brevity the find will be called in this paper the Los Angeles skull.

In comparing this skull with other female skulls found in America it is seen that in breadth (132 mm) and in basion-bregma height (131 mm) it is rather close to the "Basket Maker" cranium. The height-breadth index of the Los Angeles skull is considerable —99.24; therefore, it should be classified as acrocranial. On account of the damaged state of the Los Angeles skull it can not be measured as to maximum length, but in all probability the skull is dolichocephalic.

The index of the foramen magnum of the Los Angeles cranium is very high—96.7. Thus, although the size of the occipital foramen is small, yet in its shape it is very broad.

The maximum thickness of the walls of the brain case of the Los Angeles cranium is rather considerable —7 mm. In the Calaveras skull it is 8 mm.

Since all the facial skeleton is lacking it is very difficult to conceive clearly the physical type of the individual. The cranium exhibits no striking primitive features which would justify classification of its owner as a lower being. On the contrary, the brain box is decidedly human, and the individual is a representative of our species.

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FOSSIL LEAVES OF DICOTYLEDONOUS FLOWERING PLANTS

I WISH to make a preliminary announcement in SCIENCE of the discovery of fossil leaves of dicotyledonous flowering plants in formations of the Trinity division of the Comanchean, in Erath County, Texas. The most striking features of these leaves are first, their already highly organized structure, and next, their remarkable variability, no two specimens being closely similar.

The full description of the new finds is being prepared for publication.

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SCIENTIFIC BOOKS

GEOGRAPHY OF DISEASE

A Geography of Disease. A Preliminary Survey of the Incidence and Distribution of Tropical and Other Diseases. By EARL BALDWIN MCKINLEY, M.D. Published as a Supplement to the *American Journal of Tropical Medicine.* Pp. i + xxv, 1–495. George Washington University Press, Washington, D. C. 1935.

THIS valuable study of the geography of disease was made possible by a grant from the American Leprosy Foundation (formerly the Leonard Wood Memorial) to the Division of Medical Sciences of the National Research Council, and was prepared from collected data by Dr. McKinley, the director of studies, assisted by an advisory committee consisting of Drs. Frederick P. Gay, Richard P. Strong and the late Theobald Smith. In his introductory chapter Dr. McKinley well says that "the geography of disease has never been written and the exact picture of this important subject, of such deep significance to mankind, may never be painted," but this volume certainly adds greatly to our knowledge and is an excellent stepping-stone toward a more complete recording and understanding of the distribution of disease.

In the collection of the data contained in this book, special stress was laid on the geographical distribution of tropical disease, so that the work is of special interest and value to those interested in diseases occurring in warm countries. It is not necessary to emphasize the importance of the geographical distribution of disease, but unfortunately the subject appears to have attracted little attention, and this is the first contribution to it that has appeared in many years. The geographical distribution of disease in each country is considered separately, and valuable tables summarizing disease distribution in each country are given at the end of the section treating of the country in question. It is evident that there is great lack of uniformity and accuracy in the statistics of disease as furnished by the various health departments consulted. This is especially evident regarding the reports of local and state boards of health in this country when compared with the reports of foreign countries, and this book is valuable in that it calls attention to this lack of accuracy in our health statistics. For instance, in the distribution of malaria as reported by various health authorities, it is noted that it is impossible to arrive at any adequate conception of the incidence of the various types of malaria in this country, since only two states, Alabama and Kentucky, furnish any data relative to the respective incidence of tertian, quartan and estivo-autumnal malaria. On the other hand, these data are available for most foreign countries.

The volume contains special chapters upon the most important tropical diseases, malaria being considered by Boyd; bacillary dysentery by Strong; amebiasis by Craig; typhoid fever by Gay; tuberculosis by White; Brucellosis by Evans; dengue fever by Siler; yellow

fever by Sawyer; typhus fever by Dyer; leprosy by McCoy; syphilis by Chesney; yaws by Butler; trachoma by Julianelle; tularemia by Francis; clonorchiasis by Strong; schistosomiasis by Faust; filariasis by O'Connor; beri-beri by Vedder; malnutrition and undernutrition by Cook; and chemotherapy by Leake. These special discussions add much to the scientific worth of the book and include short but excellent presentations of the distribution of the various diseases considered.

The labor involved in the collation of the data furnished in this work can be realized only by one who has edited similar publications, and the author is to be congratulated upon a volume which should prove of great value to all public health officers and to all who are interested in the geography of disease. As already stated, the book is of special interest to workers in tropical medicine. The medical profession and the sanitarian owe Dr. McKinley a debt of gratitude for having made available for the first time in many years a real geography of disease.

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ASTRONOMY

The Realm of the Nebulae. By EDWIN HUBBLE. xiii and 207 pp., 1936, $3.00. New Haven: Yale University Press.

Two outstanding characteristics of this account of the Metagalaxy are the wealth of scientific material involved and the breadth of outlook. There are minute and frequently technical descriptions of the steps needed to establish, for example, the distances of the nebulae, or the magnitude effect of the red shift, or the velocity-distance relation. But we do not lose sight of the fact that the goal is an integrated picture. We are shown exactly why each separate problem is raised. The forest remains in sight, despite the trees.

One could wish that, for the sake of the scientist more than for the layman, some of the researches were more fully discussed. The consideration of uniform distribution of nebulae seems to be left in a tentative state; concentrations within clusters certainly must have a more direct bearing on both practical and theoretical problems than the author indicates. A mystery still rests also in the calibration of the velocity-distance relation. The coefficient derived on the basis of the brightest stars in nebulae is almost exactly that derived previously from the mean absolute magnitude of the galaxies. But, curiously enough, the mean absolute magnitude is now found to be 0.4 magnitudes brighter than before. We may hope that detailed publication of the work involved will explain the apparent inconsistency.

Such criticism, however, is a matter of detail. The importance of the work lies in the clarity and fulness of its account of a complex scientific problem. The style is smooth and clear; the author's habit of referring to the same subject in different contexts tends to unify the work. The material is both inciting and exciting, and the volume is a valuable contribution to knowledge of the Cosmos. J. M.

Theoretical Astrophysics. By S. ROSSELAND. Oxford: The Clarendon Press, 1936. Pp. xix + 355. Figs. 47. $8.00.

THE study of astronomy is handicapped by the scarcity of satisfactory texts, and this has been especially true in the field of theoretical astrophysics. Therefore the appearance of "Theoretical Astrophysics," by S. Rosseland, is an event very much to be welcomed—the only complete modern treatise on astrophysics (with the exception of the same author's "Grundlagen der Astrophysik"). The author is professor of astronomy at the University Observatory, Oslo, and director of the Institute of Theoretical Astrophysics, and is well known for his contributions to the fields covered in this treatise.

For about a third of the book, astronomy is not considered at all, while Professor Rosseland presents the fundamental ideas of quantum physics, beginning with the classical equations of analytical dynamics and statistical mechanics. The object here is to give the student a self-contained and logical development—including the Schrödinger equation and its application to a few elementary problems, simple spectra, the periodic system, complex spectra and the theory of absorption and emission of radiation. With few exceptions, the methods of quantum mechanics are adhered to, and while they are condensed and clarified remarkably (104 pages), the reader feels that he has a working outline of theoretical physics and a background from which he can proceed to astrophysics, or to further work in theoretical physics, with confidence. Discussions of certain additional topics in physics—such as the Zeeman and Stark effects, and molecular spectra—are included in the corresponding applications to stellar atmospheres.

The remainder of the book takes us from the analysis of normal stellar atmospheres to extended atmospheres, nebulae and interstellar gases. Professor Rosseland states in the preface that his aim is the formulation of a program of theoretical astrophysics. This is accomplished by detailed critical reports on important researches of the past few years and by the accompanying theoretical exposition of methods.

A considerable amount of attention is necessarily devoted to the equations of the transfer of radiation, leading to the interpretation of the continuous spectrum and the profiles and intensities of absorption