Subclass Prototheria—the Egg-laying Mammals

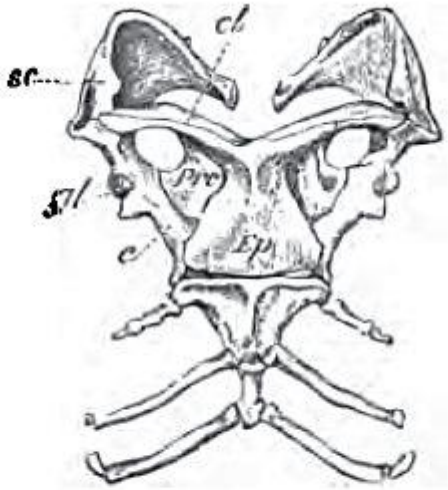
The prototherians are the egg-laying mammals, the survivors of a phylogenetic line that must have branched early from the line leading to other living mammalian groups. All living forms are limited to the Australian Biogeographic Region (essentially New Guinea and Australia, including Tasmania).

Traditionally, one order, Monotremata, is recognized. McKenna and Bell (1967) recognize two, however: Order Platypoda (the Platypus, *Ornithorhynchus anatinus*, Family Ornithorhynchidae) and Order Tachyglossa (Echidnas, with one family and two genera of one species each) Prototherian fossils before the Pleistocene are rare, but recently have been recovered from the Lower Cretaceous of Australia and the Paleocene of Argentina

The Platypus is semiaquatic, semifossorial ,and carnivorous, feeding on such foods as aquatic invertebrates, frogs, and small fish. Burows are constructed in stream banks. The echidnas (often called Spiny Anteaters) are good burrowers and feed largely on insects such as ants.

The Platypus has poorly developed teeth embryonically (apparently 0/5, 1/1 (?1/2), 2/2, and 3/3). DP1/1 apparently forms. The teeth are lost early and the molars replaced by horny pads that are used to grind up food. Litter size is small, generally limited to two. The echidnas have no teeth, embryonic or later (absence of teeth is widespread in ant and termite specialists). Among the soft-anatomy features of interest is the pliable, superficially duck-like, rostrum of the Platypus, well endowed with sensory structures, including those able to sense electrical fields (and thus the muscle contractions of prey), and the spines of the echidnas. The Platypus also has a poison spur in the ankle region. The echidnas have an ephemeral pouch for the eggs and young; the Platypus does not.

ent. In their skeletons, the monotremes (so-called because they preserve a reptile-like **cloaca** with essentially a single opening) show some characteristics that we normally think of as reptilian or otherwise unknown in mammals, including cervical ribs ossified separately from the vertebrae and only later fusing, absence of vertebral epiphyses (except in the caudal vertebrae of the Platypus), no zygapophyses on the neck vertebrae, an extended period of time before the odontoid process becomes fused with the axis, presence of an **interclavicle**, a separate **coracoid**, a separate **epicoracoid** in front of the coracoid, and an absence of the scapula blade in front of the scapula spine. The skull lacks an **alisphenoid**, but has a bone homologous with the reptilian **ectopterygoid**. **Epipubic bones** are present.



After Flower, 1885.

FIG. 85.—Ventral view of shoulder-girdle and anterior portion of sternum and sternal ribs of Ornithorhynchus (*O. anatinus*); ½. *sc* scapula; *cl* calvicle; *c* coracoid; *Prc* epicoracoid; *Ep* interclavicle or episternum.