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With the Authors' Regards
Takeo

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THE OCCURRENCE OF *SONORASPIS CALIFORNICA*
FROM EAST-CENTRAL NEVADA

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In several publications the genus *Sonoraspis* Stoyanow (1952:50-53) was either regarded as a paleontological puzzle (Lochman, 1952:137) or overlooked in its stratigraphic significance (Palmer, 1954:67), or even misrepresented (Moore, *et al.*, 1959:0224), but invariably confused with *Glossopleura* Poulsen (1927:268), from which it sharply differs in its paleontological and easily observable nature, its stratigraphic position, and its paleogeographical distribution. This genus possesses clearly outlined characteristics: a thorax always with eight segments, and certain mixed features of *Anoria* Walcott (1924:54) and *Glossopleura* but never all of them. This provides a basis for specific separation and an easy identification. It should be stated that thus far *Sonoraspis* has never been located in the same strata with *Glossopleura*. The purpose of this article is to present additional data acquired in the recent research of the writers. This paper is the first in a series of proposed reports dealing with the distribution of *Sonoraspis* and its relation to *Glossopleura*.

A significant clue as to the presence of an eight-segmented form in southern California was briefly mentioned by Clark (1921:6) while discussing *Bathyriscus howelli* var. *lodensis*. Based on Clark's discussion, Stoyanow and Susuki (1955:467-470, pl. 1, figs. 1, 2) conducted an extensive research in the Marble Mountains, San Bernardino County, California (Bristol Mountains of Clark), and located there specimens of *Sonoraspis* about fifty feet below the base of the Bonanza King formation (Hazzard and Mason, 1936:234-238). This find by Stoyanow and Susuki revealed that a seaway containing *Sonoraspis* fauna existed between the Sonora Basin, Mexico and southern California. Before *Sonoraspis* was discovered in southern California, McKee (1947:288) postulated an early Middle Cambrian seaway continuous from western Sonora north through Arizona and into the Grand Canyon area. McKee (1947:288) based this seaway on the presence of *Glossopleura* in the Harquahala Mountains to the south of the Grand

Canyon. Stoyanow (1948:323-324) was not in agreement with McKee's interpretation, pointing out the lithological similarity between the Cambrian of Harquahala Mountains and the Grand Canyon, and that it seemed more probable that the Harquahala trilobites belonged in the Cambrian basin of the Grand Canyon, inasmuch as southwestern Arizona was occupied by a pre-Cambrian Massive of Mazatzal Land (Stoyanow, 1942:1264; 1936:462). A westward Paleozoic portal in the Sonora Basin was first suggested by Schuchert (1910: pl. 52) and Schuchert's idea was corroborated by Stoyanow (1942:1263-1264).

The presence of *Sonoraspis* thirty feet below the stratum containing *Albertella* was established in the Inyo Mountains, California (Stoyanow, 1958:347), thus extending northwestward the geographic distribution of *Sonoraspis*. The occurrence of *Sonoraspis* in the Inyo Mountains may well suggest a connection with the Sonora Basin through the Marble Mountains during early Middle Cambrian time. This discovery is not only significant paleogeographically, but extremely important stratigraphically in that from this relationship, the stratigraphic position of *Sonoraspis* was determined. It should be noted that in the Canadian Rockies (Rasetti, 1951:109), *Glossopleura* zone is well above the *Albertella* zone and a similar stratigraphic relation exists in the Grand Canyon section (McKee, 1945:30, 33). Although *Sonoraspis* and *Albertella* had been found in the Sonora section, their stratigraphic interrelation there was not clearly understood, since Lochman (1952:180) did not recognize *Sonoraspis* as a valid genus but equated it both paleontologically and stratigraphically with *Glossopleura*. In discussing *Glossopleura* species, Lochman (1952:137) was unable to explain why *Glossopleura mckee* Resser from the Bright Angel shale of the Grand Canyon section showed consistently seven segments in the thorax, yet all the species from Sonora, even though the cephalon and pygidium appeared identical to *G. mckee*, showed eight thoracic segments.

The find of *Sonoraspis* by the present writers in Currant Creek Gap section, east-central Nevada (Fig. 1) indicates the first recorded extent of the *Sonoraspis* fauna considerably northeastward within the main Cordilleran trough.

This specimen from Nevada is closer to *S. californica* Stoyanow and Susuki (Holotype, UCLA Invert. Paleo. Cat. no. 23460) than to *S. gomezii* Stoyanow (1952:54-55) by tuberculation on all thoracic segments which increase in size (from circular to elongated) toward

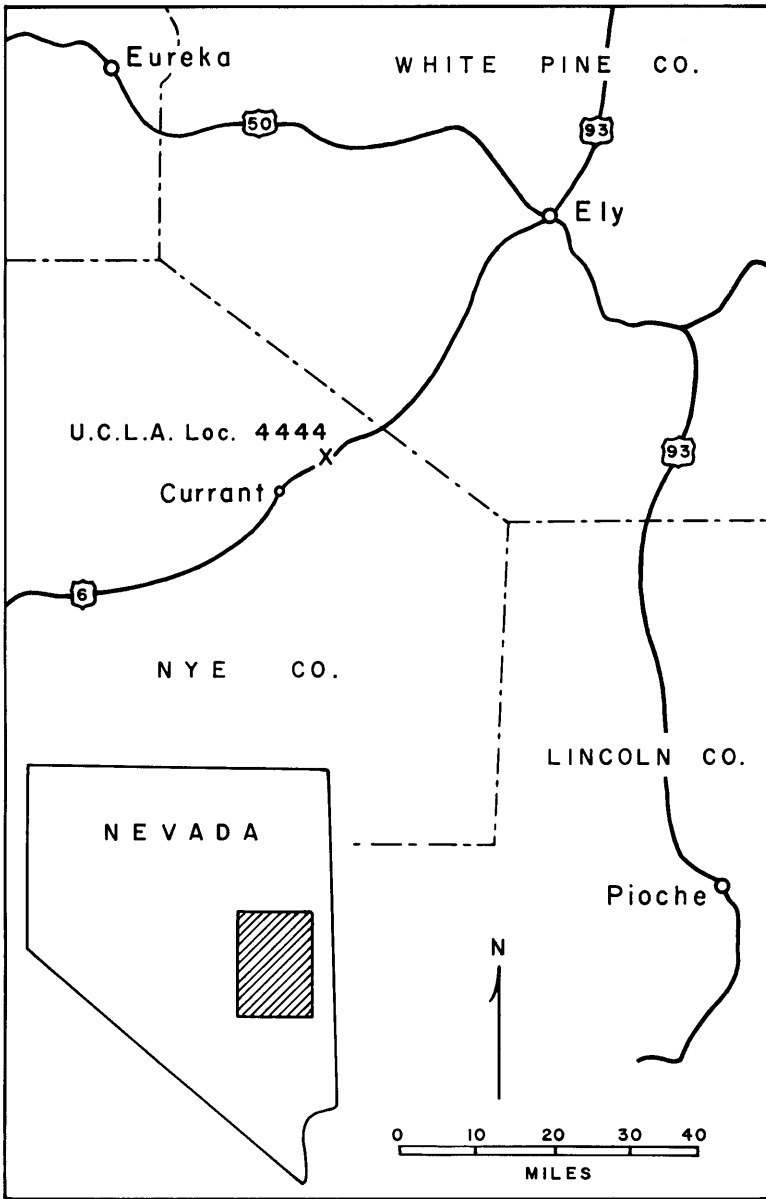


Figure 1. Map showing east-central Nevada where *Sonoraspis californica* was found.

the segmented pygidium, whereas *S. gomezi* has only six posterior thoracic segments bearing tubercles and an unsegmented pygidium.

Type: Hypotype, UCLA Invert. Paleo. Cat. no. 34974, Figure 2.

Locality: UCLA Invert. Paleo. Loc. no. 4444.

Occurrence: The described type has been collected at a roadcut on



Figure 2. Sonoraspis californica Stoyanow and Susuki, Hypotype, UCLA Invert. Paleo. Cat. no. 34974, specimen enlarged x2 to show posteriorward development from circular to elongated tubercles on the thoracic segments.

the northside of U.S. Highway 6, in thin-bedded, platy, gray limestone, 300 feet north and 400 feet west of the southeast corner of Sec. 24, T. 11 N., R. 58 E., Currant Mountain quadrangle (U.S.G.S., 1957 ed.), Currant Creek, Nye County, Nevada (Figs. 3 and 4).



Figure 3. Currant Creek Gap, Nevada. Westward view. Lighter colored exposure at the base, on the right side of photograph is where *Sonoraspis californica* was found.

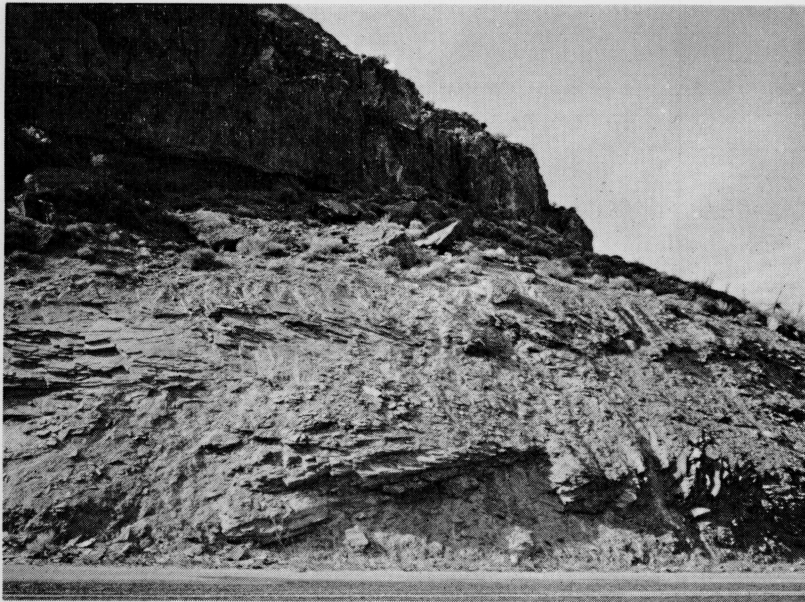


Figure 4. Close-up of the limestone outcrop.

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LITERATURE CITED

- CLARK, CLIFTON W.
1921. Lower and Middle Cambrian formations of the Mohave Desert. *Univ. Calif. Pub. Geol. Sci. Bull.*, 13:1-7.
- HAZZARD, JOHN C., AND MASON, JOHN F.
1936. Middle Cambrian formations of the Providence and Marble Mountains, California. *Geol. Soc. America Bull.*, 47:229-240, 1 fig.
- LOCHMAN, CHRISTINA
1952. Trilobites, pp. 60-161 pls. 15-31, in Cooper, G. A., *et al.*, Cambrian stratigraphy and paleontology near Caborca, northwestern Sonora, Mexico. *Smithson. Misc. Coll.*, 119:(1):184, 31 pls.
- McKEE, EDWIN D.
1945. Stratigraphy and ecology of the Grand Canyon Cambrian, pp. 1-168, pls. 1-15, in McKee, E. D. and Resser, C. E. Cambrian history of the Grand Canyon region. *Carnegie Inst. Washington Pub.* 563, 232 pp., 27 pls.
1947. Paleozoic seaways in western Arizona. *Amer. Assoc. Petroleum Geol. Bull.*, 31:282-292.
- MOORE, RAYMOND C., *et al.*
1959. *Treatise on invertebrate paleontology*, Part O, Arthropoda. Geol. Soc. Amer., 560 pp., 415 figs.
- PALMER, ALLISON R.
1954. An appraisal of the Great Basin Middle Cambrian trilobites described before 1900. *Geol. Surv. Prof. Paper* 264-D, pp. 55-85, pls. 13-17.
- POULSEN, CHR.
1927. The Cambrian, Ozarkian and Canadian faunas of northwest Greenland. *Meddelelser om Gronland*, 70:233-348, pls. 14-21.
- RASETTI, FRANCO
1951. Middle Cambrian stratigraphy and faunas of the Canadian Rocky Mountains, *Smithson. Misc. Coll.*, 116:(5):1-277, 34 pls.
- SCHUCHERT, CHARLES
1910. Paleogeography of North America. *Geol. Soc. Amer. Bull.*, 20:427-606, pls. 46-101.
- STOYANOW, ALEXANDER
1936. Correlation of Arizona Paleozoic formations. *Geol. Soc. Amer. Bull.*, 47:459-540, 1 pl., 5 figs.
1942. Paleozoic paleogeography of Arizona. *Geol. Soc. Amer. Bull.*, 53:1255-1282, 5 pls., 3 figs.
1948. Some problems of Mississippian stratigraphy in southwestern United States. *Jour. Geology*, 56:313-326.

1952. The original collection of Cambrian trilobites from Sonora, pp. 49-59, pl. 14, in Cooper, G. A., *et al.*, Cambrian stratigraphy and paleontology near Caborca, northwestern Mexico. *Smithson. Misc. Coll.*, 119:(1):7-184, 31 pls.
1958. *Sonoraspis* and *Albertella* in the Inyo Mountains, California. *Geol. Soc. Amer. Bull.* 69:347-352, 1 pl.
- STOYANOW, ALEXANDER, AND SUSUKI, TAKEO
1955. Discovery of *Sonoraspis* in southern California. *Geol. Soc. Amer. Bull.*, 66:467-470, 2 pls.
- WALCOTT, CHARLES D.
1924. Cambrian geology and paleontology. Cambrian and lower Ozarkian trilobites. *Smithson Misc. Coll.*, 75(2):53-60, pls. 9-14.