is expressed as the sum of two polynomial functions. One is determined by the loading, the other by the supports or boundary conditions. Many beam configurations are treated, as well as the theorem of three moments, elastic supports, the theorem of five moments, and variable flexural rigidity.

The reader might wish for a better mathematical introduction, since the transform integral is merely stated, and inversions are covered only by a short table without proofs. Nevertheless, here is a book which it is hoped may promote wider application of this useful technique.

Ionographie: les émulsions nucléaires, principes et applications. By Pierre Demers. 834 pp. Les Presses Universitaires de Montréal, Canada, 1958. $20.00 (Canadian). *Reviewed by M. W. Friedlander, Washington University.*

NUCLEAR photographic emulsion is an important and versatile tool in modern nuclear physics. After a long period of hibernation, it rose rapidly to its present status through technical developments in the immediate post-war years. One of the pioneers in the development of electron-sensitive emulsions, Pierre Demers, has written the book now under review.

Apart from one book published nine years ago, newcomers to this field have had to rely upon a series of review articles, in technical journals and handbooks, for their introduction to the recipes and folklore of this still-very-mystical technique. It is unfortunate that the present volume does not fill the hiatus in the literature of experimental nuclear physics.

An almost (but not completely) exhaustive search through journals, well known and obscure, has produced an enormous bibliography, but one is left with the impression of vast quantities of information uncritically represented, with many tables and figures reproduced from the originals in smaller size and eyestrain print.

As a chronicle of the published works related even remotely to emulsion use, the book serves a purpose, but this detailed-yet-superficial omnium-gatherum is not the emulsion handbook for which the need remains.

Electron Impact Phenomena and the Properties of Gaseous Ions. Vol. 1 of Pure and Applied Physics. By F. H. Field and J. L. Franklin. 349 pp. Academic Press Inc., New York, 1957. $8.50. *Reviewed by R. Geballe, University of Washington.*

THE title of this book may be misleading to some, for it can be taken to imply contents as broad as, say, those of Massey and Burhop. Instead, the subject matter is restricted to the formation of ions at pressures typical of mass spectrometer sources, with major emphasis on complex organic molecules. The authors have attempted to provide an introduction to mass spectrometry for those unfamiliar with it and at the same time to serve experts by compiling and to some extent interpreting and criticizing a large body of experimental

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data. The tines of their double-pronged attempt are clearly visible; the space between them is noticeable also.

There are five substantive chapters. One on "Apparatus and Methods" contains a survey of various types of electron impact apparatus. The descriptions are brief, and refer to recent books and review articles for details of construction and operation. Time-of-flight instruments are not mentioned. The authors take up the nature of ionization efficiency curves, appearance potential determination, instrumental factors affecting electron energies and reliability of impact experiments, all qualitatively, at length, and with comment. A short chapter entitled "Theoretical" contains a qualitative exposition of the Franck-Condon principle and a more detailed discussion of the quasi-equilibrium theory of the mass spectra of large molecules. The ionization and dissociation of N_2 are used as an illustration of the former. The longest chapter (85 pp.) is on "Energetic Considerations", and deals with measurement and interpretation of heats of formation of ions, activation energies, bond strengths, and related subjects. The last two chapters are entitled "Mass Spectral Considerations" and "Implications for Chemical Reactions". In the first of these are reviewed the few qualitative and empirical general rules known for relating the more than 900 mass spectra that had been tabulated at the time of writing. The second presents examples of the use of impact measurements to aid in interpretation of some organic chemical reactions. The appendix, over one fifth of the book in length, is a table compiled from ionization and appearance potentials of positive and negative ions published during the period 1930 to 1955, inclusive. Wherever possible, ionization mechanisms are postulated. The table is arranged according to key atoms by increasing atomic weight. The reference list contains 534 entries.

The book is written clearly, and its extensive table, reflecting the judgment of its widely experienced authors, is a substantial contribution. Critical remarks sprinkled through the descriptive parts will be a guide to successful operation of instruments and to interpretation of results. However, considering its rather special slant and consequently scant treatment of basic physical processes, a more descriptive title would have been appropriate.

Etude des Textures piézoélectriques. By A. V. Shubnikov, I. S. Zheludev, V. P. Konstantinova, I. M. Silvestrova. Translated from Russian by A. Daknoff. 207 pp. Dunod, Paris, France, 1958. 2750 fr. *Reviewed by Hans Jaffe, Clevite Corporation.*

PARTLY ordered arrays or "textures" of polar particles is the subject of this book. The first chapter begins with the general theory of textures which Shubnikov pioneered, and then gives the fundamentals of piezoelectricity.

The second chapter presents a detailed account of a texture made by solidifying molten Rochelle salt under mechanical agitation. As Shubnikov has shown, this texture can be piezoelectric, although no direction is