by the ideal of the creative artist—an ideal which expresses itself in thought precesses which move in a different dimension to those of logic and experiment." One can only hope that this wisdom can be squared with the *wisdom* of the evolutionary process.

The theory presented in *The Ethical Animal* will not, as Waddington is well aware, be accepted unanimously by everybody, or even by all biologists. It is nevertheless a significant contribution to the discussion of a momentous issue. By changing what he knows about the world, man changes the world he knows; by changing the world, he changes himself. Are these changes in accord with biological and other wisdom?

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Geological Survey Research 1960. Professional Paper No. 400, part A and part B. U.S. Geological Survey, Washington, D.C., 1960 (order from Supt. of Documents, GPO, Washington 25). Part A, 142 pp., illus., $1; part B, 523 pp., illus., $4.25.

The United States Geological Survey is currently engaged in so many activities and projects, spanning the full range of the geological sciences, that publication of results has tended to lag behind the completion of many investigations. This book has been prepared to make available a digest of important new ideas and new discoveries, both published and unpublished, made by survey personnel during the 12 months that ended 30 June 1960. This presentation is an experimental one, and only the work of the Geological Division is included.

The arrangement of material is dictated by what the Geological Division considers to be its major objectives: increasing our knowledge in economic geology, regional geology, and geologic principles and processes. Pages A1–A26 are devoted to economic problems, by district and region, together with commodity and topical studies. Many persons outside geology will consider this to be the most important phase of the survey's work, because the economic studies help in solving problems connected with the construction of highways and dams and, while developing information in the search for new deposits of minerals and fuels, provide the nation with a continuing appraisal of its known and potential mineral and fuel resources. It should be noted, however, that without the supporting regional studies (pages A26–A54) and those that deal mainly with principles and processes (pages A54–A73), the specific economic studies would soon become sterile.

All reports and articles by survey personnel, actually published or otherwise released to the public during fiscal 1960, are listed alphabetically by author in the bibliography (pages A107–A127). Not every title that will eventually bear dates between July 1959 and June 1960 could be included, since publication in periodicals is commonly delayed several months. The inclusion of journal articles and survey open-file reports with standard survey publications will greatly aid geologists and others searching the recent literature. The "Subject classification of publications" (pages A127–A136), together with the very detailed table of contents, makes the lack of a general index less inconvenient.

The list of investigations now in progress, which gives the name and headquarters of those in charge of each investigation (pages A77–A105), alone makes the publication worth the price. Too often in the past, even after extensive inquiry, have workers outside the survey started a research project only to find that it duplicated a survey project which was well under way. The only illustrations in part A are four index maps.

The second part of this professional paper is bound separately and consists of 232 papers, generally of less than 1000 words each. Some of the papers are primarily announcements of new discoveries or observations on problems of limited scope, and for many, this will probably be the final report. Others are progress reports on more extensive investigations which have been under way for some time. It is expected that these conclusions will, in large part, be included in much longer reports to be published when the projects are complete.

Most authors are represented by one paper, but some have as many as seven. The papers, well-illustrated by line drawings and a few photographs, are arranged, as to subject matter, in the same order as those in part A. The volume has a comprehensive index, by subject and author, referring to article number rather than to page.

I hope that the publication will be continued and that it will be expanded to include the work of other survey divisions.

Obviously few, if any, will read the entire book but almost every geologist will enjoy and benefit by browsing, not only in his own field of interest but also in the many others presented. There is a wealth of material for the teacher and the research geologist, as well as for those more concerned with practical application of the science.

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Analysis and Design of Feedback Control Systems (formerly *Servomechanism Analysis*). George J. Thaler and Robert G. Brown. McGraw-Hill, New York, ed. 2, 1960. xiii + 648 pp. Illus. $14.50.

The first industrial revolution provided abundant power for operating machinery, but this power had to be controlled by human beings. In the present industrial revolution, more and more of the control functions are being taken over by the machines themselves. This is done by using the principle of feedback. A standard is set up for the variable to be controlled in an industrial process. This standard is continuously compared with the actual value of the variable, and an error signal is obtained, which is then used to actuate machinery in such a way that the error is reduced.

The present volume is intended for use by electrical engineering students who are taking the analysis and design of such apparatus at the senior or graduate level. The authors first provide an introduction to the subject and some of the basic working tools. They then deal with the analysis of linear control systems: how to evaluate their performance—the speed of response, stability, overshoot, steady-state error, and so forth. They continue with the design and construction of control systems for given specifications. Finally they go on to more advanced aspects of the subject and discuss Mitrovic's method, sampled data control systems, and the analysis and design of nonlinear control systems, including relay servomechanisms. There are five appendixes, giving, in addition to some useful tables, descriptions of physical components