be determined by linearly extrapolating the results for low D_2O concentrations.

One of the experiments on the chemical kinetics in D_2O is the velocity change of the reaction between hydrogen peroxide and hydriodic acid through the displacement of protium by deuterium atoms.[5] The time of the first 10 per cent. conversion of a solution of 0.01 n Hl by H_2O_2 is measured in mixed aqueous media containing 0, 19, 50 and 73.7 ml D_2O at 20°. The reaction volume is 1 ml. The end point is indicated by the blue coloration of iodostarch after the iodine corresponding to the 10 per cent. conversion has been removed by 0.001 m $Na_2S_2O_3$ previously added. The results are extrapolated to 100 per cent. D_2O. It is concluded that the reaction $D_2O_2 + I^- — D_2O + IO^-$ in D_2O proceeds 0.60 times as fast as the corresponding reaction $H_2O_2 + I^- — H_2O + IO^-$ in H_2O.

Another similar experiment is the reduction of the permanganate ion by hydrogen peroxide in heavy water.[6] A solution of 0.001 *n* $KMnO_4$ in 0.05 *n* H_2SO_4 is reduced by H_2O_2 of various concentrations at 20°. Mixed aqueous media containing 0, 28.7, 47.8 and 79.6 mol per cent. D_2O are employed. Extrapolation of the results 100 per cent. D_2O leads to the conclusion that the autocatalysis of Mn^{++} ion proceeds more quickly in the presence of D_3O^+ in D_2O than in the presence of H_3O^+ in H_2O, the maximum increase of velocity being 50 per cent. Further, D_2O_2 reacts directly with MnO_4^- in D_2O with a rate equal to only 15 per cent. of that of H_2O_2 in H_2O. In the transitional region the velocity ratio drops down to a minimum of only 2.5 per cent., the reaction involving deuterium being slower.

Besides, heavy water is used to hydrolyze sodium and aluminum ethylate respectively.[7] The obtained ethyl alcohol-d, C_2H_5OD, purified by distillation in vacuum, boils at 78.8° and weighs 0.801 g/ml at 25°.

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"THE PERMEABILITY OF LIVING CELLS"

WE have received a number of letters from interested people inquiring about the fate of the monograph which we wrote for the Protoplasma series, entitled "The Permeability of Living Cells." Since there seems to be some interest in the subject, we would appreciate this notation concerning the book.

In 1929 I was invited by the editors of the Protoplasma series, in collaboration with Mrs. Brooks, to write a volume on the "Permeability of Living Cells." This was finished in 1939, before we entered the war. Through various censorship delays at Bermuda and on ships, we were not able to get the final book out of Germany before we entered the war. We tried to get some copies imported through Stechert in New York for the various libraries and for others, but the Treasury Department refused a license. Dr. Joseph Needham, of Cambridge, England, interested himself in this, and through his efforts and those of Sir Henry Dale, the president of the Royal Society, and of Dr. A. V. Hill, the secretary of the Royal Society, the Ministry of Economic Warfare of Britain gave permission to have the book brought in through England. However, in spite of this, the U. S. Treasury still refused to grant us a license. Following this, various members of the National Research Council, the National Academy of Science, the American Physiological Society and the Office of Scientific Research and Development of this country have tried to get the book passed by the Treasury Department without success.

We made a personal visit to the Treasury Department in Washington and were given a "conference" by a Mr. Wechsler, formerly of New York. We were given a "dressing down" and told in a none too pleasant tone that we could be accused of "trading with the enemy."

After returning to the west coast again, we took the matter up with the Foreign Funds Division of the Federal Reserve Bank in San Francisco and asked permission to get a few free copies out through Switzerland. They gave us a license expiring in a month, and our letter to Switzerland was returned "Service discontinued" after a considerable time.

The American Library Association became interested, but since the book was not on the original list of foreign books to be imported, they said that nothing could be done by them.

Finally, through the efforts of various libraries and scientists who wanted the book, the matter was brought to the attention of the Alien Property Custodian of this country who asked us for a copy so that it could be reprinted!

The book is a critical analysis of various problems relating to the intake of salts, water, drugs, dyes in such things as cells, blood, serum, the various tissues and organs. It is without doubt a book which would facilitate the research being done in these various fields, being a critique and having over 3,000 references.

The present status is that we have the page proof with corrections, but this is evidently not satisfactory for filming, such as is the work of the Alien Property Custodian.

[5] Tsing-Lien Chang and Yu-Chih Wei, *Jour. Chinese Chem. Soc.*, 8: 138, 1940.

[6] Tsing-Lien Chang and Yu-Chih Wei, *Science Record*, L: 132, 1942.

[7] Tsing-Lien Chang and Yu-Chih Wei, *Sci. Rep. Nat. Tsing Hua Univ., loc. cit.*, p. 10.

It is interesting in this connection to reread the resolution passed by the American Association for the Advancement of Science[1] on "Intellectual Freedom":

> We regard the suppression of independent thought and of its free expression as a major crime against civilization itself. Yet oppression of this sort has been inflicted upon investigators, scholars, teachers and professional men in many ways, whether by governmental action, administrative coercion, . . .

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MATHEMATICS IN A NUTSHELL

ONE of the prominent features of the recent mathematical developments in our country is the rapid increase in very brief mathematical text-books which are largely intended for the use of students in the army and the navy. While these text-books may serve an actual need it should be remembered that they do not conform with the real nature of mathematics, which involves an unrestricted inquiry into the mathematical elements of our surroundings. Even the large text-book fails to give full freedom to the inquiring student, but it does not impose as many restrictions as the smaller text-book, where the arousing of interest along one line of thought is too rapidly followed by a change of subject.

Unfortunately, there is a tendency to imply that the small text-book contains all that is really important in regard to the subject under consideration. A somewhat extreme instance of this kind appears on page 418 of E. T. Bell's book entitled "The Development of Mathematics" (1940), where it is stated that "in permutation groups, for example, the first week of school algebra will give the prospective calculator all the manipulative skill he needs." Manipulative skill is often a great asset to the mathematician and after it has been acquired one often wonders why it took so much effort to acquire it, but it is unfortunate to understate the actual situations. Its acquisition usually requires persistent efforts on the part of the beginner, as has been experienced by many.

In view of the recent tendency to begin with a very brief text-book on a mathematical subject and to follow it later with a more advanced treatise it may be desirable to refer here to a subject where the opposite procedure was followed and to note some of the advantages which resulted therefrom. In 1870 there appeared under the title "Traité des substitutions" the first text-book on the theory of permutation groups. Its size of xviii + 667 large pages is the more remarkable in view of the fact that when it appeared much less was known about this subject than is known at the present time. Not only was it the first text-book on the subject of permutation groups, but it was also the first text-book on the subject of groups in general or any part thereof, and it therefore exhibits the modernness of this subject.

As late as 1926 the widely known mathematician, Felix Klein, said on page 338 of his "Entwicklung der Mathematik," volume I, that Camille Jordan traversed, in particular, all of algebraic geometry, number theory and function theory to find interesting examples of permutation groups which he then embodied in his text-book. The great wealth of material thus obtained is an important element of the history of group theory and explains to some extent why this subject gained so rapidly in prominence during the latter part of the nineteenth century when American mathematical contributions began to receive wide European recognition largely as a result of the foreign training of their authors.

Hence the extensive introductory text-book on a mathematical subject may also render very valuable service and one may wonder whether our modern tendency towards the very brief mathematical text-book for the beginner is a wise one. At any rate, it may be of interest to observe that a subject which gained so rapidly in the appreciation of the mathematical public as group theory did was introduced in a different way in recent times. It is possible that in the very brief mathematical text-book the student loses too much of outlook for the sake of avoiding difficulties and this outlook is often more inspiring than the simplicity which the very brief text-book usually provides. Many students are not averse to difficulties provided they are surmountable, and it seems worthwhile to make the effort to surmount them.

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SCIENTIFIC BOOKS

CITROLOGY

The Citrus Industry. Volume I. *History, Botany and Breeding.* Edited by HERBERT JOHN WEBBER and LEON DEXTER BATCHELOR. Pp. 1028. 233 illustrations. University of California Press. 1943.

DR. WEBBER, when teaching citriculture in the College of Agriculture at Berkeley, planned to write a one-volume text-book. For four years he worked on this, but his notes and manuscripts were lost in the big Berkeley fire in 1923. Two years later he was transferred to the Citrus Experiment Station at Riverside, and returning to his project of a book came

[1] *A.A.A.S. Bulletin,* Vol. 2, January, 1943.