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CAMBRIAN GEOLOGY AND PALEONTOLOGY

II

No. 10.—GROUP TERMS FOR THE LOWER AND UPPER
CAMBRIAN SERIES OF FORMATIONS

BY

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With the development of the mapping of the geological formations of the United States, it has increasingly become evident that the use of more than one term derived from the same geographic name is faulty in principle and confusing in usage. I have long been guilty of doing it in the use of Georgian for the Lower Cambrian series of formations, and I now find that the name I derived Saratoga from, for the Upper Cambrian series, was previously used for the Cretaceous Saratoga formation. (See page 306.) Much as we may regret the change to new terms, I think that in the long run of time it will facilitate the understanding of the nomenclature of the Cambrian system by the student.

WAUCOBAN OR LOWER CAMBRIAN

Under the principle stated in the preceding paragraph, the term Georgian as used by me in 1891¹ is in bad form and should be replaced by a geographic name that has not been used for any geologic formation or group of formations. The history and use of the name Georgia is given in Bulletin 81, cited above, on pp. 98-113, 249-250, and 360.

Since the publication of Bulletin 81 in 1891, it has been found that the greatest development of the Lower Cambrian terrane is in Esmeralda County, Nevada, and the adjoining county of Inyo, California.

The Barrel Spring section of Nevada² has several thousand feet of Lower Cambrian strata with a fine Lower Cambrian fauna. The Waucoba³ section, 30 miles to the southwest in California, is also finely exposed, and it has a well-marked Lower Cambrian fauna that extends through 4,000 feet of strata.

¹ Bull. U. S. Geol. Survey, No. 81, 1891, p. 360.

² Smithsonian Misc. Coll., Vol. 53, No. 5, 1908, pp. 188-189.

³ *Idem*, pp. 185-188.

In view of the fine section east of Waucoba Springs on the north-eastern side of Saline Valley, and the great development of Lower Cambrian strata to the north and east in Nevada, the term Waucoban is selected to replace Georgian as a group name for the formations included in the Lower Cambrian.

ST. CROIXAN OR UPPER CAMBRIAN ¹

When I proposed the name "Saratogian" in 1903 ² for the Upper Cambrian group of formations, an examination of several lists of geological formation names failed to show that the name Saratoga had been used by Dr. J. C. Branner ³ for a Cretaceous chalk marl in Arkansas, in his description of "The Cement Materials of Southwest Arkansas." ⁴ A description of the formation is given, with sections illustrating its stratigraphic position. In 1902 ⁵ Mr. J. A. Taff used the term Saratoga formation in the same sense as Branner and gave illustrations of sections and contained fossils.

In view of the prior use of the name Saratoga by Branner and Taff, I doubt the advisability of continuing the use of Saratoga as a group name for the Upper Cambrian formations. There is also the fact that the two formations of Saratoga County, New York, that are used as the basis for the name, are not typically of Upper Cambrian age. A present tendency is to include them as passage beds between the Cambrian and the superjacent system of strata, or as belonging to the higher systems. ⁶ With the evidence now known to me from New York and the Appalachian region to the southwest I am inclined tentatively to refer the fauna as found in New York State to the upper limit of the Cambrian. The "Saratogan" would thus be correlated with one of the upper horizons of the "St. Croix sandstone" and included in the Upper Cambrian. ⁷

My present view is that the use of the name Saratoga should be restricted to the Cretaceous formation, another name adopted for the

¹ Ulrich, Bull. Geol. Soc. America, Vol. 22, No. 3, 1911, pl. 27, and pp. 613 and 614.

² Journ. Geol., Chicago, Vol. 11, 1903, pp. 318-319.

³ Dr. John M. Clarke recently (May 27, 1912) called my attention to this use of the name Saratoga by Branner, and wrote that he was then discussing the history of the name in a paper in press.

⁴ Trans. American Inst. Mining Engineers, Vol. 27, 1898, pp. 52-55.

⁵ Twenty-second Ann. Rept. U. S. Geol. Survey, 1902, pp. 714-720.

⁶ See Ulrich, Bull. Geol. Soc. America, Vol. 22, No. 3, 1911, pl. 27, and p. 612.

⁷ See Smithsonian Misc. Coll., Vol. 57, No. 9, 1912, pp. 255, 256, for a fuller discussion of this question.

group of formations included in the Upper Cambrian, and another name for the Potsdam-Hoyt fauna if that fauna is considered as distinct from the Upper Cambrian fauna.

When looking up a name for the Upper Cambrian formations in 1903, I thought of St. Croixan, but as the name St. Croix had become fixed in geological literature for the Cambrian sandstone of the Upper Mississippi Valley¹ I did not use it. In 1911² Dr. E. O. Ulrich proposed to use the name St. Croixan for the sea in which the St. Croix sandstones were deposited, and in his table of correlations of formations (pl. 27) and on page 614 of the same work he uses the term as a collective name for his Upper Cambrian formations. If we drop the term "St. Croix" as a formation name for the sandstones of Wisconsin and Minnesota containing the Upper Cambrian fauna, then the term St. Croixan may be used for the assemblage of formations characterized by the Upper Cambrian fauna.

¹ See N. H. Winchell, 1873, Ann. Rept. Board of Regents, University of Minnesota. First Ann. Rept. Geol. and Nat. Hist. Surv. for 1872, pp. 68-80.

² Ulrich, Bull. Geol. Soc. America, Vol. 22, No. 3, 1911, p. 613.