

is now just south of the Aleutian Islands.

The book has a number of excellent illustrations and maps.

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ORGANISM AND ENVIRONMENT: A MANUAL OF QUANTITATIVE ECOLOGY, by Rezneat M. Darnell. 1971. W. H. Freeman & Co., San Francisco. 300 p. \$5.75 (softback).

Designed as a laboratory manual for an upper-division course in ecology, this book offers considerably more than the 25 exercises of which it is composed; but it cannot properly be called a manual of quantitative ecology. What it offers, under the headings of morphologic, physiologic, behavioral, population, and community ecology, are very specific exercises, which are introduced by broadly informative, factual reviews or summaries of the general nature of the subject matter of which the exercise is a small part. Collectively these introductions constitute a useful introduction to, or summary of, a more general ecology. Individual exercises include highly sequenced procedures for obtaining information, mostly numbers, which are to be entered on detachable worksheets. A set of questions, mostly routine but some quite provocative, is a part of most exercises, and each exercise concludes with a useful, current reference list.

Treatment of the quantitative aspects begins with simple visual observations coupled with written descriptions and progresses logically through mensuration, graphical representation, sampling, and a variety of statistical procedures for determining significant differences and describing the distribution of individuals in natural populations; necessary tables are included. The exercises are a good cross-section of the experiments sometimes used in courses in evolution, comparative physiology, animal behavior, general ecology, and population biology. They have all been tested, modified, and adapted in Darnell's course at Texas A. & M., and they do not require much in the way of apparatus not found in a reasonably well-equipped undergraduate laboratory. Although simple in principle, many require careful planning and timing. A separate, 47-page Instructor's Guide lists materials required, preparation procedures, and culture techniques; this will be invaluable for the instructor who attempts these exercises for the first time.

I am disappointed that more use is not made of actual field situations—maps and distribution charts are substituted—but where large numbers of students and urban conditions are present this is probably required. Some of the figures, although clear enough,

provide no useful information, and a key to aquatic plankton is inadequate. Although I shall not use this book in my courses, I am pleased to have it on my shelf. It contains much useful information and a number of ideas well worth adapting to local institutional and ecologic conditions.

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BEFORE NATURE DIES, by Jean Dorst. 1971. Pelican Books, Baltimore. 352 p. \$2.45 (softback).

This is a translation of a 1965 work by the eminent French zoologist and widely traveled conservationist. The book has two main parts: "Yesterday" and "Today." The first part discusses preindustrial man and his impact on nature; man against nature; and man to the aid of nature. These chapters comprise a history of the preservation and conservation of the natural resources of the entire earth. Man's assault on nature, traced by continents, is a chronology of devastation. Primitive man is seen to have possessed the germ of self-destruction. Increased population, migration, and the great land discoveries made man aware of the world and led to the exploitation of virgin or undeveloped lands. North America, Africa, Australia, and South America suffered most and have the largest total of rare or extinct species. Dorst emphasizes, from historical accounts, the spectacular decrease of animal life: no fewer than 120 forms of mammals and about 150 forms of birds have vanished, not to mention a great number of lesser creatures. The fact that there has been an average loss of one avian form a year during the past 100 years underscores the need for a policy of conservation.

Part 2 uses global examples of the 20th-century population explosion, man's destruction of the land, the dual menace of pests and pesticides, pollution by waste products, artificial biologic communities, pillage or rational exploitation of maritime resources, and man in nature. Dorst shows that the most pressing problem in conservation today is the protection of man against himself. He raises the issues relating to the preservation of nature in the modern world, and he makes a rational attempt to formulate a philosophy of conservation designed to maintain a balance between man and his habitat.

Although the account of man's wanton destruction of nature is grim, Dorst's literary style is pleasingly relaxed: he is not an alarmist or an emotionalist. The many pictures and maps add greatly to the discussion, which is thoroughly objective and well documented. One is left with a feeling of optimism because of the awakening of public interest by the schools and by

the press, radio, and television. Nevertheless, the message is clear: man must act now, before nature dies.

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PURITY OR POLLUTION: THE STRUGGLE FOR WATER, by Pierre Rondière. 1971. Franklin Watts, Inc., New York. 129 p. \$4.95 (hardback).

When I leafed through *Purity or Pollution* the attractive format, excellent color and black-and-white photographs, and interesting-looking sketches made me eager to delve into it. I read the introduction, which consists of short, single-paragraph reports under the datelines of cities; these reports emphasize the world's serious and ubiquitous water problems.

Then I made a mistake: I started to read the rest of the book. Here's what I came upon: ". . . water is a relative thing, with nothing certain, firm, and constant about it," and—would you believe it?—"When water becomes solid, the dance of the atoms congeals, the flexible moving patterns become fixed, and the molecules which were twisting and interchanging are kept still, at a distance from one another. As the whole thing increases in size, it becomes aerated, turning into a hollow, porous thing with a hexagonal pattern; the molecules, which had been twirling in fours, whipping at one another with their flexible antennae, are now held where they are by stiffened antennae, and the number of molecules takes up more room." Rondière's similes (" . . . the water which sustains us is clean—like a cat it is continually washing itself . . .") evoke unusual mental images, to say the least. His overabundant metaphors are equally *manqué*, at least in English.

We might forgive Rondière (or his publisher) for his style; but in chapters 1-3, which deal with the origin of water, the chemistry and physics of water, and the water cycle, he shows himself to be grossly uninformed about the nature of water in particular and about science in general. I learned, for example, that glaciers have been the primary sculptors of the earth's surface—not streams, as years of studying geology had led me to believe. His chapter "The Secrets of Water" would be better labeled "Rumors About Water, Best Left Untold." We learn that "Water occurs in solid, liquid, and gaseous form of which only one, solid ice, is less dense than liquid water." Fancy that! Whatever happened to water vapor? One of my favorites is "It is water, once again, that dissolves and dilutes the flour in baking, and thus makes it possible for us to enjoy our daily bread." His explanation of the composition, varieties, and structure of water is as muddy and full of floating debris as the pollution he complains about later.

Rondière, a journalist who works for the United Nations as a special adviser on the use of science and technology in developing countries, does better when it comes to reporting various statistics—some fascinating, others trivial. (Did you know that “When it becomes a slice of ham, the pig contains 72.5 per cent of water, and a bullock in the form of steak 76.4 per cent?”) And when Rondière deals with water procurement, use, recycling, and other such vital problems of today he finally finds his métier. A statement like “In the underdeveloped countries it is a lack of industrialization which leads to thirst, here it is industrialization which is causing it . . .” is perceptive and well supported by the accompanying text.

All in all, this book is good for its photos, format, and occasional lucid passages, especially on pollution and purity. Other than that, it's mainly good for laughs.

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**HIGHWAYS AND OUR ENVIRONMENT**, by John Robinson. 1971. McGraw-Hill Book Co., New York. 352 p. \$24.50 (hardback).

Once I accepted the fact that Robinson's idea of “environment” is different from mine I found this a fascinating, informative book. The author is adept with words and photographs and is profuse with both. The photographs are well placed throughout the book, effectively reinforcing points in the text. On the other hand, the book has a clumsy format, with much wasted space (in a time of high printing costs). I question the use of so many photos, regardless of their superb quality and excellent illustration of topics. It is unfortunate that such an outstanding book on a timely subject is prohibitive in cost for much of a vast public that would benefit from it.

The first part of the text is a history of the evolving road and is pleasant, informative reading for young and old alike. Part 2 covers problems ranging from design failures and space encroachment to pollution, billboards, and littering. Part 3, “Bringing Back the Stile,” covers subjects such as landscaping and pedestrian malls and has a truly outstanding treatment of recreational and scenic roads and parkways. The final part, “The Political Arena,” is followed by appendices that expand on this subject by listing lobbies, citizen-action groups, and granting agencies and the funds available for the building and improvement of parkways, recreational and scenic routes, and city streets.

The book contains very few unsupported statements. On page 67 we find “engineers as a class are scrupulously honest.” I know of no data showing them to be more or less honest

than dentists, teachers, bankers, or even biologists “as a class.” On page 146 (regarding bottles, etc., and the litter problem) Robinson states: “Even if deposits could be collected within two weeks, several million dollars would be constantly tied up in deposits!” (Who worries about the billions of dollars “tied up” in consumer goods on retail shelves or in unused commodities around the house?) Yet we find on page 71 (in reference to the \$60 billion in fuel taxes reportedly to be generated by the interstate highway system in two decades): “Apparently, this money needs to be spent!” Does it? I find that Robinson's aesthetic tastes and mine differ—a phenomenon that plagues planners, designers, and laymen alike. A photo on page 268 shows an aerial view of Mission Bay, California, in its present, developed form, and the caption states that it was “once a great ugly marsh.” Earlier this year I visited Mission Bay and bemoaned the fact that the beautiful marshes, with their riches of wildlife, were gone. On page 191 Robinson comments that a photo shows palm trees “hardly more attractive than utility poles.” I could write a brisk essay on the vast aesthetic differences between the two. But these are minor points.

Many major points are well covered. On page 162 the annual report to the President of the United States from the Citizens Advisory Committee on Recreation and Natural Beauty is quoted as follows: “Further, we recommend that the Secretary establish specific procedures for bringing the citizens into the decision-making progress at the earliest stages of planning.” Indeed, a great shortcoming of much highway-building, as well as other public projects, is the late stage at which the public is asked for opinions. Thus the taxpayer and user is made to feel important by being asked “Which alternative route do you prefer, A or B?” when the first question that should have been asked was “Do you want a highway here?” Roadside rests are commonly designed for a public that “doesn't know what it wants” and people sit under trees planted because the planter liked that kind of tree. A common conception is that people stop at roadside rests to use the rest rooms, get a drink of water, and maybe eat lunch. What else can you do at most of them? Thus, Robinson might have made his case for citizen involvement in planning even stronger.

If I must criticize the book it is for errors of omission rather than of commission. The words animal, wildlife, and plant do not occur in the index, nor do I see the word wildlife in the text. These are certainly major components of the environment. Robinson's view of environment seems to stop somewhere just beyond the right-of-way or at the edge of the visual distance from the highway (for aes-



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