

not necessarily a sign of Ctenophore affinities. As in other divisions of the Cœlenterata, the determination of true or natural specific distinctions in Medusæ from false or accidental differences is extremely difficult. A great many species have been described from the more or less distorted and contracted specimens that are sent to systematic zoologists by the collectors, and it is very probable that many of the folds and wrinkles, and even the warts and tubercles, that are relied upon for separating species are due to post-mortem changes. Mr. Mayer deals with this problem with sound judgment. The work of previous authors is carefully considered and tabulated, so that the reader may form his own judgment in each case if he wishes to do so; but his own opinion, based on a wide experience of living and preserved material, is clearly expressed. Thus, of the genus *Pelagia*, no fewer than fourteen species have been described, of which six are from the Atlantic Ocean. "All of the Atlantic species," he says, "are closely related one to another, and future researches may demonstrate that they are only geographical races."

It would be difficult to express adequately our admiration of the seventy-six coloured plates with which this monograph is illustrated. As regards delicacy of treatment and accuracy in detail, they may be regarded as the best series of zoological plates that have been published for many years. In addition to the plates, there are more than four hundred text illustrations in black and white. The majority of these are copied from the works of other authors, but there are several, such as the two specimens we reproduce, that have not been previously published.

Important changes in well-known generic names are not so common as in some other recent memoirs, but there are some which many students of the group will notice with regret. Thus the familiar genus *Lizzia* becomes merged in *Rathkea*; *Corynitis* becomes *Linvillea*. The generic name *Turris*, having been used by Humphrey in 1797 for a mollusc, is regarded as preoccupied, and this genus of *Medusæ* becomes *Clavula*. As examples of changes in spelling, we may refer to the genus *Irene*, which becomes *Eirene*, and *Aurelia*, which becomes *Aurellia*. But the most deplorable proposal in this respect is that the name *Craspedacusta* should be used in place of *Limnocoelium*. It is clear from the text that the author has made this change with regret, since he realises the great inconvenience that must be caused by the substitution of a name that has been used only once, and in a preliminary note, for a name that has been used consistently by all authors, including the writer of the preliminary note, ever since. That the change has been made is due to the mandate of the International Commission on Zoological Nomenclature, who stated that the usage of the name *Limnocoelium* would be "in contravention of the provisions of the Code." No better example could be found to show the pressing need of some revision of the Code. We cannot close this notice without again expressing our thanks to Mr. Mayer for his most magnificent and serviceable memoir. It is really a great work, and will mark a great step of progress in the literature of the subject.

#### MEASURES OF SOLAR PARALLAX.<sup>1</sup>

THE particular value of solar parallax derived from the discussion of any one set of measures is of smaller consequence than the manner in which the result has been achieved. The interest in the problem has shifted. In its present position, the knowledge of the distance of the sun from the earth is less important than the examination and elimination of the causes that affect the accuracy of the measured coordinates obtained from a series of plates. Viewed in this light, Prof. Perrine's paper is of great value, for it puts us in possession of an independent discussion of material that has already been submitted to the most careful scrutiny.

We have presented to our examination a numerical estimate of the different constructions that expert know-

<sup>1</sup> "Determination of the Solar Parallax," from Photographs of Eros, made with the Crossley Reflector of the Lick Observatory, University of California. By Charles D. Perrine, and others. Pp. v+98. (Carnegie Institution of Washington, 1910.)

ledge can place upon the same measures. Mr. Hinks, in his elaborate discussion of the solar parallax from photographic observations of Eros, pointed out some discrepancies in the Lick results, which he thought required further examination. Among others, he suggested that some of the comparison stars were too distant from the axis of collimation. Apparently this criticism was justified, and Prof. Perrine has employed in his reductions only those star images which were accurately circular. A second suggestion, that an error was introduced by the eccentric position of Eros with reference to the stars of comparison, is not accepted. This want of symmetry arose from the plan of choosing the same stars for the morning and evening observations, a scheme which possesses obvious advantages; but in a plate taken with Eros always in the centre, the motion of the planet will carry it nearer to, or away from, the more outlying members of the group of stars selected for measurement. The motion of Eros in the interval was about 8'-10', and in a field the available diameter of which is small the distortion of the image might outweigh the evident theoretical advantages.

To test this point Prof. Perrine has made two solutions, according to the stars selected, and can find no evidence of systematic error. Another attempt to explain the observed discrepancy, more of the nature of a suggestion than a criticism, was made to depend upon the generally small magnitude of the comparison stars. With a large aperture and the necessity of restricting the field, there will be a tendency to use fainter stars than in other observatories employing the ordinary photo-refracting telescope. As a rule, the stars selected at Lick have been fainter than the planet. Prof. Perrine does not specifically discuss the effect of magnitude, and there is the less necessity, since the value of the solar parallax he obtains does not show any anomalous deviation from the final value adopted by Mr. Hinks.

The difference of computational results is a point of great interest. The final value of solar parallax derived from the total mass of measures at the command of Mr. Hinks is 8.807", while the same authority obtained from the Lick measures alone 8.815". From the same data Prof. Perrine derives from his own measures 8.8067", or identically Mr. Hinks's result. The problem for solution has therefore moved from finding an explanation of the difference of Lick results from the general average to tracing the cause of the disagreement between the Cambridge and the Californian computations. The computed probable errors also differ. That attached by Prof. Perrine in his final equation for  $\pi$  is  $\pm 0.0025''$ , and by Mr. Hinks  $\pm 0.0046''$ . It is a matter for congratulation that such small differences should attract attention and call for explanation. The minuteness of the discrepancy seems to indicate that in modern processes such a degree of refinement has been reached that the disagreement must be attributed to purely arithmetical operations, and has no physical significance.

#### AMERICAN VERTEBRATE PALÆONTOLOGY.

THE phylogeny of the Felidæ forms the subject of an article, by Dr. W. D. Matthew, published in vol. xxviii. (pp. 289-316) of the Bulletin of the American Museum of Natural History. According to the author, the great majority of the extinct members of the family, including all the oldest species, are characterised by a more or less pronounced development of the upper canines into long, flat-sided tusks. These are the so-called sabre-tooths, or machærodonts, which date from the Lower Oligocene, typical cats with relatively short upper canines being unknown before the Pliocene. The early sabre-tooths are, however, divisible into two series, one characterised by the extreme length and slenderness of the tusks and the large size of the protecting flange on the lower jaw, and the other by the shorter tusks and smaller flange. *Hoplophoneus* and *Dinictis* respectively represent the two series in America. While the derivation of the large Pliocene and Pleistocene sabre-tooths from *Hoplophoneus* has been accepted, the relations of the modern cats to *Dinictis* have been overlooked. "The evidence appears, however, to indicate that the *Dinictis* phylum led