

steel tape is driven by synchronous motors at a normal speed of 90 metres per minute, between two drums similar to those used in a cinematograph film projector. In its passage the tape passes in succession through three pairs of special bi-polar electromagnets, which are used in turn for 'wiping-out' any previous record, for recording and for reproducing. The heads carrying the two latter sets of magnets are provided with micrometer adjustments for controlling the separation of the pole pieces, since this adjustment affects the response characteristics. The three heads of the apparatus are connected by screened twin leads to their appropriate places on the amplifying and control panels, and means are provided for obtaining the correct level required for recording and reproduction. The recording magnet is also supplied with auxiliary direct current to operate the tape at the best part of the magnetisation characteristic for recording. A suitable audio-frequency correcting circuit is connected in the reproducing amplifier, and the proximity of the recording and reproducing heads on the apparatus enables an instantaneous comparison to be made between the input signals and the output from the equipment.

The magnetic record, once made, is permanent and may be utilised any number of times until it is wiped out by the demagnetising process for use on another programme. The whole process now finds widespread application in broadcasting services, particularly for the relaying of important or interesting programmes at different times.

University and Educational Intelligence

CAMBRIDGE.—J. Yudkin, of Christ's College, has been appointed to the Benn W. Levy research studentship in biochemistry.

Smith's prizes have been awarded to the following candidates: K. Mitchell, of Peterhouse, and A. J. Ward, of Emmanuel College.

Rayleigh prizes have been awarded to M. S. Bartlett, of Queen's College, and C. G. Pendse, of Downing College.

Grants from the Worts Fund have been made as follows:—£50 to N. Bachtin towards the expense of a journey to North Thessaly, £50 to I. H. Cox towards his expenses as geologist in the Parry Islands, £50 to J. J. Keigwin towards the expenses of an expedition to the Zambezi Valley, £50 to P. W. Richards towards the expense of a botanical expedition to South Nigeria, £40 to W. Graham-Smith for palaeontological investigations in Canada, £25 to C. W. Borgmann for metallurgical research in Sweden, £25 to J. W. S. Pringle towards the expenses of the Cambridge Freshwater Biological Expedition to South Morocco, £10 to J. W. Welch for expenses in connexion with his study of the Qaoko tribe.

The managers of the Balfour Fund have made a grant of £50 to C. Forster-Cooper, of Trinity Hall, for researches on the fauna of the Achenarass Quarries.

J. H. Lochhead, of Christ's College, has been nominated to use the University's table at the Zoological Station at Naples from April 1 until September 30, 1934.

LEEDS.—The Vice-Chancellor, on behalf of some two hundred subscribers, presented on March 9 to Prof. Walter Garstang a radiogramophone and a cheque, as a token of appreciation from colleagues,

pupils and other friends at Plymouth, Oxford, Lowestoft and Leeds. Prof. Garstang retired from the chair of zoology last year.

LONDON.—The following degrees have recently been awarded: D.Sc.(Econ.) to A. E. Feavearyear (private study) for two published works entitled "The Pound Sterling. A History of English Money", and "Spending the National Income"; and D.Sc. in physics to W. E. Williams (recognised teacher at King's College) for ten works on interferometry.

SHEFFIELD.—The following appointments have been made: Dr. E. J. Wayne, to the chair of pharmacology; Dr. James Clark, to the lectureship in infectious diseases; Mr. H. Laithwaite, as junior research assistant in the Department of Glass Technology.

THE Board of Education is prepared to consider applications for full-time studentships from teachers with at least five years' teaching experience who desire financial assistance to follow courses of advanced study at universities or other institutions at home or abroad. Particulars of the awards and application forms are obtainable from the Board of Education, Whitehall, S.W.1.

Science News a Century Ago

Capt. John Ross Honoured

In 1829, thanks to the generosity of Sheriff Felix Booth, Capt. John Ross had been able to fit out the steam vessel *Victory* for arctic exploration. Ross sailed in May 1829 and returned home in October 1833 in the *Isabella*, the *Victory* having had to be abandoned in the ice. On March 27, 1834, at a Court of Common Council, Ross was presented with the freedom of the City of London. In making the presentation, Sir James Shaw, the Chamberlain of the City, said: "Captain Ross—The City of London have ever been forward in bestowing the honour of their freedom on eminent men who have distinguished themselves in the service of the public. In your person science has been largely and specially indebted for the zeal, public spirit and disinterestedness shown by you in fitting out and taking charge of an expedition, with the patriotic view to the solution of the problem whether a north-west passage existed to the Pacific. For the courage and perseverance which have marked the whole of your proceedings in this hazardous enterprise, and for the admirable skill and address manifested by you, with the blessing of Heaven, in preserving life and health and harmony amongst your brave companions, amidst the privations and hardships of four years' navigation in the Arctic regions;—for these services the Corporation of London have recorded their grateful thanks by presenting you with the freedom of their ancient city in a box of British oak."

J. D. Forbes at Edinburgh

When J. D. Forbes in 1833 was appointed to succeed Sir John Leslie as professor of natural philosophy in the University of Edinburgh, he was not twenty-four years of age and had held no appointment before. When preparing his lectures, he wrote