long been known that ammonia is rapidly decomposed into nitrogen and hydrogen by the action of red-hot iron, but the effect upon the iron has attracted less attention. The authors find that whatever the metal used, it becomes changed in its appearance and very brittle. With some metals, as iron, the action is very rapid, with others slower, but even gold and platinum cannot resist this action of ammonia. Under the microscope the metal gives evidence of having been fused or semi-fused, and of bubbles of gas having escaped through the fused metal. The authors conclude that under the influence of the ammonia a nitrid of the metal has been formed, which is stable only within narrow limits of temperature, and which is fusible at the temperature of its formation. At slightly higher temperatures than that of its formation, it is decomposed into the metal and the escaping nitrogen gives the peculiar appearance to the metal. Pure iron was found to be rendered hard and brittle by the absorption of small quantities of nitrogen and a rod of charcoal iron was made so hard that it could be used as a drill. The thought naturally suggests itself that the presence of nitrogen may play some part in the manufacture of cement steel. The results of this investigation make it clear that there is no metal of which pipes can be made for the conveyance of ammonia at high temperatures, and that porcelain is the only available material for this purpose.

### FITTICA'S LATEST TRANSMUTATION.

PROFESSOR FITTICA has been heard from again, and this time he claims to convert boron into silicon, or rather he considers boron to be an oxid of silicon, contaminated perhaps with carbon. By heating boron in a silver dish with sodium or potassium or their hydroxids, he obtains a dark, oily mass, from which carbon can be isolated by acidifying. The chief constituent of this mass, however, is silicic acid, as shown by familiar tests. The alkali was proved to be originally free from silicic acid, but no evidence is presented that the boron used did not contain silicon. Other methods for effecting this conversion were successful, but all seem to be open to the same criticism.

J. L. H.

### *CIRCULAR OF INFORMATION OF THE NATIONAL BUREAU OF STANDARDS, NO. 1.*

#### ANNOUNCEMENT OF ORGANIZATION.

BY an act of Congress approved March 3, 1901, the Office of Standard Weights and Measures of the Treasury Department was, on July 1, 1901, superseded by the National Bureau of Standards, the functions of which are as follows: The custody of the standards; the comparison of the standards used in scientific investigations, engineering, manufacturing, commerce, and educational institutions with the standards adopted or recognized by the Government; the construction, when necessary, of standards, their multiples and subdivisions; the testing and calibration of standard measuring apparatus; the solution of problems which arise in connection with standards; the determination of physical constants and the properties of materials, when such data are of great importance to scientific or manufacturing interests and are not to be obtained of sufficient accuracy elsewhere.

The Bureau is authorized to exercise its functions for the Government of the United States, for any State or municipal government in the United States, or for any scientific society, educational institution, firm, corporation, or individual within the United States engaged in manufacturing or other pursuit requiring the use of standards or standard measuring instruments.

For all comparisons, calibrations, tests, or investigations, except those performed for the Government of the United States or State governments, a reasonable fee will be charged. Provision is also made for the purchase of a site and the erection of a suitable laboratory, its equipment with the most improved facilities and the personnel necessary for the organization of the Bureau.

A suitable site has been selected in Washington in a locality free from mechanical and electrical disturbances, and yet easy of access. Plans are being prepared for a physical laboratory which will be equipped with apparatus and conveniences for carrying on investigations, and for testing standards and measuring instruments of all kinds. Also a somewhat similar building, to be known as a mechanical labora-

tory, which will contain the power and general electrical machinery, the instrument shop, refrigerating plant, storage batteries, dynamos for experimental purposes, and laboratories for electrical measurements requiring heavy currents.

The construction of the buildings will be pushed as rapidly as possible, and it is expected that they will be ready for occupancy by January 1, 1903. For the present, additional quarters have been secured in the building occupied by the former Office of Standard Weights and Measures, with a view to the organization of the bureau and the immediate development of the more needed extensions of the work heretofore carried on, such as photometric measurements, the testing of instruments for determining high or low temperatures, clinical thermometers, chemical glass measuring apparatus, electrical apparatus used to measure alternating currents, pressure gauges, and meteorological instruments.

For the present, however, the work of the bureau will be limited to the comparison of the following standards and measuring instruments, either for commercial or scientific purposes:

*Length Measures.*—Standard bars from 1 to 10 feet, or from 1 decimeter to 5 meters; base bars; bench standards; leveling rods; graduated scales; engineers' and surveyors' metal tapes 1 to 300 feet or from 1 to 100 meters.

*Weights.*—From 0.01 grain to 50 pounds, or from 0.1 milligram to 20 kilograms.

*Capacity Measures.*—From 1 fluid ounce to 5 gallons, or from 1 milliliter to 10 liters.

*Thermometers.*—Between 32° and 120° Fahrenheit, or 0° to 50° centigrade.

*Polariscopic Apparatus.*—Scales of polariscopes, quartz control plates, and other accessory apparatus.

*Hydrometers.*—Alcoholometers, salinometers and saccharometers whose scales correspond to densities between 0.85 and 1.20.

*Resistances.*—Coils of the following denominations: 1, 2, 5, 10, 100, 1,000, 10,000, 100,000 ohms; low resistance standards for current measurements of the following denominations: 0.1, 0.01, 0.001, 0.0001 ohm. Coils of resistance boxes; potentiometers; ratio coils.

*Standards of Electromotive Force.*—Clark and other standard cells.

*Direct Current-Measuring Apparatus.*—Millivoltmeters and voltmeters up to 150 volts; ammeters up to 50 amperes.

It is the desire of the Bureau to cooperate with manufacturers, scientists, and others, in bringing about more satisfactory conditions relative to weights and measures in the broader meaning of the term, and to place at the disposal of those interested such information relative to these subjects as may be in possession of the Bureau.

S. W. Stratton,
*Director.*

Washington, D. C.

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## *MEETINGS OF SCIENTIFIC SOCIETIES AND CONVOCATION WEEK.*

We call special attention to the calendar of the meetings of scientific societies which begin shortly after the issue of the present number of Science. They are as follows:

*The American Association for the Advancement of Science.* A meeting of the council will be held at the Quadrangle Club, University of Chicago, on the afternoon of January 1. Section H (Anthropology) will meet in the Field Columbian Museum, Chicago (December 31 and January 1 and 2). The next regular meeting of the Association will be held at Pittsburg, Pa. (June 28 to July 3). A winter meeting is planned to be held at Washington during the convocation week of 1902-3.

*The American Society of Naturalists* will hold its annual meeting at the University of Chicago (December 31 and January 1). In conjunction with it will meet the Naturalists of the Central States and several affiliated societies, including the American Morphological Society (beginning on January 1); The American Physiological Society (December 30 and 31); The American Psychological Association and the Western Philosophical Association (December 31 and January 1 and 2); The Society of American Bacteriologists (December 31 and January 1), and The American Association of Anatomists (December 31 and January 1 and 2).

The Astronomical and Astrophysical Society of America will meet in Washington (beginning on December 30).

The Geological Society of America will meet at Rochester, N. Y. (December 31 and January 1 and 2).