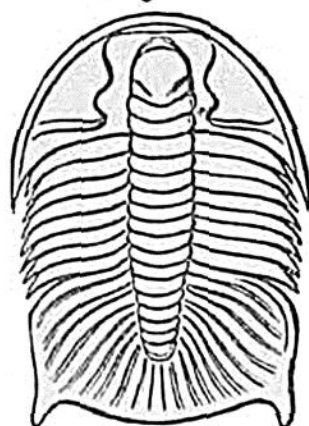


sedimentary rocks near the head-waters of the Mississippi, lying at the base of the whole Silurian series. They are many hundred feet thick, and for the most part similar in character to the Potsdam Sandstone above described, but including in their upper portions intercalated bands of magnesian limestone, and in their lower some argillaceous beds. Among the shells of these strata are species of *Lingula* and *Orthis*, and several trilobites of the new genus *Dikelocephalus* (fig. 618). These rocks, occurring in Iowa, Wisconsin, and Minnesota, seem destined hereafter to throw great light on the state of organic life in the Cambrian period. Six beds containing trilobites, separated by strata from 10 to 150 feet thick, are already enumerated.

Fig. 618.



*Dikelocephalus Minnesotensis*, Dale Owen.  $\frac{1}{2}$  diameter.  
A large crustacean of the Olenoid group. Potsdam Sandstone, Falls of St. Croix, on the upper Mississippi.

*Relation of Silurian and Cambrian Faunas.*—That there is a considerable connection between the Cambrian and lower Silurian faunas, notwithstanding that nearly every species may be distinct, seems evident; but it may not be a closer one than that existing between the Upper Silurian and Devonian. This I infer from the following facts,—that in Bohemia, where the Cambrian or primordial fauna of Barrande is best developed, it consists mainly of Trilobites; and of this order more than two-thirds of the genera and all the species, more than twenty in number, are, with one exception (*Agnostus pisiformis*), distinct from the Silurian. But M. Barrande observes that out of thirty-nine *Silurian* genera of Trilobites, no less than eleven pass upwards into the Devonian. If, therefore, we had only trilobites in the latter, its generic relationship to the Silurian fauna would appear greater than that of the Silurian to the Cambrian. And, though the details of the English rocks of this age are not yet fully known, the species at least appear all to be distinct. The same holds good with regard to the fossils of the Swedish strata, and, as we have seen, to those of America.

A distinctive character, therefore, is given to the fauna of this period, by which we seem to be carried one step farther back into the history of organic life.

#### *Supposed Period of Invertebrate Animals.*

We have seen that in the upper part of the Silurian system a bone-bed occurs near Ludlow, in which the remains of fish are abundant, and amongst them some of a highly organized structure, referred to the genus *Onchus*. We are indebted to Sir R. Murchison for having first announced, in 1840, the discovery of these ichthyolites, and he then spoke of them as “the most ancient beings of their class.” In his new and excellent work, entitled “*Siluria*” (p. 239), he reverts to the opinion formerly expressed by him, and observes that the active researches of the last fourteen years in Europe and America “have failed to modify that