

If the book has a weakness, it is that the participants seem to be asking how histones regulate the expression of genes, but find themselves brought back again and again to the more fundamental question of whether this is the function of histones. Not until page 99 is the question of alternative functions taken up seriously, although Busch had attempted to raise it previously. This is no doubt unavoidable so long as no solution is available. Certainly it will not disturb those who are concerned with the problem of histones.

J. O. BISHOP

MICROBIOLOGICAL JOKERS

A Microbial Enigma

Mycoplasma and Bacterial L-Forms. By York E. Crawford, Paul F. Smith, Charles Panos and Raymond J. Lynn. (Monographs in Microbiology.) Pp. x+264. (Cleveland and New York: The World Publishing Company, 1967.) 36s. net.

MYCOPLASMA and bacterial L-forms are the jokers in the present-day microbiology pack, for their purpose and place in the microbial kingdom and their role in the pathogenesis of ill-health remain enigmatic. A few are pathogenic to man, many are harmless saprophytes and several of these wall-less micro-organisms have been isolated from London sewage water and other such sources. This monograph comprises four chapters, each by a distinguished authority in a particular aspect. York Crawford confines himself to mycoplasma of human derivation in a comprehensive sixty-five page essay with 102 references, nineteen elegant figures and eleven tables. He delineates the seven mycoplasma species isolated from man according to their usual habitat in the genitourinary tract or oropharynx, and provides most helpful schemes for their isolation and identification. For the isolation of mycoplasma from the respiratory tract, he employs a two-plate system. One plate is prepared from standard 70 per cent PPLO agar, 20 per cent horse serum, and 10 per cent yeast extract, to which 0.002 per cent methylene blue is added to suppress unwanted mycoplasma species. After sealing the lids with paraffin to prevent dehydration, the plates are incubated at 36° to 37° C, examined at 3-4 day intervals for evidence of growth of *M. pneumoniae* and not discarded until after 30 days of incubation.

A second plate, without methylene blue, is used for the isolation of anaerobic species. Plates are incubated in anaerobic jars under 95 per cent nitrogen - 5 per cent carbon dioxide. Cultures are examined microscopically at 7 and 14 days for *M. salivarium*, *M. pharyngis*, *M. hominis* and *M. pneumoniae*. A full account of various methods of identification for species pays tribute to the considerable pioneer work carried out in Britain. Inhibition of growing organisms by homologous antibody using an eight-tipped disk is considered a most convenient and efficient identification reaction in the US Naval Medical Research Unit, Illinois. When viewed under a microscope, a clear zone of variable dimensions surrounds the paper disks which contain antiserum. The above methods were used to assess the frequency of various species in 600 throat swabs from new US Navy recruits. *M. salivarium* was by far the commonest species, comprising 68 per cent of positive cultures, compared with 30 per cent for *M. pharyngis* and 1 per cent apiece for *M. hominis* and *M. pneumoniae*.

Because they have no rigid cell wall, mycoplasma have been obliged to live and reproduce in an osmotically hostile environment without a protective coating. In his chapter on the physiology of these micro-organisms, Paul F. Smith describes how they have compensated by increasing the amount and kinds of lipids in the limiting membrane and by existing as small coccoidal or filamentous forms.

Their plasticity results in penetration into interstices of the fibrillar network of agar gels, and thereby to the "fried-egg" appearance of agar colonies. His eighty-two page chapter contains 210 references, ten figures and eleven tables, from which may be derived the chemical composition of the various species and of the cell envelope, growth, nutrition, metabolism and biosynthesis. Biochemically orientated clinicians will also enjoy a section on the effect of antibiotic, chemical and physical agents on mycoplasma.

Charles Panos has edited this authoritative monograph and contributed a thirty-nine page chapter on the biochemistry of bacterial L-form growth and structure; and finally, Raymond J. Lynn surveys the immunology of mycoplasma and bacterial L-forms in thirty-eight pages, citing 199 references. He describes antigen preparations, antibody responses, and the serological differentiation of Mycoplasmataceae, and speculates on their relationship to other micro-organisms.

This book will be a valuable source of data to the clinician and laboratory worker, particularly those in the fields of microbiology and immunology. It will assuredly fulfil the editors' hope that it will stimulate further research into this microbial enigma.

D. GERAINT JAMES

ABOUT ELEMENTARY PARTICLES

Strong Interactions

(Proceedings of the International School of Physics "Enrico Fermi" Course 33, Varenna on Lake Como, July 6-18, 1964. Italian Physical Society.) Pp. xi+225. (New York: Academic Press, Inc.; London: Academic Press, Inc. (London), Ltd., 1966.) 92s.

It is rare to discover in the proceedings of a summer school a text which can unhesitatingly be recommended as compulsory reading for research students in elementary particle physics.

The article on meson resonances, by D. H. Miller, and that on baryon resonances, by R. D. Tripp, give an excellent insight into the kind of analysis, often extremely theoretical, required in order to infer viable physical "facts" from the raw experimental data. These methods are amply illustrated in the examples of the identification of the quantum numbers of many of the well known resonances. The contents of these articles give a fair representation of our understanding of the new resonances as it stood in mid-1965.

A very clear discussion of several theoretical tools is also given: Dalitz plots, Argand diagrams for resonant amplitudes, and the Wigner condition. There is a table relating (for spin $\frac{1}{2}$ /spin 0 scattering) the coefficients in the expansion of the angular distribution and polarization, in terms of Legendre functions, to the partial wave amplitudes.

The section by R. H. Dalitz on the production and decay of resonant states concerns itself with a more refined theoretical discussion of some of the techniques mentioned previously, and also deals with certain dynamical models of resonance production, namely, the peripheral model and the absorptive peripheral model.

It is remarkable that the articles of Dalitz, Tripp and Miller achieve such a high degree of pedagogical clarity while dealing with topics at the very forefront of elementary particle research.

The final section, on symmetries of strong interactions, by S. L. Glashow, is pedagogically much less successful, and contains several printing errors. It does, however, serve as a useful summary of the applications of SU(3) to concrete physical processes.

In summary, this is a most valuable contribution to the literature on elementary particle physics.

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