

Candidates for the natural science scholarship at Clare College are to be examined in chemistry and chemical physics, without restrictions in age.

At King's College any candidates for honours are now received, a great improvement on the old exclusiveness. The Vintner exhibition for natural science is worth 90*l.* a year, but only candidates under twenty, and British subjects, may compete, also undergraduates of the College in their first or second year. The scholarships are to be held till M.A. standing, or until election to a fellowship. Candidates in natural science must notify before March 1 in what branches of natural science they wish to be examined.

Every encouragement is now offered to selected candidates for the Indian Civil Service.

It having been decided that there should be a memorial to Prof. Clerk Maxwell, it might be suggested that a Maxwell university scholarship in experimental and molecular physics would be a great benefit, as there are scarcely any mathematical or natural science competitions open to the University. Let it be given for a specified research, rather than spend it on a posthumous bust or portrait.

MANCHESTER.—Mr. J. E. A. Steggall, B.A., scholar of Trinity College, Cambridge, mathematical master at Clifton College, Bristol, has been appointed to the Fielden lectureship in mathematics in the Owens College, vacant by the appointment of Mr. A. T. Bentley, M.A., to the principalship of the Firth College, Sheffield. Mr. Steggall graduated as second wrangler in January, 1878, and subsequently gained the First Smith's Prize. There were twenty candidates.

WE have received a very favourable report from the Liverpool School of Science, which now numbers 800 students. Before long it is hoped that a central college may be established in Liverpool, from which all existing branches with extensions may be worked.

THE Kaiser Wilhelm University at Strassburg is seemingly becoming popular in Germany. During the last term the number of students rose to 810, this being the largest number reached since the University was inaugurated.

SCIENTIFIC SERIALS

Annalen der Physik und Chemie, No. 11, 1879.—This opens with a valuable contribution by Herr Hagenbach in support of Stokes's law, the validity of which has been somewhat controverted recently. The author regards Lommel's division of fluorescent bodies as based on no essentially different behaviour of them.—Some curious experiments on electric perforation of glass are described in papers by Herren Mach and Doubrava, and Herr Waltenhofen; the latter considers the phenomenon as "a mechanical work taking place at cost of the *vis viva* of the colliding air-molecules at the part perforated, and this transformation of energy is evidently more easily effected the stronger the molecular motions; which, when they meet an obstacle, are suddenly checked." Herr Doubrava also writes on the motion of plates between the electrodes of the Holtz machine.—A series of experiments, by Herr L. Weber, with electricity of high tension used in the telephone, seem to clear up some sources of error in like observations by other physicists, to give new proof of the availability of the telephone for observing weak periodic discharges of a conductor, and to illustrate the conception of Helmholtz and others as to electric movements in an induction circuit and electrolytes inserted in it.—The relations between velocity of rotation, resistance, current strength, and electromotive force, in the Gramme machine, are set forth by Herr Meyer and Herr Auerbach.—Other papers:—On the true theory of Fresnel's interference phenomena, by Herr F. Weber.—On the relation between galvanic resistance and specific heat, by Herr Auerbach.—On extra currents in iron wires, by Herr Herwig.—Experimental researches in determination of the indices of refraction of liquefied gases, by Herr Bleekrode.—Influence of temperature on tuning-forks, by Herr Kayser.—On galvanic conduction of metallic alloys, by Herr Elsässer.—On phosphorescence-phenomena, by Herr Stürtz.

Gazetta Chimica Italiana, fasc. x, 1879.—Researches on cobalt and nickel, and methods for distinguishing them when mixed, by Dr. Papisogli.—On the constitution of ellagic acid, by S. Schiff.—On determination of acetyl by means of magnesia, by the same.—Ozone with some noble metals, by Prof. Volta.—On paraoxymethylphenyl-cinnamic acid, and on oxymethylstilbene, by Dr. Ogliarolo.—On the action of perchloride of

phosphorus on molybdic anhydrides, by S. Piutti.—On some derivatives of naphthols, by S. Marchetti.—Researches on the diffusion of copper in the animal kingdom, by Dr. Giunti.—On amines corresponding to a toluic alcohol, by Dr. Spica.—On the preparation of hydroxylamine, by Dr. Berton.—Transformation of hydroxylamine into nitrous and nitric acid, by Dr. Berton.—On an easy and rapid process for determining at any time the nitrogen, sulphur and chlorine, in organic substances, by Dr. Spica.

Bulletin de l'Académie Royale des Sciences de Belgique, Nos. 9 and 10.—M. Montigny here describes a case of supernumerary rainbows which were only visible at the lower extremities of the principal bow (a phenomenon overlooked in works on meteorology).—M. van Mensbrugge shows how the ventral and nodal appearances of liquid veins may be explained on principles he lately enunciated.—Dr. Jorissen contributes a note on the employment of chloride of zinc as reagent for certain alkaloids, glucosides, &c.

SOCIETIES AND ACADEMIES

LONDON

Royal Society, December 18, 1879.—"Chemico-Electric Relations of Metals in Solutions of Salts of Potassium," by G. Gore, LL.D., F.R.S.

In this investigation the author has determined the chemico-electric positions of about twenty-four elementary substances in a number of solutions, of various degrees of strength, and both cold and hot, of chloride, bromide, iodide, and cyanide of potassium, and has drawn from the results of the experiments various general conclusions. The results are exhibited in a series of tables. The experiments were made with the intention of also determining by means of a capillary electrometer the quantitative differences of electromotive force between each two consecutive elementary substances of the entire series; but after making many attempts the author was unable to construct such a form of that instrument as might be relied upon for accurately measuring such differences.

Chemical Society, December 18, 1879.—Mr. Warren De La Rue, president, in the chair.—The following papers were read:—On the specific volume of water of crystallisation, by T. E. Thorpe and J. J. Watts. Some years ago Playfair and Joule pointed out that the volumes of certain highly hydrated salts, for example, sodium carbonate with ten molecules of water, are equal to that of the water, considered as ice, which they respectively contain. This law does not hold good for salts less highly hydrated. The authors of the present paper have determined the precise relations between the specific volumes of various sulphates of copper, magnesium, zinc, nickel, cobalt, iron, and manganese, and their respective degrees of hydration. They conclude that in the case, at least of the so-called magnesian sulphates, the volume occupied by the several molecules of water varies with the degree of hydration. The first molecule occupies less bulk than any other, its mean relative value is 10.7, the value of the second molecule being 13.3, of the third 14.5, the fourth 15.4, the fifth 15.6, the sixth 15.7, the seventh 16.2. These results accord with the fact that the different molecules of water in a hydrated salt are held with various degrees of tenacity. The authors point out the importance of estimating the amounts of heat resulting from the combination of successive molecules of water.—Note on the formation of ozone during the slow oxidation of phosphorus, by H. McLeod. The active substance formed during the slow oxidation of phosphorus is probably either ozone or peroxide of hydrogen. Air in which phosphorus is slowly oxidising, was drawn through a U-tube 9½ inches long (filled with fragments of glass containing in succession sodic carbonate, a mixture of potassic bichromate and sulphuric acid, and potassic permanganate), the U-tube was at the temperature of the air or at 100° C., in both cases the gas which passed through rendered blue a solution of potassic iodide and starch, hydroxyl under these circumstances would be completely decomposed. In another series of experiments the gas was passed through a narrow U-tube heated to 150° to 200° C., but no water was formed. It is extremely improbable that ozone and hydroxyl are simultaneously formed, as these substances decompose each other. The author therefore concludes that the gas obtained during the slow oxidation of phosphorus possesses the properties of ozone and not those of hydroxyl, the only known peroxide of hydrogen.—On the analysis of organic bodies containing