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REPORT ON THE INITIAL WORK OF THE
STATE GEOLOGICAL SURVEY OF
NEBRASKA.*

IN a State such as Nebraska where there is no 'mineral'—a term which in the west has come to mean gold and silver-bearing—it is difficult to convince the masses that there is the least possible economic importance in a State geological survey.

If 'mineral' did occur, apathy could much more easily be overcome, and the appeals for a survey would find more willing and receptive ears. But something stronger than apathy is encountered in the prejudice which has been engendered against a State survey by men who have sought heretofore to establish such for the evident purpose of holding office, that is make a political job of it. This prejudice seems justifiable, nevertheless it is none too easy to live down. A good many years have passed since our admission to Statehood, yet Nebraska, a commonwealth greater than all New England, has never made an allowance of any kind for a State survey, not even for the postage and stationery used in correspondence. Literally then not so much as one cent has ever been voted for such work to

* Paper read before the Nebraska Academy of Sciences, December 1, 1899.

date. Even moral support has been withheld, save that the titles Acting Botanist, Acting Chemist and Acting Geologist have been conferred. The title being the sole emolument of office. However, the preliminary work of a survey, which has engaged the writer's attention for successive summer vacations since 1891, has just received from the University of Nebraska encouraging recognition, and an allowance, which, though small, is substantial. For the biennium of 1899 and 1900, \$1000 was allowed by the Board of Regents for the initial work of a State geological survey. The same sum was likewise allowed for a botanical survey. The sum of \$500 a year may seem ridiculously small, yet it made it possible to undertake several lines of work, and fair progress may be reported. Camp outfits were obtained for several field parties. Team and camp accoutrements were procured for Mr. Cassius A. Fisher, a Fellow in the department of geology, who, together with Mr. W. H. H. Moore (U. of N., 1900), constituted a party whose summer was to be spent in examining gravel pits, clay pits, quarries, the water supply, and geology of the southeastern or Carboniferous counties of Nebraska. At each quarry, pit and exposure photographs were taken, measurements and sections made, notes recorded, and liberal samples taken from the soil and sub-soil down through every layer.

One hundred and fifty localities were thus examined. The specimens from each quarry are being mounted in order upon large wooden tablets properly made and finished, each some 7 feet high by one foot wide; these as done are placed permanently on exhibition to illustrate the rock and clay resources of the State. A second party in charge of Mr. C. N. Gould (a Fellow in the department of geology), with Mr. Roy Hadsel (S. W. Kan. College, 1899), as assistant, was provided with team and camp outfit, and drove from Oklohomah through

Kansas, Nebraska, northwestern Iowa into South Dakota, following the Dakota Cretaceous, the great water-bearing beds of the plains. Over one hundred boxes of material were collected, with the result that new forms were found, some valuable rock-bearing beds located, and the second or third largest known collection of Cretaceous leaves made, numbering 4000 to 5000 specimens. Mr. Gould is devoting his undivided energy to these collections, working them out, recording and numbering them, classifying and describing them. This work is to be finished by July 1, 1900.

A third party consisted of Mr. G. E. Condra, a graduate student of the University of Nebraska, who spent the spring and summer collecting the fossil Bryozoa in the Carboniferous exposures, with the result that some 30 localities were visited and a large collection made, in which are already represented over 40 species, several forms being undoubtedly new. Mr. Condra will spend the remainder of the year upon his collections, preparing the material, numbering, recording, identifying and describing the same. Numerous microscopic sections are already cut, and as many more are to be prepared, and this work which was begun two years ago will be continued for at least another year before a paper is to be presented.

A fourth party, consisting of Miss Carrie A. Barbour, assistant curator of the State Museum, and an assistant, visited quarries in the Carboniferous, and Permian for the sole purpose of collecting fossils. Over 20,000 of the commoner species were procured, some of them apparently new to the State, with three or four species supposed to be undescribed. A fifth party consisted of the acting State Geologist, who visited all quarters of the State, and attempted to correlate work as far as he was able. There is such an accumulation of data and material that it will tax the department to dispose of

it in time to begin the work of 1900. Besides, several lines of investigation are under way, the most noteworthy of which is that of Mr. W. W. H. Moore, who is making freezing and pressure tests of the mortar, cement and building rocks collected during the summer. This investigation bids fair to yield some useful if not important results. It is the intention that every line of work and investigation shall be so well finished and so nearly in hand that there will be little or no overlapping of the work of one year upon the next. It may be reported that the initial work of the survey seems to be as well systematized as is to be expected the first year. Barring unexpected difficulties and adversities, it seems assured that fair progress may be reported to this academy at the close of the present biennium.

Another sum of \$500 will be available for a continuance of the work in 1900, and not less than five or six papers will be ready to submit to the Legislature, as the result of the work of the first biennium. The plan being to ask for a special appropriation for publishing. These papers, according to present intention, will be confined studiously and strictly to economic phases of our geology, with the hope and full expectation that a legislative as well as a university appropriation may be a reality for the second biennium.

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THE UNIVERSITY OF NEBRASKA.