particles obtained through differential centrifugation appear in three chapters, while another section is devoted to similar particles in plant cells. It is apparent that problems like those of the biochemistry of sarcosomes, Golgi bodies, and rat liver particles need considerably more careful and exact research. The reader may here see where chemical contaminations of cell fractions must be avoided and can form a judgment on the growing importance of investigating the physics and chemistry of cells as *living* functions.

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Clinical Toxicology of Commercial Products. Acute poisoning (home and farm). Marion N. Gleason, Robert E. Gosselin, and Harold C. Hodge. Williams & Wilkins, Baltimore, Md., 1957. 1160 pp. $16.

This large manual is designed to guide physicians in quickly identifying and treating poisonings from commercial products. It is extremely well arranged and comprehensive. A unique frontispiece is a flow sheet of the procedure to be followed by the user and a guide to the differently colored sections to which he will turn.

The first section (white) is on emergency and first-aid treatment. Here are considered the imperative measures, necessary often within minutes, which should be carried out while more specific procedures are being arranged. The induction of vomiting or gastric lavage, for instance, is considered, from the standpoint of technique and indication.

The second section (blue) is an ingredients index of more than 1000 chemical substances. If the poison is known, this section should be consulted next in order to get a thumbnail statement about the poison and a reference to definitive treatment in the third section. The chemicals listed are primarily those commercially available and likely to be found in the home or on the farm. Drugs and natural substances are specifically omitted, although even here the authors have wisely included certain items, especially generic ones. Thus, *Amanita* and Jimson weed poisons are listed, and scopolamine and digitalis, but not synthetic and prescription drugs like the sulfonamides or chlorpromazine.

The third section (white) is the therapeutics index. This is the section in which the physician will find the specific instructions he wishes. The other sections mainly furnish different approaches to this section, the starting place depending on the type of information at hand. Thus, the second section, already mentioned, furnishes the approach when the active ingredient is known. There are 68 compounds or classes of compounds in this therapeutic section, which are prototype examples that cover the field. Thus, in section 2, under zinc one finds a reference to copper in section 3, copper being the example to serve for several metals. The therapeutic material starts with general considerations of toxicology and symptomatology, followed by clearly outlined treatment measures.

The fourth section is subsidiary to the third and describes supportive or general measures, such as the management of shock or suicidal disorientation.

The fifth section (yellow) lists, in more than 800 pages, some 15,000 trade names of poisonous or potentially poisonous products and the contained ingredients. From the critical ingredients one is led back to the second section for a reference to the specific treatment, in section 3. This progress through sections sounds complex but is, in fact, very easy, once the general system of the flow sheet is understood.

The sixth section lists general formulations, first in an index and then by general formula. Thus, if all that is known is that a suspected substance is a white tire wall cleaner, one is led to the general ingredients of tire cleaners and then to the ingredient section, as before.

Finally, there is a manufacturers' list, suggesting sources for further information.

The volume represents a vast amount of work. Certainly nothing so formidable has been prepared before in the field. Although the authors have bent every effort toward usefulness in specific accidents, the book will also have tremendous value as a reference volume. It should come to be a classic source of general toxicological knowledge for academic purposes as well as an invaluable guide to the treatment of individual patients.

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Thermodynamics. An advanced treatment for chemists and physicists. E. A. Guggenheim. North-Holland, Amsterdam, ed. 3, 1957 (distr. by Interscience, New York). 476 pp. Illus. $9.75.

The third edition of this well-known monograph contains several important revisions, so that the chapter headings now read as follows: (i) "Introduction and fundamental principles," (ii) "Digression on statistical thermodynamics," (iii) "Some relations of general validity," (iv) "Systems of a single component," (v) "Gaseous, liquid, and solid mixtures," (vi) "Solutions, especially dilute solutions," (vii) "Systems of chemically reacting species," (viii) "Solutions of electrolytes," (ix) "Electrochemical systems," (x) "Gravitational field," (xi) "Electrostatic systems," (xii) "Magnetic systems," (xiii) "Radiation," and (xiv) "Onsager's reciprocal relations."

The principal changes relate to the chapter on mixtures and the following one, on solutions, which originally comprised several chapters. The present condensation and revision represent a marked improvement. Perhaps the most important addition is the use of excess molar functions to describe the deviation of a mixture from ideal behavior. The brief introduction, in the last chapter, to the modern theory of irreversible processes appears in this edition for the first time. To simplify matters, only isothermal systems are discussed. It is strange, therefore, that electrokinetic effects and the electric double layer are considered, whereas the important and relatively simple case of isothermal diffusion in multicomponent systems is omitted. Further changes are in the fourth chapter, where there is a new discussion of sorption, and in the ninth chapter, where the pseudothermostatic theory of galvanic cells with transference has been eliminated. The page size has been reduced, which makes for easier reading.

The text is clear, well written, and scientifically accurate. However, there are several points worth discussing in the way of criticism. (i) The consequences of the phase rule seem to be ignored in several places. For example, the Duhem-Margules equation is really an approximation, since a two-phase, two-component system has only two independent intensive variables. However, in section 5.21 it is presented as though it were exact. The following section, 5.22, on pressure dependence is not sufficient to clarify the situation. Similarly, the definition of fugacity in condensed phases (sections 4.51 and 5.19) seems to imply that a gas phase always exists in equilibrium with a condensed phase. (ii) The position that it is entirely meaningless to consider differences of electric potential between phases of different composition (section 9.03) is no longer accepted by many experts, who believe that the difficulties are experimental, not conceptual, and may be overcome eventually. Professor Guggenheim is entitled to his views, of course, but an authoritative treatise should at least mention the existence of contrary opinions, and the several dogmatic statements in chapters 8 and 9 should be replaced by more critical comments. (iii) The discussion of the third law rests largely on results of statistical mechanics which are presented without