

and that the *ischium* is not present as a bone, being represented only by the *ligamentum ischiadicum*, the obturator hole being situated between this ligament and his pubic bone; and he gives the name *foramen cordiforme* to that which is usually called the *foramen obturatorium*. Here Fürbringer differs to some extent from Gorsky, inasmuch as he considers the pubic bone of the latter to represent both the pubic and ischiatic bones, constituting an *os puboischium*, and that the obturator foramen is not behind this bone between it and ischiatic ligament, but in the bone at the junction of the pubic and ischiatic components, and is represented by a cartilaginous space in early life and by a thin space in the full-grown animal.

Tracing the progressive disappearance of the limbs in the several members of the class he finds it to commence in the distal parts, that is, in the terminal phalanges, the nail becoming transferred to the proximal remnants or even to parts which are not phalanges. The disappearance of the phalanges culminates in the loss of the digits; commencing at the fifth and going on successively to the first, which is, accordingly, the most persistent. In the shoulder-girdle, which not unfrequently persists when the other parts are lost, the components disappear in the following order, Episternum (Parker's interclavicle), Sternum, Clavicle, Coracoid, Scapula. In the pelvis the several parts fade more uniformly and become blended undistinguishably, first the *os ileopectineum* and the *os puboischium*, and then these two with the iliac bone.

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*Anatomische Studien* herausgegeben von DR C. HASSE, Prosector in Würzburg. Erstes Heft. Leipzig, Verlag von W. Engelmann, 1870, 8vo. ss. 188.

The chief part of this work is occupied by an exhaustive essay on the Comparative Anatomy of the Vertebral Column, more particularly of man and mammals, by Dr C. Hasse and W. Schwarck. It is mainly devoted to descriptive and comparative details, but enters also into the development of the column in the different classes and orders of vertebrates. This is essentially the same in all and, as is well known, takes place from the *chorda dorsalis* and its sheath, and from the surrounding layers of embryonic tissue; but the place which these respectively take in the several classes is shewn to vary to some extent, the importance of the circumferential layer being greatest in the higher classes. The part contributed by the *chorda* and its sheath, and chiefly by the latter, is called the "chordal vertebral body," is limited to the vertebral body, and in Fishes, most teleosts at least, forms the chief part of it. In other vertebrates it plays a minor rôle, the chordal sheath remains non-cellular and is supplemented by a cellular layer, early segmented from the surrounding embryonic strata, and which combines with it to form the "chordal" or "inner" or "true vertebral centre." To this again is superadded an outer layer from the middle stratum of the embryonic tissue, which forms the "outer" vertebral body, and from which also the neural and hæmal arches

and the lateral processes are developed. The formation of these arches and processes, as well as of the outer part of the vertebral body, from the same embryonic substance accounts for their varying position, especially that of the lateral processes, which may be situated upon the body or the neural arches, or both. He shews that the chordal or inner vertebral centrum and the outer part of the vertebral body are in the cartilaginous state distinguished from one another by the more closely set cells and the darker appearance of the latter as compared with the clearer substance and larger cells of the former; yet the two are continuous, and ossification commencing in the one spreads into the other. In the case of the atlas, however, they are and remain more distinct, the inner or chordal vertebral body being represented by that which constitutes the odontoid process of the axis, and the outer part by the anterior portion of the ring of the atlas.

The essay is an excellent work of reference for all who desire to study the vertebral column carefully and to compare the various processes and tubercles in different animals.

The other articles in the number are on the *Cupula terminalis* of Cyprinoids by Dr C. Hasse: on the nerves of the *Serrati posici* muscles by Rielander: on the development and anatomy of the Pharynx by Ketel; and on the position of the openings of the Eustachian tubes during development by Kimkel.

*Grundzüge der vergleichende Anatomie*, von CARL GEGENBAUR, Prof. der Anatomie in Jena, Zweite umgearbeitete Auflage mit 319 Holzschnitten. Leipzig, verlag von W. Engelmann, 1870. 8vo. ss. 892. In the eleven years that have elapsed since the first edition of this admirable treatise on comparative anatomy, so much advance has been made that the author has found it necessary to work over the whole subject again and almost to re-write the book. For the German reader it is decidedly the best student's book on the subject, clear, sufficiently full and exact without being tedious. Next to seeing as good a work produced in English, we would gladly see a translation of it for the use of our students.

*Compendium der Physiologie des Menschen*, von JULIUS BUDGE, Professor der Anatomie und Physiologie in Greifswald. Zweite umgearbeitete Auflage. Leipzig, Ernst Julius Günther, 1870.

An immense amount of information in a concentrated form is given in this little book, which must not be regarded as a condensation merely of the author's larger *Lehrbuch der Physiologie des Menschen*, but as an independent work. It would not suffice, even to the student, in the place of a more extended treatise, but will serve as an excellent reminder or primer.

*Ornithosauria, Aves and Reptilia from the secondary strata*, by HARRY GOVIER SEELEY, St John's College, Cambridge, with a Pre-