Controlling Oil Pollution

Pollution, Politics, and International Law. Tankers at Sea. R. MICHAEL M'GONIGLE and MARK W. ZACHER. University of California Press, Berkeley, 1979. xviii, 394 pp., illus. $15.95.

The authors of this book set out "to illuminate the nature of the international political challenge posed by environmental pollution" by focusing on the political processes "leading to the creation and application of international environmental law for one pollutant, oil." The problem they deal with is how to cope with the damage ("externalities") to the global ocean (a relatively unregulated "commons") caused by the transportation of oil by tankers. According to figures the authors cite approximately 35 percent of petroleum hydrocarbons entering the oceans in 1973 came from marine transportation. Sixty-two percent of the discharge from this source was "operational discharge" from tankers—principally from tank flushing and drydocking. Only 9.5 percent came from accidental discharges from tankers at sea or at loading terminals. The transport of oil by tanker is not the only problem, however. Another surprise from the 1973 figures is that slightly more than 28 percent of ship-generated oil discharge, operational and accidental, comes from nontankers. The source for these figures is an authoritative study, *Petroleum in the Marine Environment*, published by the National Academy of Sciences in 1975.

"The voyage of the American tanker *Manhattan* through Arctic waters in 1969 sparked Canadian legislation for a one-hundred mile pollution-control zone. This act was a dramatic, unilateral manifestation of coastal power that challenged traditional maritime freedoms and contributed to the already growing demands for a new conference on the law of the sea. Amid continuing controversy on this issue, the conference opened four years later. Here, a Canadian Eskimo protests the ship's intrusion into his own 'personal sovereignty' while the ice-bound tanker waits before plowing over his igloo." [From *Pollution, Politics, and International Law*; photo, CP]

"The bow of the oil tanker *Sansinena* (71,763 dwt) protrudes from the waters of Los Angeles harbor after an explosion and fire destroyed the ship. This accident in December 1976 was one of the rash of accidents occurring in the United States soon after the grounding of the *Argo Merchant*. The explosion helped prompt demands for 'inert gas systems' to be installed in tankers to combat the threat of hydrocarbon gas buildup. Coincidentally, the *Sansinena* was one of two sister ships of the *Torrey Canyon*." [From *Pollution, Politics, and International Law*; photo, AP]

The authors analyze the tangled web of discrete jurisdictions and economic interdependencies that must be taken into acccount if the damaging effects of pollution of the seas by oil are to be ameliorated. They omit consideration of regional efforts to deal with this kind of pollution, notably the Mediterranean Action Plan developed in 1975, including the coming into force of the Convention for the Protection of the Mediterranean Sea against Pollution (Barcelona Convention).

The work is organized in three main sections dealing with the international organizational aspects of oil pollution, the technology of pollution control, and the jurisdictional problems of setting and enforcing operational standards in internal and territorial waters and on the high seas. Because it is the most specifically involved international agency, the Intergovernmental Marine Consultative Organization (IMCO) and its continuing conference diplomacy are featured heavily. The United States is described as a "unique actor" in the IMCO context because of the amount of oil it imports, the size of its shipping tonnage, and its concern for preserving the marine environment. The United Kingdom and other Western states share such concern in considerable degree. In fact, the United States imports much of its oil under a "flag of convenience." Since 1960 Liberia has registered most of the world's tankers, the number reaching nearly 28 percent in 1975. The closest competitors were Japan with roughly 11 percent and the United Kingdom with 10 percent. Only a little over 3 percent of the world's tankers were registered in the United States.

Although oil transportation has unique environmental consequences and its control involves technological and economic measures, the pollution that accompanies the transportation of oil is above all a political problem. It cannot be disentangled from a larger economic, politi-

cal, and military context. The authors document, for instance, how military considerations tend to predominate over environmental considerations in the formation of a regulatory regime. Events in the Middle East, especially the wars of 1967 and 1973, set in motion a chain reaction, including changes in transportation routes and the size and fragility of tankers, that exacerbated the problem. The authors completed their study too early to note similar consequences due to events in Iran and Afghanistan in 1979. All proposals to control pollution that would affect military movements or trade in strategic goods have so far been unacceptable to the major oil-consuming and shipping nations. Similarly, developing nations are reluctant to accept environmental standards they feel threaten their economic development.

The authors end by making recommendations to improve the regulatory regime that is emerging through such conferences as those called by IMCO, the U.N. Environmental Program (UNEP), and the interminable yet useful sessions of the Third U.N. Conference on the Law of the Sea. These include strategies to deal with factors "intrinsic" and "extrinsic" to the oil pollution issue. The former include improved chartering contracts to provide greater accountability from oil companies for the behavior of independently owned tankers flying flags of convenience and increased port-state powers to deal with substandard vessels and crews. Recent versions of a draft comprehensive ocean treaty emerging from the Law of the Sea Conference point in the direction the authors prescribe. An enlarged IMCO with a more efficient legislative process than is afforded by traditional conference diplomacy and with greater secretariat initiative is also urged. Among the extrinsic factors discussed are the importance of technological and economic growth, especially among the developing countries (the Group of 77) and economic strategies to internalize environmental costs. Last but not least, the authors urge the introduction of alternative energy sources or a slowdown in energy demand in the developed world. All in all, they have contributed a useful study on the general problem of world order by focusing in commendable but judiciously selected detail on one aspect of one problem—ocean pollution.

DANIEL S. CHEEVER
Graduate School of Public and International Affairs, University of Pittsburgh, Pittsburgh, Pennsylvania 15260

Lemurs

Nocturnal Malagasy Primates. Ecology, Physiology, and Behavior. P. CHARLES-DOMINIQUE, H. M. COOPER, A. HLADIK, C. M. HLADIK, E. PAGES, G. F. PARIENTE, A. PETTER-ROUSSEAUX, and A. SCHILLING. Academic Press, New York, 1980. xii, 216 pp., illus. $27.50. Communication and Behavior.

This collection is the work of nine French biologists of the Museum National d'Histoire Naturelle, Brunoy. Half the chapters report on a series of visits of one or two months' duration (between November 1973 and July 1974) to a western sclerophyllous and deciduous forest near Morondava, Madagascar. Most of the reports discuss lemuriform primates that have seldom been studied in the wild; many of the observations are preliminary reports on the natural history of these lemurs. Five of the perhaps 11 species of nocturnal Malagasy lemurs are dealt with, and tantalizing glimpses of their "eco-ethology" are provided. The remaining five chapters report laboratory observations of learning and annual cycles; some reports summarize three years of work at Brunoy. Though well presented, much of this material is available elsewhere. The book will be welcomed as a convenient English summary of much of the French research on nocturnal lemurs. Unfortunately, it is not a summary of what is known about nocturnal lemurs, because much previous work is not given adequate citation.

The authors have made an admirable attempt to integrate their field and laboratory observations. However, these observations are intertwined to an extent that it is often difficult to determine whether or not a particular behavioral or physiological pattern has actually been observed under natural conditions. For example it is stated that *Cheirogaleus medius* hibernates "for at least 6 consecutive months and, in some instances, up to 8 months" (p. 53). When, where, and how often was this observed? Here torpor is claimed to be an adaptation to a seasonally variable food supply while another plausible hypothesis—that torpor is a response to microclimatic change—is not explored. With the exception of the introductory chapter, which outlines the flora and climate of the study site, the field reports are primarily anecdotal. Information on hours of observation and sample sizes, tables of raw data, statistical tests, and standard ecological indices are almost entirely absent. For example, the statements that "seasonal variation in diet follows food availability" (p. 55), that two lemur species collect the "same absolute quantity of animal prey" (p. 60), and that "allogrooming is frequent between males, females, and juveniles" (p. 85) are presented without supporting data. Many of these assertions may be insightful, but there is danger that such untested generalizations will become established in the literature because they are the only statements extant about these rarely studied taxa.

Overall, this book can serve neither as a general review of nocturnal Malagasy lemurs nor as a detailed reference. But, though the authors generally fail to provide adequate hypotheses and tests, their observations could serve as a basis for framing hypotheses. Sadly, very few field studies of Malagasy lemurs have been attempted during the last five years. The lemurs may become extinct before we can pursue hypotheses derived from preliminary studies such as these.

ROBERT JAY RUSSELL
Department of Anthropology, University of California, Los Angeles 90024

Annelids

Aquatic Oligochaete Biology. Proceedings of a symposium, Sidney, B.C., Canada, May 1979. RALPH O. BRINKHURST and DAVID G. COOK, Eds. Plenum, New York, 1980. x, 530 pp., illus. $55.

In *Aquatic Oligochaete Biology* the editors have succeeded in presenting an overview of what is known, and unknown, about their favorite organisms. The book is the proceedings of a meeting held at the Patricia Bay facility, British Columbia. It demonstrates clearly the variety of interest in and approaches taken to oligochaete biology by what amounts to a who's who of specialists on the group. There are taxonomic reviews (Harman, Erséus), zoogeographic reviews (Timm), and reviews of reproductive biology (Brinkhurst) and of various aspects of ecology (Caspers, Diaz, Giere), in addition to a series of papers reporting original research on a variety of topics from morphological variability to sensitivity to chemical pollutants. A series of papers demonstrate the influence of various anthropogenic agents on the populations of worms, and there is even a review of the content of the book in the form of a postscript by Brinkhurst.

For me, as a polychaete systematist and biologist, the most impressive feature of the book is the amount and quality of information available about some of