in the standard Bethe–Heitler bremsstrahlung formula in a dense medium. At electron energies of about 10^{13} eV these changes have become radical. There is an extensive treatment of transition radiation—the radiation emitted by a fast particle traversing a material boundary. This is done classically. The calculation is arduous, and one loses the physics in the mathematics. However, the results are complete and general. There are some useful appendices for those who deal with the electromagnetics of fast particles.

All of the above is not new material but its incorporation into one source is very useful because the literature is scattered about. The author includes a large reference list to the original literature to which he, himself, was a major contributor. The homogeneity of treatment and notation is a further help. The subjects have amusement value in their own right. The topics will also be suggestive to those who might have despaired that all particles behave in a rest-mass independent way at high velocities. If accelerators continue their upward growth, effects such as the ones considered here may well become the basis for experimental schemes of particle identification.

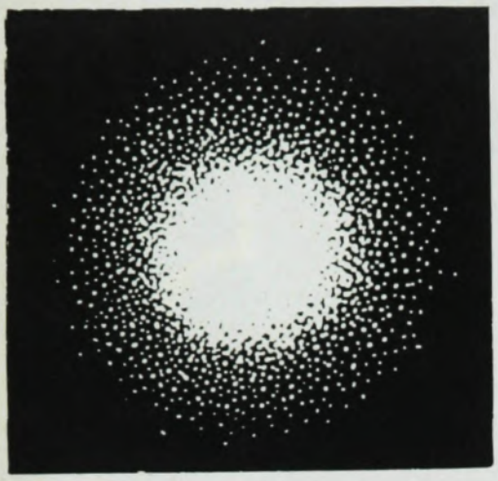
Each reader may have desired additional topics included or more detail. But at $27.50 who can afford more?

LOUIS S. OSBORNE
Massachusetts Institute of Technology, Cambridge, Mass.

Rutherford: Recollections of the Cambridge Days

Mark Oliphant
158 pp. Elsevier, New York, 1972. $7.50

Ernest Rutherford, first (and only) Baron Rutherford of Nelson, plain 'Ern' to his wife, or the "Prof(essor)" to the many who came under his spell at Montreal, Manchester, Cambridge or elsewhere in the world of science, was the most extraordinarily ordinary man. Probably unparalleled in the history of science was the great multitude of students, colleagues and disciples with and through whom he worked, and by whom his influence on science was multiplied many times over. Not that the direct impact on science of his own immense contributions was less than of the highest order—these are tributes to Rutherford's own extraordinary skill, insight, energy and dedication. His disciples bear witness to equally outstanding personal qualities and the gift of extraordinarily vigorous and inspiring leadership.



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Volume II: 1973, 7½ x 9¼, est. 432 pp.

ELEMENTARY MODERN PHYSICS, Alternate Second Edition
Richard T. Weidner, Rutgers University; and Robert L. Sells, State University of New York at Geneseo

A text for introductory physics courses, this book covers fundamentals of relativity and quantum theory, atomic, nuclear, elementary-particle and solid-state physics. A revision of the highly successful second edition, the text contains new and revised problem sets and an attractive two-color format to enhance readability.
1973, 7½ x 9¼, est. 550 pp.

Allyn and Bacon, Inc., College Div., Dept. 893, 470 Atlantic Ave., Boston, MA 02210

Circle No. 53 on Reader Service Card

Mark Oliphant was one of the last of Rutherford's collaborators. Despite their difference in age—Rutherford was about twice Oliphant's age at this time (the 1930's)—and in scientific stature and experience, there was between the two men a strong mutual attraction. Indeed it was affection, a sort of father-son relationship, but one based on choice rather than parental contingency. (Rutherford had only one child, a daughter Eileen, who died in childbirth just at the time (1930) when the close association with Oliphant began. Rutherford's son-in-law, Ralph H. Fowler the mathematical physicist, was of an age, background and temperament that makes it unlikely that Rutherford could have regarded *him* as a son.) Rutherford and Oliphant seem to have much in common: Both came from "down under"—Rutherford from New Zealand, Oliphant from Australia—and they shared the characteristic forthright, brisk, commonsense manner, singularly free from sophistry and sophistication, and even some mannerisms and accents of speech.

By virtue of this close association—personal and scientific—Oliphant has been able to transmit to us some very close, highly sympathetic, but honest and frank impressions of Rutherford in the last decade of his life. It is a close-up, intimate domestic view of a renowned scientist, perhaps the most renowned of his day, who enjoyed, in the world of science, a strong, characteristic *public* personality. The two images are interestingly complementary.

Here in Oliphant's narrative (a sort of diary-*cum*-scrapbook-*cum*-family album) we see Rutherford puffing and sweating, "dribbling" marmalade down his jacket (Lady Rutherford's remonstrance), excited, elated, depressed, angry and contrite (in rapid succession): we see him exploding in momentary irritation at some clumsy assistant, or expressing publicly deep, simple and moving indignation at some political barbarism or social outrage of his time. All this is vividly illustrated in a loosely connected collection of episodes, narratives, recollections, and snapshots about Rutherford, his domestic life and his contemporaries, against the background of Cambridge and the Cavendish Laboratory in the 1930's.

To someone with his own memories of this scene, Oliphant's is a highly narrative account of something already well into the historical part. But even the reader who cannot share this nostalgia will surely find here a strong sense of atmosphere and personality; and since the book is about one of the most remarkable scientific careers of all time, it will surely appeal to a wide audience.

What connection exists between Rutherford's outright "simplicity," his extreme "humanness," his larger-than-life personality, and the immensity and style of his scientific creation, each will judge for himself. Oliphant does not indulge much in philosophical speculation. His is a story simply, naturally, casually told: a modest style that harmonizes with the subject but does not distract attention from it. But the spirit that moves the author is deep and sustained. It is best expressed in his own closing words:

"His (Rutherford's) success came as much from complete dedication to his work as from his innate ability, so that even the average student was inspired to emulate him. Yet ordinary as he was, there was something in him which raised him high above others, and put him in the company of the greatest of men, and this something earned for him both the profound respect and the deep love of all who came under his influence."

SAMUEL DEVONS
Columbia University
New York, N. Y.

Momentum, Energy and Mass Transfer in Continua

J. C. Slattery
McGraw-Hill, New York, 1972. $19.50

This is an introductory text on the basic equations of fluid mechanics, including heat and mass transfer, with emphasis on their axiomatic, deductive, continuum formulation. There is no attempt to relate them to microscopic physics. The author, J. C. Slattery, is professor of chemical engineering at Northwestern University, and has published extensively in mixture transport phenomena. He makes a serious effort to broaden the scope by solving many explicit boundary-value problems, especially on viscous flows and on heat and mass transfer. This effort is only partly successful; 679 pages are simply not enough to allow adequate treatment of both mathematical continuum mechanics and what might be called "phenomenological fluid mechanics," the largely observable world of fascinating physical phenomena such as instabilities, surface waves, shock waves, rotating flows, nonlinear stress effects, vortex lines and sheets, drops and bubbles, buoyant flows, turbulence, and so on. Most of these phenomena are accorded little or no space.

Scientists and engineers will miss experimental information, especially on those phenomena for which formal mathematical solutions are not avail-