complete coverage will arise because of the question of the meaning of the term "concentrated solutions." The author states that "As concentrated solutions I choose to consider arbitrarily systems between 10 and 90 per cent by weight; I left also out of consideration data relating to dilute solutions, if there is only one measure between 10 and 20%." This is not altogether clear. While it suggests that the tables would give no data outside the range 10–90%, there are actually very many tables covering very low concentrations at one or both ends of a system. When such information is not given, the reader will not know whether it was omitted according to plan or whether the literature contains no such data.

Many of the systems are covered in great detail, while some are given with just three points, the pure components and one binary point, as for the over two thousand azeotropes cited from Lecat's book (1949). (The rest of Lecat's 6287 azeotropic systems will presumably be included in the subsequent volumes, but Lecat's information on "zeotropes," altogether 7003, seems to have been ignored.

As a mechanical compilation this is quite unlike any other collection of numerical data, in that there is no averaging, no critical selection, of values. It simply presents the numbers as they were originally published. The densities of benzene–toluene solutions, for example, appear in nineteen consecutive tables, some long, some short, from the year 1896 to 1956. The author adds no comments on relative dependability, and the number of "significant figures" is left as in the original papers. The density of benzene itself, for just 25°, appears about 100 times in the Volume, many of the entries being from the same source. They cover a range from 0.8696 to 0.87661 (in one case 0.871651, from 1919). There are also the values 0.86035 and 0.8617; these are not "sports," however, but the result of the reversal, either of order or of meaning, in the composition column. The range almost overlaps that for the density at 20°(about 70 entries): 0.8760 to 0.8809, not counting one value, inexplicable, of 0.8710, and including 0.878434, from 1910.

Personally I think that this is not as valuable as would be a compilation of selected data, a thing which Dr. Timmermans undoubtedly could have done with ability and authority. But it would not have been possible without much more help than he used. And there will certainly be those who will appreciate what he did do. It is somewhat like scanning the original articles themselves, at least for the results reported in them. Some of the older items are hardly more than of historical interest. In some cases the mass of figures tabulated would require quite a labor of plotting to deduce the "physico-chemical constants" which they determine. This is the case with the pressure–volume–temperature–concentration data for the liquid–vapor relations of the system benzene–ether, given in two tables, one from 1881 and an extremely extensive one from 1908.

A more or less careful perusal of the tables has revealed certain occasional faults. In a few cases, some symbols or functions are not adequately defined, and it is consequently not clear what relation is represented by the numerical values; this happens a few times for the symbols C, C_1, C_2, meaning a solid, undefined, in certain complex phase relations involving liquid immiscibility and liquid–vapor critical phenomena. Symbols are occasionally confused, such as p (=mm.) and P (=atm.). A condition such as the temperature is sometimes omitted. Some numerical values are wrong, as seen simply from the break in trends.

By ironic accident, the very first page of the book has some strange things. The opening table gives diffusion coefficients in the system "methane (CH_4) + tritiummethane (CH_3T)"; but these were simply measurements made with tritium-tagged methane, and one could hardly be farther from "concentrated solutions" even with reagent grade materials. The third table, still on page 1, gives liquid–vapor compositions for methane–ethane; the figures looked strange, and it turns out that "%" (to be understood throughout the book as referring to the second component, here ethane) should be "% methane," and that all the temperatures listed (Centigrade) should be negative. The fourth table on p. 1 (extending to page 2), for the same system, also has strange looking figures; nine of the numerical values were either miscopied from the original or spoiled in printing. There are a few more errors on pages 2 and 3, including confusion between weight and mol % in both Table 5 and Table 6. This checking takes time, because, to repeat, the bibliography is missing. There was at least one small error on each of four more pages chosen at random for checking.

Such occurrences are not surprising in a compilation of this magnitude. In the expectation that there are not too many of them, I would say that they should not seriously impair the general usefulness of the book, particularly for the searcher, already somewhat familiar with the specific substances he is investigating.

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Some Problems in Chemical Kinetics and Reactivity. Volume 2. By N. N. SEMENOV. Translated by MICHEL BOUDART. Princeton University Press, Princeton, N. J. 1959. 330 pp. 15 × 23 cm. Price, $4.50.

This is volume II of a two-volume work. Volume I was reviewed earlier (THIS JOURNAL, 81, 2916 (1959)). The present volume includes in an appendix a number of minor additions to Volume I, including a brief section on heterogeneous catalysis in biology.

The major sections comprise Parts III and IV of the work. Part III is a discussion of Kinetics of Chain Reaction, with particular emphasis on competition between chain reactions and direct or molecular reactions. Examples of decomposition and pyrolysis, oxidation and halogenation, polymerization, etc., are discussed. Part IV deals with branched-chain reactions and thermal explosions. Chain ignition, with detailed consideration of hydrogen–oxygen system, chain interaction, and reactions with degenerate branching are the major topics. This section includes a number of interesting comparisons with Semenov's earlier book on chain reactions, published in 1935.

There are also two appendices on the activated complex and on quantum-mechanical calculations of activation energies.

With this additional volume there are now available a two-volume version of this work from the Princeton University Press, and a one-volume version from Pergamon Press (THIS JOURNAL, 81, 2917 (1959)). The present edition is a paperback one; but this reviewer finds the translation by Boudart somewhat smoother to read than that of Bradley. Furthermore, the two volumes of the American edition now make available the section on branched-chain reactions and explosions (Part IV), which was not included in the British edition.

Those interested in kinetics of chain reactions, combustion and explosions will find this volume a very effective extension of the discussion of the present status of the field.

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Einführung in die Theoretische Organische Chemie. By HEINZ A. STAAB. Verlag Chemie, G. m. b. H., Weinheim/Bergstr., Germany. 1959. xii + 760 pp. 18 × 24 cm. Price, DM 46.—.

"Introduction to Theoretical Organic Chemistry" is based on lectures given to advanced students at the University of Heidelberg. It deals exclusively with the structure of molecules, and therefore leaves out a good part of what is generally considered theoretical organic chemistry, namely, that part which deals with kinetics, reaction rates and mechanisms. For many, these may be the more important aspects; they are certainly the more complex ones, for, whereas there are many methods available by which to study static molecules, our techniques for studying transition states are much more limited. Nevertheless, this omission is not necessarily a drawback, if the scope of the book is recognized. In fact, this is a good and intelligently written book, and although it draws mainly on work done in the last few decades in this country and in England, no comparable volume, written by a single author, is available in English.

The range of the book is indicated by listing some of the contents. Of the five chapters which comprise the book, the first deals with the chemical bond. The valence-bond and molecular-orbital treatments are discussed in the now familiar semi-mathematical, descriptive terms, and applied