says, for example, that "the presence of delusions and/or gross perceptual disorder constitutes the necessary and sufficient condition for psychosis"—where, then, does schizophrenia simplex belong? "An involutional melancholia with schizophrenic features is incomprehensible except to those who believe in a schizo-affective syndrome", he writes: and he holds that syndromes must be mutually exclusive, therefore there cannot be a schizo-affective syndrome but "it would, however, be possible for a particular individual to fall into both classes". Where psychiatrists have most trouble in classification, Dr. Foulds's scheme likewise tends to run aground; for example, in distinguishing the varieties of neurotic disorder.

There is, in the main, however, remarkable agreement between the findings arrived at here by the psychologist, determinedly systematic in his procedure, and those of the psychiatrist, using all the information he can and obliged to turn his diagnoses to practical account in each individual patient. Dr. Foulds, in a characteristic aside, says that until the structure of an experimental science of abnormal behaviour is complete, "psychiatrists should bear the confirmation of their observations with benign resignation".

AUBREY LEWIS

MANAGEMENT FOR METALLURGISTS

Management and Cost Control in the Metallurgical Industry

(Lectures delivered at the Institution of Metallurgists Refresher Course, November, 1964.) Pp. x+105. (London: Iliffe Books, Ltd., 1965. Published for The Institution of Metallurgists.) 25*s*. net.

MANAGEMENT and Cost Control in the Metallurgical Industry is comprised of lectures delivered at the Institution of Metallurgists in November 1964. The lectures were: "The Role of the Manager", by E. F. L. Brech; "Management and Cost Accountancy", by J. H. Spooner; "Industrial Relations", by Lord Geddes; and "A Project Officer's Diary", by R. L. Berry.

Mr. Brech attempted to distil his many years of experience as a management consultant into twenty-odd pages, including two appendixes entitled "A Definition of Management" and "The Theory of Management". The latter are a useful record, but until one has had experience it is difficult to turn the precise phrases into the flesh and blood of management in practice. It is bound to be true that the role of the manager varies between organizations, and particularly with the size of the organization and the extent to which technological advance has made an impact on it. It would have been helpful in addressing a group of technologists and scientists to discuss these points and to consider the presently changing role of management.

In the lecture "Management and Cost Accountancy", Mr. Spooner presented the results of twenty years' experience of the United Steel Companies in the development of their standard cost system. This talk gives a useful insight into the objectives of their cost control system and the means by which these are to a greater or lesser extent achieved. An audience of technologists would probably have been interested to hear more about the basic relationships underlying the cost structure of an industrial organization, since without this knowledge a manager is less able to interpret the true meaning of the data presented. Under what circumstances is it reasonable to assume that the total cost/output relationship is linear and the marginal cost per unit of product constant?

Lord Geddes's talk consisted of his presentation of the general case for the Trades Unions in industrial behaviour. This is a most valuable talk for the person with little experience of industrial relations in industry. The speaker managed to get away from the traditional 'two sides' approach to such problems and to explain the basic aims of Union activities. This talk should be read by those on both sides who are inclined towards a stereotyped view of the roles of management and Unions.

In the final talk, Dr. Berry, a director of I.M.I. Ltd., described the changing role of the manager as a particular project progresses from research, through development and pilot plant operation, to full-scale production. The talk suggests how the relationship of the project officer with other functions in the organization must develop, and how his role must change as increasing emphasis is placed on production. The research technologist who may transfer into production management by this route will find the talk most helpful. Dr. Berry not only signposted the route, but also the way in which the individual must change the emphasis that he puts on the qualities and abilities he possesses in order to become a good manager.

In summary, this is a mixed bag containing some useful material and some which would have been more so if it had been aimed more particularly at the needs of a specialist audience. The lack of obvious orientation is reflected in the discussions after the lectures which rapidly got down to the details of the subjects presented rather than retaining the broader overall perspective. Some bibliographies would have been helpful.

J. BANBURY

DETERMINATION OF NITROGEN

The Kjeldahl Method for Organic Nitrogen

By R. B. Bradstreet. Pp. viii+239. (New York: Academic Press, Inc.; London: Academic Press, Inc. (London), Ltd., 1965.) 76*s*.

THERE can be little doubt that the methods most frequently used for the determination of nitrogen in organic substances are based on that originally described by J. Kjeldahl in 1883. Essentially the method involves the conversion of the nitrogen to ammonia by digestion with sulphuric acid, and titration of the ammonia. Speed and simplicity are the principal attractions of the method, but other useful features are its adaptability to multiple determinations and to aqueous solutions of nitrogenous substances, and its sensitivity to low levels of nitrogen. The defects are that many compounds, notably those in which nitrogen is linked to oxygen or to nitrogen, require special treatment which detracts from the essential simplicity, and there are a few types of compound which apparently fail to give correct values with any known modification of the method. Other methods for the determination of nitrogen, although usually applicable without modification to a wide range of substances, lack many or all of the attractive features of Kjeldahl's method. The combustion method of Dumas (1831), although accurate, is slow and complicated even in its micro-modification by Pregl (1912), nor is it of universal application, being unreliable with some heterocyclic compounds and unsuitable for materials containing trace amounts of nitrogen. The ter Meulen (1924) method, based on pyrolysis in a stream of hydrogen, overcomes these two latter objections but remains unattractively complex. The Kjeldahl method seems likely, therefore, to retain its popularity, and it is thus most important that both its potentialities and limitations be widely recognized.

Since the inception of the method, many investigations and modifications have been described, and the literature of the subject is vast and scattered. Thus it is often difficult especially for the inexperienced analyst to find the procedure most appropriate for the material under examination, and it is probable that many procedures in regular use are far from the best that could be devised.

The author of *The Kjeldahl Method for Organic Nitrogen* has set out to ease the task of the analyst by collecting in