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BIOLOGICAL INDUCTIONS FROM THE EVOLUTION OF THE PROBOSCIDEA¹

By Dr. HENRY FAIRFIELD OSBORN

MEMBER OF THE NATIONAL ACADEMY OF SCIENCES

THE extinct and living Proboscideans, including mastodonts and elephants of all the continents except Australia, of the 50,000,000 year period since Oligocene time in North Africa, have been intensively studied since the year 1907 or for the past quarter century for a monograph which will afford biological inductions even more significant than those set forth in Chapter X of the author's Titanotheres Monograph of 1929.² Whereas the Titanotheres are geologically short-lived and variants of two chief types of adapta-

tion, the Proboscideans are geologically long-lived, 55,000,000 to 65,000,000 years, and represent no less than fourteen widely distinct types of biomechanical adaptation to an environmental range from the equator through the north and south tropics to the southern and northern continental extremities, guided by a surpassing intelligence, and guarded by tusk-like weapons equal or superior to any of those invented by man up to the introduction of firearms.

In brief, Proboscideans rank next to man in biological interest and far surpass man in confirmation of the principles of biomechanical evolution first set forth (December, 1931) in my seventh contribution to this series.³ These six principles are: biomechanical

¹ Read by title before the National Academy of Sciences, Ann Arbor, Michigan, on November 15, 1932. This is the eighth contribution on the Origin of Species, and the principles of biomechanical evolution, as demonstrated in vertebrate paleontology.

² "The Titanotheres of Ancient Wyoming, Dakota and Nebraska," Monograph 55, U. S. Geological Survey, Washington, 1929.

³ "New Concept of Evolution Based upon Researches on the Titanotheres and the Proboscideans," SCIENCE, December 4, 1931, Vol. 74, No. 1927, pp. 557-559.

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