

II. Soft-Iron Wires.

Wires of about the same gauge as the steel were used, but, except one of them, bore only about 28 lbs. instead of 230. All of three or four kinds tried agreed with the steel in (1).

The first tried behaved (except a seeming anomaly, hitherto unexplained) in the reverse manner to steel in respect to (2), (4), (5), and (6); it agreed with the steel in respect to (7). Another iron wire*, which, though called "soft," was much less soft than the first, agreed with steel in respect to (1) and (2), but [differing from steel in respect to (3)] showed greater effects of weights on and off when the magnetizing current was flowing than when it was stopped.

Other soft-iron wires which were very soft, softer even than the first, agreed with all the steel and iron wires in respect to (1), but gave results when tested for (2) which proved an exceedingly transient character of the residual magnetism, and were otherwise seemingly anomalous.

The investigation is being continued with special arrangements to find the explanation of these apparent anomalies, and with the further object of ascertaining in absolute measure the amounts of all the proved effects at different temperatures up to 100° Cent.

The Society then adjourned over the Election-day, to Thursday, June 10.

June 3, 1875.

The Annual Meeting for the election of Fellows was held this day.

JOSEPH DALTON HOOKER, C.B., President, in the Chair.

The Statutes relating to the election of Fellows having been read, Mr. A. J. Ellis and Admiral Ommanney were, with the consent of the Society, nominated Scrutators to assist the Secretaries in examining the lists.

The votes of the Fellows present having been collected, the following candidates were declared duly elected into the Society :—

* It was tested magnetically with weights up to 56 lbs., and broke, unfairly however, when 63 lbs. were hung on.

William Archer, M.R.I.A.
 James Risdon Bennett, M.D.
 Dietrich Brandis, Ph.D., F.L.S.
 James Caird, C.B.
 Prof. John Casey, LL.D.
 August Dupré, Ph.D., F.C.S.
 James Geikie, F.R.S.E.
 James Whitbread Lee Glaisher,
 M.A.

John Baboneau Nickterlien Hennessey, F.R.A.S.
 Emanuel Klein, M.D.
 E. Ray Lankester, M.A.
 George Strong Nares, Capt. R.N.
 Robert Stirling Newall, F.R.A.S.
 William Chandler Roberts, F.C.S.
 Major-General Henry Y. D. Scott,
 R.E., C.B.

Thanks were given to the Scrutators.

June 10, 1875.

JOSEPH DALTON HOOKER, C.B., President, in the Chair.

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

Dr. James Risdon Bennett, Mr. James Caird, Mr. James Whitbread Lee Glaisher, Mr. J. Baboneau Nickterlien Hennessey, Mr. William Chandler Roberts, and Major-General Henry Young Darracote Scott were admitted into the Society.

The following Papers were read:—

- I. "A Memoir on Prepotentials." By Prof. CAYLEY, F.R.S.
 Received April 8, 1875.

(Abstract.)

The present memoir relates to multiple integrals expressed in terms of the $(s+1)$ ultimately disappearing variables $(x \dots z, w)$, and the same number of parameters $(a \dots e, e)$, and being of the form

$$\int \frac{\rho d\omega}{\{(a-x)^2 \dots + (e-z)^2 + (e-w)^2\}^{\frac{1}{2}s+q}},$$

where ρ and $d\omega$ depend only on the variables $(x \dots z, w)$. Such an integral, in regard to the index $\frac{1}{2}s+q$, is said to be "prepotential," and in the particular case $q = -\frac{1}{2}$ to be "potential."

I use throughout the language of hyper-tridimensional geometry: $(x \dots z, w)$ and $(a \dots e, e)$ are regarded as coordinates of points in $(s+1)$ -dimensional space, the former of them determining the position of an element $\rho d\omega$ of attracting matter, the latter being the attracted point; viz. we have a mass of matter $= \int \rho d\omega$ distributed in such manner that $d\omega$ being the element of $(s+1)$ - or lower-dimensional volume at the