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Petrography of the Tertiary Igneous Rocks, Nigger Hill District, Wyoming-South Dakota

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MELT-WATER VOLUME OF IOWA'S LAST ICE-SHEET

CHARLES KEYES

The old-fashioned notion of a gargantuan ice-cap, so huge as to occupy half of the earth's hemisphere and miles in thickness, was as we now well know, not a creation of the geologist but of the zoologist, a fancy drawn upon to support the theological idea of special creation of life on the globe. It was zoologist Agassiz's last stand against the rapidly growing Darwinian revolution through evolution.

Lately, this all but forgotten concept has been revived to explain submarine terraces, 50 to 300 feet below sea-level, the continental shelf at 600 feet and even deep-sea plains trenched by canyons a mile below sea-level. But an ice-cap is, as we now know, not the gargantuan affair so often pictured, which latter is really a composition of half a dozen different glaciations.

On the other hand, the dimensions of Iowa's last great ice-sheet, about the largest known, are fairly well determined. It probably did not exceed a thousand feet in thickness. At this figure the ice-cap when melted, would return to the ocean water sufficient to raise the sea level only about 2 feet. If, for fancy, the ice were half a mile thick, the sea level would scarcely rise 5 feet. These are maximum figures. The flooded benches under sea, on the continental shelf, will have to be accounted for by some other means than as directrices of melt-waters from a great ice sheet.

DES MOINES, IOWA.

PETROGRAPHY OF THE TERTIARY IGNEOUS ROCKS, NIGGER HILL DISTRICT, WYOMING-SOUTH DAKOTA

J. ROBERT BERG

The Nigger Hill District, located on the Wyoming-South Dakota border in the northwestern Black Hills, is an area of Paleozoic sedimentaries, dipping outward from a central core of various alkaline and sub-alkaline Tertiary intrusives, and pre-Cambrian pegmatitic granite and schists.

The Tertiary igneous rocks are of interest for three reasons: (1) they may furnish data that will contribute to the much debated problem of the origin of alkaline rocks; (2) when their structural relations are better understood, it will be possible to interpret more

correctly the mechanics of their intrusion and the type of intrusive body they represent; (3) apparently they have been the source of the gold in a rare genetic type of potential ore deposit.

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DEVONIC CHRONOLOGY IN IOWA

CHARLES KEYES

The most important geological discovery in Iowa in recent years is the revelation that our Devonic deposition is not what it was long thought to be, that is, contemporaneous with the Devonic sedimentation of the East, or New York standard column. Instead of the two widely separated sections being of the same age, as always regarded, our Iowa Devonic rocks turn out to be very much younger than New York rocks. The two stratal successions appear now to have been laid down in altogether different geosynclines, and our western rocks were formed largely out of the ruins of the Eastern rocks.

To be sure, our Iowa Devonics were long known to recline in marked unconformity upon Siluric and Ordovicic strata. But in southeastern Missouri, recently, Devonic strata continuous with our Cedar Valley limestones rest in conspicuous erosional unconformity upon the western extension of the New York Hamilton formation. So in Iowa, our so-called Hamilton is obviously not the New York Hamilton by any means, as so long so confidently regarded, a fact indicative of a hiatus much wider than heretofore suspected. Fortunately most of the fossils occuring in the Iowa Devonic rocks have been described as different from those of the New York Hamilton and now our organic forms urgently need to be analyzed anew.

DES MOINES, IOWA.

GLACIAL MARKS

ARTHUR GOSHORN

Opening a quarry on the southern edge of a Middle River bluff, the quarryman exposed 20 feet of the top layer of limestone. The top face of the limestone was covered with glacial scratches, hun-