Book Reviews

Is Political Science a Science?

Political Science. A philosophical analysis. Vernon Van Dyke. Stanford University Press, Stanford, Calif., 1960. xv + 235 pp. $5.

There has been much debate whether the social sciences in general and political science in particular are real sciences. Some natural scientists think they are not because they are intended to assist in making decisions which involve value judgments while the function of science is to produce generalizations which give information as to what will happen under stated conditions or what measurable relations can be relied upon among defined variables. Social scientists, however, reply that while they cannot ignore values they can discover persistent relations, statistical trends, and effective methods of exerting influence, and that the information and classification of this knowledge constitutes science. While they recognize that they frequently have to deal with qualitative distinctions, they increasingly seek to reduce their distinctions to quantitative terms. This is especially true of the economists and sociologists, but in recent times the political scientists have also utilized statistics. They can conform in a measure to Lord Kelvin's suggestion that if it cannot be measured it is not a science.

Vernon Van Dyke, who writes from long experience in conducting a graduate seminar on the philosophy of political enquiry, does not argue the point but assumes the broad view that science is the acquisition, verification, and systematic classification of useful knowledge. He recognizes the importance of the knowledge being as general as possible and the difficulty of utilizing this criterion in the social sciences where there is frequent incompatibility between the requirement of verifiability and the requirement of generality (page 196).

The utilitarian point of view which he suggests conforms to the title of "The American Philosophical Society Held at Philadelphia for Promoting Useful Knowledge," an organization which includes natural scientists as well as social scientists and humanists. To determine what knowledge is useful Van Dyke assumes it should serve desirable purposes, it should be significant, and in particular it should be rational. On the latter point he quotes Dahl and Lindblom, "Any action is rational to the extent that it is 'correctly' designed to maximize goal achievement. . . . Given more than one goal (the usual human situation), an action is rational to the extent that it is correctly designed to maximize *net* goal achievement" (page 5). Thus for a political scientist "scholarship is significant when it contributes to the potential rationality of a political decision. Its significance varies with the importance of the end to which the decision relates, with the importance of the decision to the achievement of the end, and with the extent of the contribution to potential rationality" (page 5).

But beyond utility, significance, and rationality, the political scientist "should seek answers to questions or solutions to problems having to do with thought and action, ends and means, cause and effect, conditions and consequences. The study of politics should thus be conceived as a question posing and question answering activity" (page 6).

It is clear that Van Dyke's criteria have a large subjective element. He recognizes that in substance political science deals with values as well as with facts, with the "ought" as well as with the "is." His effort is to assist in the development of good scholarship in political science, not to reduce it to a "science" in the narrow sense. To this end he is concerned with qualitative distinctions such as those between facts and values, history and analysis, explanation and prediction, belief and knowledge, static and dynamic concepts. He also examines the methods of study which are suitable for determining the truth of statements in each of these categories.

Methods, Assumptions, Definitions

In the body of the book he examines critically certain key words which different political scientists have used in organizing their discipline—for example, conflict, power, interest group, decision making, and game playing. He asks the utility of each for the purpose intended. He does not discount the legal approach, though he warns against the "reifying" of law as something natural and beyond human control. He distinguishes descriptive from prescriptive law and discusses the value of mathematical expression in the former, with the remark: "It is a moot question whether Stalin's law or Parkinson's is the more valid" (page 82). He believes it unfortunate that political scientists do not know more about the methods of natural science than they do, but at the same time he recognizes that they must develop their methods from their own materials.

The book is doubtless in some degree stimulated by Walter Lippmann's comment which he quotes: "Nobody takes political science very seriously, for nobody is convinced that it is a science, or that it has any important bearing on politics" (page 204). The book may not allay this criticism, but it brings to light the underlying assumptions of leading political scientists and passes critical judgment on the methods they have used. It provides a body of definitions which will probably assist scholarship among the political scientists more than it will help either natural scientists or politicians to understand what contributions political scientists have made or can make. The latter are likely to ask, "Do political scientists have a technique that permits them to predict or control political phenomena better than the man in the street or the practiced politician?" Van Dyke does not answer this question. He says, "Whenever anyone makes a rational choice he is predicting" (page 42), that the capacity to explain past events correctly can help to predict future events, and that there is a difference between rational predictions and persuasive argument, although the latter,

if good enough, may be a self-confirming prediction. He outlines methods which have been used—analytical, inductive, deductive, comparative, "scientific"—but does not indicate whether any or all of them have actually produced reliable results of either practical or theoretical utility. The book is, as the title indicates, a philosophical analysis rather than an exposition of scientific method in the field of politics. It has a good index, gives access to recent literature in the field, and should be useful to political scientists; it will at the same time give natural scientists some insight into the way political scientists think.

QUINCY WRIGHT
Woodrow Wilson Department of Foreign Affairs, University of Virginia

Hybrid Flora

Flora of New Zealand. vol. 1. *Indigenous Tracheophyta: Psilopsida, Lycopsida, Filicopsida, Gymnospermae, Dicotyledones*. H. H. Allan (deceased 29 October 1957). Government Printer, Wellington, 1961. liv + 1085 pp. Illus. $14.70.

This excellent volume, an original work, is nevertheless a lineal descendant of Cheeseman's *Manual* (1906; rev. ed., 1925). The unavailability of the latter, to bend a phrase from Cheeseman's preface in the first edition, "has long been a serious hindrance to the study of the indigenous vegetation, and a bar to inquiries of any kind connected therewith."

The long-awaited *Flora* was written by the late H. H. Allan, ably assisted by Lucy B. Moore, who completed the work. Compact owing to the use of thin paper, the book contains abundant dichotomous keys and descriptions of 116 families, 290 genera, 1457 species, and 272 varieties. Synonymy, distribution, and often critical notes are provided for each taxon; the numerous invaluable discussions of hybridism, polymorphism, and plasticity are tempting invitations to further study. All measurements are metric. In addition there are a chronological account of plant-taxonomic research in New Zealand from 1769 to 1958, a brief account of ecological and floristic conditions, a list of author abbreviations and dates, and a glossary of Maori plant names.

An estimated 80 percent of the species and 40 genera are endemic; 40 other genera but few identical species occur also in Australia. New Zealand offers a natural laboratory for the study of hybridization largely resulting from human disturbance. Most of the larger genera are suspected of having been affected, and some described varieties may owe their existence to this phenomenon.

A North American is struck by the fact that the families with most genera are Compositae, Umbelliferae, Scrophulariaceae, Papilionaceae, and Cruciferae. Among the largest genera are *Epilobium, Ranunculus, Senecio, Myosotis,* and *Gentiana*. Problems of bipolar distribution at once come to mind.

Of especial interest is the subantarctic element in the flora: "a whole vegetation type may be said to show 'disjunct' distribution across the South Pacific. . . . The acceptance of an evolutionary hypothesis forces one also to accept that the ancestors of these now widely separated plants . . . were once in genetic, if not geographical, contact. The biogeographer's task is to explain how this contact was achieved, and how it gave rise to the present pattern of distribution" [M. Holdgate in *New Scientist* **10**, 636 (1961)].

Exploration of these and many other problems will be greatly aided by the timely appearance of the *Flora*. The New Zealand Department of Scientific and Industrial Research, which sponsored the preparation and publication of the work, deserves congratulations.

LINCOLN CONSTANCE
Department of Botany, University of California, Berkeley

Moon Maps

Orthographic Atlas of the Moon. Supplement 1 to the *Photographic Lunar Atlas*. (Contributions, Lunar and Planetary Laboratory, No. 1). Compiled by D. W. G. Arthur and E. A. Whitaker. Gerard P. Kuiper, Ed. University of Arizona Press, Tucson, 1960.

The *Orthographic Atlas* is a very useful tool to be used in conjunction with the magnificent *Lunar Atlas* which was reviewed in the 29 July 1960 issue of *Science*. It is Supplement 1 of the *Lunar Atlas* and has been issued in two editions: (i) Edition A, on a high-grade coated paper, showing only the standard othographic grid and (ii) Edition B, on a washable, tear-resistant, heavy-duty, coated plastic showing, in addition to the orthographic grid, a latitude-longitude grid overprinted in blue, spaced by 2-degree intervals, giving approximate selenocentric coordinates. Edition B will be useful when the charts are to be used regularly at the telescope. The review copy is Edition A.

The supplement is being published in two parts. Part 1, "The Central Area of the Moon," is the portion now available. Part 2, covering the limb regions of the moon, has been announced for publication in the near future. The hard cover binder supplied with Part 1 will also accomomodate Part 2.

D. W. G. Arthur and E. A. Whitaker are skilled cartographers with expert knowledge of the lunar literature and of the problems of lunar cartography. They worked in close collaboration with the Aeronautical Chart and Information Center (ACIC) at St. Louis.

The grid lines shown on the maps have an interval of 0.01 lunar radius. They correspond to the intersects with the lunar surface of two sets of parallel planes, normal to each other, one set being parallel to the plane of the lunar equator and the other to the plane of the prime meridian. The point (0,0) corresponds to the center of the lunar disk as seen at zero libration in both latitude and longitude. The distance between consecutive grid lines at the center of the lunar disk is 10.8 miles or 17.4 kilometers.

Lohrmann (1824), Mädler (1837), and Schmidt (1878) produced remarkably accurate charts of the lunar surface before the advent of effective lunar photography. After 1900 it was possible to base lunar maps on the photographic triangulations of Franz and Saunder. Their triangulations were about 10 times more accurate than the prephotographic positions used by Schmidt and his predecessors. The present atlas is based on more control points than the work of Franz and Saunder, and for that reason it achieves much greater accuracy.

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FRANK K. EDMONDSON
Goethe Link Observatory, Indiana University