

lication the morphology of the coffee flower will be treated in detail.

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### ON THE REACTION OF ANTHOCYANINS WITH THE SULFITES

ANTHOCYANINS were extracted from the flowers of *Pelargonium zonale* and of various other plants by means of a hot 5 per cent. solution of citric acid.

The red-colored liquids were carefully treated with powdered sodium sulfite and sodium hydrosulfite ( $\text{Na}_2\text{S}_2\text{O}_4$ ), respectively. On account of the reduction of anthocyanins the extracts became colorless. When afterwards some tincture of iodine was added in an adequate amount the original red color of anthocyanins reappeared unchanged as to its strength and shade.

A red pigment which was obtained by a reduction of flavonols by means of magnesium in the presence of hydrochloric acid did not become decolorized by the sulfites, and it turned orange-yellow if afterwards some iodine was added.

The flavonols, extracted from the yellow flowers of various plants, did not produce any red color after

their treatment with sodium hydrosulfite, and with magnesium in the presence of organic acids, respectively. This latter decolorized the above extracts of anthocyanins in the absence of air more or less irreversibly.

The results of the above reactions corroborate the old hypothesis on the formation of anthocyanins by an oxidation of anthocyanogens, and, on the other hand, they indicate that the hypothesis, put by Willstätter, according to which anthocyanidins are formed in nature by a reduction of flavonols, does not seem to be fully justified.

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### IODINE THERAPY FOR GOITER

APROPOS of Mr. Alexander's article in the March 6 issue of SCIENCE (pp. 230-231) with special reference to Dr. McCay's note on Boussingault, I may perhaps be permitted to point out that a decade ago I called attention, in this journal (SCIENCE, 63: 428, August 23, 1926) to that early investigator's remarks and there gave some references that may be of interest.

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## SCIENTIFIC BOOKS

### RECENT BOOKS ON ASTRONOMY FOR THE GENERAL READER

*The Solar System and Its Origin.* By HENRY NORRIS RUSSELL. 144 pages, 14×20 cm. The Macmillan Company, New York, 1935. Price, \$2.00.

A DISTINGUISHED astronomer gives an account of the present state of our knowledge of the solar system. Within the modest covers of this book there is a wealth of information for the scientist and the general reader alike, presented in the author's characteristic informal, sparkling style. The first two chapters consider the properties of the system as they are known to-day, including the important conclusions from the researches of the past few years. The third chapter treats of the theories of its origin. Dr. Russell's conclusion that no one can yet say how our system originated in detail, leaves the reader with the thought, not of the necessary futility of such inquiries, but rather of the magnitude of the problem to be solved. And his guarded reference to something that may have happened two thousand million years ago, in which the earth's beginning was only a minor item, suggests that the problem is not being abandoned.

*Stars and Telescopes.* By JAMES STOKLEY. xiii + 319 pages, 15×22 cm. Harper and Brothers, New York, 1936. Price, \$3.00.

THIS attractive book, by the associate director in charge of the Fels Planetarium, in Philadelphia, is an answer to the frequent queries of visitors to the planetarium for the name of a book on astronomy that is suited to the general reader. It presents in a simple but authoritative way, as Dr. Walter S. Adams remarks in the preface, much of the romantic history of astronomy and the striking developments which have resulted from the application of modern instruments and modern methods. One of the many pleasing features is the well-told story of the telescope itself, from its invention to the present day.

*Astronomy.* By JOHN CHARLES DUNCAN. Third edition. xvii + 448 pages, 15×22 cm. Harper and Brothers, New York, 1935. Price, \$3.75.

THE appearance of the third edition of this familiar text book for beginning classes in colleges and universities, first published in 1926, bears witness to its continued success. The new edition contains extensive revisions, particularly in the later chapters which deal with sidereal and structural problems. The star maps, on a blue background as before, are more clearly reproduced. The author has accomplished very creditably his expressed aim to keep pace in the new edi-

tion with the rapid progress of astronomy, and to improve the methods of presentation.

*Consider the Heavens.* By FOREST RAY MOULTON. xi + 332 pages, 15 × 23 cm. Doubleday, Doran and Company, New York, 1935. Price, \$3.50.

THE author of this book for the general reader again demonstrates his ability to tell the story of the heavens in a clear and entertaining style. Into his accounts of the celestial bodies and their ways he introduces much of the romance of astronomy, and his belief that order prevails in the universe. Of the fifteen chapters, the one on the origin of the planets is especially welcome, in view of Dr. Moulton's well-known contributions to the subject. The closing chapter on "All Things Change" provides material for reflection on the significance of the picture of the universe that has been presented.

*Handbook of the Heavens.* Edited by HUBERT J. BERNHARD, DOROTHY A. BENNETT and HUGH S. RICE. xvi + 131 pages, 15 × 23 cm. Whittlesey House, New York, 1935. Price, \$1.00.

THIS "Simple Introduction to the Study of the Stars" was written by members of the Junior Astronomy Club of the Museum of Natural History, New York. Well illustrated, it contains descriptions of the constellations in their seasons, and of the sun, moon, planets, meteors and stars. Young readers, and older ones as well, will find here many suggestions out of the authors' experience for observing the heavens with or without the telescope. And they are likely to be stimulated by the spirit of eager inquiry which pervades its pages. The foreword is a greeting from Dr. Harlow Shapley.

*Highlights of Astronomy.* By WALTER BARTKY. viii + 280 pages, 17 × 23 cm. The University of Chicago Press, Chicago, 1935. Price, \$2.50.

WRITTEN expressly for an orientation course in the University of Chicago, the chapters of this book conform closely to the conventional sequence, beginning with the earth and its motions, and ending with the sidereal universe. They open brightly with verses and modernistic sketches doubtless designed to lead the student on to the somewhat more difficult matter ahead. Simple charts are included to aid in locating the stars and planets.

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### INFANT APE AND HUMAN CHILD

*Infant Ape and Human Child (Instincts, Emotions, Play, Habits).* By N. KOHTS. Moscow, 1935, pp. xvi + 596, with 145 plates. (Published in Russian, with English summary.)

THE author, wife of Professor Alexander Kohts, founder and director of the Darwinian Museum, Moscow, USSR, presents a long-delayed sequel to her volume on chimpanzee intelligence, which was published in 1923.<sup>1</sup> These two volumes, and a third, which is projected, on the "ability of the chimpanzee to distinguish form, size, quantity, and number, and his capability towards ascertaining likeness and dissimilarity, making analysis and synthesis" (p. 579), are based on naturalistic and experimental studies of an infant chimpanzee between the estimated ages of one and a half and four years, conducted from 1913 to 1916, and in the present volume on comparable studies of the son of the author from birth to four years of age, carried forward from 1925 to 1929.

Mrs. Kohts is a gifted observer, well informed, sympathetic, who with fidelity and exceptional insight describes and compares in these elaborate reports varied expressions of psychobiological characteristics in chimpanzee and man. Fortunately for non-readers of the Russian language, among which the reviewer is numbered, this book includes a comprehensive and extremely interesting summary in English, and in addition 120 pages of photo engravings which present hundreds of carefully selected photographic records. It is chiefly because of these illustrations, which indeed convert the volume into an atlas, that this review is presented to American biologists. The volume is primarily a pictorial and verbal account of emotional expression in chimpanzee and human infancy, and although the illustrations of Mrs. Kohts's earlier volume were superb in quality and of high scientific value, the present collection, in the reviewer's opinion, surpasses them in all respects. They constitute a rich mine of information: fascinating to those who seek entertainment, engrossing to those concerned with psychobiological problems. One need not be deterred from attempt to use this book by language handicap.

The work is constituted by three parts: (1) Behavior of the infant chimpanzee; (2) behavior of the human child; and (3) analysis of behavior of man and ape. Among the topics treated descriptively in these several parts are: physical characteristics and expressions, emotional expressions, instincts (feeding, property, nesting, sex, freedom, social, etc.), play, cunning and deception, use of tools, imitation, memory and language.

The following examples, chosen almost at random, will serve to illustrate the nature and quality of the author's comparisons. Anent destructiveness and effects of prohibitions the author remarks: "Many

<sup>1</sup> "Untersuchungen über die Erkenntnisfähigkeiten des Schimpansen." Moscow, 1923, pp. 453, with 16 plates. (Published in Russian, with a German translation of summary.)