

sider methods by which the acquisitive instinct in children may be diverted by encouragement and suggestion so as to prove the stimulus for the higher forms of intellect.

WILLIAM DRUMM JOHNSTON, JR.  
WALKER MUSEUM, UNIVERSITY OF CHICAGO

#### LINKAGE IN POULTRY

Two genes each of which is sex-linked must obviously be completely linked in the gametogenesis of the sex which is heterozygous for the sex gene. On Morgan's theory of inheritance they should also be partially linked in the homozygous sex, as in the female of *Drosophila*. I therefore decided to test for linkage between two well-known sex-linked genes of poultry, namely B, whose presence causes barring of melanic feathers, and S, which by inhibiting yellow pigmentation, converts "gold" into "silver" hackle feathers. A Brown Leghorn cock of composition bs/bs was therefore mated to Barred Plymouth Rock hens of composition BS. Their male children were of composition BS/bs. These were mated to bs Brown Leghorn hens, and have so far produced:

- 30 Barred silver BS/bs ♂ and BS ♀
- 17 Unbarred silver bS/bs ♂ and bS ♀
- 10 Barred gold Bs/bs ♂ and Bs ♀
- 21 Unbarred gold bs/bs ♂ and bs ♀

This corresponds to a series of spermatozoa 30 BS, 17 bS, 10 Bs, 21 bs, or 27 cross-overs out of 78. The cross-over value is therefore 34.6 per cent. with a probable error of 3.6 per cent., that is to say there is undoubtedly linkage. The numbers of barred and unbarred are practically equal, but there is a 50 per cent. excess of silver over gold, perhaps due to selective mortality.

The experiment is being continued, and it is hoped next year to obtain repulsion as well as coupling. If Pearl is correct in his view that one of the genes for high egg-laying is carried in the sex-chromosome, the economic importance of mapping it is considerable. For example if the locus of the egg-laying gene  $L_2$  lies between those of B and S, then if B and S have been transferred together from a race of high-laying power to one of low-laying power, we shall know without further testing that, ex-

cept in the rare cases of double crossing-over,  $L_2$  has been transferred with them.

J. B. S. HALDANE

NEW COLLEGE,  
OXFORD, ENGLAND

#### THE ZOOLOGICAL RECORD

*The Zoological Record*, which was founded in 1864 by English zoologists, has been issued regularly ever since and contains each year a complete bibliography of all publications connected with zoology. It is now the sole work of the kind, and is invaluable to all workers in every branch of zoology.

Previous to 1914 *The Zoological Record* formed part of the "International Catalogue of Scientific Literature," and was issued under the joint responsibility of the Royal Society and the Zoological Society. As the Royal Society found itself unable to proceed with the volumes of the "International Catalogue" after the issue for 1914, the Zoological Society has undertaken to prepare and issue the volumes for 1915-1920 inclusive at its sole financial risk.

It is the wish of the record committee of the Zoological Society to continue the publication of this most useful work, but it is obvious that they can not expect the Society to undertake the heavy financial liability involved in publication unless they receive reasonable support from working zoologists both at home and abroad.

I hope, therefore, that all working zoologists who agree with me that the suspension of the publication of the *Record* would have a most disastrous effect on the progress of zoology, will either subscribe themselves or will urge the librarians of the institutions with which they are connected to do so.

A prospectus and form of subscription either for the whole or separate divisions of the *Record* can be had on application to the Zoological Society.

W. L. SCLATER,  
*Editor*

ZOOLOGICAL SOCIETY OF LONDON,  
LONDON, N. W. 8

#### METEOROLOGISCHE ZEITSCHRIFT

IN a letter received from Professor V. Conrad, the recently elected secretary of the

Austrian Meteorological Society, he expresses the fear that the *Meteorologische Zeitschrift* may cease publication for want of funds. This would be a deplorable circumstance and a distinct loss to meteorology and science. He asks for subscriptions, the price being only \$3.20 U. S. currency per year. It is hoped that this note may secure not only renewals, temporarily dropped during the war, but also new subscriptions, so that this valuable periodical may be saved from extinction.

OTTO KLOTZ

DOMINION OBSERVATORY,  
December 6

### SCIENTIFIC BOOKS

#### RECENT ADVANCES IN PALEOPATHOLOGY

AN important contribution to the study of the origin and evolution of diseased conditions is contained in the recent volume by Dr. John M. Clarke<sup>1</sup> whose previous studies on this subject have enriched the literature of paleopathology.<sup>2</sup> He has, in the present essay, given a popularized account of his accurate paleontological studies, dealing with the nature of disease and the geological indications of its evolution. He calls attention specifically to the fact that there has been an evolution of disease similar to the evolution of organic forms. Certainly the evidence points to a progressive increase in pathological conditions throughout the geological ages.

Dr. Clarke's evidences are all selected from the field of invertebrate fossils in which his wide acquaintance with invertebrate paleontology and stratigraphy gives his opinion the greater weight. Only a specialist in this field would be able to discriminate benign pathological conditions from those of accidental post-fossilization erosions.

The author has a deeper purpose in view than merely contributing to the subject of

<sup>1</sup> "Organic Dependence and Disease: Their Origin and Significance," Yale University Press, October, 1921, pp. 1-113; 105 figures.

<sup>2</sup> "The Beginnings of Dependent Life," Fourth Annual Report, State Museum of New York, 1908, pp. 1-28, 13 plates and text-figures.

paleopathology and his essay is a philosophical study of the nature of symbiotic and parasitic conditions of the ancient Paleozoic world.

This subject has been further enriched by the appearance of another volume dealing with the evidence of disease during a more recent period of the world's history.<sup>3</sup> This volume was prepared under the supervision of Lady Alice Ruffer of Ramleh, Egypt, as a memorial to her husband who lost his life in the recent war. The volume consists of nineteen essays which had been previously published in various journals, chiefly the *Journal of Pathology and Bacteriology*. These deal with detailed accounts of Sir Ruffer's studies on ancient Egyptian mummies; one paper relating to a condition of spondylitis deformans in a crocodile from the Miocene of Egypt.

These reprinted essays are accompanied by a brief biographical sketch and a list of Ruffer's writings.

Ancient Peru has contributed greatly to our knowledge of paleopathology, and the civilizations of the Incas and their predecessors have a diligent student in Edmundo Escomel,<sup>4</sup> a practising physician in Arequipa, Peru. His most recent contributions deal with discussions of the ancient surgical art of Peru; the instruments and results obtained, seen especially well in the numerous trephined skulls of the ancient Peruvian burials.

ROY L. MOODIE

UNIVERSITY OF ILLINOIS,  
CHICAGO

### SPECIAL ARTICLES

#### A SIMPLE METHOD OF OBTAINING PREMATURE EGGS FROM BIRDS

IN connection with studies on the relation of the endocrine glands to sex and reproduc-

<sup>3</sup> Sir Marc Armand Ruffer, "Studies in the Palaeopathology of Egypt," University of Chicago Press, October, 1921, pp. i-xx and 1-371; illustrated by 71 plates.

<sup>4</sup> Dr. Edmundo Escomel, "Ciencia y arte en la prehistoria peruana," printed privately, Lima, Peru.