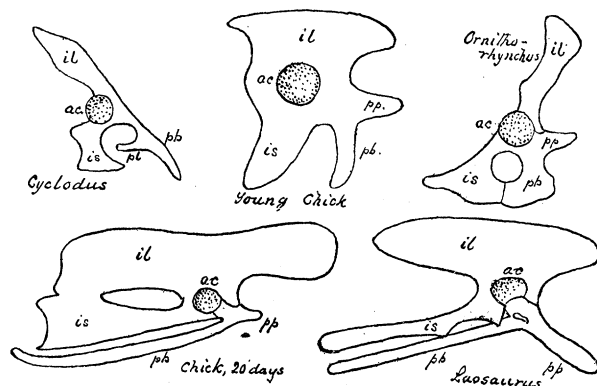


of the pubis, and the ischium appears behind as a downward expansion below the acetabulum. The further change consists chiefly in the expansion of the ileum, and in the growth of the pubis and ischium; which last two become inclined backward, and acquire a considerable posterior prolongation. During these changes the pelvis passes through a stage which is permanent in *Apteryx*. The division of the primitive anlage into the skeletal parts is produced by the known histological changes at the joints. The author thinks that Hofmann's 'epipubis' (*Nederl. arch. zool.*, iii.) is the true pubis, and his 'pubis' in reptiles a process of the ischium. She also corrects some errors of Bunge.

These observations throw much light on the homologies of the pubis, of which the pectineal process is a branch, so that the pubis is biramous. A comparison of the bird with mammals (in which the pectineal process is often reduced, and sometimes absent) and dinosaurs at once determines the homologies of the pubis in these forms. In reptiles the pubis has also two branches, — the main body of the pubis; and the



EXPLANATION. — *il*, ileum; *ac*, acetabulum; *is*, ischium; *pb*, pubis; *pl*, processus lateralis; *pp*, pectineal process.

posterior ramus lateralis, which may be wanting, however, as is the case with crocodiles. After discussion of the subject, the writer concludes, we think rightly, that the so-called pubis of reptiles is homologous with the pectineal process, and the lateral ramus homologous with the pubis of higher forms. The homologies are given in the following table, and differ, it will be seen, very widely from those current:—

Reptiles.	Dinosaurs.	Embryo bird.	Birds.	Mammals.
1. Pubis.	Pubis (Marsh).	Anterior branch of pubis.	Pectineal process.	Pectineal process.
2. Processus lateralis.	Postpubis (Marsh).	Posterior branch.	Pubis.	Pubis.

Miss Johnson also investigated the development of the limb. Her observations agree in almost every

detail with Baur's (*Morphol. jahrb.*, viii.): we therefore note merely the presence of five metacarpals, and the failure to find a separate origin for the intermedium; but, in opposition to Morse, she is inclined to concur with Baur in describing the ascending process of the astragalus as an outgrowth from the tibiale. Morse's conclusion may be due to his having studied different birds (aquatic species). It is a pleasure to praise this excellent paper.

C. S. MINOT.

RECENT WORK ON BRACHIOPODS.

THE important though rather fragmentary observations of Kovalevski on the development of the brachiopods have long remained sealed in their original Russian from western naturalists, who have only had access to more or less incomplete synopses of the original. MM. Oehlert and Deniker have prepared for the latest volume of the *Archives de zoologie expérimentale* a careful analysis of the paper in question, illustrated by rough but sufficiently clear figures reproduced from the original. The result is a paper of some twenty pages, which may be obtained separately, and will have a value for all biologists, whatever their position as to the author's theories.

In a note on *Terebratula* (*Centronella*) Guerangeri, M. Oehlert signalizes the existence of two or three forms of this genus in the Devonian of Europe. He discusses the relations of *Centronella*, *Leptocoelia*, and *Renssellaeria*, and concludes that they probably represent an arrested development, which would, if carried out, bring them into relations with *Waldheimia*, and that they should be referred to the same sub-family. The absence of punctation in the test is referred to metamorphism, as in *C. Guerangeri* all stages were discovered, from impunctate to completely punctate.

The same author, in the *Bulletin de la société géologique de France*, discusses the Devonian *Chonetes* of western France, where four species are found in the grauwacke and calcaire beds, but are absent in the grits. One of the species, *C. tenuicostata*, is new, and all are figured; while the characteristics of the genus are thoroughly reviewed.

In the same publication the author describes two new species of *Acroculia* from the lower Devonian of Mayenne, reviews the genus, and shows that the prior name of *Platyceras* Conrad, being doubly preoccupied in insects, must give way to *Acroculia*.

Lingula Norwoodi, from the Cincinnati limestone, is redescribed and figured by U. P. James in the *Cincinnati journal of natural history*.

Glottidia pyramidata Stimpson has been found by Hemphill in South Florida, considerably extending its range, and leading to the suspicion that *G. antillarum* Reeve, described from the West Indies, may be identical with it.

W. H. DALL.