arrive at the Cape and to forward to you such of the specimens collected as require only ordinary care in their transmission. The more fragile things are likely to reach you in better condition if I keep them until my return to England, than they would if they were sent with the others.

SCIENTIFIC SERIALS

Journal de Physique théorique et appliquée, Feb. 1875.—This number contains several papers reprinted from other serials, and the following original ones:—On the spectra of yttrium, erbium, didymium, and lanthanum, by Prof. R. Thalèn. On account of the difficulty to obtain the compounds of these metals in a pure state, considerable doubt has hitherto existed, whether certain lines that always appeared in the spectra of yttrium and ertium and in those of didymium and lanthanum belonged to the first or second metal in the pair; the state of these questions in 1868 was, that there were twelve lines which always appeared when yttrium or erbium were examined, and sixteen lines in the case of didymium and lanthanum. Prof. Thalèn succeeded in obtaining sufficient quantities of compounds of each of the metals, from M. Cleve, Professor of Chemistry at the Upsala University, and these were of undoubted purity. He was thus enabled to study their spectra most accurately, and the following table shows the number of lines found in former and in the recent researches:—

Metal.	Number of lines, 1868.		1873.
Yttrium	70	+ 12 uncertain	106
Erbium	10		83
Didymium	6	+ 16 ,,	209
Lanthanum	49		188

It was found that the twelve uncertain lines that always appeared with yttrium or erbium belong to yttrium only; in the same way the sixteen uncertain ones in the second case belong only to the lanthanum spectrum. Prof. Thalèn gives a detailed map of the spectra in question.—Researches on the induction sparks and electro-magnets; their application to electro-chronographs, by M. Marcel Deprez.—On analogies in the evolution of gases from their over-saturated solutions, and the decomposition of certain explosive substances, by M. D. Gernez.—On the preservation of energy in electric currents, by M. E. Bouty.—On the transformation of static into dynamic electricity, by M. E. Bichat.

Der Zoologische Garten.—In the January number, the first article is a description of the new Zoological Gardens at Frankfort, by the director, Dr. Max Schmidt, illustrated by a coloured plan. J. von Fischer gives an account of the habits of *Herpestes galera* as observed in confinement. E. Buck figures and describes an apparatus for producing currents in the water of aquaria; it may be worked either by a miniature steam-engine or by clockwork. H. Schacht gives minute details of the breeding habits of the common swallow (*Hirundo rustica*); and A. B. Meyer and K. von Rosenberg both write upon the newly discovered Bird of Paradise (*Diphyllodus Gulielmi III.*, Van Muschenbroek) from Ternate.—In the February number is printed a paper read by Dr. Hermann Müller before the Provincial Society of Westphalia, on the stingless Brazilian Honey-bees of the genus *Melipona*, and the possibility of their acclimatisation in Europe. Dr. J. J. Rein remarks on the distribution of some of the mammals of Japan; and C. Geitel writes on the feeding of small birds in winter in the neighbourhood of human habitations.

Poggendorff's Annalen der Physik und Chemie, 1875, No. 2, contain the following papers:—On the galvanic conducting capacity of melted salts, by F. Braun. The author experimented with twelve different salts, and tabulates his results; the salts were nitrates of potash, soda and silver, carbonates of potash and soda, sulphate of soda, chlorides of potassium, sodium, strontium, zinc and lead, and iodide of potassium.—On a compilation of facts which prove a decrease of volume as a consequence of chemical action in solid bodies, by W. Müller.—On the electric conducting capacity of the chlorides of the alkalies and alkaline earths as well as of nitric acid in aqueous solutions, by F. Kohlrausch and O. Grotrian. This is the last part of the author's interesting communications, and treats of the liquids examined, of the resistances observed, of the conducting capacities in their relation to that of mercury, and of their dependence on temperature; further, of their proportion to the percentage of concentration of liquids, of the co-efficients of temperature, and of the conducting capacity of dilute solutions.—On the theory of galvanometers, by H. Weber.—A reply to Baron Eötvös' remarks on a part of the astronomical undulation-theory by Ed. Ketteler.—Some remarks upon Helmholtz's work on Sound, "Die Lehre von den Tonempfindungen," by Emil v. Quanten; these remarks relate principally to what Helmholtz says on vowels.—A reply to Herr C. Heumann regarding his claim of priority in observing the action of nitrate of silver upon sulphide of copper, by R. Schneider.—On the construction of lightning conductors, by Dr. W. A. Nippoldt. Some remarks by Dr. G. Baumgartner, on Prof. E. Edlund's paper on the nature of electricity.—Description of a very simple apparatus to photograph spectra, by Hermann W. Vogel; this apparatus can even be applied to an ordinary pocket spectroscope of the smallest dimensions.—On the phenomena of interference visible on mirrors covered with dust or a fine layer of grease, by Prof. M. Sekulic.—Researches on apparent adhesion, by J. Stefan.—On the conducting capacity of the halogen compounds of lead, by E. Wiedemann.

Transactions of the Manchester Geological Society, Part viii. vol. xiii., 1874–75.—Nearly the whole of this part is occupied by an elaborate illustrated paper on "Hæmatite Deposits," by Mr. J. D. Kendall. There is a short paper by Mr. A. W. Waters on "Tertiary Coals," in reference to specimens of carbonised peat he found in Northern Italy under rather peculiar circumstances. Part ix. is occupied with the discussion on Mr. Kendall's paper on Hæmatite deposits, and with a long paper on basalt and its effects, by Mr. G. C. Greenwell, F.G.S.

SOCIETIES AND ACADEMIES

London

Royal Society, April 29.—"On a Continuous Self-Registering Thermometer," by H. Harrison Cripps. Communicated by Prof. Stokes, Sec. R.S.

The instrument is divided into two portions:—First, the thermometer, which marks the degrees; secondly, the clockwork, which indicates the hours and minutes. The thermometer is first described. The form in which it was originally made, and which perhaps serves best for illustrating the principle, was the following:—A glass bulb, rather more than an inch in diameter, ends in a glass tube 12 inches long, having a bore of $\frac{1}{8}$ inch. This tube is coiled round the bulb in such a manner as to form a complete circle four inches in diameter, the bulb being in the centre of this circle. Fixed to opposite poles of the bulb, exactly at right angles to the encircling tube, are two needle-pointed pivots. These pivots work in minute metal depressions fixed to the sides of two parallel uprights. It will be seen from this arrangement that the bulb with its glass tube will rotate freely between the uprights, and the pivots will be the centre of a circle, the circumference of which is formed by the glass tube. The bulb is filled with spirit in such quantity that at 60° Fahrenheit the spirit will fill not only the bulb, but about 4 inches of the tube. Mercury is then passed into the tube till it comes into contact with the spirit, and in such quantity as to fill up about three inches of the remaining portion of the tube. The spirit is now heated to 120°, and as it expands forces the column of mercury in front of it till the mercury comes within $\frac{1}{4}$ inch of the end of the tube. The tube is then hermetically sealed, enclosing a small quantity of air. If the thermometer be now arranged with its needle-points between the uprights, it will be observed that, as the spirit contracts on cooling, it draws the column of mercury with it. This immediately alters the centre of gravity, and the bulb and tube begin to revolve in a direction opposite to that of the receding mercury. On again applying heat, and the mercury passing forwards, the bulb regains its original position. By this simple arrangement, the two forces, heat and gravity, acting in contrary directions, generate a beautifully steady rotatory movement. The method by which this movement is made serviceable for moving the register will now be described. A grooved wheel, two inches in diameter, is fixed to one of the central pivots, therefore revolving with the bulb. Directly above, and at a distance of seven inches from this wheel, is fixed between needle-points another wheel of exactly similar size. Around and between these two wheels passes a minute endless chain. To the chain is fixed a tiny pencil, which will be carried backwards and forwards between the wheels in a perpendicular line. This constitutes the register worked by the thermometer. The clockwork portion of the machine is so arranged that it causes a vertical cylinder, four inches diameter and five inches in length, to revolve once in twenty-four hours. Round this cylinder is fixed a piece of paper twelve inches long, five inches wide.