



Carlotta J. Maury

MEMORIAL TO CARLOTTA JOAQUINA MAURY

BY CHESTER A. REEDS

Carlotta Joaquina Maury, American paleontologist and Fellow of the Geological Society of America, died at 50 Locust Hill Avenue, Yonkers, New York, on January 3, 1938. Final rites of the Episcopal Church were read at 3:00 P.M., January 5, in Grace Episcopal Church, Hastings-on-Hudson, the Reverend J. E. Reilly officiating. She was buried at Cold Springs, New York, on Thursday, January 6, her sixty-fourth birthday.

Born in Hastings-on-Hudson January 6, 1874, Miss Maury was the daughter of the Reverend Mytton Maury, D.D., and Virginia Draper Maury. Miss Maury was of the sixth generation of Maurys in the United States. She was descended from the noted French Huguenot family de la Fontaine (later simply Fontaine) which was driven out of France by persecution. Mary Ann Fontaine, who came to Virginia in 1718, married Matthew Maury, also of French Huguenot descent, who had arrived previously in Virginia. The second generation consisted of the Reverend James Maury and wife Mary Walker. The third generation is represented by James Maury, the Consul, and wife Margaret Ruston. In the fourth generation were William Maury and wife Sarah Mytton Hughes. The Reverend Mytton Maury and wife Virginia Draper comprised the fifth generation. In the sixth generation Carlotta Joaquina Maury was the fourth child born to her parents. Her eldest sister, Miss Antonia Coetana de Paiva Pereira Maury, former research astronomer at the Harvard Observatory and now Curator of the Dr. John William Draper Museum in Draper Park, Hastings, New York, was born March 21, 1866; Sarah Mytton Maury, a second sister, died in infancy; her brother, Dr. John William Draper, born August 21, 1871, was a well-known New York surgeon, who died in 1931. Dr. Draper, whose name at birth was John Draper Maury, later assumed the name of his maternal grandfather.

Miss Maury's great-grandfather, James Maury, of Fredericksburg, Virginia, was the first consul from America to Liverpool, England. He was appointed by President Washington and remained in office 40 years. On his retirement he was presented with a splendid silver dinner service as a token of regard by the merchants of Liverpool. Miss Maury gave the large meat platter of this set to the Virginia Historical Society, Richmond, Virginia. It is very heavy and handsome, with a wreath of oak leaves and acorns and the crossed flags of the two countries, with the inscription in

the center. Miss Maury also gave to the Virginia Historical Society her great-grandfather's consular letter appointing him to Liverpool, signed by George Washington, President of the United States, and Thomas Jefferson, then Secretary of State.

Miss Maury's first cousin, twice removed, Matthew Fontaine Maury, 1806-1873, American hydrographer and the great pathfinder of the seas, was world-famous and much beloved in the South. A monument has been erected to him in the Blue Ridge Mountains. His statue stands in the Hall of Fame for Great Americans, in New York City.

Miss Maury's maternal grandfather, John William Draper, 1811-1882, a pioneer physicist of America, noted for discoveries in radiant energy, took the first photograph of the human face in 1840 and shortly thereafter the first photograph of the moon. Probably his most important work, *The production of light by heat*, was published in 1847. He was also the author of *History of the intellectual development of Europe*, Harper's, 1862, which was translated into many European languages. He prepared and published a three-volume *History of the American Civil War*, Harper's, 1867-1870. He presented his first photograph of the human face to his dear friend, Sir John Herschel of England. The Herschel family lent it for exhibition at the World's Fair, Chicago, 1892, whence it was returned to them. The photograph is of Miss Maury's great-aunt, Dorothy Catherine Draper, and was taken on the roof of the old building of New York University, on the east side of Washington Square, New York City. The Draper Museum and Draper Park in Hastings, New York, were named after him.

Miss Maury's father, the Reverend Mytton Maury, D.D., Episcopal minister and editor of Maury's geography, was born in Liscard, Wales, January 18, 1839, near Liverpool, England, where his grandfather, James Maury, was the first American consul. Miss Maury's father was a graduate of Beakeley Divinity School, Middletown, Connecticut; Columbia University, A.B., A.M.; and New York University, D.D. He died in Hastings-on-Hudson, August 5, 1919, and was buried in Cold Springs, New York.

During his lifetime he took daily walks with his children. According to his daughter Antonia he taught Carlotta the names of all the trees before she could talk plainly. Illustrations of geography were found everywhere—in mountains, rivers, islands, clouds, forests, and the sea. He told his children all about the rocks, stones, and fossils they could find. On his walks he carried a vial in which he placed living invertebrates and later under a binocular microscope showed them to others. There never was a day, in fact, in which he did not find some beautiful thing in nature. He told his children and his pastorate that the world is full of wonders.

He did not let his children go to school until they were in their teens; in fact, they learned French, German, and Latin at home.

Miss Maury's mother, Virginia Draper, was the daughter of Dr. John William Draper, pioneer physicist, historian, and author of many scientific papers. She was born in Virginia, December 28, 1838. She died in Hastings-on-Hudson, October 26, 1885. According to her eldest daughter Antonia, she was a talented musician, played the piano as would Thalberg, possessed great imagination, and improvised fairy tales and legends. She had a great love for nature and natural scenery and was never at home but in the great out-of-doors. She never let a day pass without at least an hour or two for country walks. Her influence together with that of her husband gave to their children that love of nature which underlies science.

Miss Maury's mother's mother, Antonia Caetana de Paiva Pereira Gardner, was born in Brazil, a daughter of the English doctor, Daniel Gardner, who was physician to the Emperor Dom Pedro I and who had come over from Portugal with the Emperor when he came to establish his court in Brazil. Antonia's mother, Carlotta Joaquina de Paiva Pereira, was one of the court ladies who came over from Portugal. Her ancestry was from the two families de Paiva and Pereira. The first was of the Portuguese nobility; the Pereiras was an old and noted family, an ancestor of whom sailed with Vasco da Gama on the first expedition around the Cape of Good Hope.

In 1876, when Miss Maury was a baby, Dom Pedro II, then reigning Emperor of Brazil, came to the United States on a trip. While here he went to the Centennial Exposition in Philadelphia and called at her grandfather Draper's house in Hastings-on-Hudson. As Dom Pedro II kissed the baby, Miss Carlotta Joaquina Maury, he said: "Some day she may like to say she was kissed by an Emperor."

After the usual childhood Miss Maury attended Radcliffe College, Columbia University, the University of Paris, and Cornell University. At Cornell she received the degrees of Bachelor of Philosophy, 1896, and Doctor of Philosophy, 1902. At Cornell she was awarded in turn the Schuyler Fellowship in Geology, 1898, and the Sarah Berliner Fellowship, 1916. From 1904 to 1906 she was Assistant in Paleontology at Columbia University with Professor A. W. Grabau. From 1907 to 1909 she was Assistant Geologist for the Louisiana Geological Survey. From 1909 to 1911 she was paleontologist on a Venezuelan Geologic Expedition headed by Dr. A. C. Veatch. From 1912 to 1915 she was Professor of Geology and Zoology at Huguenot College, Cape of Good Hope, South Africa. In 1916 she organized and conducted the Maury Expedition to the Dominican Republic and published the stratigraphic results and description of the fossils collected, 1917. She was consulting and research paleontologist

and stratigrapher for the Royal Dutch Shell Petroleum Company, Venezuelan Division, 1910-1937. From 1918 to 1934 she furnished at intervals paleontological reports for the American Museum of Natural History, New York. As an official paleontologist of the Geological and Mineralogical Survey of Brazil, she also conducted exhaustive researches on fossil faunas from Brazil and prepared paleontological and stratigraphic monographs for the Brazilian Government, 1914 to 1937. She made a specialty of the study of Antillean, Venezuelan, and Brazilian fossil faunas and determined thereby the ages and relationships of the various rock formations.

Miss Maury's report, *The fossils of Acre, Brazil*, which was written in July 1937 and published in December 1937 by the Geological and Mineralogical Survey of Brazil was her last publication. To friends who called to see her in her last illness, she spoke of this report as her "Swan Song" and expressed a feeling that it was her greatest work. An annotated bibliographic list of her publications, prepared by Miss Maury herself to February 22, 1935, is appended.

In November 1937 Miss Maury was advised by Doctor Euzebio Oliveira, Director of the Geological and Mineralogical Survey of Brazil, Praia Vermelha, Rio de Janeiro, that on October 11, 1937, the Brazilian Academy of Sciences had elected her a Corresponding Member of the Academy. Miss Maury was also a Fellow of the Geological Society of America, the American Geographical Society, the American Association for the Advancement of Science, and a Corresponding Member of the Philadelphia Academy of Science. Of Greek letter societies she was a member of Delta Gamma, Sigma Delta Epsilon, and the honorary scientific society, Sigma Xi. She was an Episcopalian, and her recreations were travel and cruising.

Miss Maury was not only a paleontologist of note but also a gifted writer. Her accounts of some of the expeditions she made are not only delightful reading but are illumined with a poetic charm. In addition to her expeditions she made a cruising trip around the world in her later years. Excerpts from a few of the letters she wrote to friends may be noted here:

"Among my most delightful memories are daybreak at Tiger Hill, Darjeeling, on the eternal snows of Everest and Kinchinjanda, the Heaven of Siva, and the most celestially beautiful sight in this world.

"The changing sunset lights on the South African Mountains, like the light that never was on land or sea, when the gray sandstones turn to copper pink, then to loveliest mauve, galena blue, then darkness. Once I gave a party in the Drackenstein Mountains, the objective being a cave with Hottentot drawings of the long-nosed-man, that is the European. And on the way the baboons barked at us, mocking, from the Krantzes of the Kopjies. The rocks appear barren in the distance but every now and then is a ledge with enchanting flowers, perfect as though planted by human hands.

"Drake said of the Cape of Good Hope that it is the noblest cape in the world. With the adjacent and still more impressive Cape Point it is very splendid. And Table Bay, with Table Mountain and Lion's Head is never to be forgotten.

"But for serene, lovely and majestic beauty the harbor of Rio de Janeiro is unsurpassed. You enter as it were a massive gateway guarded by magnificent bosses of granite, while in the far distance the Organ Mountains rise up to ten thousand feet, the highest peak being: 'The Finger of God.' The sternness of these masses of rock is softened by the loveliness of the vegetation which is intensely dark, a rich green. And once I looked down on that green and saw a glorious bird fly by, deep red, and aptly named the 'Drop of Bullock's Blood.'

"Birds recall my sojourn of nearly a year in the jungle of Venezuela, and how lovely they are in the land of Hudson's immortal green mountains. Every day I set breakfast for them of bananas on an old stump; they formed a ring round, mignonette green, ruby, chocolate, and sky blue, with my tame love bird, furious in the center. Magnificent blue and buff macaws flew overhead. But one of the sweetest was a tiny insect-eating bird, with a little crown on its head, singing always: Christo fue! Christo fue! Christ is risen."

For many years, Miss Maury made her home in the charming old family mansion situated on a narrow strip of high ground between Broadway and the Hudson River in south Hastings. It is now a part of the Draper Memorial Park. Following her aunt's death in 1923, she made her home in Yonkers. At 50 Locust Hill Avenue, Yonkers, she lived in a charming small apartment which was decorated with flowers, pictures, and heirlooms of her family. In one room she carried on research in paleontology for the Brazilian Government and the Royal Dutch Shell Petroleum Company. She was a frequent visitor at the American Museum of Natural History in New York City and often consulted its extensive scientific library and its large collections of living and fossil invertebrate specimens.

Whether it was her Brazilian ancestry, the memory of Dom Pedro's kiss, or her zeal for working up new material, Miss Maury just loved to prepare reports and monographs for the Geological and Mineralogical Survey of Brazil. She put her whole soul into the work. She engaged only the most skilled draftsmen and engravers in preparing the plates for her monographs. She wrote with a facile and skilled hand in preparing the various texts. When she was not certain of the specific status of new and strange forms she engaged specialists to assist her and paid them an honorarium for their services. She personally defrayed the initial expense of preparing these large governmental publications and, after their submission, awaited the slow return of an honorarium for doing them.

Miss Maury was very particular as to what she undertook to do. No commonplace or routine work appealed to her; she was interested only in those problems which afforded a special opportunity to do something exceptional. In her shorter publications she had a strong preference that the illustrations should be in white on a black background, not the conventional black figures on white paper. When she undertook a task she worked quickly and with precision. She was an indefatigable worker. Moreover, she had a most pleasing personality and made enduring friends wherever she went. Her passing is mourned by all who knew of her exceptional abilities and fine qualities.

BIBLIOGRAPHY OF CARLOTTA JOAQUINA MAURY

By Carlotta J. Maury (to February 22, 1935)

1896

Geology Chiapas, Tabasco and the Peninsula of Yucatan. *Journal of Geology*, volume 4, number 8, pages 938-947 and two geological maps. Translation and brief summary by C. J. Maury and G. D. Harris from the original by Carlos Sapper, *La Geografía Física y la Geología de la Peninsula de Yucatán*, Boletín del Instituto Geológico de Mexico, Número 3, 57 pages, 2 plates of sections and 3 maps. Mexico.

1898

Chautauqua Lake shells. Elementary Natural History Series, Number 1. Harris Co., Ithaca, N. Y., 44 pages with map showing distribution through the lake, photo-engraving of the Inlet, and 3 plates of Mollusca.

1902

A comparison of the Oligocene of western Europe and the southern United States. A thesis presented to the faculty of Cornell University for the degree of Doctor of Philosophy. *Bulletin of American Paleontology*, number 15, Ithaca, 94 pages, 7 photo-engravings of classic localities, 1 geological map, 6 geological sections, 2 correlation tables, 2 plates of new species comprising marine Mollusca from Bailey's Ferry, Florida (Miocene); and very rare freshwater forms referred to the Unionidae from the Grand Gulf beds at Chalk Hills, near Rosefield, Louisiana; the first animal remains ever found in the Grand Gulf beds of Louisiana. Thesis work carried on while Schuyler Fellow in Geology.

1908

An interglacial fauna found in Cayuga valley and its relation to the Pleistocene of Toronto. *Journal of Geology*, volume 16, number 6, pages 565-567. Fossil Mississippi and St. Lawrence molluscan species listed and correlated with the Don Valley, or warm climate beds, of the Toronto Pleistocene, representing the Peorian, or fourth, interglacial period.

(With G. D. Harris and L. Reinecke.) Rock salt, its origin, geological occurrence and economic importance in the State of Louisiana, together with brief notes and references to all known salt deposits and industries of the world. *Geological Survey of Louisiana, Bulletin 7, Report of 1907*, 259 pages, 48 plates, 21 figures. Baton Rouge, Louisiana.

1909

A new connecting link in the genesis of *Fulgur*. *American Journal of Science*, 4th series, volume 27, page 335. With figures of *Levifusus fulguriparens*, new species from the Jackson Eocene of Montgomery, Louisiana. Demonstrating the relationship between the genera *Levifusus* and *Fulgur*.

1910

New Oligocene shells from Florida. *Bulletin of American Paleontology*, number 21, 46 pages, 9 plates of new species. At that time the horizons at Bailey's Ferry and Oak Grove, Florida, from which the fossils were collected, were referred to the Oligocene following Dr. Dall and the United States Geological

Survey but were later referred to the Miocene in consequence of the Maury expedition to Santo Domingo and its stratigraphic results.

Stratigraphy of the Jennings oil field, Louisiana. United States Geological Survey (Harris), *Bulletin 429*, pages 56-60, with figures of *Rangia johnsoni* and *Rangia cuneata*. Maury showed that two Miocene ridges oriented at right angles and carrying *Rangia johnsoni* underlie the eastern part of the Jennings field, their highest levels ranging from 1040 feet (Syndicate's number 29 well) to 2204 feet below the surface (Franklin number 1 well).

Shells from deep wells, Terrebonne Parish, Louisiana, and their bearing on stratigraphy. United States Geological Survey, *Bulletin 429*, pages 169-173, with lists of species and depths recorded, proving Pleistocene strata in that part of Terrebonne Parish have a thickness of at least 2443 feet.

1912

A contribution to the paleontology of Trinidad. *Journal of the Academy of Natural Sciences of Philadelphia*, second series, volume 15, pages 25-112, 9 plates. Section of Soldado Rock, Gulf of Paria. Faunas described and figured. Bed number 2, referred to Old Eocene with faunal affinities with Alabama and with Pernambuco, Brazil. First discovery of Old Eocene in the entire West Indian and northern South American region. Other Eocene horizons described from Soldado section. Also Cretaceous Mollusca from Venezuela referred to the Turonian.

1916

Freshwater shells from central and western New York. *Nautilus*, volume 30, number 3, pages 29-33. The Mollusca were collected by the writer from the lakes and rivers of central and western New York and presented to Cornell University. Species and localities listed. Interglacial species also listed obtained from a delta terrace on Cayuga Lake between Toughanock Falls and Frontenac Beach, synchronous with the Don Valley beds of Toronto. Deep dredging in Cayuga Lake proved at depths greater than 40 feet there is only a fine gray mud entirely barren of life.

1917

Santo Domingo type sections and fossils. Part I. Description of the Maury expedition and of the species collected. *Bulletin of American Paleontology*, number 29, 251 pages, 3 photo-engravings of localities, 37 plates of fossils, very many being new species. Maury expedition to Santo Domingo carried on as Sarah Berliner Fellow in Geology.

Santo Domingo type sections and fossils. Part II. Stratigraphy. *Bulletin of American Paleontology*, number 30, 43 pages, 3 sections, correlation table, 6 photo-engravings of localities. Conclusions: Three formations in the Yaqui Valley in descending geological order: that of *Sconsia laevigata*, of *Aphera islacolonis*, and of *Orthaulax inornatus*. *Sconsia* zone referred to Middle Miocene, the *Aphera* zone to Lower Miocene, and the *Orthaulax* zone and *Lepidocyclina* horizon to the Oligocene. First differentiation of Oligocene and Miocene beds in the Antillean area.

1918

Santo Domingan paleontological explorations. *Journal of Geology*, volume 26, number 3, pages 224-228. Review of the earlier work of Heneken, Sowerby, Moore, Gabb, and Guppy. Résumé of the stratigraphic results of the Maury

expedition, undertaken in 1916 with the purpose of determining the exact stratigraphic sequence to which Santo Domingo was rightly judged to be the key. Differentiation of Antillean Miocene and Oligocene horizons.

A calcium carbonate concretionary growth in Cape Province, South Africa. American Journal of Science, 4th series, volume 31, pages 369-370. At Hermon, 40 miles north of Cape Town, is a circular mass of limestone 99 per cent calcium carbonate encircled by the Malmesbury shales. This has been a baffling puzzle to South African geologists. Examination of the limestone mass led the writer to believe that it is a concretionary dome of calcium carbonate formed by the segregation and crystallization of lime particles from the surrounding and underlying Malmesbury shales and corresponds in mode of its origin to the sodium chloride domes of Louisiana and the salt mountains of Algeria.

1919

On the correlation of Porto Rican Tertiary formations with other Antillean and mainland horizons. American Journal of Science, 4th series, volume 48, pages 209-215, with correlation table. Discussion of Porto Rican faunal groups and their stratigraphic relations.

A proposal of two new formational names. Science, new series, volume 50, number 1304, page 591. Name Gurabo formation for the Middle Miocene, *Sconsia laevigata* zone; and name Cercado formation for the Lower Miocene, *Aphera islacolonis* zone of my 1917 Santo Domingo memoir.

1920

Tertiary Mollusca from Porto Rico. New York Academy of Sciences. Scientific Survey of Porto Rico and the Virgin Islands, volume 3, part 1, 77 pages, correlation table, and 9 plates. Fossils mostly new species. Collection studied was made by Dr. Chester A. Reeds, American Museum of Natural History, in 1915. Stratigraphic results: 6 faunal zones. (1) Quebradillas limestone with *Melis trinitaria* referred to the Miocene; (2) Aguadilla limestone with *Orthaulax aguadillensis*; (3) Ponce chalky beds with *Ostrea cahobasensis*; (4) Lares limestone with *Campanile (Portoricia) laricum*, all referred to the Upper Oligocene; (5) Rio Callazo shales with *Clementia rabelli*; and (6) Guanica shaly limestone with *Ostrea antiquensis*, both referred to the Middle Oligocene.

Recent Mollusca of the Gulf of Mexico and Pleistocene and Pliocene species from the Gulf States. Part I. Pelecypoda. Bulletin of American Paleontology, number 34, 115 pages. Original descriptions, synonymy, and reference to figures given for every species. New collections studied and added to all known records of distribution and occurrence of species along the Gulf of Mexico from Tampa, Florida, to Corpus Christi, Texas. Also well faunas. One plate given shows two figures of *Phacoides (Parvilucina) fontis*, n. sp. from Knapp's number 1 well, Terrebonne Parish, at depths of 2000-2150 and 2250-2450 feet. This horizon doubtful but apparently approaching the Upper Miocene since the Pleistocene fauna changes subtly.

1921

On the rediscovery and validity of *Arca lithodomus*. Science, new series, volume 54, page 516. Hitherto the only specimen ever found of this curious species was the type found by Cuming at Monte Christi, Ecuador, Latitude 1 degree South. Later thought to be pathologic and invalid. New specimens prove this species to be a cuneiform boring shell of the group of true arcas.

1922

Recent Mollusca of the Gulf of Mexico and Pleistocene and Pliocene species from the Gulf States. Part II. Scaphopoda, Gastropoda, Amphineura, Cephalopoda. Bulletin of American Paleontology, number 38, 142 pages. Revised nomenclature, references to original descriptions and to figures of every species. Distribution.

The Recent arcas of the Panamic province. Palaeontographica Americana, volume 1, number 4, 46 pages, 3 plates. Descriptions and figures of the living West Coast arcas from Lower California to Peru, including Islas de las Perlas and the Tuamotu archipelago. Specimens figured from the Newcomb and Olsson collections, Cornell University, from the National collection, Washington, and from the Constable collection, American Museum of Natural History, New York.

1924-1925

Fosseis Terciarios do Brasil com descripcao de novas formas Cretaceas. Monographias do Servico Geologico e Mineralogico do Brasil, volume 4, 705 pages, 24 plates. Rio de Janeiro. Brazilian Tertiary formations and fossils described, pages 1-493. Tertiary correlation tables, pages 32 and 33. Cretaceous fossils of Rio Grande do Norte State described, pages 495-551. Cretaceous fossils and formations of State of Sergipe, pages 589-599. Correlation table of Brazilian Cretaceous formations, pages 602-603. Description of the localities by Dr. Gonzaga de Campos, pages 668-705, followed by map of all the fossiliferous localities.

1925

A new formational name. Science, new series, volume 61, page 43. Name Soldado formation given to Bed number 2 of my 1912 Soldado Rock section as the type of northern South American and of Antillean basal Eocene deposits.

Venezuelan stratigraphy. American Journal of Science, 5th series, volume 9, pages 411-414. Brief résumé of the then known formations.

A further contribution to the Paleontology of Trinidad. Miocene horizons. Bulletin of American Paleontology, number 42, 250 pages, 43 plates. Stratigraphic and faunal relations discussed, pages 7-18. Descriptions of species, pages 19-250. Many new species. All species figured.

1927

Fosseis Silurianos de Santa Catharina. Servico Geologico e Mineralogico do Brasil. Boletim número 23, 15 pages, 1 plate. A fossil annelid worm, *Oliveirania santacatharinae*, n. gen., n. sp., is described and figured, from blackish slates at Anitapolis, State of Santa Catharina, Brazil.

1928

Trinitasia, a new molluscan genus from South America. Science, new series, volume 67, number 1734, page 318. *Thyasira sancti-andreae* Maury (Bulletin of American Paleontology, number 42, page 166, plate 30, figures 2, 3, 1925) proven by later specimens found in Venezuela to show traces of strong teeth and hence not referable to *Thyasira* which is practically edentulous.

The Brasso fossiliferous Miocene of Trinidad, West Indies. Science, new series, volume 67, number 1735, page 348. These beds, described in my 1925 Trinidad

memoir, are typically developed at Brasso Junction, overlie the Manzanilla formation, and carry a fauna of Middle Miocene age. This formation is entirely distinct from the Brasso Miocene clay and Brasso conglomerate, described in Gerald Waring's Trinidad report of 1926, which underlie the Manzanilla beds.

1929

Novas colleccoes paleontologicas do Servico Geologico do Brasil. Servico Geologico e Mineralogico do Brasil. Boletim número 33, 23 pages, Rio de Janeiro. Marine fossils from the State of Espirito Santo; terrestrial fossils from the State of Rio de Janeiro; freshwater fossils from the State of Pernambuco; oil shales from Serra de Araripe, State of Ceara. Sponge spicules from Riachao suggesting a marine Silurian deposit rather than Permian which in that area, State of Minas Geraes, and environs, appears to be nonmarine.

The Soldado rock type section of Eocene. Journal of Geology, volume 37, number 2, pages 177-181. Revision of Soldado section of my 1912 memoir. Bed number 8 is named the Boca de Serpiente formation, uppermost Eocene, equivalent to the European Ludian; Bed number 6, Foraminifera abundant, is made equivalent to the European Bartonian; Bed number 2 Soldado formation Maury, 1925 (not Liddle, 1928, which is invalid) is basal Eocene, equivalent to the European Montian and the Thanetian of England.

Porto Rican and Dominican stratigraphy. Science, new series, volume 70, number 1825, page 609. Porto Rico: Lower Miocene: Ponce chalk beds, Quebradillas limestone, Aguadilla limestone. Upper Oligocene: Lares and San Sebastian beds, Guanica limestone, Lower Ponce beds, Juana Diaz shales. Upper Eocene: Rio Descalabrados and La Muda deposits. Middle Eocene: Rio Jueyes beds. Upper Cretaceous (Maestrichtian): San German deposits, Ensenada shale, Fajardo, and Cape San Juan limestones. Lower Cretaceous: (?) Limestone south of Cidra, doubtful but possibly equivalent to the Fredericksburg. Santo Domingo. Upper Miocene: Caimito beds. Marine Pliocene: Gato beds of my 1917 memoir.

Uma zona de graptolitos do Llandovery Inferior no Rio Trombetas, Estado do Para, Brasil. Monographias do Servico Geologico e Mineralogico do Brasil, número 7, Rio de Janeiro. 53 pages, 1 plate showing *Climacograptus innotatus brasiliensis*. Fossiliferous limestone at Bom Jesus da Lapa, State of Bahia discussed, pages 46-49. *Arthraia* tubes from Riachao, State of Minas Geraes, pages 50-53. The Rio Trombetas graptolites are described and correlated with graptolite zones of Britain, Bolivia, Peru, and Canada. The Rio Trombetas Silurian is shown to be Lower Llandovery of Britain and equivalent to the Medina sandstone of New York. (Not equivalent to the Niagara limestone as thought by Clarke in his report of 1899. Evidence from the graptolites proves Derby's belief that the Trombetas beds were of Medina age, as noted by him in 1877, was correct.)

1930

O Cretaceo da Parahyba do Norte. Monographias do Servico Geologico e Mineralogico do Brasil, número 8, 305 pages, Rio de Janeiro. Album das Estampas da Monographia 8, O Cretaceo da Parahyba do Norte, with 35 plates. Also locality map. Stratigraphy discussed, pages 1-55. Extensive correlation tables showing relation of the Brazilian Cretaceous faunas and formations to those of Mexico, Antilles, North America, Europe, and India. Paleontology, pages 56-305. Very many new and very handsome species.

Correlation of Antillean fossil floras. Science, new series, volume 72, number 1862, pages 253-254. The *Nilssonia* flora of Porto Rico referred with a query to the Upper Cretaceous. The *Archaeolithothamnium* beds of Saint Bartholomew, Antigua, Anguilla, and Porto Rico, at Antigua are Antiguan Oligocene; the others not definitely known, as these calcareous algae show affinities with both Oligocene and Upper Cretaceous (Turonian) species. Flora of the Rio Collazo (Porto Rico) shales includes dicotyledons, palms, two cycads, a fern, and an alga. Age shown by associated Mollusca to be Antiguan Oligocene. *Siparia* flora, Trinidad, is referred to the Miocene. The Los Quemados flora, Dominican Republic, is referred to the Middle Miocene. The Dominican Sanchez flora is Miocene or Pliocene. Antillean fossil floras indicate that the climate has remained unchanged from Antiguan Oligocene to the present day.

1931

Two new Dominican formational names. Science, new series, volume 73, number 1880, pages 42-43. Name Gato formation, marine Pliocene, with *Clypeaster dalli*; and the Upper Miocene, Camito formation; both in the Dominican Republic. Correlation of Upper Miocene Antillean horizons.

Bartonian and Ludian Upper Eocene in the Western Hemisphere. American Journal of Science, 5th series, volume 22, pages 375-376. Douvillé in 1924 referred the Point Bontour foraminiferal marls of Trinidad to the Bartonian. But the first recognition of equivalents of both the European Bartonian and Ludian in the entire Western Hemisphere was on Soldado Rock, Gulf of Paria, by Maury, 1929. These can now be traced across northern South America. The South American Bartonian is stratigraphically and faunally allied to the Upper Mokattam of Egypt.

1934

Fossil Invertebrata from northeastern Brazil. Bulletin of the American Museum of Natural History, volume 67, article 4, pages 123-179, 11 plates. Limestone west of Natal, State of Rio Grande do Norte, is proven to carry the *Nerinea* fauna of Rio Assu, near Pendencia, and to be Upper Cretaceous, probably Turonian, and not Lower Eocene as held by Jenkins, Branner, and others. The shales and sandstones of the Rio do Peixe basin, western interior of the State of Parahyba do Norte, are lacustrine in origin and Middle or Upper Triassic in age.

Lovenilampas, a new echinoidean genus from the Cretaceous of Brazil. American Museum Novitates, number 744, 5 pages, 1 figure. Internal cushions as in *Lovenia* but with well-developed peristomal phyllodes. Genotype, *Lovenilampas baixadoleitensis* Maury from Baixa do Leite, southeast of Macau, State of Rio Grande do Norte.

1935

New genera and new species of fossil terrestrial Mollusca from Brazil. American Museum Novitates, number 764, 15 pages, 15 figures. The new genera are, *Brasilennea* and *Itaborahia* from Fazenda Sao Jose, municipality of Itaborahy, State of Rio de Janeiro, in pure, light yellow limestone, referred to the Miocene, with an extreme possible upper limit of Pliocene. Genotypes: *Brasiennea arthusae* and *Itaborahia lamegoi*. Pleistocene species also described from near Iporanga, State of Sao Paulo, in erratic limestone blocks thought to have been formed in caves or joints of the prevailing Sao Roque series of metamorphic crystalline limestone of that area.

The Soldado Rock section. *Science*, new series, volume 82, number 2122, pages 192-193. Correction of Dr. H. W. Shimer's correlation and complete history with reference to the Soldado Rock and associated Eocene sections, traced through northern South America.

1936

O Cretaceo de Sergipe. *Monographias do Servico Geologico e Mineralogico do Brasil*, Boletim número XI, pages xxxv, 1-283, 28 plates, Rio de Janeiro.

1937

Argillas fossilíferas do Plioceno do Territorio do Acre. *Servico Geologico e Mineralogico do Brasil*, Boletim número 77, pages 1-34, 2 plates, Rio de Janeiro.

Note: In addition to the above listed titles Miss Maury, during her lifetime, prepared 16 confidential reports on Venezuelan fossils and their stratigraphic significance for the Royal Dutch Shell Petroleum Company. C. A. R.