comprise the laborious one of making detailed observations and recording data. Since June, 1940, four radio talks have been presented by the consultants of the executive staff. These talks on various phases of the committee's programs for amateurs included two nation-wide broadcasts in cooperation with the series of "Adventures in Science" of Science Service on the Columbia Broadcasting System. One result of these talks and other forms of publicity has been an increasing interest in amateur scientific programs for other sections of the country. Starting in October the committee will resume the monthly publication of its circular, "Activities in Science in the Philadelphia Area," which lists a variety of educational opportunities in the physical and natural sciences, such as lectures, demonstrations, field trips, exhibits and radio broadcasts. It also includes notices of the regular meetings of the forty amateur scientific societies in the region. An interesting development of the activities of the committee has been the formation of the Philadelphia Council of Amateur Scientists which will hold its first formal meeting on September 23. Delegates from all the active groups will be present.

Further information concerning the American Philosophical Society's Committee on Education and Participation in Science can be obtained from W. Stephen Thomas, Executive Secretary of the Committee, The American Philosophical Society, 104 South 5th Street, Philadelphia, Pennsylvania.

W. STEPHEN THOMAS

VEGETATION TYPE MAPS OF CALIFORNIA AND WESTERN NEVADA

IN order to obtain information needed in a variety of administrative and research problems, the Forest Survey Division of the California Forest and Range Experiment Station[1] has for some years been mapping the natural vegetation resources of California and western Nevada. Twenty-one of the map units have been published to date.[2] Each unit consists of a standard 15- or 30-minute U. S. Geological Survey topographic quadrangle (approximately 1- or ½-inch to the mile, respectively) on which symbol and color overprints have been placed to show, as far as the base permits, the present dominant vegetation just as it occurs on the ground. On wide margins are the legend; brief descriptions of the type classification basis and the various types found on the quadrangle; a table summarizing the type areas by counties, national forests and parks; and a profile illustrating the relationship of types to elevation and slope exposure.

Plant associations, based upon dominant species composition, comprise the primary vegetational elements mapped. These are shown in their actual relation to the topography, with symbols identifying the species involved. Any species is considered a dominant if it forms 20 per cent. or more of the total vegetation cover in associations that are wholly herbaceous, shrubby or arborescent; or like percentages of its respective class in composite associations. These percentages are applied only to the vegetation visible from above, however, since the mapping is done externally. The associations are segregated according to general similarities of use, economic importance and fire-hazard characteristics into broad types, which are designated by colors. Three of these types are classed as herbaceous, 5 as shrubby, 4 as broadleaved tree, and 10 as coniferous tree. Also shown are barren, semi-barren and desert areas, cultivated and urban lands and tree plantations.

A considerable amount of basic information concerning the present vegetation resource is thus made available for ready use. The color designations alone are ample for many purposes in which only broad classes of vegetation are involved. If it should be necessary to modify the grouping or to obtain certain details of species composition, the individual associations and their included symbols may be used. In either case the distributions may be studied in relation to location and area occupied, elevation and slope exposure. Although successional positions are not directly indicated, a knowledge of the ecological relationships of the local flora will provide the clues for such a classification.

This flexibility opens up a wide range in usefulness. In California, the maps have had important parts in many projects dealing with the protection, management and utilization of the resource they depict, and in botanical, zoological, ecological and geographical studies as well. For classroom study and demonstration their use has been wide-spread. As the significances of the different elements making up the resource become better understood, these and other uses will grow. Whatever may be lost through lack of agreement with actual conditions after vegetational changes have occurred will be more than compensated by the increasing value of a record against which conditions of the future may be compared.

Other maps of this series will be published as rapidly as funds become available for that purpose.

H. A. JENSEN

CALIFORNIA FOREST AND RANGE EXPERIMENT STATION

[1] Maintained by the U. S. Department of Agriculture at Berkeley, Calif., in cooperation with the University of California.

[2] Obtainable at the cost of printing from the University of California Press, Berkeley, Calif.

SEX VARIATION IN THE UTILIZATION OF IRON BY ANEMIC RATS

IN the issue of SCIENCE for June 28, 1940, Dr. Mary Swartz Rose calls attention to our article entitled

"Further Evidence of Sex Variations in Utilization of Iron by Anemic Rats," and states that the findings of the authors, Drs. Louise Otis and Margaret Cammack Smith, "were previously established by Dr. Helen Hubbell and reported in the *Journal of Nutrition* in January, 1938, Vol. 15, pp. 91–102." In this connection we would like to point out that in the course of an investigation using hundreds of rats, begun in 1935 in our Arizona laboratories on the hematopoietic value of foodstuffs, a marked difference in the response of male and female rats was consistently noted. At that time it was current practice in other laboratories to use male and female rats interchangeably, which gave conflicting results. Our findings were reported in a paper by Smith and Otis entitled "Sex Variations in the Utilization of Iron by Anemic Rats," which appeared in SCIENCE in January, 1937, Vol. 85, pp. 125–6, which was almost a year before the paper by Rose and Hubbell appeared. Also, a paper by Smith and Otis entitled "Hemoglobin Regeneration in Anemic Rats in Relation to Iron Intake," which included a discussion of their findings concerning sex difference, was published in the *Journal of Nutrition,* Vol. 13, pp. 557–82, in June, 1937.

We regret that in our third paper, entitled *"Further Evidence* of Sex Variation in Utilization of Iron by Anemic Rats," which is the paper to which Dr. Rose refers, no mention was made of the excellent paper of Rose and Hubbell. It would, of course, have been included in any complete review of the literature on the subject, but a review of any length is not permitted in SCIENCE. A more complete description of our iron studies is soon to appear elsewhere.

MARGARET CAMMACK SMITH
LOUISE OTIS
ARIZONA AGRICULTURAL EXPERIMENT STATION

SUGGESTIONS REGARDING A PROPOSED STANDARDIZATION OF OSMOTIC PRESSURE AS A TERM

THE proposal to standardize osmotic pressure as a term made recently in these columns[1] should meet with sincere approval. We believe, however, that such a standardization should, if possible, transcend the limits of one field of science. This is particularly necessary from a pedagogical standpoint.

As pertinent to this suggestion we would call attention to the desirability of considering osmotic pressure as the pressure that must be exerted on the solution in order to make the escaping tendency of the solvent from the solution equal to the escaping tendency of the pure solvent at the same temperature. One needs further to point out that (*a*) the addition of a solute to a solvent in general lowers the escaping tendency of the solvent molecules and (*b*) the application of an external pressure in general increases the escaping tendency of the solvent. This treatment of osmotic pressure is quite generally found in the better elementary text-books of chemistry, in the physical chemistry texts and in advanced texts.[2]

It will be observed that the suggested standardization includes the two generalizations regarding the influence of solute concentration and pressure. We propose (1) that the definite relation between these generalizations and the osmotic pressure be pointed out and (2) that reference be made to some generalized term such as "escaping tendency."

We suggest that such an amplification would improve the treatment of the term by increasing the range of applicability and by relating the phenomenon under consideration to others, such as vapor pressure effects, etc.

W. H. HALL
BOWLING GREEN STATE UNIVERSITY

SCIENTIFIC BOOKS

LIFE ON OTHER WORLDS

Life on Other Worlds. By H. SPENCER JONES. New York: The Macmillan Company. 1940.

FOR centuries man has wondered and speculated about the possibility of life on other worlds. Nowadays probably no question is put more frequently to the astronomer by the layman than "Are there men on Mars?" Percival Lowell at the close of the past century thought he had evidence for the existence of intelligent life on Mars. Alas, the modern astronomer can not concede Lowell's point. H. Spencer Jones, Astronomer Royal of England, in his recent book, "Life on Other Worlds," brings a timely and authoritative account of many aspects of the problem of the existence of life elsewhere in the universe.

Regardless of whether or not life does exist on the other planets, life can be directly observed only on the Earth. Life as we know it must therefore furnish a working definition of what shall constitute life. Complex molecules containing carbon have been found to form the basis of the structure of all living organisms on Earth. From the prevalence of the same physical

[1] H. C. Eyster, SCIENCE, 92: 171–2, 1940.

[2] The following list includes an example from each of the classes mentioned: Herman T. Briscoe: "An Introduction to College Chemistry," p. 257. Houghton Mifflin Company. W. H. Rodebush and E. K. Rodebush: "An Introductory Course in Physical Chemistry," p. 188. D. Van Nostrand Company. G. N. Lewis and Merle Randall: "Thermodynamics and the Free Energy of Chemical Substances," p. 213. McGraw-Hill Book Company.