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|   |     |  |     |
|---|-----|--|-----|
| <i>The Harvard Program of Galactic Explorations:</i><br>DR. HARLOW SHAPLEY .....  | 207 | F. MACKELL. <i>A New Dehydrating Agent for<br/>Histological Technique:</i> PROFESSOR O. C. BRAD-<br>BURY .....   | 224 |
| <i>Obituary:</i><br><i>Frank Wigglesworth Clarke:</i> PROFESSOR L. M.<br>DENNIS. <i>Memorials; Recent Deaths</i> .....  | 212 | <i>Special Articles:</i><br><i>On the Relative Sterility of the Adolescent<br/>Organism:</i> DR. CARL G. HARTMAN. <i>The Etiology<br/>of Epizootic Encephalomyelitis of Horses in the<br/>San Joaquin Valley, 1930:</i> DR. K. F. MEYER, DR.<br>C. M. HARING and B. HOWITT ..... | 226 |
| <i>Scientific Events:</i><br><i>Dissolution of the Royal Botanic Society; Oppor-<br/>tunities for Employment of Engineering Gradu-<br/>ates; The New York State Geological Association;<br/>Symposium of the American Chemical Society</i> .....  | 213 | <i>Science News</i> .....  | 10  |
| <i>Scientific Notes and News</i> .....  | 216 |  |     |
| <i>Discussion:</i><br><i>Why the Angiosperms are Old:</i> PROFESSOR G. R.<br>WIELAND. <i>The Occurrence of Phylloerythrin in<br/>the Digestive System of Herbivorous Animals:</i><br>PROFESSOR O. L. INMAN and PAUL ROTHEMUND.<br><i>Fresh Water Medusae in Oklahoma:</i> DR. A. I.<br>ORTENBURGER and GEORGE R. PHILLIPS. <i>The<br/>"Fire Stopper":</i> DR. FERDINAND W. HAASIS ..... | 219 |  |     |
| <i>Special Correspondence:</i><br><i>International Physiological Congress Fund Fellow-<br/>ships:</i> PROFESSOR HOWARD B. LEWIS .....   | 223 |  |     |
| <i>Scientific Apparatus and Laboratory Methods:</i><br><i>A Simplified Instrumental Method of Measuring<br/>Sound Absorption Coefficients:</i> PROFESSOR JAMES  |     |  |     |

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## THE HARVARD PROGRAM OF GALACTIC EXPLORATIONS

By Dr. HARLOW SHAPLEY

DIRECTOR OF THE HARVARD OBSERVATORY

THE work carried on at the Harvard Observatory for the past ten years has included the systematic survey of various parts of the stellar universe. Recently we have been able to inaugurate active studies in the whole range from the nearest stars to the groups of galaxies at distances of the order of a hundred million light years. For convenience of operation and discussion the program of exploration and measurement has been divided into eight major sections, each concerned with a separate territory and employing in general a special method and equipment. Ten photographic telescopes and approximately thirty observers and investigators are involved in the program. In the following paragraphs I shall outline briefly the progress in the eight territories, of which five lie within the galactic system and three in the extragalactic universe.

### (1) THE SOLAR NEIGHBORHOOD

A large majority of the stars within fifty light years of the sun are of less than solar luminosity, and most of them are below naked-eye visibility. Thus a recent compilation of those stars known to be nearer than sixteen light years shows but 40 per cent. brighter than the sixth magnitude. The exploration of the solar neighborhood is therefore a search for dwarf stars among telescopic objects.

It is important to have as complete a census as possible of the solar neighborhood—the most useful sample we have of a volume of space. A thoroughly observed frequency distribution of stellar luminosities and a knowledge of the density-in-space laws for the stars within fifty light years of the sun are fundamental in the analysis of stellar development and the structure of stellar systems.

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