

is considerable overlap in the presentation of theories of the liquid state in chapters 4, 6, and 7. A reasonable editorial effort should have eliminated these defects.

LECTURES AT HEIDELBERG

PHYSIKALISCHE CHEMIE. Ein Vorlesungsskript (2nd ed.). By Klaus Schäfer. 432 pp. Springer-Verlag, Berlin and New York, 1964. DM 36.

by *M. E. Straumanis*

Klaus Schäfer is a well known professor of physical chemistry at the University of Heidelberg. The book originated from lectures given to students of chemistry there.

The outline of the book follows the same pattern as proposed by the School of Eucken. A large part of the text (about 150 pages) is devoted to thermodynamics, especially chemical thermodynamics, whereby the calorie is still used, although the value in joules is mostly added. However, the other parts of physical chemistry are not at all neglected: following thermodynamics, on about 50 pages electrochemistry is discussed, and then on 20 pages chemical kinetics. The first 56 pages of the book are devoted, according to the old pattern, to gas laws, liquids, diluted solutions, and the kinetic theory. However, already on page 13, Maxwell's velocity distribution law is introduced.

The last 142 pages deal with the structure of matter, starting with the old quantum theory of atoms, and continuing with wave mechanics (de Broglie, Heisenberg, Dirac, Schrödinger), in application to various chemical bonding problems, such as formation of molecules, organic compounds, and crystal lattices, including the structure of metals. Some facts and thoughts concerning nuclear chemistry, nuclear energy, and the structure of nuclei are added.

There is no colloid and surface

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Professor Straumanis, who is now at the University of Missouri at Rolla, was for many years a professor of chemistry at the University of Latvia. During this time he worked and studied in Germany on a number of occasions.

chemistry, no photochemistry, no x-ray analysis, and there are no phase diagrams, since these topics are covered in separate, special courses in Germany. No exercises are given in the book, although the application of many equations is sufficiently explained.

The book is very concise and uses mathematics extensively. There is hardly a page without equations and there are no superfluous words in the text. All mathematical expressions are given in a form which permits their derivation. Hence, the mathematical requirements are not low: one has to have a good knowledge of the operations of differentiation and integration, differential equations, and analytical geometry. However, the author warns the student not to overestimate the significance of the mathematical tool in its application to physical chemistry.

It seems to the reviewer that in some parts of the book, the mathematical language is too heavy for a chemistry student, but the difficulty is balanced by the very clear writing and appropriate explanations in the text. The book can be recommended to those, who in addition to the requirements mentioned above, have a sufficient knowledge of German. There are no bibliography and no author index in the book. It is well printed and makes, like many other Springer editions, a good impression.

THE PUNISHMENT FITS THE CRIME

THE NEUTRON BEAM MURDER. By Terry Johnson King. 190 pp. Abelard-Schumann New York, 1965. \$3.50.

by *Dietrick E. Thomsen*

Murder by neutron beam is one of the more appalling possibilities provided by modern technology to the vindictive and envious. It is not difficult to accomplish if the victim is doing an irradiation experiment at a reactor and the murderer can get in and secretly replace the beam shielding with balsa dummies. It might also provide nontraditional difficulties for coroners and other forensic physicians, but in this novel they do not get into the act. From the first page, the reader

knows who the murderer is, and the interest is on the means he uses to accomplish his objective (the crime occurs about halfway through the book) and what happens afterward. Such detective work as occurs is done ad hoc by, of all people, a university vice president.

Mrs. King's novel differs from most of the genre in another respect: It is not simply an amusing criminal mystery; it has also the aspects of a medieval morality play. The author is the wife of a nuclear engineer at the University of Miami and seems to have had much opportunity to become familiar with the soul searchings of scientists about their responsibility for the use of the destructive inventions of recent years. She has written something of a nightmare for these people.

Houston Rutherford, chairman of the physics department in a fictional Florida university, is a man of peace and goodwill. In the same department is Rutherford's villain and victim, one Crozier. Crozier is working on a way to seed nuclear bombs with radioactive cobalt, thereby to kill and overkill.

Rutherford thinks that Crozier will become director of a new institute and gain the opportunity to push his nefarious research to the ultimate limit, and this is likely to mean doom for the human race. Rutherford decides to kill Crozier. The horror in the story arises from contemplation of the evil that a well meaning man can do when he once decides that the salvation of the world depends on him and loses trust in the good intentions of his fellows.

The book is not likely to get any prizes for style, but Mrs. King's prose is easy reading when she keeps it tight. When she lets it go, the result is sometimes baroque. The dialogue occasionally sounds a little contrived too. Her people sometimes talk as if they were in a movie instead of life. Nevertheless, it is an engaging and readable book. The plotting is good; very few occurrences are suspected beforehand, and the end is something of a poetic-justice reverse twist for a man of Rutherford's character.

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Dietrick E. Thomsen is editor of the PHYSICS TODAY book department.