chooses to publish will be read avidly by others interested in the same subject matter.

In this book Johnson and his associates report the findings of three research projects. Two of these are shown in great detail: the final 243 papes of the book are made up of tables of data indicating the responses to questionnaires of some 200 controls and an equal number of parents of stutterers. Such material is rarely made available in book form, and its value for the general reader is somewhat questionable; for those having an intense interest in the subject it is undoubtedly invaluable.

Two general findings are emphasized: the parents of stutterers are more demanding than others in their expectations regarding the fluency of their children, and they are somewhat more dissatisfied with their children and with each other, than the parents of nonstutterers are. These are certainly not surprising findings, but it is nice to see them stipulated so specifically. It has long been postulated that certain attitudes of parents toward their children cause tension states in the children; to see the relationship to stuttering so carefully drawn is extremely worth while.

The book includes a chapter devoted to what the authors call a "general interaction hypothesis" based on the research findings. As stated, this seems to support and implement Johnson's previously reported "semantogenic" theory of the cause of stuttering.

While it is limited in its appeal, the book is carefully written, claims no more for itself than its contents warrant, and makes available research data to indicate the source of its findings. It will undoubtedly find its place on most reference shelves in the sections reserved for worth-while books on speech problems.

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Just before Darwin: Robert Chambers and "Vestiges." Milton Millhauser. Wesleyan University Press, Middletown, Conn., 1959. ix + 246 pp. Illus. $4.50.

It has become almost a game to discover anticipations of Darwin's ideas and accomplishments. Indeed Darwin, like everyone else, had predecessors and built on the past, but until *The Origin of Species* was published there were almost no full-length, thoroughgoing, sufficiently documented publications on evolution in general or on particular theories of evolution. The nearest thing to an exception was *Vestiges of the Natural History of Creation,* issued anonymously in 1844 but now known to have been written by the Scottish publisher, encyclopedist, and hack writer Robert Chambers. In that remarkable work a dilettante perceived more clearly and sooner than most of the professional scientists the new direction that biology was taking at the time. Yet *Vestiges* was not basically or soundly a scientific or even a forward-looking production. It smacked rather, and in a somewhat half-baked way, of philosophical and theological predilections already obsolescent. (It is significant that the author was sympathetic, at least, to both phrenology and spiritualism.)

Chambers believed that the realm of natural law extends to living things and that evolution ("development") is among the universal natural laws. In that he was both right and progressive. But he mingled legitimate evidence with false data, naive arguments, wild speculations, and impossible theories. Darwin and Huxley, among many others, really were justified in acknowledging no scientific debt to Chambers. Nevertheless, *Vestiges* did make a contribution to the history of opinion, as distinct from that of ideas. In a later, more mellow mood Darwin eventually expressed well the real indebtedness. He still spoke of Chambers' "little accurate knowledge and. . .great want of scientific caution" but added that Chambers had "done excellent service. . .in calling attention to the subject, in removing prejudice and in thus preparing the ground" for general acceptance of the fact of evolution.

It is thus unwarranted to agree entirely with T. H. Huxley that Chambers' extravagances were a positive hindrance to the rise of evolutionary biology, or with a few later writers (for example, Lovejoy) that he should be regarded as a founder of that movement. His role was between those extremes, and it was minor. Yet it is an interesting and essential part of the drama. Millhauser's account is careful and fair. It gives particular attention to the climate of opinion and to the popular and literary antecedents and reactions. The biography of Chambers which is included is intellectual rather than personal, but it is adequate for the purpose. As an individual, Chambers remains a shadowy figure, but his ideas and influence have been well explored.

This is a welcome specialized addition to the wealth of new books on Darwin and his forerunners that are appearing in this centennial year of *The Origin of Species.*

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New Books

Australian Atomic Energy Symposium, 1958. Proceedings of a symposium on the peaceful uses of atomic energy in Australia held in Sydney 2–6 June 1958. Melbourne Univ. Press, Melbourne, 1959. 799 pp. The symposium was attended by 435 people, including 38 foreign representatives from Great Britain, the United States, Canada, New Zealand, Pakistan, and the International Atomic Energy Agency. A total of 114 papers were presented. They covered a wide range of interests in relation to raw materials, nuclear power, nuclear research, the basic sciences, education, and the industrial and medical uses of isotopes, and were divided into the following sections: "Materials"; "Power engineering"; "Power auxiliaries and research reactors"; "Basic sciences"; "Associated techniques"; "General." The appendices include a list of participants and a list of authors.

Automation: Its Impact on Business and Labor. John Diebold. National Planning Assoc., Washington, D.C., 1959. 73 pp. $1.

The Challenge of Science Education. Joseph S. Roucek. Philosophical Library, New York, 1959. 503 pp. $10.

Circumpolar Arctic Flora. Nicholas Polunin. Oxford Univ. Press, New York, 1959. 542 pp. $20.20.

The Orchids. A scientific survey. Carl L. Withner, Ed. Ronald Press, New York, 1959. 657 pp. $14.

Psychosomatic Methods in Painless Childbirth. History, theory and practice. L. Chertok. Translated by Denis Leigh from French ed. 2 of *Les Méthodes psychosomatiques d'accouchement sans douleur.* Pergamon, New York, 1959. 276 pp. $6.50.

Reproduction in Domestic Animals. vol. 1. H. H. Cole and P. T. Cupps, Ed. Academic Press, New York, 1959. 666 pp. $14.50.

Solid State Physics. Advances in research and applications. vol. 8. Frederic Seitz and David Turnbull, Eds. Academic Press, New York, 1959. 533 pp. $13.50. Contents: "Electronic spectra of molecules and ions in crystals. pt. 1: Molecular crystals," D. S. McClure; "Photoconductivity in germanium," R. Newman and W. W. Tyler. "Interaction of thermal neutrons with solids," L. S. Kothari and K. S. Singwi; "Electronic processes in zinc oxide," G. Heiland, E. Mollwo, F. Stockmann; "The structure and properties of grain boundaries," S. Amelinckx and W. Dekeyser.

Vector Space and Its Application in Crystal-Structure Investigation. Martin J. Buerger. Wiley, New York; Chapman & Hall, London, 1959. 366 pp. $12.