

inculcation of good reading habits and the systematic dissemination of superior literature, not merely to make this literature better known, but to create an atmosphere in which—except in the case of thoroughly inferior minds—inferior literature will not be able to exist.

IN 1901 a central committee was formed in Berlin for the purpose of organising gratuitous post-graduate courses in medical science throughout Prussia. This committee, of which Prof. von Bergmann is the chairman, has now instituted such courses in twenty-three towns, and has acquired a collection of medical books and instruments to be lent to the local committees in small places where such means of instruction are not sufficiently available. A building, to be called the Empress Frederick House for Post-graduate Training, will be erected in Berlin to serve as the headquarters of the organisation in Prussia. The Emperor has expressed complete approval of the plans of the committee.

THE eleventh annual report for the year 1902 of the Technical Instruction Committee of the City of Liverpool shows an increase of 1040 in the number of registered students of the evening science, art and technological classes. The total number of entries to the classes held at the Central Technical School was 3625. This increase is to be attributed in some measure to an exhibition of students' practical work held just before the commencement of the session, and it is in contemplation to continue the exhibition and extend it to other centres. The establishment of a day technical school in the central school building, and of improved local buildings in the south end and on the east side of the city are still under consideration. The report also shows that the City Council has devoted to educational purposes the whole of the amount received under the Local Taxation (Customs and Excise) Act, 1890, with the exception of a sum of 7000*l.* paid to the credit of the City fund in 1892. The total amount thus allocated to educational purposes during the twelve years, 1890-1902, is 225,450*l.* 19*s.* 4*d.*

THE platitudes often expressed by speakers on educational subjects, and the verbose character of the larger part of educational literature, are responsible for the suspicion and want of respect with which many practical teachers regard any attempts to construct an educational science. What is wanted at the present time is a centre where the aims and practice of education can be studied without the limitations of traditional doctrines, and with modern requirements well in mind. The University of Birmingham seems to offer an opportunity for work of this kind in connection with the new chair of education, for which applications are invited. In the particulars issued to candidates for the post we read:—"The University believes that the improvement of education in England is a vital matter, and that the present post offers attractive opportunities to a man of influence and ability who is willing to cope with the difficulties of the task. Such a man would meet with cordial cooperation and assistance, and might be able to accomplish a worthy piece of work." The professor will be required to take control of the training of secondary teachers and to organise the inspection and examination of secondary schools. It should thus be possible for the successful candidate to establish a system of training of teachers in the science and art of education which would have a decided influence upon the work of secondary schools.

A CONFERENCE of representatives of county and county borough councils was held on Tuesday, under the auspices of the National Association for the Promotion of Technical and Secondary Education, to consider the question of higher education. Lord Avebury presided, and the following resolutions were adopted:—(1) That this conference of representatives of local authorities and educational bodies recognise the great importance of suitable, adequate and systematic provision being everywhere made for the supply of facilities for higher education by means of continuation schools, secondary schools, technical institutes, and classes, and by access to the universities, such facilities to include a sufficient number of scholarships and exhibitions, and, where suitable funds exist, to provide for a post-graduate course and the endowment of original research; (2) that every effort should be made to secure proper cooperation between local authorities and educational bodies in promoting higher, including university, education; (3) that it

is urgently necessary for the improvement of education that more suitable means should be provided for the training of all grades and classes of teachers. Mr. J. Bryce, M.P., was one of the speakers, and in the course of his remarks train for the universities; and in towns of 100,000 people what they might call a grammar school, providing the elements of technical instruction; in towns of 40,000 or 50,000 population there ought to be a school competent to train for the universities; and in towns of 100,000 people there should be a completely equipped technical institute to fit boys for a science profession and for the pursuit of science. He added that in towns of 300,000 there should be a university college.

### SCIENTIFIC SERIALS.

*American Journal of Mathematics*, vol. xxv. No. 1, January.—D. N. Lehmer, parametric representation of the tetrahedroid surface by elliptic functions. Various properties of the singular points, lines and planes.—E. B. Skinner, on ternary monomial substitution-groups of finite order with determinant  $\pm 1$ . All the groups can be got from three generators or less, one of order two, and conversely.—V. Snyder, forms of sextic scrolls (two papers). There are sixty-eight types of such scrolls which are unicursal, and thirty-two of genus 1.—E. D. Roe, note on symmetric functions.—A portrait of Cremona accompanies this part.

*Annals of Mathematics* (2), vol. iv. No. 2, January.—J. W. Bradshaw, the logarithm as a direct function (with introduction by W. F. Osgood).—P. Saurel, positive quadratic forms.—E. A. Hook, multiple points on Lissajous's curves in two and three dimensions.—C. C. Engberg, a special quadri-quadric transformation of real points in a plane ( $x = x'$ ,  $y = \pm \sqrt{x'^2 + y'^2}$ ).

*Bulletin of the American Mathematical Society* (2), vol. ix. No. 5, February.—W. F. Osgood, transformation of the boundary in conformal mapping.—V. Snyder, quintic scroll with three double conics.—L. P. Eisenhart, surfaces referred to their lines of length zero.—E. R. Hedrick, note on calculus of variations.—E. B. Wilson, synthetic treatment of conics at the present time. The author (very properly) emphasises the value of v. Staudt's methods.—Reviews: Brown's "Lunar Theory" (F. R. Moulton), Geissler's "Die Grundsätze u. das Wesen des Unendlichen" (E. R. Hedrick), recent German text-books in geometry (P. F. Smith).

*Bulletin of the American Mathematical Society* (2), vol. ix. No. 6 (March).—L. E. Dickson, the abstract group isomorphic with the alternating group on six letters.—H. F. Blichfeldt, property of conics.—R. W. H. T. Hudson, analytic theory of displacements.

*Transactions of the American Mathematical Society*, vol. iv. No. 1 (January).—F. Morley, orthocentric properties of the plane  $n$ -line.—L. E. Dickson (two papers), definitions of a field by independent postulates; definitions of a linear associative algebra.—E. V. Huntington (two papers), definitions of a commutative group and of a field.—C. N. Haskins, invariants of differential forms of degree higher than two.—A. Loewy, reducibility of groups of linear homogeneous substitutions.—A. B. Coble, the quartic curve as related to conics.—E. Kasner, cogredient and digredient theories of multiple binary forms.—R. E. Allardice, envelope of axes of conics through three fixed points.—W. F. Osgood, a Jordan curve of positive area.

### SOCIETIES AND ACADEMIES.

LONDON.

**Royal Society**, February 19.—"The Evaporation of Water in a Current of Air." By Dr. E. P. **Perman**. Communicated by Prof. E. H. Griffiths, F.R.S.

The object of this investigation was to discover with what accuracy the vapour-pressure of water could be calculated from the amount of water vapour carried off by an air current passed through the water, the temperature being maintained constant. The method adopted was to aspirate air, at a rate of not more than 0.1*l.* per minute, through