

BOOK REVIEWS

J. H. Schwarz (ed.), *Elementary Particles and the Universe*, Essays in honour of Murray Gell-Mann, Cambridge University Press, ix + 212 pp., hard cover £24.95/\$49.95, ISBN 0-521-41253-6.

Post-World War II developments in fundamental physics took place on three fronts. First quantum electrodynamics became reasonably understood although there were (and still are) problems with divergent integrals. Then came an improved understanding of strong and weak forces with a successful unification of the latter with electromagnetism. This success led to the search for a grand unification of the three interactions. Parallel to these two developments gravity came closer to the rest of physics thanks to the numerous researches in general relativity, relativistic astrophysics, and cosmology.

Amongst the generation of theoretical physicists who began their career in the post-war era Murray Gell-Mann stands out as a path breaker and leader whose influence is continually being reflected by the developments in the field. This book brought out in celebration of his (more or less) sixtieth birthday does ample justice to the man and his ambience. The essays by leaders in their respective fields include topics like quantum cosmology (Hartle), foundations of quantum mechanics (Hartle, Telgadi), field theory including strings (Witten), strong and weak interactions (Goldman, Fritsch), representation theory of classical and super algebras (Gunaydin), the 5th force of 1964 vintage (Neeman), angular momentum theory in nuclear motions (Biedenharn and Truini), supersymmetry and supergravity (Brink, Schwarz, Ramond), and the effective Lagrangian approach (Nambu, Lee). These are subjects in which Gell-Mann has been interested and thus highlights his contributions too. Abdus Salam and M. Goldberger in less technical words have given warm personal glimpses of the scientist, although most other contributors have also made personal references to him. Seth Lloyd's article on heat engines seems, however, to stand unconnected from the main theme.

By and large the contributors have done justice to the editorial fiat to talk about the present status and future projections in their respective fields. The articles are more suited (and should be of value to) the active workers in particle physics – graduate students upwards.

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