being a collector of specimens and found his chief outdoor recreation in the study of nature. He made two long canoe trips in the northwest of Canada. A carefully written diary illustrated with photographs of the second expedition which took him by rivers and lakes from Lake Superior to Hudson's Bay, is amongst the books which he left in his will to Columbia University.

He was president of the American Mathematical Society from 1894 to 1896, and served as lecturer on celestial mechanics in Columbia University from 1898 to 1901. The manuscript of his lectures shows that they must have cost him much labor; it contains long algebraic developments and is apparently intended to be a more or less complete account of the methods by which the motions of the moon and planets are calculated. His numerous honors include foreign membership in the Royal Society, the Paris Academy, and the Belgian Academy. He received the Schubert Prize (Petrograd), the Damoiseau Prize (Paris), the Gold Medal of the Royal Astronomical Society and in 1909 the Copley Medal of the Royal Society.

His chief characteristic was a single-minded devotion to the subject which he had made his own. A highly sensitive conscience was always apparent in his dealings with the world: one year he refused to accept the salary of his lectureship at Columbia because no students then appeared to attend the course, and this in spite of the fact that the endowment left him absolutely free to lecture or not as he chose. In later years, he rarely left West Nyack, owing to ill health. He died on April 16, 1914, from heart failure and was buried near the graves of his ancestors not far from his home.

E. W. BROWN.

DICKSON'S LINEAR ALGEBRAS.

Linear Algebras. By L. E. DICKSON, Ph.D. (No. 16, Cambridge Tracts in Mathematics and Mathematical Physics.) Cambridge, University Press, 1914. 8vo. viii + 73 pages.

> And still they read, and still the wonder grew,
> That one small tract contain so much. . . .

A SUBSTANTIAL and systematic introduction to general linear algebras, associative and non-associative, a revision of Cartan's theory of linear associative algebras over the field of