. (Edinburgh: Edmonston and Douglas.)

WE regret to be obliged to find fault with the work of a naturalist, but duty to our readers compels us to say that this book should never have been published. There is perhaps no part of the world which is at once so remote and inhabited by such interesting savage tribes, with the main features of whose scenery and natural productions the public is so well informed as that which forms the subject of this book. It is therefore surprising that a gentleman who has had the opportunity of studying the natural history of this region at his leisure, should have thought himself justified in printing a volume of 500 pages of his rough journal, nine-tenths of which are occupied with a bald record of the usual monotonous incidents of sea and shore excursions, and with repetitions of facts already given us by Darwin, Hooker, and a host of other less eminent writers. There are, of course, some interesting facts and some original observations in this volume, but they are so thinly scattered amid a mass of details of weather and personal incidents, with records of the gathering of every common plant and the capture of every common as well as uncommon bird or insect, as to be not worth the search after. The book too is got up with an utter disregard of the reader's convenience. The author journalises his whole voyage, and at least one third of the volume treats of other parts of the world than those indicated by the title, yet the heading throughout is "Strait of Magellan," even when Rio Janeiro, Valparaiso, or the Azores are being described. Neither is there any indication of years or months, except when a change occurs; and if we find that something was captured on the "14th," we have to go back or forward many pages to discover whether we are in May or December. The plates too are wholly without references to the letterpress; and we find a curious plant (*Philesia buxifolia*) described at page 173, and figured at page 321, with no reference from description to figure or from figure to description. The illustrations seem thrown in at random, anything the author collected being apparently deemed worthy of a plate. On no other principle can we explain the plate devoted to an indifferent figure of the cranium of so common an animal as the puma; and another to the furcula of a condor, the picking-up of which is recorded at page 113, and figured full size, *à propos* of nothing, at page 303.

It is the more to be regretted that such a book as this has been published, because there is ample room for one of a different character, and for which Dr. Cunningham must have collected or have been able to obtain ample materials. The temperate parts of South America form a well-marked district, the productions of which are exceedingly interesting and their affinities well worthy of careful study. The relations of the fauna and flora of this district to those of Tropical America, of Europe, of Australia, and of New Zealand, require a thorough and critical examination; and this could hardly fail to throw much light on the means by which organic forms have been distributed, and on the relative importance of the various zoological regions into which the globe has been divided.

The author states in his preface that he has not yet completed the examination of his materials. Why then did he rush into print before he was able to lay before the world a single generalised result of his three years' voyage? W.

Les Houillères en 1869. Par Amédée Burat, Secrétaire du Comité des Houillères Françaises. Texte et Atlas. (Paris, 1870. London: Williams and Norgate.)

THIS is an annual publication of a semi-official character, proceeding from M. Burat, the Secretary of the very useful Association of Coal-mine Proprietors in France. We are not aware that any such committee of coal owners exists in Great Britain, although other trades or professions, such as bankers, railway companies, &c., have similar committees. The Iron and Steel Institute, which has lately been holding its meeting in London, fulfils to some extent this purpose in regard to the iron trade. Wherever such associations exist we wish that they could be persuaded to publish as complete and valuable reports on the condition of their branch of trade as we have in these annual reports on the French coal trade, now available for ten or eleven years back. The present report consists of four chapters, which treat respectively of the strikes of the coal-miners, which had greatly interfered with the trade, improvements in the machinery and modes of working coal mines, the statistical conditions of the production of coal in 1860,