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Now throw away the operand $Nv_{sc}H$, and we get the velocity equation pure and simple, and the index equation (3) then comes by $s = Nv^{-1}$.

But, although the above manipulation of the characteristic equation has some analytical interest, the process cannot be always recommended on the score of simplicity. It is, on the contrary, usually easier and simpler to work upon the component equations upon which the characteristic is founded.

*Presents, January 18, 1894.*

Transactions.


Medical and Chirurgical Faculty of the State of Maryland. Transactions of the Ninety-fifth Annual Session. 8vo. *Baltimore* 1893.

Berkeley:—University of California. [University Publications for the year 1892—93.] 8vo. 1892—93.


Dublin:—Royal Irish Academy. Transactions. Vol. XXX. Parts
Transactions (continued).
615. 8vo. [London 1893.] The Society.
Transactions (continued).


The Institution.


Transactions (continued).


Transactions (continued).


Tōkyō:—Imperial University of Japan. Calendar. 1892—93. Svo. Tōkyō 1893; Mittheilungen aus der Medicinischen Facultät. Bd. II. No. 1. 4to. Tokio 1893.


Observations and Reports.


The Office.
Observations and Reports (continued).


Observations and Reports (continued).


Sydney:—Observatory. Meteorological Observations. June, 1893. 8vo. [Sydney.] The Observatory.


Journals.


Journals (continued).
Astronomie (L') Août—Décembre, 1893. 8vo. Paris. The Editor.
Astronomy and Astro-Physics. December, 1893. 8vo. Northfield, Minn. The Editors.
Athenæum (The) July—December. 1893. 4to. London. The Editor.
Boletín de Minas Industria y Construcciones. Año IX. No. 10. 4to. Lima 1893. Escuela de Ingenieros, Lima. The Editor.
Educational Times (The) July—December, 1893. 4to. London. College of Preceptors.
Fisherman's (The) Nautical Almanac and Tide Tables. 1894. 8vo. Grimsby 1893. The Editor.
Notes and Queries. July—December, 1893. 4to. London. The Editor.
Journals (continued).
Observatory (The) July—December, 1893. 8vo. London.

Browning (J.) Our Eyes, and how to preserve them from Infancy to Old Age. 8vo. London 1892.
Gore (G.), F.R.S. The Decomposition of Liquids by Contact with Powdered Silica, &c. 8vo. Birmingham 1893.
Hooker (Sir J. D.), F.R.S., and B. D. Jackson. Index Kewensis; an Enumeration of the Genera and Species of Flowering Plants from the time of Linnaeus to the year 1885. Parts 1—2. 4to. Oxford 1893.
Keeler (J. E.) Physical Observations of Mars made at the Allegheny Observatory in 1892. 4to. London 1893.
Sidgreaves (W.) The Physical Constitution of the Sun. 8vo. [1893.]

The Editors.
Mr. G. J. Symons, F.R.S.
Institute of Technology.
The Editors.
The Author.
The Author.
The Author.
The India Office.
Sir Joseph Hooker, F.R.S.
The Author.
The Author.
The Authors.
The Author.
Wardle (T.) On the Relation of Design to such Craft Teaching as may be undertaken by Technical Schools. 4to. Manchester 1893.

The Author.

Photogravure Portrait of Professor Michael Foster, Sec. R.S., after a painting by H. Herkomer, R.A.

The Subscribers to the Foster Portrait Fund,
Trinity College, Cambridge.

January 25, 1894.

Sir JOHN EVANS, K.C.B., D.C.L., LL.D., Vice-President and Treasurer, in the Chair.

A List of the Presents received was laid on the table, and thanks ordered for them.

The following Papers were read:—

I. "On Intra-cranial Pressure. Preliminary Note." By LEONARD HILL, M.B., Assistant Professor of Physiology, University College, London. Communicated by Professor BURDON SANDERSON, F.R.S. Received November 16, 1893.

(From the Physiological Laboratories of Oxford and University College.)

My purpose in the following note is to submit to the Royal Society the results of experiments, made during the past year, relating to the "intra-cranial pressure" (i.e., the pressure to which the brain is normally exposed in the cranial cavity), and the changes which can be produced in it by alterations of the form and diminution of the capacity of the cranial cavity.

The experiments were undertaken at the suggestion of Professor Burdon Sanderson, and have been carried out with his help and criticism.

The animals employed were cats or dogs. Ether, chloroform, and morphia were used as anaesthetics.

Methods of Research.

Methods of Producing Alterations of Pressure within the Subdural Space.—

(a) The skull is trephined in the parietal region, the dura mater freely divided, the trephine hole "wormed" with an ordinary
the site of their formation plays a part in the occurrence of cédema even more important than that played by starvation.

The greatest amount of cédema was obtained with venous obstruction after anæmia and stimulation of the sciatic nerve.

The author shows that stimulation of the nerve of a muscle normally produces changes which lead to an absorption of water by the muscle, and he concludes that the cédema which accompanies passive congestion depends upon an excess of the normal process whereby the nutrition of the tissues and the removal of the waste products of their metabolism are carried out, the supply of lymph being excessive only because the demands of the tissues are excessive.

The part played by the blood-vessels the author regards as somewhat uncertain. Sharing in the general starvation of the limb, their function must be modified in some as yet unrecognised way; nevertheless, he considers that the part played by them is subordinate to the part played by the tissues outside the blood-vessels.

*Transactions.*


Transactions (continued).


Toronto:—Mathematical and Physical Society. Papers. 1891—92. 8vo. Toronto 1892. The University, Toronto.


Observations and Reports.


India:—Tide Tables for the Indian Ports for the year 1894. Two parts. 8vo. London. India Office.

Leyden:—Sterrenwacht. Verslag van den Staat der Sterrenwacht. 1890—93. 8vo. Leiden 1892—93. The Observatory.


Abney (Capt. W. de W.), F.R.S. Chemical Action and Exposure; or, a Failure in a Photographic Law. 8vo. London 1893. The Author.


Quatrefages de Bréau (J. L. A. de) Notice Biographique. 4to. [Private print.] Madame Quatrefages de Bréau.


The Author.

Map of England and Wales showing Lines of Equal Magnetic Declination for January 1, 1894. With a Reprint from the 'Colliery Guardian.' Two copies.

Mr. W. Ellis, F.R.S., and The Editor, 'Colliery Guardian.'

"On Copper Electrolysis in Vacuo." By William Gannon, M.A., "1851 Exhibition" Scholar, Queen's College, Galway. Communicated by Arthur Schuster, F.R.S. Received November 14.—Read December 7, 1893.

The following research upon the electrolysis of copper sulphate in vacuo was commenced nearly two years ago, at the suggestion of Dr. Schuster, and the experiments were made in the Physical Laboratory of the Owens College.

The electrolysis of copper salts is interesting, not only theoretically as affording a verification of Faraday's Law of Electrolytes, but also practically on account of its constant use in the graduation of current-measuring instruments, such as tangent galvanometers and ammeters. It is known that copper sulphate in solution does not conform rigorously to the simple form in which Faraday's law is generally expressed. Gray,* who made a detailed examination of the electrolysis of copper sulphate, found that the weight of the deposit is very variable in neutral solutions for the same current and the same interval of time; and he also showed that, in solutions containing a little free sulphuric acid, this inconstancy was removed, but that the weight was a function of the temperature of the solution and of the current density at the cathode. His results with acid solutions are graphically represented by curves (partly reproduced at the end of

* 'Phil. Mag.,' vols. 22 and 25 (1886–88).
VI. Literature.—1. In 1697 Camerarius described, amongst hexagonal plates of hoar frost, some slightly depressed in the middle.

2. In 1874 Krenner described and illustrated hollow hexagonal ice crystals found in the ice cave of Dobschau. His remarks on their formation and attachment are, however, quite at variance with our observations.

3. In 1889 Assmann described and illustrated the forms of hoar frost; but his illustrations only show flat fronds growing in one dimension.

VII. Conclusions.—1. Water, when changing direct from the gaseous into the solid state, is highly crystalline.

2. The tendency to crystallisation is so strong that in those cases where the area of supply is limited by a wall or other heterogeneous surface, skeleton crystals—hexagonal "hoppers"—are formed, growing away from that wall, even under circumstances of excessively slow growth.

3. Calmness of air seems to be an essential condition for their formation.

4. The natural example of crystallisation of water limited to certain directions is given in hoar frost, showing a very marked tendency to form hexagonal hoppers.

5. From our observations, there can be no doubt as to the identity of the ice crystals of Surtshellir, of the refrigerating chambers and ships in Liverpool, and of the cooling cellars of the Berlin breweries, with natural hoar frost.

Transactions.
Observations and Reports.


Journals.


Astronomy and Astro-Physics. January, 1894. 8vo. Northfield, Minn.


Buller (Sir Walter L.), F.R.S. [Twenty-three Excerpts from the ‘Transactions of the New Zealand Institute,’ &c.]. 8vo. [1869–93.] The Author.


Schreiber (Paul) Die Grundgleichungen für Zustand und Zustandsänderung in der Atmosphäre. 4to. [1893.]; [and Four other Excerpts. 8vo and 4to.] The Author.
Transactions.


Transactions (continued).

Observations and Reports.

Journals.
Archives des Sciences Biologiques. Tome II. No. 4. 4to. St. Pétersbourg 1893.
Institut Impérial de Médecine Expérimentale, St. Petersburg.

Burnham (S. W.) The System of ζ Cancri. 8vo. [1894.]
V. Chemical Relationship to other Meteoric Stones.

For the olivinic silicate, the ratio of the oxygen in combination with the iron and manganese to that in combination with the magnesium and calcium is $1:2.9$; in this respect the Makariwa stone resembles those of Gopalpur ($1:2.75$); Mező-Madaras and Eichstädt ($1:2.8$); Montréjeau and Pultusk ($1:2.9$); Borkut and Chantonnay ($1:3$).*

For the enstatitic silicate, the corresponding ratio is $1:2.7$. This approximates to those of Eichstädt ($1:2.2$); Manegaum, Waconda, and Tjabé ($1:2.3$); Seres ($1:2.4$); Georgia and Montréjeau ($1:2.5$); Grosnaja ($1:2.6$); Utrecht ($1:2.7$); Ski ($1:2.8$); Borkut ($1:3$).

Of the above meteoric stones, which stands nearest in this respect for both silicates is Montréjeau; other stones approximating to Makariwa in both ratios are Borkut, Eichstädt, Tjabé, Utrecht, and Linn County.

In the proportion of the olivine to the enstatite, there is also a close similarity: in Makariwa the proportion is $56:44$; in Montréal, $54:46$.

The proportion of nickel (18—21 per cent.) in the alloy is higher than the average, and approximates to that of Middlesbrough (23 per cent.).

Presented, February 15, 1894.

Transactions.


Copenhagen:—Danish Biological Station. Report. 1893. 8vo. Copenhagen 1893. The Station.


International:—Congrès International de Zoologie. 2ème Session, Moscou, 1892. Partie 2. 8vo. Moscou 1893.

Société Imp. des Amis des Sciences Naturelles, Moscow.


London:—British Association for the Advancement of Science. Index to the Reports and Transactions from 1861 to 1890 inclusive. 8vo. London 1893. The Association.

Transactions (continued).


Observations and Reports.


Journals.


1. That over such temperature ranges as the observations extend the results obtained at a particular value of the slope may be regarded as general for all liquids, with the exception of the alcohols, for which the relationships vary slightly as the slope alters. A general expression connecting the viscosity coefficient with the slope is given.

2. It is further indicated, from comparisons made by the use of slopes which varied from liquid to liquid, and which were chosen according to definite systems, that in the present state of the question equal slope is the most suitable condition at which to compare the viscosities of different liquids.

With respect to the relationships existing between the magnitudes of the comparable temperatures of equal slope, it appears:

1. That these vary in a regular way with the chemical nature of the substances, except in the case of liquids like benzene and propylene dibromide, giving viscosity curves which are abnormal when compared with those of their homologues.

2. The temperature relationships may also be regarded as general and thus independent of the value of the slope, except in the case of the alcohols, which, in this respect, as in that of viscosity at equal slope, are anomalous.

The rest of the memoir is concerned with the discussion of certain general conclusions regarding physicochemical comparisons; and it finally deals with other possible methods of obtaining and comparing viscosity magnitudes.

Presents, February 22, 1894.

Transactions.


Transactions (continued).


Société Impériale des Amis des Sciences Naturelles, &c., Moscou.


Observations and Reports.

Calcutta:—Meteorological Department, Government of India. Monthly Weather Review. August, 1893. 4to. Calcutta; Meteorological Observations recorded at Seven Stations in India. August, 1893. 4to. The Department.


Stationery Office.

Norway:—Norske Gradmaalingskommission. Vandstandssobserva-


The Observatory.

Observations and Reports (continued).
The Survey.

Washington:—Weather Bureau, Department of Agriculture.
The Bureau.

Frederick the Great. Politische Correspondenz. Bd. XX. 8vo.
Greig (J. A.) Den Norske Nordhavs-Expedition, 1876–78. Zoologi—
Ophiuroidea. 4to. Christiania 1893.
Editorial Committee of the Expedition.
Rambaut (A. A.) To adjust the Polar Axis of an Equatorial Tele-
scope for Photographic Purposes. 8vo. London [1894].
The Author.

"Note on some Changes in the Blood of the General Circula-
tion consequent upon certain Inflammations of acute and
local Character." By C. S. Sherrington, M.D., F.R.S.,
Lecturer on Physiology, St. Thomas's Hospital, Professor-
Superintendent of the Brown Institution, London. Re-
ceived December 11, 1893,—Read December 14, 1893.

[PLATE 1.]

In result of an acute inflammatory process of even limited local
extent alterations, that have been long recognised, take place in the
blood of the general circulation. These alterations are (1) hyper-
inosis, or increased yield of fibrin; (2) leucocytosis, or numerical
increase of leucocytes.

Of all the phenomena of inflammation the most fundamental, apart
from the local degeneration of the involved tissue, is, without doubt,
abnormal exudation of intravascular fluid. The latter process must
produce changes in the blood in general circulation, as well as in that
in the vascular area locally disturbed. It is these general hemic
changes incident on local inflammation with which my experiments
deal, especially with certain features of the inflammatory leucocy-
tosis.

I. Methods.

The inflammatory lesion I have established by trauma of one or
other kind, induced generally by thermal means. When the seat
chosen for the lesion has been in the limb, the procedure has been as
follows.
In conclusion, I desire to express my warm thanks to Professor Weldon for constant advice and assistance on many points connected with the preparation of the foregoing data.

Transactions.


Lyons.—Université. Annales. Tome VI. Fasc. 3. 8vo. Lyon 1893. The University.


Transactions (continued).

Montpellier 1893; Section de Médecine. 2e Série. Tome I. No. 1. 8vo. Montpellier 1893; Section des Lettres. 2e Série. Tome I. Nos. 1—3. 8vo. Montpellier 1893.

The Academy.


The Museum.


The Circle.


The Committee.


The School.


The School.


The Society.


The Society.


The Society.


The Academy.


The Academy.


The Academy.


The Academy.


The Academy.


The Society.


The Department.


The Society.


The Society.
Observations and Reports.


Journals.

Boletín de Minas Industria y Construcciones. Tome IX. Num. 11. 4to. Lima 1893. Escuela Especial de Ingenieros, Lima.


Mohorovičić (A.) Der Tornado bei Novska. 8vo. Agram 1894.


Department of Revenue and Agriculture, Calcutta.

March 8, 1894.

Sir JOHN LUBBOCK, Vice-President, in the Chair.

A List of the Presents received was laid on the table, and thanks ordered for them.

The Croonian Lecture was delivered as follows:—

CROONIAN LECTURE.—“La fine Structure des Centres Nerveux.”
By S. RAMÓN Y CAJAL, Professor of Physiology in the University of Madrid. Received March 1, 1894.

[Publication deferred.]

Transactions.


Buitenzorg:—’s Lands Plantentuim. Verslag. 1892. 8vo.

Buitenzorg 1894.


Gloucester 1894.


Heidelberg 1894.


Lausanne 1893.


London 1894.


London 1894.


London.
Transactions (continued).


Observations and Reports.

San Fernando:—Instituto y Observatorio de Marina. Observaciones Meteorológicas y Magnéticas. Año 1892. 4to. San Fernando 1893. The Institute.

Journals.

Presents.

Journals (continued).

Journal of Comparative Neurology. September, 1893. 8vo. Granville, Ohio.


Akerblom (Ph.) De l’Emploi des Photogrammètres pour mesurer la Hauteur des Nuages. 8vo. Upsala 1894.

Meteorological Observatory, Upsala.


Bataviaasch Genootschap van Kunsten en Wetenschappen.


Transactions.


Kazan:—Imperial University. [Two Medical Dissertations.] [Russian.] 8vo. Kazan 1893. The University.


Appropriation of the Government Grant.

Observations and Reports.

Journals.


Photograph of the Indenture of Sir H. Davy, in the possession of the Royal Institution of Cornwall. Mr. John D. Enys.

Account of the appropriation of the sum of £4,000 (the Government Grant) annually voted by Parliament to the Royal Society, to be employed in aiding the Advancement of Science (continued from vol. liii, p. 321).

April 1, 1893, to March 31, 1894.

General Fund.

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4. That Poisson’s ratio, as found by direct measurement, is not the same as that found by comparing torsion and tension experiments.

The work entailed in the digestion of these experiments, and their reduction to a small table, has been heavier than the author had anticipated, but as the results show that they are fairly reliable, they may be of use to those engaged in researches on elasticity. In conclusion, the author begs to thank Professor Kennedy, not only for allowing him the use of his testing machine, but also for directing each experiment, and personally taking its reading.

[April 30.—Somewhat similar experiments were carried out by Professor J. Bauschinger (see ‘Der Civilingenieur,’ 1879, 1881, 1882, &c.).]
Transactions (continued).


Transactions (continued).
Institution of Mechanical Engineers. Proceedings. 1893 No. 4. 8vo. London [1894]. The Institution.
Presents. [Apr. 19,

Transactions (continued).


Transactions (continued).

Observations and Reports.
Calcutta:—Meteorological Department, Government of India. Meteorological Observations recorded at Seven Stations in India. October, 1893. 4to; Monthly Weather Review. October, 1893. 4to. Calcutta, 1894. The Department.
Kiel:—Sternwarte. Publication. 9. 4to. Kiel 1894. The Observatory.
Observations and Reports (continued).


Journals.


Sir B. W. Richardson, F.R.S.


Smithsonian Institution, Washington.


The Observatory, Kiel.

Boletin de Minas Industria y Construcciones. Año IX. No. 12. 4to. Lima 1893.

Eescena Especial de Ingenieros, Lima.

Cellule (La). Tome X. Fasc. 1. 8vo. Louvain 1894.

The Editors.


General Medical Council.


Physikalische Gesellschaft, Berlin.


British Horological Institute.


Medical Register. 1894. Svo. London.

General Medical Council.


The Editor.
Journals (continued).


Revue Médico-pharmaceutique. Année VII. No. 2. 4to. Constantinople 1894. The Editor.


Burdett (H. C.) Burdett’s Official Intelligence. 1894. 4to. London. The Author.

Dawson (Sir J. W.), F.R.S. New Species of Cretaceous Plants from Vancouver Island. 4to. [Ottawa 1893.] The Author.

Dukes (C.) On the Features which distinguish Epidemic Roseola (Roserash) from Measles and Scarlet Fever. 8vo. London 1894. The Author.

Fritsche (H.) Die magnetischen Localabweichungen bei Moskau und ihre Beziehungen zur dortigen Local-Attraction. 8vo. [Moskau 1894.] The Author.


Gore (G.), F.R.S. Changes of Temperature caused by Contact of Liquids with Powdered Silica, &c. 8vo. London 1894. The Author.


2 e 2
Circular Case for a Rumford Medal, made out of the wood from an
ash tree, until lately growing in front of Count Rumford's house,
North Woburn, Massachusetts, and contemporary with him.

Rumford Historical Association, North Woburn,
Mass., through Dr. Ephraim Cutter.

April 26, 1894.

The LORD KELVIN, D.C.L., LL.D., President, in the Chair.

A List of the Presents received was laid on the table, and thanks
ordered for them.

Pursuant to notice, Professor Henri Ernest Baillon, Professor
Henri Poincaré, and Professor Eduard Suess were balloted for and
elected Foreign Members of the Society.

The following Papers were read:—

I. "On the Specific Heats of Gases at Constant Volume.
Part II. Carbon Dioxide." By J. JOLY, M.A., Sc.D.,
F.R.S. Received March 9, 1894.

(Abstract.)

In the former experiments on this gas, recorded in the first part of
this research,* the highest absolute density at which the specific heat
was determined was 0.0378. In the present observations the deter-

* "On the Specific Heats of Gases at Constant Volume," Part I, 'Phil. Trans., A,
vol. 182, 1891, pp. 73–117.
From these observations it is also clear that the sounds produced by these fishes are not caused by the expulsion of air through the ductus pneumaticus, as erroneously assumed by us on pp. 298 and p. 301 of our memoir, but are caused by the vibration of the air within the air-bladder, which is set in motion either by the "elastic spring" apparatus, or by the extrinsic muscles.

The investigations of Dr. Sörensen seem to show that, under certain conditions, the "elastic spring" mechanism, and the paired extrinsic muscles of the Pimelodinae, are structures subordinate to sound production, and are not, as we suggested, related to any method of adjustment to varying hydrostatic pressures. Had we appreciated this fact earlier, we should have modified certain of the tentative conclusions suggested on pp. 298—301 of our memoir. On the present occasion we wish to draw the attention of those interested in the subject to Dr. Sörensen's researches, and at the same time to express our regret at the injustice we have unintentionally done him.

The Society adjourned over Ascension Day to Thursday, May 10.

Transactions.
Kazan:—Imperial University. Scientific Notes. [Russian.] 1894. No. 4. 8vo. Kazan. The University.
Transactions (continued).

The School.

Svo. Pisa 1894.
The Society.

Prague:—Gesellschaft zur Förderung Deutscher Wissenschaft, Kunst und Literatur in Böhmen. Mittheilung. Nr. 1. 8vo.
Prag 1894.
The Society.

The Academy.

The Academy.

The College.

The Academy.

Observations and Reports.

The Observatory.

The Institute.

The Service.

Secretary of State for India.

Adm. Sir G. H. Richards, F.R.S.

The Bureau.

The Bureau.
Observations and Reports (continued).

Sydney:—Department of Agriculture. Host and Habitat Index of the Australian Fungi. 8vo. Sydney 1893.

Mr. N. A. Cobb.

Trieste:—Osservatorio Astronomico Meteorologico. Rapporto Annuale. 1891. 4to. Trieste 1894. The Observatory.

Journals.


Archives Cliniques de Bordeaux. Année III. No. 3. 8vo. Bordeaux 1894. The Editors.


Astronomy and Astro-Physics. February—April, 1894. 8vo. Northfield, Minn. The Editors.


Dawson (G. M.), F.R.S. Geological Notes on some of the Coasts and Islands of Bering Sea and Vicinity. 8vo. Rochester (U.S.A.) 1894; [And two other Excerpts. 8vo.] The Author.


Bronze Copy of Medal, 'Analyse des Protubérances Solaires, 18 Août, 1868,' struck in honour of MM. Janssen and Lockyer.

M. Janssen, For. Mem. R.S., and Professor J. Norman Lockyer, F.R.S.