the number of students. The authorities of the college have under consideration the establishment of a regular academical course for women, which will be largely of a scientific character.

Owens College has its class rooms at present in an old building adapted to its use; but an elegant new building is now in process of erection at a cost of £90,000, and a sum of £130,000 is said to have been raised as a building fund. The foundation stone of this building was publicly laid in September last. It is to be observed that Mr. Owens wisely prohibited any portion of his endowment fund being expended in buildings, and that the Government of Great Britain has given no aid to Owens College, so that this large sum is a product of private munificence, chiefly in the town of Manchester.

SCIENCE TEACHING AT CAMBRIDGE.

The two great English Universities of Oxford and Cambridge are obviously not content to lie under the aspersion some time ago cast on them by an eminent scientist that their "atmosphere" is unfavorable to scientific study. Both are making rapid strides in this direction.

At Cambridge, under the kind guidance of Prof. Stokes, himself one of the most eminent of living physicists, and of the patriarchal Sedgwick, and his able assistant Seeley, I saw the improvements which in late years have been made in the means of study in natural and physical science, and which tend, with other changes, to give greater effect to the regulations in favour of the natural science tripos. Still more recent movements in this direction are the appointment of a university professor of pure physiology, and the movement in aid of a university professorship and demonstratorship of experimental physics, towards the buildings and apparatus necessary for which, the Chancellor, the Duke of Devonshire, has offered a contribution of £6,300.

WHAT OXFORD IS DOING.

Oxford has, however, taken the lead of its sister university in this matter, and I shall therefore notice more in detail what I had the pleasure of seeing there in the way of provision for practical science teaching.

The new museum, now of world-wide reputation, is not merely a museum in the more modern sense of the term, but a series of scientific laboratories and class rooms, attached to a magnificent library and museum. The museum proper had been largely increased and improved in its collections since my last visit in 1865, and its great central glass-roofed court, more than 100 feet square, with its surrounding galleries, is now well-filled with specimens in Geology and Zoology. On the south and west sides, the museum is encompassed with class rooms and laboratories in geology, chemistry, and physical science. On the north side are the laboratories and class rooms in physiology. Prof. Phillips was absent, owing to an attack of illness, and in his department I saw only assistants engaged in laboriously piecing together the huge bones of the Cetiosaurus, a gigantic reptile with thigh bones more than five feet in length, of which a magnificent skeleton has recently been discovered in a quarry not far from Oxford. I had, however, the pleasure of seeing the students at work in the laboratory of practical chemistry, under Prof. Brodie, and of examining the admirable arrangements of Prof. Rolleston for practical work in physiology. Among other things which I saw in the physiological laboratory, were excellent dissections of mullusks and worms made by students as a part of their examinations in the honour course of Natural science.

Though the museum contains rooms for experimental physics, the University has greatly enlarged its means of instruction in this department, by the erection in the vicinity of the museum of a physical laboratory, which I believe will cost about £40,000, and which, in the perfection and completeness of its arrangements, will surpass all similar workshops of science, not only in England, but in the world. Prof. Clinton, who himself showed me the building, and explained its plan, has endeavored to make this laboratory in itself a model of practical science, considered as the art of doing everything in the best way, by applying in the most perfect manner every known improvement and many original inventions of his own, to secure convenience and accuracy of working. The building has a central hall for apparatus, and for certain experiments requiring a large space; a class room, which is a model of acoustic perfection and mechanical arrangement; and a number of work-rooms, in which all the most delicate kinds of operations in weighing and measuring can be carried on with the best apparatus and with every precaution against error. This laboratory was to be opened in the present autumn, and I was informed by Prof. Clinton that he expected to begin with about 30 practical students. The object of the laboratory is two-fold—(1) to train observers and experimentors more thoroughly than heretofore: (2) to undertake original physical researches with more perfect appliances than those now available.

The Oxford new Museum, with the neighboring Physical Laboratory, thus constitutes in itself a great educational institution in physical science, managed by some of the ablest instructors and original investigators of the day, and providing for studies in experimental physics, chemistry, mineralogy, geology, physiology, and zoology; botany being otherwise provided for in connection with the Botanic Garden. It has seven large class rooms and a multitude of working rooms and laboratories, with the scientific department of the Radcliffe Library. These appliances are as yet large in comparison with the number of students who use them; but the number of students is increasing, and this apparently not at the expense of the literary courses of study. It is to be observed, moreover, that the aim of the Oxford Science school is high. Its object is not so much to train practical workers in science as applied to the arts, as to give the education necessary to enable those who receive it to take their places as original investigators in the advancement of theoretical science, and in connection with this to bring out the true value of physical science as a means of securing the highest mental culture. Viewed with reference to those ends, Oxford is undoubtedly an excellent Science school; and a University which offers its highest honours, in courses, in which practical chemistry and physics, and dissections of invertebrate animals, constitute important parts, cannot be regarded as unfavorable to the cultivation of science. It must be admitted however that these improvements have been effected only after severe contests between the advocates of modern science and the conservative element in the University, contests in which my valued friend, Dr. Acland, well known to many of us here, has borne an influential part.

MOVEMENT IN EDINBURGH.

Edinburgh has as yet no organized Science school, and has undoubtedly been falling behind the English schools in its reputation for training in natural science. This is, however, a relative rather than an actual decadence, and there is a very strong desire on the part of many of the friends of the University to restore its ancient reputation in this respect. In evidence of this we have the recent endowment of the Baxter Chair of Engineering, and the still more recent offer of Sir Roderick I. Murchison to give £6,000 as the endowment of a Chair of Geology, which I am informed the Government is likely to supplement with a like sum. The Department of Science and Art has also attached to the University a museum on the plan of that of South Kensington, under Prof. Archer; but no lectures are delivered in connection with it. No Institution in Great Britain has a better field for science education than Edinburgh, and it possesses many excellent teachers, but their action is to some extent paralyzed by want of facility for mutual co-operation, and by want of some professorships necessary to complete the course of study. In the meantime, there are excellent practical classes in chemistry, experimental physics and botany, and there is an academical course for a science degree. In this course the candidate is required to have the degree of B. A., M. A., M. B., or M. D., or to hold certificates of having passed the examinations in two of the departments of the University course, or to have matriculated in the University of London. Otherwise he must pass a preliminary examination. He must then pass a general examination in mathematics, physics, chemistry, zoology, and botany; but may omit this examination if an M. A. who has taken honours in natural science, or an M.B. or M.D. who has taken honours in natural history, and has passed the examinations in physics, higher mathematics, and logic. There is then a final examination, in which the student may select one of three branches in which to pass, viz.: (1) Mathematical science; (2) physical and experimental science; (3) natural science. On passing this examination he is entitled to the Degree of Bachelor of Science, and at the end of twelve months may come up for the degree of Doctor of Science, in the examination for which he must show profound knowledge of a special scientific subject. The number of candidates for these degrees is not as yet large, but is increasing. They might obviously be rendered much more valuable and attractive by connection with special science courses, leading to application to the arts or to definite branches of original research.

It may be well to mention here that the Principal of Edinburgh University, in his inaugural address, has suggested the omission of Greek from the University course for M. A., to make room for science culture, and that the chairman of the Endowed Schools Commission has, as already mentioned, put this idea in a practical shape before the English Universities, in an official letter to the Vice-Chancellors, in which he intimates the design of the Commissioners to establish schools in which Latin alone shall be taught, in addition to science and modern languages and literature, and invites them to open their examinations for degrees and honours to the pupils of such schools. While it is to be doubted whether any such change is required here, where classics have not been so exclusively insisted on in the schools as in England, the arguments adduced by Lord Lyttleton in his circular are well deserving of study, as indicating the strong feeling among parents and educated persons in England that science education for their children is a matter of absolute necessity, and that, if it cannot otherwise be obtained, some portion even of their cherished literary culture must be sacrified to a want, on the supply of which even national existence may depend.

SCIENCE TEACHING IN THE UNITED STATES.

We might now turn to the efforts which have been made in the United States, where, owing to the more general diffusion of elementary education, the value attached to the applications of science to the arts of life, and the liberality of private benefactors and of the State and general Governments, much more has been done than in England, and where such schools as the Lawrence and Sheffield