

studied by Dr. H. Rabl-Rückhard, of the Berlin Museum, with a view (1) to determine the cephalic ending of the notochord in its relations towards the hypophysis cerebri and the so-called middle trabecula, and (2) the origin of the pineal gland. He finds that at no period has the embryo of *Acanthias* a notochord with its apex projecting beyond that part of the base of the skull, which subsequently becomes the dorsum sellæ, thus confirming the views of W. Müller, Balfour and Parker; though this view is not irreconcilable with the view of Reichert, that the notochord of young sharks at a certain period of development reaches to the frontal wall. —As regards the comparison of the brains of the higher vertebrates with the lower, which is in controversy, by ascertaining the true position of the pineal gland, we advance towards a true solution of the difficulty. Rabl-Rückhard confirms the views of Balfour and Ehlers that in sharks this gland is developed just as in higher vertebrates, as Stieda insists, in all higher adult vertebrates it lies dorsally between structures which correspond to the primary first and second cerebral vesicles. — Professor His, studying the question as to the development of a tail in the human embryo, disputes that it has at first a true tail, as it possesses no supernumerary vertebræ, and in pathology no extra number have ever occurred.

ENTOMOLOGY.¹

EXUVIATION IN FLIGHT.—Mr. R. McLachlan has recorded a remarkably numerous flight of the Ephemeroidea, *Oligoneura rhonana*, last August, at Basle, Switzerland, with the interesting observation that it casts the subimaginal skin while on the wing. We have often met with just such swarms of Ephemeroidea as Mr. McLachlan describes, flying either against the wind or against the current of a river. In the case of *Polymitaercys alba* (Say), which is extremely common on the Red river of the north, where in August, 1877, we found it actually giving the river a white appearance, and falling upon vessels like snow, the subimaginal skin was shed in an incredibly short space of time (less than a minute), but was almost invariably preceded by a brief period of rest. The impatience to fly off after the true wings were withdrawn, however, was such that in the large majority of cases the insect took wing before the subimaginal skin was fully cast, in which case exuviation would be completed on the wing. We cannot conceive of the beginning of the process taking place on the wing, for there is a period, however short, from the bursting of the skin on the thorax to the extraction of the wings from their covering, when the use of the wing, it seems to us, is impossible; and we can conceive of full exuviation in the air only on the hypothesis that the insect during the process descends from a sufficient altitude to afford time for the extraction of the new wings.

¹This department is edited by PROF. C. V. RILEY, Washington, D. C., to whom communications, books for notice, etc., should be sent.

THE
AMERICAN NATURALIST,

AN ILLUSTRATED MAGAZINE

OF

NATURAL HISTORY.

EDITED BY

A. S. PACKARD, JR., AND EDWARD D. COPE.

ASSOCIATE EDITORS:

PROF. C. E. BESSEY, DEPARTMENT OF BOTANY.

PROF. C. V. RILEY, DEPARTMENT OF ENTOMOLOGY.

PROF. O. T. MASON, DEPARTMENT OF ANTHROPOLOGY.

ELLIS H. YARNALL, DEP. OF GEOGRAPHY AND TRAVELS.

DR. R. H. WARD, DEPARTMENT OF MICROSCOPY.

SA...

...

VOLUME XV.

PHILADELPHIA:
PRESS OF McCALLA & STAVELY,
Nos. 237 AND 239 DOCK STREET.
1881.