A word in explanation of this strange appearance from some of your learned contributors would, I think, be interesting.

Model School, Waterford, June 1 HENRY P. DOWLING

### Classes for Women at University College

IN view of the new charter enabling the University of London to confer degrees on women, and the increased demand for a higher education of women, the council of this college have determined to provide for them systematic instruction in regular college classes.

In most subjects the junior classes for women will be distinct from those attended by male students. The senior classes will more generally be open to both sexes, and these classes, which are already open to both, as fine arts, philosophy of mind, &c., will remain so.

Prospectuses embodying the results of this change will be ready by the 18th inst. TALFOURD ELY

University College, London

[OUR St. Petersburg correspondent, "C. S." must send us his name (in confidence), before we can publish his last communication.]

## *PROF. JOSEPH HENRY, LL.D.*

PROF. HENRY was born December 17, 1797, at Albany, New York, where also much of his early life was passed. The year of his birth seems, however, uncertain, some authorities placing it in 1799, or even later. He had at first the advantages of only a common school education. A parish library supplied him with boyish reading, and his early tastes were in the direction of romance and the drama. He was nearly grown when the accidental possession of a copy of Robinson's "Mechanical Philosophy" turned his thoughts towards natural philosophy. After two years of work as a watchmaker, he came under the training of the Albany Academy, where he developed a degree of mathematical talent which, in 1826, led to his selection for the duties of instructor in mathematics in that institution. Prior to this, having had some experience in the field as a surveyor, he was associated with Amos Eaton in the Geological Survey along the line of the Erie Canal, projected and sustained by General Stephen van Rensselaer. Failing physical health led to his taking this step. He returned home with a robust constitution, which never failed him throughout his life.

While occupied with his duties as mathematical instructor in the academy—then in charge of Dr. T. Romeyn Beck—he commenced that line of investigation in electricity which resulted in the important discoveries that have made his name famous. He attended the lectures on chemistry of Dr. Beck, and assisted in the preparation of his experiments. At this time he devised and published an improved form of Wollaston's sliding-scale of chemical equivalents, in which hydrogen was adopted as the radix—a contrivance which is hardly known, even by name, to the present generation of chemists. Thus, while Prof. Henry's original contributions to science were chiefly physical, his first scientific work was in the department of chemistry. His work with Dr. Beck enabled him, after his removal to Princeton—where he became professor of natural philosophy in 1832,—to take up the duties of the chemist, Dr. John Torrey, when that well-known teacher was disabled for a time by ill health.

It was in the interval between 1828 and 1837 that the most important work of his life was accomplished in the line of strictly scientific research.

If we compare the poverty of his apparatus and the poverty of his means for research and publication with the importance of the results which he reached, we may accord him a place by the side of Faraday as an experimentalist. He became the sole discoverer of one of the most singular forms of electrical induction, and was among the first, perhaps the very first, to see clearly the laws which connect the transmission of electricity with the power of the battery employed. One of the problems to which he devoted himself was that of producing mechanical effects at a great distance by the aid of an electro-magnet and a conducting wire. The horse-shoe electro-magnet, formed by winding copper wire round a bar of iron bent into the form of a U, had been known before his time, and it was also known that by increasing the number of coils of wire greater force could be given to the magnet, if the latter were near the battery. But when it was removed to a distance the power was found to weaken at so rapid a rate that the idea of using the electro-magnet for telegraphic purposes seemed hopeless. Henry's experiments were directed toward determining the laws of electro-motive force from which this diminution of power resulted, and led to the discovery of a relation between the number of coils of wire round the electro-magnet and the construction of the battery to work it. He showed that the very same amount of acid and zinc arranged in one way would produce entirely different effects when arranged in another, and that by increasing the number of cells in the battery there was no limit to the distance at which its effects might be felt. It only remained for some one to invent an instrument by which these effects should be made to register in an intelligible manner, to complete the electro-magnetic telegraph, and this was done by Morse. Henry himself considered the work of an inventor as wholly distinct from that of a scientific investigator, and would not protect the application of his discoveries, nor even engage in the work of maturing such applications. He never sought to detract from Morse's merits as the inventor of the magneto-electric telegraph, but did on one occasion, under legal process, give a history of the subject which was not favourable to Morse's claim to the exclusive use of the electro-magnet for telegraphic purposes. Some feeling was thus excited; but Henry took no other part in the controversy than to ask an investigation of some charges against himself contained in an article of Morse's.

The results of these researches are chiefly recorded in the *Transactions* of the Albany Institute, the volumes of the *American Journal of Science and Arts* for the period, and the *Transactions* of the American Philosophical Society. His "Contributions to Electricity and Magnetism" were collected in a separate volume in 1839. The analysis of these important researches, and the discussion of the questions of priority connected with them, will be the duty of the academician to whom shall be assigned the preparation of a memoir or eulogy of the distinguished author.

The memoir in the *American Journal* gives a list of twenty-two memoirs and discoveries by Prof. Henry. To these papers should be added an important series of communications, made chiefly to the National Academy of Sciences during the past four or five years, upon the laws of acoustics as developed in the course of investigations conducted for the Light-House Service in order to determine the various conditions involved in the transmission of fog-signals. These investigations have been carried forward mainly in government vessels, and occupied Prof. Henry's close personal attention during many weeks of each season.

Besides these experimental additions to physical science, Prof. Henry is the author of thirty reports, between the years 1846 and 1876, giving an exposition of the annual operations of the Smithsonian Institution. He has also published a series of essays on meteorology in the Patent Office Reports, which, along with an exposition of established principles, contain many new suggestions, and, among others, the origin of the development of electricity, as exhibited in the thunderstorm.

In 1837 he visited Europe and made the acquaintance