phenomena that cannot be fitted into the model. The history of physical science provides some good examples; on the whole, however, the physicists have succeeded in keeping their models as tools, revising or discarding them as new facts have been discovered.

The common complaint against the social scientists, with which I tend to agree, is that in their zeal for quantification and model-building they have oversimplified some of the most important phenomena of man and society.

b) To what extent is the new encyclopedia guilty of this sin? The verdict of some of its critics has been severe, but I cannot endorse all the invectives. The editors and authors are guilty only in the sense that they have represented social science not as it ought to be but as it actually is (in America). This may have been a mistake in policy; but the motivation was honest. The common criticism is that the new encyclopedia neglects the "humanistic" approaches to social science. This is not true of the biographies, which include most of the important "humanists." It is probably true of the substantive articles, which are heavily loaded with what pass for "empirical" contributions. But, again, can we challenge the good faith of editors and authors who are attempting to represent the contemporary scene? We may deplore, as I do, premature quantification and the worship of mathematical models, but the fact is that this is a correct picture of contemporary (American) social science.

c) Should an encyclopedia attempt to be contemporary? My own feeling is that the editors have overemphasized contemporaneity. Many of the articles are now as out-of-date as are the chapters of a new textbook, and many of the references will quickly fade out of history. A record of current excitements will be of interest to the future historian, but the excitements of any year can be gleaned from the evanescent periodicals or from such publications as the *Annual Reviews*. One thinks wistfully of the famous ninth edition of the *Britannica* (1886), which can still be consulted with profit. I am not suggesting that there is nothing of enduring value in this encyclopedia. The biographies, the historical articles, and many of the discussions of basic theory may even grow in importance with the passage of years. Too many of the special articles, however, competent as they are, read as though they were written for a current periodical.

d) Have we a circumscribed field or set of fields which can properly be called "the social sciences"? I consider this a fruitless question. The labeling of a cluster of disciplines may be administratively necessary, but the particular label is of minor importance. (The term "behavioral science," sanctified if not invented by the Ford Foundation, has in my opinion contributed little but confusion.) One of the encouraging things about the encyclopedia is the evidence that disciplinary lines are becoming blurred. Again and again we find a topic, for example, language, being treated by authors from different disciplines but with such catholicity that one has to check the index to discover their formal affiliations. This is a healthy sign.

e) Social problems are researchable. This is perhaps the most important lesson that natural scientists may learn from social scientists. Facts may be difficult to establish, methods may be inadequate; but there is still the faith that even in the realm of human affairs there is a place for careful observation and close reasoning. This encyclopedia gives us some encouragement.

Balancing the pros and cons, I find my assessment of the *International Encyclopedia of the Social Sciences* definitely on the plus side. It is not truly international, nor is it truly encyclopedic; it is essentially American, and the biases of the editorial consultants are revealed in the selection of topics and authors; it will probably not live as long as has its predecessor. Nevertheless it is a magnificent achievement, 17 volumes of fact and wisdom, superbly edited and reasonably well written. In any given field it is certainly not a substitute for primary sources, but in fields other than one's own it provides a good orientation. And this, perhaps, is the most one can expect from an encyclopedia. In spite of the reservations noted above, I consider it worth its price and the 38 inches of shelf space it requires.

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# Region and No-Man's-Lands

**The Makers of Modern Geography.** ROBERT E. DICKINSON. Praeger, New York, 1969. xiv + 306 pp. + plates. $7.50.

To all appearances this is a book of, by, and for geographers. As such it will be useful and controversial. It will refuel an old argument in a rather defensive and introspective profession. But its value goes beyond that. As a document, it offers insight into the way in which cultural and academic institutions influence the history of ideas. It is a demanding book. I suspect it will give students and "under 30" geographers cultural indigestion. Nongeographers will have to put up with long strings of "begats." A hundred times the book goes right to the brink of tedium, and comes up suddenly with a flash of insight into the nature of the great millennial academic procession.

Dickinson's stated purpose is to invite his fellow geographers in the English-speaking world to return to their scholarly heritage, the study of region. By examining the history of the German and French schools of thought in geography, he shows that the notion of region lies at the core of the geographic tradition. The analytic and systematic work of American geographers he sees as peripheral for the most part. "The widespread scepticism among British and American geographers means that they are, in effect, rejecting or ignoring, the best offerings of their birthright" (p. 179). He recommends the analysis and resynthesis of "region," which balances all aspects of physical environment, culture, and historical experience. An understanding of greater (world) regions must, in his view, be built up from many studies of small regions.

This controversy is chronic among geographers, and I do not believe it will ever be resolved. Dickinson's basic approach is sound, even refreshing. It is based on the notion, "By their fruits ye shall know them." Hartshorne's classic work, *The Nature of Geography,* de-

fined geography and reviewed past definitions of geographers of the 19th and 20th centuries. Dickinson builds upon that, and builds well. He reveals geography as it has been *practiced* by "geographers." Nevertheless, his book is still not truly a history of geographic thought, that is, of man's ideas about his relation to the earth. We are still waiting for a sequel to Clarence Glacken's *Traces on the Rhodian Shore*, which brings us down to the 18th century.

The essence of Dickinson's argument is that region has been the focus of geographers, geographers have been creative and contributed powerfully on the frontier of human knowledge, and therefore regional geography is the proper focus. I would propose a different interpretation—the "hat rack" theory of the study of region. The focus on region, as I see it, has served as a hat rack, so that in departments of geography people with various scientific interests and training could hang their hats and work together. Eclectic in training and methods, they could pay attention to interactions that would otherwise have been left in some academic no-man's-land. Their regional descriptions, which fulfilled the apparent "purpose," have been largely forgotten, and their more valuable contributions have been by-products or "fallout," consisting of their systematic work on man and nature. Penck, for example, set out to study the ice sheet near Leipzig, but his great contributions eventually were in the understanding of glaciers and general models of evolution of slopes and land forms. I would argue further that other hat racks can be equally useful in geography—for example, the enduring theme of man and nature (or Spaceship Earth!) or "applied geographies" such as Tricart's efforts in France to relate scientific study of natural phenomena to current engineering problems and public policy issues.

Dickinson's thesis is most successful in the book if it is itself regarded as a hat rack. The regional thesis provides a framework for resurrecting and interrogating several generations. In general, the by-products are more fascinating than the basic theme.

Probably the most important by-product of this book for geographers is that Dickinson restores the wholeness and breadth of a number of great men whom we have known only for some fragment or single aspect of their work. Many German geographers, notably Ratzel and Richthofen, were seriously diminished and distorted, first by the controversy over environmental determinism, then further by the perversion of Nazi geopolitics.

For readers from any discipline, the mass of biographical and genealogical details of French and German geography over two centuries adds up to a rather powerful statement of the oneness and continuity of science. In this connection the book raises certain questions for our modern community of scholars. From this point on, I am risking inferences which Dickinson does not make, in the hope that nongeographers will become interested enough to examine the evidence.

First, a great chasm of language among scientists is striking. The fact that none of the works of many scholars (Hettner, Credner, Rühl) and only very limited portions of the work of others (Peschel, Ratzel, Sorre) were translated contributed greatly to the neglect and distortion of their ideas. This was particularly the case with the German political and social geographers already mentioned. It was a major factor in the excesses of environmental determinism and racism, which nearly strangled American geography and are still pervasive in our children's social studies books. Our grade school texts still hark back to the turn-of-the-century "länderkundliche Schema" which Dickinson describes, and have not caught up with Schlüter and Brunhes, of the '20's.

The absence of cross-cultural exchange in universities is due not only to linguistic handicaps, but also to the nationalistic functions of universities. The results are great gaps in the scholarship of each nation, and a more general impoverishment in "Anglo" geography. The language barriers have not, I think, been diminished in recent years, nor have our universities become less nationalistic in structure. As American science surges in productivity and prestige, our linguistic arrogance has kept pace.

Dickinson's book further provides some evidence for the importance of language-bound cultures in the development of concepts. He has found it necessary to pepper the book with untranslatables such as *Lebensraum, milieu, Landkunde, Landschaft,* and *Zusammenhang,* and illustrates their seminal value in geography.

Likewise, a certain rootedness in "place" and "folk" has been profoundly creative in the geographic sciences, both by the depth of experience and attention devoted to the home-place (for example Penck again, or the work of Partsch in Silesia, Troll in Bavaria, or Hassinger on the city of Vienna) and by the intense and dramatic discoveries arising from travel, culture shock, and exile. (This theme suggests why the American or New World experience looms so large in the geographic tradition of Europe over 150 years—Humboldt, Elisée Reclus, Ratzel, Hettner, Troll, Penck, Sapper, Blanchard, Leon Waibel). The mobility of American scholars in their homeland and the absence of that Romantic place-mindedness may contribute to the lack of American regional studies which Dickinson deplores.

The greatest gap in Dickinson's treatment is the complete absence of Russian and other Soviet scholars (except for two references to Voyeykov around 1900) in the web of geographic work which he extends to Brazil, North America, and Africa. Again the language gap? In the same vein, the emphasis on person-to-person development of ideas in this book might lead us to underestimate the influence of the context of world events upon our scholarly work. Many such themes are hinted at, however—exploration, world wars, urbanization, colonization and decolonization—and we cannot criticize Dickinson for lack of balance, because we have dragged him way beyond his stated purpose.

A theme which is explicit in the book is the influence of university structure on the transmission and evolution of ideas. "Much of the integrating research in physical geography in the early nineteenth century (physical, biological, and ethnographic) was lost. This, says Richthofen, was probably because of the lack of clear definition of geography as an academic discipline" (p. 85). Once the structure was established toward the end of the century, links with other disciplines and the existence of no-man's-lands between them became important, as dramatic as the relationships to language and culture. The contrasts which Dickinson describes between French and German university systems are illuminating. French geographers have been closely allied with historians, classicists, and scholars of the other humanities (Faculty of Letters). The lineage of Paris was dominant. German geographers were linked with a greater variety of sister disciplines—geology, statistics, ethnology, economic history, political science—depending on the constellations and conjunctions of personalities in the prestigious chairs of a dozen great universities. (Many people would quarrel about the relative amounts of attention Dickinson pays to one or another of these schools or sister disci-

plines.) Much of the value and vitality of Aristotle and Plato, Pestalozzi, Kant, LePlay, or Darwin breaks through into geography through coincidences in the lives of unconventional geographers.

Another recurrent theme is the teaching role of the great geographers. It is not surprising to find that pioneering scholars are influenced by their experiences as pupils and colleagues of several "masters," although in American universities we are less accustomed to celebrating our intellectual extended families with festschriften. Some great teachers and stimulating colleagues—Hettner, Richthofen, Ratzel, Waibel, Vidal de la Blache—seem to have had a more profound effect on geographic research over the generations through their teaching and personal roles than through their writings, which quickly became dated. Other men, whose research was equally meticulous and original and filled whole stacks in libraries but who were less successful teachers, have been wholly forgotten. From Dickinson's history, it looks as if "publish or perish" is a short-term game. In the long run, we also teach or we perish.

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## Seeking Confluence

**Streams of Culture**. GAVIN DE BEER. Lippincott, Philadelphia, 1969. 262 pp. $5.95.

Of the debate on his phrase "the two cultures" C. P. Snow once remarked that only its definite article had emerged unscathed (*The Two Cultures: and A Second Look*, Mentor, 1964, p. 60). Where Snow saw, in Western culture, an unfortunate division between scientists and literary intellectuals, Gavin de Beer detects a richness of many streams, united in their "use of the same mental processes, and in particular of the gift of imagination, the creative 'art' " (p. 10). This book of essays represents de Beer's attempt to wade in several of the units of his metaphor.

The 12 essays, two new and ten previously published, fall into four categories. The opening selections deal with the history of evolutionary theory and genetics. Of these, I highly recommend the first two. These incorporate the many new insights—particularly on Darwin's limited debt to Malthus—that de Beer gained from Darwin's notebooks on the transmutation of species (the sources for a later "abstract," the *Origin of Species*). The second group covers some of de Beer's personal contributions to evolutionary biology (the role of pedomorphosis in human evolution and the importance of mosaic evolution in the origin of vertebrate classes). The third contains reviews of books by Dobzhansky, Simpson, and the Toulmins. These are a mixture of interesting points, repetition, and irrelevancy. While I would not insist that the journalist's adage "yesterday's paper wraps today's garbage" must apply to all old book reviews, this genre does not abound in examples of timeless prose. The final section includes three essays on archeology and ancient civilizations, a field that de Beer has pursued recently with much ingenuity and grace (*Hannibal's March*, Sidgwick and Jackson, 1967). The first of these, "Genetics and Prehistory," is, to my mind, the showpiece of this book. In this Rede Lecture, delivered six years after Snow began the "two cultures" debate from the same podium, de Beer shows how the evidence of modern "genes, place-names, and customs" can be used to reconstruct the wanderings of Neolithic Mediterranean peoples about Western Europe. It serves, far better than his explicit pleas, to demonstrate the power of a confluence in our cultural streams. The last two essays are new, but by no means novel—a defense of Galanopoulos's equation of Plato's Atlantis with the Minoan empire, and some comments on Norse settlements in America.

Unfortunately, this volume suffers the common ills of essay collections: it is often repetitious and is uneven and lacking in coherence. Thus, on the first count, de Beer cites the shoulders of Newton's giants to introduce two essays (and give R. K. Merton two more entries for his compendium of pre- and post-Newtonian uses of that metaphor —*On the Shoulders of Giants*, Harbinger, 1965); we receive four explanations of Fisher's theory of dominance and four citations of Deevey's estimate that our global population was a mere 125,000 one million years ago. Second, the essays range from semipopular presentations for UNESCO to contributions to technical symposia. Those who fathom the arcane anatomy of fossil evidence for mosaic evolution may be bored with the UNESCO essay, while, in the absence of definitions, those who favor the easier reading will have no other referent for "supergene" than a recent presidential contender.

Finally, on the subject of coherence, I can see two ways of breaking the wall between Snow's two cultures. One can construct a coherent argument that it does not (or at least should not) exist, or one can simply place his diverse work before the public as a testimony that one man, at least, can do more than one thing well. The great danger of this second strategy, one that de Beer does not avert, lies in the use of *ecce homo* as a justification for the union of diverse chapters bearing no common theme or unifying thread. I suspect that our greatest practitioners of this strategy in evolutionary biology, Simpson and Medawar (G. G. Simpson, *This View of Life*, Harcourt, Brace and World, 1964, and *Biology and Man*, Harcourt, Brace and World, 1969; P. B. Medawar, *The Art of the Soluble*, Methuen, 1967) succeeded because they had no such grandiose goal and thereby felt a greater need for internal coherence.

Another aspect of his writing foils de Beer's attempt to unite the streams: his tendency to caricature the positions he opposes and to refute intellectual positions of some subtlety by demolishing irrelevant straw men. Thus, theologians will be rightly displeased that de Beer dismisses their claims by attacking a certain Father O'Neill and showing the scientific improbability of the virgin birth (pp. 16–17). And philosophers of science will be disturbed by the statement that a popular theory on the nature of scientific "truth" embodies the attitude that forged the Galilean inquisition (p. 166). I detect the specter of an otherwise distinguished American educator who, in an area far beyond his competence, once almost blamed Darwin for the evils of Nazism (J. Barzun, *Darwin, Marx, Wagner*, Doubleday, ed. 2, 1958, pp. 15–16).

When I look from my secluded corner of intellectual endeavor back to the days when Dryden joined the Royal Society and Thomas Jefferson wrote papers (however faulty) on fossil quadrupeds, I am profoundly grateful to all intelligent men of de Beer's caliber who try to break down the barriers to communication among disciplines. But I question the format of this particular work. Rather than dusting off yesterday's essays, I hope that de Beer will develop even further the promise of his Rede Lecture—to unite the streams of culture by showing that the methods and materials of natural science can solve persistent problems in other fields.

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