the Professorship of Botany; Prof. Dewar an Elector to the Professorship of Chemistry; Prof. Liveing an Elector to the Jacksonian Professorship; Prof. G. H. Darwin an Elector to the Cavendish Professorship of Physics; Prof. Sir G. G. Stokes an Elector to the Professorship of Mineralogy; Dr. J. Hopkinson an Elector to the Professorship of Mechanism and Applied Mechanics; Prof. Ray Lankester an Elector to the Professorship of Zoology; Mr. W. H. Hudleston to the Woodwardian Professorship of Geology; and Dr. Gaskell an Elector to the Professorship of Physiology.

At the Congregation on February 25, graces for the establishment of two lectureships in Agricultural Science, one of which should be held by a Director of Agricultural Studies, were rejected by 103 votes to 91. A grace for the appointment of a Syndicate to consider the question of degrees in science was rejected by 154 votes to 105. The latter was opposed by a number of the teachers in natural science, as tending to place their students in a position of isolation, and perhaps of inferiority, as compared with others.

The Rev. W. M. Campion, D.D., Fourth Wrangler in the Mathematical Tripos of 1849, and formerly an Examiner for the Mathematical and Moral Sciences Tripos, was on February 23 unanimously elected President of Queen's College, in succession to the late Dr. G. Phillips.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, February 25.—"Note on the New Star in Auriga." By J. Norman Lockyer, F.R.S.

Since my note of February 11, observations of the new star have only been possible at Kensington on seven evenings—namely, February 11, 12, 13, 16, 22, 23, and 24. The 13th and 22nd were the only two very fine nights.

The star now appears to be fading. In the photograph of the region taken on February 3, the Nova appeared to be brighter than χ Aurigæ (magnitude 5·0), but in that taken on February 23 it is not brighter than the companion to this star, which is fainter than sixth magnitude. No marked diminution in brightness was noticed before February 22.

The colour has not appreciably changed since the star was first observed.

Photographs of the spectrum were attempted on all the dates named. Those of February 11, 12, 16, and 23, however, were insufficiently exposed, but they show that the dark lines were still more refrangible than the accompanying bright ones, and that the same lines were present as in the previous photographs. A plate was exposed for 2 hours 35 minutes on February 24, but no impression was obtained. The photograph taken on February 13 is identical with those referred to in the notes which I have already communicated to the Society. In the three photographs of February 22, there appears to be a slight diminution in the intensity of the H and K lines, but otherwise there is no decided change.

There is no evidence of revolution during the twenty days of observation. In all the photographs the dark lines are more refrangible than the bright ones, and the relative velocity deduced from those of February 3, 7, 13, and 22 appears to be about 600 miles per second. As this only represents the velocity in the line of sight, we are still ignorant of the real velocities of the two bodies. The constant relative velocity indicated by the displacement of the bright and dark lines may be regarded as confirming the supposition that two meteor-swarms or comets have collided, the velocities being so great, and the masses so small, that neither was captured by the other.

The relative velocity of 600 miles per second seems at first sight to be abnormally great, but if we regard each of the component swarms as moving at the rate of 300 miles per second, the velocities are quite comparable with those of other bodies in space. The star 1830 Groombridge, for example, moves at the rate of 200 miles per second across the line of sight, and its real velocity may be much greater.

Eye observations have been made on every available occasion. The chief variation from those previously reported is the general fading of the continuous spectrum, and the consequent unmasking of the lines between *b* and D. Micrometric measures of four new lines in this region were made by Mr. Fowler on February 23 and 24. These, with the other lines observed at Kensington in the region F to C, are shown in the table which follows. The corresponding lines observed in the spectra of new stars which have previously appeared, and those in the spectra of some of the bright-line stars, are added for comparison.

Nova Aurigæ.		Nova Cygni.			Nova Andromedæ.	Nova Coronæ.	γ Argûs.	Arg.-Oeltz. 17681.	Lalande 13412.	1st Cygnus.	2nd Cygnus.	3rd Cygnus.	γ Cassiopeiæ (Sherman).	Suggested origins.
Feb. 23.	Feb. 24.	Cornu.	Vogel.	Copeland.										
656 (C)	656	661	656	656	—	656	—	—	—	—	—	—	—	H (656·2)
635	630	635	630	630	—	—	—	—	—	—	636	636	635	—
589 (D)	—	588	589	589	—	—	590	—	—	—	—	—	—	Na (589·1)
579	579	—	580	577·5	—	—	580·9	581	581	583	581	581	—	Fe (579·0)
—	570	—	—	—	—	—	—	—	—	571	570	569	—	—
566	—	563	564	—	—	—	566	—	—	—	—	564	—	C (563·5)
558	558·3	—	—	—	558	—	—	—	—	558	—	558	556	Mn (557·6)
531	531·5	531	531	—	532	—	—	—	—	—	—	—	531	—
518	517·7	518	—	—	517	—	—	—	—	—	—	517	517	C (516·5) or Mg (517·5)
500·6	500·6	500	499	502	—	501	—	—	—	—	—	—	499	Mg (500·6)
490	490·3	—	490	—	—	—	—	—	—	—	—	—	—	—
486	486·2	483	486	486	486	486	—	—	—	—	—	—	486	H (486·2)

It will be seen that all the lines of Nova Aurigæ have previously been recorded in other Novæ, or in the bright-line stars.

The complete spectrum, including the photographic region, is shown in a diagram (which was exhibited). This, and the light curve of the spectrum from F to C, were drawn by Mr. Fowler and Mr. W. J. Lockyer on February 22, and confirmed by Mr. Fowler on February 23. The 3-foot reflector and McClean spectroscope were employed in each case.

The changes which are taking place in the Nova are exactly what would be expected according to my hypothesis that new stars are produced by the collisions of meteor-swarms. The rapid fading of the star demonstrates that small bodies and not large ones are engaged, and this is further confirmed by the observed diminution in the brightness of the continuous spectrum relatively to the bright lines. If two condensed bodies were in collision, it is evident that the lines would fade first.

Chemical Society, February 4.—Prof. A. Crum Brown, F.R.S., President, in the chair.—The following papers were read:—Pedetic motion in relation to colloidal solutions, by W. Ramsay. The pedetic or Brownian motion of small particles depends (1) on the size of the particles, (2) on their density, and (3) on the nature of the medium in which they are sus-

pended. If an electrolyte be added to a liquid containing such particles in a state of pedetic motion, the movement is soon arrested, owing to the particles touching one another, and cohering to form clots or clusters. If no electrolyte be present, the particles do not tend to touch each other. From microscopic observations, it is calculated that a particle with a mass of $2\cdot8 \times 10^{-12}$ grams moves through, approximately, its own diameter, $1\cdot4 \times 10^{-4}$ c.m., in a second. Such a particle has one hundred billion times the estimated mass of a water molecule; hence, if its pedetic motion be produced by bombardment from water molecules, these must exist in complex groups of considerable mass and some stability. The fact that pedesis is stopped by the addition of an electrolyte would appear to indicate that the water complices are disintegrated in the presence of ions. The effect of pedetic motion in a liquid is to cause hydrostatic pressure; such hydrostatic pressure would be less on a membrane capable of penetration by the molecular aggregates or particles than on one not so permeable. It is not unlikely that these particles obey gaseous laws in regard to pressure on the sides of the containing vessel, as microscopic observations show that the relative velocity of the particles depends on their mass and density. L. Meyer has pointed out the great discrepancies existing between measurements of the osmotic pressures of solutions and the pressures calculated on the assumption that the dissolved substances obey gaseous laws. These discrepancies may be best explained by considering that combination of the dissolved substance with the membrane walls takes place, and that, subsequently, dissociation of the compound occurs at the other side of the cell wall, as in the case of hydrogen penetrating a palladium diaphragm. The author is disposed to conclude that solution is merely subdivision and admixture, accompanied by pedetic motion, that the true osmotic pressure has never been measured, and that a continuous passage can be traced between visible particles in suspension and matter in solution.—The acid action of drawing-paper of different makes, by W. N. Hartley. An examination of numerous samples of the best drawing-papers shows that they all contain free sulphuric acid. Water in which the paper has been steeped yields a precipitate of barium sulphate, and solutions of helianthin and azolitmin painted on to the paper give the acid reaction.—The interactions occurring in flames: a correspondence between Sir G. G. Stokes and H. E. Armstrong. Sir G. Stokes considers that the facility with which steam is decomposed by glowing carbon favours the view that, at a high temperature, oxygen combines with carbon in preference to hydrogen. He considers it necessary to distinguish carefully between the changes which take place in the partial combustion of a molecule and those which are produced in neighbouring molecules as a result of the heat liberated. This latter change may be termed a thermo-chemical one, in contradistinction to a pure chemical change. In the blue base of a candle flame, where oxygen is plentiful, pure chemical change may occur. The blue part envelops for a little way the highly luminous shell in which glowing carbon is present. This carbon may owe its origin to a thermo-chemical change, the heat being derived from the pure chemical change occurring just outside it. The hydrocarbon spectrum may be due to a gas formed by a pure chemical change; this gas is generally supposed to be acetylene, but Sir G. Stokes considers that it is more probably methane. This unknown gas is a hydrocarbon, which, when burnt in the pure state, would show but feebly, if at all, the hydrocarbon spectrum. For, in order that it should show its spectrum, its molecule must be in a state of violent agitation; this might be expected to be the case if it had just been formed as the result of partial decomposition, but would not be so merely because it was going to be destroyed by union with oxygen. Dr. Armstrong, while admitting that the facts do not justify the assertion that oxygen combines with hydrogen in preference to carbon when a hydrocarbon is burnt with insufficient oxygen, is unprepared to adopt the view, advocated by Sir G. Stokes and Prof. Smithells, that the carbon is the more combustible, and thinks that the actual condition of affairs is far less simple than is expressed in the statement of either of these views. There seems to be very little opportunity in flames for simple heat changes to occur, the molecules of different kinds being so mixed up together. Thus opportunity is given for interactions to occur, the end result of which is the same as that of a simple heat change of the chief substance concerned; merely because a change occurring at one moment is reversed the next, and so escapes notice. In this way, contiguous molecules may play the part of surfaces, and that there can be little doubt that such actions are of primary importance may be inferred from the well-known fact that the extent to which the dissociation of water vapour takes place depends on the character of the surface in contact with which it is heated, and not solely on the temperature. In fine, it seems permissible to doubt whether, under the conditions present in flames, carbon is ever separated by simple heat changes. It will certainly be unwise at present to infer that the oxidation of the hydrocarbons, or the separation of carbon and also of hydrogen from them, takes place entirely in any one way.—Properties of alcoholic and other solutions of mercuric and other chlorides, by S. Skinner. The author has determined the variation in the boiling-point of alcohol produced by dissolving it in mercuric, lithium, magnesium, and calcium chlorides, as well as the variation in the boiling-point of a solution of hydrogen chloride of constant boiling-point produced by mercuric chloride. He has also studied the distribution of mercuric chloride between the two solvents, water and ether. The results indicate that mercuric chloride affords a case in which the measure of the property is a simple function of the quantity of salt present, whereas in the case of the other chlorides, the measure of the property involves some higher power.—The isomeric α-bromocinnamic acids, by S. Ruhemann. An account is given of experiments on the action of ammonia and phenylhydrazine on the α-bromocinnamic acids.

Entomological Society, February 10.—Mr. Frederick DuCane Godman, F.R.S., President, in the chair.—The President nominated Lord Walsingham, F.R.S., Captain Henry John Elwes, and Dr. D. Sharp, F.R.S., Vice-Presidents for the session 1892–93.—Mr E. Meyrick exhibited a number of specimens of *Euproctis fulviceps*, Walk., taken by Mr. Barnard, showing the extraordinary variation of this Tasmanian species, all the males of which had been "sembled" by one female. The males were represented by various forms ranging from black to white, which had all been described as distinct species. Dr. Sharp, Mr. Hampson, Mr. McLachlan, Colonel Swinhoe, Mr. Elwes, Mr. Poulton, and Mr. Jacoby took part in the discussion which ensued.—Dr. Sharp exhibited samples of pins which he had tried for preventing verdigris, and stated that silver wire was the best material to use, as insects on silver pins remained intact, whilst those on gilt pins were destroyed by verdigris.—Mr. G. T. Porritt exhibited a series of specimens representing Huddersfield forms of *Polia chi*, including nearly melanic specimens, found there during the last two seasons. He said these forms had not hitherto been observed elsewhere.—Mr. Tutt exhibited a series of *Hadena pisi*, comprising specimens very grey in tint, others of an almost unicolorous red with but faint markings, and others well marked with ochreous transverse lines; three distinct forms of *Hadena dissimilis*; red and grey forms of *Panolis piniperda*, and a dark form of *Eupithecia fraxinata*; also a specimen of *Sciaphila penziana*.—The Rev. Dr. Walker exhibited specimens of *Arge titea*, *A. lachesis*, *A. psyche*, *A. thetis*, and other species of the genus from the neighbourhood of Athens; also specimens of *Argynnis phœbe*, taken in Grenada in May 1891.—Mr. W. Farren exhibited a series of specimens of *Peronea variegana* var. *cirrana*, and *P. schalleriana* var. *latifasciana*, from Scarborough; *Eupœcilia vectisana*, from Wicken Fen; and *Elachista subocellea*, from Cambridge.—Mr. G. A. J. Rothney sent for exhibition a number of species of ants collected in Australia, in May and June 1886, which had recently been named by Dr. Forel. The collection included: *Iridomyrmex purpurens*, Sm., *I. rufoniger*, Lowne, *I. gracilis*, Lowne, *I. itinerans*, Lowne, *Ectatomma metallicum*, Sm., *E. nudatum*, *E. mayri*, *Aphœnogaster longiceps*, Sm., *Polyrhachis ammon*, Fab., *Myrmecia nigriventris*, Mayr, and *nigrocincta*, Sm.; and a variety of *Camponotus rubiginosus*, Mayr, from Brisbane; also a few species from Honolulu; and a species of *Monomorium*, which Dr. Forel had not yet determined.—Mr. C. O. Waterhouse read a paper entitled "Some Observations on the Mouth Organs of Diptera," which was illustrated by numerous diagrams.—Mr. E. Meyrick read a paper entitled "On the Classification of the Geometrina of the European Fauna." Mr. Hampson, Mr. Elwes, Mr. McLachlan, Colonel Swinhoe, Mr. Tutt, and Mr. Distant took part in the discussion which ensued.

Zoological Society, February 16.—Osbert Salvin, F.R.S., Vice-President, in the chair.—Mr. W. T. Blanford, F.R.S., exhibited two heads and a skin of the Yarkand Stag, lent for

exhibition by Major C. S. Cumberland, by whom they had been obtained, and proposed the name of *Cervus elaphus yarkandensis* for this form.—Mr. Sclater exhibited and made remarks on some living specimens of what are commonly called Spinning or Japanese Mice.—Mr. Sclater also exhibited and made remarks on some mounted heads of Antelopes from Somali-land, belonging to Captain Swayne, R.E., amongst which was an example of the recently described Swayne's Hartebeeste (*Bubalis swaynei*).—Mr. A. Smith-Woodward exhibited and made remarks on examples of the supposed jaws and teeth of *Bothrio lepis* from the Upper Devonian formation of Canada.—Mr. F. E. Beddard read a paper containing the results of his examination of the Chimpanzee "Sally" and the Orang "George," lately living in the Society's Menagerie. The author's remarks referred principally to the external characters and the muscular anatomy of these Anthropoid Apes.—A communication from Mr. A. G. Butler gave an account of a collection of Lepidoptera from Sandakan, North-East Borneo.—Mr. G. A. Boulenger gave an account of a third collection of Fishes made by Surgeon-Major A. S. G. Jayakar at Muscat, East Coast of Arabia. Amongst these was a specimen of *Histiopterus typus*, a fish described in "Fauna Japonica," but not since recognized; and an example of a new species of *Box*, proposed to be called *B. lineatus*.—A communication from Dr. W. B. Benham contained a description of three new species of Earthworms from British Colombia and South Africa. These were proposed to be called *Plutellus perrieri*, *Microchæta papillata*, and *M. belli*.—Mr. F. E. Beddard read a paper on some new species of Earthworms of the genus *Perichæta*.—A communication was read from Dr. H. Bolau, on the specimens of *Heliaëtus pelagicus* and *H. branickii*, now living in the Zoological Gardens of Hamburg. Coloured drawings of these nearly allied Sea-Eagles were exhibited.

Anthropological Institute, February 9.—E. B. Brabrook, Vice-President, in the chair.—Mr. Walhouse exhibited the skull of a Dacoit leader from the Chin country on the Burmese and Chinese frontier; also a quiver and several other Chin objects sent to him by Captain E. S. Hastings.—The following papers were also read:—On the exploration of Howe Hill Barrow, Duggleby, Yorkshire, by J. R. Mortimer; and on the human remains found in Howe Hill Barrow, by Dr. J. G. Garson.

Royal Meteorological Society, February 17.—Dr. C. Theodore Williams, President, in the chair.—The following papers were read:—The untenability of an atmospheric hypothesis of epidemics, by the Hon. Rollo Russell. The author is of opinion that no kind of epidemic or plague is conveyed by the general atmosphere, but that all epidemics are caused by human conditions and communications capable of control. In this paper he investigates the manner of the propagation of influenza, and gives the dates of the outbreaks in 1890 at a large number of islands and other places in various parts of the world. Mr. Russell says that there is no definite or known atmospheric quality or movement on which the hypothesis of atmospheric conveyance can rest, and when closely approached it is found to be no more available than a phantom. Neither lower nor upper currents have ever taken a year to cross Europe from east to west, or adjusted their progress to the varying rate of human intercourse. Like other maladies of high infective capacity, influenza has spread most easily, other things being equal, in cold calm weather, when ventilation in houses and railway-cars is at a minimum, and when, perhaps, the breathing organs are most open to attack. But large and rapid communications seem to be of much more importance than mere climatic conditions. Across frozen and snow-covered countries and tropical regions it is conveyed at a speed corresponding, not with the movements of the atmosphere, but with the movements of population and merchandise. Its indifference to soil and air, apart from human habits depending on these, seems to eliminate all considerations of outside natural surroundings, and to leave only personal infectiveness, with all which this implies of subtle transmission, to account for its propagation.—The origin of influenza epidemics, by Mr. H. Harries. The author has made an investigation into the facts connected with the great eruption of Krakatão in 1883, and the atmospheric phenomena which were the direct outcome of that catastrophe. He has come to the conclusion that the dust derived from the interior of the earth may be considered the principal factor concerned in the propagation of the recent influenza epidemics, and that, as this volcanic dust invaded the lower levels of the atmosphere, so a peculiar form of sickness assailed man and beast.—Report on the phenological observations for 1891, by Mr. E. Mawley. This report differs in many respects from the previous reports on the same subject. Among other changes, the number of plants, &c., selected for observation has been greatly reduced, while the number of observers has considerably increased. The winter of 1890–91 proved in England very destructive to the root-crops, as well as to green vegetables and tender shrubs. Birds also suffered severely. In Scotland and Ireland, however, there was scarcely any severe weather until March. The flowering of wild plants was greatly retarded by cold in the spring, but during the summer the departures from the average were not so great. The harvest was late, and its ingathering much interfered with by stormy weather.—Note on a lightning discharge at Thornbury, Gloucestershire, July 22, 1891, by Dr. E. H. Cook.

EDINBURGH.

Royal Society, January 18.—Prof. Chrystal, Vice-President, in the chair.—Prof. C. G. Knott read a paper on the magnetization of iron by a current passing through it. The experiments were an attempt to get some insight into the nature of circular magnetization as it exists in an iron wire carrying a current. Direct experiment seemed hopeless. Accordingly, tubes were used, in which the circular magnetization was measured by the induction current produced in a coil wound longitudinally round the wall of the tube. The circular magnetization could be produced either by an *axial current* along a copper wire threading the tube, or by a *sectional current* from end to end along the tube itself. Several tubes of different bores were used in pairs, the induction, axial or sectional, in one being balanced, by adjustment of resistances in the secondary circuits, against the induction, axial or sectional, under the influence of the same current in the other. The average magnetic force acting round the tube was calculated in accordance with the usual assumptions, and this, taken along with the observed induction, gave an average permeability. The general result was that the sectional induction accompanying a given current is greater by about 7 per cent. than it would be if the usual theory as to the relation between it and the axial current were accurate. Direct experiment appreciably showed that a current flowing through iron does not increase permeability to inductive forces acting perpendicular to the current, so that the deviation mentioned must be due to the faultiness of the theory. With greater current densities, such as exist in the circularly magnetized wire, this deviation may be even more pronounced.—A paper, written by Mr. R. W. Western, on tactics adopted by certain birds when flying in the wind, was read. In this paper an attempt was made to explain the advance of certain birds against the wind without motion of the wings.—A paper, by Dr. A. B. Griffiths, on ptomaïnes extracted from urine in certain infectious diseases, was communicated.—Prof. Tait read the second part of a paper on impact. In the series of experiments described in this part of the paper, blocks of the various substances dealt with, similar in shape to those used in the first set of experiments, but larger in size than they were, were used. The mass of the impinging body was also larger than formerly, and in some experiments the part of it which impinged upon the substance was made of a V-shape instead of flat. The paper contained a comparison of the present results with the former.—Prof. Tait also read a note on the critical isothermal of carbonic acid as given by Amagat's experiments. Throughout a considerable range of volume this isothermal is practically flat.

February 1.—The Rev. Prof. Flint, Vice-President, in the chair.—A paper by Dr. Piazzi Smyth, formerly Astronomer-Royal for Scotland, on the latest physical geography from Greenland, was read.—A paper, by Mr. R. Brodie, on the equilibrium and pressure of arches, with a practical method of ascertaining their true shape, was communicated. The method involves the use of a very simple and easily applied geometrical construction.—Prof. Tait read a note on the isothermals of mixtures of gases. In this note reference was made to a possible explanation of the flatness (indicated in Amagat's recent experiments) of the critical isothermal of carbonic acid near the critical point as due to the presence of a small quantity of air.

PARIS.

Academy of Sciences, February 22.—M. d'Abbadie in the chair.—On a geometrical interpretation of the expression of an angle with two normals infinitely close to a surface, and on its

use in theories of the rolling of surfaces and gearings without friction, by M. A. Resal.—On the theory of elasticity, by M. H. Poincaré.—On the magnetic disturbance of February 13-14, by M. Mascart. It is stated that the instruments at the meteorological stations of Nice, Toulouse, Clermont, and Besançon were disturbed during the recent magnetic storm in the same manner as those at Perpignan, Lyons, Nantes, and Parc Saint-Maur. An account is also given of an aurora observed on February 14 by M. P. Lefebvre at Troyes, and M. de Roquigny-Adanson at Parc-de-Baleine.—Note on a sun-spot observed at Meudon Observatory from February 5 to February 17, by M. J. Janssen.—On the measurement of high temperatures; reply to some remarks made by M. H. le Chatelier, by M. Henri Becquerel.—Preparation of amorphous boron, by M. Henri Moissan. (See Notes.)—On an improvement of automatic arrangements for lifting water to great heights, employed in irrigation, by M. Anatole de Caligny.—Researches on ethyl monochlor-, monobrom-, and monocyanacetoacetate, by MM. A. Haller and A. Held. The monohalogen derivatives of ethyl acetoacetate react sometimes as α and sometimes as γ derivatives, and sometimes as a mixture of α and γ derivatives.—On the deformation of the earth's crust, by M. Marcel Bertrand.—Photographs of the star Nova Aurigæ, taken at the Vatican Observatory, by M. F. Denza. Two negatives were taken of the region about Nova Aurigæ on February 7. The telescope was moved slightly in declination between successive exposures, so that each of the negatives obtained showed five images of the Nova. The star on the date of observation was said to be undoubtedly of the fifth magnitude. Its image is not so clearly defined as are the images of other stars on the same plates. Careful measurements of position made with the meridian instrument of the Observatory give the values R.A. 5h. 25m. 3·4s., Decl. 30° 21′ 42″·0. —On algebraic integrals of differential equations of the first order, by M. Léon Autonne.—On maximum elastic deformation of metallic arcs, by M. Bertrand de Fontvioland.—Relation of the magnetic disturbance of February 13-14 to solar phenomena, by M. E. Marchand.—Researches on the realization of the spheroidal state in boilers, by M. A. Witz. Experiments have been made by the author to determine the duration of evaporation of water on heated metals.—On the solubility of tricalcic phosphate and hydrogen bicalcic phosphate in solutions of phosphoric acid, by M. H. Causse.—On the stereochemistry of diacetyltartaric acid; a reply to a communication by M. Le Bel, by M. Albert Colson.—Thermal study of sodium isopropylate, by M. de Forcrand.—Tartronic acid and the tartronates of sodium and potassium, by M. G. Massol. The heat of combination of tartronic (oxymalonic) acid is greater than that of malonic acid under the same conditions. This result is similar to that obtained with oxysuccinic and succinic acids.—The specific gravities of textile fibres, by M. Léo Vignon.—On the vitality of germs of microscopic organisms in fresh and salt waters, by M. A. Curtis.—On some points in the embryology of *Oniscus murarius*, Cuv., and *Porcellio scaber*, Leach, by M. S. Jourdain.—Structure of the nervous system of the larva of *Stratiomys strigosa*, by MM. F. Henneguy and A. Binet.—On nutrition during diabetes, by M. Hanriot.—Researches on the fall of the leaves of the vine and the ripening of grapes, by M. A. Muntz.—Remarks on a recent communication by M. J. Passy, as to the minimum perceptible quantity of some odours, by M. Charles Henry.

BERLIN.

Physical Society, January 29.—Prof. Schwalbe, President, in the chair.—Prof. Lampe gave an account of the life and work of the late Prof. L. Kronecker; and Dr. Budde an address in honour of the late Astronomer-Royal, Prof. Airy.—Prof. König described experiments, made chiefly in collaboration with Dr. Ritter, on the luminosity of spectral colours under very widely different intensities of illumination. Special attention was directed to the curves of luminosity under very feeble illumination, a condition under which only the outermost red of the spectrum is visible.

Meteorological Society, February 2.—Dr. Vettin, President, in the chair.—Dr. Arendt spoke on the relationship of the electrical phenomena of the atmosphere to terrestrial magnetism. Neither the aurora nor the sudden discharges during thunderstorms have exhibited any regularity in their relationship to variations of terrestrial magnetism. The speaker's observations at the magnetic observatory of Potsdam, extending over a whole year, have shown that sudden luminosities in the sky, which differ from ordinary sheet-lighting, but are certainly due to electrical discharges, and are most prevalent in winter, are always accompanied by changes of terrestrial magnetism. In connection with the above, Prof. Spoerer pointed out that the solar activity had undergone a sudden reversal in April 1891, in so far as since 1883 the southern hemisphere had been more active than the northern, in the ratio of 15 and 18 to 10, whereas since April the activity had markedly increased in the northern hemisphere, so that it had exceeded that of the southern in the ratio of 34 to 10.—Dr. Assmann gave a preliminary short account of some observations made in a captive balloon in January last during a dead calm and the lowest temperature of the winter. The balloon ascended slowly at 1 o'clock, and was slowly pulled down at 5 p.m.; and since it was found that the self-registering apparatus was in perfect working order, it was again allowed to ascend, and remained up until 11 p.m. During the whole afternoon the cable hung perfectly vertical, so that the balloon reached its full elevation of 750 metres. In the evening a slight south-easterly wind blew aloft, although the calm was continuous below. The temperature at midday at the earth's surface was −12° C.; a few metres above the surface it rose 0°·6, and was then constant up to a height of 250 metres, and as far as the fine mist extended. At greater elevations it rose rapidly, and at an elevation of 750 metres stood at −4°. That this considerable elevation of temperature at the higher altitude was not due to solar radiation was shown by the fact that in the evening the temperature at an elevation of 700 metres was as much as 12° above that at the earth's surface. The data as to humidity and barometric pressure were less trustworthy.

Physiological Society, February 5.—Prof. du Bois Reymond, President, in the chair.—Dr. René du Bois Reymond gave an account of his researches with chloroform purified by crystallization at −100°, and compared its action with that of ordinary chloroform and of the mother liquor from the crystals. Experimenting on frogs and rabbits, he found their action was practically identical.—Prof. H. Munk made a short communication on the function of the superior laryngeal nerve, on extirpation of the thyroid gland, and on a centrally blind monkey.

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