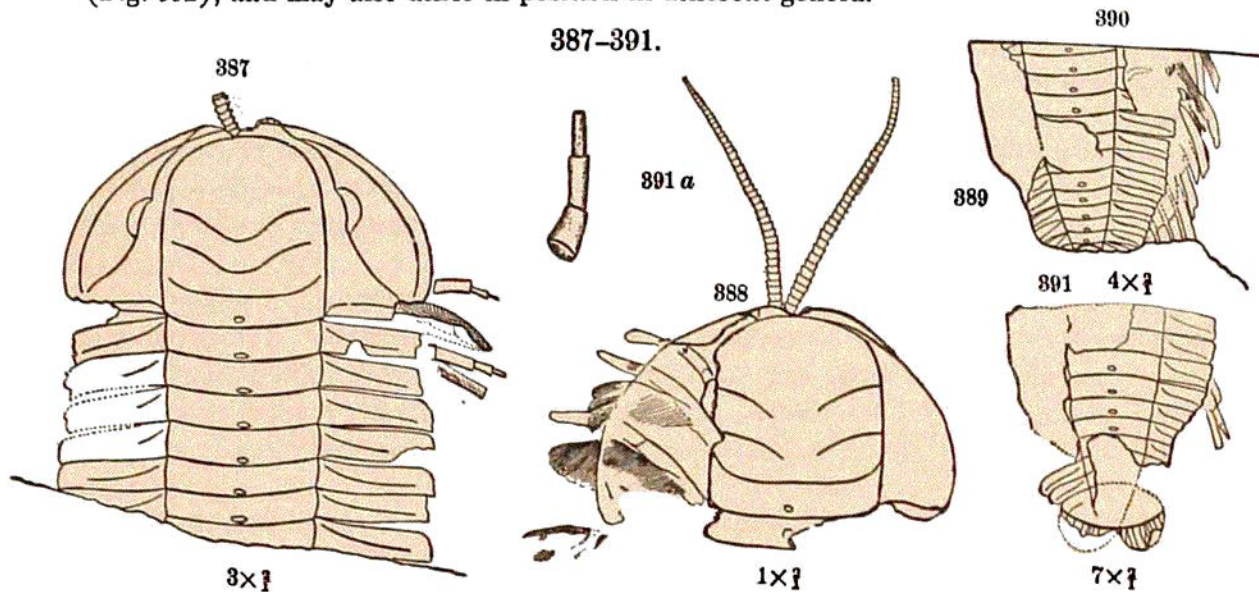


*hypostome*. The eyes may be very large, as in *Dalmanites* (Fig. 386), *Phacops*, and *Asaphus* (Fig. 689), or small, as in *Homalonotus*; or not at all projecting, as in *Trinucleus* (Fig. 692); and may also differ in position in different genera.



**TRIARTHURUS BECKII.**—Figs. 387, 388, specimens with antennæ and portions of cephalic and thoracic appendages ( $\times 2$ ); 389, portion of antennæ ( $\times 10$ ); 390, posterior half, with remains of feet ( $\times 2$ ); 391 *a*, one of the jointed appendages ( $\times 6$ ); 391, one of the feet. Matthew.

Specimens of Trilobites are almost always without appendages of any kind. Evidence of pairs of slender limbs extending the whole length of the body were first observed in a specimen of *Asaphus platycephalus*, by Billings, in 1870; and later, in 1883, in another American species, *A. megistos*, by Mickleborough. New proof was announced by Walcott, in 1876, 1877, and 1881, from slicings of some hundreds of specimens of a species of each of the genera *Calymene* and *Ceraurus*; who reached the conclusion that there were four pairs of slender appendages to the head-portion, and a series along the whole under surface to the extremity of the pygidium or abdomen. He also obtained evidence that the thoracic legs had at bases a branch (epipodite), and that they carried also an appendage in the form of slender filaments, some of which were spiral, which he described as probably branchial. Mr. Walcott also gives figures of what he regards as the fossil ova of the Trilobites.

These results have been in the main confirmed and made more definite from specimens of *Triarthrus Beckii*, found by W. S. Valiant, and described, in 1893, by W. D. Matthew, some of which are represented in Figs. 387-391, from Matthew's paper. In addition to the existence of legs, the specimens figured show that Trilobites had slender antennæ of the first pair (Figs. 387, 388), consisting of short joints (Fig. 389); and that the slender, bifid, jointed feet were, in part at least, natatory organs, probably, by plumose setæ (as is indicated in Fig. 388 and others). The presence of a second pair of antennæ is probable, but none is indicated. The specimens were from a thin layer in the Utica shale near Rome, Oneida County, New York.

Later investigations of specimens from the same locality, by C. E. Beecher (1893, 1894) have ascertained that the abdominal appendages are *branchial*, as in modern Isopods; he has also made out the precise form and other characters of the thoracic limbs, showing that each consisted of a seven-jointed leg, and a long natatory appendage. (See page 512 for figures.)

The following table exhibits the homologies, as regards segments and their appendages, of different types of Crustaceans. 0 indicates the absence of a segment, and the Roman numerals above, the normal number of the segments in the cephalothorax and abdomen.