may have become the nucleus direct by a process of vacuolation and differentiation within itself.

In the case of the Cyanophyceæ I have already shown that the central body is a vacuolar structure associated with granules of chromatin, and that sometimes this vacuolation becomes so pronounced in resting cells that we get an appearance as of a limiting membrane between it and the cytoplasm. The granules run together and become associated in such a way as to simulate the spireme thread of an ordinary nucleus. Further, we have in some Cyanophyceæ a differentiation of a nuclein-like substance in the form of the red granules of Butschli at the periphery of the central body, which may be an early stage in the separation of a portion of its substance to perform the special functions of the pyrenoid. The complete separation of this into a definite pyrenoid and the formation around the remainder of a nuclear membrane would give us a differentiation comparable to some extent to what we find in *Euglena viridis*, where we have a reticulate nucleus which divides by a rudimentary process of karyokinesis, in which, so far as we know, there is no definite formation of chromosomes and no longitudinal splitting.

As to when or how the higher differentiation of the nucleus, with its chromosomes, longitudinal division, and spindle figure, arose we do not know. Possibly a careful investigation of the lower forms of the fungi and algæ and such organisms as Euglena, and especially the protozoa, may throw light upon this difficult problem.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

SIR DONALD CURRIE has promised to give 20,000*l.* to the equipment fund of Queen's College, Belfast, provided an equal sum is raised from other sources. It is understood that a considerable portion of this amount has already been promised.

MR. E. TOWYN JONES, demonstrator in chemistry at University College, Bangor, has been appointed assistant lecturer and senior demonstrator in the department of chemistry and physics of the Pharmaceutical Society of Great Britain.

IT is announced that Mr. Bazil McCrea has given 6000*l.* to found a chair of experimental physics in Magee College, Londonderry, and to provide two scholarships in connection therewith. The gift is conditional upon funds being provided by subscription within six weeks for the erection of a suitable physical laboratory.

WE have received the year-book of the Michigan School of Mines for 1904–5, and an album of views showing the facilities for instruction afforded by the immediate surroundings of the college. Established in 1885, the college is situated at Houghton, in the heart of the great copper mining region of Lake Superior, with the deepest shafts in the world and the most powerful machinery ever employed in mining. The students also have access to the docks, railways, dressing plants, and smelting works. The special facilities for practical training largely account for the success which the institution has attained. There are at the present time 223 students, their average age being 22½ years.

THE metropolitan medical schools will re-open for the winter session on October 2 and October 3, and in many of them inaugural addresses will be delivered. At University College the address will be given on October 2, at 4 p.m., by Prof. Kenwood on "Preventive Medicine: Past and Present"; at King's College on October 3, at 3 p.m., by Prof. Clifford Allbutt, F.R.S., on "Medical Education in London," and an opening lecture on October 4, at 4 p.m., by Prof. Dendy on "The Study of Zoology"; at Charing Cross Hospital on October 2, at 4 p.m., by Sir James Crichton-Browne, F.R.S.; at St. George's Hospital on October 2, at 3 p.m., by Mr. Brudenell Carter; at the Middlesex Hospital on October 2, at 3 p.m., by Dr. R. A. Young; at St. Mary's Hospital on October 2, at 3.30 p.m., by Dr. Wilfred Harris; at the London (Royal Free Hospital) School of Medicine for Women on October 2, at 4 p.m., by Mrs. Bryant, D.Sc.; at the London School of Tropical Medicine on October 10, at 4 p.m., by Dr. Nuttall; at the School of Pharmacy, Pharmaceutical Society, on October 2, at 3 p.m., by Sir Boverton Redwood; and at the Royal Veterinary College on October 2, at 4 p.m., by Mr. W. Hunter. At Guy's, the London, St. Thomas's, and Westminster hospitals there will be no inaugural addresses, but at the first named Prof. Osler, F.R.S., will open the session of the Pupils' Physical Society with an address on "Some Reminiscences of Sir Thomas Browne" on October 12, at 8 p.m.

THE second volume of the report of the Commissioner of Education for the year 1903 has now been received from Washington. The bulky volume of some 1300 pages is largely concerned with statistics, full data being provided concerning every grade of educational institution. Dealing with the income of colleges and universities, the report shows that in the United States the State and municipal aid to higher education during 1903 amounted to 1,591,000*l.*, of which 1,034,000*l.* was granted for current expenses and 557,000*l.* for buildings and other special purposes. The total value of all gifts and bequests reported during the year to the commissioner by universities and colleges amounted to 2,950,000*l.* The three institutions receiving the largest sums for the year under consideration were:—University of Chicago, 487,500*l.*; Harvard University, 351,300*l.*; and Barnard College, 225,600*l.* The universities and colleges in the States of the North Atlantic and North Central divisions continue to receive the greater portion of benefactions, more than 90 per cent. of the total amount being reported by them in 1903. Dr. John Eaton, who was formerly United States Commissioner of Education, contributes biographical sketches of American educational benefactors and of American citizens whose lives were devoted to educational work, and this brightly written section of the volume affords another indication of the way in which the men of wealth in the United States are encouraged by those in authority to interest themselves in educational progress.

THE polytechnics and technical institutes of London will open shortly for the winter session, and the issue of new calendars and syllabuses has begun already. The session of Birkbeck College will commence, we learn from its new year-book, on October 2, when Sir Edward Fry will deliver the inaugural address. Afterwards the class-rooms and laboratories will be opened for inspection, and an exhibition of work will be held in the school of art. The work of Birkbeck College is conducted in close relation with the University of London, courses of study for examinations of the university being provided under recognised teachers of the university. In addition to evening classes in almost every department of learning, there are day courses of work which give instruction in practical and theoretical science, in classics, in modern languages, in commercial subjects, and in English literature. The moderate fees will enable students of limited means to take advantage of the lectures and laboratory work which have been arranged at this central institution. The syllabus of classes at the Sir John Cass Technical Institute has also been received, and supplies gratifying evidence of the excellent provision of scientific and technical instruction which is available in Aldgate. It is satisfactory to find that in addition to systematic courses of lectures, special attention is given to laboratory work with a view to bring home to students the general and fundamental principles of science in association with the work and products with which they are more immediately concerned in their daily life.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, July 20.—"A New Formation of Diamond." By Sir William **Crookes**, F.R.S.

Assuming the following data for carbon—boiling point 3870° ab., melting point 4400°, critical temperature 5800°, critical pressure 2320 ats.—the Rankine or Van der Waals formula calculated from the boiling point and critical data gives for a temperature of 4400° ab. a pressure of 16·6 ats. as the melting-point pressure.

Making similar estimates for other temperatures, it appears that above a temperature of 5800° ab. no amount of pressure will cause carbon vapour to assume liquid form, whilst at 4400° ab. a pressure of above 17 atmo-