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preserved in shale, of *Sphenopteris elegans*, which display regular transverse ridges crossing their stems and branches, which seem to have been caused by the presence of bands of some hard substance, corresponding exactly with those seen in the outer bark of both the Heterangiums. These, at all events, are the only examples of fossil Carboniferous plants, in which structures comparable with those of the Heterangium stems have been discovered. It is not without significance that *H. Grevii* has not only been found in the Westphalian deposits of Pith Vollmond, but a German locality has furnished Professor von Weiss, of Berlin, with specimens of *Sphenopteris elegans*, having the same kind of bark as those found in Scotland. The author suggests that the Heterangiums may possibly have been ancestral forms, having exogenous stems and fern-like foliage, which may have bequeathed the former features to some of the modern Cycads, and the latter to the Ferns, the living Stangeria having retained some of the features of both.

*Presents, January 6, 1887.*

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Athenæum (The). July to December, 1886. 4to. London 1886. The Editor.


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Mr. J. W. Hulke. On Polacanthus Foxii. [Jan. 13, 1886.]

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Rambaut (A. A.) On the Possibility of determining the Distance of a Double Star. 8vo. Dublin 1886; On the Reduction of Bessel’s Precessions to those of Struve. 8vo. London 1886. The Author.

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January 13, 1887.

Professor STOKES, D.C.L., President, in the Chair.

The Presents received were laid on the table, and thanks ordered for them.

The Right Hon. Hardinge Stanley Giffard, Lord Halsbury (Lord High Chancellor), whose certificate had been suspended as required by the Statutes, was balloted for and elected a Fellow of the Society.

The following Papers were read:

I. “Supplementary Note* on Polacanthus Foxii, describing the Dorsal and some parts of the Endoskeleton imperfectly known in 1881.” By J. W. HULKE, F.R.S. Received December 14, 1886.

(Abstract.)

The author describes the large dorsal shield, which has been recently restored and now exhibits the grouping of the keeled and tuberculated fragments, which in their disconnected and scattered

* See 'Phil. Trans.' vol. 172 (1881).
1. The crimson line is due to alumina, but it is capable of being suppressed by an accompanying earth which concentrates towards one end of the fractionations.

2. The crimson line is not due to alumina, but is due to the presence of an accompanying earth concentrating towards the other end of the fractionations.

3. The crimson line belongs to alumina, but its full development requires certain precautions to be observed in the time and intensity of ignition, degree of exhaustion, or its absolute freedom from alkaline and other bodies carried down by precipitated alumina, and difficult to remove by washing; experience not having yet shown which of these precautions are essential to the full development of the crimson line and which are unessential.

4. The earth alumina is a compound molecule, one of its constituent molecules giving the crimson line. According to this hypothesis alumina would be analogous to yttria.

It is not unlikely that a chemist wishing to obtain alumina of exceptional purity might submit it to a series of operations, akin to fractionation, which would have the effect of giving earths phosphorescing either with a strong crimson line, or with little or no crimson line; and either of these samples of alumina might be looked upon by him as pure. It is possible that some such explanation as this may be at the bottom of the contradictory statements respecting the crimson line of alumina.

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Melnikow (M.) Geologische Erforschung des Verbreitungsgebietes der Phosphorite am Dnjester. 8vo. 1885. The Author.
Shelford (W.) and A. H. Shield. On some points for the consideration of English Engineers with reference to the Design of Girder Bridges. 8vo. London 1886. The Authors.

January 27, 1887.

Professor G. G. STOKES, D.C.L., President, in the Chair.

The Presents received were laid on the table, and thanks ordered for them.

The following Papers were read:—

I. "On a Perspective Microscope." By GEORGE J. BURCH.
Communicated by J. RUSSELL REYNOLDS, M.D., F.R.S.
Received January 7, 1887.

(Abstract.)

In 1874 the author discovered a form of microscope giving constant magnification along the optic axis, so that objects were shown by it in microscopic perspective.

By writing \((f_1 + f_2 + H)\) for the distance between two thin lenses, he obtained for the formula of the system

\[
\frac{f_2(f_2 + H)u - f_1 f_3(f_1 + f_3 + H)}{Hu - f_1(f_1 + H)} = v;
\]

\(u\) being the distance from the object to the first lens, and \(v\) that from the second lens to the image.

Putting \(H = 0\) in this equation, three things result.
1. \(dv/du\), which represents the longitudinal magnification, becomes constant, namely \(-(f_2/f_1)^2\);
2. The lateral or angular magnification, \(f_2/f_1\), is also constant;
3. A picture of an object so magnified, drawn with the camera lucida, when viewed from a distance \(f_2/f_1\) times less than that at which it was drawn has the perspective belonging to an object magnified \((f_2/f_1)^2\) times.

The distance at which the eye must be placed is great, but may be reduced by employing three lenses, the distance between the first and
Transactions.
University of London. Accessions to the Library, 1876–86. 8vo. London 1886. The University.

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Klein (Sydney T.) Hunting among the Lepidoptera and Hymenoptera of Middlesex. 8vo. Bath 1887. The Author.


Comité Géologique, St. Petersburg.


III. "On Proterosaurus Speneri (von Meyer)." By H. G. Seeley, F.R.S., Professor of Geography in King's College, London. Received February 3, 1887.

(Abstract.)

The author gives an account of the scientific history of Proterosaurus, and states the interpretations of its structure given by Cuvier, von Meyer, Sir R. Owen, and Professor Huxley.

In Part II he describes the type specimen in the Museum of the Royal College of Surgeons. In the skull characters are given of the cerebral cavity, the supra-occipital, parietal, frontal, pre-frontal, nasal, and premaxillary bones. A restoration is made of the skull and the teeth are shown to be ankylosed to the jaw. On the palate the vomer, palatine, and pterygoid bones are described and shown to have all been armed with minute teeth. The pterygoid bone was strongly united to the quadrato bone. The lower jaw and hyoid bones are also described.

In the vertebral column a description is given of the second to the seventh cervical vertebrae, of sixteen dorsal vertebrae, two sacral vertebrae, and twenty-three caudal vertebrae.

The femur, tibia and fibula and foot are also described. The skin is found to have been defended with a bony armour.

In Part III comparison is made between the type and other specimens which have been referred to it, with the result that some are regarded as indicating different species while others indicate different genera.

In Part IV a comparison is made to show the resemblances of Proterosaurus with other reptiles, in the several regions of the skeleton; with the result that the Proterosauria is regarded as a distinct division of the Reptilia, showing resemblances to many of the highly specialised orders and to some low types.

Transactions.


The University.


The University.
Transactions (continued).


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Christiania:—Fjerde Beretning om Bygdø Kongsgaard med Tillæg. 4to. Christiania 1886. The University, Christiania.
Observations, &c. (continued).


Melbourne:—Department of Mines. Reports of the Mining Registrars, quarter ended September, 1886. Folio. Melbourne 1886. The Department.


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Observations, &c. (continued).


Zürich:—Schweizerische Meteorologische Central-Anstalt. Anna- len. 1885. 4to. Zürich [1886].

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Compass Observatory, Cronstadt.

Naturalist (The). No. 139. 8vo. London 1887. The Editors.


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Bekker (Dr.) Ueber den Streit der historischen und der filoso- fischen Rechtsschule. 4to. Heidelberg 1886.

The University, Heidelberg.


Lipschitz (R.) Transformation d’une Somme de Deux ou de Trois Carrés. 4to. Paris [1887].

The Author.


The Author.
of them fall near lines in the spectra of my Gβ and Gê. At first sight it might appear that his and my spectra were due to the same bodies, but according to M. de Boisbaudran, the chemical properties of the earths producing them are widely distinct. These giving phosphorescent lines by my method occur at the yttrium extremity of the fractionation, where his fluorescent bands are scarcely shown at all; whilst his fluorescent phenomena are at their maximum quite at the terbium end of the fractionation, where no yttrium can be detected even by the direct spark, and where my phosphorescent lines are almost absent.

_Presents, February 17, 1887._

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Kingston, Canada:—University of Queen's College. Calendar. 1886–87. 8vo. _Toronto_ 1886; Examination Papers. 1886. 8vo. _Toronto._ The University.


Louvain:—Université Catholique. Annuaire. 1887. 12mo. _Louvain_; Thèses. 1885–86. 8vo. _Louvain_; Recherches Analytiques sur la Diffraction de la Lumière. 4to. _Bruxelles_ 1886; Sur les
Transactions (continued).


No. 2. 8vo. New York. The Society.


Transactions (continued).


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The Meteorological Office.


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Supplement. 8vo. London 1886.

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New York:—Columbia College. Library. 2nd and 3rd Annual Reports. 8vo. New York 1886.

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Kops (Jan) Flora Batava. Afl. 275–276. 4to. Leiden [1886].

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Mueller (Baron von), F.R.S. Iconography of Australian Species of Acacia and Cognate Genera. 1st Decade. 4to. Melbourne 1887.

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Prince (C. L.) The Summary of a Meteorological Journal, 1886. Folio. [Crowborough 1887.]

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Saint-Lager (Dr.) Histoire des Herbiers. 8vo. Paris 1885.

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Transactions (continued).


Tokio:—Imperial University of Japan. Calendar. 1886–87. 8vo. Tōkyō 1886.


Vienna:—Verein der Geographen an der Universität. Bericht über das XI. Vereinsjahr. 8vo. Wien 1886.

Journals.


Indian Antiquary (The) Vol. XV. Part 190. 4to. Bombay 1886.

New York Medical Journal. Vol. XLV. No. 5. 4to. 1887.

VOL. XLII.
Journals (continued).


The Observatory of Rio.


The Author.


Prof. Conwentz.


The Author.


Mr. G. Dimmock.


Prof. T. R. Jones, F.R.S.


The Author.

Pickering (E. C.) Heights of the White Mountains. 8vo. [1887.]

The Author.

Prince (C. L.) Summary of a Meteorological Journal. 1885. Folio.

[Crowborough 1886.]

The Author.


The Author.


The Author.


The Author.

Wright (T.), F.R.S. Monograph on the Lias Ammonites of the British Islands. 4to. London 1878-86.

Bequeathed by the Author.
scarlatina the same micrococcus was recovered by cultivation, possessing all the characters shown by the cultures of the micrococcus of the Hendon cows, and of the cases of human scarlatina.

It must be evident from these observations that the danger of scarlatinal infection from the disease in the cow is real, and that towards the study and careful supervision of this cow disease all efforts ought to be directed in order to check the spread of scarlet fever in man. It is also obvious that in the agricultural interest alone investigations of this cow disease are greatly called for.

Presented, March 3, 1887.

Transactions.


Transactions (continued).


Observations and Reports.

Observations, &c. (continued).

The Director.
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The Author.

M. Cassagnes.


The Author.

The Author.

Loomis (E.) Contributions to Meteorology. II. 4to. New Haven 1887.
The Author.

The Editor.
Pritchard, and others. He further shows that observations made by people who are colour-blind in the red tend to diminish the value of the coefficient of transmission, and that the difference between stellar and solar light cannot account for the apparent discrepancy. It would appear that Professor Pritchard's maximum value for the coefficient of transmission at Cairo does not differ much from his.

The values of the different colours in the spectrum which Rood has adopted from Vierordt's method are then discussed, and corrected according to the author's determination of the values on a day in June.

A series of tables close the paper, in which the original observations and the deduced values are given.

**Transactions.**


Transactions (continued).


Vienna:—K. Akademie der Wissenschaften. Anzeiger. 1887.
Nr. I-V. Svo. [Wien].

Watford:—Hertfordshire Natural History Society. Transactions.

Airy (Sir G. B.), F.R.S. Numerical Lunar Theory. 4to. London
1886. The Astronomer Royal.

Andrews (T.) Effect of Temperature on the Strength of Railway
Axles. Part II [In Manuscript]. Folio [1887]. The Author.

Lühmann (O. von) Sprache und Schrift. (Two copies). 12mo.
[Greifswald 1887]. The Author.

Newton (A.), F.R.S., and J. W. Clark. The Woodwardian Professor
and the Sedgwick Memorial Museum. 8vo. Cambridge 1887.
The Authors.

Sasse (E.) Die Erhaltung der Empfindungs-Energie. 8vo. Berlin
1887. The Author.

The Author.

Shaw (H. S. Hele). Cantor Lectures on Friction. 8vo. London
1886. The Author.

Stolipine (D.). Essais de Philosophie des Sciences. 8vo. Genève
1886. The Author.

Photographs of Cape Observatory, Exterior and Interior; with
Photograph of Stars about η Argus, and other Photographic
Star-maps. Dr. Gill, F.R.S.

Mezzotinto Engraving of Thomas, Lord Bishop of Rochester, and
Thomas Sprat, A.M., Archdeacon of Rochester.

Mr. Eldridge Spratt.
that although the lines seem to be in the same position their relative intensity has greatly altered. The strongest corona line during the last eclipse had a wave-length of about 4232; it is slightly but distinctly less refrangible than the strong calcium line at 4226.

The measurement of the photographs is very fatiguing to the eyes; and it is only when these are in exceptionally good condition that the work can be done with any degree of accuracy. The delay in bringing out a full report is solely due to this difficulty.

The second spectroscope had its slit placed so as to take a radial section of the corona. It had one large prism giving a theoretical resolving power of 11·4; slightly larger therefore than the two-prism spectroscope.

The film was one prepared by Captain Abney so as to be more sensitive in the green than the ordinary plates.

The photograph obtained is faint, but I believe will ultimately give good results.

A good drawing of the corona was obtained by Captain Maling at the station occupied by Captain Darwin and myself.

The plates were prepared by Captain Abney, whose valuable help I have had in the whole of the preliminary arrangements.

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Observations and Reports.


Meteorological Office, Bombay.
Observations, &c. (continued).

The Library.


The Director.


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The Commission.


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The Author.

Jones (T. Rupert), F.R.S. History of the Sarsens. 8vo. [Devizes] 1887.

The Author.

Seacchi (A.) I Composti Fluorici dei Vulcani del Lazio. 4to. [Napoli] 1887; Le Eruzioni Polverose e Filamentose dei Vulcani. 4to. Napoli 1886; Sopra un Frammento di Antica Roccia Vulcanica. 4to. Napoli 1886.

The Author.


The Author.
method should be applied to the manganese steel whose non-magnetic quality under ordinary conditions has been already commented on by himself as well as by Mr. J. T. Bottomley and Professor Barrett. In connexion with the values of $\mathcal{B}$ reached by other observers, Professor J. J. Thomson informs me that in some recent experiments by himself and Mr. H. F. Newall on the effect of cutting a magnet at right angles to the lines of force, an induction of 28,000 was found on one occasion.—J. A. E.]

*Transactions.*


Observations and Reports.


Observations, &c. (continued).


The Office.

Milan:—R. Osservatorio Astronomico di Brera. Osservazioni. 1886. 4to. Milano [1887]. The Observatory.

Journals.


Société Hollandaise des Sciences.


The Horological Institute.

Indian Antiquary (The) Vol. XVI. Part 192. 4to. Bombay 1887.

The Editors.


The Publishing Committee.


The Editor.

Naturalist (The) No. 140. 8vo. London 1887. The Editors.


The Editor.


The Publishers.


The Editor.
VII. "Contributions to our Knowledge of the Connexion between Chemical Constitution and Physiological Action. Preliminary Communication on the Action of certain Aromatic Bodies." By T. LAUNDER BRUNTON, M.D., F.R.S., and J. THEODORE CASH, M.D. Received March 24, 1887.

The distinctive action of the lower members of the fatty series is their stimulant and anaesthetic action on the nerve-centres.

The members of the aromatic series also affect the nervous system, but they appear to affect the motor centres more than the sensory, so that instead of producing anaesthesia, like the members of the fatty series, they tend rather to produce tremor, convulsions, and paralysis. Benzene, chlorobenzene, bromobenzene, and iodobenzene are all somewhat similar in their action on frogs; the halogen radicals not modifying the action of the benzene to such an extent as they do in the case of ammonium salts. The voluntary muscles are weakened by them, and there is a slight tendency to paralysis of the motor nerves; but the action is chiefly exerted upon the brain and spinal cord. The brain is first affected, as shown by general lethargy and disinclination to move. Next the cord is affected; motions are imperfectly performed, and there is a tendency to general tremor on movement resembling that observed in disseminated sclerosis; sometimes, however, the tremor is observed independently of movement.

The addition of hydroxyl to the benzene nucleus intensifies the convulsant action, so that oxybenzene (carbolic acid) and dioxybenzene cause convulsions in frogs, and trioxybenzene causes jerkings, though of a slighter character.

The Society then adjourned over the Easter Recess to Thursday, April 21st.

_Presents, March 31, 1887._

Transactions.


Transactions (continued).
	Middlesex Hospital. Reports. 1885. 8vo. London 1887. The Hospital.

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Water | 0.0747 | 0.0815  
Solution sulphuric acid, No. 1 | 0.0759 | —  
" | No. 2 | 0.0767 | —  
" | No. 3 | 0.0765 | —  
" | No. 4 | 0.0778 | —  
Methylated spirit | 0.0354 | 0.0346  
Bisulphide of carbon | 0.0322 | —  
Paraffin oil | 0.0264 | 0.0273  
Turpentine oil | — | 0.0189  

The temperature of the various experiments differed somewhat, but as a rule was a little under 20° C. The difference of temperature in the two series of experiments on water tends partly to explain the discrepancy in the above results, as the results of previous observers indicate a considerable rise in conductivity with the temperature. For water and the methylated spirit results of a confirmatory nature were obtained by the larger apparatus.

The experiments were conducted in the Cavendish Laboratory.

Transactions.

Present, April 21, 1887.


Transactions (continued).


Journals.

Naturalist (The). No. 141. 8vo. London 1887.
Revista do Observatorio. Anno II. Num. 3. 8vo. Río de Janeiro 1887.
Note added April 27th.

The following experiments give additional weight to the previously described results.

In the one case the anthrax grew with very great rapidity in the culture fluid, and the clear filtrate contained but a very small quantity of proteid matter. Forty cubic centimetres of this fluid was injected into a rabbit, and the rabbit immediately inoculated in the ear with virulent anthrax blood; in two days there was very marked œdema at the seat of inoculation, which increased to an enormous extent during the next few days, and then gradually subsided. The rabbit is now perfectly well, twenty-four days after the inoculation.

In the second case the growth of anthrax had been very slight; 20 c.c. of the filtered fluid was injected, and the animal immediately inoculated in the leg with virulent anthrax blood. In three days there was marked œdema at the seat of inoculation. This spread up the leg to the back, so that there was enormous œdema occupying nearly the whole posterior part of the animal; this persisted for ten days, and then gradually subsided. The animal is quite well, twenty-eight days after inoculation.

These cases are of interest, since they are obviously instances of partial protection. The animals are still affected by anthrax, but it is only as a severe local affection, and does not kill them.


Observations and Reports.


Tiflis:—Physikalisches Observatorium. Meteorologische Beobachtungen, 1885. 8vo. Tiflis 1886. The Observatory.


Transactions.

The Academy.

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Observations and Reports.

The Meteorological Office.
Observations, &c. (continued).

Die "Osterreichische Polarstation Jan Mayen. Beobachtungs-
Ergebnisse. Herausg. von der Kaiserl. Akad. der Wissen-
schaften. Band II. Abth. 2. 4to. Wien [1887].

The Academy.

London:—Colonial and Indian Exhibition, 1886. Reports on the
Colonial Sections. 8vo. London 1887.

The Society of Arts.


The Observatory.

1886. 8vo. Washington.

The Comptroller.

States, 1885. 8vo. Washington 1886.

The Survey.

May 12, 1887.

Professor G. G. STOKES, D.C.L., President, in the Chair.

The Presents received were laid on the table, and thanks ordered
for them.

The following Croonian Lecture was delivered:—

CROONIAN LECTURE.—"On Parieasaurus bombidens (Owen), and
the Significance of its Affinities to Amphibians, Reptiles,
and Mammals." By H. G. SEELEY, F.R.S., Professor of
Geography in King's College, London. Received April 21,
1887.

(Abstract.)

The author gives a short account of the literature of Parieasaurus,
and describes a skeleton in the British Museum, received from the
Karoo deposits of South Africa in 1878.

The head has the external bones pitted and grooved as in Labyrin-
thodonts and Crocodiles, and mucus canals are developed between
the nares and orbits such as characterise Labyrinthodontia. The
palate, as evidenced by Parieasaurus serridens (Owen), is essentially
Anomodont in structure. The dentition, with some distinctive features,
approximates to that of Dinosaur's and Crocodiles, but though the
teeth are in sockets they are cemented to the jaw by bone.
then the community of structure with mammals which appears in the pelvis in Parieasaurus, and is variously developed in other parts of the skeleton, in many allied genera of Anomodontia and Theriodontia, must similarly be held to establish a common origin for these mammalian and reptilian structures by inheritance from amphibian ancestors.

The Society adjourned over Ascension Day to Thursday, May 26th.

Transactions.


May 26, 1887.

Professor G. G. STOKES, D.C.L., President, in the Chair.

The Presents received were laid on the table, and thanks ordered for them.

Professor Archibald Liversidge (elected 1882) was admitted into the Society.

The following Papers were read:—

I. THE BAKERIAN LECTURE.—"On the Dissociation of some Gases by the Electric Discharge." By J. J. THOMSON, M.A., F.R.S., Fellow of Trinity College, and Cavendish Professor of Experimental Physics in the University of Cambridge. Received May 26, 1887.

(Abstract.)

The gases considered are iodine, bromine, chlorine, and nitrogen tetroxide. The effects of the spark on iodine and bromine were investigated in two ways. In the first method the iodine was placed in a tube from which the air had been exhausted, and which was furnished with a gauge which served to measure the changes of pressure in the tube. The liquid in the manometer was sulphuric acid, and in order to avoid any disturbance due to the absorption of
was not aware that importance was attached to this point, but I have since repeated many of my former observations, holding the pillar in the hand. The results are certainly stronger, but the extra heat imparted to the apparatus is in my opinion sufficient to account for this. M. Thore brings forward many new and ingeniously devised experiments to prove that heat cannot be considered the cause of the movement. He exposes the instrument to the full sun and then brings it into a cool dark room; he suspends it over boiling water; he places a large block of ice between the cylinder and the observer; he similarly interposes metallic vessels full of boiling water between the cylinder and observer (the observer not moving from his place in front), and he tries the experiment in a hot chamber alternately moist and dry, without finding the regularity of the movements interfered with. I have tried most of these, and obtained results corroborating M. Thore's, but I have also tried the experiment of quietly bringing near to the stationary cylinder a bottle of hot water and observing the movement from a safe distance through a telescope, and I find that the hot bottle is able to effect rotation as well as the observer.

Among the curious observations mentioned by M. Thore is this:—Placing the pillar in front of the cylinder (between it and the observer), if the pillar is held with the right hand the movement is clockwise, and if the left hand is used the rotation is counter-clockwise. The right hand is stronger in its effects than the left hand in the proportion of 2 to 1.

M. Thore has given in addition a large number of curious and interesting observations, using two, three, and more movable cylinders and recording their movements under a great variety of circumstances. I admit I do not see at once how all these are to be explained on the molecular bombardment theory. But this theory has not yet explained all the anomalous results I have recorded in my papers on "Repulsion resulting from Radiation," although I believe it capable of doing so; and I therefore think that it is not necessary to call upon a new force to explain any of M. Thore's results which radiation does not yet seem able to account for.

The Society adjourned over the Whitsuntide Recess to Thursday, June 9th.

_Presents, May 26, 1887._

Transactions.
_Buckhurst Hill:—Essex Field Club. The Essex Naturalist. No. 4. 8vo. Buckhurst Hill 1887._
_The Club._
_Leeds:—Naturalists' Club. Transactions. 1886. 8vo. Leeds 1886._
_The Club._
Transactions (continued).


Albrecht (Dr. P.) Verläuf der Nervenstrom in geschlossener Strömbahn? 8vo. Erlangen 1887. With two other excerpts in 8vo. The Author.

Bagnoli (U.) Teorie Fondamentali dell' Elettricità. Sm. 8vo. Milano 1887. The Author.


Fleming (S.) Documents in reference to the General Adoption of the Twenty-four Hour Notation on the Railways of America. 8vo. Ottawa 1887; Time-Reckoning for the Twentieth Century. 4to. Montreal 1886. The Author.

Folmer (N.) Rebus over het Licht, het Beeld en de Prismatische Kleuren; in 500 Figuren op 60 Platen. Folio and 8vo. Groningen [1887]. The Author.


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2 D
XXXVI. "Note on Mr. Davison's Paper on the Straining of the Earth's Crust in Cooling." By G. H. DARWIN, M.A., F.R.S., Plumian Professor of Astronomy and Experimental Philosophy in the University of Cambridge. Received June 15, 1887.

[To be published in the 'Philosophical Transactions,' in conjunction with Mr. Davison's paper.]

XXXVII. "A further minute Analysis, by Electric Stimulation, of the so-called Motor Region of the Cortex Cerebri in the Monkey (Macacus sinicus)." By CHARLES E. BEEVOR, M.D., and Professor VICTOR HORSLEY, F.R.S., B.S., F.R.C.S. Abstract received June 16, 1887.

[Publication deferred.]

XXXVIII. "On the present Position of the Question of the Sources of the Nitrogen of Vegetation, with some new Results, and preliminary Notice of new Lines of Investigation." By Sir J. B. LAWES, Bart., F.R.S., and J. H. GILBERT, M.A., LL.D., F.R.S., Sibthorpiian Professor of Rural Economy in the University of Oxford. Abstract received June 16, 1887.

[Publication deferred.]

XXXIX. "On Diameters of Plane Cubics." By JOHN J. WALKER, M.A., F.R.S. Received June 16, 1887.

[Publication deferred.]

The Society adjourned over the Long Vacation to Thursday, November 18th.

Transactions.


The University.

Transactions (continued).


Bremen:—Naturwissenschaftlicher Verein. Abhandlungen. Band 
The Verein.

Brünn:—Naturforschender Verein. Verhandlungen. Band XXIII. 
Hefte 1-2. 8vo. *Brünn* 1885. The Verein.


The Academy.

Vol. LV. No. 4. 8vo. *Calcutta* 1884, 1887; Proceedings. 1886. 


No. 1. 8vo. *Copenhague; Mémoires (Classe des Sciences). 
Vol. IV. No. 3. 4to. *Copenhague* 1887. The Academy.

Danzig:—Naturforschende Gesellschaft. Schriften. Band VI. 

*Leide* 1887. The School.


Band II. (Zweite Hälfte.) Band III. Band V. Nr. 1-2. 8vo. 
*Frankfurt a. Oder* 1885-7; Societatum Litterae. 1887. No. 3. 

Halifax:—Nova Scotian Institute of Natural Science. Proceedings 
The Institute.


Jena:—Medizinisch-Naturwissenschaftliche Gesellschaft. Jenaische 
*Jena* 1887. The Society.

Königsberg:—Physikalisch-Ökonomische Gesellschaft. Schriften. 

Transactions (continued).

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Transactions (continued).


Lund:—Universitet. Års-Skrift. Tom. XXII. 1–2. 4to. Lund 1886-7. The University.


Transactions (continued).


Observations and Reports.


Calcutta:—Meteorological Observations recorded at Six Stations in India. 1886. November to December. 4to. Calcutta. The Meteorological Office, India.
Observations, &c. (continued).


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Analyst (The) January to June, 1887. 8vo. London.

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Archives Néerlandaises des Sciences Exactes et Naturelles. Tome XXI. Livr. 4. 8vo. Harlem 1887.

Société Hollandaise des Sciences.


Dr. Richardson, F.R.S.

Astronomie (L') Janvier—Juin, 1887. 8vo. Paris.

The Editor.
Journals (continued).

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Athenaeum (The) January to June, 1887. 4to. London.
The Editor.

Builder (The) January to June, 1887. Folio. London.
The Editor.

Bullettino di Bibliografia e di Storia delle Scienze Matematiche e Fisiche. Tomo XIX. Maggio—Giuagno, 1886. 4to. Roma.
The Prince Boncompagni.

Natural History Society, Montreal.

Chemical News. January to June, 1887. 4to. London.
Mr. W. Crookes, F.R.S.


Educational Times (The) January to June, 1887. 4to. London.
The College of Preceptors.

Electrical Review (The) January to June, 1887. Folio. London.
The Editor.

The Horological Institute.

The Publishing Committee.

Industries. March to June, 1887. Folio. London. The Editor.

Medical Register (The) and Dentists' Register. 1887. 8vo. London.
The General Medical Council.


Mittheilungen aus der Zoologischen Station zu Neapel. Band VII.
Heft 2. 8vo. Berlin 1887.
The Station.


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Notes and Queries. January to June, 1887. 4to. London.
The Editor.

Observatory. January to June, 1887. 8vo. London.
The Editors.

Paris. The Editor.


Mr. Symons, F.R.S.

The Editors.


Dawson (Dr. G. M.) Note on the Occurrence of Jade in British Columbia. 8vo. Montreal 1887.


Hall. A Compendious Vocabulary of Sanskrit, in Divanagari and Roman Characters. 4to. London 1885.


Marey (J.) Le Mécanisme du Vol des Oiseaux étudié par la Photochronographie. 4to. Paris 1887. With one other excerpt.


Mueller (Baron F. von), F.R.S. Iconography of Australian Species of Acacia and Cognate Genera. Third Decade. 4to. Melbourne 1887.


Rüdorff (Friedrich) Die Fortschritte der Chemie in den letzten 25 Jahren: Rede. 4to. Berlin 1887.

Scharff (R.) On Otenodrilus parvulus, nov. spec. 8vo. London 1887.


Warner (Dr. F.) Three Lectures on the Anatomy of Movement:
On the Viscosity of Ice.


Wernicke (Dr. A.) Die Grundlage der Euklidischen Geometrie des Maasses. 4to. Braunschweig 1887. The Author.

Wolf (Dr. R.) Astronomische Mittheilungen. No. 68. 8vo. Zürich 1887. The Author.

“Note on some Experiments on the Viscosity of Ice.” By J. F. Main, M.A., D.Sc. Communicated by Prof. W. C. Unwin, F.R.S. Received April 13,—Read May 5, 1887.

Owing to the uncertainty prevailing as to the continuous extensibility of ice under tensional stress, it appeared to me desirable to institute a series of experiments directed to this point, conducted according to the methods, and, as far as possible, with the exactness of modern experimental testing.

In order to eliminate the influence of regelation, the experiments have been carried on at such low temperatures as preclude the possibility of any effect being produced by this cause, the highest temperature recorded in Experiment No. 1 being \(-2.6^\circ\) C.; in No. 2, \(-1.0^\circ\) C.; and in No. 3, \(-0.5^\circ\) C. It must be remarked, moreover, that these maximum temperatures only obtained for a very short time, on one or two days, as will be seen from the records.

The testing machine which I used was constructed for me by Herr Ingenieur Usteri-Reinacher, of Zürich. It was on the compound lever principle, the ratio of the arms of the equivalent simple lever being 1:20. All parts where friction could be prejudicial were provided with knife-edges. The design of the machine is obvious from the figure, in which A represents the specimen of ice to be tested, held by the collars at B and C. D is an equipoise, to balance the weights of the levers and of the vessel E, through which the power is applied by means of shot. F is a hand-wheel fixed to the screw G, by means of which, as the specimen extends, the under collar C may be lowered, so that the position of the upper collar B and of the two levers may remain the same. An index at H shows when the parts of the instrument are in the relative position required, and by its motion enables a rough estimate to be formed of the extension of the specimen.

The temperature was rendered more equable by enclosing the apparatus in two wooden boxes, KL and MN.

A delicate thermometer, graduated to tenths of a degree centigrade, and reading from \(-6^\circ\) C. to \(+6^\circ\) C., was attached to the central