The Dinosaurs of East Africa

Bulletin of the American Geographical Society, Vol. 45, No. 3. (1913), pp. 193-196.

Stable URL:
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Bulletin of the American Geographical Society is currently published by American Geographical Society.

Tapatele, east cape, Taŭ.

Tapuaiga, a land of western Tutuila comprising five towns. (Sacred abiding place.)

Taputapu, west cape, Tutuila.

Taputimu, town, Tualatai district, Tutuila west. (Sacred rain.)

Togalei, malae, 'Ofu.

Tualagi, malae, Amanave. (Back of the sky.)

Tualatai, a land of western Tutuila comprising four towns. (Tuala by the sea.)

Tualauta, a land of western Tutuila comprising five towns. (Tuala inland.)

Tuautu, town, Tualatai district, Tutuila west.

Tula, town, Le Vaifanua district, Tutuila east. (Bald, bare.)

Tutuila, third in size of the Samoan Islands.

Utuloa, south cape, Tutuila. (Long cape.)

Utumea, village, Alao. (Red cape.)

le Vaifanua, see Sua. The name signifies a gap in the land, it is in effect an isthmus save that the Samoan attention is directed upon the bays which restrict the land. A land of eastern Tutuila comprising nine towns.

Vailoauta, town, Tualatai district, Tutuila west. (Long river inland.)

Vainiu, malae, Matu'u. (Water of coconuts.)

Vaitogi, town, Tualauta district, Tutuila west.

Vatia, town, Le Vaifanua district, Tutuila east.

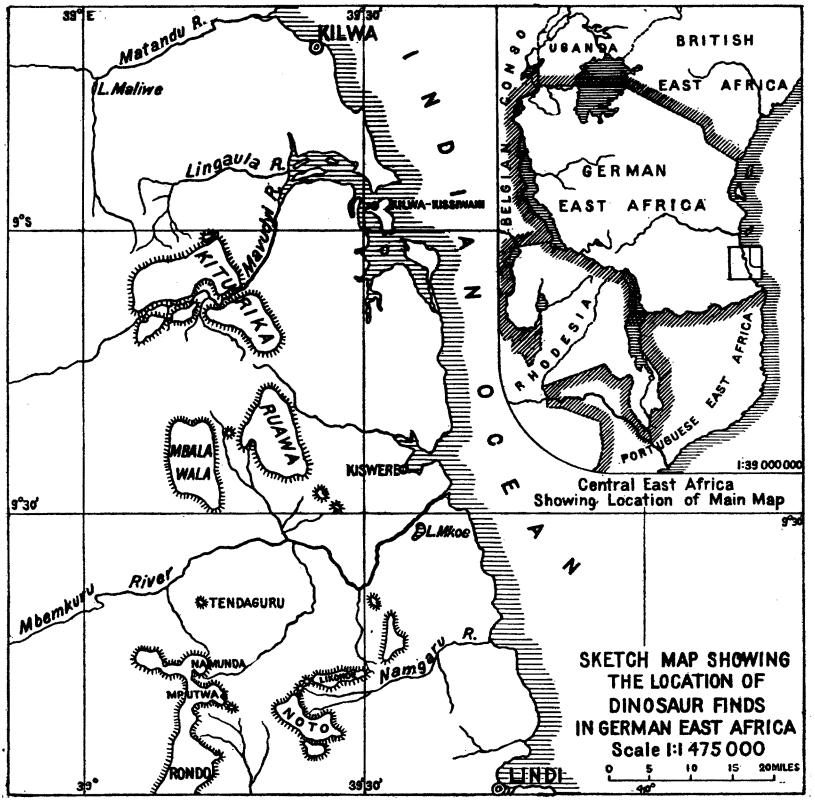
The record may well be completed with a note as to pronunciation. All the vowels have the Italian sound and are pronounced in full, the consonants as in the English *g,* already explained. Except where otherwise marked the accent lies upon the penult. The character ', the inverted comma and not the apostrophe, indicates that the vowels between which it is set must not be permitted to coalesce.

THE DINOSAURS OF EAST AFRICA

Geographers as well as paleontologists are interested in the distribution and the former geographical conditions under which the "largest of all known land animals" lived. These animals are the East African dinosaurs discovered by Engineer B. Sattler in 1907 and reported to his German countrymen by Professor Fraas whom Sattler informed of his discovery. The name of Gigantosaurus has been given to them. The Geological-Paleontological Institute of the University of Berlin sent out an expedition under the leadership of Dr. W. Janensch, assisted by Dr. Edward Hennig, to study these remarkable finds and make collections. Dr. Hennig has just pub-

lished a finely illustrated volume* telling how the expedition lived, what it did and describing the country and its peoples. The following facts are condensed from a review† of the book by Prof. Charles Schuchert, Professor of Paleontology in Yale University.

The expedition arrived in the Tendaguru region of German East Africa on April 16, 1909, and remained at work for two years and six months. The digging still goes on under other field operators.



In the first three years, $45,000 was expended by the expedition resulting in 4,000 packages of bones and other natural history material. The Europeans adapted themselves to the tropical climate and educated the negroes to dig out the bones and to harden and pack them. Many porters were employed to carry the packages to Lindi

*Am Tendaguru. Leben und Wirken einer deutschen Forschungs-Expedition zur Ausgrabung vorweltlicher Riesensaurier in Deutsch-Ostafrika. Von Dr. Edw. Hennig, Stuttgart, 1912. 151 pp. Map, ills.

†*Amer. Journ. of Sci.*, 4th Series, Vol. 35, 1913, No. 1, pp. 34-38.

where the bones were boxed and sent to Berlin. From 400 to 500 negroes were usually employed.

The map shows the distribution where exhumations have been in progress. The hill Tendaguru, less than 100 feet high and on a plateau about 650 feet above the sea, is the central point from which all the diggings have been operated. It is in the midst of an extensive dinosaur cemetery, for at one time there were twenty exhumations in operation scattered over thirty square kilometers. In a thickness of about 500 feet exposed along the stream Mbemkuru are found three distinct horizons of soft shale with dinosaur remains separated from one another by hard, cross-grained sandstones to conglomerates that have an abundant marine invertebrate fauna. Though the marine fossils have not yet been determined, Dr. Hennig says that the time represented is not of the upper Cretaceous as was first supposed but of earliest or lowest Cretaceous age comparable to the earlier dinosaur horizon of America. The conditions of deposition appear to have been an alternation of shallow marginal seas that came to be filled with detritus and changed into great mud flats, flooded by rivers and possibly in part by high tides. Three such cycles are recorded.

The largest African animals of that time were truly gigantic in size exceeding by far the mightiest of American Comanchian dinosaurs. It is thought that the largest attained almost twice the length of Diplodocus which is 80 feet long. The neck appears to have been at least fifteen feet longer than that of Diplodocus and a good deal thicker, as the vertebræ of Gigantosaurus are nearly twice as high as in the American genus. "It is very difficult to picture to ourselves the enormous size of such living masses."

Dr. Hennig offers the following as the most plausible explanation of the manner in which these animals came to be entrapped and buried in the sediments:

"We can accordingly assume that a very shallow sea flooded vast areas of marsh land, and at times of ebb the dinosaurs wandered far out over these flats to feed on algae, sea-weed and small marine animals only to be caught in low places by the incoming tides and so drowned and eventually buried. In some cases feet were found standing upright, leading to the conclusion that the animal had become mired in the mud. Because of the very small size of the brain, we may ascribe to them a low mentality and consequently frequent recurrences of the accidental drownings. We may also assume that the flesh-eating animals of the water as well as of the land fed on these cadavers. This explanation, of course, does not

readily apply to the gigantic forms since they could easily have waded out of the flooding waters, but they may have lost their sense of shore direction and, becoming confused, gone into deeper waters and drowned. We may also assume, since the strand line repeatedly rose and fell, as is indicated by the changing characters of the strata, that large land masses were separated into islands and that these were finally submerged beneath the sea with all the life upon them."

Dr. Hennig says in conclusion:

"We may picture to ourselves as follows the wonderfully varied life that dwelt along the strand of this Cretaceous sea. Here trod those dull-witted giants whose necks were more than twelve meters long and up to two meters thick, with length of legs exceeding any known size; here hurried about the dragon-tribe, large and small, down to the tiniest lizard; here appeared herds of armored dinosaurs, terrible in shape, with mighty spines along the back and tail; here hastened past small swift saurians erect upon their hind legs, while others flew through the air; here were the fearsome flesh-feeding robbers and the Gigantosaurians who alone because of their size could escape from them alive and who fed their huge bodies upon plants and smaller sea animals. Scarcely can the noble and prolific animal life of Africa to-day compare in diversity with the assemblage which here lies before us."

GEOGRAPHICAL RECORD

THE AMERICAN GEOGRAPHICAL SOCIETY

MR. ROBBINS RETIRES FROM THE CHAIRMANSHIP OF THE COUNCIL. Mr. Chandler Robbins, Chairman of the Council since early in 1907, declined reelection at the meeting of the Council on Feb. 20 and Mr. John Greenough was unanimously elected to the position. On taking the Chair, Mr. Greenough expressed his appreciation of the honor conferred upon him, adding that he wished to record the obligation of the Society to his predecessor Mr. Robbins for his unequalled services covering a period of forty-one years. Mr. Robbins was elected a Fellow in 1872. In 1886 he was appointed a member of the Executive Committee which then had charge of the affairs of the Society. In 1887 he was appointed a member of both House and Finance Committees, served as Domestic Corresponding Secretary from March, 1897, to November, 1906, and was elected Chairman of the Council on Feb. 21, 1907. Mr. Greenough expressed the feeling of his colleagues in hoping that the Society would long continue to enjoy the assistance of Mr. Robbins as a member of the Council and of its Committees.

MR. MADISON GRANT ELECTED TO THE COUNCIL. The Council on Feb. 20 elected Mr. Madison Grant a Councillor of the Society for the term expiring in 1914.

THE SOCIETY'S DELEGATE TO THE TENTH INTERNATIONAL GEOGRAPHICAL CONGRESS. The Council, at its February meeting, appointed Herbert L. Bridgman,