UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

AN association of American Universities has been formed for the purpose of considering matters of common interest relating to graduate study. The association includes most of the leading universities of the United States.

IT has already been announced that a school of forestry is about to be established at Yale University. We now learn from *Science* that, at a meeting of the corporation on March 16, a gift of 150,000 dollars for this purpose was acknowledged. Mr. Henry S. Graves, assistant in the Division of Forestry, U.S. Department of Agriculture, has been appointed professor of forestry.

SIR GEORGE W. KEKEWICH, K.C.B., has been appointed Secretary of the Board of Education, which came into existence on April 1. A circular letter has been issued stating that in future all communications relating to elementary education should be addressed to the Secretary, Board of Education, Whitehall, London, S.W., and letters concerning science, art, and technical education should be addressed to the Secretary, Board of Education, South Kensington, London, S.W.

As the subjects which should form part of elementary education in rural districts have recently been much under discussion, it is of interest to call attention to a chapter on methods of instruction in agriculture, included in vol. ii. of the Report of the U.S. Commissioner of Education, for 1897-98. The chapter includes reprints of leaflets illustrating the educational work done at the Cornell Agricultural Experiment Station, and at Purdue University. The volume also includes reports of U.S. Consuls on school gardens and gardeners' schools in Russia.

THE Cambridge Summer Meeting will be held on August 2-15, and August 15-27. Among the lectures to be delivered in the section on scientific progress are the following: *Physical Science.*—The development of the nebular theory in the nineteenth century, by Sir Robert Ball, F.R.S.; the spectroscope in astronomy, by Mr. Arthur Berry; the wave-theory of light, by Sir George Stokes, Bart., F.R.S.; advances in the science of electricity, by Prof. J. J. Thomson, F.R.S.; the conservation of energy, by Prof. J. A. Ewing, F.R.S.; chemistry and its applications, by Mr. M. M. Pattison Muir; electro-chemical methods, by Mr. D. J. Carnegie. *Biological Science.*—The theory of evolution and its influence on thought and research, under arrangement; researches on the brain, by Dr. Alex. Hill. There will also be lectures on some aspects of advance in the following sciences:—geology, by Prof. T. McK. Hughes, F.R.S.; anthropology, by Prof. A. Macalister, F.R.S.; agriculture, by Prof. W. Somerville; bacteriology, by Prof. Sims Woodhead. Mr. H. Yule Oldham will give a lecture on geographical exploration in the nineteenth century; Prof. W. M. Davis, of Harvard, U.S.A., will give six lectures on the study of the development of land forms. The study of special points in the following departments will be undertaken in sectional meetings:—chemistry and physics, under the direction of Mr. A. W. Clayden; evolution, under the direction of Mr. F. W. Keeble, Mr. C. Warburton, and others; anthropology, under the direction of Prof. A. C. Haddon, F.R.S. There will in addition be arranged, primarily for teachers, practical courses in chemistry and geography.

THE Passmore Edwards Museum in the Romford-road, Stratford, is now approaching completion, and arrangements for the opening will shortly be made. The museum has been built and furnished by the Council of the County Borough of West Ham at a cost of about 9000*l.*, of which 4000*l.* was the gift of Mr. Passmore Edwards. The main portion of the museum will be devoted to the Essex Museum of Natural History, belonging to the Essex Field Club, which is deposited in the building under agreement between the club and the Borough Council. The remainder of the building will be used as an educational museum in connection with the adjoining Municipal Technical Institute. The scientific control of the Essex Field Club collections remains with the club, and they contribute 50*l.* a year towards the curatorial expenses, the council contributing 100*l.* a year. The club appoints the curator. At their meeting on March 27, the council resolved to set aside annually out of the Estate Duty Grant the sum of 1000*l.* for museum purposes. It is expected that from 500. to 600*l.* of this will be needed for the up-keep and maintenance charges, the balance being placed to the credit of a museum purchase fund, which will be treated as a capital fund, from which payments may be made from time to time for the purchase of objects and of the necessary cases, &c., in which to exhibit them. The Essex Field Club have appointed Mr. W. Cole as curator of their Natural History collections. The building itself and the educational collections of the council are under the charge of the principal of the Technical Institute, Mr. A. E. Briscoe.

SCIENTIFIC SERIALS.

Bulletin of the American Mathematical Society, February.—The opening articles respectively give abstracts of the proceedings and papers read at the sixth annual meeting, at New York, December 28, 1899, by Prof. F. N. Cole, and at the sixth semi-annual meeting, at Chicago, December 28 and 29, 1899, by Prof. T. F. Holgate.—On cyclical quartic surfaces in space of n dimensions, by Dr. V. Snyder, was read at the first of the above meetings. The method employed is a generalisation of that first employed by Darboux, using Lie's more general co-ordinates. For $n = 2$ (bicircular quartic curves) reference is made to memoirs by Casey, Darboux, Cox, Loria and others, where the curves have been discussed from a different point of view, and for $n = 3$ (cyclides) reference is again made to Casey, and to Maxwell, Cayley, Darboux, Reye, Loria, Bôcher and others. In the case of $n = 4$, the number of distinct types is 58, and of $n =$ higher numbers, the number of types has not been determined.—At the same meeting, Prof. H. Taber read a paper on the singular transformations of groups generated by infinitesimal transformations, and Prof. Dickson gave a proof of the existence of the Galois field of order p^r for every integer r and prime number p. Existence proofs have been given by Serret (*Alg. Sup.* vol. 2) and by Jordan (*Traité des Substit.* pp. 16, 17). The developments used by Serret are lengthy, and the short proof by Jordan assumes with Galois the existence of imaginary roots of an irreducible congruence modulo p. The present proof proceeds by induction. Assuming the existence of the GF$[p^n]$, it derives that of the GF$[p^{nq}]$, q being an arbitrary prime number. Since the GF$[p]$ exists, being the field of integers taken modulo p, it follows that the GF$[p^n]$ exists, and by a simple induction that the GF$[p^r]$ exists for r arbitrary.—Dr. Lovett contributes a lengthy review of the "Leçons nouvelles sur l'analyse infinitésimale et ses applications géométriques" of Ch. Méray (1st part, 1894; 2nd part, 1895; 3rd part, 1897; and 4th part, 1898).—Varied information of interest to mathematicians occupies the "Notes" and "New Publications."

Annalen der Physik, No. 2.—Solubility of carbonic acid in alcohol between $-67°$ and $+45°$, by C. Bohr. The absorption of carbonic acid in alcohol increases rapidly at low temperatures. The coefficient is 1·97 at 47°, 4·46 at zero, and 39·4 at $-65°$. The coefficient of evasion at zero is 0·524, and the coefficient of invasion 2·375.—Specific heats of metals, alloys and graphite at low temperatures, by U. Behn. This paper deals with the specific heats of antimony, tin, cadmium, silver, zinc and magnesium, brass, graphite and three tin-lead alloys. Of these, only graphite and magnesium show a very considerable fall of specific heat down towards the temperature of liquid air. Many of the curves are probably parabolic, and concave towards the axis of temperatures.—Heat of sublimation of carbonic acid, and heat of evaporation of air, by U. Behn. The former is 142·4 calories, and the latter 50·8 calories.—A vacuum electroscope, by H. Pflaum. By exhausting a gold-leaf electroscope to such a degree that no vacuum discharge was able to traverse it, the author proved that an extreme vacuum is a perfect insulator, and that electrostatic forces act across it with great intensity.—The experimental basis of Exner's theory of atmospheric electricity, by G. Schwalbe. The author has made further experiments to show that a vapour arising from an electrified liquid is incapable of conveying away any of the charge. He explains the contrary results obtained by Pellat, on the ground of loose particles adhering to the vessels used. Solid particles are capable of conveying away the charge. Exner's theory of atmospheric electricity, as derived from the evaporation of natural bodies of water, is not confirmed.—Discharge of statical electricity from points, by H. Sieveking.—Negative electricity begins to be discharged from a point at a lower potential than positive electricity, and the quantity discharged is also greater. Positive electricity is chiefly discharged along the axis of the point. Gases may be arranged in accordance with their capacity of encouraging the