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The American Association for the Advancement of Science:

Ecological Segregation: PROFESSOR A. S. PEARSE 167

Tissue Reactions in Immunity: DR. REUBEN L. KAHN 172

Scientific Events:

Preservation of Records in Libraries; The Development of the Collection of Maps at the University of Chicago; Research Conferences on Chemical Physics; The International Congress of the Anthropological and Ethnological Sciences 176

Scientific Notes and News 178

Discussion:

Scarps in Tularosa Valley, New Mexico: PROFESSOR STERLING B. TALMAGE. *Lightning Protection for Trees:* PROFESSOR JOHN B. WHITEHEAD. *Weights and Measures and the Public:* DR. J. F. McCLENDON. *Reflections on Two Scientific News Items:* DR. EDGAR T. WHERRY. *Warning Concerning an Impostor:* PROFESSOR CHARLES P. SIGERFOOS 181

Scientific Books:

Heredity and Environment in Man: DR. CHARLES B. DAVENPORT. *The Phylogeny of Apes and Man:* DR. ADOLPH H. SCHULTZ 185

Societies and Meetings:

The Indiana Academy of Science: PROFESSOR WILL E. EDINGTON. *The Colorado-Wyoming Academy of Science:* PROFESSOR RALPH J. GILMORE 186

Scientific Apparatus and Laboratory Methods:

A Method for Studying Soil-plant Nutrient Relationships: C. W. LAURITZEN. *A Simple Stain for Nuclear Structures in Living Amoebae and Cysts:* H. E. MCDANIELS 187

Special Articles:

The Isotopic Fractionation of Water by Physiological Processes: THE LATE DR. EDWARD W. WASHBURN and DR. EDGAR R. SMITH. *Hereditary Variations in the Blood Cytology of Normal Rabbits:* DR. ALBERT E. CASEY, DR. PAUL D. ROSAHN, C. K. HU and DR. LOUISE PEARCE 188

Science News 5

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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

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

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

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.

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