stration of some effects of alternating magnetism on iron, nickel, cobalt, and ores of these metals, and on Heusler alloy. Prof. E. G. Coker showed the action of cutting tools working on a transparent medium by means of polarised light, using for this purpose Dr. Thompson's large Nicol prism, and Prof. C. H. Desch exhibited a number of lantern slides illustrating the structure of steel and non-ferrous alloys. Dr. Eccles, principal of the College, and a number of past students had interesting exhibits.

Pasteur.

ON Friday last, February 2, an address on the work and ideals of Pasteur was given in the rooms of the Royal Society by Dr. Pasteur Vallery-Radot, the grandson of Louis Pasteur. This was the first of a series of lectures, organised by the Alliance Française to be given by Dr. Pasteur Vallery-Radot in this country, in commemoration of the centenary of Pasteur, which is being celebrated this year. Sir Charles Sherrington, president of the Royal Society, was in the chair, and among those present at the meeting were Sir Anthony Bowlby, Sir Humphry Rolleston, Sir William Hale-White, Sir Charles Ballance, Prof. C. J. Martin, and Mr. Chaston Chapman.

Dr. Pasteur Vallery-Radot prefaced his remarks by saying how much he appreciated the homage which this country was paying to his illustrious grandfather, since it was in England, the home of Jenner and Lister, that Pasteur found some of his most ardent supporters. He contrasted the state of medicine before the advent of Pasteur with what it was at the end of the nineteenth century, showing what immense benefits had accrued to humanity at large from the brilliant researches of this great man.

In the short period of forty years, Pasteur lifted the study of infectious disease out of the morass of empiricism and placed it on a scientific basis. By his discoveries he opened up a new world, the realm of micro-organisms, and laid the foundations of bacteriology, which to-day occupies so important a position in medicine and many industries. The numerous investigations of Pasteur, commencing with his work on the tartrates and paratartrates at the age of twenty-six, were next rapidly passed in review. His fundamental discoveries in fermentation, his investigations on the disease of silkworms, chicken cholera, swine erysipelas, anthrax, these were all dealt with in logical sequence leading up to the masterpiece of this scientific genius, anti-rabies inoculation.

Perhaps to many this story was not new. It bears repetition, however, not only because of its enthralling interest, but because of the lesson which can be learnt from it. There are many, even to-day, who are only too ready to point the finger of scorn at scientific investigation or to oppose animal experiments. If only these misguided individuals were to make a study of the life and work of Pasteur, perhaps many of the grotesque criticisms of research would remain unuttered. To what did Pasteur owe his great success? We are told that as a youth at the Lycée he showed no promise of great achievement in life, that he was no more than an average pupil. He was, however, endowed with an imagination which served him well in planning his investigations. Coupled with this gift was a critical faculty which he applied rigorously to all he did—an unusual combination. It was, however, his faith in the experimental method, his fundamental honesty, his single-mindedness and his immense desire to advance knowledge and work for the good of humanity, which enabled Pasteur to achieve what he did. Inspired by this ideal, he went from one success to another, carrying all before him. Despite this, Pasteur remained simple and unostentatious to the end; he was indeed a great man.

Pasteur and Lister are perhaps the two most beautiful characters among the scientific men of the last century. Their lives should be read and studied by all those entering upon a career of scientific investigation. With such a model as Pasteur and fired by some of the idealism and enthusiasm of this great man, even those of mediocre attainments would achieve success. S. P. B.

University and Educational Intelligence.

CAMBRIDGE.—Another important development of the Agricultural School of the University is foreshadowed in an offer from the Ministry of Agriculture and Fisheries announced by the Council of the Senate. In the first instance the offer is of a sum of 30,000*l.* from the Development Commissioners to provide for a Chair of Animal Pathology. On the professor being appointed, he would be required to prepare a scheme for the development within the University of the study of the diseases of farm animals. For an approved scheme the Commissioners would be prepared to find a capital sum of about 25,000*l.* for buildings, the sites to be provided by the University. While the Corn Production Acts (Repeal) Act Fund lasts, *i.e.* till about 1927, annually recurring grants for maintenance and research would be met out of that Fund. After the Corn Repeal monies come to an end the Ministry confidently expect to find from other sources money to continue the work. In the event then of the necessary financial provision not being forthcoming, the University would be under no obligation to continue the Institute. Both the Schools of Agriculture and of Medicine stand to gain greatly from this new scheme, and work of the utmost importance for that side of agriculture which depends on live-stock will be initiated.

It is proposed to confer the degree of M.A., *honoris causa*, on Mr. Humphry Gilbert-Carter, director of the Botanic Garden.

LONDON.—A course of four public lectures on "Electric Fields in Atomic Physics" will be given at University College, at 5.15 on March 13, 15, 20, and 22, by Prof. E. T. Whittaker. Admission will be free, without ticket.

Applications are invited by the Senate for the University readership in cultural anthropology tenable at University College. The latest time for the receipt of applications (12 copies) is the first post of Thursday, February 22. They should be sent to the Academic Registrar, University of London, South Kensington, S.W.7.

OXFORD.—An examination will be held at Keble College on March 13 for two science scholarships, each of the annual value of 80*l.*, plus 20*l.* laboratory fees. The subjects of the examination will be chemistry or biology, with elementary physics, and, for biologists, elementary chemistry in addition. Information can be obtained from Dr. Hatchett Jackson, Keble College, Oxford.

Dr. R. A. Peters, lecturer in biochemistry in the University of Cambridge, has been elected to the Whiteley professorship of biochemistry.

DR. G. H. CARPENTER, professor of zoology at the Royal College of Science, Dublin, has been appointed keeper of the Manchester Museum.

DR. RAFFAELE ISSEL, son of the late Prof. Arturo Issel, the geologist, has been appointed professor of zoology in the University of Genoa.

IN the course of the annual dinner of the Honourable Society of Cymmrodorion on January 19, at which the Prince of Wales was the chief guest, Mr. Dan Radcliffe promised, in honour of His Royal Highness, to give 50,000*l.* for the benefit of the University of Wales.

THE Sydney correspondent of the *Chemical Trade Journal* writes that the secretary of the Victorian Chamber of Manufactures has informed the registrar of the University of Melbourne that the sum of 1500*l.* per annum for ten years has been contributed for the University funds "for the purpose of assisting in providing and maintaining professional chairs associated with arts and sciences which have relation to industries and production."

IN connexion with Battersea Polytechnic, Tate scholarships in engineering, science, and domestic science are being offered for competition in June next. The scholarships vary in value from 20*l.* to 30*l.* per annum, with free tuition, and are tenable for two or three years. The latest day for the receipt of applications is April 21. Further particulars are obtainable from the principal.

"THE continued neglect of science as a part of general education in schools" is lamented by the advisory committee on the textile industries and colour chemistry departments of the University of Leeds in a report for the year 1921–22. They are able, nevertheless, to congratulate these departments on being permeated as never before by the spirit of research. An illustrated account of one of their investigations—into the ancestry of the Suffolk Down sheep—appeared early last year in NATURE (vol. 109, p. 595). The number of students, though smaller than in the preceding year, was still large: day students 277, evening 131. More than 80 per cent. of students who completed their course in the department of colour chemistry and dyeing last session obtained either positions in factories or research scholarships; there is evidence of an increasing tendency for large manufacturing firms to engage only those students of the department who have obtained in addition to the honours degree some experience of research in pure science.

A USEFUL "Record of Educational Publications" is issued from time to time by the United States Bureau of Education. Those of May and September 1922 (Bulletins 21 and 33, 5 cents each) covering a period of about 8 months, contain some 800 titles of books and articles classified under such headings as: educational history, current educational conditions, educational theory and practice, educational psychology, psychological tests, etc. In many cases a brief synopsis of the contents is given. Eleven books and pamphlets, containing 1300 pages, and 50 magazine articles are devoted to the subject of intelligence tests, interest in which was greatly stimulated in America by their utilisation during the war for recruiting purposes. Under the heading of higher education appear notices of two works by French "exchange" professors, one being "Universities and Scientific Life in the United States" (Oxford University Press), by M. Caullery, who was exchange professor of biology at Harvard, and one, "Six mois à l'université Yale," by A. Feuillerat, which appeared in the *Revue des deux Mondes* for February and March 1922. *School Life* announces that seven American universities have combined to finance an exchange between Prof. Jacques Cavalier of Toulouse and Prof. A. E. Kennedy of Harvard and the Massachusetts Institute of Technology.

Societies and Academies.

LONDON.

Royal Society, February 1.—O. W. **Richardson**: The magnitude of the gyromagnetic ratio. The gyromagnetic ratio has the value m/e instead of 2m/e, the value calculated on the turning electron orbit theory of magnetism of the Langevin type; the discrepancy may be due to the rotation of the atomic nucleus. In iron it appears that the effective electron orbits possess altogether two quanta of angular momentum per atom and the nucleus a single quantum of angular momentum on this view.—Sir Richard **Paget**: The production of artificial vowel sounds. Plasticene resonators were used to imitate resonances heard by the writer in his own voice when breathing various English sounds. The first models, made in rough imitation of the oral cavity, gave two double resonances. The models were tuned by appropriate alterations of form until they gave recognisable breathed vowel sounds when blown through a small orifice at the back. An artificial larynx was made by means of a rubber strip laid edgewise across a flattened tube, and, when blown through this larynx, the models gave recognisable voiced vowels. The oral cavity behaves in every case as two Helmholtz resonators in series, and the remaining vowel sounds were reproduced by forming two separate resonators joined together in series, and made of such capacity and size of orifices as to allow for mutual reaction of resonators on their respective resonant pitch. Vowels may be produced by two resonators in series with a larynx between them, and a single tubular resonator may act as two resonators in series. Two resonators in parallel, blown by means of a single larynx with a bifurcated passage, produced vowel sounds indistinguishable from resonators in series.—F. **Simeon**: The carbon arc spectrum in the extreme ultra-violet. The arc-spectrum of carbon gives lines in the Lyman region at 1194, 945, 858, 687, 651, 640, 599, and 595, which have not been previously observed. They correspond with prominent lines in the "hot-spark" spectrum studied by Millikan. Groups of lines have been found at 1657, 1560, 1335, 1329, 1260, 1194, 1175, 1036, and 651, of which those at 1329, 1260, 1194, 1036, and 651 do not seem to have been observed by any other worker, and that at 1657 has not been completely resolved heretofore.—J. **Joly**: Pleochroic haloes of various geological ages.—H. A. **Wilson**: The motion of electrons in gases.—H. **Hartridge**: The coincidence method for the wave-length measurement of absorption bands. Measurements of the absorption bands of pigments by the ordinary spectroscope are inaccurate because of the breadth of the bands and the indefiniteness of their margins. The adjustment of two similar absorption bands into coincidence can be effected with considerable accuracy. If then a spectroscope is designed in which two spectra are seen side by side on looking down the eyepiece, but reversed in direction with one another, the measurement of the mean wave-length of the absorption bands can be accurately carried out. The quantitative estimation of pigments depends on the movement of the bands which occurs when the concentration of one pigment changes. In measuring the percentage saturation of blood with carbon monoxide from the wave-length of the α-absorption band, the accuracy of measurement is approximately 0·7 Å.U. The probable error in setting two absorption bands into coincidence is little greater than that of setting two sharp black lines into coincidence, or of making one line bisect the area between two others.—A. **Berry** and Lorna M. **Swain**: On the steady motion of a cylinder through infinite viscous fluid. The so-