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Robert Henry Thurston, director of Sibley College and Professor of Mechanical Engineering at Cornell University, one of the editors of this Journal, died at Ithaca on October 25, on his sixty-fourth birthday.

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SCIENCE

A WEEKLY JOURNAL DEVOTED TO THE ADVANCEMENT OF SCIENCE, PUBLISHING THE OFFICIAL NOTICES AND PROCEEDINGS OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

FRIDAY, OCTOBER 30, 1903.

CONTENTS:

MSS. intended for publication and books, etc., intended for review should be sent to the responsible editor, Professor J. McKeen Cattell, Garrison-on-Hudson, N. Y.

*ADDRESS OF THE PRESIDENT OF THE SECTION OF ANTHROPOLOGY OF THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.**

IT is now nearly twenty years since anthropology attained to the dignity of being awarded a special and independent section in this association, and I believe it is generally admitted that during this period the valuable nature of many of the contributions, the vigor of the discussions and the large attendance of members have amply justified the establishment and continued existence of this section.

While the multifarious and diverse nature of the subjects which are grouped under the term anthropology gives a variety and a breadth to our proceedings, which are very refreshing in this age of minute specialism, I feel that it adds very considerably to the difficulty of selecting a subject for a presidential address which will prove of general interest.

A survey of the recent advances in our knowledge of the many important questions which come within the scope of this section would cover too wide a field for the time at my disposal, while a critical examination of the various problems that still await solution might expose me to the temptation of pronouncing opinions on subjects regarding which I could not speak with any real knowledge or experience. To

* Southport meeting, 1903.

finish that is seldom found in connection with such papers. The author has himself studied the orthoptera of his state in the field, during the last twenty years, and many of the statements given relative to habits have come first hand fresh from the observer. The student of geographical distribution will find much of interest, while even those not especially interested in the technical descriptions will certainly not fail to appreciate the copious notes on habits, abundance, etc., etc., but it will be of the greatest value to those who make a specialty of the orthoptera.

F. M. Webster.

Urbana, Illinois,
September 30, 1903.

SCIENTIFIC JOURNALS AND ARTICLES.

The closing (October) number of volume 4 of the *Transactions of the American Mathematical Society* contains the following papers: 'On the subgroups of order a power of p in the quaternary abelian group in the Galois field of order p^n,' by L. E. Dickson; 'On the order of linear homogeneous groups,' by H. F. Blichfeldt; 'Non-abelian groups in which every subgroup is abelian,' by G. A. Miller and H. C. Moreno; 'On nilpotent algebras,' by J. B. Shaw; 'On solutions of differential equations which possess an oscillation theorem,' by Helen A. Merrill; 'On the reducibility of linear groups,' by L. E. Dickson; 'Semireducible hypercomplex number systems,' by S. Epsteen; 'A symbolic treatment of the theory of invariants of quadratic differential quantics of n variables,' by H. Maschke; 'Congruences of curves,' by L. P. Eisenhart; 'Similar conics through three points,' by T. J. I'a Bromwich.

The opening (October) number of volume 10 of the *Bulletin* of the Society contains the following papers: 'Poincaré's Review of Hilbert's Foundations of Geometry,' translated by E. V. Huntington; 'On linear differential congruences,' by S. Epsteen; 'Fields whose elements are linear differential expressions,' by L. E. Dickson; 'On directrix curves of quintic scrolls,' by C. H. Sisam; 'Josiah Willard Gibbs, Ph.D., LL.D., a short sketch and appreciation of his work in pure mathematics,' by P. F. Smith; Notes; New Publications.

The November number of the *Bulletin* contains: 'Report of the tenth summer meeting of the American Mathematical Society,' by F. N. Cole; 'Report of the committee of the American Mathematical Society on definitions of college entrance requirements'; 'On the congruence $x_{\phi(P)} \equiv 1$, mod. P^n,' by J. Westlund; Review of Mach's Mechanics, by E. B. Wilson; Review of Forsyth's Differential Equations, by E. J. Wilczynski; Notes; New Publications.

The Journal of the Franklin Institute prints, in its October number, the paper of Mr. Thomas M. Gardner, instructor in Sibley College, on 'The Graphics of Carbon-Disulphide, with Formulas and Vapor-Table.'

It is a practically important contribution to the literature of the subject, as it provides the essential entropy-values of a substance which is thought by some authorities to be likely to have importance as the working fluid of a secondary heat-motor, as in the 'waste-heat engines.'

A plate is given exhibiting the properties of the substance having importance in the thermodynamic operations, and another giving the temperature-entropy diagram with MacFarlane Gray's constant-volume lines. Several other plates present the constant-area lines, $pv = C$, the constant-quality lines, $x = C$, the constant-entropy lines, $\phi = C$; and the general temperature-entropy diagram, after Boulvin, completes the series.

A new and extensive table of the properties of the saturated vapor, in the form of the standard steam-tables, provides data hitherto uncomputed and in forms suitable to the thermodynamic discussion of heat-engines employing this substance. The values of n, also, in $pv^n = C$ are determined and the curve is given for adiabatic expansion of qualities ranging from $x = 0.10$ to $x = 1$.

It is shown that, with hyperbolic expansion, the 'quality' of wet fluid improves, the proportion of moisture decreasing; with superheated vapor, this expansion becomes isother-

mal, as with all gases, and all heat supplied is utilized as external work. The constant-quality curves have the equation $pv^{1.0568} = C$. With adiabatic expansion, the quality improves with all mixture in which $x < 0.6$ and the fluid progressively condenses for mixtures of initially $x = 0.7$ and above. The value of n is found to be

$$n = \left(\frac{x}{c}\right)^{\frac{1}{6.36}}; \quad xn^{-6.36} = C;$$

the logarithmic curve is given, graphically illustrating the law of variation of n.

The specific volume of CS_2 is 2.6258 times that of air. Its boiling point is, according to Thorpe and Freidburg, 115.88 *F.* and its critical temperature is 504.5° *F.*, at a pressure of about 65 atmospheres.

The paper is one of special value and is the outcome, in part, of work for the Ph.D. at Cornell. R. H. T.

SOCIETIES AND ACADEMIES.

NEW YORK ACADEMY OF SCIENCES. SECTION OF BIOLOGY.

THE first meeting of the academic year was held at the American Museum of Natural History on October 12, Professor Wilson acting as temporary chairman. As in former years, this first meeting after the long vacation was devoted to reports on scientific work carried on by members of the section during the summer. The following notes indicate the lines of the work of the members who reported.

Professor Bristol, in association with Professor Mark, of Harvard, directed the summer work at the Bermuda Biological Station. Dr. Hay was very successful in collecting in Wyoming materials for his studies of fossil turtles. Professor Osborn directed explorations in Wyoming, Nebraska and South Dakota in the interest of the American Museum of Natural History, securing much valuable material which supplements collections previously made. Professor Grabau collected in Michigan materials for continuation of his studies on Devonian faunas. Dr. Summer directed the Biological Laboratory of the United States Fish Commission at Woods Hole, Mass. Professor Calkins studied the relation of Protozoa to cancer and smallpox. Professor Crampton continued the accumulation of data relating to selection in Lepidoptera. Mr. Bigelow studied the early embryology of some crustaceans. Mr. Yatsu experimented on regulation and organization of nemertean eggs. Professor Wilson at Naples studied problems of localization and mosaic development of molluscan eggs.

M. A. BIGELOW,
Secretary.

SECTION OF ASTRONOMY, PHYSICS AND CHEMISTRY.

AT the meeting of the section on October 5, Professor Harold Jacoby and Dr. S. Alfred Mitchell exhibited a combined prismatic transit and zenith telescope. This instrument, just received by the Department of Astronomy of Columbia University, was made by Bamberg of Berlin. It includes all the latest observational devices, including an eye-piece of the Repsold pattern for the automatic registration of transit observations.

Dr. George F. Kunz and Dr. Charles Baskerville gave an exhibition of radium of 300,000 activity, with some notes on the action of the Roentgen ray, ultra-violet light and radium on mineralogical substances. This paper will be published elsewhere in SCIENCE.

S. A. MITCHELL,
Secretary of Section.

DISCUSSION AND CORRESPONDENCE.

THE INTERNATIONAL CONGRESS OF ARTS AND SCIENCE.

TO THE EDITOR OF SCIENCE: I returned only a few days ago from Europe and, therefore, have not seen until now the letter of Professor Dewey in SCIENCE of August 28 and that of Professor Woodward in SCIENCE of September 4, both of which deal with the International Congress of Arts and Science and especially with my essay on that congress, published in the May number of the *Atlantic Monthly*.

Professor Woodward's document gives me hardly a chance for a reply, since I can not see that it contains an argument. It is only a general expression of his contempt, on principle, for every effort to classify sciences from