Communications

Trilobite Protaspids Showing Superfamily Differences

Fundamental differences of suprageneric nature are indicated in the structure of immature forms of the trilobites *Olenellus gilberti* Meek and *Antagmus* sp. from beds of Early Cambrian age and *Poliella denticulata* Rasetti from beds of early Middle Cambrian age in the Pioche district of Nevada. The three species are among the oldest known representatives, respectively, of the superfamilies Olenelloidae, Ptychoparioidae, and Corynexochoidae.

The structural differences of the immature forms are shown principally in the development of the glabella. In *Antagmus* sp. the glabella passes through three phases before reaching a condition comparable to that of the adult. In the youngest phase, the protaspid, the glabella is roughly T-shaped and it reaches to the anterior margin of the cephalon. The T-shape results from the nondifferentiation of the ocular lobe from the anterior part of the glabella. In the second phase, the earliest meraspid degrees, dorsal furrows outlining the anterior part of the glabella differentiate the glabella from the ocular lobes, but the glabella continues to extend to the anterior margin of the cephalon. In the third phase, later meraspid degrees, the frontal area appears and the glabella becomes progressively shorter until it reaches the adult condition. Similar developmental sequences are shown by Störmer [*Norsk Geol. Tidsskr.* **21**, pl. 1 (1942)] for *Blainia*(?) and *Olenus*.

In the protaspid of *Poliella denticulata* Rasetti the anterior portion of the glabella is already differentiated from the ocular lobes, comparable to phase two of the glabellar development of *Antagmus* sp.

In the protaspid of *O. gilberti* Meek the glabella and ocular lobes are differentiated and the frontal area is developed to a degree comparable to phase three of the glabellar development of *Antagmus* sp. The protaspid of *O. gilberti* Meek is therefore much more like the adult than the protaspids of *P. denticulata* Rasetti and *Antagmus* sp. Similar protaspids are illustrated by Störmer (*op. cit.*) for species of the olenellid genera *Elliptocephala* and *Paedumias*.

These observations indicate that there are recognizable differences among even the smallest fossilized remains of some of the earliest representatives of three groups of trilobites considered by most authors as superfamilies, and that these differences are shared by other trilobites placed in those superfamilies. The study of trilobite protaspids may be of fundamental importance to any future considerations of the basic principles of trilobite classification.

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Sclerotia in an Operculate Discomycete

True sclerotia have apparently never been reported in an operculate discomycete. Members of the genus *Wynnea,* however, produce an anomalous structure termed a sclerotium by some authors (*1, 2*). One of us (*3*) has referred to the structure in *Wynnea* as a "sclerotium," recognizing that it differs fundamentally from a true sclerotium in its internal structure. Recently the development of true sclerotia in an apparently undescribed species of *Pyronema* has been observed and is reported in this note.

Sclerotia, but no apothecia, were observed to develop on a coconut-milk medium supplemented with essential mineral elements and on a synthetic medium, Czapek's I (*4*). The latter medium has consistently yielded sclerotia in liquid and in 1.5 percent agar cultures. The sclerotia are spherical to irregular in shape, generally no larger than 1 mm in any dimension, and occur scattered over the surface of the medium. In cross section, the sclerotia are characterized by an outer rind of compacted, distorted, dark-colored cells and an inner, almost colorless medulla of thinner walled, less compacted pseudoparenchyma. The sclerotial anatomy is strikingly reminiscent of the kind found in certain members of the Sclerotiniaceae, a family of inoperculate discomycetes.

After surface sterilization of the sclerotia and transfer of them to sterile water agar (1.5 percent), mature apothecia, typical of the original *Pyronema* isolates, were produced. Single ascospores from these apothecia were transferred to the type of medium favoring sclerotial formation, and typical sclerotia were again produced. The fungus has been carried through a number of generations, from ascospores to sclerotia and back to ascospores, by repeating the foregoing techniques.

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References

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Recent Progress in the Study of Pacific Coast Paleozoic Faunas

Exceptional advances in the study of Paleozoic rocks and fossils of the Far West have been made since 1943. From southern California to Oregon, detailed geologic mapping reveals new paleontologic data germane to a better understanding of Pacific Coast Paleozoic history.