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ECOLOGICAL SEGREGATION¹

By Professor A. S. PEARSE

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ANIMALS known to science all live in a thin layer which is close to the surface of the earth. The complex group of conditions which surround any animal is called an environment. An area where more or less uniform conditions obtain is a habitat. Animals are in a general way adapted to live in particular habitats in one of the three great ecological realms—sea, fresh water or land. This statement raises the first question: What is adaptation and how does it come about?

ADAPTATION

To most zoologists adaptation means merely that an animal fits its particular environment. A fish out of water does not fit; an eagle is out of place in the depths of the ocean. Somewhere on the earth there

is a place where an animal fits in a more or less precise way. It is impossible to conceive an animal without its environment. If an animal does not fit, it ceases to exist. If an animal continues to exist it must perhaps change its habitat and its bodily constitution somewhat as earth environments change. "Evolution is no more than adaptation of organisms to environment."² The past history of the earth indicates that unusual environmental conditions precede new types of adaptation in animals.³ Animals must in a changing environment remain continually adapted or become extinct.

If one studies in detail the adaptations of animals

¹ Address before Section F—Zoological Sciences, American Association for the Advancement of Science, Boston, December 28, 1933.

² S. L. Hora, "Ecology, Binomics and Evolution of the Torrential Fauna, with Special Reference to the Organs of Attachment," *Philosoph. T. Roy. Soc., London (B)*, 218: 171-282, 1930.

³ H. F. Osborn, "The Origin and Evolution of Life," xxi + 332 pp., New York, 1917.