

in this connection that the upper shales and sandstones, or division 1 of the Queen Charlotte section, contain *Inoceramus problematicus*, Schloth., a species that is characteristic of the Colorado formation in the Rocky mountain region and is not known to range higher than the Turonian in Europe.

Correlation of Nanaimo Beds with the Chico.—The correlation of the Nanaimo beds on Vancouver island with the Chico formation, taken in connection with the facts already given, implies that these beds are more closely related to the Queen Charlotte formation than has been supposed, and I think that a comparison of the faunas found in the three regions, California, Vancouver and Queen Charlotte, will give evidence of this relationship. The principal facts that seem to be opposed to this conclusion are that some of the species of *Baculites* and of *Inoceramus* found on Vancouver island are apparently closely related to species in the Montana formation of Nebraska, Colorado and elsewhere in the interior region, and that the plants found in the Nanaimo coal field are said to be of upper Cretaceous types.

With the possible exception of the species just mentioned and a few others that have little diagnostic value, it is doubtful whether any of the species of the Shasta-Chico fauna occur in the upper Cretaceous beds east of the Rocky mountains.* The ammonites nearly all belong to genera that are not found in the upper Cretaceous of the interior region, and differences almost as great might be pointed out in other classes of mollusks.

These facts may readily be explained by supposing that the faunas lived contemporaneously in different oceans separated by a long continental area, but they would also be equally well explained if it could be proved that they were not strictly contemporaneous.

THE SHASTA-CHICO FAUNA COMPARED WITH THE FAUNA OF THE BLACK-DOWN BEDS.

Mr Whiteaves has correlated the Queen Charlotte formation with the Gault, and as confirmatory of this reference it may be of interest to give the results of the comparison I have made with one of the English Cretaceous faunas.

In Sowerby's "Mineral Conchology" 46 species of Cretaceous fossils are described from the Blackdown beds of Devonshire, England. These beds have usually been referred to the Gault, though some authors now regard them (at least in part) as representing the lowest beds of the

* See Dr C. A. White's statement on this point in Bull. 15, U. S. Geol. Surv., pp. 27-29.