

First Annual Report of the Iowa Geological Survey

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the constitution to the end that they might secure the preferment they desired. Mr. Eastman, then a young lawyer recently arrived at Burlington from New Hampshire, where he was born in 1810, united with the late Captain Mills, who lost his life during the Mexican war, and also a prominent attorney of the same place, to defeat the measure before the people. They undertook to stump the Territory, but finding the job too large a one, they invited myself to relieve them in the Second Judicial District of the Territory, which I did, taking as a text of my discourse before the people the famous distich of Bishop Berkley, "Westward the course of empire takes its way," and from that I proceeded to urge the people to insist that inasmuch as emigration followed the parallel lines of latitude, we should insist upon our State extending to the Missouri river, and that the only way to accomplish this would be the rejection of the boundaries prescribed by Congress.

Our efforts in the First and Second Districts were successful and the Constitution [of 1844] was defeated by some 400 votes, and but for the efforts of Mr. Eastman in organizing that effort and combination against its adoption, the Congressional boundaries would have been imposed upon our people and there would now be two states where there is but one—Iowa.

The setting forth of the boundary of the proposed State, as stated by Mr. Parvin, seems to be a little indefinite, and not to include all the territory which the people asked for in the Constitution of 1844. The Constitution included all that part of the present State of Minnesota south and east from a line drawn from the mouth of the Sioux or Calumet river to the southerly bend of the St. Peters—now the Minnesota—river, and thence by that river to the Mississippi, and excluded that part of the present State of Iowa northwest of the Sioux river. The act of Congress of 1845 provided as the boundary a parallel passing through the mouth of the Mankato or White Earth river, from the Mississippi to the meridian of $17^{\circ} 30'$ west from Washington, and thence due south to the boundary line of the State of Missouri.

FIRST ANNUAL REPORT OF THE IOWA GEOLOGICAL SURVEY.

The first official report of the Geological Survey of Iowa, for which the last General Assembly made provision, has just left the hands of the printer and is now ready for distribution. Two attempts have been made already to investigate the material resources of Iowa; one in the fifties and the other more

than a quarter of a century ago. Unfortunately for the State both were cut off before they had fairly begun work. It is to be hoped that the third attempt will be more successful and that the work be permitted to continue to its finish—work that should have been done a score of years ago. It is the purpose of the Geological Survey to make a complete examination, as the law specifies, “Of the natural resources of the State in all their economic and scientific aspects; including the determination of the order, arrangement, dip and comparative magnitude of the various formations; the discovery and examination of all useful deposits, their richness in mineral contents, and their fossils; and the investigation of the position, formation and arrangement of the many different ores, coals, clays, building-stones, glass-sands, marls, peats, mineral oils, natural gas, mineral and artesian waters, and such other mineral materials as may be useful, with particular regard to the value of these substances for commercial purposes and their accessibilities; also the careful noting of the characters of the various soils, and their capacities for agricultural purposes; the growth of timber, and other scientific or natural history matters that may be of practical importance and interest.”

Although the organization of the Survey was not effected until late in July, 1892, when the field season was fully two-thirds over, considerable progress was made during the remaining portion of the year that could be devoted to out-door work. Of course all subjects cannot be taken up at once. Among the special and important lines of inquiry that are already being worked out are the coals, clays, building-stones, and cement rocks. The artesian and mineral waters will be reported upon soon. The soils of the State will receive full consideration; their properties and capacities are now being studied by the most advanced methods known to agricultural geologists and chemists. Particular attention will also be paid to ores of zinc, iron and other minerals. As stated by one of our State's most eminent engineers: “One noteworthy feature of the present Survey is the number of competent investigators who are giving their service without pay. It is expected that

there will be at least one such local assistant in each county, so that no geological facts of scientific or economic interest will fail to be recorded. The gratuitous service that the State will receive, if the work is completed according to present plans, will amount to many thousands of dollars annually. All that is needed is time and moderate annual appropriations to make for Iowa one of the most complete, most valuable, and at the same time least expensive of all the geological surveys thus far undertaken by any of the States."

The First Annual Report is a large royal octavo volume of about 400 pages, with a colored geological map and section of the State, and a dozen or more of full-page engravings, besides a number of cuts and sections.

In addition to the administrative reports of Professor Samuel Calvin, State Geologist, and Dr. Charles R. Keyes, Assistant State Geologist, there are a number of papers in which special topics are discussed. The first is a succinct account, or summary, of the Geological Formations of Iowa, by Dr. Keyes. It embraces 140 pages and is illustrated by a number of plates showing some of the more typical rock outcrops. The following is the classification of the geological formations which occur in the State:

Quaternary		Drift
Cretaceous	Upper	Niobrara Woodbury
Carboniferous	Upper	Missouri Des Moines
	Lower	St. Louis Augusta Kinderhook
Devonian		Lime Creek Montpelier Cedar Valley Independence
Silurian	Upper	Le Claire Niagara
	Lower	Maquoketa Galena Trenton St. Peter Oneota
Cambrian	Upper	St. Croix
Algonkian		Sioux

Among the more important geological features described are a number which exhibit the lines of separation between the several different geological formations. One of the most marked is in southeastern Iowa, where the hard Burlington limestone forms overhanging cliffs above the soft Kinderhook shales. Wherever the small streams cross this line, rapids and water-falls are formed. One of the latter near Burlington is called the "Cascade." It is shown in the accompanying plate.

Professor Samuel Calvin has a "Preliminary Report on the Cretaceous Deposits of Woodbury and Plymouth Counties, with Observations on their Economic Uses," in which are described valuable deposits for the manufacture of Portland cement and materials for various kinds of clay goods. Incidental references are made to certain deposits of lignite, or brown coal, which are now being investigated farther.

Professor S. W. Beyer gives a scientific account of "Some Lava Flows," which occurred long ago in the northwestern part of the State. This old volcanic eruption will be reported upon farther in due time. In "The Distribution and Relation of the St. Louis Limestone in Mahaska County, Iowa," Mr. H. F. Bain gives some very important conclusions in regard to the mining of coal along the east margin of the Iowa coal field. If the suggestions offered are duly considered in the prospecting for coal in that part of the State, it will doubtless save the citizens of Mahaska and neighboring counties many thousands of dollars each year.

"An Annotated Catalogue of Minerals," by Dr. C. R. Keyes, gives brief notes on all the minerals, whether of economic importance or not, which are known at present to occur within the limits of the State. It was prepared in response to a large number of inquiries from all parts of Iowa in regard to the occurrence and location of the various kinds of minerals.

Mr. Gilbert L. Houser describes the localities, value, accessibility and the properties of the lime-burning dolomites and building-stones of certain parts of northwestern Iowa. It forms a preliminary account of a more extensive report on the subject to appear soon. The concluding article of the report

is a "Bibliography of Iowa Geology," by Dr. Charles R. Keyes. It embraces over 200 pages, and is practically a dictionary catalogue of all references pertaining to Iowa geology. It includes:

1. An author's list, in which is given the full title, volume, pages and illustrations of the book or serial in which each article appeared, place of publication and date. Each entry is followed by a brief synopsis of the contents of the work.

2. A title index in which the name of each article appears under each of its leading words. Then comes the name of the author and an abbreviated reference to its place of appearance.

3. Subject entries and cross references. These embrace under each topic all references to any particular subject, as to county geology, geological formations, zoological groups, special subjects, etc.; also, those writings referring to Iowa in general. The names of authors and abbreviated references to place and time of publication are given in all cases. Whenever additional information is wanted reference can be made readily to the name of the author. For convenience the whole is arranged alphabetically.

One of the most noticeable features connected with the bibliographical index is the fact that the literature is so widely scattered and now largely inaccessible to the people of the State. The last of the two earlier geological reports was issued nearly a quarter of a century ago. They were rather sparingly distributed, and during the period which has elapsed since their publication most of the copies have been lost, destroyed or passed beyond the boundaries of the State. In the meantime the population has largely increased, so that if the reports were all at hand the supply would be inadequate. A goodly number of references have appeared in the publications of leading societies and have had a limited distribution, a large share of which have been foreign. Many of the papers referring to the geological phenomena as presented in Iowa are found in the reports of other states; still others are scattered far and wide through various journals and serials both in English and foreign languages; besides there are many short articles and

more or less lengthy allusions included in the long list of publications printed by the Federal Government. A large majority of these descriptions are unknown to the people of the State, who consequently know not where to look for the information desired.

Yet all these have to be gone over, involving so much time and labor that considerable hesitancy arises before the preparation of indices of this kind is entered upon finally.

MESSRS. BYERS AND RICHMAN.

It is doubtless known to our readers that Col. S. H. M. Byers, of Oskaloosa, has for the past two years held the position of Consul-General at St. Gall, Switzerland, to which he was appointed by President Harrison. It was announced in the public journals about the middle of May that he had been recalled by President Cleveland, and that Hon. Irving B. Richman, of Muscatine, had been appointed to fill his place. As both gentlemen are widely known, the present is deemed a fitting occasion to make mention of their merits and distinguished public services, and especially because of the excellent work they have done in the direction of Iowa history.

Mr. Byers was born in Pulaski, Pa., July 23, 1838. The family came to Iowa in 1851, and settled in Oskaloosa in 1853. After his school days he studied law and was admitted to the bar. When the Fifth Iowa Infantry was raised, young Byers enlisted as a private. He was immediately appointed Quartermaster's Sergeant. A little later he was commissioned as First Lieutenant and Adjutant of the regiment. He served in this capacity until the battle of Mission Ridge, where he was captured by the Confederates. He was, first and last, in six different prisons, including the Libby at Richmond, and was one of the Union officers who were placed under the fire of our own guns at Charleston, S. C. During this long imprisonment of one year and four months he escaped three times, but was as often recaptured. While in prison he wrote his well-known song of "Sherman's March to the Sea," thus winning national

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