

The conductivity measurements have brought to light a bewildering range of behavior on the part of the solutions studied. In the first place, it appears that in practically all mixtures into which water enters as one of the constituents of the solvent, the molecular conductivities show a minimum value for a certain composition of the solvent. In the second place it is shown that in mixtures of the alcohols, the conductivity follows the law of averages, that is, the conductivity of solutions in such mixtures is usually approximately the mean calculated from the conductivities of equimolecular solutions in the pure solvents. Finally, in mixtures of the alcohols with acetone, the molecular conductivities generally show a maximum value for certain mixtures.

These relations, however, hold only in broadest outline; so complex indeed are the observations that it would be useless to attempt an account of them in the limits of a review.

As the result of a long series of measurements of viscosity of mixed solvents and their solutions, there has been shown to exist a parallelism between the fluidity—that is, the reciprocal of the viscosity—of a solvent and the conductivity of its solutions, whence it is concluded that electrical conductivity is largely dependent upon the fluidity of the solvent. The parallelism between fluidity and conductivity is shown to be only approximate, however, for upon the effect of fluidity on conductivity is superimposed the effect of the degree of dissociation of the solute and also the size of the sphere of solute which is assumed to be in combination with the ion and to affect the speed with which it travels through the solution.

The experimental results are discussed at length and hypotheses are offered in explanation of the diminished fluidity of the solvent mixtures containing water; of the increased fluidity of certain mixtures of the alcohols and acetone; of the approximately normal behavior of mixtures of the alcohols with respect to fluidity; of the obvious dependence of electrical conductivity on

fluidity; of the observed deviations of the conductivity curves from the fluidity curves; of the effect of temperature on the conditions prevailing in solutions in mixed solvents; of the effect of the presence of ions of high atomic volume on the viscosity of solvents; and of what seems to be the greater ionizing power of certain mixed solvents over that of either constituent of the mixture.

Altogether a very extended series of relationships have been discovered and a number of ingenious hypotheses have been offered which are certainly of the greatest importance as contributions to our knowledge of solutions.

E. C. FRANKLIN

Elementary Experiments in Psychology. By CARL F. SEASHORE, of the University of Iowa. Pp. 218. New York, Henry Holt & Co. 1908.

Had this very valuable manual appeared a few weeks earlier, a notice of it would have been incorporated in the review of Professor Judd's handbooks of psychology (SCIENCE, May 15, 1908). Like the Judd volumes it testifies to the increasing need of serviceable handbooks for the presentation of the experimental attitude to students of mental processes. Like the Witmer handbook, Professor Seashore's manual contains within its own covers (with the aid of a few simple properties to be found in every household) a considerable range of experiments illustrative of psychological principles. Unlike the Witmer volume, it is not at the same time a text, but merely a companion manual to any text or course. It should be said with the brevity as well as with the emphasis characteristic of the book itself that it accomplishes its purpose with exceptional skill. Its appeal is to a very general clientele. There is hardly a course in psychology so brief or elementary as not to make possible the introduction of the experimental method on the scale provided by Professor Seashore. Let it also be said that while the scope of the work is elementary, its spirit and discernment are sufficiently advanced to arouse in all disposed thereto a proper "student" psycho-

logical reaction. Always direct, terse, clear, explicit, the directions lead unmistakably to the illustration of principles. No more suitable treatment for the purpose in view could be wished for. Its only fault is freely admitted: the selection of experiments in part for their ease of execution without facilities, and hence a rather uneven range of importance and significance. For beginners' courses in psychology of modest scope the manual may be warmly recommended.

J. J.

SOCIETIES AND ACADEMIES

THE IOWA ACADEMY OF SCIENCE

THE twenty-second annual meeting of the Iowa Academy of Science was held at the State Normal School at Cedar Falls on Friday and Saturday, May 1 and 2, with twenty-seven members in attendance.

The president of the academy, Professor John L. Tilton, of Simpson College, gave the presidential address on the subject, "Science required for a General Education." The evening lecture was given by Professor Moulton, of Chicago University, on "Old and New Theories of the Formation of the Earth." The lecture was a critical comparison of theories and was illustrated by most excellent stereopticon slides.

Friday afternoon and Saturday forenoon were devoted to the reading and discussion of papers. A few of the papers were read by title while the others were read in full and quite thoroughly discussed.

Resolutions were adopted with reference to the death of Lord Kelvin, and also with reference to the use of the metric system of weights and measures. The latter resolution is as follows:

WHEREAS, the metric system possesses great advantages over the system now in common use and is being adopted more and more throughout the world, and is used without difficulty, with facility and satisfaction, in American shops upon foreign work, be it

Resolved, That the Iowa Academy of Science again express its conviction that the exclusive use of this system for all public transactions is highly desirable, and be it

Resolved, That Congress be urged to pass legislation looking towards the introduction of the metric system for general use in the United States at as early a date as possible.

Officers elected for the ensuing year are:

President—Samuel Calvin, State University of Iowa.

First Vice-president—Frank F. Almy, Iowa College.

Second Vice-president—S. W. Beyer, Iowa State College.

Secretary—L. S. Ross, Drake University.

Treasurer—H. E. Summers, Iowa State College.

Elective Executive Committee—D. W. Morehouse, Drake University; R. B. Wiley, State University of Iowa; Louis Begeman, Iowa State Normal School.

The program as presented is given below. The brief abstracts accompanied the papers at time of presentation.

Review of Solar Observations made at Alta, Iowa, during the Past Five Years: DAVID E. HADDEN.

A brief review of sunspot observations during the years 1903 to 1907.

The Vitality of Weed Seeds under Different Conditions of Treatment and a Study of their Dormant Periods: H. S. FAWCETT.

The object of the investigation recorded in this paper is to make a comparison of viability of different species of weed seeds, especially those found in cultivated fields and pastures, and to study their dormant periods in order to determine possible means of destroying these weeds. Plantings were made under out-door and in-door conditions. Conclusions: that seeds require a rest period; that natural conditions shorten this dormant period; that best germination indicates fall and spring as the two natural periods; that in general, percentage of germination was low. The paper is accompanied by tables summarizing the experiment.

Some Seeds of the Genus Pyrus: L. H. PAMMEL.

A brief study of the minute morphology of the seeds of the more common cultivated apples along with the specific gravity. The differences in some of the forms is quite marked,