attention at the present moment were:—(1) The union or co-ordination of the work of the Board of Education and the Board of Agriculture in dealing with agricultural and rural instruction; and (2) the training of teachers in nature knowledge and other rural subjects. Speaking upon the first of these subjects, Mr. Hobhouse, M.P., said the Board of Agriculture only inspected certain of the higher agricultural schools, and did not systematically advise or report on the work of the local authorities. It had no voice in drawing up schemes for agricultural instruction for which grants were given under the Directory or Code. It thus failed to take the position assumed by the agricultural departments of nearly every other country, including Ireland and our own colonies, where the progress of agriculture was systematically promoted by encouraging the best methods of instruction. The yearly sum devoted to agricultural instruction and research in the United States was (federal grants only) 700,000*l.*; in Canada, 156,000*l.*; in France, 152,460*l.*; and in Würtemberg, 65,000*l.*; while in England the sum was only about 15,000*l.* It would seem that the example of Scotland should be followed in England, and that the educational powers of the Board of Agriculture should be transferred to the Board of Education, especially as under the Board of Education Act, 1899, there already existed power to make a similar transfer by Order in Council. The Board of Agriculture would then, much to its own relief, cease to be an educational authority, though it might, perhaps, retain some supervision over certain experimental work carried on by agricultural societies.

SCIENTIFIC SERIALS.

American Journal of Science, April.—The magnetic theory of the solar corona, by F. H. Bigelow. A discussion of an experiment of Ebert on the behaviour of an electrified sphere in a magnetic field, when placed in a rarefied gas. The phenomena observed in the corona of the sun agree in a remarkable way with the effects produced in the above experiment.—Tertiary springs of Western Kansas and Oklahoma, by C. N. Gould.—Some fundamental propositions in the theory of elasticity. A study of primary or self-balancing stresses, by F. H. Cilley. A discussion of the effects of initial or "primary" strain of a body upon its elasticity. Since these strains and stresses are a component of the actual strains and stresses existing in substances, it is concluded that the latter cannot be defined through the equations of elasticity alone.—The boiling point of liquid hydrogen determined by the hydrogen and helium gas thermometers, by T. Dewar. From the *Proceedings* of the Royal Society.—On the nature of vowels, by E. W. Scripture. Reproductions of a magnified set of curves from a gramophone. The results tend to show that the movement of the air in the mouth cavity is a free vibration and not a forced one. The cord movements in the vowels are of the nature of explosive openings and not of the usual vibratory form found in most musical instruments.—Note on the behaviour of the phosphorus emanation in spherical condensers, by C. Barus.—The remarkable concretions of Ottawa County, Kansas, by W. T. Bell.

Annalen der Physik, April 1.—The application of the method of residual rays to the proof of the law of radiation, by H. Rubens and F. Kurlbaum. A discussion of the various expressions which have been proposed to show the relations between the intensity of radiation, the wave length and the temperature. A detailed account of the experimental methods is given, measurements being carried out at temperatures between −180° C. and 1450° C., a graphical comparison being given between the experimental results and those calculated from the formulæ proposed by Wien, Thiesen, Rayleigh and Planck. The simple formula of Planck would appear to be the best hitherto proposed.—The elementary laws of electrodynamics, by E. Wiechert.—On the absorption of heat by carbonic acid, by S. Arrhenius. An account of the results of measurements of the absorptive capacity for heat of carbonic acid. The results are applied to the discussion of the effects of carbonic acid in the atmosphere upon the temperature of the air.—On the surface tension of water surfaces covered with an oil layer, and on the range of molecular action, by R. H. Weber. The value deduced from the experiments for the radius of molecular action is 115 $\mu\mu$., considerably greater than that deduced from the experiments of Reinold and Rucker, 10 to 17 $\mu\mu$.—On the phenomena in induction coils, by K. R. Johnson.—Mechanical vibrations of an isolated stretched wire with visible electrical discharges, by O. Viol. If an isolated stretched wire is charged from one end with electricity at high potential, transverse vibrations are set up in the wire, and if the electricity is negative and the charge sufficiently high for a visible discharge to take place along the wire, only the nodes appear to shine.—On the mode of action of coherers, by K. E. Guthe.—Contribution to the knowledge of the thermomagnetic longitudinal effect, by L. Lownds.—On the band spectra of alumina and nitrogen, by G. Berndt.—On the change of the absorption of light in solid bodies with the temperature, by J. Kœnigsberger.—On the influence of a resistance free from self-induction on the oscillatory discharge of a condenser, by T. Mizuno.—The air barometer, by H. A. Naber.—On the spectrum equation of polished platinum, by D. A. Goldhammer.—On the pressure of light rays, by D. A. Goldhammer.—On the magnetism of iron, by C. Fromme.

SOCIETIES AND ACADEMIES.

LONDON.

Chemical Society, March 21.—Prof. Thorpe, president, in the chair.—The following papers were read:—Researches on morphine, part ii., by S. B. Schryver and F. H. Lees. The authors have previously shown that bromomorphide is decomposed by water with formation of isomorphine, a base isomeric with morphine; it is now shown that another isomeride, *β*-isomorphine, is also produced in small quantity. Phosphorus trichloride converts codeine into chlorocodeide, which corresponds with bromomorphide and is convertible into isocodeine, a base isomeric with codeine.—The constitution of pilocarpine, part ii., by H. A. D. Jowett. Bromine acts upon isopilocarpine with formation of dibromoisopilocarpine perbromide and small quantities of monobromoisopilocarpine and isopilocarpinic acid; the latter is an oil of the composition $C_{11}H_{16}O_4N_2$. On oxidising dibromoisopilocarpine with permanganate, pilopinic acid, $C_8H_{11}O_4N$, and pilopic acid, $C_7H_{10}O_4$, are obtained. At 100°, in presence of water, bromine acts on isopilocarpine with production of dibromoisopilocarpinic, monobromoisopilocarpinic, bromopilopinic and bromopilopic acids.—The chemical action of *Bacillus coli communis* and similar organisms on carbohydrates and allied compounds, by A. Harden. The author has examined the products of the action of *B. coli communis* and *B. typhosus* on carbohydrates, and notes that the production of alcohol by the former organism appears to depend on the presence of the group $CH_2(OH)\cdot CH.OH$ in the compound to be fermented.—Action of dry silver oxide and ethyl iodide on benzoylacetic ester, deoxybenzoin and benzyl cyanide, by G. D. Lander.—Alkylation of acylarylamines, by G. D. Lander. Dry silver oxide and ethyl iodide convert the acylarylamines into the imino-ether, whilst if methyl iodide is substituted for ethyl iodide, a mixture of the imino-ether and the acylalkylamine usually results.—The preparation of aliphatic imino-ethers from amides, by G. D. Lander.—Note on the latent heats of evaporation of liquids, by H. Crompton.—On the atomic weight of lanthanum and on the error of the "sulphate method" for the determination of the "equivalent" of the rare earths, by B. Brauner and F. Pavlíček. It is shown that in the conversion of lanthanum oxide into sulphate for atomic weight determinations, small quantities of acid sulphate are produced and cause error in the determination of the equivalent; it is further shown that lanthanum, as hitherto known, is a mixture of two earth metals in which the true lanthanum of atomic weight 139·0 predominates.—On the atomic weight of praseodymium, by B. Brauner. The author has determined the atomic weight of praseodymium by four methods and made ebullioscopic determinations with the chloride in alcohol solutions; the final atomic weight of praseodymium is given as 140·94.—On praseodymium tetroxide and peroxide, by B. Brauner. Praseodymium tetroxide, Pr_2O_4, is obtained as a black powder, by fusing the nitrate with nitre and on treating praseodymium nitrate with hydrogen peroxide the hydrate of praseodymium peroxide, Pr_2O_5, is produced.—Note on neodymium, by B. Brauner. The number 143·5 was found by the sulphate method for the atomic weight of neodymium; this metal gives a tetroxide, Nd_2O_4, and a peroxide, Nd_2O_5.—Contribution to the chemistry of thorium, by B. Brauner. The author concludes that thorium does not consist of a single element because on fractional hydrolysis of ammonium thorium oxalate, fractions are obtained in which the