bays or in front of the somewhat sharper curves at the ends of the oval basins.

Whenever the sand cast upon the lake-shore beaches was dry, it was subject to transportation by the winds. Thus it happened that ridges of wind-blown sand accumulated on the upper parts of the beaches, transforming beach ridges into dune ridges which encroached upon the land immediately to the rear of the beaches. On small lakes the beaches were characteristically insignificant features; but there was no limit to the height and breadth that the dune ridges replacing them might acquire. Often the sand from the beaches was carried up over the rim of the crater and accumulated as a dune ridge resting upon the Coastal Plain strata at the crater's edge.

Before streams had incised their valleys below the nearly flat surface of the Coastal Plain, the groundwater level or water table must have been fairly constant in its position close to the plain surface. But as stream valleys were deepened, conditions changed. At wide intervals underground waters found opportunity to escape into major streams at levels well below the surface of the plain. Near the valleys the water table was permanently lowered, so far indeed that lakes near the rivers must have gone dry, and their basins have become subject to dissection by minor streams gnawing headward from the valleys into the adjacent upland. Farther away from the valleys, and especially in the central portions of the broad, undissected interstream areas, the lowering of the water table was much less pronounced. Here lakes may long have persisted in the craters, even where lake levels were permanently lowered. Under the new conditions temporary fluctuations in the groundwater level must have developed, the water table rising during periods of abundant rains and falling during periods of drought. This would cause lake levels to fluctuate, with the result that sandy beaches might form at different levels at different times, while beaches dry at one period might be wet or submerged at another.

As solution of limestone and other soluble formations progressed, another type of change affected the lakes. Subterranean passageways were gradually enlarged, and new channels and connections were opened from time to time. These changes in soluble formations caused changes in the circulation of underground waters, which in turn affected the position of the water table. When such changes were gradual lake levels may have shifted gradually; but the sudden opening of a new underground connection between passageways may well have caused a sudden rise or fall of lake surfaces. Beach formation and the development of dune ridges would thus be suddenly shifted from one level to another.

Progressive deepening of river valleys and progressive development of underground channels connecting eventually with the ever deepening streams, tended toward one end—the ultimate extinction of the lakes through lowering of the groundwater level below the bottoms of the lake basins. To the same end operated the filling of lake basins with marshy deposits and peat. In time most of the lakes were transformed into dry depressions or into marshy basins called "bays." Relatively few basins, specially favored by local conditions, still contain open lakes. In time they too will be drained or filled; and ultimately the progressive dissection of the Coastal Plain by headward growing branches of the major streams will destroy every trace of the countless basins and their contained lakes which once diversified broad areas of the Coastal Plain surface.

Such is the history of the initiation, development and extinction of the curious Carolina bays, according to what may be called "the hypothesis of complex origin," since it involves artesian, solution, lacustrine and aeolian factors. It remains to test the validity of this hypothesis: first, by determining whether it will adequately account for the many facts concerning the bays already reported in the literature of the subject; and second, by deducing as fully as may be the reasonable consequences of the hypothesis, and then ascertaining whether newly discovered and previously recorded facts correspond to the consequences thus deduced. To this task the writer has for some time devoted his attention, and the results will be published at an early date.

OBITUARY

HERMAN DIEDERICHS

HERMAN DIEDERICHS, dean of the College of Engineering of Cornell University, died on August 31 at the age of sixty-three years.

For forty-four years Dean Diederichs, whose career began as a poor German immigrant boy, has been identified with Cornell University as a student, teacher and, since July 1, 1936, as dean of the engineering college.

He was regarded as an authority in experimental engineering with special reference to materials of engineering. His text-book, in collaboration with the late Professor R. C. Carpenter, published in 1910, is standard in the field. He is co-author with W. C. Andrae of a monumental work on mechanical experimental engineering, dealing with engineering instruments, published in 1931.

A prolific writer, he was co-author of three bul-

letins of the Engineering Experiment Station at Cornell and with W. D. Pomeroy, of Seneca Falls, was a winner in 1930 of the Melville Medal of the American Society of Mechanical Engineers for a "thesis of exceptional merit." He had performed many investigations and tests as a consultant in private industry.

Throughout his career on the faculty of Cornell University, Dean Diederichs maintained his interest in student activities, particularly in athletics. Elected in 1907 as track adviser for the athletic association, he became its president in 1913 and served through 1925, being elected again in 1932 and serving until he became chairman of the new board of athletic control. He was known as the father of the regional scholarship plan of the athletic association.

In recognition of his many years of service to his alma mater, as student, teacher and administrator, the class of 1935 designated him as "Cornell's Man of the Year" in dedicating its classbook to him. He was a member of Quill and Dagger, senior honorary society; Tau Beta Pi, Phi Kappa Phi and Phi Sigma Kappa fraternities, and belonged to such professional societies as the American Society of Mechanical Engineers, the Society of Automotive Engineers, the Society for the Promotion of Engineering Education, the German Society of Engineers and the American Society for Metals.

A CORRESPONDENT

LORD ROTHSCHILD, FOUNDER OF THE ZOOLOGICAL MUSEUM AT TRING

LORD ROTHSCHILD, founder of the Zoological Museum at Tring, England, which is considered the finest privately owned institution of its kind in the world, died on August 27 at the age of sixty-nine years. Before his illness he took the chief part in the management of his museum, and was accustomed to work side by side with members of his staff cataloguing new specimens which were continually arriving from all parts of the world. In addition he also maintained at Tring a large private zoological garden.

In an account of his life and work the London *Times* writes:

> Since his earliest days Lord Rothschild had been devoted to zoological science, and it was his boyish hobby of collecting butterflies that led to the founding of his museum. Before the War the collection was stated to be the largest of its kind in the world, and through the years it continued to increase. The reason of its rapid growth was the necessity Lord Rothschild found of accumulating not merely specimens of a creature from every part of its habitat, but of obtaining a very large number of specimens of each individual kind. The scope of the museum was very wide. Many thousands of mammals, birds, fishes and reptiles were mounted in the spacious buildings designed to house them. A description of the museum in detail would fill volumes. Exhibits traced the development of species and included examples of extinct or disappearing animals, in addition to which there was an exceptional collection of horns from all over the world. Between 1,000,000 and 2,000,000 butterflies were in the departments to which Lord Rothschild was specially devoted and concerning which he had been the largest contributor to our knowledge.
>
> Ornithologists learned with dismay in 1932 that the collection of birds, an outstanding department of the museum, had been sold and was going to the United States. The reasons given for that step were the heavy burden of maintaining a private museum and the consequent necessity of disposing of part of it. The choice lay between the sale of the birds or the sale of an even more complete collection of insects. Lord Rothschild chose to dispose of the former. The collection of birds was particularly rich in "types." In modern systematic zoology, when a new species is described, in addition to the publication of an adequate diagnosis, preferably with a figure, an actual individual specimen is selected by the author of the species and its registered number in a private or public collection is stated. This selected example is known as a "type" which acquires a high money value as well as scientific interest.
>
> Lord Rothschild wrote numerous articles on zoology; was the author of "Avifauna of Laysan," and was the joint editor of "Novitates Zoologicae"—published at the Zoological Museum, Tring. In 1911 he was elected a Fellow of the Royal Society and he had been a trustee of the British Museum since 1899.

RECENT DEATHS AND MEMORIALS

DR. HUGH D. REED, head of the department of zoology of Cornell University, died suddenly on August 23 at the age of sixty-two years.

PROFESSOR EDSON FORBES HITCHINGS, from 1905 to 1911 state entomologist of Maine and later, until his resignation in 1918 on account of ill health, in charge of the department of horticulture in the University of Maine, died on September 8 at the age of eighty-four years.

DR. JAMES NATHANIEL JENNE, for the last ten years dean of medicine at the University of Vermont, died on September 9. He was seventy-seven years old.

PROFESSOR J. E. DUERDEN, head of the Wool Industries Research Association in Leeds; honorary fellow in zoology of the University of Leeds, and an honorary curator of the American Museum of Natural History in New York City, died on September 4 at the age of sixty-two years.

Nature announces the death of Professor Josef Woldřich, director of the State Geological Institute at Prague; of A. Sharples, formerly government mycologist of the Federated Malay States and head of the