work. No reversal of the survey's present decline curve need be expected until adequate provision is made for such opportunities.

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Denver, Colorado,
January 22, 1920

### THE AWARD OF THE NOBEL PRIZE TO PROFESSOR HABER

To the Editor of Science: The statement of the First Secretary of the Swedish legation (published in the February 27 number of Science, p. 207), relative to the award of the Nobel Prize to Professor Haber, contains some erroneous conclusions and some half-truths which should not be allowed to pass unchallenged. While Professor Haber's perfection of the commercial synthesis of ammonia amply warrants the award of the prize to him, I would comment upon the other numbered statements as follows:

2. The production of ammonia is only a step, this product being oxidized to nitric acid and nitrates by the Oswald process. While the Haber process will ultimately be of great value to the world at large, the patents, secrets, experience and profits were all Germany's (until after the war). The first secretary omitted to state that the Haber process made Germany independent of Chile saltpeter (sodium nitrate), not only for agricultural purposes, but also for the manufacture of chemicals, dyes, and especially explosives.

3. The address of Professor Bernthsen in 1912 before the eighth International Congress of Applied Chemistry in New York, was notice to the world at large that Germany could carry on war even if the British fleet cut off the Chile nitrate supply. While giving much general information, Bernthsen did not disclose all of the essential details necessary to the successful manufacture of ammonia, and of nitrates from ammonia. Therefore during the war when this country wished to use the Haber process, it became necessary for one of our large American corporations to work out the details in connection with the War Nitrates Board.

4. The statement that "the Haber plants in Germany were erected with a view to producing agricultural fertilizers" is a half-truth. This naturally was an important object, for in war as well as in peace the army and the nation must be fed, and business go on; but even more vital to Germany's purposes was the fact that ammonia meant nitrates, and nitrates meant explosives necessary for the carefully planned war, which so soon followed the perfection of the Haber process.

5. Although the first secretary disclaims knowledge of the manufacture of gas masks in Sweden, it is probable that Germany got wood or charcoal from Sweden for gas mask purposes, just as she got iron ore. No criticism attaches to Sweden for this, and her fear of Russia and proximity to Germany across the Baltic (a "German lake") readily explain her attitude toward her powerful neighbor.

However the pro-German activities of certain Swedes and Swedish-Americans, and especially the abuse of Swedish diplomatic privileges by such Germans as Count Luxberg, of "spurlos versenkt" fame, have naturally created among the Allied people an atmosphere of suspicion against Sweden; so that, especially since Professor Haber is understood to be one of those who advised and helped develop gas warfare, it is easy to understand how many believe that the award of the Nobel Prize to him was, *at this time,* ill-advised and undiplomatic.

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## SCIENTIFIC BOOKS

*A Handbook of Physics Measurements.* By Ervin S. Ferry in collaboration with O. W. Silvey, G. W. Sherman, Jr., and D. C. Duncan. Vol. I. Fundamental Measurements, Properties of Matter and Optics. Pp. ix + 251. $2.00. Vol. II. Vibratory Motion, Sound, Heat, Electricity and Magnetism. Pp. x + 233. $2.00. New York, John Wiley & Sons, Inc. 1918.

Manuals for use in the physical laboratory have been designed from two quite distinct points of view. On the one hand, an attempt has been made to develop a series of experiments that would serve to illustrate the gen-

eral principles of physics and give the student a first-hand contact with the notions discussed in text-books, lectures and recitations. The emphasis is on the underlying ideas and the discussion of methods and accuracy of measurement is purely incidental. Books of this type are eminently suitable for students in elementary physics. On the other hand, the purpose of the manual may be to develop the theory and practise of physical measurements and to describe the construction and operation of standard measuring instruments. Such manuals are essential to the advanced student in physics and, if sufficiently comprehensive, they are useful to the student in chemistry or biology.

Professor Ferry's work belongs to the second category although a few of the experiments described would not be out of place in a manual of the first type. It is a thorough revision and rearrangement of an earlier book on "Practical Physics," by Ervin S. Ferry and Arthur T. Jones, to which chapters on sound, optics, electricity and magnetism have been added. The scope and method of the work are adequately indicated by the following quotations from the author's preface: "Only those experimental methods have been included that are strictly scientific and that can be depended upon to give good results in the hands of the average student. Although several pieces of apparatus, experimental methods and derivations of formulæ that possess some novelty appear, our fixed purpose has been to use the standard forms except in cases where an extended trial in large classes has demonstrated the superiority of the proposed innovation." "It has been assumed that the experiment is rare that should be performed before the student understands the theory involved and the derivation of the formula required. Consequently the theory of each experiment is given in detail and the required formula developed at length. The more important sources of error are pointed out, and means are indicated by which these errors may be minimized or accounted for."

Several of the methods of measurement described involve the use of instruments of special design not likely to be found outside of the author's laboratory but the greater part of them can be carried out with the apparatus that should be found in any well-equipped laboratory. The theory and manipulation of the more important modern instruments of precision are comprehensively treated and any student who has occasion to use such instruments will find these sections of the work very useful. The work is well adapted for use as a text in second- or third-year laboratory courses in physics. It should also find wide use as a reference book, in any laboratory where physical instruments and methods are occasionally used.

A. DEF. P.

## SPECIAL ARTICLES

### NOTICE OF A RECENT CONTRIBUTION TO STATISTICAL METHODS

PROGRESS in science is measured, among other things, by the extent to which the qualitative treatment of problems is supplemented by a more rigorous quantitative treatment. The introduction of quantitative methods into the biological sciences, however, is beset with unusual difficulties. The highly complex and variable nature of the subject matter generally demands the empirical procedure of the statistician rather than the deductive one of the mathematician, and this is true of many problems of physical science as well, for example, those of meteorology. One of the main difficulties to be overcome arises from the simultaneous variation in the magnitudes of the many variables concerned. Especially is this true in "field" investigations where artificial control over the variable is impossible; as, for example, in marine ecology. In order to meet this difficulty the authors have prepared a paper entitled: "The functional relation of one variable to each of a number of correlated variables determined by a method of successive approximation to group averages." The introduction is written by Wm. E. Ritter under the title: "A step forward in the methodology of natural science."

[1] *Proc. Amer. Acad. Arts. Sci.*, Vol. 55, Dec., 1919, pp. 89–133.