and concrete framing, local availability of materials imposed great regional diversity on building forms, but this is not nearly so marked nor so extensive in Canada as in the United States.

The chief reason for these distinctions is that the northern nation did not experience the extreme geographical and cultural diversity of its southern neighbor. In the United States the colonies extended—to take the seasonal extremes—from cold and snowbound New England through the jungle marshes of the Gulf Coast to the aridity and burning heat of the Southwestern deserts. In Canada the hostile forms of the weather came in the form of a single enemy, namely, the long, relentless, killing winter. Many of the peculiarities of Canadian building, such as masonry cavity walls, seaweed insulation, stovewood construction, and wood sheathing on masonry, arose from the necessity of finding protection against the arctic cold. In the matter of cultural diversity, building in Canada developed primarily under the influence of two European traditions, the English and the French, with a minor mark left by Russian settlers in the West, who were unknown in the United States. By contrast, if one made a complete circuit through the area of the U.S. colonies one would successively discover the influences of English, Dutch, German, Swedish, Scotch-Irish, Spanish, French, and Indian traditions. They were all flourishing by the beginning of the 18th century, and they all left a lasting mark. Finally, of course, in Canada there was the unity of British rule, established in 1759, which was far more enlightened in dealing with the conditions of pioneer and gold-rush settlements than the vigilante savagery of the American West.

The regional differences have now disappeared from active building in every so-called developed nation, and Canada today stands in the front rank of world building, a fact which is overwhelmingly demonstrated by such brilliant achievements as Simon Fraser University in Vancouver, the City Hall of Toronto, and the great many-layered skyscraper core of Montreal. If I quarrel with the organization of Ritchie's book, my complaint is a minor one; he has written an admirable introductory work to an exciting and important subject.

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Tumor Immunology

Immunity, Cancer, and Chemotherapy. Basic Relationships on the Cellular Level. A symposium. ENRICO MIHICH, Ed. Academic Press, New York, 1967. xxiv + 390 pp., illus. $18.

This book deals with a "hot subject." It contains the proceedings of a symposium held in 1967 which covered topics in immunology, particularly immunosuppression and chemotherapy and their application to cancer therapy. Because of the recent escalation of knowledge and interest in problems of tumor immunology, this is a fascinating subject, and the book is interesting for many reasons. The conference was "interdisciplinary"; experts from various pertinent fields were brought together in the hope that meaningful exchanges of information and ideas would take place. Did they?

Interesting papers were given on the effects of immunosuppressive drugs on cellular changes after antigenic stimulation (Turk), on specialized cell function in the lymphoid and reticuloendothelial cell series (Ada), and on allogeneic inhibition (Hellström and Hellström). Good reviews were presented on cellular differentiation during immune responses (Clark) and tumor antigens (Prehn). Thoughtful contributions were made on immunosuppressive agents and the cellular kinetics of the immune response (Berenbaum), on the role of antigen (Uhr and Horibata), and on mammalian cell antigens (M. Schlesinger).

Many of these and other papers are compilations of information already published and no longer new. The material is well handled but already familiar, at least to workers in immunology. If we look to the discussions, do we see evidence of "cross-fertilization" taking place between the immunologists, pharmacologists, and oncologists? All too often the discussions are limited to small points of clarification and contention within the special field itself. [There are, however, interesting discussions about the significance of allogeneic inhibition and about alterations of immunity by antimetabolites (Schwartz).] One would have like to hear far more from the experts about mechanisms of resistance and susceptibility to tumors and where our present knowledge and ignorance should lead us in the future. What are the most promising clues and the most frustrating obstacles?

In short, this report is interesting for what it tells us about immunology, pharmacology, and oncology. It is disappointing in what it might have told us but didn't. As scientific subspecialists, we still talk too much to ourselves.

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One Condition of Matter

An Introduction to the Liquid State. P. A. EGELSTAFF. Academic Press, New York, 1967. xvi + 236 pp., illus. $10.

The Liquid State. J. A. PRYDE. Hillary House, New York, 1967. viii + 179 pp., illus. $6. Hutchinson University Library.

Until about two or three years ago there were only two or three books dealing primarily with liquids from a molecular point of view. Reading the standard textbooks on statistical mechanics, students (physics students at least) must have concluded that the world is made up entirely of gases and crystals (either perfectly ideal or almost so). This situation has changed drastically in the last few years. The number of new books on the subject appears to be going up exponentially. In addition to the two books reviewed here I have also been asked (in the same week) to review two other books on this subject. It would be nice, if somewhat regrettable, if one could conclude from this that the properties of liquids are now as well understood, in principle at least, as those of gases or crystals. Actually, this is not the case. While much progress has been made in recent years, I for one feel that some key elements in the theory are still missing and that the subject is therefore still interesting to theorists.

The subject matter divides naturally into four parts obtained by forming all the pairs of words chosen one from each of the two categories Classical–Quantum and Equilibrium–Nonequilibrium. All of these are considered in the book by Egelstaff. There is of course much overlap between the parts, and in principle one ought to start with the nonequilibrium properties of a quantum fluid and obtain equilibrium and classical statistical mechanics as limiting cases. It is one of the strengths of Egelstaff's book that this point of view is brought out whenever possible, as in the discussion of neutron scattering. The other and, to me, chief virtue of the

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