PART III. THE SAURIA. (*Continued.*)

THE AVES.

The Muscles of the Birds.
The Larynx and its Muscles.
Summary and Review of Sauropsidan Muscles.
Review of the Saurian Muscles.

THE MUSCLES OF THE BIRDS.

Eighteen birds have been dissected for this section of the work, but, as there is a marked similarity in the arrangement of the muscles, only those which present interesting features will be described in detail.

The conditions in *Gallus*, which is described fully, may be regarded as the normal, or typical, arrangement for the birds. The majority of those examined resemble it closely.

Gallus.

(Figs. 157–166.)

THE MUSCLES OF THE MANDIBULAR SEGMENT.

The ventral constrictor, Csv.1, presents no division into parts. It consists of a sheet of transverse fibres which arise on each side from the inner surface of the mandible for the greater part of its length and which are inserted into a median raphe.

Innervation.—This is, of course, by the mandibular ramus of the Vth nerve. The course of this nerve is almost exactly as in the Reptilia. The main trunk passes deeply between the pterygoid and temporo-masseteric groups of masticatory muscles, the terminal, mandibular, branch enters the canal in the mandible. The first branch of this to perforate the jaw-bone breaks up into three to five twigs as soon as it emerges; one of these supplies the whole of the motor fibres to the Csv.1.

Lubosch (1933, fig. 14) depicts the posterior margin of this muscle as trending caudad. I have dissected, in all, about forty specimens, and in every one of them I find the posterior margin to be almost exactly transverse, but I also find that the posterior limit of the origin is placed further back than he depicts it, whilst the posterior limit of the insertion is a little further forward.

The muscles of mastication are essentially similar to those of the reptiles. I have not, however, found any trace of the retractor anguli oris in any one of the many birds examined.

The Masseter muscle is a relatively thicker muscle in the fowl than it is in any reptile examined. It arises from a very strong fascia which is bound to the outer surface of the post-orbital process of the skull and to the anterior wall of the fibrous external auditory meatus.

This fascia is, as it were, continued forward and ventrally along the superior margin of the muscle for about two-thirds of the length of that margin. The fasciculi arise from the outer surface of the post-orbital process and from the continuation of the fascia along the whole of its length. Their direction is ventrad and rostrad and they are inserted directly into the outer surface of the mandible well in front of the jaw joint.

The Temporalis muscle arises from the inferior margin and surface of the post-orbital process and from the skull in the temporal fossa deep to the M. massetericus. This temporal muscle is roughly pyramidal in shape. The apex of the pyramid is a short tendon which is inserted into the upper edge of the mandible, actually to the little tubercle upon that edge immediately above Meckel's fossa and which may be regarded as a much reduced coronoid process. The pyramid is, then, upside down, and the base is the origin of the muscle as described.

As the final portion of this work goes to the press I feel that some explanation of the absence of references to recent work is called for. The work was commenced in 1933 and progressed steadily till its completion in 1939. Delay in publication resulted from lack of available funds and the general uncertainty of conditions associated with the declaration of war. In 1942 the Trustees of the Australian Museum agreed to publish sections of the work from time to time as funds became available, and in 1944 a grant from the Commonwealth Scientific Publications Committee helped to expedite the completion of publication. I should like to express my gratitude to both those bodies, as well as to the Director of the Museum, Dr. A. B. Walkom, and to the Librarian, Mr. W. A. Rainbow, for invaluable assistance in the editing and printing of the memoir.

As a result of the delay, the work, in its reference to current research in comparative anatomy and embryology, is to a certain extent out of date. This has been unavoidable because my time has been wholly taken up in the discharge of my duties as Director of Medical Services of the Allied Works Council of the Commonwealth of Australia, and consequently I have had no opportunity of bringing the work up to date.—H.L.K.