

ference of only one day from that expected. In each case this error of one day is adjusted during the next few lunar half-years of the table.

A similar examination of the four dates at Naranjo reveals complete agreement without exception. Of the seven dates at Copan, five are in exact agreement, and the other two are one and two days at variance respectively, but again are corrected during the following few lunar half-years. The starting date for the lunar table is a different one for each city. At Piedras Negras it is the lunar base for 9.12. 2. 0.16, which is recorded twice with different moon ages, and at Copan it is the lunar base for 9.12. 8. 3. 9, which is used as the basis for lunar computations on Altar H'.

At Piedras Negras two monuments record Initial Series identical to two at Copan. In the first case, 9.13.10. 0. 0, the moon age at Piedras Negras is given as two days more than at Copan. In the second, 9.15. 5. 0. 0, identical moon ages are recorded. All four of these dates fit exactly into the manuscript month series. The apparent contradiction is caused by the fact that the month grouping used is engaged into the Long Count at different points in the two cities.

It is demonstrable, therefore, that a 135-month cycle of 30- and 29-day months, so arranged as to conform to the groups of the manuscript lunar table, may be applied to the records of the inscriptions in such a way as to cause a day-for-day agreement between it and the records given in glyphs E, D and C of the Supplementary Series, with a very few exceptions, which are all corrected in succeeding lunar half-years. At Piedras Negras this 135-month cycle must be repeated twelve times.

As it is used, this 135-month cycle does not conform with the record of glyph A, because at every other repetition of the cycle the half-year group starts with a 29- instead of a 30-day month. By using twice this cycle, or one of 270 months, grouped in two parts of 134 and 136 months each, in which the intercalary days occur in the first 132 months of each part in exactly the same positions as in the first 132 months of the manuscript table, an agreement with the glyph A record can be secured.

It must not be overlooked that as soon as adjustments are made, the possibilities for alternative adjustments increase. The fitting of the manuscript table into the inscriptions demonstrates that the record given in glyphs E and D may be a computed record, and is not, therefore, necessarily an observational one. I am convinced that other computed cycles can also be found which will fit the mathematical records of the Supplementary Series.

This paper is of necessity a brief review of my findings, and does not attempt to be exhaustive. The indigenous records of the Maya lunar count still contain many interesting unsolved problems.

My general conclusions at the present time are: first, the Maya lunar month began at either new or full moon, but the data available at present does not permit the exclusive use of either phase for the beginning of the Maya lunar month as a premise in deducing conclusions regarding Maya astronomy; and second, it can be demonstrated that the numbers associated with glyphs E, D, C and A of the Supplementary Series of the inscriptions may have been obtained by the use of a computed lunar calendar, and need not, therefore, be records of current contemporaneous observations.

OBITUARY

EDWARD ORTON, JR.

GENERAL EDWARD ORTON, JR., died at his home in Columbus, Ohio, on February 10. With him a most distinguished and unique career is closed. He was the founder of the first course in ceramic engineering which he established at the Ohio State University in 1894. He was a powerful and able investigator in the field of economic geology, ceramics and silicate technology, in which he was a pioneer. In 1898 Orton founded the American Ceramic Society which he served as secretary and editor for many years, and was its president as recently as 1930-31. His efforts were mainly responsible for the creation of a fruitful American literature on the subject of ceramics. He served the Ohio State University twice as dean of the College of Engineering, was active in the establishment of the Engineering Experiment Station, and in

1916 was elected one of the university's two first research professors. He was state geologist of Ohio from 1899 to 1906, during which time he placed the Ohio Survey on a firm basis and published a series of monographs. General Orton created the Orton Geology Library at the Ohio State University in memory of his father. He left the university when America entered the war, and despite his age, he had gone to the Plattsburg training camp. He was subsequently commissioned a major and later a colonel. His work in the Motor Transport Division was of such an outstanding character that Congress awarded him the Distinguished Service Medal. He was later made a brigadier general in the reserve corps. General Orton received many honors. He was given the honorary D.Sc. degree by Rutgers University in 1922 and the LL.D. degree by Alfred University in 1931. He

was a fellow of the Geological Society, the American Association for the Advancement of Science, the American Ceramic Society, and an honorary member of the Ceramic Society of England.

Edward Orton was born at Chester, New York, in 1863 and was brought to Ohio in 1865. His father was the eminent geologist, Dr. Edward Orton, Sr., the first president of the Ohio State University.

The life of young Edward Orton was thus intimately connected with the growth of the university to which he gave his lifelong devotion. He was graduated in 1884, in the course of mining engineering and metallurgy. He was equally attached to the city of Columbus, which he served in many capacities, in the field of civics and in the cause of its charities. For two terms he was president of the chamber of commerce. He was known as Columbus' First Citizen.

General Orton leaves his widow, Mrs. Althea Orton; two sisters, Mrs. Oliver P. Watts, of Madison, Wisconsin; Mrs. Francis C. Caldwell, of Columbus, and a brother, Dr. Samuel T. Orton, of New York City.

Dr. Orton was an extraordinary man. He combined the ability of the scientist with that of the executive, and he showed rare skill in anything he undertook. He was passionately devoted to science and most humble in its service. He was, by nature, a lover of mankind, an American gentleman of the highest type, a lover of truth and justice, a broad thinker, an altruist, a striver after the beautiful. He was a man who singularly combined the qualities of strength and great personal kindness and charm. Dr. Orton's influence upon his students and associates was a powerful one and he invariably gained the respect and affection of all with whom he came in contact.

His departure is a sore loss not only to his family but to his university, his city, his state, the nation, the American Ceramic Society with the industries it represents, and to all who have felt his benign presence.

A. V. BLEININGER

RECENT DEATHS

FREDERICK LANE HUTCHINSON, national secretary and executive manager of the American Institute of Electrical Engineers, died on February 26 at the age of sixty-six years.

DR. WILLY MEYER, emeritus professor in the New York Post-Graduate Medical School and Hospital, died on February 24 while attending a meeting of the New York Surgical Society, where he had made an address on "Special Aspects of Cancer and Its Treatment." He was seventy-three years old.

DR. CHARLOTTE ANGUS SCOTT, professor of mathe-

matics at Bryn Mawr College from 1885 to 1917, who had been living at Cambridge, England, since her retirement, died on November 8 at the age of seventy-three years.

HOWARD E. BOARDMAN, Dudley professor of railway engineering at Yale University, died on February 28 at the age of fifty-two years.

HUGH GIBB, chief preparator in vertebrate paleontology at Yale Peabody Museum, with which he had been connected for fifty years, died on February 28, at the age of seventy-two years.

PROFESSOR J. FIDEL TRISTAN, director of the National Museum at San Jose, Costa Rica, died on January 23.

SIR WILLIAM SOMERVILLE, professor emeritus of rural economy at the University of Oxford, died on February 18 at the age of seventy-one years.

SIR ARTHUR DUCKHAM, president-elect of the Federation of British Industries and a founder of the British Institution of Chemical Engineers, died on February 14 at the age of fifty-one years.

PROFESSOR R. STENHOUSE WILLIAMS, first director of the British National Institute for Research in Dairying, and research professor in dairy bacteriology in the University of Reading, died on February 2, aged sixty years.

PROFESSOR WILLIAM BILLINGTON, professor of surgery in the University of Birmingham, has died at the age of fifty-six years.

PROFESSOR ERNEST WILSON, emeritus professor of electrical engineering at King's College, London, since 1930, died on February 17.

SIR FREDERICK WILLIAM ANDREWES, emeritus professor of pathology at the University of London, died on February 24, at the age of seventy-two years.

GUILLAUME BIGOURDAN, formerly director of the Paris Observatory, died on February 29 at the age of eighty-one years. He was a member of the French Academy of Sciences and had served as president of the Bureau of Longitudes.

THE death is announced at the age of fifty-three years of Dr. Benjamin Lipschütz, professor of dermatology and syphilology at the University of Vienna.

A CORRESPONDENT writes: Dr. Ferdinand Canu, paleontologist of Versailles, France, died suddenly February 12, 1932, of cerebral hemorrhage. Born December 10, 1863, at Paris and educated there he was instructor in mathematics and sciences in the Paris schools until his retirement in 1914. His first scientific work was a text-book on meteorology, which was followed by an atlas of fifty plates on paleogeography,