bridge was used instead of the simple truss bridge.

A bridge is being built across the Charles River between Boston and Cambridge that deserves especial mention and marks a decided advance in the growing recognition on the part of municipal authorities of the importance of esthetic considerations in the design of public works. It consists of 11 spans of steel arches whose lengths range from 101½ to 188½ feet. Its width is 105 feet between railings. It is claimed that this bridge 'will be not only one of the finest structures of its kind in this country, but will be a rival of any in the old world.' Its length between abutments is 1,767½ feet, and it is estimated to cost about two and a half millions of dollars.

The problems incident to the replacing and strengthening of old bridges frequently tax the resources of the engineer and demonstrate his ability to overcome difficulties. Only a few examples will be cited to indicate the character of this work. In 1900 the Niagara cantilever bridge had its capacity increased about 75 per cent. by the insertion of a middle truss without interfering with traffic. In 1897 the entire floor of the Cincinnati and Covington suspension bridge was raised four feet while the traffic was using it. It may be of interest to state that the two new cables, 10½ inches in diameter, which were added to increase the capacity of the bridge, have just about three times the strength of the two old ones, 12⅓ inches in diameter, and which were made a little over thirty years before. In the same year the old tubular bridge across the Saint Lawrence River was replaced by simple truss spans without the use of false works under the bridge and without interfering with traffic. On May 25 of this year the Pennsylvania Railroad bridge over the Raritan River and canal at New Brunswick, N. J., was moved sidewise a distance of 14½ feet. Five simple spans 150 feet long and a drawbridge of the same length, weighing in all 2,057 tons, were moved to the new position and aligned in 2 minutes and 50 seconds. The actual time that the two tracks were out of service were respectively 15 and 28 minutes. On October 17, 1897, on the same railroad near Girard Avenue, Philadelphia, an old span was moved away and a new one, 235 feet 7 inches long, put in exactly the same place in 2 minutes and 28 seconds. No train was delayed in either case.

Henry S. Jacoby.

Cornell University.

---

*Report of Progress of the Nebraska State Geological Survey and the Morrill Geological Expedition of 1901.**

In spite of the phenomenal heat of the summer of 1901, which was of such intensity and duration that active work in the field was finally suspended, enough progress was made to justify the presentation of the matter to this society. It should be reported, first of all, that a request for funds, amounting to twelve hundred dollars, for publishing the first reports of the state geological survey, was presented to the Legislature, and was passed April 1, 1901, without comment or dissent. This may be recorded as the first sum voted by the state for the examination and publication of its resources; and, though small, it is particularly large at this juncture, for it makes possible the initial work of the state survey. Unfortunately the passage of the bill, by the Legislature, was a little too late to enable us to avail ourselves of a long-standing offer from the U. S. Geological Survey to cooperate in doing geological work in Nebraska, as soon as the state evidenced its recognition of the importance of a geological survey by offering

* Reported to the Nebraska Academy of Science, January 25, 1902.

it material support. By the time the bill was passed all appointments had been made for the U. S. Survey; nevertheless, as soon as the facts were made known to Dr. Charles D. Walcott, Director of the U. S. Geological Survey, several men were detailed to run control lines in Sarpy, Cass and Otoe counties, with the courteous and encouraging proffer of an increased force of topographers for the summer of 1902, so as to expedite the work of making maps to serve as bases for the reports of our own survey. This is cooperation in fact, and it should be stated, furthermore, that we have been favored over many of the older states, on the ground that so young a state can be excused for failing to cooperate with the national survey, better than the older and more resourceful states. Already a line of quadrangles, extending the length of the state, has been surveyed topographically, and that portion of the state west of the 103d meridian has been surveyed, and reported upon by Darton. Besides, certain papers on the water resources of the state have been prepared and published by the national survey. Some of the older states which have shown no spirit of cooperation have received fewer favors.

Field work was confined to the eastern counties, where there are the greatest number of quarries, clay pits and exposures. Mr. E. G. Woodruff spent the early part of the summer, chiefly in Sarpy County, filling in gaps left in the maps made by Fisher and Woodruff the previous summer. Mr. G. E. Condra continued the work of collecting Carboniferous fossils, especially the Bryozoa, while the Director of the State Survey made various short collecting trips. All field notes of each worker are put in typewritten form, and are uniformly bound at the end of each season; likewise all maps and photographs. These manuscript volumes, now numbering twelve books of photographs, seven books of notes, and two books of maps, are deposited with the librarian for safe keeping until such time as they can be published.

The annual Morrill Geological Expedition was rendered self-sustaining during the summer of 1901, by the sale of duplicate specimens the previous year; and one extended trip was made to the famous collecting grounds of Colorado and Wyoming, and numerous short trips to interesting localities in the state, preliminary to future work. Over thirty thousand specimens have been added to the state collections during the past three years.

Specimens, selected from the collections of the Hon. Charles H. Morrill, and from the state geological collection, which are virtually one and the same, are being photographed preparatory to figuring and describing. The material at hand for papers has outrun the publishing fund by several years. However, at the close of the present biennium, a specific publishing fund will not be asked for, for the coming biennium. Hereafter the legislative appropriation will be devoted to the preparation of reports, which will be submitted to the state printer for publication. Supplemental to the state funds for geological work is an annual fund from the University of Nebraska, varying from $200 to $500 a year.

ERWIN HINCKLEY BARBOUR.
THE UNIVERSITY OF NEBRASKA.

SCIENTIFIC BOOKS.

Fact and Fable in Psychology. By JOSEPH JASTROW. New York, Houghton, Mifflin and Co. Pp. xvii + 375.

The wild notions that are current about psychic phenomena are for the most part founded on truth. If the air is full of vagaries in this field we must in part at least lay the blame on the strangeness and suggestiveness of the facts themselves. Automatic speech and writing, hypnotism, the strange subsidences and upheavals of memory that go