Hutton, Smith, and Cuvier together "possessed the secret of the past but they never sat down in the same tavern to put the chart together." It was Charles Lyell who first wrote a coherent, general account of geology; and while Lyell did not develop a theory of evolution, Darwin's debt to him—evolution's debt to him—is enormous. "One can scarcely resist the observation that the *Origin* could almost literally have been written out of Lyell's book, once the guiding motif of natural selection had been conceived."

Eiseley discusses Darwin's predecessors in evolutionary theory—William Wells, Patrick Mathew, Robert Chambers. But the major portion of Eiseley's book, naturally, deals with Darwin himself: with his ideas and the sources of his ideas. There is probably more documentation on Darwin—more letters, notebooks, impressions, analyses—than on any other scientist. Yet he remains a baffling personality—difficult to understand, perhaps, because of the very extent of the documentation. The Darwin of the *Autobiography* and of the letters to close friends is, surely, the conscious Darwin, self-revealed. But thought does not reach its full development through conscious processes, and subconscious influences were surely just as important with Darwin as with any of us. Darwin's own concept of how he arrived at an idea is often clearly inadequate, which makes the game of trying to untangle the influences on his thinking even more fascinating. Eiseley makes many thoughtful contributions to this study.

Eiseley has a particularly interesting discussion of two attacks on Darwin that are now not well enough remembered. An erudite Scotch engineer, Fleeming Jenkin, published an article in 1867, pointing out in neat mathematical terms that a newly emergent character, however favorable, would, with blending inheritance, be swamped through backcrossing. The Mendelian answer to this had already been written but was unknown, and Darwin could find no answer. The other attack was from the physicists. Lord Kelvin, looking at the heat production of the sun in thermodynamic terms, found that the biologists and geologists could not possibly have the vast stretch of time that they needed for evolutionary processes. Again Darwin had no answer; there was no answer until the discovery of radioactivity at the end of the century. Darwin could only become more cautious, more Lamarckian, with each successive edition of the *Origin*.

Eiseley draws a moral from this. "Today there is a tendency in some quarters to regard the physical sciences as superior in reliability to those in which precise mathematical adeptness has not been achieved. Without wishing to challenge this point of view, it may still be worth a chastening thought that, in this long controversy extending well over half a century, the physicists made extended use of mathematical techniques and still were hopelessly and, it must be added, arrogantly wrong."

The last chapters of the book are appropriately devoted to the problems of human evolution: to the controversies over the first human fossils, to the divergence between Darwin and Wallace over the special case of man, to the emergence of the concept of culture and of cultural evolution. The book ends with the end of the century, with only occasional allusions to the vicissitudes of evolutionary ideas in the present century. Perhaps Eiseley will now carry the story on, in another book, to our own time. Whether he carries on or not, he has made an important contribution both to the history of ideas in general and to the history of evolution in particular, and through this, I think, a very real contribution to the study of the evolutionary process itself.

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Hospital Treatment of Alcoholism. A comparative experimental study. Menninger Clinic Monograph Series No. 11. Robert S. Wallerstein *et al.* Basic Books, New York, 1957. xi + 212 pp. $5.

The past few years have seen an encouraging rise in the number and quality of investigations of the goals, methods, and results of therapies for alcoholics. Since we are yet far from a satisfactory knowledge of the causes and dynamics of uncontrolled, pathological use of ethyl alcohol, it is clear that methods for rehabilitating alcoholic patients are properly approached from a research viewpoint. The clinical study by Wallerstein and his colleagues, reported in the present monograph, is a commendable and welcome example of this point of view.

What the authors have done is to compare four different methods used in treating a group of 178 alcoholic patients at Winter Veterans Administration Hospital from 1 Jan. 1950 to 30 June 1952 with a subsequent 2-year follow-up. The treatment modalities selected were (i) Antabuse (Disulfiram) therapy, (ii) conditioned-reflex therapy, (iii) group hypnotherapy, and (iv) "milieu" therapy (a control group). Of these modalities, it appeared that Antabuse therapy was most helpful to the most patients. However, of those to whom Antabuse was administered, nearly one-half were not helped. Also, it was concluded that the practical values of the other methods were sufficient to preclude the use of Antabuse as optimal for the mental hospital treatment of alcoholic patients.

In a study of which kinds of alcoholic patients tended to improve with which kinds of therapy, the authors found a significant correlation between *compulsivity* and improvement with Antabuse. The greater the characteristic *passivity* of the patient, the greater, in general, was his improvement under hypnotherapy. The danger of precipitating a psychotic reaction with Antabuse was stressed in borderline depressive or schizophrenic patients; these were helped more by the milieu therapy, which emphasized individual contact with the physicians and avoided threat to defense structure. Hypnosis seemed temporarily helpful to schizoid patients. Conditioned-reflex treatment seemed to evoke a good response in clinically depressed patients, but this treatment was considered contraindicated for masochistic individuals. With every type of therapy, those patients did best who were able to form and maintain close ties with the therapist, the hospital, and the program and, in general, to sustain relationships.

The authors have provided a sound analysis of their study, including analysis of the limitations of their project design (follow-up, patient selection, and so on), and have suggested lines of further investigation.

Karl Menninger's introduction to this monograph points out that enough correlation between the success of specific methods of treatment and the psychological characteristics of the patients has been revealed to merit further exploration of this idea. It is to be hoped that studies of this design will be widely extended.

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Integral Equations. F. G. Tricomi. Interscience, New York, 1957. viii + 238 pp. $7.

The subject matter of this book, as interpreted by the author, is a topic which has become a standard part of everyday analysis, to be used, in particular, in innumerable problems of applied mathematics. A few such problems are treated or alluded to, among them the critical speeds of a rotating shaft, the forced oscillations of finite amplitude for a pendulum, the airfoil equation, the vibrations of a membrane. The book is intentionally short, and yet it covers all the classical types; it presents as simply as possible the essentials of the theories of Volterra, Fredholm, Hilbert, Erhardt