BOOK REVIEWS

J. J. Thomson and the Cavendish Laboratory in his Day. By Sir George Paget Thomson. 186 pp. Thomas Nelson & Sons, London, 1964. 25s. Doubleday, Garden City, N. Y., 1965. $4.95.

Reviewed by Norman Feather, University of Edinburgh.

It is not much more than a hundred years since Kelvin converted an old wine cellar in a professor's house in Glasgow into a physical laboratory, and began to enlist the help of volunteers from his natural philosophy class in the experimental researches on which he was engaged. So recently—and in so casual a manner—was the first research laboratory in physics established in a British university. By the time that the centenary of this event came round no university the world over, of any pretensions, was without such a facility.

There is something of surprise, for most modern readers, in this bare statement of historical fact. What is perhaps more surprising, for the situation is unlikely ever to recur, is that for nearly half that period one of these laboratories was, by common consent, preeminent among all the rest. From 1895 to 1935, or thereabouts, the Cavendish Laboratory in Cambridge was the mecca of the experimental physicist. For more than half that period of preeminence, J. J. Thomson was its director. He had been appointed Cavendish professor, within a few days of his twenty-eighth birthday, in 1884, and when he resigned, in 1919, the university created a personal chair for him, without stipend, which allowed him to continue his experimental work, and gave him the use of accommodation in the laboratory for as long as he had need of it. In the upshot, he outlived his pupil and successor, Rutherford, by nearly three years, dying on August 30, 1940—Rutherford's birthday.

J.J.'s son, "G.P.", himself Nobel prizeman, as his father was, has contributed the biography now under review to the British Men of Science Series; it is the first volume in that series to be devoted to a physical scientist. Possibly, today, in the popular mind, physics begins with the discovery of the electron; possibly expediency rather than policy decided priority for the publisher. In any case, Sir George Thomson prefaces his account of the life and work of his subject by an introductory chapter which leads the reader forward from Newton to Maxwell and Helmholtz and Stoney, thereby providing his own historical background. Against this background he paints a lively portrait, unsubtle perhaps, but clearly conceived and sharply in focus. He does not claim undue success for the first eleven years of his father's professorship ("this period is best regarded as one of preparation", p. 78), nor blink the scientific conservatism which settled upon him relatively early in life ("J.J.'s attitude to the theories coming into physics after the First World War tended to be conservative, though this did not prevent him advancing highly original and imaginative theories of his own. . . . He accepted Special Relativity though he did not use it . . . he was unwilling to give up the aether", pp. 154-5), but he gives a full and fair account of the twenty years of glorious achievement, 1895-1915, and he shows him as an old man of seventy-five doing "at least his fair share" of the work on the much enlarged third edition of *Conduction of Electricity through Gases*, and even later amusing himself "working out problems in the Mathematical Tripos papers which were sent to him"—for "he retained his facility with mathematics till a great age" (p. 163).

All in all, the record is straightforward and the survey wide-ranging and open. And there are clues enough to keep the inquisitive reader busy for many a day ferreting out for himself details of scientific investigations which could only be hinted at in the text. But for the few who will read this account having known J.J. personally there will, I think, somehow be found missing the warmth of his humanity—and even the stranger will ask in vain to be shown, even dimly, the inner working of that genius which indubitably belonged to this great and lovable man.

So far as the text is concerned, there is no difference at all between the English and American editions, except for the publisher's imprint. The only differences are in the binding and in the dust jacket. The binding of the Doubleday edition is definitely more attractive than that of the other, but the dust jacket is a failure. The so-called portrait of "J.J." is unrecognizable by any who knew him in later life or are familiar with authentic portraits of earlier days, and the blurb is full of mistakes. It implies fairly clearly that Thomson was Maxwell's immediate successor in the Cavendish Chair (which of course he was not), it claims that the Cavendish Laboratory produced among other distinguished physicists both Millikan and Bohr, for which claim there is absolutely no foundation, and it states that Thomson more than any other man discovered the proton. This again is entirely misleading and grossly exaggerated.

Unified Theory of Nuclear Models. By G. E. Brown. 178 pp. (North-Holland, Amsterdam) Interscience, New York, 1964. $7.25.

Reviewed by J. E. Mansfield, Harvard University.

This is one of those excellent little books that put one at ease by their lack of bulk and pretension. An entertaining style follows up the mood of a lively introduction. The language is for the most part that of many-body theory, as are many of the alternate derivations. The scope of the book is modest: the shell, collective, and optical models. Three early chapters introduce the application of Hartree-Fock theory to the nuclear problem. Second quantized notation is used, and the shell model is defined.

The bulk of the book considers particle-hole excitations in Hartree-Fock approximation. The Elliot-Flowers cal-