Star Clusters (Harvard Observatory Monographs No. 2). By HARLOW SHAPLEY. xi + 276 pp. McGraw-Hill Book Company, New York, 1930. $3.00.

ONE of the reasons why many star clusters are worth studying is that they present stars of different physical characteristics at practically the same distance. The possibilities here offered have been utilized with startling success.

"Star Clusters" tells the story of the exploration of this interesting field of modern astronomical activity. The author of the book has had a lion's share in the advancement of the subject. The fifteen years of active study of star clusters have not lessened his enthusiasm for the subject, as is apparent from every page of the book.

The book deals with galactic and globular clusters but with the latter in the forefront. It does not pretend to give an exhaustive treatment of all the ground it covers but contains abundant references to subjects treated elsewhere. As part of its plan, and a very welcome part to its readers, it presents as one unit Professor Shapley's own researches, published in numerous papers, now extended and amended where necessary.

The author states in his preface that he has postponed the publication of this monograph till a revised system of parallaxes for globular clusters could be available. It is evident how much time-consuming labor members of the Harvard Observatory Staff, under Professor Shapley's direction, had to accomplish in order to provide for the finishing touch to many chapters.

The period luminosity curve for Cepheid variables is newly derived from a richer material of variables in the Small Magellanic Cloud only.

Theoretical considerations in connection with the period-luminosity relation are presented in two separate paragraphs (22 and 51). It is to be regretted that the subject has not been treated as a whole.

Paragraph 44 gives some historical notes in connection with the period luminosity relation. Hertzsprung is given credit for his early work on Cepheid variables. But the interesting fact that he was the first to use the relation for the determination of the distance of the small Magellanic Cloud is not stated. In the same paragraph, when reference is made to "some vigorous critical discussion of the data on galactic Cepheids," Dr. Schilt's contributions are not mentioned.

In recent years much has been written about the transparency of space. An interesting chapter is devoted to this subject of intrinsic importance when one deals with the huge distances of globular clusters and extra-galactic nebulae.

In a chapter, "Data Bearing on the Origin of the Galaxy," the knowledge of star clusters is used as a basis for an interesting tentative discussion of the galactic system as a unit of higher order in the universe.

Forty-six pages at the end of the book are devoted to four valuable appendices. They give catalogues of globular and galactic clusters and a very complete bibliography of star clusters containing 812 titles.

It may be a decided disadvantage when the author's own researches have covered practically the whole subject treated in a book. His presentation will almost necessarily be too subjective. In this book we frequently notice such a lack of objectiveness when important contributions of others are reviewed in a few words. This is especially regrettable if, on this account, work of original character does not receive proper emphasis.

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FEBRUARY 13, 1931

SCIENTIFIC APPARATUS AND LABORATORY METHODS

A DEVICE FOR WASHING TISSUES

IN our laboratory it became necessary to devise an apparatus for washing fixed tissues in running water. It was desirable to arrange this apparatus to accommodate the material of a technique class of about a half-dozen students so that all individuals could use it without interfering with each other's material or hampering the efficiency of the apparatus.

The apparatus is so constructed that any one who is handy with a pair of tin shears and a soldering iron can put it up in an hour's time from a few scraps of thin galvanized iron at no cost whatever.

Essentially the apparatus consists of a tank (K), a rack (E) to hold the tubes containing the material and an overhead trough (C) to distribute the water. Fig. 1 shows the apparatus as it appears when assembled. It is set up from only three parts that need to be cut to pattern and two small tubes. The pattern of the tank itself is shown in Fig. 4. Dotted lines indicate folds in the metal. The nature of such folding will be apparent at once by reference to Fig. 1. The holes at A are to take screws to support the whole apparatus on the under side of a shelf above the laboratory sink. The hole (S) shown in Fig. 4 (not visible in Fig. 1) is a drain, but kept closed with a cork when the apparatus is in use. The overflow pipe (L, Fig. 1) is soldered over the hole L (Fig. 4) and the inflow pipe (M, Fig. 1) is soldered over the hole M (Fig. 4). These pipes are easily fashioned from small rectangular pieces of the sheet