

Proceedings of the Iowa Academy of Science

Volume 1 | Part 3, 1892; (1887) -

Article 3

1892

The Seventh Annual Session of the Iowa Academy of Sciences;; Membership of the Academy

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Recommended Citation

(1892) "The Seventh Annual Session of the Iowa Academy of Sciences;; Membership of the Academy," *Proceedings of the Iowa Academy of Science*, 1(Pt. 3), 5-7.

Available at: <https://scholarworks.uni.edu/pias/vol1/iss3/3>

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IOWA ACADEMY OF SCIENCES.

The seventh annual session of the Iowa Academy of Sciences was held in the High School building at Cedar Rapids December 27 and 28, 1892.

The following papers were presented:

S. CALVIN—"The Relation of the Woodbury Sandstones and Shales and the Inoceramus Beds of White to the Subdivisions of the Cretaceous proposed by Meek and Hayden;" "Note on the Structure and Probable Affinities of *Cerionites dactyloides* Owen."

C. K. KEYES—"Natural Gas and Oil in Iowa;" Some Mineralogical Notes;" "Surface Disintegration of Granitic Masses;" "Some American Eruptive Granites."

J. L. TILTON—"Strata Between Ford and Winterset."

C. O. BATES—"The Analysis of Water for Railway Engines."

F. M. WITTER—"Some Observations on *Helix cooperi*;" "On the Absence of Ferns between Fort Collins and Meeker, Colorado;" "Notice of Stone Implements from Mercer County, Ills., and Louisa County, Iowa."

GILMAN DREW—"Some Reason Why Frogs are Able to Survive."

C. C. NUTTING—Presidential Address—"What We Have Been Doing;" "Report of Committee on State Fauna;" "The Significance of the Concealed Crests of the Flycatcher."

L. H. PAMMEL—"Phenological Notes for 1892;" "Relation of Frost to Certain Plants;" "Notes on the Flora of Texas;" "Pollination of Cucurbits."

F. C. STEWART—"Palisade Cells and Stomata of Leaves;" "A Key for the Identification of Weed Seeds found in Clover Seed."

F. REPERT—"Notes on the Flora of Muscatine."

W. B. NILES—"Preliminary Observations on a Cattle Disease of Frequent Occurrence in Some Parts of Iowa."

F. W. MALLY—"Preliminary List of the Saw-flies of Iowa."

H. A. GOSSARD—"Observations of Insects Taken in Clover."

HERBERT OSBORN AND F. A. SIRRINE—"Notes on Aphididae."

HERBERT OSBORN—"On the Life-Histories of Certain Jassidae;" "Notes on the Catalogue of the Iowa Hemiptera."

A talk on a Collecting Trip to Southern Mexico, illustrated with Lantern Views.

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THE RELATION OF THE CRETACEOUS DEPOSITS OF IOWA TO THE
 SUB-DIVISIONS OF THE CRETACEOUS PROPOSED
 BY MEEK AND HAYDEN.

BY S. CALVIN.

The cretaceous deposits of Woodbury and Plymouth counties are composed of sandstones, shales and certain calcareous deposits. The heavier beds of sandstone belong to the basal portion of the series, barely rising higher than forty feet above the level of the water in the Big Sioux river. The part of the column to which these heavier sandstones are confined is, however, not all sandstone, but consists of arenaceous beds alternating with beds of argillaceous shales. Above the more massive sandstones the beds, for a vertical distance of fifty to sixty feet, contain streaks and thin layers of sand, but shales preponderate. In certain typical exposures these alternating beds are followed by from thirty to forty beds of pure shales, dark in color, smooth and unctuous to the feel, and containing the remains