torical Outline, with Descriptive Notes, planned as a Text-book for the Use of College Lecturers and Directors of Home-reading Clubs," by Dr. E. C. Parsons; "On the Great American Plateau: Wanderings among Canyons and Buttes in the Land of the Cliff Dweller, and the Indian of To-day," by T. M. Prudden, illustrated; "Scientific Sanction for the Use of Alcohol, Proved and Popularly Expanded by a Physiologist," by Dr. J. Starke; "Hunting Big Game with Gun and with Kodak: how Wild Animals Look and Live in their Haunts, from Personal Experiences in the United States, Dominion of Canada, and Old Mexico," by W. S. Thomas, illustrated; "A Manual of Prescription Writing, with a Full Explanation of the Methods of Correctly Writing Prescriptions, and Rules for Avoiding Incompatibilities and for Combining Medicines," by Dr. M. D. Mann; "Science and a Future Life," by Dr. J. H. Hyslop; "Enigmas of Psychical Research," by Dr. J. H. Hyslop; "The Interpretation of Nature," by Prof. C. Lloyd Morgan, F.R.S.; and "Life in the Open: Sport with Rod, Gun, Horse, and Hound in Southern California," by C. F. Holder, illustrated.

The Religious Tract Society promises:—"Stories of Animals," illustrated; "Stories of the Seasons," illustrated; "Animal Life," illustrated; "Round the Sun," illustrated; "By-paths in Nature," by F. Stevens, illustrated; "Every Boy's Book of British Natural History," by W. P. Westell, with an introduction by Lord Avebury, F.R.S., illustrated; and new editions of "How to Study Wild Flowers," by Rev. G. Henslow, illustrated; and "Walks and Talks in the Zoo," by H. Scherren, illustrated.

Messrs. E. Grant Richards will publish:—"Christopher Columbus and the New World of his Discovery," a narrative by F. Young; and "Voyages of Captain William Dampier," edited by J. Masefield, illustrated.

In Messrs. Alston Rivers's list appears:—"Tibet the Mysterious," by Sir Thomas Holdich, K.C.M.G.

Messrs. Smith, Elder and Co. promise:—"The New Physics and Chemistry: a Series of Essays on Physical and Chemical Subjects," by W. A. Shenstone, F.R.S.; "South Polar Times," reproduced in facsimile, with coloured sketches by Dr. Wilson, and other illustrations, brought out by the officers of the National Antarctic Expedition on board the *Discovery*, during the winters of 1902 and 1903; and "Animal Life," by Dr. F. W. Gamble.

Messrs. Swan Sonnenschein and Co., Ltd., direct attention to:—"Thought and Things: a Study of Logical Process," by Prof. M. Baldwin, vol. ii., "Experimental Logic," vol. iii., "Real Logic"; "The History of Philosophy," by Dr. J. E. Erdmann, revised by W. B. Erdmann, an English abridgment, translated and edited by W. S. Hough; "A Treatise on Psychopathology," by Prof. Storring, translated by Prof. T. Loveday; "Physiological Psychology," by Prof. W. Wundt, translated by Prof. E. B. Titchener, vol. ii., illustrated; "The Student's Text-book of Zoology," by A. Sedgwick, F.R.S., vol. iii., illustrated; "The Natural History of Our Shores," by J. Sinel, with chapters on collecting and preserving marine specimens, methods of microscopic mounting, and the marine aquarium, illustrated; and "How to Study Geology," by E. Evans, illustrated.

The University Tutorial Press will issue:—"Geometry, Theoretical and Practical," by W. P. Workman and A. G. Cracknell, parts ii. and iii.; Clive's "New Shilling Arithmetic"; "The Junior Chemistry," by R. H. Adie; "Technical Electricity," by Prof. H. T. Davidge and R. W. Hutchinson; "Elementary Science of Common Life (Chemistry), Subject xxvi. of the Board of Education Science Examinations," by W. T. Boone; "New Matriculation Physics, Heat, Light, and Sound," by Dr. R. W. Stewart and J. Don; and "Certificate Hygiene," by R. A. Lyster.

In Mr. T. Fisher Unwin's list we observe:—"The Principles and Practice of X-Ray Diagnosis and Therapy," by Dr. J. Rudis-Jicinsky, illustrated; "The Horse: a Guide to its Anatomy for Artists," 110 drawings (reproduced by photolithography) by H. Dittrich, with explanatory notes by Profs. Ellenberger and Baum; "Methods in Plant Histology," by Dr. C. J. Chamberlain, illustrated; "The Psychology and Training of the Horse," by Count E. M. Cesaresco; "The Sanitary Evolution of London," by H. Jephson; "The Psychology of Child Development," by I. King; and a new edition of "Australian Sheep and Wool: a Practical and Theoretical Treatise," by A. Hawkesworth, illustrated.

Messrs. F. Vieweg and Son (Brunswick) direct attention to:—"Prüfungen in elektrischen Zentralen," by Dr. E. W. Lehmann-Richter, II. Teil, illustrated; "Die chemische Düngerindustrie," by L. Schucht, illustrated; "Die Anilinfarben und ihre Fabrikation," by Dr. K. Heumann, vierter Teil, edited by Prof. G. Schultz, Zweite Hälfte, erste und zweite Abteilung; "Sechs Vorträge über das thermodynamische Potential und seine Anwendungen auf chemische und physikalische Gleichgewichtsprobleme," by J. J. van Laar; "Die Nichtzuckerstoffe der Rüben in ihren Beziehungen zur Zuckerfabrikation," by Dr. A. Rümpler; "Technisch-Chemisches Jahrbuch, 1904," edited by Dr. R. Biedermann; "Die Untersuchung des Erdöles und seiner Produkte," by M. A. Rakusin, illustrated; and "Handbuch der chemischen Technologie," edited by Profs. Bollen and Birnbaum, sections 13 and 14.

Messrs. Watts and Co. announce:—"A Picture Book of Evolution," by D. Hird, illustrated; "The New Scientific System of Morality," by Dr. G. Gore, F.R.S.; and "The Cultivation of Man, according to the Teachings of Common Sense," by C. A. Witchell.

Messrs. Whittaker and Co. promise:—"Modern Practice in Coal Mining," by D. Burns and G. L. Kerr; "A Pocket-book of Aëronautics: a Practical Treatise for Balloonists," by H. W. Moedebeck; "Electricity in Mining," by P. R. Allen; "Electric Lamps and Photometry," by L. Gaster; "Concrete Steel Buildings: a Treatise giving the Examples of Reinforced Concrete Construction," by W. N. Twelvetrees; "A Guide to Electric Lighting," by S. R. Bottone; "Motor Construction," by T. Gray; "The Care of Motor-cars," by T. Gray; "An Advanced Text-book on Steam, Gas, and Oil Engines," by J. W. Hayward; "A Treatise on Fuels," by T. Gray; "Motor-car Ignition Methods," by W. Hibbert; and "Sound, Light, and Heat," by J. R. Ashworth.

Messrs. Williams and Norgate direct attention to:—"The Surgical Anatomy of the Horse," by J. T. Share Jones, in four parts.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—Dr. W. L. H. Duckworth, Jesus College, has been appointed demonstrator in anatomy for one year.

Mr. J. F. Cameron, Caius College, and Mr. G. T. Bennett, Emmanuel College, have been nominated moderators, and Mr. A. Munro, Queens' College, and Mr. R. H. D. Mayall, Sidney Sussex College, examiners in part i. of the mathematical tripos for the year beginning May 1, 1907.

The proposed alterations in the regulations for the mathematical tripos will be voted upon at a Congregation fixed for 2 o'clock on Thursday, October 25.

DR. G. C. SIMPSON has resigned his post as lecturer in meteorology at the University of Manchester on his appointment as assistant to the director of observatories under the Indian Government.

ON Tuesday evening, October 9, Prof. H. G. Seeley, F.R.S., began a course of lectures at King's College, London, on some of the larger questions of geology, including (1) atmospheric denudation; (2) jointing in rocks; (3) internal heat of the earth; (4) the relations of rock masses; (5) minerals which form rocks. The lectures will be delivered on alternate Tuesday evenings, at 6 p.m., during the Michaelmas term.

THE Merchant Venturers' Technical College at Bristol was totally destroyed by fire early on Tuesday morning. The fire appears to have broken out in the chemical laboratory on the top floor and in a short time the whole building was in flames. The college, which was attended by more than two thousand students in the day and evening classes, was erected in 1885 by the Society of Merchant

Venturers at an outlay of about 50,000*l.*, which is covered by insurance, but not the least heavy loss sustained is that of books and manuscripts in the library of the principal, Prof. Wertheimer.

AT the distribution of prizes awarded to successful students of the Royal College of Science, for the session 1905–6, on October 4, Prof. W. A. Tilden, who presided, remarked that two public events of great importance to the college have occurred since the prize distribution last year. The first is the publication of the final report of the departmental committee appointed to study the condition, appliances, purposes, and work of the Royal College of Science and the Royal School of Mines, and to consider what could best be done with them. The committee well described the main object of the institution to be the teaching of science, especially in its application to industry. The other event is the practical completion of the great museum buildings, which have been in progress for seven or eight years. Dr. T. E. Thorpe, who presented the prizes, in an address to the students said those whose business it is to examine students recognised that the system of examinations, like all human institutions, is liable to fall into error. Nevertheless, it is the conviction of those who have given dispassionate consideration to the matter that, faulty and fallible as the system may be, it affords the best method of arriving at the relative positions of schools and students. As a rule, in England a university takes only its name from the place in which it is situated. What has made the Aberdeen University an integral part of the life of the people is that the people make special efforts to create and maintain it, and their self-sacrifice on its behalf gives them an abiding interest in it. It is an unfortunate thing for education in London that London is so vast it is impossible to get collective effort and collective influence enlisted for any of its educational institutions.

A SERIES of articles on public-school education was commenced in the *Times* of September 10, and among the subjects which have been dealt with in the eight contributions which have been published already are mathematics, science, and engineering. Mr. T. J. Garstang, in his article on the teaching of mathematics (September 13), traces the course of development which has led to the adoption of reformed courses of geometry, arithmetic, and algebra in our schools. Much, however, remains still to be accomplished. As Mr. Garstang points out, the commercial arithmetic still exacted through examinations is largely either a survival of past commercial method or a collection of artificial fictions. Mr. W. D. Eggar, writing on science in public schools (September 20), considers what school science is now compared with what it was thirty years ago. Thanks largely to Prof. Armstrong's efforts, science teaching by lectures or talks illustrated by curious experiments has given place to practical work, by which pupils measure and weigh and accumulate experience by and for themselves. If nature-study forms part of the English teaching in schools, and practical measurement part of the mathematical work, Mr. Eggar thinks it is possible in one stage of every boy's career to give him a real chance of learning scientific method. In some middle portion of the school through which all boys must pass, a year's course with four hours a week should be mapped out. To this work the main energies of the laboratory staff must be directed, and the classes must be small. The most suitable subjects Mr. Eggar believes to be heat or chemistry or magnetism and current electricity. The subject should be one in which mathematical theory may be kept in the background until a thorough practical acquaintance with facts has been gained; also one which gives ample scope for cultivating the scientific virtues of accuracy and honesty. The Rev. F. Stephenson describes (October 9) what is done by a public school to train boys who intend to become engineers. In his concluding paragraph he remarks:—"The public school caters mostly for those whose means and brains alike are limited, and attempts to combine the teaching of the science of engineering in the class-room with practice in the workshops in such a way that at eighteen a boy may be ready to take full advantage of the opportunities offered him in large commercial works, and may neither waste six months in picking up as best he may from mechanics the purport of nuts, valves, and cylinders, nor allow himself to sink in manners and morals to lower standards that may not unnaturally be prevalent among associates of a humbler class."

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, June 28.—"An Investigation of the Influence of Electric Fields on Spectral Lines." Preliminary Note. By Prof. G. F. **Hull.** Communicated by Prof. J. Larmor, Sec.R.S.

In general the electrical fields used were those concomitant with the luminous electric discharge. An interferometer of the Michelson form and an echelon spectroscope of eighteen plates were used to analyse the radiations. The results may be summarised as follows:—

(1) End-on discharge tubes of special design in which the light-source was a uniform column of luminous mercury vapour, viewed in the direction of discharge, showed no change of wave-length so great as 1 part in 4,000,000 when the direction of the discharge was reversed. The pressure in the tube was varied from a few millimetres to a vacuum so high that there was but little luminosity.

(2) The passage of Röntgen rays through the tube did not alter the wave-length nor the width of the mercury lines to an extent sufficient to affect the visibility of interference fringes formed with a difference of path of 400,000 waves. When the luminous column was viewed at right angles to the direction of the discharge no polarisation effects in the radiation from it, due to the passage of the Röntgen rays, could be detected by a sensitive Savart plate and Nicol prism.

(3) When the discharge passed in air between electrodes formed of an amalgam of cadmium and mercury, no variation of the wave-lengths of the strong Cd, Hg, lines greater than 0·002 tenth-metre was obtained by changing the line of sight from a direction along the discharge to one at right angles to that direction. Approximately the same result held good when a small capacity was inserted in the circuit, but in this case the discrepancies in the readings were larger.

This result shows that the luminous particles do not acquire a velocity in the direction of the discharge greater than 150 metres per second. Hence the curving of the image of the discharge produced by a rotating mirror, as in the Feddersen experiment, and as recently studied by Schuster and Hemsalech for individual spectral lines, appears to be due, not so much to motion of luminous particles as to the propagation along those particles of a condition of luminosity.

(4) Doppler effects in the canal rays, as announced by Stark during the course of the present investigations, were found for the strong hydrogen lines. In some cases they appeared also in mercury lines. The velocities represented by the displacements of the lines were of the order of 4×10^5 metres per second for the hydrogen particles and $2{\cdot}5 \times 10^4$ metres per second for those of mercury. But it was found that, in general, the luminous mercury particles in the canal rays did not move (with a velocity greater than 100 metres per second). In these cases the canal rays appear to be due to non-luminous particles streaming through the mercury vapour and producing luminescence in the latter, probably by bombardment.

(5) A glass tube was sealed on to a canal-ray tube at right angles to the direction of the rays. This tube was covered by a piece of optical glass as free as possible from strain. A very sensitive combination of Savart plate and Nicol prism was used to detect, if possible, any polarisation that might exist in the light from the rays in hydrogen. After eliminating reflections from the walls of the tube no polarisation could be recognised.

(6) The light produced by electrical discharge, in uniform tubes 3 cm. or 4 cm. in diameter, was examined at right angles to the direction of discharge, at various points between the electrodes, and also behind the perforated kathode. It was found that the principal hydrogen lines were greatly broadened in those parts where the electric