SCIENCE

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RELATIONS OF THE AMERICAN ASSO-CIATION TO THE NATIONAL ACADEMY¹

THE advancement of science, for which both the National Academy and the American Association stands, has, in the last century, come to represent a great profession of many branches. The number of professional scientists has increased very remarkably in the last half-century in our country, and it continues to increase at an accelerated rate. Science is becoming recognized as one of the important professions. A young man may now look forward with assurance to a professional career in science.

The new science profession embraces both research and teaching, the securing of new knowledge and the distribution of knowledge that has already been secured. The two are obviously closely allied, but they represent different aspects of the advancement of science, both of which are necessary. Scientific research includes investigations of both the "pure" and the "applied" kinds and these also represent different aspects of the same general endeavor, although they are not readily separated when one attempts a categorical classification. And science teaching embraces many kinds of work; from elementary instruction to the guidance of candidates for the doctor's degree of a university, from special consultation to the giving of public lectures, from the writing of popular stories on science subjects to the preparation and editing of technical contributions in the several special branches.

Coordinate with the development of this complex professional field has developed an increasing need for the organization of scientists, which has been met by the formation of many special societies, each aiming to hasten the advance of science along a particular line or group of related lines. These are devoted to the advancement of the sciences rather than to the advancement of science. Their journals and their meetings are of and for specialists.

Before the advent of these societies mathematics and the natural sciences had their general organizations in the National Academy, the American Association, the American Philosophical Society, the American Academy and a number of state academies. Their meetings tended to bring together specialists

¹ Address given at the dinner of the National Academy of Sciences, at Urbana, Ill., October 19, 1927.

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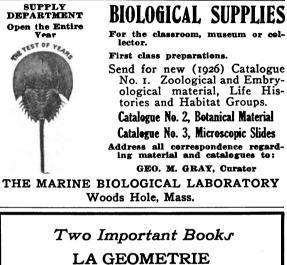
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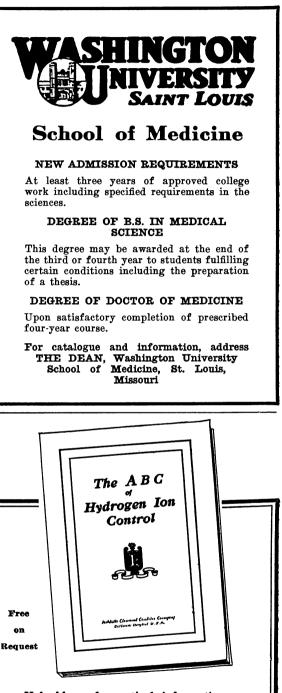
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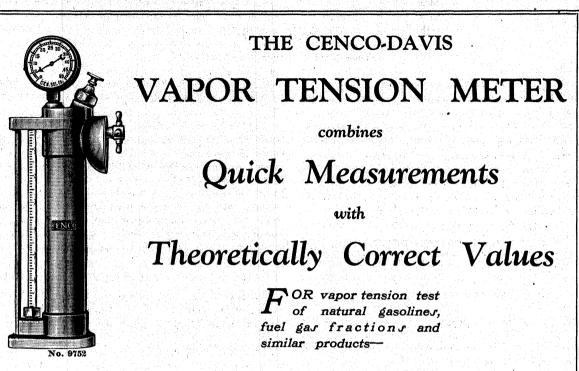
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SCIENCE—ADVERTISEMENTS



The measurement of vapor tension of natural gasolines in tank cars is required by the provisions of the Interstate Commerce Commission which limit the vapor pressure in tank cars for interstate shipment to 10 pounds per square inch. For making this measurement a vapor pressure bomb was developed by the U. S. Bureau of Explosives which has been the standard apparatus for measuring the vapor tension. There has been some dissatisfaction with this method, known as the B. E. method, because of the inaccuracies inherent in the method.

Dr. H. S. Davis, while with the laboratories of Arthur D. Little, Inc., developed a method for measuring vapor tension which possesses the advantage over other methods of giving values for vapor tension which are accurate and which check closely with results secured by physico-chemical methods. The method is based on the principle of confining a mixture of air and the vapor of the liquid under test in a closed glass tube, at atmospheric pressure, increasing the pressure by means of a pump until the volume of air and vapor has been reduced to half of the former volume, reading on a gage the pressure in pounds per square inch, and calculating the true vapor tension from the formula:

vapor tension = 2x first gage reading + 14.7 pounds (or the proper value for the locality)—the final gage reading + 0.3 pound (a correction due to the hydrostatic head in the metal reservoir tube). The Davis Vapor Tension Meter consists of a metal reservoir tube closed by cast metal caps at top and bottom, a pressure gage graduated to read 0 to 50 pounds, a graduated glass indicator tube attached to the bottom casting by a packing gland and a built-in compression pump. The top and bottom castings are extended to one side forming brackets to which is screwed a strip of metal forming a guard for the indicator tube. These brackets also serve as supports for the tube when laid on its side for filling. One side of the top casting is extended to form a bell-shaped mouth and drain spout, which may be closed by turning the hand wheel shown. The gage is graduated in single pounds from 0 to 50 pounds and has been selected of the proper accuracy for the purpose used. The pump, which is screwed into the upper casting, is provided with a one way valve which prevents leakage. The indicator tube is graduated from the top in arbitrary divisions to enable the volume of enclosed vapor and air to be considered without being compelled to adjust to a reference line.

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Dimensions: Height over all, 15 inches (37.5 cm.); diameter of metal cylinder, 2 inches (5 cm.); diameter of gage, 2¾ inches (7 cm.); length of glass tube, 9¼ inches (23.5 cm.); capacity of metal tube, about 500 cc.







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