different systems proposed for the labyrinthodonts, forming a very convenient compilation for the student. The rest of the book is devoted to descriptions of the different families of the Stegocephali. The author concludes that the paleontological material is still too meagre to venture on a genealogical table, but promises to offer a comparative discussion at the end of the whole work.

The first part of the second volume contains the Dendrerpetondidae, Diplovertebridae, Archaegosauridae, Chauliodontia (Miall), and Melosauridae. In the beginning we find the remarkable note, that it is difficult to accept Cope's division into Rachitomi and Embolomeri, based on the characters of the vertebrae, because both kinds of vertebrae (rachitomous and embolomerous) can be found in the same animal. The embolomerous form seems to be developed in the caudal, the rachitomous form in the thoracic, region.

The question whether the hypocentrum or the pleurocentra constitutes the base of the vertebra is decided by Fritsch in the following way: A normal vertebra with *one* centrum never can be formed from a rachitomous vertebra, but only an embolomerous vertebra with two disks. The rachitomous form prepares the embolomerous, and it is not surprising that both forms exist in the same animal.

The following parts will contain the fishes and arthropods, and in the final part the general conclusions will be given.

Finally, it should be mentioned that galvanoplastic copies of thirty-five Stegocephali have been prepared by the author, which cannot be distinguished from the originals. They are obtainable at the low price of fifty dollars from the author, 35 Brenntegasse, Prague.

PRACTICAL BOTANY.

TEACHERS who carry their classes beyond the elements of analytical botany find the number of adjuncts at their disposal increasing rapidly, so far, at least, as histology is concerned. Beside general text-books of all grades, and the treatises, large and small, on the methods of microscopical work, explicit directions for the study of common representative plants are now published in several languages.

So far as a short course is concerned, the demand for laboratory directions is already well met by the botanical portion of Huxley and Martin's 'Biology,' which any capable teacher can bring to date by a few lectures, and supplement by synopses of work for a few additional plants, like Spirogyra, Aspergillus, and Penicillium; and it is doubtful if many courses offered in America are comprehensive enough to warrant carrying this part of the work further. Yet to students who have time for additional work in this direction, without the knowledge requisite for carrying it on independently, this little book of Mr. Bower's, which owes its origin to the same causes that produced Huxley and Martin, will prove exceedingly useful. If it cannot be said to equal Strasburger's 'Botanisches practicum,' it has the merit of being in English, and bears evidence of careful workmanship on every page, while it is sensibly bound for laboratory use.

A course of practical instruction in botany. By F. O. BOWER, M.A., F.L.S., and SYDNEY H. VINES, M.A., D.Sc., F.L.S. Part i. Phanerogamae-Pteridophyta. London, *Macmillan & Co.*, 1885. 11+226 p. 16°.

NOTES AND NEWS.

THE vessel Alert, sent to visit the stations established last summer in and *en route* to Hudson Bay, has been obliged to return by reason of the prevalence of pack-ice, the exhaustion of their coal, and certain damages sustained. She will start again; but those interested in the commercial route *via* Hudson Bay to Manitoba are much disappointed; and the return is generally regarded as evidence that such a route would be even more precarious and uncertain than its opponents have claimed.

— Dr. Elkin, in charge of the heliometer of the Yale-college observatory, has been engaged for nearly a year and a half past in measuring the group of the Pleiades, his original plan being to measure with this instrument the same stars which Bessel measured with the Königsberg heliometer about fifty years ago. Dr. Elkin has taken advantage of all the improvements in the instrument and the methods of using it which have been developed in the last half-century; and, in addition to the successful carrying-out of his carefully elaborated plan of triangulation, he has also been able to extend his work to a large number of stars which Bessel did not measure. The position-angle and distance of the Bessel stars from the large star Alcyone are included in the work. The results of this very valuable work cannot be fully discussed, and prepared for publication, until the positions of certain stars of reference have been obtained from the work of other observatories where they are now being determined. Dr. Elkin has also obtained measures of the distances of a number of craters on the moon from neighboring stars, on thirty-six nights, near the times of first and last quarter. The positions of these craters on the moon itself have been determined; also series of measures made of the diameters of Venus, of the outer ring of Saturn, and of the satellite Titan