University of Michigan. Commissioner Bowers has allotted a liberal sum for the first season's inquiries, and will undoubtedly provide for a continuance of the work over several years. Professor Reighard will have associated with him Dr. H. B. Ward, of the University of Nebraska; Dr. H. S. Jennings, of the Montana College of Agriculture and Mechanical Arts; Dr. Julia Snow, of Ann Arbor; Mr. A. J. Pieters, of the U. S. Department of Agriculture, and a number of other assistants.

An elaborate plan for the study of the lake fauna and flora has been outlined and will be followed as closely as the circumstances permit. The work will extend over the entire year. Experimental work, similar to that conducted at agricultural experiment stations, will be a prominent feature of the survey, some of the problems to be considered being the rate of growth of fishes; the food of young fishes reared from the egg and the changes in their regimen during growth; the source of food of aquatic rooted plants; the life histories of food fishes reared in aquaria or ponds, and of certain aquatic insects and other invertebrates; the rate of increase of the plankton as a whole and of its individual constituents. There will also be systematic studies of the habits, migrations, distribution and food of the fishes and other organisms of the lake.

At the beginning of the work Professor Reighard and Dr. Ward will devote a considerable amount of time to plankton problems, especially the perfection of methods and apparatus; Dr. Snow will carry on experimental work on the algæ; Dr. Jennings will undertake experimental researches on the protozoa, and Mr. Pieters will pursue studies of the aquatic flora. The summer headquarters of the survey will be at the government hatching station at Put-in-Bay, South Bass Island, Ohio.

Lake Erie affords an excellent field for work of this character, on account of its varied fauna, diversified physical features, extensive fishing interests, and the recent serious depletion of the supply of certain valuable food fishes. The investigations may ultimately be extended to some of the other Great Lakes.

H. M. Smith.

U. S. Commission of Fish and Fisheries.

EUGÈNE FLACHAT.

The committee on the inauguration of the monument erected to the memory of Eugène Flachat, of the *Société des Ingénieurs Civils de France*, issued invitations to scientific and professional colleagues on both sides of the Atlantic. The ceremony took place June 12th, at Paris, at the intersection of the streets named for Brémontier, Alphonse de Neuville and Eugène Flachat. We glean the following from the circular issued by the committee:

Flachat, one of the most famous, and justly so, of French engineers, was the designer of the now familiar I-section of rolled iron or steel beam, universally employed in construction.

Flachat was born in 1802. He exhibited his genius for construction, and his inclination toward engineering as a profession, in earliest childhood. As a school boy he was called upon to check the mathematical work of his master, and as a youth investigated the proportions of parts of structures and machinery with the greatest completeness and success. He became particularly interested in metallurgy, constructed the largest blast furnaces and mills of the Ardennes, organized the forges at Commentry and, with Barrault and Petiet, produced a great work, now classic, on the metallurgy of iron which is known by their names. He wrote many articles and brochures, some on economics and related subjects. His main occupation was the construction of railways; but he published descriptions of

a great variety of other works, illustrating his versatility, his industry and his extensive interests. Inaugurating in France the era of railways, he also, as a sequence and as a part of that great work, had a hand in the perfection of their bridges and stations and locomotives and other rolling stock, and in all forms of related constructions, whether architectual or mechanical. He it was who, perhaps more than any other, created the systems of construction, organization and operation of the French railways. In 1848 he was called upon to rebuild the old wooden bridge at Asnieres, and showed his originality and boldness by reconstructing it in wrought iron, and, further, in rebuilding it and transferring traffic to it from the temporary construction improvised upon the burning down of the old bridge, without the delay of a single regular train. From that time the substitution of iron as a building material for wood, in his work, was a fruitful source of fame. He performed the, as then thought, most marvellous feats and always with success; for his computations were always accurate and based upon data ascertained by his own experiments and observations to be safe and correct. The framing of exposition buildings, in 1878 and in 1889, by Dion, his favorite disciple, and by Contamin, his follower, were illustrations of the methods of Flachat.

Flachat reconstructed the foundations of the cathedral of Bayeux, saved its central tower from imminent danger of falling, and restored the church, without accident or delay, and this after the experts consulted had declared the case beyond remedy. He there used a now common form of support, hollow iron columns, of large diameter, filled with concrete, as substitutes for the failing foundations.

The memorial erected in Paris is placed by his now few surviving pupils, aided by many friends and numerous admirers, as a testimonial of their appreciation of the service rendered by the great engineer to his country.

R. H. T.

CURRENT NOTES ON METEOROLOGY.

MOHN'S GRUNDZÜGE DER METEOROLOGIE.

MOHN'S *Grundzüge der Meteorologie* has long been one of the favorite text-books of meteorology in Europe. Its author is well known as professor of meteorology at the University of Christiania and Director of the Norwegian Meteorological Institute. The book was first published in Norwegian, and was translated into German by the author himself, the last German edition (the 4th) bearing the date 1887. We now have a new German edition, the fifth (Berlin, Reimer, 1898), enlarged from 364 to 419 pages, and with several changes. Among the additions we note a description and a cut of the Assmann aspiration psychrometer and of the Richard thermograph. There is a new chart of mean annual ranges of temperature, and the other temperature charts are revised. Mention is made of so recent a phenomenon as the Paris *trombe* of September 10, 1896. The general arrangement of the book is the same as in the former edition, and there is, unfortunately, the same lack of an index.

VAN BEBBER'S WETTERVORHERSAGE.

THE present year brings us also a new edition, the second, of Van Bebber's *Wettervorhersage* (Stuttgart, Enke, 1898), the first edition being dated 1891. The book is now some forty pages longer than when it was first written, and a new chapter on weather forecasting for several days in advance has been added. The substance of this chapter was contained in a pamphlet by the author, published in 1896, under the title *Die Beurtheilung des Wetters auf mehrere Tage voraus.* The plan of the work is, in brief, to present by means of a large number of weather charts (over two hundred), arranged