

## BOOK REVIEWS

### **The First Fifty Years at the Jackson Laboratory**

**Jean Holstein**

Bar Harbor: The Jackson Laboratory, 1979. xiii + 231 pp., \$5.00  
(paperback)

**Reviewed by**

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In compiling the history of the Jackson Laboratory from 1929 to 1979 Jean Holstein has provided a readable and reasonably comprehensive account of the founding and development of the laboratory and of the many individuals who have played important roles in the funding, administration, and research at the center "where mouse is king." She has provided a record which will be of special interest to those who have been associated with or closely acquainted with the laboratory or who will be in the future. For others the book provides a written record, at times inspiring, of an important chapter in the history of biological and medical science with particular reference to genetics and to an understanding of the development of cancer.

The first three chapters of the book give the reader a broad overview of the fifty-year period from the founding of the laboratory by Dr. Clarence Cook Little in 1929, through the directorship of Dr. Earl L. Green (1956-1975), and a brief look at Dr. Richmond T. Prehn's directorship which began in 1976. Jean Holstein makes clear why Dr. Little decided to establish the laboratory at Bar Harbor where inbred strains of mice could be developed and raised in large numbers to provide controlled genetic material for research. As we read the story we get a good picture of Little's unflinching optimism and of his colorful and impressive personality as well as of the dedication of the staff which he brought to the laboratory. The dedication of the closely knit laboratory "family" is highlighted by the efforts of its members to weather the lean years of the financial depression, which hit soon after the laboratory was founded, and by their devoted participation in the phoenix-like renewal after the disastrous 1947 Bar Harbor fire which almost completely destroyed the main laboratory and the carefully bred mouse colony.

In later chapters Holstein gives at least brief accounts of most of the research projects carried out at the main laboratory by the various staff

members. Although some readers may be disappointed that at times little more than a catalogue-like listing and description is provided, it must be realized that, in the fifty-year period covered, many research projects were carried out and that to give more extensive summaries of each of them would require a book many times the length of the present one. At least, success has been achieved in the aim of providing "digested information about some of the people and major events between 1929 and 1979." Moreover, fairly extensive accounts are given of recent Nobel Prize winner George D. Snell's work on histocompatibility and Dr. Elizabeth S. Russell's research on inherited anemias. The work at the laboratory on genetic linkage maps is also presented in some detail.

The behavioral scientist may well be disappointed that Holstein has not given a fuller account of the research on behavior genetics which was carried out at the Hamilton Station, a division of the laboratory. The work of J. Paul Scott and John L. Fuller and their colleagues on dogs and other species at the Hamilton station extended the range of mammalian research considerably beyond that of the mouse which remained not only "king" but also almost exclusively the only loyal subject at the main laboratory. Holstein has provided an introduction to a phase of the Jackson Laboratory saga which merits more extended coverage than she has provided.

The final chapter, before the book's Epilogue, gives an account of another important feature of the Jackson Laboratory's contribution to science, namely, the training of pre-college, college, doctoral, and post-doctoral students. Dr. Little actually initiated such training with college students on a summertime basis while he was President of the University of Maine. Subsequently he expanded such training and made it an important part of the Jackson Laboratory's mission. More than one productive scientist has looked back upon the enriching and stimulating experience gained while participating in the trained program as an important aspect of his or her development.

Finally, commendable features of the book include an appendix listing current and former staff members with dates of tenure and an ample index of names and subjects.

## **Data Analysis Strategies and Designs for Substance Abuse Research. Research Issues 13**

**Edited by P.M. Bentler, D.J. Lettieri, and G.A. Austin.**

Rockville, MD: National Institute of Drug Abuse, DHEW Publication No. (ADM) 77-389, 1977. 226 pp., \$3.00

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This book is a steal. Buy it. *Data Analysis...* is only nominally about drugs. Drugs and related variables are used in concrete examples, yet, with minimal transfer of learning, the methods and strategies discussed are the basic fabric of statistical research being conducted by most behavioral and, increasingly, chemical, biological, and physical scientists.

The twelve chapters are not written by "regular" experts. When have you ever read about factor analysis with an  $n$  of 1, (no typo:  $n = 1$ )? The chapter titles and solid introductory coverage are: Single-organism Designs; Longitudinal Designs; Automatic Interaction Detection; Actuarial Prediction; Cluster and Typological Analysis; Path Analysis; Factor Analysis; General Multiple Regression and Correlation Analysis; Multivariate Analysis of Variance; and Discriminant Analysis. Each chapter is well referenced and the level of non-mathematical as well as mathematical explanation is ideal for a senior statistics course or as *part* of a graduate seminar in statistics. *Drug Abuse* could be used in conjunction with the many manuals of canned programs.

## **Writing Scientific Papers in English**

**M. O'Connor and F.P. Wadford**

ELSE-Ciba Foundation Guide for Authors. Tunbridge Wells, Kent, England: Pitman Medical, 1977. 108pp. \$5.95

Distributed by University Park Press, Baltimore, MD 21202

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The book being reviewed is a "core" manual developed by the Euro-

pean Association of Editors of Biological Periodicals. The group is also known as ELSE (European Life Science Editors). ELSE acknowledges that English has replaced Latin as the language of knowledge. Specific problems inherent in writing in English for Russian or Scandinavian authors are not treated in this manual: booklets addressing specific problems for special groups will be published as supplements to the "core" manual. The ELSE manual being reviewed is similar to many style manuals but is more encompassing in scope. After all, it is concerned with the clarity of international information.

*Writing Scientific Papers in English* is a worthwhile investment: readable without cuteness; specificity with room left for the style requirements of other manuals (*Publication Manual of the American Psychological Association*, 2nd Ed., 1974); and references to some of the manuals in the different disciplines and journals that now exist. In effect, the "core" manual is a good overview and reference book. Strunk & White (*The Elements of Style*, 1972, MacMillan) is included in the reference section as is the University of Chicago Press's, *A Manual of Style*. I think that Roget's *Thesaurus* (Signet, 1968) would have been complimentary to Appendix 5 (Expressions to Avoid). With or without Appendix 5, a thesaurus is helpful.

The book is inexpensive—it can be used in undergraduate as well as graduate courses or as a text for most scientific or non-scientific courses that hope to train students to write acceptably. The language used is close to journalistic style, so a researcher wanting to prepare a paper in English should not have difficulty with idioms or convoluted grammar.

## **Fourier Analysis of Time Series: An Introduction**

**Peter Bloomfield**

New York: John Wiley & Sons, 1976. 258 pp., \$23.50

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According to the title, the book is an introduction to Fourier Analysis. It is not. According to the overview on the back cover, only mathematics up to the level of calculus is required. Not so. After a brief introductory chapter, the author delves into least squares amplitude and phase estimation using partial differentiation (p. 11). The text as a whole attempts to

explain the theory of frequency and time series analyses at an introductory level but, to me, falls short because of poor organization, stilted writing, and the bane of all introductory texts—too few graphical representations of the major points of the different steps of the analyses. The figures that are used tend to be restricted to only a few examples where many different concrete examples are needed.

The text is also somewhat confusing in the repeated use of terminology that is dated, e.g., "periodogram." The inclusion, as appendices in almost every chapter, of routines and subroutines for the reader's use are also dated. Most computing facilities have long had the *BMDX* (Dixon, W.J., 1972), *BMDP* (Dixon, W.J. and Brown, M.B., 1979) and *SAS* (SAS Institute, 1979) "canned" programs that are readily available to the new user. In addition, collections of routines such as *IMSL* (International Mathematical Statistical Library Inc., Release 8/1980) are inexpensive and also available at most computing installations.

Prior to reading this book, which I cannot recommend, I would suggest that the article by C. I. Bliss on Periodic Regression in Biology and Climatology (*Connecticut Agricultural Experimental Station Bulletin 615*, 1958) be read thoroughly. The next book to read, an inexpensive paperback well worth the price, is a collection of papers by E. Parzen (*Time Series Analysis Papers*, Holden-Day, San Francisco, 1967). The articles range from the readable to the sweatable. Upon completion of selected papers by Parzen, I strongly recommend the classic by R. Blackman and J. W. Tukey (*The Measurement of Power Spectra, from the Point of View of Communications Engineering*; 1959, Dover Press, New York).

After completing the above readings, one would be well advised to read some of the older, as well as more recent, literature on missing values in time series and spectral analyses. I. Jurkevich has written an excellent paper on *Non-Linear Regression Analysis and Analysis of Variance of Periods Defined by Irregular Observations* (NASA, CR465, 1966). C. L. Morbey's *Brief Note on Searching for Periodicities in Data Obtained at Irregular Intervals* (*Dominion Astrophysical Observatory, XIV* (9), Victoria, B.C., 1973) is brief, but contains a fast subroutine for computing and plotting. D. D. Meisel's "Fourier Transforms of Data Sampled in Unequally Spaced Segments" (*The Astronomical Journal*, 84, (1), 1979, 116-126) is not only the most recent article but one of the few to hint at the importance of Hilbert space definitions as a unifying conceptual basis for past and future research.

Lest the reader think that the frequency domain is for engineers and astronauts, it is only necessary to note the quality of behavioral research being conducted by John M. Gottman ("Detecting Cyclicity in Social Interactions," *Psychological Bulletin*, 86, (2), 1979, 338-348). The work of

S. Porges, et al., on using time-series analyses to investigate respiratory sinus carrythmia and methylphenidate has revealed some intriguing relationships between respiration and cardiac activity using cross-spectrum analyses (*Unpublished manuscript*, 1980, Department of Psychology, University of Illinois; and in *Child Development*, 46, 1975, 727-733). G.C. Galbraith ("Cross-spectral coherence analysis of central nervous system coupling patterns," *Proceedings of the Symposium on Biomedical Engineering*, 1, 1966, 341-344) has contributed very basic information that can be used by biologists, psychologists, internists, as well as chemists.

The above articles serve as a much better introduction to the time and frequency domains than the Bloomfield book. As I point out in a different review, the tables have been turned on psychologists in one of their speciality areas: the chemists have taken factor analysis and greatly improved upon the technique. We need these type of interactions between disciplines of study.

## **Introduction to Bivariate and Multivariate Analysis**

**R.H. Lindeman, P.F. Merenda, and R.Z. Gold**

Glenview, IL: Scott, Foresman and Company, 1980. 444 pp., \$15.95

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Multivariate analyses have become the rising star in psychological and sociological research. Multivariate courses are now being required as part of graduate training. Computer programs, simple and complex, have been developed specifically to meet, or perhaps encourage, the increased use of multivariate analyses.

The major drawbacks in the use of multivariate statistics have been twofold: (1) the need for a text that is more advanced in depth and breadth of coverage than some quik-texts (e.g., M. Tatsuoka, I.P.A.T., *Selected Topics in Advanced Statistics*, 1970; and *Data Analysis Strategies and Designs for Substance Abuse Research*, 1976, National Institute of Drug Abuse, Research Issues #13), yet, at the same time, introducing the basis of theory and application in a more readable and understandable format than the classics (e.g., Finn, *Multivariate Statistics*, 1971); and (2) the conceptual problem of understanding the

solutions to “designs” that have X-factors with partial repeated measures.

Lindeman, et al., do an excellent job of fulfilling the need for a good intermediate text. The text progresses rapidly with solid examples that can be worked by hand, or a programmable calculator, using simple matrix notation. An appendix is provided that gives a brief but sufficient explanation of the matrix operations needed. The text further develops the matrix solutions so that one feels quite comfortable with the notation and, more importantly, the proofs and examples.

The second criteria presented above concerns how to formulate a problem. The tendency to try and obtain signals that are important from a plethora of partially correlated, possibly linear data, with little experimental or theoretical guidance has ruined the hopes of many anglers, especially if they try to fish in waters where others have found “significant” relationships between and among the different fish. Please note that the red herring appears in univariate statistics as well. Trying to interpret four or five way interactions usually ends up being treated as error terms to account for that extra variance.

The Lindeman book was the subject of discussion prior the the Sixth Annual Maine Biomedical Symposium and was to have been one of the books selected for a discussion session on multivariate text books. Due to time limitations, the book was discussed almost everywhere but at the Symposium. It is the general consensus of those who have read the book that it would be an excellent text for graduate courses or for self-study—the latter can not be easily said of other multivariate texts. I recommend the book without reservation.