Fig. 2. The gas entered by the inner tube, which passed down to the surface of the mercury, and the outer tube was connected with the gas-burner placed under the U-shaped heating-tube. Thus a rise of mercury in the regulator reduced the supply of gas to the burner. The cross-section of the flat glass bulb at the common surface of the mercury and volatile liquid was large compared with the cross-section at the upper end of the regulator; thus nearly all the increase in height due to expansion of the volatile liquid and vapour takes place at the upper end of the regulator, and the level of the common surface of the mercury and volatile liquid remains nearly constant.

The most interesting part of the apparatus is the arrangement for compensating for the variation of atmospheric pressure. With this object a barometer in the form of a bent tube is fixed at F. To simplify the explanation we will suppose that the atmospheric pressure diminishes by an amount equal to a head of one inch of mercury; this will cause the mercury in the open end of the barometer to rise half an inch. If the regulated gas-flame is to be extinguished when there is a constant pressure on the volatile liquid, then the tube E must be raised one inch; thus it must move in the same direction as and twice the amount of the exposed surface of the mercury in the barometer. To accomplish this the upper part of the regulator was attached to a board turning about a horizontal axis, A. A gas-bag was placed between the projecting end of this board and a fixed board, B. The board turning about A was so weighted as to tend to close the bag. The nozzle of the bag was connected to the gas-main, and a branch pipe led to a small tube, C, passing down the open end of the barometer. This small tube was fixed by a bracket to the movable board half-way between the upper end of the regulator and the pivot A. Now if the mercury rises in the open end of the barometer it closes the tube C, and the gas from the main passes into the bag, forces the boards apart, and raises both the upper end of the regulator and the tube C, until the escape restores the equilibrium. The flexible india-rubber connections in the glass tubes allow the necessary movement to take place. This arrangement is of interest, as the pressure of the gas-supply is the motive-power for automatically moving a piece of mechanism in a required manner.

The apparatus was kept in action for fourteen days without readjustment, but the stirring of the water was discontinued at night. The thermometer was read about ten times a day, and from July 18 to August 1 the extreme readings were 30°·90 C. and 30°·86 C. The greatest change of temperature during any day was 0°·04 C., the least observed change during any day was 0°·01 C., and the longest period during which no change was observable was from 12.30 p.m. on July 20, to 1 p.m. the following day. At night, when the stirring was discontinued, the variation of the temperature was greater, but it settled down to its normal amount shortly after the stirring began. In a properly-constructed comparing-room the change of temperature would have been less. On one occasion the barometer rose rapidly, nearly half an inch in twenty-four hours, and during this time the temperature of the water did not vary perceptibly. If the barometer had not been attached to the regulator, this change of pressure on the volatile liquid would have produced a change of 0°·14 C. in the bath.

The apparatus was roughly made in an experimental form, but the results were highly satisfactory. There were no doubt errors in the readings of the thermometer. Sir William Thomson, in his article on "Heat" in the "Encyclopædia Britannica," describes an error which may be introduced owing to the mercury in the stem of a thermometer remaining at rest whilst slight changes of temperature are occurring, and then moving suddenly into a new position, where it again remains at rest. This phenomenon was observed in the very delicate thermometer used.

The variation of temperature due to the expansion of the mercury in the barometer and regulator was perceptible, and agreed roughly with the amount arrived at by calculation. Very small errors were also probably introduced by the following causes: the sticking of the mercury in the regulator and the barometer; variation of the gas-pressure; imperfections in the mechanism and of the vacuum in the barometer. There can, however, be little doubt that the errors produced by these and other causes could be reduced to an inappreciable amount, and if the apparatus were placed in a room of fairly constant temperature, remarkable results could be obtained.

HORACE DARWIN

SCIENTIFIC SERIALS

Journal of the Russian Chemical and Physical Society, vol. xviii., fasc. ii.—On the analysis of platinum ores, by F. Willm. All former methods of the separation of noble metals, though sufficient for technical purposes, are considered not exact for the scientific determination. Electrolytic method is recommended.—On the thermic effects of the replacement of hydrogen by bromine in the aromatic compounds, by E. Werner.—On cholanic and bileanic acids, by P. Latchinoff. Both having been obtained from cow's bile and formulæ proposed for the former $C_{25}H_{38}O_7 + \frac{1}{4}H_2O$, and for the latter $C_{25}H_{36}O_8 + \frac{1}{4}H_2O$.—Contribution to the theory of the influence of the decomposition of a body due to heat or to mechanical influences, on its magnetism, by P. Bakmetieff.—Thermo-electrical researches, by the same author. The starting-point for these researches being the fact observed by the author, that the thermo-electro generative force in the metal rods, which serve as thermo-elements, undergoes variations under the influence of the contraction or expansion of the rods parallel to those of magnetism in the same metals and from the same causes.

Rendiconti del Reale Istituto Lombardo, February 18.—State of public instruction in Italy, by Prof. A. Amati. In general the results here tabulated of an inquiry into the present state of instruction throughout the peninsula show that the number of unlettered is in direct proportion with that of the criminal classes.—On a phenomenon of intermission in the sense of hearing, by Prof. A. Raggi. It is shown that under certain conditions regularly recurring sounds strike the auditory faculty in rhythmically recurring waves of greater and less intensity. The phenomenon is regarded as the direct result of perception, the reflex act represented by the awakened attention not being produced with a uniform degree of energy continued throughout the duration of the stimulus, the lack of uniformity being itself due to the feeble degree of excitement.—Note on a simple and obvious, but not hitherto noticed deduction from Taylor's formula in infinitesimal analysis, by Gian Antonio Maggi.—Remarks on a normal metamorphosis of the scented violet due to the presence of the larva of *Cecidomyia destructor*, by Dr. S. Calloni.

SOCIETIES AND ACADEMIES

LONDON

Royal Society, March 25.—"On the Changes produced by Magnetisation in the Length of Iron Wires under Tension." By Shelford Bidwell, M.A., LL.B. Communicated by Prof. F. Guthrie, F.R.S.

In a paper communicated to the Royal Society about a year ago, the author discussed the results of certain experiments made by Joule in relation to the effects of magnetism upon the dimensions of iron and steel bars.

It is well known that the length of an iron rod is in general slightly increased by magnetisation. Joule enunciated the law that the elongation is proportional in a given bar to the square of the magnetic intensity, and that it ceases to increase after the iron is fully saturated. The author's experiments, made with a greater range of magnetising forces and with thinner rods than those used by Joule, showed that if the magnetising current were gradually increased after the so-called saturation point of the iron had been reached, the elongation, instead of remaining at a maximum, was diminished, until, when the current had attained a certain strength, the original length of the rod was unaltered, and if this strength were exceeded, actual *retraction* was produced.

Joule also found that when the experiment was performed upon an iron wire stretched by a weight, the magnetic extension was in all cases diminished, and if the weight were considerable, magnetisation caused retraction instead of elongation. From these facts he appears to have formed the conclusion that, under a certain critical tension (differing for different specimens of iron, but independent of the magnetising force), magnetisation would produce no effect whatever upon the dimensions of the wire. In one of his experiments a certain iron wire loaded with a weight of 408 lbs. was found to be slightly elongated when magnetised; the weight was then increased to 740 lbs., with the result that magnetisation was accompanied by a slight retraction. In both cases the magnetising currents varied over a considerable range, and the smaller ones were without any visible effect. Commenting upon these results, Joule conjectured that "with a tension of about 600 lbs. (which number is roughly

the mean of 408 and 740) the effect on the dimensions of the wire would cease altogether in the limits of the electric currents employed in the above experiments."

In reference to this surmise the author in his paper of last year expressed his belief that, if Joule had actually made the experiment, he would have found that the length of the wire was increased by a weak current, that a current of medium strength would have had no effect whatever, and that one of his stronger currents would have caused the wire to retract. He had, in fact, reason to believe that the effect of tension was to diminish the "critical magnetising force" (which produces maximum elongation), so that the retraction which is found to occur in all iron rods when a sufficient magnetising force is employed, is observed with smaller magnetising currents when the rod is stretched than when it is free, but want of suitable apparatus prevented him from submitting this idea to the test of direct experiment.

		Commercial iron wire, diam. 1·2 mm.			Charcoal iron strip, section 3 mm.				Hard wire, diam. 2·6 mm.		Soft wire, diam. 3·25 mm.	
		Amperes							Scale divisions			
Stretching load ...		3 lbs.	7 lbs.	10 lbs.	14 lbs.	3 lbs.	7 lbs.	10 lbs.	14 lbs.	3 lbs.	14 lbs.	3 lbs.	14 lbs.
Smallest current producing sensible elongation		0·043	0·064	0·084	...	0·033	0·020	0·029	0·064	0·12	0·15	0·064	0·033
Current producing maximum elongation		0·49	0·39	0·23	...	0·44	0·33	0·27	0·15	0·70	0·58	0·70	0·58
Current by which original length is unaffected ...		0·99	0·73	0·47	0·23	1·30	0·99	0·77	0·53	0·99	0·94	1·24	1·09
Maximum elongation in scale divisions	2		1·5	0·5	...	10	6	4	1	2·5	2·5	6·5	4·5
Retraction with current of 1·6 ampere	6		9·5	11	11	9	15	18	20	11	11	8	11

The magnetic field at the centre of the coil = current × 92.
One scale division = one five-millionth part of the length of the wire.

He has lately modified the instrument, which was described in his former paper, in such a manner that it can be used for observing the effects of magnetisation upon rods and wires under traction, and the results of a series of experiments made with it are presented in a synoptical form in the above table. Four specimens of iron were used. The first was a wire of commercial iron, 1·2 mm. in diameter, which had been softened by heating in a gas flame; the second was a strip of annealed charcoal iron, 5·5 mm. wide and 0·55 mm. thick, its sectional area being about 3 mm.; the third was a piece of hard unannealed wire, 2·6 mm. in diameter; and the last was a wire of very pure soft iron, 3·25 mm. in diameter, which had been carefully annealed. These were successively fixed in the apparatus, and loaded with weights varying from 3 lbs. to 14 lbs. While under the influence of each load, four observations were made in the case of each wire:—(1) A determination was attempted of the smallest magnetising current which sensibly affected the length of the wire in the direction of elongation or retraction. (2) The current producing *maximum* elongation (if any) and the extent of such maximum elongation were found. (3) A determination was made of the critical current which was without effect upon the original length of the wire, *i.e.* the current of such strength that a weaker one would cause elongation and a stronger one retraction. (4) The retraction produced by a fixed current of 1·6 ampere was measured.

The figures recorded in the table disclose the following facts:—

(1) The effects produced by magnetisation upon the length of an iron wire stretched by a weight are in general of the same character as those which have been shown in the former paper to occur in the case of a free iron rod. Under the influence of a gradually increasing magnetising force such a wire is at first elongated (unless the load be very great), then it returns to its original length, and finally it contracts.

(2) The maximum elongation diminishes as the load increases according to a law which seems to vary with different qualities of iron. If the ratio of the weight to the sectional area of the wire exceeds a certain limit, the maximum elongation (if any) is so small that the instrument fails to detect it.

(3) The retraction due to a given magnetising force is greater with heavy than with light loads.

(4) Both maximum elongation and neutrality (*i.e.* absence of both elongation and retraction) occur with smaller magnetising currents when the load is heavy than when it is light; retraction, therefore, begins at an earlier stage. Thus the anticipation expressed in the author's former paper is justified.

(5) The phenomena, both of elongation and of retraction are, as might be expected, greater for thin than for thick wires, and for soft than for hard iron.

Linnean Society, April 15.—W. T. Thiselton Dyer, C.M.G., Vice-President, in the chair.—The following gentlemen were nominated auditors, viz., J. Jenner Weir and F. Victor Dickins, as representing the Fellows, and Thos. Christy and F. B. Forbes for the Council; afterwards Mr. Rochfort Connor was elected a Fellow of the Society.—Specimens of so-called Madrepore marble from Iowa (U.S.) were exhibited for Mr. G. A. Treadwell. These contained abundance of a species of *Stromatopora*.—Mr. E. A. Heath showed living examples of *Dendrobium densiflorum* and *D. suavissimum*, and Mr. J. G. Baker drawings of new and remarkable ferns in illustration of the Roraima report.—A paper was read on new African genera and species of Curculionidæ by Mr. F. P. Pascoe. These were obtained from Momboia, a missionary station north of Lake Nyassa, from Landana, a new settlement on the Congo, and Mayotte, one of the Comoro Islands off Madagascar. The author remarks that the inadequate descriptions, without reference to affinities or diagnostic characters as given by some entomologists, ought to be disapproved. The great diversity of appearance among the same genus of Curculionidæ is somewhat remarkable; secondary characters, therefore, have to be taken into account, but these, after all, may be quite as natural. On the other hand, species quite like each other in appearance are found to belong to widely different groups. For these and other reasons the correlation of stable characters is perplexing, and definite classification difficult.—The third part of Mr. C. E. Broome's series of fungi from Brisbane, Queensland, was read in abstract.—Mr. Everard F. im Thurn then gave the gist of a long report on the plants collected by him during his recent ascent of Mount Roraima, British Guiana. Among these, 3 new genera and 54 new species had been determined. The country of Guiana was described by him as consisting of three marked ascents from the Atlantic on the east to the central table-land west. The groups of vast sandstone columns, of which Roraima is the best known, really abut or overlap on to Brazil territory, and from their summit pour down

streams which flow in diverse directions to feed the rivers Orinoco, Essequibo, and Amazon. Roraima is therefore a probable centre whence peculiar vegetable forms may have originated and distributed themselves over a wide area. Regarding the flora of Guiana as a whole, three distinct zones of vegetation may be distinguished: one, the cultivated strip of coast-land; another, the forest which clothes the upward slopes of the country; and, third, the high savannahs of the interior. Within each of these zones plant species are evenly distributed, though occasionally on the savannahs uniformity is interrupted by small tracts of peculiar vegetation. Sometimes these tracts are marked by the occurrence of only one peculiar species—"areas of localised species"; sometimes by a large number of peculiar species—"areas of distinct vegetation." These latter have notable representatives in the savannah above Karctem Fall and Roraima itself; where, so to say, the more common plant species are excluded. This, then, gives them quite a separate and independent botanical facies.

Entomological Society, April 7.—Mr. Robert McLachlan, F.R.S., President, in the chair.—The following were elected Fellows:—Dr. Capron, Dr. J. W. Ellis, Messrs. F. D. Wheeler, M.A., J. B. Bridgman, F.L.S., T. D. Gibson-Carmichael, F.L.S., J. Rhodes, F.R.M.S., A. C. Horner, J. T. Harris, Evan John, Martin Jacoby, J. A. Clark, G. Elisha, and A. S. Olliff.—Mr. Crowley exhibited a large number of *Lepidoptera* from Accra, West Africa, including long series of *Charaxes* and *Rhomalæosoma*, and a number of specimens of *Saturnia* from Natal.—The Rev. W. W. Fowler exhibited four beetles belonging to the family *Carabidæ*. Three of them had been taken twenty years ago on the banks of the Clyde, and had lately been identified as *Anchomenus sahlbergi*, a species new to Europe, having hitherto been only found in Siberia. The remaining specimen was *Anchomenus archangelicus*, a North European species, nearly related to *A. sahlbergi*.—Mr. J. W. Slater exhibited a spider belonging to the genus *Galeodes*, a Lamellicorn beetle belonging to the genus *Cetonia*, and an undetermined species of *Curculionidæ*, all from Port Elizabeth, South Africa.—Mr. Billups exhibited a specimen of *Bassus bizonarius*, an Ichneumon new to Britain, taken at Peckham in 1885; also a series of another parasite, *Dimeris mira*, taken in Headley Lane, Surrey, in March last.—Mr. White exhibited preserved larvæ of two species of *Catocala*, for the purpose of calling attention to some hitherto undetected processes on the under side; and Prof. Meldola and Mr. J. J. Weir made some remarks on them.—Mr. H. Goss exhibited two remarkable varieties of the male of *Argynnis paphia*, taken in Sussex and Hampshire respectively.—Mr. S. Edwards exhibited an unknown exotic spider found in his Orchid House at Blackheath.—Mr. A. G. Butler communicated a paper entitled "Descriptions and Remarks upon Five New Noctuid Moths from Japan."—The Rev. W. W. Fowler read a paper on new genera and species of *Languriidæ*, chiefly from specimens in the collections of the British Museum, the Cambridge Museum, Mr. G. Lewis, and the Rev. H. S. Gorham; and Dr. Sharp and Mr. Champion made remarks thereon.—Dr. Sharp read a paper on "Some Proposed Transfers of Generic Names," the subject of a pamphlet recently published by M. Des Gozis, in which that author transposed many of the most familiar generic names. Dr. Sharp pointed out the extreme confusion caused by this practice, and showed that the theory on which the system was based was as unsound as the practice itself was objectionable. A long discussion ensued, in which Mr. Fowler, Mr. Waterhouse, Mr. Pascoe, Mr. McLachlan, Dr. Sharp, and Mr. Dunning took part. The last-named gentleman said that the discussion reminded him of a similar one on the application of the law of priority, which took place at a meeting of the Society nearly twenty years ago. The project was then condemned as unanimously as that of M. Des Gozis had been that evening, and he trusted that entomologists would hear no more of it.

Anthropological Institute, April 13.—Prof. A. H. Keane, Vice-President, in the chair.—Mr. H. Ling Roth read a paper on the origin of agriculture. He commenced by briefly reviewing the ideas entertained by savages as to the origin of agriculture among them; then, criticising the views held by scientific men of the present day on the subject, he discussed the conditions generally accepted as necessary to be fulfilled wherever agriculture is to flourish. He laid special stress on the fact that with savages the want of food could not possibly be an inducement to cultivate the soil, but considered that, from the social condition of women in barbarous life and their connection with the soil, they probably originated the first steps which ultimately led whole nations to become agriculturists. He then described what he thought might have been the first step, the rotation in which plants became domesticated, the three homes of agriculture and its spread amongst the uncivilised, and wound up with a few words on the development of agricultural implements.—A paper on the Sengirese, by Dr. Hickson, was read.—The election of Mr. Abraham Hale was announced.

PARIS

Academy of Sciences, April 12.—M. Jurien de la Gravière, President, in the chair.—Complementary note on the results of the application of the prophylactic method against rabies after the bite, by M. L. Pasteur. As many as 726 patients from every part of Europe, and even from North America and Brazil, have now been treated, of whom 688 were for dog-bite and 38 for wolf-bite. Of the first class all are doing well except the already-reported case of the girl Pelletier, and over half of the number have passed the critical period. Of the second class—all Russians—three have succumbed, the others, so far, progressing favourably. An essential difference is pointed out between the nature of bites by wolves and dogs, the former being regarded in Russia as always absolutely fatal. Hence the proportion of victims under the new process must be considered extremely low, more especially considering the severity of the wounds and the long time that elapsed before the treatment could be applied.—On the origin of the electric discharge in thunderstorms, by M. Daniel Colladon. The paper contains a more detailed statement of the author's views, already reported in previous numbers of the *Comptes rendus*, supplemented with remarks suggested by two violent thunderstorms observed by him in the Swiss Alps during the summer of 1885. In the latter an important feature was the *stationary* character of the thunder-clouds, inexplicable according to M. Faye's well-known theory.—Remarks on the second volume of the "Cours de Machines" presented to the Academy by M. Haton de la Goupillière. This volume treats of hydraulics and all kinds of hydraulic machinery, with a special chapter on accumulators and their various applications.—Note on a photographic map of the Pleiades group, by MM. Paul and Prosper Henry. This chart is an engraved reproduction of a proof on paper of the impression obtained on November 16, 1885, by means of the 0·33m. photographic equatorial twice enlarged. It shows, besides the interesting nebula near Maia, another near Electra, of which a very faint impression was obtained. It also indicates the existence of several new companions to Merope, Alcyon, and some other brilliant stars. The discrepancies between this map and Wolf's tables are most pronounced in the case of the small stars in the vicinity of brighter constellations. One of the 10th magnitude in Wolf's list is resolved in the photographic into two of the 13th magnitude. It is also pointed out that where direct observation gives only 625, the photographic process reveals 1421 stars in a somewhat smaller space.—On some remarkable spectroscopic phenomena, by M. A. Riccò. While recently observing on a very bright protuberance the inversion of the sodium rays D and D_2, the author was surprised to notice that the very vivid chromospheric ray D_3 seemed double, being divided by a very fine black line. The same effect was afterwards observed on the chromospheric rays C and F, and it is suggested that these and other double inversions noticed from time to time on the sodium and magnesium rays may be connected with the phenomenon of diffraction.—On the origin of M. Janssen's "solar photospheric network," by M. G. M. Stanoiewitch. From his studies of the photosphere the author concludes that, whatever be the origin of the solar granules, the "photospheric network," as presented by the photographic plates, does not exist on the surface of the sun. It is produced by the irregular refraction of a transparent body with irregular molecular constitution interposed between the granular solar surface and the photographic objective. This irregular refraction is caused by the gaseous envelope of the sun, which, being agitated by currents in all directions, presents as a whole a body of extremely irregular molecular constitution. This view was not accepted by M. Janssen, who made some remarks after the paper was read.—On the equilibrium of a fluid mass in rotation, by M. Matthiessens. The author claims priority of discovery of the annular figures which M. Poincaré lately stated had first been observed by the English geometricians Tait and Thomson. He refers to a series of papers ranging from 1845 to 1883, in which he describes the two rings and discusses the whole theory of these forms and of the ellipsoidal figures.—On a general theorem

relating to the propagation of motion, by M. Hugoniot. The method employed by the author in studying the propagation of motion in fluids is here generalised and extended to all movements regulated by the same system of mathematical formulas.—On the thermo-electric properties of iodide of silver, phosphuret of zinc, sulphuret of tin, and some other chemical compounds, by M. G. Chaperon.—On the density and compressibility of gases and vapours, by M. Antoine. The compressibility of atmospheric air is shown to approach that of nitrogen, whence an important induction is drawn for the use of automatic torpedoes in marine warfare.—On the optical phenomenon known as simultaneous contrast, that is, the tendency to produce the sensation of a complementary colours in the neighbourhood of any coloured surface, by M. Aug. Charpentier. From his researches the author infers that this phenomenon of contrasting colours produced in a region not directly excited is simply a case of *induced colours* in the literal and figurative sense of the expression.—Transformation of the protochloride of chromium into a sesquichloride: molecular states of the oxides of chromium, by M. Recoura.—On monochloruretted vinylethylic ether, trichloruretted, pentachloruretted, and some other chloruretted ethers, by M. L. Godefroy. The first-mentioned of these ethers, discovered by the author, has enabled him to prepare six other ethers, some already known, some new, and forming two distinct series with almost opposite general characteristic properties.—A study of the isomeric naphthylphenylcarbonyls, by M. Rospendowski.—On the eleven genera of the land Lumbricus established by Kinberg, by M. Edm. Perrier. Most of these so-called genera are shown to be mere species, and all the genera known in the time of Kinberg, or down to the year 1872, are now reduced to four. To these are here added eleven others, making fifteen at present known.—On the food of turtles, by MM. G. Pouchet and J. de Guerne. Although usually supposed to be herbivorous, the stomach of some turtles captured in the Azores waters yielded remains of *Hyalæa tridentata*, *Lepas anatifera*, besides Medusæ and small fishes.—Note on the discovery of a Cenomanian deposit at Pech de Foix, containing *Pygaster truncatus*, *Rhynchonella grasiana*, and other fossils of the same epoch, by M. J. Roussel.—Experimental essay on the toxic properties of febrile urines, by M. V. Feltz.—Note on the project of a railway from the coast of Syria to the Persian Gulf, by M. A. Dumont. The projected Euphrates Valley scheme connecting the Mediterranean with the Persian Gulf is favourably discussed from the engineering and economic standpoints. This alternative overland route is declared to be a necessity in the near future, in consequence of the continually increasing traffic through the Suez Canal. At the conclusion of the paper M. de Lesseps also spoke in favour of the scheme, which might be carried out for about 10,000,000*l*.

GOTTINGEN

Royal Society of Sciences, Aug. 1, 1885.—On the theory of liquid jets, by W. Voigt.—The spectrum of the brush discharge, by E. Hoppe. The lines showed a certain correspondence to those of aurora.—On the pyro-electricity of tourmaline, by E. Riecke. The method was to heat a tourmaline a given time in a space of high constant temperature, then hang it by a cocoon fibre to cool near the knob of a gold-leaf electroscope, whose behaviour was then noted. In cooling, the maximum of electric charge occurs if the tourmaline has first taken throughout the temperature of the heating space. The charge corresponding to a regular heating is nearly the same as that with an irregular, if the mean temperature of the latter be equal to the constant temperature of the former.—On Crinoids, by H. von Könen.

November 7.—On a representation of elliptic modulus functions, by infinite products, by H. von Mangoldt.—On Maccullagh's theory of total reflection for isotropic and anisotropic media, by P. Volckmann.

STOCKHOLM

Academy of Science, March 12.—Report on a visit to the Continent for the study and research of chemicals, by Dr. J. M. Lovén.—On Biunclearia, a new genus of Confervaceæ, by Prof. Wittrock.—On *Erythræa exsiccatæ*, V. B. Wittrock.—Report on a visit to tne province of Jemtland (Sweden) for the prosecution of mycological studies, by Herr C. J. Johansson.—Report on a visit to the province of Scania for the prosecution of bryological studies, by Dr. A. L. Gröuvall.—On the formation of zoospores and quiescent spores in some species of the genus Conferva, by G. Lagerheim.—On the "Herbarium Ruborum Scandinaviæ" of Dr. C. J. Lindeberg, by Prof. Wittrock.—Report on a visit to Ireland, the North of France, Holland, and Westphalia, in order to study the Cretaceous formations of these countries, by Dr. J. C. Moberg.—On a discussion with a view to prove the stability of the planetary system, by Prof. H. Gyldèn.—Sur une formule dans la théorie des fonctions, by Prof. Pincherlè of Bologna.—Annotations on the mathematician Petrus de Dacia, and on writings (third part), by Dr. G. Eneström.—On a geological map of Scandinavia, Denmark, and Finland, exhibited and commented upon by Prof. O. Forell.—On the classification of tourmaline with the group of the rhombohedric tetartohedric forms of the hexagonal system, by Dr. W. Ramsay.

BOOKS AND PAMPHLETS RECEIVED

"The Fresh-water Fishes of Europe," by H. G. Seeley (Cassell).—"Traité de la Détermination des Orbites des Comètes et des Planètes," by A. Oppolzer (Gauthier-Villars).—"Templeton's Workshop Companion," enlarged by Hutton (Lockwood).—"Report of the Mitchell Library, Glasgow, 1885" (Anderson).—"Il Grande Ipnotismo," by Dr. G. Campili (Bocco, Turin.)—"Sound, Light, and Heat," by C. Bird (Relfe).—"Gardens of Light and Shade" (Stock).—"Encyclopædia Britannica," vol. xx. (Black).—"On Asthma," by Dr. H. Dobell (Smith, Elder, and Co.).—"Journal of the Royal Microscopical Society," April (Williams and Norgate).—"Mechanics and Faith," by C. T. Porter (Putnam).—"Systematische Übersicht der Fossilen Myriopoden Arachnoideen und Insekten" i. Abth., Bd. ii., by S. Scudder (München).—"Journal of the Society of Telegraph-Engineers and Electricians," vol. xv. No. 60 (Spon).—"Verhandlungen der Naturhistorischen Vereines," second year, part 2 (Max Cohen, Bonn).—"The Auk," April (Foster, New York).—"Journal of the Asiatic Society of Bengal," vol liv. part 2, No. 3, 1885 (Calcutta).—"American Museum of Natural History," Annual Report of the Trustees, &c., for the Year 1885-86 (Martin, N.Y.).—"Johns Hopkins University: Studies from the Biological Laboratory," vol. iii. No. v.—"The Influence of Sewerage and Water Supply on the Death Rate in Cities," by E. T. Smith.—"What is Materialism," by L. Stephen (E. W. Allen).—"Charles Darwin," by H. W. S. Worsley-Benison (Seers, Path).—"Les Orages au Sud de la Russia," by A. Klossovsky (Odessa).

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