*Boundary Layers* is a monumental achievement. It deserves a place on the desk of every student and worker in the field of fluid mechanics.

**The Theory of Laminar Boundary Layers in Compressible Fluids.** By K. Stewartson. 191 pp. Clarendon Press, Oxford, 1964. Paper $10.10.
*Reviewed by L. Talbot, University of California, Berkeley.*

Although a book ought to be reviewed on its own merits, it is difficult to resist the urge to consider the present volume in the light of *Laminar Boundary Layers* (see above review). The reason is that Stewartson's monograph contains almost precisely the kind of material on compressible boundary layers which would be required to round out the treatment of boundary layers given in the Rosenhead volume. Since both books have come from the same press, and within so short a period of time, it is inevitable that one should wonder if they could not somehow have been combined. The unity and economy of treatment which might thus have been achieved is so apparent that it hardly needs saying. What is really surprising, however, is that nowhere in Stewartson's monograph is the Rosenhead volume mentioned.

The first two chapters of Stewartson's monograph are concerned with fluid properties and the basic equations of flow. Real-gas effects are mentioned briefly, but throughout the remainder of the book only ideal-gas flows are considered in detail. The same is true for rarefaction effects.

The third and fourth chapters deal with boundary-layer flows without and with pressure gradients, respectively. Both exact and approximate solutions of the boundary-layer equations are discussed. The exposition is clear and concise, and the coverage quite comprehensive. Chapter 5 is concerned with three-dimensional layers, and the sixth chapter covers some unsteady problems. In the latter, particular attention is given to the shock-tube boundary layer and Rayleigh problems. Hydrodynamic instability theory is not discussed. The final chapter contains discussions of a number of interesting interaction problems involving shock waves and boundary layers; the reviewer found this chapter to be the most stimulating in the book.

There is ample evidence that Professor Stewartson has done some considerable thinking about the subject matter of which he writes. In many instances he brings a fresh viewpoint, both to the latest problems and to topics which by now are regarded as almost classical. His own original contributions to laminar boundary-layer theory are large in number, and he has the tendency to emphasize these more than other work on the same topic. This is not intended as a criticism but rather as an indication of the personal nature of the book, in which the views of Professor Stewartson are clearly in evidence.

There are in the book nearly 300 cited references. They are given by source, titles being omitted, and they are numbered consecutively at the end of each chapter rather than being collected together.

The omission of several topics, such as instability theory and some consideration of compressible Oseen flows is regrettable, but as always, some selection of topics is inevitable. All in all, this volume probably represents the most complete account of compressible laminar boundary layers at present available within the covers of a single book. In this case, the covers are paper, which make it a rather expensive item by comparative standards.

**The Role of Science in Civilization.** By Robert Bruce Lindsay. 318 pp. Harper & Row, New York, 1963. $6.50.
*Reviewed by Phyllis A. Richmond, University of Rochester.*

This is a thought-provoking, well-written book. The view of the scientist as a passive observer of nature is replaced by that of the scientist as a creator who "chooses the kind of experience he desires to create". Lindsay avowedly aims in part to defend science from those critics among the humanists who see it as grossly materialistic and destructive of those values in life considered most significant. On the whole he is successful, and in the process he shows that the use of creative imagination in some areas of science is as vivid as in the arts. His appreciation of nonmaterial aspects of science is refreshing.

There is no denying the breadth of Lindsay's viewpoint. Thomas Browne's *Religio Medici* comes to mind as a comparable work. A good attempt is made to answer the school of thought represented by philosophers like Karl Jaspers, who write of science as a limited and incomplete vision of the totality of experience. This is not entirely successful because Lindsay tends to see more science in the social sciences and humanities than probably exists or should exist in these fields.

The book discusses what science is and then explores its relationship to the humanities, to philosophy, to history, to communication, to technology, to the state, and to human behavior. The description of science is primarily from the vantage point of physics and chemistry. A few biological and geological examples are included, but medical ones are absent. This is, perhaps, unfortunate, because it is possible to discern several distinct scientific methods when all the sciences are taken into account.

The section on the logical structure of a scientific theory is rather unusual. It is limited to deductive reasoning without reference to inductive reasoning; that is, it is Euclidean, not Baconian, and in essence ignores the 17th-century revolution in scientific thought. "Primitive, intuitive, undefined notions" are axioms rather than hunches. Observations or experiments are undertaken to *verify* a collection of deductions. There is no suggestion that conclusions can be derived from a collection of observations and verified by accurate prediction, though prediction is discussed as part of theory elsewhere in the book. When one considers that Newton wrote the *Principia* in classic deductive form, though he used the inductive method to arrive at much of its content, Lindsay's section is doubly interesting. It suggests that in some areas of scientific endeavor there has been a return to the rigorous argument of the classic era. This needs to be investigated. Have we come full circle in some areas of physical science? Does the *method* of the theo-