

AN ITALIAN ELECTRIC RAILWAY.

THE motive power on our great railways forms such an important question that any enterprise made with a new motive power, electricity or otherwise, adapted so as to utilise the existing rolling-stock, not only may at some future time greatly accelerate the present speed, but also introduce great economies, especially if the new power can be derived from a natural source. In Italy the railway authorities have been thoroughly alive to this fact; a portion of the railway of northern Italy has been electrically equipped for running by means of electric motors, as a pioneer installation, and if successful the remainder will be similarly equipped. The Valtellina electric railway (says *Feilden's Magazine* for January), which is sixty-two miles long, runs from Lecco along the shores of Lake Como to Colico, where it divides, one branch going to Sondrio and the other to Chiavenna. The power of the line is furnished by falling water from the river Edda, which operates four turbines (2000 h.p. each) and which, coupled direct with four Schubert three-phase generators, give a current at 20,000 volts and 15 cycles. This current is led to ten substations (placed about six miles apart) along the route, where it is transformed to 3000 volts, at which voltage the various sections of the line are fed. The two overhead trolley wires which supply the motors (the railway track forming the third) are hung from steel wires supported on each side by posts spread with crossbeams; these also carry the main supply wires (20,000 volts). The traffic of the line comprises both goods and passenger, and it is worthy of note that for the former electric locomotives are used for the haulage of the wagons (which are of the standard Italian type), and for the passenger traffic bogie motor-cars act in place of locomotives and pull four coaches as trailers (these latter also of the ordinary Italian type). A train of this description is run at thirty-nine miles per hour on all gradients less than 10 per cent.; for anything steeper than this "the Cascade" arrangement of motors is used, then the speed is halved. The speed of the goods traffic is twenty miles per hour with a load of 250 tons. The line is equipped with every facility for safe working, everything being made as automatic as possible. For instance, "when a train receives a block signal it also has its current cut off so that it cannot proceed." Again, "where a train is coming up at full speed, and it is necessary to order it to stop owing to sudden occurrence of something in front, the signalman not only makes the signal to stop, but he also cuts off the current and applies the full brake power available to the advancing train." Lightning has been fully guarded against. The power house is supplied with a group of conductors of the "Horn" type outside the building, and lightning arresters of a similar type are fitted in the substations, and, lastly, the electric locomotives and motor-cars have also similar apparatus fitted. The working of the line will not only be watched with interest, but also forms an important example of electric traction on account of its newness in design (especially in detail), and the thorough way in which the system is made automatic and interlocking and also safely guarded against accidents.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—Mr. W. E. Johnson, of King's College, has been appointed the first Sidgwick lecturer in moral science.

The Balfour studentship in animal morphology will be vacant at Lady Day next. Applicants are requested to send their names, with such information as to their qualifications and proposed researches as they may think desirable, to Mr. J. W. Clark, Scroope House, Cambridge, by February 28.

The complete degree of M.A. *honoris causa* is to be conferred on Dr. W. E. Dixon, London, assistant to the Downing professor of medicine.

THE proposal to establish a University of Liverpool was warmly supported at a meeting held at the Liverpool Town Hall on Monday, the Lord Mayor of the city being in the chair. At the close of the meeting it was announced that the sum of 80,000*l.* has been promised in support of the scheme.

THE Lord Lieutenant of Berks (Mr. J. Herbert Benyon) has been elected president of Reading College, in succession to the late Lord Wantage. A fund of 1000*l.* a year for five years has been raised to augment the existing income. Lady Wantage,

Mr. Benyon and Mr. Alfred Palmer have each contributed 250*l.* a year to this fund.

IT is proposed to erect a bronze tablet in the museum at Marischal College, Aberdeen University, in honour of the late Prof. H. Alleyne Nicholson. Prof. J. Arthur Thomson and Mr. J. E. Marr, F.R.S., have undertaken the preliminary steps and are prepared to receive subscriptions from "those who were friends, colleagues, collaborateurs or old students" of Prof. Nicholson.

MR. T. J. P. A BROMWICH, Fellow of St. John's College, Cambridge, has just been appointed professor of mathematics in Queen's College, Galway, in succession to Prof. A. C. Dixon, lately appointed professor of mathematics in Queen's College, Belfast. Mr. Bromwich graduated as senior wrangler in 1895, and subsequently obtained a first class (first division) in the second part of the mathematical tripos. Since taking his degree he has made a number of original contributions to various branches of mathematics.

ANNOUNCEMENT is made in the *Times* that Lord Curzon, the Viceroy of India, has appointed a commission to visit the University centres and colleges of India to inquire into their prospects, report on their working, and recommend measures for the improvement of the teaching and the standard of learning. The commission is composed as follows:—Mr. T. Raleigh, president; Syad Hossain Bilgrami Nawab; Mr. J. P. Hewett, Secretary to the Home Department; Mr. A. Pedler, Director of Public Instruction in Bengal; Prof. A. Bourne, Principal of Madras College; and the Rev. Mr. Mackichan, Principal of Wilson College, Bombay. Mr. R. Nathan will act as secretary.

PROTESTS are being made against the dissolution of Victoria University. It is suggested that there might be one great University for the north and not several connected with single cities. At a meeting of graduates of Victoria University held at Leeds on January 24, a resolution was unanimously adopted expressing the conviction that to abolish the Victoria University would be detrimental to the interests of higher education in the north of England. A committee was appointed to attend an approaching meeting at Manchester in connection with the Victoria University and protest against its disruption. The board of governors of the Yorkshire College, Leeds, has adopted a resolution expressing the view that though the dissolution of the Victoria University in favour of separate universities would be detrimental to the interests of education in the north of England, still, having regard to the resolutions passed by Owens College, Manchester, and University College, Liverpool, preparations should be made for the establishment of a University for Yorkshire based upon the existing Yorkshire College, with provision for the admission of other constituent colleges and for the affiliation of other suitable institutions.

THE annual meeting of the Association of Directors and Organising Secretaries for Technical Education was held on Friday last. Mr. A. Keen, the president, delivered an address dealing with the question of rural education. He urged that what are wanted are:—(1) A system of suitable elementary instruction which should include practical work in every standard; (2) a good supply of secondary schools at low fees of the rural grammar school or modern school type, taking, say, the Rural School of Science course in the Government Directory, and such other studies as the circumstances of different districts might direct; (3) a more limited supply of higher secondary schools of the high-grade grammar school type for boys and girls who were intended to continue their education beyond the usual age, and probably go to a university or some other place of advanced education; and (4) for the benefit of boys intended to be farm bailiffs, agents, stewards, farmers, or market gardeners, and especially those who had no suitable means of acquiring at home an intimate knowledge of farm and garden work and general practical experience, there should be in every large county, and in every group of smaller ones, a farm school, or an agricultural school or college, for boys of fifteen to sixteen years of age and upwards, providing a course of instruction for two or three years of a thoroughly practical character.

AN interesting introductory address delivered by Prof. Wilson, professor in anatomy at Sydney University, has been sent to us. The address is entitled "Ideals in Medical Education"; it is