The book derives from a conference sponsored by the Sigrid Jusélius Foundation, which, it is said, has supported most of the medical research done in postwar Finland.

The book is broadly representative of research done on the subjects listed above and furthermore has the advantage of incorporating the views of many of the recognized authorities in these fields.

As is common among cell biologists generally, most of the authors of papers purportedly dealing with fibroblasts either are not dealing with fibroblasts or are not, as they seem to imply, dealing with normal fibroblasts. Studies done in vitro on such "fibroblast" populations as 3T3, BHK21, and mouse L cells suffer from the fact that the populations are clearly abnormal in at least one property yet are regarded either as consisting of typical normal fibroblasts or as providing normal controls for virus-transformed cells. The use of these cells is usually predicated on their common availability and the ease with which they may be cultured; but this is hardly a convincing rationale in view of the likelihood that any similarities between them and normal fibroblasts may be purely coincidental. Since such cell populations resemble no known in vivo cell type, their use can be likened to a kind of extraterrestrial biology. How disconcerting it is to realize that so much good science, carefully reasoned and technically sophisticated, rests on the use of cell populations twice removed from reality. Normal mouse, hamster, rabbit, and human fibroblasts are as easily available and as simply cultivated as are the continuously propagable abnormal cell populations now in wide use. Why do cell biologists resist using the genuine articles, which would make data extrapolation, with its inherent dangers, unnecessary?

Equally troublesome is the apparent assumption on the part of several of the authors represented in this book that a primary cell population consists entirely of fibroblasts. Surely this assumption is erroneous and the chapters based on it must be reevaluated. Several authors also base their experimental design on the notion that "normal cells in culture stop dividing after growing to confluent monolayers," a "fact" again widely accepted by cell biologists but patently false, as has been shown in several publications and as one should expect from the three-dimensional distribution of normal fibroblasts and other normal cell types in vivo.

Despite these deficiencies, this book is a unique collection of information on connective tissue, ancillary cell types, and biosynthesis of the extracellular matrix. Those readers who are cell culturists might very well conclude that the fibroblast, long regarded as analogous to a weed pest, is fast approaching deserved recognition as an important cell species which, in addition to being the archetype of proliferative capacity in vitro, is capable of several complex and important functional activities.

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Metal-Ammonia Solutions

Electrons in Fluids. The Nature of Metal-Ammonia Solutions. J. JORTNER and N. R. KESTNER, Eds. Springer-Verlag, New York, 1973. xii, 494 pp., illus. $44.10.

Although most of the 37 papers in this volume are concerned with metal-ammonia systems (including both liquid- and solid-phase systems), at least 12 of them deal with nonammoniacal systems such as metallic vapors and excess electrons in hydrocarbons. About half the papers present new experimental data; the others are either theoretical expositions or interpretive reviews.

One gets the impression on reading this book that the last few years have produced no major breakthroughs in our understanding of metal-ammonia solutions. Of course, the nature of dilute metal-ammonia solutions is now fairly well understood; this understanding has come through the application of a wide variety of physical techniques, including optical spectroscopy, nuclear magnetic resonance, electron spin resonance, calorimetry, magnetic susceptibility studies, electrical conductivity studies, and density measurements. Perhaps the principal remaining perplexity regarding these dilute solutions is an unexplained 400-cm^{-1} shift in the infrared absorption band that accompanies a change in concentration from $10^{-3}M$ to $10^{-1}M$.

Most of the current research on metal-ammonia systems is concerned with relatively concentrated solutions and with metal-ammonia solid compounds. Evaporation of ammonia from a dilute, blue, electrolytically conducting metal-ammonia solution produces a concentrated, bronze-colored, highly conducting solution. This "nonmetal-to-metal" transition has fascinated many experimentalists and theoreticians and has not yet been explained completely. One approach toward understanding the phenomenon, described in this volume, is the study of the properties of compressed metal vapors as a function of density. Such one-component disordered systems show analogous transitions and serve as simple models of the more complicated ammonia system.

By low-temperature evaporation of ammonia from the appropriate metal-ammonia solutions, one can isolate the solid compounds $Li(NH_3)_4$, $Ca(NH_3)_6$, $Sr(NH_3)_6$, and $Ba(NH_3)_6$. These materials exhibit unusual magnetic behavior and phase transitions that deserve further study. Unfortunately, the compounds are very difficult to prepare in a pure state, and reliable data are obtained only with extreme difficulty.

Only four of the papers are concerned with chemical reactions of metal-ammonia solutions. Chemical reactions definitely deserve more attention. It is remarkable that the kinetics of reactions of the short-lived aqueous electron (which must be studied by ultrafast techniques) have been much more extensively studied than the kinetics of the ammoniacal electron (which can be studied by many conventional techniques).

The book will be of interest to a wide spectrum of readers, from theoretical physicists to chemical kineticists, and it can be recommended as a summary of recent activity in the field.

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Scattering

Chemical Applications of Molecular Beam Scattering. M. A. D. FLUENDY and K. P. LAWLEY. Chapman and Hall, London, 1973 (U.S. distributor, Halsted [Wiley], New York). x, 400 pp., illus. $24.95.

Chemists have long recognized that they could find out much about molecular interactions if they could observe the scattering of a beam of molecules from a target of other molecules. Many of the techniques developed by physicists to learn about the nucleus should enable chemists to learn in detail about