

In the "Announcements" of the Northampton Institute, London, E.C., a table is given showing the courses which should be taken by various classes of technical students. This, as well as the sound advice given in many parts of the prospectus as to aims and methods of study, should be of great assistance in guiding the energies of students in right directions. Among the new developments of the institute are day courses in technical optics. These are believed to be the first complete day courses in technical optics attempted in this or any other country. In mechanical and electrical engineering complete day courses extending over four years are arranged. In mechanical engineering full evening courses for automobiles, their design, construction, and working, are offered. The courses in structural engineering have been re-modelled. The evening courses in electrical engineering have also been re-modelled, the complete course now covering five years.

THE Board of Education has issued the following list of candidates successful in this year's competition for the Whitworth scholarships and exhibitions:—Scholarships, 12*g*l. a year each (tenable for three years): Walter A. Scoble, London; Herbert G. Tisdall, Bedford; James Cunningham, Glasgow; Archibald D. Alexander, Portsmouth. Exhibitions, 50*l*. (tenable for one year): Sidney R. Dight, Plymouth; Edwin S. Crump, Wolverhampton; Harold H. Perring, Devonport; Sidney H. E. May, Portsmouth; William B. Wood, Sheerness; Alexander R. Horne, Edinburgh; Leslie G. Milner, London; John Wharton, Leeds; Thomas A. Colville, Chatham; Edward L. Macklin, Portsmouth; William D. McLaren, Glasgow; Arthur A. Rowse, Southsea; Arthur Rose, Portsmouth; Andrew Robertson, Fleetwood, Lancs.; Ernest J. Buckton, London; Roderick Ferguson, Sunderland; William Browning, Halifax; William Dawson, Glasgow; Herbert G. Taylor, Oldham; Sydney Moor, Devonport; Harold H. Broughton, Brighton; Robert C. P. Bricknell, Devonport; William E. Dommett, Southsea; John S. Mackay, Liverpool; Harry D. Marlow, Plumstead, Kent; Herbert E. Sothcott, Portsmouth; Sidney G. Winn, London; Samuel W. Orford, Sheerness; Thomas Fell, Bootle; Chauncy H. Sumner, London.

At the annual meeting of the Institution of Mining Engineers, held at Birmingham on September 14, Prof. R. A. S. Redmayne described the courses of instruction and study of the mining department of the University of Birmingham. The full three years' curriculum has been constructed on the principle of giving a thorough grounding in pure science during the first two years (with instruction in the theory and practice of mining), and devoting the third and last year entirely to the application of the scientific knowledge so acquired to engineering—mining, mechanical, civil, electrical, and metallurgical—all specialising and research work being relegated to a post-graduate or fourth year. The first year's work is devoted to such subjects as prospecting and boring, sinking, underground development and systems of working, surface and underground transport of minerals, winding, drainage, ventilation, sorting and screening of minerals, and surveying and planning. During the second year the details of colliery and mine management and mining jurisprudence are considered, in addition to which there is an advanced course in surveying and planning. To the third year is consigned the study of the foreign coal and metal mining conditions, and the dressing and preparation of fuels and ores for the market. There is a summer school of practical mining in every long vacation, the object being to devote several weeks in each year entirely to the detailed study of the plant and methods of working of a particular class of important mines, so that students may see for themselves in actual practice much that they have had described to them in the lecture theatre and classrooms. An experimental coal-mine has been constructed a few feet below the surface, with which it is connected by a downcast and upcast shaft. The workings, the area of which somewhat exceeds three-quarters of an acre, will be ventilated by a single-inlet Capell fan, driven at 500 revolutions per minute by an electric motor of 20 horse-power, coupled direct; and they will be drained by a small electric pump placed at the bottom of the downcast shaft. The chief use to which this piece of apparatus will be put will be to

enable practical instruction to be given in underground surveying and levelling, and connecting surface and underground surveys; and for demonstrating and investigating the peculiarities of mine-ventilation, such as the splitting of air currents and directing their course, the resistance to air currents, the loss of pressure due to friction, and the characteristics of mechanically produced ventilation.

## SOCIETIES AND ACADEMIES.

### PARIS.

**Academy of Sciences, September 12.**—M. Mascart in the chair.—On the comparative morphology of the cartilaginous cell: Joannes **Chatin**. The author disputes the generally accepted view that the normal shape of the cartilage cell is ovoid or spheroidal in the higher vertebrates, and shows that in cartilage from the badger, there are undoubted examples of the stelliform type of cell.—The influence of grafting on the composition of the grape: G. **Curtel**. Clear evidence of differences in physical and chemical composition between grafted and non-grafted grapes has been obtained, and the facts observed explain the more rapid ageing of wines from grafted vines, and also their greater sensitiveness to pathogenic ferments.—Simple traumatic dislocation of the atlas on the axis on a skeleton found in a megalith of Vendée: Marcel **Baudouin**.—Observations on the preceding note: M. **Lannelongue**. The author regards the effects noted as probably due to *post mortem* changes.

## CONTENTS.

	PAGE
The Scope of Anthropology. By J. Gray . . . . .	501
Progress in the Chemistry of Fats. By C. Simmonds . . . . .	502
Stokes's Mathematical and Physical Papers. By Prof. Horace Lamb, F.R.S. . . . .	503
Argentine Live Stock . . . . .	504
Our Book Shelf:—	
Gerard: "The Old Riddle and the Newest Answer."—F. A. D. . . . .	504
Langworthy and Austen: "Occurrence of Aluminium in Vegetable Products, &c." . . . .	505
Richards: "Practical Chemistry."—J. B. C. . . . .	505
Morse: "Calculations used in Cane-Sugar Factories" . . . . .	505
Letters to the Editor:—	
Colours due to Intermittent Illumination.—Rev. F. J. Jervis-Smith, F.R.S. . . . .	505
Is Selenium Radio-active?—W. A. Davis . . . . .	506
Rare Moths in England.—F. H. Perrycoste . . . . .	506
The Heart of Skye. ( <i>Illustrated.</i> ) By Prof. Grenville A. J. Cole . . . . .	506
English Medicine in the Anglo-Saxon Times. ( <i>Illustrated.</i> ) . . . . .	508
Notes. ( <i>Illustrated.</i> ) . . . . .	509
Our Astronomical Column:—	
The Return of Encke's Comet (1904 <i>b</i> ) ( <i>Illustrated.</i> ) . . . . .	512
Variations in the Lunar Landscape . . . . .	512
Sun-spot Periodicity and Terrestrial Phenomena . . . . .	512
Observations of the Recent Perseid Shower . . . . .	512
Radiation in the Solar System. By Prof. J. H. Poynting, F.R.S. . . . .	512
Physics at the British Association. By Dr. C. H. Lees . . . . .	515
Chemistry at the British Association . . . . .	516
Geology at the British Association. By J. Lomas . . . . .	517
Recent Studies of Disease Organisms . . . . .	519
The Evolution of the Horse . . . . .	520
The Action of Wood on a Photographic Plate in the Dark. ( <i>Illustrated.</i> ) By Dr. William J. Russell, F.R.S. . . . .	521
The Density of Nitrous Oxide. By Lord Rayleigh, O.M., F.R.S. . . . .	523
University and Educational Intelligence . . . . .	523
Societies and Academies . . . . .	524