OUR BOOK SHELF.

Our Stellar Universe. By Thomas Edward Heath. Pp. vi+26; with 26 star-charts and stereograms. (London: King, Sell and Olding, 1905.) Price 10*s.* net.

WHILST most students of astronomy are able to talk glibly of "stellar parallax" and "light-years," few of us are wont to form any persistent, concrete idea of the figures we employ, nor do the usual star-charts assist us in this matter. For this reason we extend a hearty welcome to Mr. Heath's latest effort to portray, as truthfully as the meagre data available will allow, the actual three-dimension character of space.

In his "Road Book to the Stars," which we reviewed in these columns on September 28, 1905, Mr. Heath explained how he had discovered a simple scale on which concrete comparisons of stellar depths could be based, and from that had been led to the construction of stereograms which would give a visual conception of the relative distances.

In the present volume he publishes twenty-six of these stereograms, including the whole of the sky, each one taking in fifty degrees square as seen from the earth. Twenty-six key-maps show these areas without distortion, and near each star disc are placed symbols denoting the magnitude, the spectral type, and the measured, or hypothetical, parallax. The hypothetical diameter of the star in miles, based on the assumption that the light-giving power of the star per unit area is equal to that of the sun, appears in an index, which also gives the data from which the key-maps were plotted and forms a handy and valuable reference table of the 1320 stars included.

In order to render their differences visible on the stereograms, all the parallaxes have been multiplied by 19,000, and where the actual values are unknown Mr. Heath has taken, as a theoretical quantity, the average parallax of the spectral type to which any one belongs.

Even if the stereoscopic appearance does not indicate the actual facts, these stereograms are of great interest and beauty, and should certainly find a place in every school or institution where astronomy is studied. They will, at least, counteract the natural assumption, made when ordinary star-charts, or even the sky itself, are consulted, that the heavens are simply studded with objects which are all in one plane.

For example, looking at No. 7—which shows the area facing xvh R.A. and 45° N. dec.—we see η Herculis standing out in the near foreground and Arcturus far removed, whilst the Northern Crown is, at first sight, hardly recognisable owing to the unfamiliar appearance produced by the separation of its stars in the third dimension. W. E. ROLSTON.

Chapters on Paper-making. Vol. ii. By Clayton Beadle. Pp. vii+174. (London, 17 The Borough, London Bridge: H. H. G. Grattan, 1906.) Price 5*s.* net.

THE object of this volume is "educational"; it is a contribution to paper-making technology, mainly as an aid to the student worker in his work of self-instruction. The author devotes himself to the task of popularising the work of the City and Guilds of London Institute by reproducing the examination papers set in the subject of paper-making in the years 1901–5, and, putting himself in the position of examinee, giving full answers to these questions.

This task is prefaced by the confession that the answers given may be in many cases open to criticism, as it is evident that certain of the subjects formulated as examination questions are in effect "leading questions" in the industry. This, however, is a tribute to the method of the institute, which, if it is to be really "educational," must keep the student mindful of difficulty, that is, of the objective realities of technical work. It is clear to us that the author has exactly appreciated the aims of the examiners in challenging the original faculties of students, and in suggesting, in the form of examination problems, some of the leading lines of progress.

In addition to this, which is the main subject-matter of the volume, the author has included a chapter dealing generally with the much controverted subjects of technical education and industrial research, and a section upon gelatine sizing embodying the results of original investigations.

The book contains a large number of special dissertations which will interest technologists and practical men, and its appeal, therefore, is to a wide circle of readers.

Anales del Museo Nacional de Buenos Aires. Ser. 3, vol. v. Pp. 574; 289 text-figures. (Buenos Aires, 1905.)

THE size of this volume is a sufficient proof of the energy with which the study of biology and the related sciences is carried on in the capital of the Argentine Republic, more especially by the professors and officials of the national museum. Two papers in the present issue by Dr. F. Ameghino, the director of the museum, both dealing with the presence of a perforation in the astragalus of certain recent and extinct mammals, have been already mentioned in these columns. The bulk of the volume is, however, occupied by an article by Dr. E. L. Holmberg on the Amyrilidaceæ indigenous to and cultivated in Argentina, and a second, by Mr. F. F. Outes, on the Stone age in Patagonia. In the latter the author describes stone implements of all descriptions, from rude flint flukes and scrapers to beautifully chipped arrow-heads and perfectly spherical "bolas." The Palæolithic, or Pleistocene, implements are all referred to a single epoch. The resemblance of these implements to those found in Europe, North Africa, and North America is very close, although, as might have been expected, the closest similarity is found in the case of the North American types. In the Neolithic epoch, on the other hand, three periods are distinguishable, each indicating a distinct step in advance of its predecessor. Throughout the Neolithic epoch Patagonia presents characteristics in the matter of flint implements distinguishing it from the rest of Argentine territory. The similarity between the Patagonian neoliths and those of the southern and south-eastern United States is surprisingly close, but between the former and those of the western United States a less marked resemblance exists. Apparently some of these stone arrow-heads were used until a very recent date by certain of the Indian tribes.

R. L.

The Natural History of Selborne. By the Rev. Gilbert White, M.A. Re-arranged and classified under subjects by Charles Mosley. (London: Elliot Stock, 1905.) Price 6*s.* net.

THE distinctive feature of this edition of the famous natural history classic is the re-arrangement of the work according to the subjects dealt with. First, there are descriptions of the locality and its physical characteristics, and these are followed by thirteen sections, respectively concerned with meteorology, geology, ethnology, mammals, birds, reptiles, fishes, insects, spiders and mites, worms, botany, superstitions, and a miscellany of subjects. This convenient arrangement will greatly assist naturalists and other students in referring to White's masterpiece.