obtained at any frequency. During the interval between 16^h45^m and 17^h02^m, as it appeared that the apparatus had become defective, various features of the apparatus were examined as time permitted and the antenna was inspected. Both apparatus and antenna were found to be in good order in every respect. At 17^h04^m, the apparatus was adjusted for 4,800 kc, the frequency used for fixed-frequency recording, but no reflections were obtained. No photographic record was attempted at this frequency. Beginning another run at 17^h40^m at 3,800 kc, nothing unusual was encountered throughout the whole run, which was terminated at 18^h26^m with a frequency of 9,600 kc.

Discussion: From the preceding paragraphs it will be seen that a solar disturbance began at 16^h45^m on April 8, 1936, and was accompanied by disturbances in magnetism, earth-currents and ionosphere-phenomena. According to the photographic records all these are known to have begun on about the same minute. The time-control of all instruments and apparatus at the Huancayo Magnetic Observatory is such that there is no question as to the element of time in connection with any of the records.

It seems generally accepted that solar disturbances are largely related to disturbances in the terrestrial elements just enumerated. Some think the solar disturbances precede terrestrial effects by about twenty-four to twenty-six hours. No solar disturbance was noted here on April 7 which would have preceded by twenty-four to twenty-six hours the magnetic, earth-current and ionospheric disturbances recorded here on April 8.

These observations may therefore indicate that some solar disturbances are capable of causing simultaneous disturbances in magnetism, earth-currents and the ionospheric regions. If the solar disturbance of April 8 were to lead by some twenty-six hours disturbances in the terrestrial elements, then the magnetic trace of April 9 should have been disturbed. The magnetic record of April 9 is entirely undisturbed; so, also, are the records of earth-currents and the ionosphere. Furthermore, the similarity of the time-duration for both solar and terrestrial disturbances is in this case striking. The solar disturbance was of eighteen minutes' duration; so was the major part of the earth-current disturbance. The duration of the ionospheric disturbance is not known but was evidently less than one hour. The duration of the magnetic disturbance, while not clearly defined, is not inconsistent with the interpretation suggested here.

It is of interest to note from Fig. 3 of the Bell System Monograph B–895, by A. M. Skellett, that solar disturbances about 13° west of the central meridian are most favorably located to produce terrestrial disturbances. The solar disturbance reported here was very near this location, being centered approximately 10° west of the central meridian.

It is, of course, recognized that the material presented here is but an isolated case and does not, therefore, offer the best basis for drawing conclusions as to the relationship between solar and terrestrial phenomena. However, considering the number of elements involved and the high degree of simultaneity found for all the disturbances, the matter seems worthy of note. While there may be radiations, expelled from disturbed solar areas, which produce effects on the terrestrial elements only after an interval of twenty-four to twenty-six hours, there may also be some radiations which travel with the speed of light and which therefore produce disturbances in magnetism and earth-currents, the ionospheric regions and possibly in other geophysical elements at the instant when corresponding solar disturbances are observed.

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THE OVULE AND SEED OF COFFEA ARABICA L.

IN studying the vascular anatomy of the flowers of the Rubiaceae the writer came upon certain morphological features of the ovule of *Coffea arabica L.* that have been misinterpreted or overlooked.

In the first place, the ovule has no integument, a structure that is mentioned repeatedly in the literature on coffee. Though *Coffea* and *Houstonia* may not be closely related genera it might be of interest to note that Lloyd,[1] in 1902, reported that an integument is lacking in the latter genus. Froehner[2] mentions the integument and tells of the obturator (or caruncula), a massive outgrowth from the placenta (funiculus?). This has been observed by the writer, but there is no sign of an integument.

Another fact of far greater importance, especially in studies on the inheritance of endosperm characters, is that the endosperm is evanescent. When the embryo is very young there is apparently a scantily developed endosperm, but this disintegrates as the embryo enlarges; consequently the mature seed has none. What botanists have been calling endosperm is really perisperm, and it is the nucellus that enlarges to form the nutritive tissue around the embryo.

The fate of the polar nuclei has not yet been determined, but an investigation of this is well advanced and will be reported presently. In a subsequent pub-

[1] F. E. Lloyd, *Mem. Torrey Bot. Club,* 8: 1902 (cited by Goebel, "Organographie," Dritte Auflage, p. 2041. Jena, 1933).

[2] A. Froehner, "Die Gattung Coffea und ihre Arten," *Diss. Univ. Rostock,* pp. 10–11. Leipzig, 1898.

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 ($Na_2S_2O_4$), 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-