

that "The season of leafage or blossoming depends on them." This shatters the principle of photoperiodism, and incidentally ruins the reputation of the U. S. Bureau of Plant Industry for publishing reliable work.

The statements that "Matter is apparently formed by a kind of negative atmospheric pressure," and that "An atom of matter is nothing but a kind of emptiness in space" (p. 282) set us to wondering whether

ideas are sometimes emptiness, formed by a negative process, but this reverie was interrupted as our eyes caught the following on page 293: "Yes, there is a scale of scientific knowledge. And at its bottom we find the so-called 'exact' sciences. Further up are the occult sciences—paraphysics and parapsychology. At the top is magic!"

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AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

MAYAN SYMPOSIA AND EXHIBITS AT NEW ORLEANS

THREE sections of the American Association are planning symposia dealing with various phases of the civilization indicated by the Mayan ruins. On Tuesday afternoon Sections H, K and L will join for symposia on "Commerce, Trade and Monetary Units of the Mayas" and "Social and Economic Institutions of the Mayas." This program is in charge of Dr. Joseph Mayer, secretary of Section L of the association. Dr. Mayer is working in cooperation with Professor Frans Blom, director of the School of Middle American Research at Tulane, and with the officers of Section H.

At a dinner meeting on Tuesday evening the retiring vice-president of Section H, Dr. Carl E. Guthe, will deliver his address on the subject, "The Maya Lunar Count."

The opportunity which these meetings will afford for becoming familiar at first hand with the important work being done by the Department of Middle American Research of Tulane University is in itself a special attraction of the New Orleans meeting. In this connection the following information, supplied by Director Frans Blom, is particularly interesting:

In the latter part of 1924 a citizen of New Orleans created the Department of Middle American Research, with an endowment of \$300,000 and the purchase of the William E. Gates Library, containing about 3,500 books, pamphlets and autographs pertaining to the ancient and modern history of Mexico. Mr. Gates was appointed the first director of the new department and functioned as such until the first month of 1926.

The aim of the department is to conduct research in Middle America (*i.e.*, Mexico), the Central American Republics and the West Indies, covering the ancient, the colonial and the modern history of these countries, their geography, botany, ethnology, etc., and to form a library which it is hoped will eventually be one of the most com-

plete and comprehensive on this subject in the United States.

In 1925 the First Tulane University Expedition departed from Vera Cruz, Mexico, and during six months conducted investigations, chiefly of an archeological and ethnological nature, in the southern states of Mexico and part of Guatemala. The results of this expedition were published in a two-volume report entitled "Tribes and Temples." During the same year an agronomical investigation was made in the State of Tabasco, Mexico, and the part of this survey which related to the possibilities of growing rubber was published in the U. S. Government report entitled: "Possibilities for Para Rubber Production in Northern Tropical America," U. S. Department of Commerce, 1926.

The library was augmented with the purchase of the George H. Pepper library.

After Mr. William E. Gates' departure, Mr. Frans Blom was appointed acting director, with Mr. Oliver La Farge II as his assistant. Later, Professor Hermann Beyer joined the permanent staff. Professor Rudolph Schuller conducted some temporary work, and from him a fine collection of pamphlets was purchased.

In 1927 the Third Tulane University Expedition, headed by Mr. La Farge, and with Mr. Douglas Byers as assistant, spent several months in the highlands of Guatemala, investigating the Indian population of the town of Jacaltenango.

During the same year the Sedly Mackie Library was purchased, and through this purchase the department's library with one stroke attained an important position. The Gates Library contained some fine manuscripts and linguistic material; the Pepper Library added much valuable pamphlet material, specially of a more general nature; and the Schuller collection, made in distant parts of Central America, contributed many rare imprints. Finally the Mackie library presented a most astoundingly complete gathering of the classics of Middle American Research, with an abundance of rare items.

It was evident that the limited funds of the department would not permit the purchase of museum specimens, the financing of expeditions and the upkeep of a library at the same time, and as it is just as evident that the library is the foundation for sound research,

all stress was thrown on the formation of a first-rate collection of books. Funds for expeditions were raised outside of the regular income. It soon was noted that New Orleans, as the gateway to Middle America, contained several private collections of archeological and ethnological objects, most of them comparatively small, but which, when brought together, would form an excellent nucleus for a Middle American museum. Fortunately, the greater part of the local collectors were well disposed toward the department, and thanks to their cooperation there has been gathered a small but quite select exhibit of objects from the field in which the department specializes.

Since it has become known that the department is interested in purchasing books and manuscripts relating to Middle American subjects, many rare items have been brought to New Orleans for sale. As a result it can now be stated that the library of the department contains one of the most complete collections of books and documents relating to the Maya, their country and history, among which are such rarities as the original of the famous documents of Mani in Yucatan, written in the Maya language, but in Latin characters (the oldest document of its type known, dated 1557), as well as several other sixteenth century documents in the Maya language. The collection of Nahuatl linguistics is remarkably complete. From the Gates library came such rare things as the original manuscript to Gilberti's vocabulary of the language of Michoacan, Mexico, and an original Father Olmos MS. The Mackie library held such a rare and charming item as the original edition of Vargas Machucas: *Milicia Indiana*, printed in 1599, and with a full manuscript page in the hand of Robert

Southey, poet laureate, author of "Maddox," who bought the book in Milan on the 16th of June, 1817.

During the New Orleans meeting of the American Association the collections and library of the Department of Middle American Research will be open, and a special exhibition will be made of the rare manuscripts, books, pamphlets and bindings, all intimately connected with truly American history and development.

In addition to this exhibit of the library of the Department of Middle American Research, the director plans an exhibit in connection with the association's scientific exhibition at the Municipal Auditorium.

The Carnegie Institution of Washington, which has been very active in research work in Middle America, plans to use about 1,000 square feet in the scientific exhibit hall for an exhibition of some of its Mayan work.

Facilities for excursions to Mexico City and Yucatan will be available. The United Fruit Company's ss. *Olancho* will leave New Orleans on January 2 in the afternoon. The round-trip with visits to Mexico City, the Pyramids of Teotihuacan, Puebla and Cuernavaca included will cost \$165.00. Delegates will be returned to New Orleans on January 12. A boat for a ten-day round trip to Yucatan will leave shortly after the convention. The Yucatan trip with visits to various ruins, including Chichén Itzá will cost \$150.00.

THE NATIONAL ACADEMY OF SCIENCES

At the autumn meeting of the National Academy of Sciences, held in New Haven, Connecticut, on November 16, 17 and 18, the following papers were presented:

New concept of evolution based upon researches on the Titanotheres and the Proboscideans: HENRY F. OSBORN. (Printed in SCIENCE this week.)

The geological significance of the relief of western Central Asia: HELMUT DE TERRA (introduced by A. Knopf).

Coral reefs and sand reefs: W. M. DAVIS. Agassiz reported in 1898 that the southern or polar end of the Great Barrier Reef of Australia is determined by the equatorward drift of sands on a long sand reef, just as the northern or polar end of the much smaller coral reef of Florida is determined by the equatorward drift of sands on another long sand reef. Hedley, of Sydney, described in 1911 a remarkable increase of sea-bottom depth near the end of the Australian reef, as shown by comparing Admiralty surveys of 1869 and 1904; but he did not connect the increase of depth with wave action consequent upon the smothering of reef corals by encroaching sands. In certain areas the depth increase

was reported to be from 20 to 30 to 200 or 300 fathoms. Such an increase seems incredible, but on inquiring of the Admiralty Office in London I was informed that both the earlier and later surveys were regarded as authentic. And in reply to a recent inquiry a tracing has been generously sent me showing the position of the 100-fathom line off the coral reef end in 1869, 1898, 1904 and 1911, and 1928. The line retreated from 2 to 4 miles in the first interval and from 2 to 3 miles in the second; but it advanced 1 or 2 miles in the third or latest interval. Hence there seems to be no question whatever that rapid changes in depth have taken place in the sea floor hereabouts during the last half century, primarily involving strong increases and secondarily moderate decreases of depth. No similar increase of depth has taken place near the coral reef end along the Florida coast: charts showing detailed soundings made in 1852 and 1931, copies of which have been provided me by the superintendent of the U. S. Coast and Geodetic Survey, indicate only moderate increases of depth, probably because the Florida coral reef does not stand so far off shore as the Australian reef; so that when the Florida corals were smothered by sand drift no great change of sea-floor depth was called for. The encroachment of the Australian sand reef appears to explain why