volved? Is it really beyond our powers to suggest which questions are the more fundamental and to consider the data and methods required to pursue them? Is it relevant for our society's emerging needs to focus so largely on competence? Or is that focus too narrow—too reflective of an individualistic, secular, liberal outlook in a period in which there is fresh awareness of the limitations of that outlook and of the degree to which all socialization is a political act: the degree to which it is an effort to control as well as to equip, and a selective allocation of skills rather than merely a general enhancement of our personal powers? I do not know the answers to those questions, but I hope that this committee, or another, will be willing to attempt them. The discussions in this book, and its authoritative bibliographies, will be a resource for that attempt.

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In the Wake of the Torrey Canyon

The Biological Effects of Oil Pollution on Littoral Communities. Proceedings of a symposium, Pembroke, Wales, Feb. 1968. J. D. CARTHY and DON R. ARTHUR, Eds. Field Studies Council, London, 1968 (distributor, Classey, Hampton, Middx.). viii + 198 pp., illus. Paper, 45 s.

This little volume deals with the observations made on the fauna and flora of oil-polluted shores and salt marshes of Milford Haven on the Cornish coast. Essentially, this work is an extension of the short-term studies conducted by the staff of the Plymouth Laboratory following the *Torrey Canyon* disaster in March 1967 (for a review of an earlier publication see *Science*, 23 Aug.). The area covered by the present investigations extends over 140 miles of the coastline, and the studies have been continued for several months after the major oil spill in March–April. Information given in the 18 articles by various authors materially broadens our knowledge of the effects of crude oil on plant and animal communities, of the chemistry of oil and detergents used to combat pollution, of the role of bacteria in degradation of oil in the sea, and of the pathological consequences for birds poisoned by oil. Of particular interest is a brief article describing the effect of certain pure hydrocarbons derived from crude oil on cellular membrane of amoeba, paramecium, and other cells. The major part of the book reports many ecological and toxicological features which had not been disclosed by previous investigations. Ecological observations of animal and plant communities in the polluted zones reveal great differences in tolerance among various species. In this respect they fully confirm the findings made in this country and in Europe. A new and interesting approach is used to demonstrate the deleterious effect of crude oil and detergents on littoral communities by determining the potential productivity, expressed in kilograms of dry weight per unit area, of the communities. For instance, the following significant figures are given for kelp forest ecosystems: 236 kilograms in clear water and 101 and 20 kilograms, respectively, in slightly and grossly polluted zones.

A study of metabolism of oil hydrocarbons by bacteria and the isolation of the most active bacterial species from polluted sediments are of scientific interest and also are important from a practical point of view as providing a promising approach to combating oil pollution by increasing the rate of oil degradation through bacterial activity.

It is apparent from the text that our knowledge of the physiological effects of various components of crude oil and of the factors that determine plant and animal growth and affect tolerances of marine species is deficient. It is clear that the detergents used in England in major oil spills are so toxic that their application is not desirable except under special emergency conditions, and there is an urgent need for comprehensive laboratory and field studies in order to formulate practical methods of controlling oil pollution. Because of great complexities of ecological relationships in polluted areas, great differences in the chemical compositions of oil, and an obvious necessity to conduct long-term bioassays at different seasons with various species, work of such magnitude and difficulty could be undertaken only by a large and well-financed organization. It is hoped that the present publication, in which these subjects are discussed, will stimulate the implementation of such research.

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Plants, Mammals, and RNA

Control Mechanisms in Developmental Processes. Proceedings of a symposium, La Jolla, Calif., June 1967. MICHAEL LOCKE, Ed. Academic Press, New York, 1967. xiv + 302 pp., illus. $12. Society for Developmental Biology Symposium No. 26. *Developmental Biology,* supplement 1.

At a time when there is rapid progress in the application of new concepts of molecular biology to developmental phenomena and in the application of modern techniques to classical experimental systems, it is increasingly important to have available the concise summaries of specific aspects of development that the symposia of the Society for Developmental Biology have come to represent to biologists around the world. The present volume is a notable addition to the series. The theme announced by the title of the volume is treated in three sections: The Role of Cytoplasmic Units, The Role of the Nucleus, and Regulatory Mechanisms. The second subject receives the greatest attention, in four chapters occupying about half of the book; the last section is comprised of three rather brief chapters. It is of special interest to the botanist that the first five of the ten chapters are concerned with control mechanisms in plants—ranging from mitachondrial control of fungous morphology (Tatum and Luck) and flagellar development in mutants of a green alga (Randall *et al.*) to plastid ribosomes in plastid development (Bogorad) and gene action in higher plants (McClintock on pigmentation patterns in corn and Stebbins on barley morphogenesis).

In four of the five other chapters, mammalian systems are explored (interspecific somatic hybrids in rodents by Ephrussi and Weiss, erythroid cell differentiation by London *et al.*, development of immunocompetence in the thymus by Auerbach, and estrogen control of development in the rat by Segal). A particularly long, comprehensive, and doubtless controversial chapter by Tyler on masked messenger RNA, especially as it has been studied in sea urchin embryogenesis, completes the list.

Each of these chapters provides sufficient background information to be comprehensible to the advanced student. Most chapters include new experimental data and stress the relationship between these data and current concepts of developmental control. Inevitably, these concepts center around molecular mechanisms controlling protein synthesis in cells, that is, DNA and the hierarchy of