THE Somerset County Education Committee announce that three Senior County Scholarships will be offered for competition in June 1894. They will be tenable for two years in the scientific or technical department of a university college, the Royal College of Science, South Kensington, or some other college or institution approved by the County Education Committee. The annual value of each scholarship will be from £50 to £60, according to the place of instruction chosen, and, subject to the maximum limit, will be fixed at a sum sufficient to cover the cost of instruction, together with £30 per annum toward's the scholar's maintenance. The competition will be open to any boy whose parents or guardians are *bonâ fide* residents in the administrative county of Somerset, and who has regularly attended any secondary school (public or private) within the county for two school years preceding August 1, 1894, provided that every candidate is over 15 and under 17 years of age on July 1, 1894, and that his parents are in receipt of an income of not more than £400 a year from all sources. Six intermediate County Scholarships will also be offered for competition in June 1894. They are of the annual value of £30, and will be tenable for two years at some public secondary school approved for the purpose by the County Committee.

SCIENTIFIC SERIALS.

American Journal of Science, February.—On the chemical composition of staurolite, and the regular arrangement of its carbonaceous inclusions, by S. L. Penfield and J. H. Pratt. A careful analysis of several specimens gave the formula $HAL_6FeSi_2O_{13}$, which may be written as a basic orthosilicate. The aluminium is partly replaced by ferric iron, and the ferrous iron by magnesium and manganese. Basal sections of the rhombic prism show the carbonaceous inclusions to be disposed in the form of a rhombus parallel to the outline, with the corners joined together. This figure develops into a simple cross towards the centre, whereas towards the ends the rhombus widens out until it coincides with the outline. This proves that the inclusions are arranged in the surface of a double pyramid with its apex in the centre, and also in planes joining the edges of this pyramid with those of the prism.—Additional species of pleistocene fossils from Winthrop, Mass., by R. E. Dodge. Three more species of preglacial shells have been found in the drumlin in Boston Harbour, known as Winthrop Great Head. They are *Lunatia Grœnlandica*, Stimpson, *Scapharca transversa*, Adams, and *Buccinum undatum*, Linné. These fossils give additional evidence of the higher temperature of Massachusetts Bay in pre-glacial as compared with the present time.—On the basalts of Kula, by H. S. Washington. These basalts occur near Kula, about 125 km. east by north of Smyrna, where they from cones and streams of a fresh and unaltered appearance. The lavas are to be classed as hornblende-lagioclase basalts, distinguished by the constant presence and great relative quantity of the hornblende, its peculiar magmatic alteration, the small quantity of both plagioclase and olivine, and the large amount of glass basis. The name *Kulaite* is proposed for them.—The fishing banks between Cape Cod and Newfoundland, by Warren Upham. If a portion of the continental border from Cape Cod to the Grand Bank south east of Newfoundland could be uplifted, we should behold nearly as much diversity of valleys, ridges, hills, plateaus, and all the forms of subaërial land erosion, as is exhibited by any portions of the adjacent New England states and eastern provinces of Canada. The submerged channels of outlet from the Gulfs of Maine and St. Lawrence, and the less profound valleys that divide the fishing banks from each other, prove that this region during a comparatively late geologic time was a land area, its maximum elevation being at least 2000 feet higher than now.

Bulletin of the New York Mathematical Society, vol. iii. No. 4, January.—"Modern Mathematical Though," the presidential address, delivered by Prof. Newcomb, before the New York Mathematical Society (pp. 95–107), has been printed in our columns (see NATURE, vol. xlix. pp. 325–329). "Recent Researches in Electricity and Magnetism" (pp. 107–111) is a review, by G. O. Squier, of Prof. J. J. Thomson's "Notes." The reviewer feels assured that this "supplementary" volume will take its proper place beside Maxwell's great treatise in the library of every true student of electrical science. "Notes" and "new publications" occupy pp. 112–118.

SOCIETIES AND ACADEMIES.

LONDON.

Physical Society, February 9.—Annual general meeting. Prof. A. W. Rücker, F.R.S., President, in the chair.—The annual report of the Council was read by the President. Dr. Atkinson read the Treasurer's Report, and also an obituary notice of the late Prof. Tyndall. The adoption of the Reports was moved by the President, and carried *nem. con.* Dr. Chichester Bell and Mr. Griffiths were appointed scrutators, and subsequently declared the following gentlemen duly elected to form the new Council:—President, Prof. A. W. Rücker, F.R.S. Vice-Presidents: Walter Baily, Major-General E. R. Festing, F.R.S., Prof. J. Perry, F.R.S., Prof. S. P. Thompson, F.R.S. Secretaries: H. M. Elder, 50 City Road, E.C., and T. H. Blakesley, 3 Eliot Hill, Lewisham, S.E. Treasurer: Dr. E. Atkinson, Portesbery Hill, Camberley, Surrey. Demonstrator: C. Vernon Boys, F.R.S., Physical Laboratory, South Kensington. Other members of Council: Shelford Bidwell, F.R.S., W. E. Sumpner, Prof. G. Fuller, J. Swinburne, G. Johnstone Stoney, F.R.S., R. E. Baynes, Prof. G. M. Minchin, L. Fletcher, F.R.S., Prof. O. Henrici, F.R.S., Prof. S. Young, F.R.S. Prof. Reinold proposed a hearty vote of thanks to the Lords of Committee of Council on Education, for the use of the rooms and apparatus in the Royal College of Science. This was seconded by Prof. J. V. Jones, and carried unanimously. Votes of thanks were similarly accorded to the auditors, Mr. A. P. Trotter and Mr. R. Inwards, on the motion of Mr. Watson, seconded by Prof. Fuller; and to the officers of the Society, on the motion of Dr. Barton, seconded by Mr. Trotter. At an ordinary science meeting then held, Mr. Owen Glynn Jones read a paper on the viscosity of liquids, and exhibited the apparatus used in his experiments. The method employed consists in measuring the speed at which a small sphere travels through the liquid under the action of gravity. As Prof. Stokes had shown, the velocity of a sphere falling in an infinite liquid becomes constant, this velocity being given by the equation

$$V = \frac{2}{9} g a^2 \frac{\sigma - \rho}{\mu},$$

where a is the radius of the sphere, σ its density, ρ the density of the liquid, and μ its viscosity. If sliding friction exists between the sphere and liquid, the equation becomes

$$V = \frac{2}{9} g a^2 \frac{\sigma - \rho}{\mu} \frac{\beta a + 3\mu}{\beta a + 2\mu};$$

where β is the coefficient of friction. In making the experiments, small spheres (usually of mercury) were allowed to fall through a burette containing the liquid, and the time taken to travel the distance between two marks about 50 c.ms. apart noted. The radii of the spheres being small, it was considered better to deduce this from the mass. Direct determination of such small masses being difficult, a larger mass (M) was taken, weighed, and divided into, say, ten or twelve parts, and the speed of falling of each part observed in a liquid of constant viscosity. The velocity V, with which a sphere containing the whole mass would have fallen, was deduced from the equation

$$V^{\frac{2}{3}} = \Sigma v^{\frac{2}{3}}.$$

Similarly, the mass of any part which falls with a velocity v is given by

$$m = \left(\frac{v}{V}\right)^{\frac{3}{2}} . M.$$

In this way the author had been able to determine the mass of a sphere weighing only about 0·003 grammes to four significant figures. Referring to experiments made with a view to ascertaining whether sliding friction existed, the author said the divergence from the simpler formula did not exceed experimental errors. In determining viscosity, changes of temperature were found to be of great importance, especially in the case of glycerine, whose viscosity varies as much as 10 per cent. for 1° C. Small differences of temperature between different parts of the liquid are, however, not very serious, provided the mean temperature be known, for the mean speed observed is shown to be that corresponding to the mean temperature. To determine viscosity accurately at a given temperature, very delicate thermometers must be employed. Most