

# THE GENERA OF REPTILES.

By

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Among all the Paleontologists living none has dealt with the recent and fossil reptiles with a wider grasp than Prof. L. DOLLO and at his anniversary it seems quite appropriate to review their whole array.

The classification used in the following enumeration of all genera of reptiles is much the same as in my book „*Die Familien der Reptilien*“; at this instance however an effort has been made to give a precise definition of every systematic unit.

Alteration of the classification became necessary among the Dinocephalians, the Nothosaurians, the Lacertilians (called here *Sauroidea*), the *Coelurosauroidea* and the *Crocodylia*. The new classification of the *Sauroidea* is intermediate between the classifications proposed by BOULENGER and CAMP. Naturally as a rule only those fossil genera are referred to, that are more than simple catalogue numbers that facilitate the finding of the respective piece in a collection; indeterminable problematic genera of small interest have mostly been omitted. Extinct units and genera are marked in the lists with a cross (†). Difficulties of classification have been encountered in the *Lacertilia* and *Ophidia*, for in the new system the conventional families of recent Lizards and Serpents has been given subfamily rank and consequently the different recent subfamilies had to be dropped. Instead of these subfamilies the minor units were separated by greek letters. —

The tedious and complicated revision of the genera of recent Lizards and Snakes was done by Prof. WERNER, the well known authority on this subject. Due to his aid this part of the memoir became of greatest value.

Of the 125 families enumerated in the following lines only 18 families (14%) are represented by living reptiles, while 107 families (86%) are represented only by fossils; of the 50 suborders 44 are only known by fossils. This should always be considered by those investigators, who, as for example VIALLETON, deal exclusively with the recent reptiles and like thereupon to draw general conclusions.

### Class *Reptilia*.

Lungbreathing Vertebrates without metamorphosis and with a mandible built up of several bones. Skin without heat regulating cover.

#### Subclass *Anapsida*.

Temporal roof of skull normally not perforated.

#### I. Superorder † *Cotylosauria*.

Tabular bones present, roof of skull never reduced, vertebrae deeply biconcave, scapular arch strong, ventral part of pelvis without large apertures, humerus with foramen entepicondyloideum.

1. Order † *Seymouriamorpha*; „embolomerous“ imperforate palate, strong otic notch, numerous skull bones, stegocephalian-like mandible, no cleithrum, clavicles and episternum sculptured, one sacral vertebra, ribs dilatated, tail moderately long.
  1. Suborder † *Seymouriamorphaidea*; definition as above.
    1. Family † *Seymouriidae*; definition as above († *Conodectes*, † *Papposaurus*, † *Seymouria*, † *Stephanospondylus*, † *Solenodonosaurus*).
  2. Order † *Cotylosauria*; comparately few skullbones, otic notch closed, palate with apertures, neck short, cleithra present, more than one sacral vertebra, two large proximal carpal and tarsal bones.
    1. Suborder † *Pareiasauroidea*; lower end of quadrate pushed forward, tabulars horizontal. —
      1. Family † *Diadectidae*; inner ear not ossified, lacrymal large, frontal excluded from orbit; teeth transversely enlarged, pubis and ischium fused, vertebrae short, tail long († *Animasaurus*, † *Bolbodon*, † *Chilonyx*, † *Desmastodon*, † *Diadectes*, † *Diadectoides*, † *Disparactus*, † *Nothodon*, † *Phanerosaurus*).
      2. Family † *Pareiasauridae*; inner ear ossified, lacrymal large, frontal excluded from orbit, cross-section of teeth round, pubis and ischium fused, no ventral ribs, vertebrae short, tail short. —
        - a) † *Elgininae*; skull covered with spines († *Elginia*).
        - b) † *Pareiasaurinae*; spines only on posterior border of skull († *Anthodon*, † *Bradysaurus*, † *Embrithosaurus*, † *Pareiasaurus*, † *Pareiasuchus*, † *Propappus*).
      3. Family † *Procolophonidae*; lacrymal short, teeth transversely enlarged, orbits enlarged, frontal bordering orbit, border of skull with spines, pubis and ischium distinct, shoulder-girdle lightly built.
        - a) † *Procolophoninae*; ventral ribs present, tail long († *Koiloskiasaurus*, † *Procolophon*, † *Telegnathus*, † *Telerpeton*).
        - b) † *Sclerosaurinae*; cranial spines very long, no ventral ribs, tail short († *Sclerosaurus*).
    2. Suborder † *Labidosauroidea*; upper end of quadrate pushed backward; Tabulars vertical. —
      1. Family † *Captorhinidae*; frontals bordering orbit; premaxillary teeth enlarged, more than one row of teeth in each jaw, limb-bones slender, vertebrae long († *Captorhinus*, † *Helodectes*, † *Isodectes*, † *Labidosaurus*, † *Pariotichus*). —

2. Family † *Limnoscelidae*; frontals excluded from orbit, premaxillary teeth enlarged, vertebrae short, ends of limb-bones expanded, carpus and tarsus incompletely ossified († *Limnoscelis*).
3. Suborder † *Pantylloidea*; tabulars horizontal; maxillary, palate and mandible with numerous teeth; small dermal ossifications present, vertebrae long; incompletely known. —
  1. Family † *Pantylidae*; definition as above († *Pantylus*). —

## II. Superorder *Testudinata*.

Tabular bones absent, roof of skull undergoing reduction by emargination, neck long, eight dorsal ribs broadened; pelvis with apertures. —

1. Order † *Eunotosauria*; incompletely known, neck more or less elongated; ribs expanded and arched; scapular arch as in *Cotylosauria*; dermal ossifications present. —
  1. Suborder † *Eunotosauroidea*; definition as above. —
    1. Family † *Eunotosauridae*; definition as above († *Eunotosaurus*).
  2. Order *Testudinata*; no pineal foramen, ribs and ventral ribs enlarged and forming a more or less firm shell or indicating the former existence of such; tail short; dorsal neural arches intervertebral, ribs two-headed, ectepicondylar foramen or groove present. —
    1. Suborder † *Amphichelonoidea*; neck moderate; skull not retractile, nasals present, pelvis in strong contact with plastron, inframarginal and intergular shields present. —
      1. Family † *Triassochelyidae*; palatal teeth present, roof of skull not emarginated, cervical ribs present, cervical vertebrae biconcave with notochordal pit, acromion relatively feebly developed, cleithrum present, pelvis not fused with shell, ventral pelvic elements flat, complete row of dermal plates intercalated between costal and marginal scutes, mesoplastron present († *Triassochelys*). —
      2. Family † *Pleurosternidae*; no palatal teeth, roof of skull not emarginated; no cervical ribs; mobility of neck rather vertical; acromion very strong; no cleithrum; scapular arch and pelvis joined to shell by ligament; shell always closed; neuralia not reduced; mesoplastron present. —
        - a) † *Pleurosterninae*; cervical vertebrae biconcave († *Glyptops*, † *Pleurosternum*).
        - b) † *Baëninae*, cervical vertebrae with various articulation († *Baëna*, † *Boremys*, † *Chisternum*, † *Compsemys*, † *Craspedochelys*, † *Neurankylus*, † *Platycheles*, † *Polythorax*, † *Probaena*, † *Thescelus*, † *Tropidemys*).
        - c) † *Helochelydrinae*, shell with bony tubercles († *Helochelydra*, † *Helochelys*, † *Naomichelys*, † *Trachydermochelys*, † *Tretosternum*).
  3. Family † *Proterochersidae*; incompletely known; pelvis fusing with shell; mesoplastron present; supernumerary scutes; femur

- with wings on proximal end; shell closed († *Proterochersis*, † *Sauroidesmus*).
4. Family † *Plesiochelyidae*; pelvis uniting firmly with shell and coossifying in old age; stegal skull; neuralia generally not reduced. —
    - a) † *Kallokibotioninae*; mesoplastra present; nares separated, († *Kallokibotium*).
    - b) † *Plesiochelyinae*; nares confluent; no mesoplastra († *Brodeichelys*, † *Hylaeochelys*, † *Plesiochelys*, † *Rhinochelys*, † *Tholemys*).
  5. Family † *Thalassemydidae*; skull emarginated; mobility of neck in horizontal plane; shell incompletely ossified; neuralia frequently reduced. —
    - a) † *Thalassemydinae*; no mesoplastron († *Chelonides*, † *Eury sternum*, † *Hydropelta*, † *Idiochelys*, † *Pelobatochelys*, † *Sontiochelys*, † *Thalassemys*). —
    - b) † *Desmemydinae*; Nasals present; mesoplastron present († *Atlantochelys*, † *Desmatochelys*, † *Desmemys*, † *Neptunochelys*). —
  6. Family † *Miolaniidae*; roof of skull prolonged into horns; strong caudal sheath († *Miolania*, † *Niolamia*). —
2. Suborder *Pleurodira*; roof of skull more or less emarginated, principal emargination from below; neck strongly flexible sideways; acromion very large; tendency to suppress neuralia; pelvis coossifying with shell; acromion very long; intergular present. —
    1. Family *Pelomedusidae*; palatines meeting in median line; mesoplastron present († *Bantuchelys*, *Pelomedusa*, † *Pliochelys*, *Podocnemis*, † *Polysternum*, *Sternothoerus*, † *Stereogenys*). —
    2. Family *Chelyidae*; palatines separated by vomer; no mesoplastron (*Chelodina*, *Chelys*, † *Chitracephalus*, *Elseya*, *Emydura*, *Hydraspis*, *Hydromedusa*, *Mesoclemmys*, † *Parahydraspis*, *Platyemys*, *Pseudemydura*, *Rhinemys*). —
    3. Family *Bothremyidae*; jaws with deep pits; incompletely known († *Amblypeza?* † *Bothremys*, † *Naiadochelys*, † *Taphrophys*). —
  3. Suborder *Cryptodira*; roof of skull more or less emarginated, principal emargination occurring behind; skull vertically retractible into shell or formerly retractible; last cervical modified accordingly; acromion very long; pelvis free; no mesoplastron; no intergulars. —
    1. Family *Chelydridae*; shell with plastral buttresses; costoid process on nuchal; 24 marginals; inframarginal shields present; dermal plates on tail († *Acherontemys*, *Chelydra*, *Devisia*, *Macroclermys*). —
    2. Family *Dermatomydidae*; plastral buttresses present; caudal ossifications absent; inframarginal shields present.
      - a) *Dermatomydinae*; 24 marginals; nuchal with costiform process. († *Adocus*, † *Agomphus*, † *Alamosemys*, † *Baptemys*, † *Basi-*

- lemys*, *Dermatemys*, † *Homorophus*, † *Hoplochelys*, † *Kallistira*, † *Notomorpha*, † *Peltochelys*, † *Xenochelys*, † *Zygoramma*).
- b) *Cinosterninae*; 22 marginals; nuchal with costiform process. (*Cinosternum*, *Claudius*, *Staurotypus*).
- c) *Platysterninae*; 24 marginals; nuchal without costiform process. (*Platysternum*).
3. Family *Testudinidae*; no costoid process of nuchal; no inframarginal shields.
- a) *Emydinae*; metacarpals long (*Batagur*, *Bellia*, *Callagur*, *Chrysemys*, *Clemmys*, *Cyclemys*, *Deirochelys*, † *Echmatemys*, *Emys*, *Geoclemmys*, *Geomyda*, † *Gyremys*, *Hardella*, *Heosemys*, *Kachuga*, *Malaclemmys*, *Morenia*, *Notochelys*, *Ocadia*, *Orlitsia*, † *Palaeotheka*, † *Patanemys*, † *Ptychogaster*, *Pyxidea*, *Terrapene*, *Trachyemys*).
- b) *Testudininae*; metacarpals short (*Acinixys*, *Achilemys*, *Bystira*, *Cinixus*, † *Hadrianus*, † *Homopus*, *Pyxis*, † *Stylemys*, *Testudo*.)
4. Family *Cheloniidae*; shell reduced; feet more or less adapted to swimming; no plastral buttresses; no inframarginal shields:
- a) † *Lytolominae*; 22 marginals, a pit in second marginal for hyoplastron († *Argillochelys*, † *Eochelone*, † *Lytoloma*, † *Osteopygis*, † *Porthochelys*).
- b) *Cheloninae*; quadrate notched behind; skull extensively roofed over; choanae underfloored; extremities converted to flippers († *Allopleuron*, *Chelonia*, † *Cheliopsis*, † *Cratochelone*, † *Glyptochelone*, † *Lembonax*, † *Notochelone*, † *Peritresius*, † *Platychelone*, † *Procolpochelys*, † *Puppigerus*, † *Syllomus*, † *Thalassochelys*).
- c) † *Protosteginae*; quadrate notched behind; 24 marginals; skull roofed; carina of dermal bones on back († *Archelon*, † *Protosphargis*, † *Protostega*, † *Toxochelys*).
5. Family *Dermochelyidae*; stegal skull; quadrate nearly straight; shell strongly reduced; dermal mosaic armour († *Cosmochelys*, *Dermochelys*, † *Psephophorus*).
6. Family *Trionychidae*; surface of shell rugose, no dermal shields:
- a) *Anosteirinae*; marginal bones united with rib-plates († *Anosteira*, † *Apholidemys*, *Carettochelys*, † *Hemichelys*, † *Pseudotrionyx*).
- b) *Trionychinae*; marginal bones, even when present not united with shell († *Axestemis*, *Chitra*, † *Conchochelys*, *Cycloderma*, *Dogania*, *Emyda*, † *Helopanoplia*, *Pelochelys*, † *Plastomenus*, † *Temnotrionyx*, *Trionyx*).

Subclass *Monozygocrotapha*.

Roof of skull with one perforation or altogether reduced; no cleithra.

III. Superorder: † *Ichthyopterygia*.

Longirostral; upper temporal opening present; quadrate robust; nasal opening placed far backward; ventral ribs present; vertebrae with traces of notochord; ribs articulating only on centra; tail long.

1. Order † *Mesosauria*; long-necked; limbs moderately adapted to marine life, shoulder girdle robust; humerus with foramen entepiconyloideum; no assymetrical caudal fin.
  1. Suborder † *Mesosauroidae*; pachyostotic; otherwise definition as above.
    1. Family † *Mesosauridae*; definition as above († *Mesosaurus*, † *Notosaurus*, † *Stereosternum*).
2. Order † *Ichthyosauria*; short-necked; body dolphin-shaped; orbits large; vertebrae disc-shaped; neural arches somewhat reduced; paddles with strong hyperphalangy; humerus without foramen.
  1. Suborder † *Omphalosauroidae*; incompletely known; maxillary and mandible with numerous rows of teeth. —
    1. Family † *Omphalosauridae*; definition as above († *Omphalosaurus*, † *Pessopteryx*).
  2. Suborder † *Ichthyosauroidae*; only one row of teeth; assymetrical caudal fin present; three true digits and supernumerary rows of sesamoid bones on extremities.
    1. Family, † *Longipinnatidae*; digit articulating with intercentrum of carpus, simple.
      - a) † *Shastasaurinae*; ventral pelvic elements broad; radius and ulna elongated († *Cymbospondylus*, † *Delphinosaurus*, † *Merriamia*, † *Pessosaurus*, † *Shastasaurus*, † *Toretocnemus*).
      - b) † *Stenopterygiinae*; ventral pelvic elements narrow; radius and ulna short († *Eurhinosaurus*, † *Leptopterygius*, † *Nannopterygius*, † *Platypterygius*, † *Stenopterygius*).
    2. Family † *Latipinnatidae*; digit articulating with intercentrum of carpus, cleft longitudinally.
      - a) † *Mixosaurinae*; ventral pelvic elements broad; radius and ulna elongated († *Mixosaurus*, † *Phalarodon*).
      - b) † *Ichthyosaurinae*; ventral pelvic elements narrow; radius and ulna short († *Brachypterygius*, † *Ichthyosaurus*, † *Macrop-  
tergius*, † *Myopterygius*, † *Ophthalmosaurus*).

#### IV. Superorder † *Theromorpha*.

Teeth thecodont, columella auris articulating with quadrate; humerus always with foramen entepicondyloideum; quadrupedal. —

1. Order † *Theriodontia*; brain-case, auditory organ and articulation of lower jaw developing on mammalian lines; base of brain-case thin; temporal bar formed of squamosal and postorbital; terrestrial carnivorous animals. Foramen obturatorium between ischium and pubis, precoracoid excluded from glenoid cavity.
  1. Suborder † *Palaeohatteroidea*; conical protothecodont teeth; palate with strong dentition; metakinetic skull; squamosal T-shaped; ventral ribs present; foramen obturatorium small; tail strong and long.
    1. Family † *Palaeohatteriidae*; definition as above († *Palaeohatteria*, † *Pantelosaurus*).

2. Suborder † *Therocephaloidea*; quadrate reduced; conical teeth with marked canines; parietals narrow; frontals bordering orbits; no ventral ribs; foramen obturatorium large; tail generally unknown (short?).
  1. Family † *Scylacosauridae*; canines small; molars not reduced; suborbital vacuities on palate present († *Alopecodon*, † *Alopecognathus*, † *Anna*, † *Cynidiognathus*, † *Ictidoparia*, † *Ictidosuchus*, † *Scylacoides*, † *Scylacorchinus*, † *Scylacosaurus*).
  2. Family † *Lycosuchidae*; canines large; molars reduced; suborbital vacuities present († *Aelurosaurus*, † *Alopecopsis*, † *Glanosuchus*, † *Moschorhinus*, † *Trochosaurus*).—
  3. Family † *Whaitsidae*; canines large; molars reduced; no suborbital vacuities († *Notosolassia*, † *Whaitsia*). —
3. Suborder † *Gorgonopsioidea*; conical teeth; canines more or less marked; parietals broad; frontals bordering orbits. —
  1. Family † *Scaloposauridae*; suborbital vacuities and ventral ribs present; canines small. —
    - a) † *Scaloposaurinae*; numerous molars; canine scarcely indicated († *Scaloposaurus*).
    - b) † *Akidognathinae*; numerous molars, canine well marked († *Aelurosuchus*, † *Akidognathus*, † *Icticephalus*, † *Ictidodon*, † *Ictidognathus*, † *Rhophalodon*).
  2. Family † *Gorgonopsidae*; canines large, molars reduced; no ventral ribs.
    - a) † *Gorgonopsinae*; snout elongated († *Arctops*, † *Ailurognathus*, † *Asthenognathus*, † *Cynariops*, † *Cynaroides*, † *Galesuchus*, † *Gorgonognathus*, † *Gorgonops*, † *Inostranzevia*, † *Leptotrachelus*, † *Scylacops*, † *Scymnognathus*, † *Sycosaurus*).
    - b) † *Lycosaurinae*; snout abbreviated († *Arctognathus*, † *Lycosaurus*).
4. Suborder, † *Gomphognathoidea*; dentition differentiated; otic region very mammal like; secondary palate present; no ventral ribs.
  1. Family † *Cynognathidae*; lumbar ribs dilatated; frontals excluded from orbits; no suborbital vacuities.
    - a) † *Cynognathinae*; cheek-teeth laterally compressed († *Cynognathus*, † *Cynosuchus*, † *Galesaurus*, † *Glochiodon*, † *Ictidopsis*, † *Karroomys*, † *Lycorhinus*, † *Lycognathus*, † *Nythosaurus*, † *Platyeranicellus*, † *Tribolodon*).
    - b) † *Gomphognathinae*; cheek-teeth broad, multituberculate († *Diademodon*, † *Gomphognathus*, † *Octogomphus*, † *Pachygenelus*, † *Protacmon*, † *Trinaxodon*, † *Trithelodon*).
  2. Family † *Bauriidae*; nares directed forward; nasal narrow behind; lacrymal not touching nasal; frontals bordering orbits; squamosum small, suborbital vacuities present († *Bauria*, † *Baurioides*, † *Doinia*, † *Melinodon*, † *Microgomphodon*, † *Sesamodon*).

2. Order † *Chainosauria*; tendency to reduce quadrate and dentition; no otic groove on quadrate; low fenestra ovalis; temporal bar formed of postorbital and squamosal; mandible with foramen; foramina obturatoria between the pubis and ischium large.
  1. Suborder † *Dromasauroidae*; precoracoid excluded from glenoid-shaped squamosum; ventral ribs present; extremities slender; tail long and slender; humerus with foramen entepicondyloideum.
    1. Family † *Galechiridae*; teeth present († *Galaeops*, † *Galechirus*, † *Galephrys*, † *Macrosclerosaurus*).
    2. Family † *Galaeridae*; jaws edentulous with tusk-like process († *Galerus*).
  2. Suborder † *Anomodontoidea*; pendent squamosum; horny beak present; dentition reduced; no ventral ribs; limbs short; tail short.
    1. Family † *Endothiodontidae*; rudiments of teeth present († *Chelyoposaurus*, † *Cryptocynodon*, † *Diaelurodon*, † *Emydochampsia*, † *Emydorhynchus*, † *Endothiodon*, † *Eocylops*, † *Esotherodon*, † *Opisthocnodon*, † *Pristerodon*, † *Prodicynodon*, † *Tropidostoma*).
    2. Family † *Geikiidae*; jaws edentulous with tusk-like process.
      - a) † *Geikiinae*: nasals broad and projecting beyond nares. († *Geikia*).
      - b) † *Cistecephalinae*; nasals narrow and not projecting beyond nares († *Cistecephalus*, † *Emydops*, † *Emyduranus*).
    3. Family † *Dicynodontidae*; no rudiments of maxillary or palatal teeth but two tusks present.
      - a) † *Gordoniinae*: tusks small († *Gordonia*).
      - b) † *Dicynodontinae*: tusks in male large († *Bainia*, † *Chelyopsis*, † *Chelyrhynchus*, † *Dicynodon*, † *Emydopsis*, † *Eosimops*, † *Kannemeyeria*, † *Myosaurus*, † *Palaemydops*).
      - c) † *Lystrosaurinae*: skull deflected; tusks large in both sexes († *Lystrosaurus*, † *Prolystrosaurus*, † *Ptychocynodon*).
3. Order † *Dinocephalia*; quadrate not reduced; basicranium forming deep wall below the condyle.
  1. Suborder † *Titanosuchoidea*; facial part of skull elongated; frontals bordering orbits; teeth differentiated; humerus with two foramina.
    1. Family † *Moschosauridae*; skull bones not thickened; squamosal just in contact with postorbital; conical teeth; canine of moderate size († *Moschosaurus*).
    2. Family † *Deuterosauridae*; Squamosal not touching postorbital; temporal opening lateral; skull short; foramen quadrati present († *Deuterosaurus*).
    3. Family † *Lamiasauridae*; skull moderately elongated, temporal fossa looking sideways, squamosal touching postorbital, quadrate more or less elongated, no foramen quadrati, canine strong († *Anteosaurus*, † *Dinartamus*, † *Dinophoneus*, † *Enobius*, † *Glaridodon*, † *Lamiasaurus*, † *Scapanodon*).



4. Family † *Titanosuchidae*; skull elongated, projections above orbits († *Burnetia*, † *Titanosuchus*).
2. Suborder † *Tapinocephaloidea*; facial part of skull more or less abbreviated; frontals excluded from orbits; temporal fossa opening upwards, quadrate short, no foramen quadrati.
2. Family † *Tapinocephalidae*: definition as above († *Delphinognathus*, † *Eccasaurus*, † *Mnemeiosaurus*, † *Moschognathus*, † *Moschops*, † *Pelosuchus*, † *Pnigalion*, † *Struthiocephalus*, † *Tapinocephalus*, † *Taurops*).

#### V. Superorder † *Pelycosauria*.

1. Order † *Pelycosauria*; skull with lower temporal arch and posttemporal opening; foramen obturatorium remaining in pubis; precoracoid entering glenoid cavity.
  1. Suborder † *Dimetrodontoidea*; quadrate short; nares terminal; lacrimal short; quadrupedal; humerus with foramen entepicondyloideum.
    1. Family † *Bolosauridae*; incompletely known; jugal arch narrow; orbits large, teeth with two cusps († *Bolosaurus*).
    2. Family † *Caseidae*; skull flat and short and covered with rugosities; foramen quadrati present; palate with diffuse dentition, tooth-bearing coronoid; ilium elongated anteriorly († *Casea*, † *Trichosaurus*).
    3. Family † *Ophiacodontidae*; skull high and laterally compressed; orbits vertical, small; very small temporal opening; no foramen quadrati; jugal very broad; ilium elongated; tail long († *Ophiacodon*).
    4. Family † *Poliosauridae*; canine small or absent; lower jaw in the same niveau as dental series; large temporal opening; lacrymal long; no foramen quadrati; neural spines short; ventral ribs present; ilium elongated; tail long.
      - a) † *Glaucosaurinae*; skull very short, orbit large († *Glaucosaurus*, † *Mycterosaurus*, † *Puercosaurus*).
      - b) † *Poliosaurinae*; skull elongated († *Haptodus*<sup>1</sup>), † *Poliosaurus*, † *Scoliomus*, † *Varanops*, † *Varanosaurus*).
      - c) † *Theropleurinae*; canine well marked († *Kallibrachion*, † *Oxiodon*, † *Theropleura*).
  4. Family † *Clepsydropodidae*; canine strong; lacrymal short; articulation of lower jaw beneath niveau of dental series; foramen quadrati present; flange on mandible; teeth compressed; neural spines elongated; ventral ribs absent; ilium broad; tail short.
    - a) † *Sphenacodontinae*; neural spines relatively short († *Diopæus*, † *Neosaurus*, † *Sphenacodon*, † *Stereorhachis*, † *Tetraceratops*).
    - b) † *Clepsydropodinae*; neural spines very long; facial part of skull very short; jaws deep († *Bathygnathus*, † *Clepsydrops*, † *Ctenosaurus*, † *Dimetrodon*, † *Embolophorus*).

<sup>1</sup>) The entry of *Haptodus* among the *Poliosauridae* is based on an investigation of the type.

2. Suborder † *Thalattosauroidae*; teeth conical; no canines; nares placed far behind; quadrate free; extremities modified.
  1. Family † *Thalattosauridae*; definition as above († *Nectosaurus*, † *Thalattosaurus*).
3. Suborder † *Edaphosauroidae*; quadrate elongated; dispersed palatal dentition; tooth-bearing coronoid; lacrymal long; parietal broad; ilium broad; humerus with two foramina.
  1. Family † *Pantelosauridae*; palatal dentition feeble, neural spines short, ventral ribs present, tail long († *Pantelosaurus*).
  2. Family † *Edaphosauridae*: palatal dentition very strong, neural spines strongly elongated, no ventral ribs, tail relatively short († *Edaphosaurus*, † *Naosaurus*).

#### VI. Superorder † *Dranitesauria*.

Superior temporal opening present; one-headed dorsal ribs articulating only on neural arch; entepicondylar foramen present; tail relatively short; strong ventral ribs.

1. Order † *Placodontia*; palate with large teeth for crushing; very strong ventral ribs; ventral pelvic elements broad; limbs somewhat reduced; humerus with entepicondylar groove; dermal armour present.

1. Suborder † *Placodontoidea*; definition as above.

1. Family † *Cyamodontidae*; posttemporal opening present; dentition of premaxillary reduced; frontals reaching orbits.

a) † *Cyamodontinae*; premaxillary short, bearing button-shaped teeth († *Cyamodus*, † *Psephosaurus*).

b) † *Placochelyinae* premaxillary elongated, edentulous († *Placochelys*).

2. Family † *Placodontidae*; posttemporal opening closed; premaxillary teeth strong and long; frontal excluded from orbit († *Placodus*).

2. Order † *Sauropterygia*; teeth conical; numerous cervicals; no dermal armour.

1. Suborder † *Trachelosauroidae*; incompletely known; hatchet-shaped cervical ribs very slender; upper part of ilium rod-shaped.

1. Family † *Trachelosauridae*; definition as above († *Trachelosaurus*).

2. Suborder † *Nothosauroidae*<sup>1</sup>; cervical ribs moderately thick; humerus with entepicondylar foramen; feet but little modified for swimming; no marked broadening of shoulder-girdle; interclavicle small; coracoid elongated with large opening between; ilium stout.

1. Family † *Pachypleuridae*; anterior outline of skull oval, anti-brachium relatively long.

a) † *Pachypleuroosaurinae*; temporal opening small, no suborbital vacuities († *Anarosaurus*, † *Dactylosaurus*, † *Pachypleurosaurus*).

<sup>1</sup>) A discussion of the classification of the *Nothosauroidae* is going to be given in the *Palaeontologia Hungarica*, Budapest.

- b) † *Neusticosaurinae*; suborbital vacuities present, skull somewhat elongated († *Neusticosaurus*).
  - c) † *Simosaurinae*; temporal opening relatively large, suborbital vacuities closed, humerus and femur with strong muscular attachments; six sacral vertebrae, ventral elements of pelvis broad († *Proneusticosaurus*, † *Simosaurus*).
2. Family † *Nothosauridae*; temporal openings large, tibia relatively short.
- a) † *Lariosaurinae*; suborbital vacuities present († *Lariosaurus*, † *Macromerosaurus*, † *Philotrachelosaurus*, † *Phygosaurus*).
  - b) † *Nothosaurinae*; suborbital vacuities closed, skull elongated († *Cymatosaurus*, † *Germanosaurus*, † *Nothosaurus*, † *Pistosaurus*).
3. Suborder † *Plesiosauroidae*; palate with vacuities near median line; cervical ribs strong; ilium slender; pelvic apertures largely closed; humerus without foramen; strong hyperphalangy; paddles; tail feeble; elements of the shoulder-girdle platelike;
1. Family † *Elasmosauridae*; number of cervical vertebrae augmenting with specialisation, symphysis of mandible always short; ischia relatively short.
- a) † *Plesiosaurinae*; skull small; relatively few cervicals, cervical ribs two-headed († *Apratoclidus*, † *Brancaosaurus*, † *Colymbosaurus*, † *Cryptoclidus*, † *Euryclidus*, † *Leptoclidus*, † *Microclidus*, † *Muraenosaurus*, † *Picroclidus*, † *Plesiosaurus*, † *Sthenarosaurus*, † *Triclidus*).
  - b) † *Elasmosaurinae*; skull small, very numerous cervicals, cervical ribs one-headed († *Elasmosaurus*, † *Leurospondylus*, † *Ogmodirus*).
  - c) † *Rhomalaeosaurinae*; skull large, cervicals numerous but short, ribs two-headed († *Rhomalaeosaurus*).
2. Family † *Pliosauridae*; tendency to reduce number of cervicals; ischium elongated backward.
- a) † *Simolestinae*; symphysis of mandible short; cervical ribs two-headed († *Simolestes*).
  - b) † *Pliosaurinae*; symphysis of moderate length; cervical ribs two-headed († *Kronosaurus*, † *Peloneustes*, † *Pliosaurus*, † *Polyptychodon*, † *Thaumatosauros*).
  - c) † *Trinacromerinae*; symphysis very long; cervical ribs one-headed († *Brachyauchenias*, † *Trinacromerum*).

## VII. Superorder *Parapsida*.

Upper temporal opening present; one-headed dorsal ribs that articulate on centrum only; upper end of ilium rod-shaped; foramen obturatorium remaining always in pubis.

1. Order † *Araucoselia*; broad temporal arch; quadrate immovable; biconcave vertebrae; humerus with two foramina.

1. Suborder † *Araeosceloidea*; teeth thecodont; cervical vertebrae elongated; limb-bones very slender; no median pelvic aperture.
  1. Family † *Araeoscelidae*; definition as above († *Araeoscelis*, † *Kadaliosaurus*).
  2. Family † *Broomiidae*; complex dentition on palate; maxillary teeth expanded transversely; temporal arch somewhat emarginated below; traces of notochord; clavicles mesially expanded; episternum cross-shaped († *Broomia*).
2. Suborder † *Acrosoidea*; episternum T-shaped; pelvis typically lacertilian, with median aperture.
  1. Family † *Saurosternidae*; coracoids very large; humerus robust; femur slender († *Aphelosaurus*<sup>1</sup>), † *Heleosaurus*, † *Heleosuchus*, † *Heliophilus*, † *Saurosternum*, † *Tangasaurus*).
  2. Family † *Pleurosauridae*; limb-bones short; body elongated; neck short, tail strong; teeth longitudinally elongated with median cone († *Acrosaurus*, † *Palacrodon*, † *Pleurosaurus*).
2. Order *Squamata*; temporal bar thin or wanting altogether; quadrate freely movable; teeth never thecodont; only ectepicondylar foramen or no foramen at all; limbs frequently reduced or absent; never more than two sacral vertebrae; upper end of ilium, when present, rod-shaped.
  1. Suborder *Sauroidea*; brain-case never completely ossified, lower temporal arch when present strongly emarginated, squamosum never elongated.
    1. Family *Geckonidae*; No pineal foramen, interpterygoideal cleft broad, centra of vertebrae short and straight, intercentra present.
      - a) *Ardaeosaurinae*; temporal arch present (*Ardaeosaurus*).
      - b) *Geckoninae*; skull without arches, vertebrae amphicoelous, clavicles expanded (*Aeluronyx*, *Aeluroscabotes*, *Agamura*, *Ankylodactylus*, *Alsophylax*, *Arristelliger*, *Bavayia*, *Blaesodactylus*, *Bunocnemis*, *Bunopus*, *Calodactylus*, *Carphodactylus*, *Chondrodactylus*, *Cnemaspis*, *Colopus*, *Crossobamon*, *Diplodactylus*, *Ebenavia*, *Elasmodactylus*, *Dactylichilikion*, *Eurydactylus*, *Gecko*, *Geckolepis*, *Geckonia*, *Gehyra*, *Gonatodes*, *Goniurosaurus*, *Gymnodactylus*, *Hardusia*, *Hemidactylus*, *Hemiphyllodactylus*, *Heteronota*, *Homonota*, *Homophilis*, *Hoplodactylus*, *Lepidodactylus*, *Luperosaurus*, *Lygodactylus*, *Microgecko*, *Microscalabotes*, *Mimetozoneon*, *Narudasia*, *Naultinus*, *Nephrurus*, *Oedura*, *Oedurella*, *Pachydactylus*, *Palmatogecko*, *Paragonatodes*, *Perochirus*, *Peropus*, *Phelsuma*, *Phyllodactylus*, *Phyllopezus*, *Platypholis*, *Pristurus*, *Ptenopus*, *Ptychozoneon*, *Ptyodactylus*, *Rhacodactylus*, *Rhynchoedura*, *Saurodactylus*, *Spathoscalabotes*, *Stenodactylus*, *Sphaerodactylus*, *Tarentola* [= *Platydactylus*], *Teratoscinus*, *Teratolepis*, *Thecadactylus*, *Woodworthia*).

<sup>1</sup>) *Aphelosaurus* is generally placed near *Proterosaurus*, investigations however show that the pelvis is different. *Aphelosaurus* may be intermediate between *Broomia* and *Saurosternum*.

- c) *Eublepharinae*; vertebrae procoelous; skull without arches (*Coelonyx*, *Eublepharis*, *Holodactylus*, *Lathrogecko*, *Lepidoblepharis*, *Pseudogonatodes*, *Psilodactylus*).
- d) *Uroplatinae*; skull-arches present, vertebrae procoelous, episternum very small, clavicles slender (*Uroplates*).
2. Family *Iguanidae*; teeth multicuspid, skull-arches present, pineal foramen present, nasals touching prefrontals, vertebrae procoelous, short and tapering at one end; no intercentra, no osteoderms.
- a) *Iguaninae*; teeth pleurodont (*Amblyrhynchus*, *Anisolepis*, *Anolis*, *Anota*, *Aperopristis*, *Aptycholaemus*, *Basiliscus*, *Brachylophus*, *Cachryx*, *Callisaurus*, *Chalarodon*, *Chamaeleolis*, *Chamaelinorops*, † *Chamops*, *Conolophus*, *Corythophanes*, *Crotaphytus*, *Ctenoblepharis*, *Ctenosaura*, *Cyclura*, *Deiroptyx*, *Diaphoranolis*, *Diplolaemus*, *Dipsosaurus*, *Enyalius*, *Enyaloides*, *Helocephalus*, *Hoolbrokia*, *Iguana*, † *Iguanavus*, *Hoplocercus*, *Hoplurus*, *Kallisaurus*, *Laemactus*, *Leiocephalus*, *Liolaemus*, *Metopoceros*, *Norops*, *Ophryessa*, *Phenacosaurus*, *Phrynosaura*, *Phrynosoma*, *Phymaturus*, *Polychroides*, *Polychrus*, *Pristidactylus*, *Saccodeira*, *Sator*, *Sauromalus*, *Scartiscus*, *Sceloporus*, *Stenocercus*, *Strobilurus*, *Tropidurus*, *Tropidodactylus*, *Uracentron*, *Uraniscodon*, *Urostrophus*, *Uma*, *Uta*, *Xiphocercus*).
- b) *Agaminae*; teeth acrodont (*Acanthosaura*, *Agama*, *Amphibolurus*, *Aphaniotis*, *Aporoscelis*, *Calotes*, *Ceratophora*, *Chelosania*, *Chlamydosaurus*, *Charasia*, *Cophotes*, *Dendragama*, *Diporophora*, *Draco*, *Gonyocephalus*, *Harpesaura*, *Hydrosaurus*, *Hylagama*, *Japalura*, *Leiolepis*, *Lophocalotes*, *Lyriocephalus*, *Molochus*, *Otocryptis*, *Phoxophryx*, *Phrynocephalus*, *Physignathus*, *Ptyctolaemus*, *Salea*, *Sitana*, *Thaumatorhynchus*, *Tympanocryptis*, *Uromastix*).
3. Family *Xantusidae*; temporal fossa closed by skull-bones, clavicles expanded, vertebrae procoelous, intercentra present, no osteoderms (*Cricosaura* = *Cricolepis*, *Lepidophyma*, *Xantusia*).
4. Family *Scincidae*; tooth replacement by intrusion into preceding tooth, clavicles broad, centra of vertebrae procoelous and tapering at one end, no intercentra.
- a) *Scincinae*; frontal touching maxillary, temporal fossa not roofed over by dermal bones:
- α) *Scincininae*; skull-arches present, chevrons present. (*Ablepharus*, *Acanthophiops*, *Acontias*, *Brachymeles*, † *Cadurcosaurus*, *Carucia*, *Chalcides*, *Chalcidoseps*, *Cryptoblepharus*, *Cryptoposcincus*, *Dasia*, † *Didosaurus*, † *Dracaenosaurus*, *Egernia*, *Emoia*, *Eumeces*, *Grandidierina*, *Herpetosaura*, *Herpetoseps*, *Isopachys*, *Leiolepisma*, *Lygosaurus*, *Lygosoma*, *Mabuia*, *Macroscincus*, *Melanoseps*, *Neoseps*, *Ophiomorus*, *Parachalcides*, *Paracontias*, *Pseudacontias*, † *Plestiodon*, † *Protrachysaurus*, *Pygomeles*, *Ristella*, *Scelotes*, *Scincus*, *Scolecoseps*, *Sepsina*, *Sepophis*, *Siaphos*, *Sphenomorphus*,

- Theconyx*, *Tiliqua*, *Trachysaurus*, *Tribolonotus*, *Tropidophorus*, *Typhlacontias*, *Typhloseps*).
- β) *Anelytropsininae*; no skull arches, chevrons present (*Feylinia*, *Typhlosaurus*, *Voeltzkowia*).
- γ) *Dibamininae*; no skull arches, no chevron bones (*Dibamus*).
- b) *Lacertinae*; temporal fossa roofed over by dermal armour, frontals touching maxillaries, pineal foramen present:
- α) *Lacertininae*; no osteoderms on body (*Acanthodactylus*, *Algiroides*, *Apeltonotus*, *Basutosaura*, *Bedriagaia*, *Cabrita*, *Eremias*, *Gastropholis*, *Holaspis*, *Ichnotropis*, *Lacerta*, *Latastia*, *Nucras*, *Ophiops*, *Platyplacopus*, *Poromera*, *Psammodromus*, *Pseudolacerta*, *Scapteira*, *Tachydromus*, *Tropidosaura*).
- β) *Gerrhosaurinae*; body with osteoderms, *Cordylosaurus*, *Gerrhosaurus*, *Paratetradactylus*, *Tetradactylus*, *Zonosaurus*.
- c) *Tejinae*; nasal touching prefrontal, no osteoderms present; the osteological characters alone are insufficient to give a definition distinguishing all the *Tejinae* from all *Iguaninae* (*Alopoglossus*, *Ameiva*, *Anadia*, *Argalia*, *Arthosaura*, *Arthroseps*, *Bachia*, *Calliscincopus*, *Callopietes*, *Centropyx*, *Cercosaura*, *Cnemidophorus*, *Iphisa*, *Crocodylurus*, *Dicrodon*, *Dracaena*, *Ecleopus*, *Echinosaura*, *Euspondilus*, *Gonioptychus*, *Gymnophthalmus*, *Heterodactylus*, *Hylosaurus*, *Leposoma*, *Loxopholis*, *Micrablepharus*, *Monoplocus*, *Neusticurus*, *Ophiognomon*, *Oreosaurus*, *Pantodactylus*, *Perodactylus*, *Pholidobolus*, *Placosoma*, *Prionodactylus*, *Proctoporus*, *Ptychoglossus*, *Scolecocaurus*, *Stenolepis*, *Tejus*, *Tretioscincus*, *Tupinambis*).
5. Family *Amphisbaenidae*; no temporal arches, very large extracolumella; vertebrae procoelous, broad and flat; no intercentra, limbs reduced, no osteoderms († *Aciprion*, *Agamodon*, *Amphisbaena*, *Amphisbaenula*, *Anops*, *Anopsibaena*, *Aulura*, *Bipes*, *Blanus*, *Cadea*, *Chirindia*, *Chirotes*, † *Diacion*, *Diplometopon*, *Geocalamus*, *Hyporhina*, *Hemichirotes*, *Lepidosternum*, *Mesobaena*, *Monopeltis*, *Pachycalamus* *Placogaster*, † *Platyrhachis*, *Rhineura*, *Trogonophis*).
6. Family *Anguinidae*; teeth conical, replacement of teeth alternating clavicles narrow, centra of procoelous vertebrae tapering.
- a) *Anguininae*; osteoderms present, interpterygoideal cleft narrow, frontals touching maxillary:
- α) *Anguininae*; skull arches present, six bones in mandible (*Anguis*, *Barissia*, *Celestus*, *Diploglossus*, † *Euposaurus*, † *Exostinus*, *Gerrhonotus*, *Ophiodes*, *Ophisaurus*, *Panolopus*, † *Propseudopus*, *Sauresia*, † *Sauromorus*).
- β) *Xenosaurinae*; skull arches present, five bones in mandible (*Xenosaurus*).
- γ) *Zonurinae*; arches present; temporal fossa roofed over; osteoderms present (*Chamaesaura*, *Platysaurus*, *Pseudocordylus*, *Zonurus*).

- δ) *Anniellinae*; skull arches absent, five bones in mandible (*Aniella*).
- b) *Helodermatinae*; interpterygoideal cleft broad; osteoderms tuberculate:
- α) † *Glyptosaurinae*; arches present; pineal foramen present; frontal bordering orbit. (*Glyptosaurus*, *Helodermoides*, *Peltosaurus*, *Placosaurus*, *Xestops*).
- β) *Helodermatinae*; arches absent, no pineal foramen, frontals excluded from orbit, episternum rod-shaped (*Heloderma*, *Lanthanotus*<sup>1</sup>).
- c) *Pygopodinae*; frontals excluded from orbit, but bordering brain laterally and inferiorly; no pineal foramen; episternum T-shaped; mandible consisting of four bones only; arch of caudal vertebrae consisting of an anterior and a posterior half which are separated by a foramen; ribs with ventral muscular process (*Aprasia*, *Delma*, *Lialis*, *Ophidiocephalus*, *Ophioseps*, *Pletholax*, *Pygopus*).
7. Family *Platynotidae*; interpterygoideal cleft broad lower jaw with sutural joint, vertebrae procoelous, broad, with lateral flanges; seven or more cervicals, clavicles narrow, no osteoderms.
- a) *Varaninae*; frontals descending on sides of brain case, nasals fused, centra depressed, no zygosphen (*Varanus*).
- b) † *Megalaninae*; centra depressed, small zygosphen present († *Megalania*, † *Saniva*, † *Thinosaurus*).
- c) † *Dolichosaurinae*, strong zygosphen present, propodials abbreviated:
- α) † *Aigialosaurinae*; neck normal, anterior limbs strong, anchor-shaped episternum, parasternum present († *Aigialosaurus*, † *Carsosaurus*, † *Opetiosaurus*).
- β) † *Mesoleptinae*, neck somewhat elongated; anterior limbs abbreviated († *Eidolosaurus*, † *Mesoleptus*).
- γ) † *Dolichosaurinae*, neck very long, anterior limbs very short, no parasternum († *Actaeosaurus*, † *Adriosaurus*, † *Dolichosaurus*, † *Pontosaurus*).
8. Family † *Mosasauridae*; cleft between pterygoids narrow, mandible with transverse hinge behind dentary, vertebrae procoelous with cylindrical centra, episternum rod-shaped, pelvis reduced, hyperphalangy and caudal fin present († *Brachysaurus*, † *Clidastes*, † *Contosaurus*, † *Globidens*, † *Hainosaurus*, † *Mosasaurus*, † *Platecarpus*, † *Plioplatecarpus*, † *Prognathosaurus*, † *Taniwhasaurus*, † *Tylosaurus*).
9. Family *Rhoptoglossidae*; vertebrae procoelous; teeth acrodont; number of cervicals reduced; ilium vertical; hands and feet modified in special manner to grasping organs; no osteoderms.

<sup>1</sup>) Professor Elliot-Smith was so kind to take a X-ray-photograph of *Lanthanotus* made at the University College London. The material was put to my disposal by the kindness of Tate Regan, Keeper at the British Museum of Natural History, London.

- a) *Chamaeleoninae*; vomer present, nasals double, parietal crest present (*Chamaeleo*, † *Procamaeleo*, *Rhampholeon*).
- b) *Brookesinae*; no parietal crest, no vomer, nasals fused, vertebrae with supernumerary bony laminae and covers (*Brookesia*).
2. Suborder *Ophidia*; teeth conical; no pineal foramen; brain case osseous; squamosal and freely movable quadrate elongated; ligamentous union of mandibles; neck elongated, vertebrae procoelous; strong zygosphen throughout vertebral column; limbless; tail shorter than body; no traces of shoulder girdle or anterior limb.
1. Family † *Cholophidae*; cervical vertebrae elongated, tail very short, no tuber costae, zygosphen small.
- a) † *Pachyophinae*; skull lacertiform, ribs and vertebrae pachyostotic; low neural spine, vertebrae broad († *Mesophis*, † *Odontomophis*, † *Pachyophis*).
- b) † *Symoliophinae*; incompletely known; ribs and vertebrae pachyostotic; neural spine high; vertebrae very broad († *Symoliophis*).
- c) *Palaeophinae*; incompletely known; neural spines high; apophyses over postzygapophyses († *Palaeophis*, † *Pterosphenus*).
2. Family *Angiostomatidae*; mouth not expandible, no ectopteryoid, pterygoid not reaching quadrate; coronoid present, tuber costae present. Zygosphen large.
- a) *Glauconinae*; maxillary firmly united to skull; mandible bearing teeth; rudiments of pelvis well developed (*Glauconia* = *Leptotyphlops*).
- b) *Typhlopinae*; maxillary movable; mandible edentulous; only vestiges of pelvis (*Anomalepis*, † *Aphelophis*, *Helminthophis*, † *Homoiotyphlops*, *Typhlops*).
3. Family *Alethinophidae*; quadrate elongated; mouth strongly expandible; ectopterygoid present; both jaws with teeth; caudal vertebrae with paired haemapophyses; zygosphen large.
- a) † *Archaeophinae*; quadrate directed forward; numerous vertebrae; no tuber costae († *Archaeophis*).
- b) *Pythoninae*; squamosal large, suspending quadrate; coronoid present; rudiments of pelvis and hind limbs present; tuber costae present (*Aspidites*, *Boa*, † *Boavus*, *Boliera*, † *Bothrophis*, *Calabararia*, † *Calamagras*, *Casarea*, *Charina*, *Chondropython*, *Corallus*, *Enygrus*, *Epicrates*, *Eryx*, *Eunectes*, † *Gigantophis*, † *Heterophyton*, *Liasis*, † *Lithophis*, *Lichanura*, *Loxocemus*, *Nardoa*, † *Ogmophis*, † *Palaeopython*, † *Paleryx*, † *Protogras*, *Python*, † *Scaptophis*, † *Trachyboa*, *Ungalia*, *Ungaliophis*).
- c) *Ilysiinae*; squamosal small and intercalated in brain case; coronoid present; vestiges of hind limbs present; tuber costae present (*Anomalochilus*, *Cylindrophis*, † *Dinilyisia*, *Ilysia*, † *Scytalophis*).
- d) *Uropeltinae*; no supratemporal; coronoid present; tuber costae present; maxillary immovable; coronoidal process present;



- palate reduced; tail truncated, no trace of pelvis; few vertebrae (*Melanophidium*, *Platyplectrurus*, *Plectrurus*, *Pseudoplectrurus*, *Rhinophis*, *Silybura*, *Uropeltis*).
- e) *Xenopeltinae*; no coronoid, pterygoid reaching quadrate or mandible; prefrontal in contact with nasal; (*Xenopeltis*).
- f) *Colubrinae*; prefrontal not in contact with nasal; maxillary horizontal; no coronoid; tuber costae present; pterygoid reaching quadrate or mandible; movement of maxilla restricted; palate strongly reduced, no coronoidal process; no traces of pelvis:
- α) *Aglypha*; teeth without furrows. (*Abastor*, *Ablabes*, *Ablabophis*, *Achalinopsis*, *Achalinus*, *Acrochordus*, *Adiastema*, *Aeluroglena*, *Agrophis*, *Amastridium*, *Amphiardis*, *Anoplohydrus*, *Anoplophallus*, *Aporophis*, *Aproaspidops*, *Argyrogena*, *Arrhyton*, *Aspidura*, *Asthenophis*, *Atractus*, *Blythia*, *Boodon*, *Bothrolycus*, *Bothrophthalmus*, *Brachyorrhus*, *Calamaria*, *Calamorrhadium*, *Carpophis*, *Cemophora*, *Chamaelycus*, *Chersodromus*, *Chersydrus*, *Chilomeniscus*, *Chlorophis*, *Coluber* (= *Elaphe*), *Compsophis*, *Contia*, *Coronella*, *Cyclagras*, *Cyclocorus*, *Cyclophis*, *Dakaria*, *Dasypeltis*, *Dendrelaphis*, *Dendrophis*, *Diadophis*, *Diaphorolepis*, *Dimades*, *Dinodon*, *Dirosema*, *Drepanodon*, *Dromicodryas*, *Dromicus*, *Drymobius*, *Dryocalamus*, † *Elaphis*, *Elapoides*, *Eusemia*, *Farancia*, *Ficima*, *Fimbrios*, *Gastropyxis*, *Geagras*, *Geatractus*, *Geophis*, *Gonionotophis*, *Gonyophis*, *Grayia*, *Haldea*, *Haplocercus*, *Haplonodon*, *Hapsidophrys*, *Helicops*, *Herpetodryas*, *Heterodon*, *Heteroliodon*, *Homalosoma*, *Hormonotus*, *Hydrablabes*, *Hydraethiops*, *Hydromorphus*, *Hydrops*, *Hypsiglena*, *Hypsirhynchus*, *Idiophis*, *Iguanognathus*, *Lampropeltis*, *Lamprophis*, *Leiopeltis*, *Leptocalamus*, *Leptophis*, *Lepturophis*, *Liparophis*, *Lioheterodon*, *Liophis*, *Liopholidophis*, *Lycodon*, *Lycognathophis*, *Lycophidium*, *Lystrophis*, *Lytorhynchus*, *Macrocalamus*, *Macropisthodon*, *Micaela*, *Micropisthodon*, *Morenoa*, *Nerophidion*, *Nothopsis*, *Oligodon*, *Opheodryas*, *Oreocalamus*, *Oxyrhadium*, *Padangia*, † *Palelaphis*, *Pelophis*, *Petalognathus*, *Philothamnus*, *Phrydops*, *Phrynononax*, *Phyllorhynchus*, *Plagiopholis*, † *Plesiotortrix*, *Poecilopholis*, *Polydontophis*, *Procteria*, *Prosymna*, *Pseudaspis*, *Pseudoboodon*, *Pseudorhadium*, *Pseudoxenodon*, *Pseudoxyrrhophus*, *Pseuduromacer*, † *Pylmophis*, *Rhabdophidium*, *Rhabdops*, *Rhadinea*, *Rhinochilus*, *Rhynchophis*, *Salvadora*, *Scaphiophis*, † *Scytalophis*, *Seminatrix*, *Simocephalus*, *Simophis*, *Simotes*, *Sonora*, *Sordellina*, *Spilotes*, *Stegonotus*, *Stenorhadium*, *Stoliczkaia*, *Storeria*, *Streptophorus*, *Stylopholis*, *Sympholis*, *Symphimus*, *Synchalinus*, *Synophis*, † *Tachyophis*, † *Thamnophis*, *Tapinophis*, *Tetralepis*, *Thrasops*, *Trachyophis*, *Trachischium*, *Tretanorhinus*, *Triaenopholis*, *Trimetopon*, *Trirhinopholis*, *Tropidoclonium*, *Tropidodipsas*, *Tropidonotus*, *Tropidophidium*, *Typhlogeophis*, *Uromacer*,

*Urotheca*, *Virginia*, *Xenelaphis*, *Xenochrophis*, *Xenodermus*, *Xenodon*, *Xenurophis*, *Xylophis*, *Zamenis*, *Zaocys*).

β) *Opisthoglypha*; posterior maxillary teeth with poison conveying furrows (*Alluaudina*, *Amblyodipsas*, *Amplorhinus*, *Aparallactus*, *Apostolepsis*, *Boiga*, *Brachyophis*, *Calamelaps*, *Cantorina*, *Chamaetortus*, *Chilorhinophis*, *Chrysopelea*, *Coelopeltis*, *Coniophanes*, *Conophis*, *Cynodontophis*, *Dipsadoboa*, *Dipsadoides*, *Dispholidus*, *Ditypophis*, *Dromophis*, *Dryophiops*, *Dryophis*, *Elachistodon*, *Elapina*, *Elapomoius*, *Elapops*, *Elapotinus*, *Erythrolamprus*, *Eteirodipsas*, *Eurostus*, *Fordonia*, *Gerardia*, *Geodipsas*, *Hemirhagerrihis*, *Herpeton*, *Himantodes*, *Hipistes*, *Hologerrhum*, *Homalopsis*, *Hydrocalamus*, *Hypoptophis*, *Hypsirhina*, *Ialtris*, *Ithycyphus*, *Langaha*, *Leptodira*, *Lycodryas*, *Lycognathus*, *Macrelaps*, *Macropotodon*, *Manolepis*, *Microelaps*, *Mimophis*, *Miodon*, *Myron*, *Ogmis*, *Oxybelis*, *Oxyrhophus*, *Paroxyrhopus*, *Philodryas*, *Platyinion*, *Polemon*, *Psammodynastes*, *Psammophis*, *Pseudablabe*, *Pseudotomodon*, *Pythondipsas*, *Rhachidelus*, *Rhamphiophis*, *Rhinobothryum*, *Rhinocalamus*, *Rhinostoma*, *Scolecophis*, *Sibon*, *Stenophis*, *Stenorhina*, *Tachymenis*, *Tantilla*, *Taphrometopon*, *Tarbophis*, *Thamnodynastes*, *Theletornis*, *Tomodon*, *Trimerorhinus*, *Trimorphodon*, *Trypanurgos*, *Xenocalamus*, *Xenopholis*).

γ) *Proteroglypha*; anterior maxillary teeth with poison conveying furrows (*Acalyptophis*, *Acanthophis*, *Aipysurus*, *Apistocalamus*, *Aspidelaps*, *Astrotia*, *Brachyaspis*, *Boulengerina*, *Bungarus*, *Callophis*, *Dendraspis*, *Denisonia*, *Diemena*, *Distira*, *Doliophis*, *Elapechis*, *Elapognathus*, *Elaps*, *Emydocephalus*, *Enhydrina*, *Enhydris*, *Furina*, *Glyphodon*, *Hemibungarus*, *Homorelaps*, *Hoplocephalus*, *Hornea*, *Hydrelaps*, *Hydrus*, *Micropechis*, *Naia*, *Notechis*, *Ogmodon*, *Oxyuranus*, *Platurus*, *Pseudapistocalamus*, *Pseudechis*, *Pseudelaps*, *Rhinohoplocephalus*, *Rhynchelaps*, *Sepedon*, *Thalassophis*, *Tropidechis*, *Toxicalamus*, *Utrocalamus*, *Walterinesia*).

- g) *Amblycephalinae*; no coronoid, pterygoid not reaching quadrate or mandible, maxillary horizontal, tuber costae present (*Amblycephalus*, *Dipsas*, *Eberhardtia*, *Haplopelturus*, *Heterorhachis*, *Leptognathus*, *Pseudopareas*).
- h) *Viperinae*; maxillary vertical, abbreviated and freely movable; large poison fangs of which only one functions at a time; pterygoid reaching quadrate or mandible, comparatively few vertebrae; tuber costae present (*Ancistrodon*, *Atheris*, *Atractaspis*, *Azemiops*, *Bitis*, *Causus*, *Cerastes*, † *Coniophis*, *Crotalus*, *Echis*, *Eristicophis*, † *Helagras*, *Lachesis*, † *Laophis*, *Pseudocerastes*, *Sistrurus*, *Trimeresurus*, *Vipera*).

#### Subclass *Archosauria*.

Skull originally with two temporal openings; arches never reduced; only one coracoidal element; no cleithra.

VIII. Superorder *Diaptosauria*.

Quadrupedal Archosaurs with seven cervical vertebrae; scapular arch not reduced; acetabulum not perforated; vertebrae never opisthocoelous or procoelous.

1. Order *Rhynchocephalia*; teeth protothecodont or acrodont; no tabular bone, pineal foramen present, cervical vertebrae short.
  1. Suborder *Sphenodontoidea*; teeth acrodont; strong coronoidal process; large pelvic apertures; humerus with two foramina.
    1. Family *Sphenodontidae*; definition as above.
      - a) *Sphenodontinae*; separate teeth present; no supratemporal († *Chometokadmon*, † *Homoeosaurus*, † *Opistias*, *Sphenodon*).
      - b) † *Saphaeosaurinae*; supratemporal present; jaws edentulous (?) († *Saphaeosaurus*).
    2. Suborder † *Choristodera*; skull longirostral; no coronoidal process; strong dentition on palate; small pelvic apertures; ilium reduced; foramina of humerus reduced.
      1. Family † *Champsosauridae*; definition as above († *Champsosaurus*, † *Simoedosaurus*).
  3. Suborder † *Rhynchosauroidae*; short-snouted; teeth prothothecodont; small pelvic apertures; well developed ilium; humerus with two foramina.
    1. Family † *Howesiidae*; palatal dentition very strong; premaxillary feeble († *Askeptosaurus*, † *Howesia*, † *Noteosuchus*, † *Polysphenodon*).
    2. Family † *Rhynchosauridae*; nares confluent; premaxillary and anterior part of mandible very strong.
      - a) † *Mesosuchinae*; no rostrum († *Brachyrhinodon*, † *Mesosuchus*).
      - b) † *Rhynchosaurinae*; rostrum strongly developed († *Eifelosaurus*, † *Hyperodapedon*, † *Rhynchosaurus*, † *Stenomelopon*).
2. Order † *Thecodontia*; teeth thecodont; no entepicondylar foramen.
  1. Suborder † *Eosuchoidea*; tabular bone present; large pineal foramen; no prelacrymal fossa; intercentra present throughout vertebral column.
    1. Family † *Younginidae*; definition as above († *Paliguana*, † *Youngina*).
  2. Suborder † *Pseudosuchoidea*; no pineal foramen; no tabulare; prelacrymal fossa present; posttemporal fossa open; neck short; humerus without foramina.
    1. Family † *Proterosuchidae*; palatal dentition present († *Proterosuchus*).
    2. Family † *Ornithosuchidae*; palatal dentition absent.
      - a) † *Euparkeriinae*; limb-bones stout; pubis deflected; ventral pelvic elements plate-like († *Browniella*, † *Euparkeria*, † *Heleosaurus*).
      - b) † *Ornithosuchinae*; pubis straight and slender; limb-bones slender; row of dorsal dermal plates narrow († *Ornithosuchus*, † *Saltoposuchus*).

- c) † *Scleromochlinae*; skull short; scapula thin; arm-bones attenuated; metatarsals closely applied against each other; no dermal armour († *Scleromochlus*).
3. Suborder † *Parasuchoidea*; no pineal foramen; strong dermal armour; posttemporal fossa open; neck short; traces of ectepicondylar fossa on humerus.
1. Family † *Aëtosauridae*; brachyrostral, scapula with acromion († *Aëtosaurus*, † *Stegomosuchus*, † *Typtothorax*).
2. Family † *Belodontidae*; longirostral; scapula without acromion.
- a) † *Mystriosuchinae*; excrescences on snout absent or small († *Angistorhinus*, † *Episcoposaurus*, † *Leptosuchus*, † *Mystriosuchus*, † *Palaeorhinus*, † *Promystriosuchus*, † *Rileya*, † *Rutiodon*, † *Stegomus*).
- b) † *Phytosaurinae*; excrescences on snout very strong († *Machaeoroprosopus*, † *Phytosaurus*).
4. Suborder † *Pelycosimia*; pineal foramen present; posttemporal fossa closed; scapula with acromion; neck short, vertebrae with intercentra.
1. Family † *Erythrosuchidae*; facial part of skull short; feeble dermal armour; upper temporal vacuities open; humerus twisted († *Erythrosuchus*, † *Scaphonyx*).
2. Family † *Desmotosuchidae*; facial part of skull long; strong dermal armour; upper temporal vacuity closed († *Desmotosuchus*, † *Stagonolepis*).
5. Suborder † *Proterosauroidae*; neck long, ventral pelvic elements plate-like; semierect animals;
1. Family † *Proterosauridae*; definition as above († *Proterosaurus*).

#### IX. Superorder † *Dinosauria*.

Long necked, originally bipedal Archosauria with numerous cervicals, with thecodont teeth, with prelacrymal fossa, reduced scapular arch and without humeral foramina; upper part of ilium expanded at both ends, ventral pelvic elements more or less elongated; acetabulum perforated; pineal foramen never present.

1. Order † *Saurischia*; pubes directed forwards, pubic protuberance of ilium long.
1. Suborder † *Pachypodosauroidae*; vertebrae not opisthocoelous; teeth coarseley serrated;
1. Family † *Thecodontosauridae*; base of skull broad; condyle directed downward; bipedal animals († *Aristasaurus*, † *Gyposaurus*, † *Thecodontosaurus*).
2. Family † *Anchisauridae*; base of skull narrowed; condyle directed obliquely backward; lightly built animals († *Aëtonyx*, † *Agrosaurus*, † *Ammosaurus*, † *Anchisaurus*, † *Dromicosaurus*, † *Hortolotarsus*, † *Massospondylus*).
3. Family † *Plateosauridae*; condyle directed obliquely backwards; heavily built semi-bipedal animals († *Eucmesaurus*, † *Euskele-*

saurus, † *Gigantoscelus*, † *Melanorosaurus*, † *Pachysaurus*, † *Platosaurs*, † *Sellosaurus*).

2. Suborder † *Coelurosauroidae*; pneumatic bones; anterior extremity a grasping organ; hallux reduced; pes only organ of locomotion.
  1. Family † *Hallopodidae*; well developed conical teeth; pubis comparatively short and slender; caudal vertebrae short; manus pentadactyle; scapula with deltoid crest; calcaneus with projecting tuber; semibipedal or saltatorial († *Hallopus*, † *Procompsognathus*, † *Pterospondylus*).
  2. Family † *Podokesauridae*; pubis long and slender; caudal vertebrae more or less elongated; manus tridactyle; scapula without deltoid crest.
    - a) † *Coelophysinae*; caudals of moderate length († *Coelophysis*).
    - b) † *Podokesaurinae*; caudals strongly elongated († *Podokesaurus*, † *Procerosaurus*, † *Saltopus*, † *Tanystropheus*).
  3. Family † *Compsognathidae*; pubes short with hammer-shaped distal end; caudals moderately elongated; hallux opposable; bipedal animals.
    - a) † *Compsognathinae*; jaws provided with teeth; manus undergoing anisodactylous reduction († *Aristosuchus*, † *Calamospondylus*, † *Cheirostenotes*, † *Coelurus*, † *Compsognathus*, † *Ornitholestes*, † *Saurornithoides*<sup>1</sup>), † *Thecospondylus*, † *Thecocoelurus*, † *Velociraptor*).
    - b) † *Ornithomiminae*; jaws edentulous, three digits of nearly equal length († *Coelosaurus*, † *Elaphrosaurus*, † *Ornithomimus*, † *Oviraptor*, † *Struthiomimus*).
3. Suborder † *Megalosauroidae*; bipedal; bones not pneumatic; teeth with trenchant and serrated edges; manus undergoing reduction; pes with well-developed hallux which functions as a grasping organ.
  1. Family † *Teratosauridae*; incompletely known; one prelacrymal fossa; all vertebrae biplane (?) († *Teratosaurus*, † *Zanclodon*).
  2. Family † *Megalosauridae*; two prelacrymal fossae; skull moderately abbreviated; dentition complete; cervicals opisthocoelous;
    - a) † *Megalosaurinae*; jaws elongated; skull metakinetic; manus well developed († *Altispinax*, † *Antrodemus*, † *Ceratosaurus*, † *Dromaeosaurus*, † *Erectopus*, † *Genyodectes*, † *Megalosaurus*, † *Poikilopleuron*, † *Sarcosaurus*, † *Streptospondylus*).
    - b) † *Aublysodontinae*; jaws and neck abbreviated; skull rigid; manus reduced († *Albertosaurus*, † *Aublysodon*), † *Dryptosaurus*, † *Gorgosaurus*, † *Teinurosaurus*, † *Tyrannosaurus*).

<sup>1</sup>) New name for the piece described and figured by Sauvage (Direct. Travaux Geol. Portugal Lisbonne 1897-98, plate VII, Fig. 7-10) as late caudal of *Iguanodon Prestwichi*.

<sup>2</sup>) This name, proposed by Cope in 1869, is used instead of *Deinodon* (Leidy 1859) for the name *Deinodon* (= *Dinodon*) was preoccupied by Dumeril and Bibron in 1853 for a colubrid snake.

3. Family † *Labrosauridae*; incompletely known; dentition incomplete († *Labrosaurus*, † *Spinosaurus*).
4. Suborder † *Sauropoda*; omnivorous; quadrupedal; cervical and dorsal vertebrae opisthocoelous and with plate-like buttresses; os penis present.
  1. Family † *Morosauridae*; teeth strong; neural spines of anterior dorsals simple; anterior limbs short.
    - a) † *Camarasaurinae*; caudal vertebrae biplane († *Apatosaurus*, † *Camarasaurus*, † *Cetiosaurus*, † *Dystrophaeus*, † *Elosaurus*, † *Haplocanthosaurus*, † *Pelorosaurus*, † *Ornithopsis*).
    - b) † *Titanosaurinae*; caudal vertebrae procoelous († *Hypselosaurus*, † *Macrurosaurus*, † *Titanosaurus*).
  2. Family † *Brachiosauridae*; teeth strong; anterior limbs long († *Bothriospondylus*, † *Brachiosaurus*, † *Dinodocus*, † *Pleurocoelus*).
  3. Family † *Diplodocidae*; teeth reduced; anterior limbs short; anterior dorsal spines bifid († *Amphicoelias*, † *Barosaurus*, † *Dicraeosaurus*, † *Diplodocus*).
2. Order † *Orthopoda*; preentary bone on mandibular symphysis; pubes rotated backward; pubic protuberance of ilium short; never rapacious.
  1. Suborder † *Poposauroidea*; incompletely known; vertebrae biplane; anterior part of ilium expanded downward; bipedal;
    1. Family † *Poposauridae*; definition as above († *Poposaurus*).
    2. Suborder † *Ornithopoidea*; teeth with enamel reduced at one side; bipedal; without dermal armour;
      1. Family † *Kalodontidae*; teeth comparatively few in number but strongly ornamented.
        - a) † *Nannosaurinae*; small but incompletely known, lightly built († *Nannosaurus*).
        - b) † *Hypsilophodontinae*; premaxillary with teeth, ischium dilated, pubis long; cervical vertebrae flat († *Geranosaurus*, † *Hypsilophodon*, † *Stenopelix*).
        - c) † *Camptosaurinae*; no premaxillary teeth, ischium rod-shaped, few alveoli, pubis long; cervical vertebrae flat († *Anoplosaurus*, † *Camptosaurus*, † *Dryosaurus*, † *Dysalotosaurus*, † *Kangasaurus*, † *Laosaurus*, † *Priodontognathus*, † *Rhabdodon*, † *Thescelesaurus*).
        - d) † *Iguanodontinae*; no premaxillary teeth, numerous alveoli, pubis abbreviated, ischium rod-shaped; cervical vertebrae opisthocoelous († *Craspedodon*, † *Iguanodon*).
      2. Family † *Trachodontidae*; teeth very numerous, not sculptured, rapidly replacing each other; opisthocoelous cervicals.
        - a) † *Protrachodontinae*; premaxillary short; relatively few teeth († *Orthomerus*, † *Syngonosaurus*).
        - b) † *Trachodontinae*; very numerous teeth, skull without ornament (provisional group!) † *Claosaurus*, † *Edmontosaurus*, † *Hadrosaurus*, † *Kritosaurus*, † *Thespesius*, † *Trachodon*).

- c) † *Saurolophinae*; very numerous teeth; males with median horn-like protuberance on skull († *Parasaurolophus*, † *Prosaurolophus*, † *Saurolophus*).
- d) † *Lambeosaurinae*; very numerous teeth, males with helmet-like crest on skull († *Cheneosaurus*, † *Corythosaurus*, † *Lambeosaurus*, † *Hypacrosaurus*).
3. Suborder † *Thyreophoroidea*, teeth with multicuspid margin and striated crown, more or less complete dermal armour. —
1. Family † *Psittacosauridae*; skull high, broad posteriorly; upper temporal vacuities present; teeth comparatively simple and few in number; semiquadrupedal; pseudopectineal process short; ischium without flange; very feeble dermal armour († *Psittacosaurus*, † *Protiguanodon*). —
2. Family † *Stegosauridae*; base of cranium narrow; upper temporal vacuities present; condyle oblique; anterior limbs short; dermal bones keeled or plate-like. —
- a) † *Scelidosaurinae*; coronoidal process on mandible; teeth acuminate; spines on shoulder († *Echinodon*, † *Scelidosaurus*).
- b) † *Stegosaurinae*; no coronoidal process; teeth inflated; tail bearing dermal spines († *Anthodon*, † *Craterosaurus*, † *Diracodon*, † *Kentrurosaurus*, † *Lametasaurus*, † *Omosaurus*, † *Stegosaurus*).
3. Family † *Acanthophoridae*; skull small; base of cranium broad; upper temporal vacuities reduced; cranial roof rounded; condyle directed downward; premaxillary tooth-bearing; quadrate feeble, strongly inclined forward; scapula with acromion; anterior limbs long; back covered with spines; tail with flat plates († *Acanthopholis*, † *Hylaosaurus*, † *Stegoceras*, † *Struthiosaurus*, † *Troodon*).
4. Family † *Nodosauridae*; skull large; cranial roof flat; without temporal vacuities, base of cranium narrow, condyle oblique; dentition much reduced; neck and back covered with plates in the middle and spines on the side. Tail with vertical plates; no acromion on scapula († *Ankylosaurus*, † *Dyoplosaurus*, † *Erroplocephalus*, † *Hierosaurus*, † *Hoplitosaurus*, † *Nodosaurus*, † *Palaeoscincus*, † *Panoplosaurus*, † *Polacanthus*, † *Sarcolestes*, † *Stegopelta*).
5. Family † *Ceratopsidae*; skull with nuchal fringe and generally with horns; no armour on body.
- a) † *Leptoceratopsinae*; no horns; fringe well developed, mandible robust († *Leptoceratops*, † *Protoceratops*).
- b) † *Ceratopsinae*; frontal horns larger than nasal horn († *Anchiceratops*, † *Arrhinoceratops*, † *Ceratops*, † *Diceratops*, † *Eoceratops*, † *Pentaceratops*, † *Triceratops*, † *Torosaurus*).
- c) † *Monocloniinae*; nasal horn larger than frontal horns († *Brachyceratops*, † *Chasmasaurus*, † *Monoclonius*, † *Styracosaurus*).

X. Superorder *Praepubici*.

Thecodonts without pineal foramen and with seven cervicals, with more or less reduced scapular arch and with separate prepubis. Acetabulum perforated.

1. Order *Crocodylia*; quadrupedals, teeth conical, quadrates rotated backward, neck short, root of the tail thick, no clavicles.
  1. Suborder †*Procrocodylia*; carpals not modified; postorbital bar not depressed.
    1. Family †*Sphenosuchidae*; no internarial septum; coracoids slender; no dermal armour (†*Sphenosuchus*).
    2. Family †*Erpetosuchidae*; internarial septum present; coracoids dilatated at both ends; dermal armour present (†*Dyoplax*, †*Erpetosuchus*, †*Erythrochamps*, †*Nothochamps*, †*Pedetico-saurus*).
  2. Suborder *Crocodyloidea*; modified and elongated carpals<sup>1)</sup>.
    1. Family †*Atoposauridae*; brevirostral; nares divided by nasal bones; postorbital arch depressed; small foramen in mandible; vertebrae biplane; humerus with foramen ectepicondyloideum (?); no ventral armour (†*Alligatorellus*, †*Alligatorium*, †*Atoposaurus*).
    2. Family †*Notosuchidae*; brevirostral; orbits large; postorbital arch depressed; mandible with large foramen; splenial entering into symphysis; vertebrae biplane; no armour.
      - a) †*Notosuchinae*; nares confluent (†*Cynodontosuchus*, †*Notosuchus*).
      - b) †*Lybicosuchinae*; nares separated; palate modified (†*Lybicosuchus*).
    3. Family †*Stomatosuchidae*; facial part of skull flat and broad but very strongly elongated; mandible edentulous and capable of dilatation in the symphyseal region so as to form a pelican-like pouch, cervical vertebrae procoelous, no dermal armour (†*Stomatosuchus*).
    4. Family †*Teleosauridae*; longirostral; frontals bordering the very large upper temporal vacuities; nares confluent; splenial entering into symphysis; vertebrae biplane; humerus without foramen.
      - a) †*Teleosaurinae*; postorbital bar not depressed; prelacrymal fossa present; dermal armour present (†*Mycterosuchus*, †*Pelagosaurus*, †*Psephoderma*, †*Steneosaurus*, †*Teleidosaurus*, †*Teleosaurus*).
      - b) †*Dyrosaurinae*; postorbital bar not depressed; no prelacrymal fossa; no dermal armour (†*Dyrosaurus*).
      - c) †*Geosaurinae*; postorbital bar depressed; prefrontals enlarged; no dermal armour; extremities modified for swimming; caudal fin present (†*Dacosaurus*, †*Enaliosuchus*, †*Geosaurus*, †*Metriorhynchus*, †*Neustosaurus*).

<sup>1)</sup> A detailed discussion of the classification of the *Crocodylia* is going to be given in the *Palaeontologia Hungarica*.



5. Family † *Goniopholidae*; frontals bordering the small supra-temporal fossae; postorbital bar depressed; nares confluent; foramen mandibulae very small; choanae in front of pterygoids; splenial entering into symphysis; vertebrae biconcave; humerus without foramen.
- a) † *Goniopholinae*; prelacrymal fossa present; brevirostral; dorsal dermal plates with pegs, ventral armour polygonal († *Amphicotylus*, † *Bottosaurus*, † *Coelosuchus*, † *Goniopholis*).
  - b) † *Bernissartinae*; prelacrymal fossa absent; brevirostral; dorsal dermal plates with pegs, ventral armour in rows († *Bernissartia*, † *Nannosuchus*<sup>1</sup>), † *Theriosuchus*).
  - c) † *Pholidosaurinae*; longirostral; dorsal dermal plates with pegs; ventral armour polygonal († *Crocodylimus*, † *Hyposaurus*, † *Machimosaurus*, † *Macrorhynchus*, † *Petrosuchus*, † *Pholidosaurus*, † *Teleorhinus*).
  - d) † *Hyposaurinae*; longirostral; supratemporal fossae large, dorsal dermal scutes without pegs († *Hyposaurus*).
  - e) † *Congosaurinae*; longirostral; dorsal dermal plates with pegs ventral armour in rows († *Congosaurus*).
6. Family *Crocodylidae*; postorbital bar depressed; nares confluent; large foramen mandibulae; choanae bordered by pterygoids only; vertebrae procoelous; humerus without foramen; no pegs on dorsal dermal scutes; ventral armour, when present, in transverse rows.
- a) † *Leidyosuchinae*; brevirostral; no preorbital fossa; splenial entering into symphysis († *Allognathosuchus*, † *Doratodon*, † *Heterosuchus*, † *Leidyosuchus*).
  - b) *Crocodylinae*; brevirostral; splenial excluded from symphysis; parietals touching postfrontals; no preorbital fossa (*Alligator*, † *Brachychampsia*, *Caiman*, † *Caimanoidea*, *Crocodylus*, † *Deinosuchus*, † *Diplocynodon*, *Jacare*, *Osteolaemus*, † *Palimnarchus*, † *Phobosuchus*, † *Thecachampsia*).
  - c) † *Thoracosaurinae*; longirostral; parietals not in contact with postfrontals; preorbital fossa present († *Holops*, † *Thoracosaurus*).
  - d) † *Hylaeochampsinae*; palate modified; longirostral († *Hylaeochampsia*).
  - e) *Gavialinae*; longirostral; parietals touching postfrontals; no preorbital fossa († *Eosuchus*, † *Euthecodon*, *Gavialis*, † *Gavialosuchus*, † *Gryphosuchus*, † *Ramphosuchus*, *Tomistoma*).
2. Order † *Pterosauria*; quadrate rotated forward; no clavicles; no episternum; anterior limbs modified to wings; humerus without foramen; no dermal armor; skeleton pneumatic; root of tail attenuated.
1. Suborder † *Tribelesodontoidea*; short-winged; long-tailed; sternum without median crest; mandibular teeth tricuspid.

<sup>1</sup>) The entry of *Nannosuchus* among the *Bernissartinae* is based on an investigation of the type.

1. Family † *Tribelesodontidae*; definition as above († *Tribelesodon*).
2. Suborder † *Rhamphorhynchoidea*; long-winged; long-tailed; sternum crested; metacarpal of wing-finger short and robust; conical teeth.
  1. Family † *Dimorphodontidae*; broad praepubes; skull with huge preorbital fossa († *Dimorphodon*).
  2. Family † *Rhamphorhynchidae*; narrow praepubes; antorbital fossa moderate.
    - a) † *Anurognathinae*; skull short and high, antorbital fossa relatively large; wings very elongated († *Anurognathus*).
    - b) † *Scaphognathinae*; skull elongated; antorbital fossa relatively large; anterior end of mandible blunt († *Parapsicephalus*, † *Scaphogathus*).
    - c) † *Rhamphorhynchinae*; skull elongated; antorbital fossa small; anterior end of mandible pointed († *Campylognathus*, † *Dorygnathus*, † *Rhamphorhynchus*).
3. Suborder † *Pterodactyloidea*; short-tailed; metacarpal of wing-finger elongated; sternum crested.
  1. Family † *Pterodactylidae*; short-winged; praepubis broad; jaws with teeth.
    - a) † *Pterodactylinae*; teeth robust, no notarium († *Cycnorhamphus*, † *Ptenodracon*, † *Pterodactylus*).
    - b) † *Ornithodesminae*; notarium present, teeth robust († *Ornithodesmus*).
    - c) † *Ctenochasminae*; snout elongated, teeth hairlike, thin and long († *Ctenochasma*, † *Gnathosaurus*).
  2. Family † *Ornithocheirinae*; incompletely known; long winged; jaws with teeth; vertebrae column with notarium († *Criorhynchus*, † *Lonchodectes*, † *Ornithocheirus*).
  3. Family † *Pteranodontidae*; long winged; jaws edentulous; praepubis narrow; vertebrae column with notarium († *Nyctosaurus*, † *Ornithostoma*, † *Pteranodon*).