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Easternmost Foldings of Ancestral Rockies

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ICE CAVES

JOHN E. SMITH

The locations, structure and meteorologic conditions favorable to forming ice and to its wasting away are considered in this paper.

IOWA STATE COLLEGE,
AMES, IOWA.

RECESSIONAL MORAINES OF THE WISCONSIN IN
IOWA

JOHN E. SMITH

The several major and many more minor recessional moraines are discussed with respect to their locations and relations to each other. The paper is a progress report of the work that was begun on this project several years ago.

IOWA STATE COLLEGE,
AMES, IOWA.

A NOTE ON THE STRATIGRAPHY OF THE CRETACE-
OUS IN NORTHWESTERN IOWA

A. C. TESTER

The lithology of certain Benton (?) strata in Lyon County and adjacent parts of Minnehaha County, South Dakota is described. These rocks differ greatly from the common type of limestone and chalk of the Cretaceous of the Big Sioux and Missouri River region. The formation contains large quantities of siliceous material in the matrix and as spicules and in some beds as chert. Fragments of glass are common in one zone.

EASTERNMOST FOLDINGS OF ANCESTRAL ROCKIES

CHARLES KEYES

Although for long it is suspected that ancestral Rocky mountains must have extended much farther to the eastward than the Front ranges of Colorado do to-day the actual proofs that they once did are long in forthcoming. Delay in this respect continues

until oil-prospecting develops so extensively in Kansas especially. Long before these oil demonstrations the pre-Cambrian crystalline basement is discovered to exist at the Missouri River much nearer to the surface than is previously thought possible. The history of this investigation is so recently given that the memoir itself may be referred to for full particulars.

Passing for the nonce the finding of the crystalline complex at Kansas City, in 1891, we may note the great "granite" ridge buried beneath the coal measures about 100 miles to the west of the river, and extending northwardly to Pawnee City and Omaha, Nebraska. This is not the old Siouan arch, which is of later date, this one being of Carbonic, while the other is of Triassic age. But it may be an important factor accounting for the petering out of the Silurian strata in northwestern Iowa. This old Nemaha range, as it is called, is now a site of great oil-fields in Kansas. Whether the same will ever be true of Nebraska and northwestern Iowa is a question.

The possibility of the existence of other great Cordilleran folds, planed off in Carbonic times, between the Nemaha ridge and the present Front range of the Rockies, is also a big problem yet awaiting solution.

ANCIENT IOWA OROGENESIS AND THEIR PRESENT-DAY IMPRESS

CHARLES KEYES

Except they be trained geologists few Iowans there are who would ordinarily think of looking for mountains in the smooth, illimitable prairies such as characterize this state of ours. Yet the evidences are many and plain, not only of the effects of mountain-making activities, but of the mountain roots themselves traversing quite across our domains. Amongst the latter are, indeed, indubitable traces of at least one mountain range that once reared its walls as loftily, as imposingly, and as majestically as do to-day the Rockies above the Colorado plain.

Some of these orographic features, of course, are readily discernible at the surface of the land; but others, and the majority, are made to reveal themselves only through the most painstaking calculations and comparisons of underground stratal data. The deep-well records gathered in Professor Norton's study of the artesian waters supply other evidences obtainable in no other way. It is to some of these more or less unfamiliar evidences of moun-