

in natural science of the value of £60 per annum, with laboratory fees not exceeding £20 per annum, on December 11 next. The examination will consist of papers in biology and chemistry, and all inquiries respecting the examination should be addressed to Mr. W. Hatchett Jackson, Keble College. The examination will begin on Thursday, December 6.

Mr. R. Warrington, F.R.S., has been elected to the Sibthorpean Chair of Rural Economy, in succession to Sir John Gilbert.

CAMBRIDGE.—This year, for the first time on record, there is a bracket of two for the Senior Wranglership. In 1887 four names were bracketed for the highest place. These are the only instances in which the Senior Wrangler of the year has not stood "alone in his glory." Messrs. W. S. Adie and W. F. Sedgwick, both of Trinity College, share the honour. There is one lady wrangler, Miss E. H. Cooke, of Girton, who is bracketed twenty-eighth. In the second part of the Mathematical Tripos, a lady of Newnham, Miss A. M. J. E. Johnson, who was between fifth and sixth in the first part last year, heads the list, as she is placed alone in the first division of the first class. The Tyson Medal, for astronomy, offered this year for the first time, is not awarded.

Seven names appear in the first list of the Mechanical Sciences Tripos, all three of those in the first class having already taken the B.A. degree on some other examination.

The Harkness Studentship in Geology has failed of award, in the absence of candidates.

The degree of Sc.D. is to be conferred on Professor Demetri Ivanovitch Mendeleef, of St. Petersburg, who was not able to accept the honour when it was offered him in 1889.

The following are appointed examiners for the new diploma in Agricultural Science: W. F. Darwin, Mr. W. G. P. Ellis, Professor Liveing, Mr. T. B. Wood, Professor Foster, Mr. A. Eichholz, Mr. A. E. Shipley, Mr. C. Warburton, Professor Hughes, Mr. P. Lake, Mr. O. P. Fisher, Mr. E. Clarke, and Mr. R. Menzies.

THE Scottish Association for the Promotion of Technical and Secondary Education have presented a memorial to Mr. Acland asking that the yearly examinations of the Department of Science and Art shall be held in the day as well as in the evening. It is pointed out that originally arranged, as they were, to suit the convenience of artisan pupils who could not be expected to attend during the day, these evening examinations are now taken by large and increasing numbers of pupils of secondary and higher grade schools. While, therefore, fully recognising the necessity which exists for examinations in all stages of art and science subjects being continued in the evening as heretofore, the memorialists urge the desirability of provision being made by the Department for the examination, within school hours, of pupils attending day schools.

SIR PHILIP MAGNUS has been appointed to represent the University of London at the bicentenary celebration of Halle University, to be held in August next.

### SCIENTIFIC SERIALS.

*Bulletin de l'Académie Royale de Belgique*, No. 3.—Experimental demonstration of the purely accidental character of the critical state, by P. de Heen. A small quantity of amylene was introduced into the bottom of a tube, and surmounted by mercury, the tube being so thin that the mercury remained at the top. The tube was placed inside a box with glass windows, which was then heated to temperatures ranging from 201° C., the critical temperature of amylene, to about 350°. The tube was connected at the top with a Cailletet compression apparatus. It was found that even under pressures less than 5 atmospheres the amylene could be heated to 350° without evaporating. The critical state, characterised by turbulent movements, was never exhibited, but if by some accident a small quantity of vapour was formed the critical state set in at once. The author concludes that the critical state consists of a non-homogeneous mixture of "liquidogenic" and "gazogenic" molecules. At a certain high temperature, estimated for most liquids at 800° or 900°, the former are completely dissociated, and the pressure-volume curve becomes a simple isothermal. But the state of a fluid is not defined by pressure and temperature alone, since at the critical temperature, and at zero pressure, the volume can vary from unity to infinity.—Facts

relating to the properties of carbon bisulphide, by H. Arctowski. The boiling point of pure carbon bisulphide is 46°·27, but this rises steadily during the process of determining it. The bisulphide is partially decomposed by the sun's rays, by moist air, and by a slight elevation of temperature continued for some time.—On the solubilities of the haloid salts of mercury in carbon bisulphide, by the same author. These salts show different solubilities, the iodide being the most, and the chloride the least soluble. The solubilities show a point of upward inflection at about 15° C. From 15° to -10° the lines of solubility converge in such a manner that if produced they would meet the axis of solubilities at a point corresponding to -25°.—Some experiments in experimental pathological embryology, by P. Francotte. Some ova of *Leptoplana tremellaris* were opened with a fine steel point to admit schizomycetes. The microbes were either digested or excreted. The author concludes that microbial diseases cannot be transmitted by either ova or spermatozoa.

THE *Meteorologische Zeitschrift* for May contains a discussion of the results of meteorological observations on the Pic du Midi, by Dr. F. Klengel. The observations dealt with are those made during the years 1874-81 (excepting 1877), at the Plantade station, situated at a Pass, at an elevation of 7760 feet, and they furnish important materials respecting the climatic peculiarities of the high Pyrenees. The mean temperature was 34°·2; the absolute minimum was -11°·2 in January 1878, and the maximum 77°·4, in August 1881. Frost was observed on an average on 224 days in the year; the absolute maxima in all months were above 32°, and the minima mostly below 32°, even in July and August. The rainfall was exceedingly copious, amounting in the year to no less than 93·5 inches, a quantity which is only equalled at a few other places in Europe. The wettest month was April, with 18 inches, and the driest July, with 2·7 inches. The distribution of rainfall throughout the year was extremely irregular; the number of wet days in the year amounted to 184. The most prevalent winds were from north-west, 25 per cent., and from south-west, 23 per cent. The French Meteorological Office has published in its *Annales* the observations made at the summit of the mountain since October 1881, at a still greater altitude; these will, no doubt, be dealt with in a subsequent paper.

### SOCIETIES AND ACADEMIES.

#### LONDON.

Royal Society, May 24.—"Measurements of the Absolute Specific Resistance of pure Electrolytic Copper." By J. W. Swan and J. Rhodin.

This paper is a record of measurements of the absolute specific resistance and temperature coefficient of pure electrolytic copper. The authors compared a large number of different specimens of electrolytic copper. Several of the specimens were at first roughly examined, and the best chosen for further investigation. The best of these was then electrolytically refined. This, without previous fusion, was drawn through sapphire dies to the requisite diameter, and the resulting wire subjected to careful measurements. The first specimen, "A," was measured both when hard and also after annealing at a red heat in an atmosphere of carbon dioxide gas; the second sample, "B," was only examined after annealing. The authors took extreme care in finding the dimensions of the wires and the temperatures at which they were measured.

The values of the two specimens in C.G.S. units were as follows, the density being 8·9587 at 15° C.

|                               | Absolute specific resistance. C.G.S. units. | Temp. coefficient. Δt. |
|-------------------------------|---|------------------------|
| Sample A. Hard, as drawn..... | 1603  | 0·00408                |
| " A. Soft, as annealed....    | 1566  | 0·00418                |
| " B. Soft, as annealed....    | 1559  | 0·00415                |

May 31.—"On Rapid Changes of Atmospheric Temperature, especially during Föhn, and the Methods of observing them." By J. Y. Buchanan, F.R.S.

In July 1893, on the west coast of Scotland, föhn of a well-defined type prevailed. It was characterised by puffs of very hot air occurring every two or three minutes in the midst of the abnormally warm air of the day. On July 7 and 8 these hot