

Geologs,

JAIVERSITY OF TOWN

IOWA .

GEOLOGICAL SURVEY

VOLUME XI.

ADMINISTRATIVE REPORTS

SAMUEL CALVIN, A. M, Ph. D., STATE GEOLOGIST

A. G. LEONARD, ASSISTANT STATE GEOLOGIST



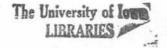
DES MOINES: Published for the Iowa Geological Survey 1901 DES MOINES:
BERNARD MURPHY, STATE PRINTER.
1901.

THE SECOND ST

George States St

GEOLOGICAL BOARD.

HIS EXCELLENCY, L. M. SHAW, - GOVERNOR OF IOWA
HON. F. F. MERRIAM, - - AUDITOR OF STATE
DR. GEO. E. MACLEAN, PRES'T STATE UNIVERSITY OF IOWA
DR. WM. M. BEARDSHEAR, PRES'T IOWA AGRI'L COLLEGE
PROF. A. A. VEBLEN, PRES'T IOWA ACADEMY OF SCIENCES



GEOLOGICAL CORPS.

SAMUEL CALVIN	STATE GEOLOGIST
A. G. LEONARD	
	- I I Markinsker v 1
J. B. WEEMS	
S. W. Beyer	SPECIAL ASSISTANT
	SPECIAL ASSISTANT
	SPECIAL ASSISTANT
T. H. MACBRIDE	SPECIAL ASSISTANT
	Special Assistant
BENJ. L. MILLER	Special Assistant
Thos. J. Savage	Special Assistant
IRA A. WILLIAMS	Special Assistant
NELLIE E. NEWMAN	Secretary

CONTENTS.

PAGE	E.
Members of Geological Board	3
Geological Corps	4
Table of Contents	5
List of Illustrations	6
Administrative Reports	9
Mineral Production in Iowa, 1900	7
Geology of Louisa County 5	5
Geology of Marion County	7
GEOLOGY OF POTTAWATTAMIE COUNTY	9
GEOLOGY OF CEDAR COUNTY	9
GEOLOGY OF PAGE COUNTY	7
Geology of Clay and O'Brien Counties	1
INDEX	9

LIST OF ILLUSTRATIONS

PLATES.

- i. Map showing progress of detailed mapping.
- ii. Preliminary map of the drift sheets of Iowa.
- iii. Greenwood Park well section.
- iv. Map of Louisa county-topographic.
- v. Cross bedding in Coal Measure sandstone, Red Rock quarry.
- vi. Geological map of Pottawattamie county.
- vii. Tipton well section.
- viii. Agglomerate mound of Gower limestone.
 - ix. Tilted Gower limestone at bridge over Rock creek.
 - x. Horizontal Coggan beds overlying the oblique-bedded Le Claire phase of Gower limestone at Lime City.
- xi. Bealer's quarry, main pit.
- xii. Bealer's quarry, general view.

FIGURES.

- 1. General section of the Mississippian rocks in Louisa county.
- 2. Section showing general relation of drift layers, Louisa county.
- 3. Section showing relation of drift layers, Louisa county.
- 4. Section of drift, Louisa county.
- 5. Section of drift, Louisa county.
- 6. Section of drift, Louisa county.
- 7. Section showing relation of different drift sheets.
- 8. Diagram showing trend of joint planes in the bed rock.
- 9. View on the Des Moines river at Elk Cliff.
- 10. Quartzitic concretions in Red Rock sandstone, Red Rock quarry.
- 11. Unconformability shown in Red Rock quarry.
- 12. Fossil fish from old coal mine at Knoxville.
- 13. Exposure of Cretaceous clay with concretions of clay ironstone.
- 14. Nishnabotna sandstone.
- 15. Change from sand below to clay above, in Cretaceous deposits.
- 16. Ledge of Gower limestone on Wapsipinicon river, Massillon.
- 17. Course in Cedar county of Stanwood river.
- 18. Gower limestone, Anamosa type, Cedar Bluff.
- 19. Massif of Gower limestone at Lohmann's quarry, near Lowden.
- 20. Weathering of Gower limestone, Baldwin creek.
- 21. Sketch map showing variant and radial dips of Gower limestone.
- Section showing zones of ferruginous and manganesic accumulation at base of loess,

LIST OF ILLUSTRATIONS.

FIGURES.

- 23. Loess-Kansan landscape south of Lowden.
- 24. Stanwood paha.
- 25. Sky-line of pahoid ridge north of Lowden, from Iowan plain to north.
- 26. Stratified sand and loessial silt in pahoid ridge, south of Tipton.
- 27. Cavity formed by weathering and filled with drift.
- View across the valley of the Nodaway from the highland northwest of Rep burn.
- The steep slopes and narrow ravines indicative of youthful topography, west of Hepburn.
- Deep, narrow trench cut by recent erosion in the bottom of one of the broad depressions in the surface.
- The sweeping, convex curves characteristic of mature, erosional topography on the highlands between the stream valleys.
- 32. Exposure of the Forbes limestone near Hawleyville.
- 33. The site of the old Shambaugh mill near Clarinda.
- 34. Exposure of the "blue ledge" and associated strata, southeast of Essex.
- 35. The deep railway cut near Clarinda.
- 36. Thin sheet of residual gravel between loess and Kansan till.
- View showing sand, partly cross-bedded, separating an old, weather-stained loss from an overlying, fresher body of the same material.
- 38. Where Willow creek debouches into the valley of the Little Sioux.
- 39. View of the north bank of the Little Sioux river north of Sioux Rapids.
- 40. Primeval oaks by the Little Sioux, near Peterson.
- 41. Lone tree, surrounded by the new forest.
- 42. An aged bur oak and its progeny.
- 43. A row of noble cottonwoods shades the highway.

MAPS

Geological map of Louisa county.

Map of the surface deposits of Louisa county.

Geological map of Marion county.

Map of surface deposits of Pottawattamie county.

Geological map of Cedar county.

Map of the surface deposits of Cedar county.

Geological map of Page county.

Map of the surface deposits of Clay county.

Map of the surface deposits of O'Brien county.

