Davis, of Harvard University, who has recently resigned.

## SOCIETIES AND ACADEMIES.

### NEW YORK ACADEMY OF SCIENCES, SECTION OF ASTRONOMY, PHYSICS AND CHEMISTRY.

THE Section met at the Chemists' Club on the evening of December 2. The following papers were presented:

Professor M. I. Pupin described an experimental investigation of 'Energy-Dissipation' in a weak magnetic field. The substance experimented upon was a toroid of square cross-section made up of iron plates .010 in. thick. The magnetizing force was supplied by a helix uniformly distributed over the core. The force applied was simple harmonic of 1,800 periods per second, and its amplitude could be varied from 0 to .1 C.G.S. unit. The inductance and resistance of the helix was determined in a Wheatstone bridge. The results obtained were compared with theory. According to the theory worked out by the author, inductance ($L$) and Foucault resistance ($R$) is given by the formulæ:

$$L = 2 s^2 \mu h \log \frac{b}{a}$$

$$R = \frac{4}{3\sigma} \pi^3 \mu d^2 f^2 L$$

where

$s$ = number of turns in the helix.
$\mu$ = permeability of the iron.
$\sigma$ = specific resistance of the iron in C.G.S. units.
$f$ = frequency of the magnetizing force.
$h$ = height of the core in cm.
$d$ = thickness of the plates in cm.
$a$ = internal diameter of the plates.
$b$ = external diameter of the plates.

Up to about .05 C.G.S. units of the magnetizing force $\mu$ is constant and equal to about 80 in the samples of iron employed; there is no hysteresis, and the theory agrees very well with experiment. Beyond that limit both $L$ and $R$ increase; the increase of $R$ is very rapid on account of hysteresis.

When the core is magnetized by a steady force and then after removal of this force $L$ and $R$ are measured it is found that they both change on account of the change of $\mu$. Their values still agree with the theory within the above limits of magnetization. Hence weak magnetizations are not accompanied by hysteresis, both when the iron is neutral and also when it is already, even strongly, magnetized.

An increase of the permanent magnetization diminishes $\mu$, and *vice versa*. The maximum change in $\mu$ thus obtained was 22 per cent.

Professor J. K. Rees presented some notes and lantern illustrations on observations of Leonids made at Bayport by C. A. Post and himself. The observations were made at Mr. Post's observatory during the nights from November 13 to 16 (both inclusive).

For the purpose of photographing meteor trails four cameras were fastened to the equatorial. Exposures for known times were made on identified parts of the sky. The results showed meteor trails on the plates taken between midnight and sunrise of November 15. Quite a remarkable meteor was shown on plates taken with the Willard and the Anthony lenses. This meteor appeared at 3.58 a. m. near the radiant point and exhibited a fine head and trail, which remained visible for a minute or more. A lantern slide of this meteor (made by Mr. Post) was thrown on the screen, and attention was called to the peculiar details of the head and trail. Considering the number and the brilliancy of the meteors which fell during the morning of the 15th, the trails on the plates are unexpectedly few.

Only during the night of November 14–15 was a careful attempt made to count the meteors. Miss Edith Post and Miss Greenough watched the northeastern and the southeastern sky. The observers at the telescope occasionally aided in counting. Four hundred and eighteen meteors, of which all but a very few were well-defined Leonids, were counted. Of these the greatest number was seen between 4.30 and 5.55 a. m., November 15, when 273 were counted. During the last hour the shower was evidently increasing.

The notes on 'Individual Meteors' show that many bright Leonids fell, showing trails which lasted many seconds, and extended 10 to 30 degrees.

Two very brilliant meteors fell at 5.28 a. m., November 15, and their paths crossed each other. One came from the radiant and the other from below Leo and cut the trail of the first under Canes Venatici. The trails were 30 degrees long.

The hope was expressed that next year we would be favored with a shower more brilliant and comparable to the showers of 1833 and 1866.

F. L. Tufts,
*Secretary.*

TORREY BOTANICAL CLUB.

The first paper on the scientific program on December 10, 1901, was by Professor L. M. Underwood on 'The Genus *Gleichenia.*' This was illustrated by specimens and sketches, showing the principal natural types. The paper will be published in full in an early number of the *Bulletin.*

Mrs. N. L. Britton presented 'Notes on Macoun's Recent Collections of Canadian Mosses,' speaking of collections made by Professor J. Macoun during the past summer in the lower peninsula of Ontario between Lake Erie and Lake Ontario. Special mention was made of *Seligeria campylopoda* Kindb., previously known only from Owen Sound, but now collected at Niagara Falls. This moss ordinarily grows in pockets in limestone rocks and being very small is easily overlooked. Mrs. Britton alluded also to the synonymy of *Polytrichum Ohioense* Ren. & Card. This species was distributed by Drummond in his Musci Americani as *Polytrichum pallidisetum* and is apparently the same as what was afterwards recognized in the Manual of Lesquereux and James as *Polytrichum formosum,* var. *pallidisetum,* but whether the original *Polytrichum pallidisetum* of Funk is identical remains to be determined.

Dr. P. A. Rydberg in 'A Review of a Recent Monograph of the Ranunculaceæ' discussed the work recently written by Dr. K. C. Davis.

The final paper was by Mr. S. H. Burnham and was entitled 'Notes on the Flora of the Lake George Region.' Mr. Burnham referred especially to *Bidens Beckii,* an aquatic plant growing in five or six feet of water in muddy streams, and to his experiences in collecting it through the ice during the last week of November of the present year. He also alluded to the restriction of *Castalia tuberosa* to the streams flowing directly into Lake Champlain while *Castalia odorata* alone is found in the Lake George Basin.

Marshall A. Howe,
*Secretary pro tem.*

NORTHERN SECTION OF THE AMERICAN CHEMICAL SOCIETY.

The regular monthly meeting of the Section was held on Tuesday evening, December 17, in the Kidder lecture room of the Massachusetts Institute of Technology. Professor C. F. Chandler, of Columbia University, addressed the Society on 'The Electro-chemical Industries at Niagara Falls.' After tracing the historical development of electro-chemistry, Professor Chandler proceeded to discuss the development of the Castner process for the manufacture of sodium, sodium hydroxide, peroxide and cyanide, and the utilization of the chlorine from the salt for the manufacture of bleaching powder. The Hall process for the manufacture of aluminium together with the electrolytic purification of bauxite was then discussed and illustrated by a large number of beautiful specimens. The preparation and applications of carborundum, graphite, phosphorus and calcium carbide were considered in detail and were used to illustrate the rapid development of the electro-chemical industries at Niagara Falls.

Henry Fay,
*Secretary.*

## *DISCUSSION AND CORRESPONDENCE.*

THE MEASUREMENT OF WIND AT SEA.

To the Editor of Science: In conducting at sea the meteorological observations with kites that have been described in Science, it was necessary to deduce from the observations on the ship and from the record of velocity at the kite the true direction and velocity of the wind at sea-level and in the upper air, respectively. Knowing the resultant direction