book is its beautiful organization. Consisting of 16 chapters of approximately 14 pages (± 3) each, it really touches on almost all experimental and theoretical points of fundamental interest in liquids. By leaving out entirely some derivations found in standard textbooks on quantum mechanics and statistical mechanics (giving instead references to specific equations in these books) Egelstaff manages in general to give a good account of almost all the topics. He also has managed, and for this he deserves really high praise, to make the best tables and graphs that I have ever seen. Table 1.1, which compares the physical properties in the liquid and solid state of argon and sodium, alone is worth half the price of the book. This inclusion of liquid metals in a book on liquids is, as far as I know, a novel feature, and to me a most welcome one.

Having praised the book so highly I very much regret that it also has some shortcomings which will reduce its usefulness to graduate students and "outsiders" wanting to learn about liquids. In many places brevity is carried to the point of confusing the reader, and the confusion is made worse by the absence of references in these places. Also there is sometimes confusion about factors and scales. To cite a few examples: the definition of the grand canonical pressure in Eq. 2.25 is different from the "usual" one. The difference disappears when the size of the system becomes infinite, a limit which is not mentioned at this point but which is brought in unnecessarily and confusingly following Eq. 2.32. In Eq. 3.4 $\phi_R\{r_j\}$ is (from the context) the wave function of all electrons (in two atoms) but the text says "where $\phi(r_j)$ is the electronic wave function of the j*th* electron," which makes no sense. In Eq. 6.12 the factor N^{-1} appears unnecessarily. This is compounded when Eq. 6.13 again has the same factor in a way which is inconsistent with 6.12. I could not follow Sec. 6.6 and could find no reference. The horizontal scale of Fig. 7.3 should be multiplied by $6/\pi$. The faults are of the kind that can be remedied relatively easily. I very much hope that they will be for the next printing so that the book can play an important part in aiding the study of liquids.

The book by Pryde, which does not contain the word "introduction" in its title, is of a much more introductory nature. It deals exclusively with classical fluids and devotes only a small portion to nonequilibrium properties. The style of the book is very relaxed, almost chatty, the opposite of Egelstaff's book. The experiments done by Scott and Bernal on steel balls in various containers are described interestingly. So are Monte Carlo and molecular dynamic methods. In general, qualitative explanations are given whenever possible. All in all, the book is pleasant and well worth reading. It could be used to form part of an undergraduate or graduate course on the properties of matter.

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Lipids

An Introduction to the Chemistry and Biochemistry of Fatty Acids and Their Glycerides. F. D. GUNSTONE. Chapman and Hall, London, 1967 (distributed in the U.S. by Barnes and Noble, New York). x + 209 pp., illus. $10. Second edition of *Introduction to the Chemistry of Fats and Fatty Acids.*

This book is meant to be a critical introduction to lipid chemistry and biochemistry for the advanced undergraduate and the graduate student. Gunstone has successfully reviewed with an appropriate amount of detail the chemistry of fatty acids and their glycerides. Phospholipids, although omitted from the title, are briefly discussed. The description of the biochemistry of these compounds is less successful.

Especial emphasis seems to have been given to recent methodological developments in the isolation and characterization of fatty acids and glycerides. This is as it should be. The range of fatty acids that occur naturally is bewilderingly complex and varied. The fatty acids can be isolated and separated only by the skillful application of the recently developed techniques of gas-liquid and thin-layer chromatography. Indeed, the immense variety of these acids and their derivatives has been fully appreciated only with the application of these techniques. Classical methods of structure determination are described, but the importance of infrared and nuclear magnetic resonance spectroscopy, of x-ray diffraction, and of mass spectrometry is fully recognized.

Most of the book is devoted to a description of the chemistry of fatty acids; their structure; their chemical synthesis, reduction, and oxidation; and their physical-chemical properties. The references at the end of each chapter, though few, are carefully selected, often to reviews, and usually very recent. Many statements in the text, however, are not documented by specific reference or covered in the reviews that are cited. This is, perhaps, appropriate for an introductory survey, but it will make it more difficult for the reader to explore many questions in greater depth.

The only disappointment in this otherwise admirable text is the brief treatment given to lipid biochemistry. In the one frankly biochemical chapter the allotted 20 pages are sufficient for only a superficial description of the major pathways of synthesis of saturated and unsaturated fatty acids, glycerides and phospholipids, and of the mechanism of β-oxidation. Elsewhere in the book mention is made of the distribution of the fatty acids among plants, animals, and microbial species, and phylogenetic aspects are briefly alluded to. Nowhere are the major problems of fatty acid transport, effects of hormones on lipid metabolism, or the role of lipids in the structure and function of biological membranes mentioned.

This book, then, is an extremely well-written and concise description of the chemistry of fatty acids but gives no indication of why these compounds are of interest to so many biologists.

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Effects of Radiation

Radiation Research. Proceedings of the Third International Congress, Cortina d'Ampezzo, Italy, June–July 1966. G. SILINI, Ed. North-Holland, Amsterdam; Interscience (Wiley), New York, 1967. xvi + 927 pp., illus. $39.

This book contains the proceedings of 12 symposia that were held at the Third International Congress of Radiation Research. Most of the 58 papers which make up the symposia present, in depth and at an advanced level, current ideas about the effects of radiation. There is considerable merit in having ultraviolet and ionizing radiation and photodynamic effects discussed in one book where they can be compared.

Both the fundamental physical interaction of radiation with matter and the

secondary biological effects on molecules and cells are described, and the coverage is broad. The book begins with a description of ionization, activation spectra, and other events at the atomic and molecular levels and then goes on to discuss the hydrated electron and radical production in water and in organic and inorganic materials; effects on artificial polymers and macromolecules of biological significance, especially proteins and nucleic acids; and effects on cell populations in vivo. The biological effects observed in viruses, bacteria, and plant and mammalian cells are described in terms of effects on DNA; transcription or production of messenger RNA; mutations, including genes controlling radiosensitivity; chromosome aberrations; and cell killing. Recovery or repair of radiation damage is given considerable attention both at the molecular level, where it is observed as excision and patching in DNA, and at the cellular level, where it is observed as restitution of chromosomal lesions and an increase in survival following fractionated doses.

Effects on the whole animal are discussed briefly, but only in terms of cellular kinetics, as they relate to the radiation syndrome and recovery from radiation injury. The main concern of the book is to gain an understanding of radiation lethality, but inclusion of material on radiation and the origin of life presents a counterbalance in that radiation may have been instrumental in the synthesis of life.

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A Panorama of Genetic Studies

Proceedings of the Third International Congress of Human Genetics. Chicago, Sept. 1966. JAMES F. CROW and JAMES V. NEEL, Eds. Johns Hopkins Press, Baltimore, 1967. xviii + 578 pp., illus. $14.50.

The topics of the symposia held at the Third International Congress of Human Genetics were chosen to represent the major areas of modern human genetics, and the resulting book presents a patchy but impressive panorama of the field.

The two sessions on Clinical Genetics contain a mixture of review articles on general topics and reports on specific research programs. W. Lenz (Germany) illustrates the problems of "Diagnosis in medical genetics" by a number of examples of skeletal anomalies. J. Mohr (Denmark) reviews the legal framework, scope, effects, underlying attitudes, and methodological possibilities of "Genetic counseling," basing his remarks largely on efforts in his country, the farthest advanced in this field. C. Scriver (Canada) presents a refreshingly imaginative review of "Treatment in medical genetics." The neurolipidoses (D. Klein, Switzerland) and the ichthyosis and epidermolysis groups (U. W. Schnyder, West Germany) are discussed from the diagnostic and nosological point of view, and M. Lamy and P. Maroteaux (France) describe a new skeletal disorder, pycnodysostosis. H. Falls (U.S.) presents an illustrated review of 81 hereditary conditions in which features of the eye and hand aid the diagnosis, and J. François (France) discusses the Lyon hypothesis of differential X-chromosome inactivation in relation to certain, mostly ophthalmological, human diseases. Finally, F. Vogel and J. Krüger (West Germany) present several models for the multifactorial determination of "familial" diseases, using strabismus as an interesting example. Under the guise of discussants, Mary Efron (U.S.) presents some practical experiences in screening for inborn errors of metabolism; D. Danks (Australia) reviews the philosophy and practice of heterozygote detection; M. A. Ferguson-Smith (Scotland) discusses the applications of clinical cytogenetics; I. Uchida (Canada) shows that the near relatives of patients with trisomy 21 mongolism do not share, even in minor degree, their dermatoglyphic peculiarities; C. A. Clarke (England) reviews the exciting new work on prevention of Rh-immunization; R. W. Day (U.S.) discusses the role of public health agencies in clinical genetics; and C. O. Carter (England) evaluates the impact of counseling on the subsequent reproductive behavior of the couples counseled. It appears that counseling does make a difference.

The session on Cytogenetics begins with a useful review by Pfeiffer (West Germany) of the less well-known autosomal variants and their phenotypic manifestations, or lack of them. This is followed by German's (U.S.) description of DNA replication patterns, determined by autoradiography, and their use in the analysis of human chromosome identity and structure, and J. de Grouchy's (France) review of chromosomes in neoplasms. C. E. Ford's (England) paper on sex chromosome anomalies was not available for inclusion.

J. Frézal and J. Rey (France) introduce the session on Biochemical Genetics with a paper on a group of diseases characterized by chronic diarrhea and stunted growth, only recently recognized as "inborn errors of digestive enzymes." The confusing interactions of the ABO, H, Secretor, and Lewis blood-group genes are beautifully accounted for by W. M. Watkins (England). She presents evidence that these genes control the serological specificity of the blood-group substances by producing enzymes that add specific sugars to a basic glycoprotein in a defined sequence. The current status of the interesting group of catalase deficiencies is reviewed by H. Aebi (Switzerland). In a thoughtful summarizing address, H. Harris (England) points out the unexpected amount of enzyme variation in human populations, the considerable degree of individual diversity in enzymic makeup this implies, and how a relatively small number of genetically determined differences in activity of an enzyme can account for the continuous unimodal distribution of activity found in a randomly selected population. ". . . One can argue that the detailed study of these enzyme polymorphisms . . . provides at the present time the most direct approach to the understanding of the genetical structure of human populations."

Immunogenetics is represented by a paper on "Genetic control of cellular antigens" (Shreffler, U.S.) which discusses the elegant genetic analysis of the complex locus controlling the H-2 antigen in the mouse, and by H. H. Fudenberg's (U.S.) capable discussion of immunological deficiencies and autoimmune disease. The paper of B. Pernis (Italy) on the genetics of antibody formation was not available for inclusion.

In the session on Population Genetics, N. Yasuda and N. E. Morton (U.S.) present a sophisticated discussion of four models of population structure (deviations from panmixia) and their value in estimating the genetic load, effects of drift, selection, and so on in human populations. A description of genetic studies on a religious isolate by A. G. Steinberg (U.S.) shows extraordinary differences in gene fre-