by an Indian expert on the subjects concerned in the Indian editions of each of the three monographs. These introductions could discuss in details the problems and lessons of the attempts of applications of job evaluation, conciliation and voluntary arbitration in India. In addition, this type of Introduction by the AIMA in the monograph on "Conciliation in Industrial Disputes" could throw more light on the legal status and responsibilities of the Conciliator in India, which has not been sufficiently highlighted in the I.L.O. monograph concerned. This deficiency is more significant in "Grievance Arbitration." As the original I.L.O publication draws heavily on the U.S. experience and practices of voluntary arbitration, which are considerably different from voluntary arbitration in India, the powers and responsibilities of an Arbitrator under the Industrial Disputes Act and the role and problems of voluntary arbitration in this country needs a separate and further treatment. Addition of an Introduction to the Indian edition by AIMA could do this. Its absence remains a serious shortcoming of an otherwise praiseworthy venture.

Subratesh Ghosh

Mathematics for Management : An Introduction. M. Raghavachari. New Delhi, Tata McGraw Hill, 1980. 448 p. Rs. 39.00.

The author states in the preface that the book is addresssed to the needs of 'students and executives to get acquainted with the basic concepts and areas of managerial applications of mathematics, probability and operations research'. While an introduction to quantitative methods necessarily constitutes an essential segment of any board curriculum of management education, the nature of contents and coverage of any such quantitative methods package is determined by the target group as well as the nature of the academic/ training programme. In the reviewer's opinion the present book is primarily geared to general level of quantitative orientation required in students of master's level academic programmes in management.

On the positive side, the coverage of 'mathematics' as required of students of management (working knowledge of basic calculas without the subtleties of 'real analysis', progressions, sets, vectors and matrices, linear equations) are reasonably adequate. At the end of each chapter, a set of problems of varying degrees of difficulty can be used by the students to clarify his understanding of the concepts and tools of each chapter. The author's attempt to illustrate the use of concepts and tools through ideas well known in traditional management literature (e g. deriving the simple Economic Order Quantity as an application of minimization of function via basic calculas — to cite an example) that the student acquires the motivation to learn the basics. Many examples are also borrowed or adapted from other sources which are acknowledged.

The contents in fact are pretty evenly matched with the compulsory course curriculam in quantitative methods at IIMA and this perhaps explains why the coverage of Linear Programming should be described as introduction to O. R. — as stated by the author in the preface. In contrast, the concepts of sampling and statistical inference are almost exclusively ignored. That the importance of estimation and tests of hypotheses and their general applicability cuts across all the traditional functional areas of management

from production through marketing is well established and their exclusion from a text on quantitative methods in management is a glaring ommision indeed.

Chapter 13 on 'Data Analysis' is misleading in its title. Data Analysis as understood in the modern and current usage of this term means much more than pictorial representation, and computing the measures of central tendency or dispersion. Regrettably this chapter also lists 'Sampling' as a topic and devotes one and a half pages to it so that the student is liable to form a totally mistaken impression of the importance of sampling. If sampling is to be treated at all, it should be done in a separate chapter in some length. The rest of the chapter should bear a more appropriate title, such as 'descriptive statistics' to properly reflect the contents of the chapter and not a more ambititous title.

There are quite a few printing errors and mistakes. The following is a list of those the reviewer has identified :

P. 46 : while introducing inverse functions, the statement that given a function $y = f(x)$, 'it is also possible to consider x as a function of y' is obviously wrong.

P. 83 : $\int F'(x) x = F(x) + c$ should read $\int F'(x) dx = F(x) + c$.

P. 130 : In the experession for the transpose matrix A', the last element of the first row of A' should read a_{m1} and *not* a_m.

P. 138 : The headline of sec. 8.7 should read 'Determinant of a Square Matrix' and *not* 'Determination of a Square Matrix'.

P. 226 : In the same content, the binomial probability is written both as b (o, n, p) and b (o, n, p). Such confusion in scripts is apt to be misleading to the beginning student. Similar errors in lack of uniformity occur elsewhere also, e.g the last line of P. 224.

$b\left(k ; \middle| 100, \frac{49}{50}\right)$ should read

$$b\left(k ; 100, \frac{49}{50}\right)$$

P. 243 : In the expression for the hypergeometric probability distribution, $\binom{n-d}{r \mid k}$ should read $\binom{n-d}{r-k}$; min. (r, d) should read min (r, d).

P. 425-432 : Tables on these pages show the values of the individual terms of binomial and Poisson distributions for different parameter values and *not* the corresponding distribution functions as the tables in each of above pages indicate. This is a mistake.

In summary keeping the errors in mind and the limitations imposed by the author's own but debatable choice of topics to be covered in an introductory text on quantitative concepts and tools in management, the book can serve as a reference and sourcebook of practice problems in basic courses relating only to mathematics (basic calculas and linear equations) and elementary probability distributions as is usually required in the first year of a management education curriculum. Its value as a self study guide to practicing is limited because of its text book format (author's recommended period of coverage is 50 sessions of 70 minutes each in a class room exposition) which hinders readability. Reorganising the chapter on data analysis with a more appropriate title, correction of errors, substituting the two chap'ers on LP by two or three chapters on sampling and statistical inference (estimation and tests of hypotheses) when sampling from normally distributed populations, would greatly improve the value of the book as a text.

M. C. Bhattacharjee