

SPINE FUNCTION IN THE ODONTOPLEURID TRILOBITES LEONASPIS AND DICRANURUS FROM THE DEVONIAN OF OKLAHOMA

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The Lower Devonian Haragan Formation of Oklahoma has well preserved odontopleurid trilobites found in repeated calcareous mudstones. These layers (5-9cm.thick) represent distal tempestites that rapidly buried and preserved completely articulated odontopleurids which provide important paleobiological information. The genal and pleural spines of Leonaspis williamsi and Dicranurus hamatus elegantus of the Haragan Formation are examined and compared.

In Leonaspis the ventrally directed genal and pleural spines are straight and lay flat. The first pleural spine is the longest followed by progressively shorter pleural spines. Several collected and prepared enrolled specimens have the spines radiating outward. In an enrolled position the spines would protect Leonaspis from a large predator.

The pleural spines of Dicranurus have a very different pattern from Leonaspis. The first three spines are short and laterally directed, the fourth, sixth and seventh are very long, curved and directed ventrally, the eighth, ninth and pygidial spines are short and decrease in length toward the pygidium. There is no pleural spine on the fifth thoracic segment and the genal spine is very long and curved. On these spines at many growth stages there is direct and indirect evidence of being encrusted based on the following: (1) Epibionts such as bryozoans, brachiopods and a crinoid; 2) Endoliths (25-150 microns in diameter) of unknown origin are found all over Dicranurus but are predominantly on the spines; 3) Pyrite (now limonite) coating the spines apparently formed from the decay of organic matter. If the source of the organic matter came from the trilobite, then pyrite would be found all over Dicranurus. However, it is only found randomly on the spines. This pattern is like some of the encrusting bryozoans suggesting that the source of the organic matter may be from an encrusting organism.

It is doubtful that the pleural spines of Dicranurus would be adapted for resting on the bottom when bryozoans are found encrusting the entire surface of the spine. However, the very long pleural and genal spines with attached organisms would break up the outline of Dicraurus making it less conspicuous to a predator.