

represent the most generalized type of Reptiles, the five tarsal bones of the Palæohatteria (1 to 5) with which the five metatarsals (I, II, III, IV, V) were articulated are shown in Fig. 1151, in which T, Fi are parts of the tibia and fibula.

Other Reptiles are the Anomodonts and Theromorphs. The former have large tusks in the jaws, and no other teeth; they include the genus *Dicynodon* of Owen, which has species in the Permian Beaufort beds of South Africa, and also in the overlying Triassic beds.

1. **Echinoderms.**—Crinoids near *Cyathocrinus*; Echinoderms of the genus *Archæocidaris*.

2. **Molluscoids.** *Brachiopods.*—*Spirifer alatus* Schloth., England, Lower Zechstein in Saxony—some specimens $2\frac{1}{2}$ inches broad; *Spiriferina cristata* Dav., Zechstein, Germany; *Productus horridus* Sow., England, Germany, characteristic particularly of the Lower Zechstein, and occurring also in the Kupferschiefer; *Strophalosia excavata* Gein., England, Germany, *S. Goldfussi*, *ibid.*; the species of the genera *Productus* and *Strophalosia* are exceedingly abundant in individuals; *Camarophoria Schlotheimi* von Buch, Russia, Germany, England; *C. superstes*, Russia.

3. **Mollusks.** (a) *Lamellibranchs.*—*Pseudomonotis speluncaria* Beyr., England, Russia, Germany, in the Lower Zechstein; *Clidophorus Pallasi* Gein., Russia, Germany; *Myalina squamosa* Sedg., Russia, England; *Avicula Kazanensis* Vern., Russia; *Bakewellia antiqua* King, England, Russia, Germany; *Schizodus dubius* M., common in England, Germany, Russia; *S. Schlotheimi* Gein., *S. obscurus* Sow., and *S. truncatus* King. The genus *Schizodus* is of the same family with *Trigonia*, a characteristic genus in the Reptilian age; it commenced in the Devonian and ends with the Permian.

(b) *Gastropods* are rare fossils in the Permian. There are a few species of *Murchisonia*, *Pleurotomaria*, and *Straparollus*, Paleozoic genera, and of *Dentalium*, *Natica*, *Turbo*, etc.

(c) *Pteropods* occur of the genera *Theca* and *Conularia*.

(d) *Cephalopods* existed, and among them two or three species of *Orthoceras* and *Nautilus*.

4. **Crustaceans.**—No *Trilobites* are known. *Ostracoids* are common. Under *Tetradecapods*, the *Amphipod*, *Prosoponiscus problematicus* Schloth., Durham, England. Under *Decapods*, besides *Macrurans*, there is reported a Crab or *Brachyuran*, from the Permian, by von Schauroth, who named it *Hemitrochiscus paradoxus*. It is $\frac{1}{8}$ of an inch long. Whether a true Crab or not is doubtful.

5. **Vertebrates.** *Fishes.*—*Palæoniscus Freieslebeni* Agassiz is common in the Kupferschiefer, and is found also in the Coal-measures in England, at Ardwick. Other species are: *Palæoniscus elegans* Sedgw., *P. comptus* Ag., *Platysomus macrurus* Ag., *Pl. gibbosus* Bl., *Acrolepis Sedgwickii* Ag., *Pygopterus mandibularis* Ag., *Cœlacanthus granulatus* Ag., etc. *Janassa bituminosa* Münster. and *Wodnika striatula* Münster. are species of Cestraciont sharks from the Kupferschiefer.

The Paleozoic character of the life of the Permian, as already shown, is strongly marked. Geinitz observes, further, that the *Terebratula* (*Dielasma*) *elongata* Schloth. of the Zechstein approaches a Devonian form; *Camarophoria Schlotheimi* Kg. (Zechstein) is near the Carboniferous *C. crumena* Mart.; *Spirifer Clannyanus* Dav. (Zechstein), near the Carboniferous *S. Uriei*; *Spiriferina cristata*, near the Carboniferous *S. octoplicata*. The genus *Schizodus* ends with the Permian, as well as *Orthis*, *Camarophoria*, *Productus*, and *Strophalosia*.