science in the public service. More than this, individual citizens have discovered that there is no better use for wealth than by endowments like those which are annually added to the educational resources of the country. In aiding all such tendencies, the American association has performed a noble part.

As we have seen, the founders of the association declared as their first object the promotion of "intercourse between those who are cultivating science in different parts of the United States." One of the obstacles to progress in this country is the wide separation of those who are workers in kindred departments. A professor in Dublin or in Edinburgh may go to London in a night; but it takes seven days for our California friends, and half that time for many a professor in the interior, to reach Washington or Boston. So much the more reason is there that these annual congresses, bringing people together from every part of the land, should be kept up. Acquaintances, friendships, copartnerships, promotions, criticisms, suggestions, assistance, are the fruits of this intercourse. Those who live in the centre of scientific activities, who see more people of mark in every month than are to be seen at other places in a year, are in danger of undervaluing all popular assemblies and conventions, and are tempted to stay away from the unsatisfactory throng. But it has been fortunate that nearly all the most eminent members of the American association have been ready to attend these meetings frequently, if not invariably, and to give the encouragement of their presence, their counsel, and their friendly greetings, to those who were younger. Not to mention any who are living, was there ever a more benignant and inspiring teacher than Agassiz? did any one ever forget the greetings of Bache who once felt his friendly grasp? and could anybody be more ready than Henry to lend a helpful hand to all who needed encouragement? Are there not scores of workers in the field to-day who remember with gratitude this trio, and others of their kin, as they appeared, for instance, at the Albany meeting when the association was in the first flush of its youthful vigor? Are there not like recollections of the great assembly of 1880, when Boston and Cambridge gave such admirable facilities for seeing institutions and men?

It seems to us that there is always danger of so multiplying the number of meetings, and of so subdividing the sections, as to confuse the members of the association, detract from the general interest, and interfere with the exchange of personal courtesies. The remedy lies with the officers of the association, preventing with firm and judicious decisions the reading of poor papers, and cutting off the discussions of wordy and rambling speakers. A few able papers are much better worth the consideration of the association than a multitude of unimportant communications. *Ponderanda non numeranda.*

As we write these lines, the meeting has not begun; but the circulars which have been issued show that every thing has been done in Philadelphia which experience in hospitality can suggest for the pleasure of the association. We trust that the reflex influences of the gathering will be felt upon the new institute of biology, on the great schools of medicine, on the University of Pennsylvania, on the Academy of natural sciences, and on all the other scientific foundations of which the city is justly proud. The seat of the American philosophical society is a shrine which the countrymen of Franklin and Rittenhouse will visit with pleasure under the presidency of Lesley.

J. PETER LESLEY.

The subject of this notice was born Sept. 17, 1819, in Philadelphia. Both his grandfather and father were cabinet-makers, intelligent, strong, and honest men, who brought up large families in the faith of the Church of Scotland, and in a love for hard work of every kind, physical and intellectual. He was sent to school on his sixth birthday, to the academy on his twelfth, and to the University of Pennsylvania on his fifteenth, getting his diploma in 1838. At an early age, his religious expe riences were of the severest type. He knew

the Bible, especially the Old Testament, almost by heart; had read Bunyan's 'Pilgrim's progress' scores of times, and 'Robinson Crusoe' still oftener; went three times to church every Sunday, and twice to Sabbath school; and was in the best trim for becoming a candidate for the ministry, to which, in fact, he had been secretly dedicated from his birth. The family physician, however, refused to permit him to enter Princeton seminary after graduating from college; and an accident threw into his lap a commission as sub-assistant on the Geological survey of Pennsylvania, under the direction of Prof. Henry D. Rogers, so that it was only in the autumn of 1841 that he commenced his theological studies at Princeton, N.J.

J. P. Lesley,

He early announced his intention not to apply for ordination, but to spend his ministry among the castaway people of the Alleghany Mountains, with whose wretched spiritual condition he had become acquainted in the course of his geological surveys. To give himself a closer and deeper view into the character of the descendants of the original immigrants to Pennsylvania, he sailed from New York to Liverpool as a steerage passenger in 1844, walked through England and around France with a knapsack and blouse, visited the Waldenses of Dauphine and the Pietists in Geneva, crossed the Jura on foot, and middle Germany, and spent the winter months with Tholuck at the university at Halle, returning in a sailing-vessel from Bremen to Philadelphia the following May. He spent the next two years in the mountain-districts of the state, until his naturally vigorous constitution gave way, under incessant mental excitement, bodily fatigue and exposure.

A long illness ensued; but late in 1848 the worn-out missionary became the salaried pastor of an Orthodox-Congregationalist church near Boston, and continued in that capacity three years, when, bidding farewell to his parish and to theology, he returned to his native place and natural science, to commence life anew.

The next ten years were the most active of his life, most of the time being spent in the field. In 1856 he published a "Manual of coal and its topography, illustrated by original drawings, chiefly of facts in the geology of the Appalachian region of the United States," and was appointed secretary of the American iron association. In 1859 appeared his "Iron manufacturer's guide to furnaces, forges, and rolling-mills of the United States, with discussions of iron as a chemical element, an American ore, and a manufactured article, in commerce and in history." Jan. 15, 1858, while examining the iron-works of southern Ohio, Mr. Lesley was elected librarian, and Jan. 7, 1859, one of the four secretaries of the American philosophical society, and continues to hold these offices, which, for the first year or two, withdrew him almost entirely from field-work. From 1860 to 1866 Mr. Lesley was busily employed by capitalists to pronounce upon projected mining-plants, and by mine-owners to examine their properties, the call for iron and coal being great on account of the civil war. In 1864 and 1865 serious illnesses, produced by overwork, prepared the way for a complete breakdown of his nervous system in the early summer of 1866, from which he did not recover until the early winter of 1869, this interval of three years and a half being spent mostly in Europe.

Mr. Lesley went from Italy to the Paris exposition of 1867 as one of the ten commissioners appointed by the United States senate; but his illness steadily increased, and he was compelled to abandon his duties. Not until 1872 could he again do six hours of hard work a day; and a new career of usefulness was opened to him by his appointment, in that year, to the professorship of geology in the new department of science of the University of Pennsylvania, and in 1873 to the directorship of the Second geological survey of the state, still in progress. For four years (1873–78) he performed the duties of both offices, finding his only relaxation in a short voyage to Europe every two years; but a threatening recurrence of his former malady induced him to offer his resignation to the trustees of the university, who, however, preferred to grant him an indefinite furlough, until the close of the geological survey.

With what untiring zeal he has devoted himself to the work of that survey is only known to those who have been associated with him in the work. How successfully he has conducted it, is shown to the world through the seventy volumes recording its progress. If his hundreds of papers, scientific and literary, read before the American philosophical society, had never been published, this great work alone would place him in the front rank of American geologists. Of the personal character of a man whose modesty is his most prominent trait, it is difficult to speak as one would wish during his life.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

PENDING PROBLEMS OF ASTRONOMY.[1]

Thirty-six years ago this very month, in this city, and near the place where we are now assembled, the American association for the advancement of science was organized, and held its first meeting. Now, for the first time, it revisits its honored birthplace.

Few of those present this evening were, I suppose, in attendance upon that first meeting. Here and there, among the members of the association, I see, indeed, the venerable faces of one and another, who, at that time in the flush and vigor of early manhood, participated in its proceedings and discussions; and there are others, who, as boys or youths, looked on in silence, and listening to the words of Agassiz and Peirce, of Bache and Henry, and the Rogers brothers and their associates, drank in that inspiring love of truth and science which ever since has guided and impelled their lives. Probably enough, too, there may be among our hosts in the audience a few who remember that occasion, and were present as spectators.

[1] Address to the American association for the advancement of science at Philadelphia, Sept. 5, 1884, by Prof. C. A. Young, professor of astronomy at Princeton, retiring president of the association.