



## OHIO TRILOBITES

Many people have an aversion to “bugs” and other crawly critters, but when it comes to fossils an extinct “bug,” known as a trilobite (TRY-lo-bite), is among the most highly prized specimens. There is such a fascination with trilobites that in 1985 an Ordovician trilobite genus, *Isotelus*, was named the official state invertebrate fossil of Ohio (see photo on reverse side).

Trilobites have been found in Cambrian (not exposed at the surface in Ohio), Ordovician, Silurian, Devonian, Mississippian, and Pennsylvanian rocks in Ohio. Although a few trilobite species survived until the middle of the Permian, when they finally became extinct, no Permian species are known from Ohio because by Permian time the sea in which the trilobites lived had withdrawn from the area that is now Ohio.

Trilobites belong to a class of animals known as *Trilobita*, a subdivision of the phylum Arthropoda, which includes insects, crabs, lobsters, scorpions, centipedes, and spiders. The name “trilobite” is derived from the three-lobed longitudinal division of the body (see diagram on reverse side). Trilobites lived exclusively in marine seas from their first appearance at the beginning of the Cambrian Period (542 million years ago) to the end of the Permian Period (251 million years ago). The majority of trilobites crawled on or burrowed through soft, muddy, sea-floor sediments and obtained nutrients by ingesting mud, somewhat like an earthworm. They are thought to have hatched from eggs, as this is the reproductive method employed by all living arthropods. Also like living arthropods, trilobites grew by shedding (molting) the hard outer body covering known as the exoskeleton. Fragments of shed exoskeletons of trilobites are common fossils. In fact, most specimens are fragmentary. Less commonly, trilobites are found as complete specimens, either outstretched (prone) or enrolled. It is thought that trilobites enrolled for protection, much like modern pill bugs do.

Some of the more common trilobites found in Ohio rocks are discussed below. The term “common,” however, should not be confused with “easy to find.” In this discussion “common” refers to the fact that if one finds a trilobite in Ohio it is likely to be one of the species discussed below.

### CAMBRIAN TRILOBITES



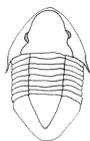
*Cedaria*

Although no rocks of Cambrian age are exposed in Ohio, a Cambrian trilobite was identified in rock cored from the Cambrian rocks underlying Warren County. The trilobite was identified as *Cedaria*, cf. *C. prolifica* (Hansen, 1992). Species of *Cedaria* reached a length of 2 inches.

### ORDOVICIAN TRILOBITES



*Flexicalymene*



*Isotelus*



*Cryptolithus*



*Ceraurus*

At least 20 species of trilobites have been collected from Ordovician rocks in Ohio. The tristate area of north-central Kentucky,

southeastern Indiana, and southwestern Ohio is world renowned for abundant and well-preserved trilobites and other marine fossils. Although trilobites can be found in both limestone and shale in this region, the shale beds have produced the greatest number of specimens.

The most common Ordovician trilobite is *Flexicalymene*. Three species are recognized: *F. meeki*, *F. retrorsa*, and *F. granulosa*. Adult specimens are about 2 inches long and are commonly preserved enrolled.

*Isotelus*, the state fossil, is common in Ordovician rocks in the Cincinnati area; however, most specimens are fragmentary and complete specimens are rare. Enrolled specimens can be collected after they have weathered out of a shale bed, but prone specimens generally must be excavated from fresh, unweathered shale. Prone specimens are rare because the shale holding the trilobite together quickly weathers when exposed to the elements, causing the specimen to disintegrate. Fragments and complete specimens also are common in limestone beds. Three species of *Isotelus* are currently recognized in Ordovician rocks in Ohio: *I. maximus*, *I. brachycephalus*, and *I. gigas*. *Isotelus maximus* is the most common species. However, *I. brachycephalus* and *I. maximus* may prove to be the same species when they are more thoroughly studied. All species of *Isotelus* are characterized by a low, flat profile, smooth cephalon and pygidium, eight thoracic segments, and a broad axial lobe. *Isotelus* is one of the largest trilobites known—some specimens are more than 18 inches long.

*Cryptolithus tessellatus*, known as the “lace collar” trilobite because of a distinctive fringe on the cephalon, and *Ceraurus milleranus*, which has a winglike cephalon, are rare trilobites in the oldest Ordovician rocks in the Cincinnati area. *Cryptolithus* reached a length of about  $\frac{3}{4}$  inch; *Ceraurus* reached a length of about 2 inches.

### SILURIAN TRILOBITES



*Calymene*



*Trimerus*



*Bumastus*

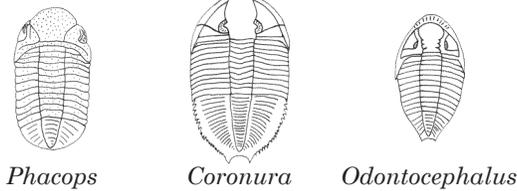
Silurian rocks of Ohio contain several trilobite genera. However, unlike the well-preserved Ordovician trilobites, most Silurian specimens are preserved as casts or molds in limestones and dolomites of western Ohio.

*Calymene*, which attained a length up to 3 inches, is similar in appearance to *Flexicalymene*, of Ordovician age, but has a more semicircular cephalon and very rounded genal angles. *Calymene niagarensis* is the most common species of this genus found in Ohio.

*Trimerus* has a triangular cephalon, rectangular glabella, and triangular pygidium that has a small terminal spine. It reached lengths of 8 inches and is the largest Silurian trilobite in Ohio. One of the more common species, *T. delphinocephalus*, is particularly abundant in Silurian rocks in south-central Ohio.

*Bumastus* has a smooth cephalon and pygidium similar to that of *Isotelus*; however, it has a more inflated (thicker) profile than does *Isotelus*. *Bumastus* reached a length of 6 inches. An unusual aspect of this trilobite is that its length is almost equal to its width, giving it a nearly oval outline. *Bumastus niagarensis* is the most common species of this genus in Ohio.

## DEVONIAN TRILOBITES

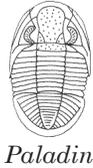


Devonian rocks of Ohio are world famous for their abundant and well-preserved trilobites. The best known Devonian trilobite, and probably the best known Ohio trilobite, is *Phacops rana*. From the 1920's to the 1970's, specimens of this species were collected by the thousands from a quarry near Sylvania, west of Toledo. *Phacops rana* has an inflated glabella and large, froglike eyes, hence the specific name of *rana*, Latin for frog. Most specimens are less than 2 inches long. Almost all Ohio specimens of *Phacops rana* have been collected from shales of the Silica Formation of Middle Devonian age in quarries in northwestern Ohio. These quarries are now closed to fossil collecting.

*Coronura* is the largest Devonian trilobite found in Ohio, reaching lengths in excess of 8 inches. The cephalon has large eyes and genal spines. The border of the pygidium has numerous pleural spines. *Coronura* is found primarily in the Columbus Limestone, of Middle Devonian age.

The distinctive cephalon of *Odontocephalus* has a series of oval perforations along the anterior margin and long genal spines. *Odontocephalus* is known from the Columbus Limestone and specimens commonly exceed 2 inches in length.

## MISSISSIPPIAN TRILOBITES



Mississippian rocks in Ohio are typically sandstones and shales that were deposited offshore from fluvial deposits to the east in Pennsylvania. This environment was not particularly suitable for trilobites. Of the eight Mississippian genera known from Ohio, only *Paladin* can be considered common. *Paladin* has a semicircular cephalon, prominent medium-sized eyes, and stout genal spines. The surface of the entire exoskeleton has a fine, granular texture. *Paladin* reached a length of 1½ inches.

## PENNSYLVANIAN TRILOBITES



By Pennsylvanian time the great coal-swamp deltas, formed from sediment eroded from the rising Appalachian Mountains, had periodically nearly excluded the sea from Ohio. Thin beds of marine limestone and shale represent brief incursions of the sea over the coal-swamp deltas. Although Pennsylvanian trilobites are very rare and diminutive, three genera—*Ditomopyge*, *Sevillia*, and *Ameura*—are known from Pennsylvanian rocks in Ohio. The most common genus is *Ditomopyge*.

*Ditomopyge* has a semicircular to parabolic cephalon and pygidium. The glabellar region is covered by fine to coarse granules. The cephalon has stout genal spines and large crescent-shaped eyes. The pygidium is distinct from the thorax and has a moderately wide border flange. Two species of *Ditomopyge*, *D. scitula* and *D. decurtata*, are known from Pennsylvanian rocks in Ohio. Each of these species can reach a length of 1¼ inches.

## FURTHER READING

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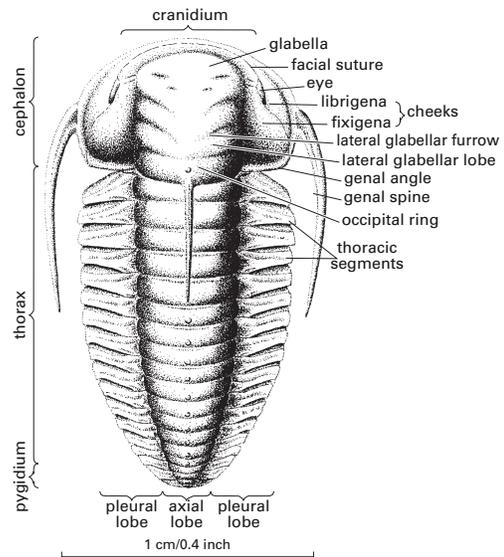
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Generalized morphological features of a trilobite (from Feldmann and Hackathorn, 1996).



*Isotelus maximus* is among the largest known trilobites and was named the state invertebrate fossil of Ohio in 1985.

