

hope that the shorter word of Aristotle may find favor with Mr. Willey.

BURT G. WILDER.

ITHACA, N. Y., November 18, 1898.

POST-GLACIAL CONNECTICUT.

TO THE EDITOR OF SCIENCE: A note in your issue of the 28th ult. makes my 'Postglacial Connecticut at Turner's Falls,' in the *Chicago Journal of Geology* (July-August), 'invoke the agency of ice' to cut the abandoned gorges at the Bird Track Quarry and Poag's Hole. This is just only in so far as it is true that had there been no glacier there would be no postglacial superposed gorge. The gorge, like all those of its class, was cut by the river and a clear photograph is reproduced, showing the visible water wear on these rocks in a region where all others are beautifully rounded by glaciation.

MARK S. W. JEFFERSON.

BROCKTON, MASS., November 11, 1898.

SCIENTIFIC LITERATURE.

Handbuch der physiologischen Optik. H. VON HELMHOLTZ. Hamburg und Leipzig, Leopold Voss. 1896. Second Revised Edition. Pp. xix+1334. M. 51; Bound, M. 54.

The phenomena of vision are so far-reaching and at the same time so organically related that they may almost be regarded as the subject-matter of a separate science. It is neither possible to include them under physics, under physiology or under psychology, nor to distribute them among these sciences. The photochemistry of the retina, the anatomical and histological data, and the comparative and evolutionary relations, add still further to the range of the subject. On vision is based one of the more important departments of medicine; for ophthalmology can in most cases not only offer a correct diagnosis, but also a cure. Probably a majority of the whole population needs its services, and if we add the hygiene of the eye, including the proper lighting of schools, the proper printing of books, etc., there is no one to whom the scientific study of vision is not of practical importance. The phenomena of vision are further factors in the production and appreciation of the great plastic arts — painting, sculpture and architecture.

Finally, the world in which we live is before all the world we see.

If there be a science of vision, von Helmholtz should be honored as its founder, and it should date from the completion of the *Physiologische Optik* in 1867. It is true, the doctrine of special creations belongs to the past. Like other departments of knowledge, vision has had a long history and a gradual development. von Helmholtz found at hand not only the greater part of the materials for his structure, but also many of the designs. From the side of physics he had the series of contributions from Kepler, Descartes, Newton, Lambert, Young, Brewster; from physiology there were Haller, Priestley, J. Müller, Plateau, Volkmann, Purkinje; from philosophy Berkeley; from art da Vinci and Goethe—to mention but a few of many names. Contemporary with von Helmholtz worked Aubert, Hering, Listing, von Graefe, Brücke, Vierordt, Donders, von Bezold and many more. But of them all von Helmholtz alone saw the range and unity of the subject, and prepared one of the few books that make an epoch. So well was his work performed that it has scarcely had a successor—only Aubert's *Grundzüge der physiologischen Optik* deserves to be mentioned—and it remained for von Helmholtz himself, in old age, with energies diverted to other channels, to write a new edition of his great work.

To give in a review an account of the contents of a book extending to 1,300 pages, written with great conciseness and covering a range of subjects so wide, is evidently infeasible. Still less possible would it be to enter into critical discussion—an article might be written on each of a hundred topics. This notice must be confined chiefly to the new edition, and the eulogy appropriate to the first edition must be tempered with criticism.

Publication of this edition was begun in 1888. In the course of about a year three parts were issued, treating of the anatomy and dioptrics of the eye. About forty pages are here added in addition to substitutions for material omitted, and thorough revisions throughout. The pages in the new edition are, however, somewhat smaller than in the old. This Section concludes with the description of von Helmholtz's great