REVIEWS & NOTICES

Topics in Plant Population Biology, Edited by OTTO T. SOLBRIG, SUBODH JAIN, GEORGE B. JOHNSON & PETER H. RAVEN. Macmillan Press, London & Basingstoke, UK: xvii + 589 pp., illustr., 22.6 x 14.4 x 4.0 cm, £14, 1979.

This book is dedicated to George Ledyard Stebbins, a foremost American plant geneticist and ecologist, whose innumerable publications span half-a-century (the first, published in 1929, was concerned with the Mt Desert flora). The book starts by discussing the work of Stebbins, but continues to consider wider areas of plant population genetics, life-history strategies, and energy accumulation.

Stebbins, himself, reviews 50 years of plant evolutionary studies. To begin with, development was slow and was largely concerned with numbers of chromosomes, but a turning point came in the mid-1960s with the discovery of isozyme differences and the conceptual framework of such strategies as those associated with the symbols *r* and *K*.

The book is then divided into three main sections. The first, 'Adaptations and Genetic Variation in Populations', has five chapters dealing with topics as varied as longevity, enzyme polymorphism, and pollinator foraging behaviour. The second section, of six chapters, is entitled 'Life-cycle Parameters'. This section begins with a further consideration of adaptive strategies and polymorphisms, but goes on to consider numbers, mortality and recruitment, and competitive interactions. The third section, 'Energy Harvest and Nutrient Capture', also has six chapters. The emphasis in this section is on energy, with particular reference to photosynthesis and carbon pathways, but there is also a general treatment of both root and canopy structure.

The book is drawn to a close by Peter H. Raven, who speculates on the future directions of plant population biology. His message seems to be that a broad view of population processes has already been gained: what is needed is more detailed study, whether it be of the dispersal of pollen or seed, of the role of specified genotypes in Nature, or of the multivariate approach to the study of woody tropical angiosperm communities.

As the book is concerned with theoretical, rather than practical, studies in plant population biology, it is not immediately possible to apply its ideas within the conservation field. The tone of the book is a review, not particularly directed towards the work of Professor Stebbins, but nevertheless lacking the stimulating ideas that are to be found in its companion volume by the first-named Editor (*Demography and Evolution in Plant Populations*, edited by O. T. Solbrig, Blackwell Scientific Publications, 1980). These two books, taken together, provide an interesting introduction to the present state of understanding of plant population dynamics and genetics.

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United Nations Water Conference: Summary and Main Documents, Edited by ASIT K. BISWAS. (Water Development, Supply, and Management, Volume 2.) Pergamon Press, Oxford–New York–Toronto–Sydney–Paris–Frankfurt: xvii + 217 pp., tables, 25.5 x 17.5 x 1.5 cm, $28, 1978.

One of the most peculiar forms of behaviour must be the large international conference where, we may often infer, conflicts are generated in order to relieve the general tedium. How fortunate, then, that the UN Water Conference, held in Mar del Plata, Argentina, in 1977, has been so ably presented to us in distilled form by Dr Biswas. Pergamon also published the proceedings in four volumes, but here is a one-volume summary divided into an Introduction by the Editor, the opening statement by the Conference Secretary-General, a perspective on the conference by M. R. Biswas, and then a world perspective on water resources and needs (pp. 71–111) and an overview of some of the thematic papers (pp. 111–47). It ends with the Mar del Plata action plan of recommendations and resolutions, and finally an Index.

The most useful parts of the book to most readers will be the compact assessment, by the Secretariat and Professor Gilbert White, of the world water position and the ensuing recommendations, although the latter are in general rather predictable, if no less interesting for that. We may well wonder how far some of them are likely to be taken seriously by governments—especially the one on pricing as a demand regulator: in industrial nations where water is heavily subsidized or virtually free, this is unlikely to be acceptable.

As a whole the Conference seems to have been free from the kind of wrangling that characterized the UN food and population conferences; but, like them, there is implicit, in much of its work, the sense of a population which is coming to the end of its environment.

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1980 United Nations List of National Parks and Equivalent Reserves. IUCN, 1196 Gland, Switzerland: iii + 121 pp., 20.5 x 14.5 x 1 cm, 1 map, soft cover, bilingual English and French texts, Swiss Francs 10, 1980.

The UN List provides basic information (such as country, name, biogeographic province, area in hectares, and date of establishment), of national parks, national nature reserves, and biosphere reserves. Also incorporated in the List are World Heritage Sites.

Last published in 1975, the current edition of the UN List follows a similar format. The 20 pages of preamble provide background data on different categories of protected areas which will be incorporated in future lists.

A major innovation in the List is the addition of the biogeographic classification of areas based on IUCN's Occasional Paper no. 18. For those with computer facilities, the List can provide a first-level analysis of protected areas by realms, provinces, and biomes.

Shortcomings of the List include the lack of commentary on each protected area, as a result of which it is

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not possible to determine whether areas are effectively managed or not. IUCN's Commission on National Parks and Protected Areas will be linking the production of the UN List to that of its *World Directory on National Parks and Other Protected Areas* (IUCN, 1196 Gland, Switzerland: Vol. 1 1975, Vol. 2 1977), which contains more data on each area. It is planned to have this system operational by 1982.

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The Tidal Thames: The History of a River and its Fishes, by ALWYNE WHEELER. Routledge & Kegan Paul, London & Henley-on-Thames, England, UK: x + 228 pp., 25 figs, 22.1 x 15.9 x 3.5 cm, £8.95, 1979.

The physical features of the Thames estuary, its fishes, and its other wildlife, are woven into an intricate web of interrelationships which also involves human endeavour, politics, and social history. From London's earliest days, its inhabitants obtained much of their food-fish from the River—small fish-bones have been identified from several layers dating from Roman Southwark and mediaeval Westminster, and scutes of Sturgeon (*Acipenser sturio*) in mediaeval remains from Westminster Abbey and Baynards Castle. The condition of London's river, however, has long been a matter of concern. As early as 1357, Edward III complained 'that dung and other filth had accumulated in divers places upon the banks of the river and... fumes and other abominable stenches arising therefrom'. Pollution increased during the centuries and, in 1771, Tobias Smollett wrote: 'If I would drink water, I must... swallow that which comes from the River Thames, impregnated with all the filth of London and Westminster. Human excrement is the last offensive part...', and he listed drugs, minerals, poisons, the putrifying carcases of beasts and men. At that time the principal pollutant of the River was organic matter—mainly human excrement, but also the waste from 150 slaughterhouses, the fish market, tanneries, and domestic rubbish.

As the city grew, pollution increased and industrial pollution contributed even further to the deterioration of the River. Water closets, introduced during the first half of the 19th century, flooded the cesspools and flushed into the Thames sewers which previously had often functioned more as storage for waste matter than as conduits. In response to the cholera epidemic that began in 1832, the City Sewers Act was passed and, in 1848, main drainage became compulsory. When cholera struck again in 1849, however, infected excrement was being piped into sewers and thus into the Thames—still a major source of drinking water—and some 14,000 people died, apparently of cholera, in less than a year. By 1949, anaerobic conditions had become virtually continuous throughout the year in many parts of the Thames, hydrogen sulphide was liberated in large quantities and, for many miles of the lower river, the water literally stank. Measures taken subsequently to safeguard public health and reduce pollution are described in detail in this fascinating book.

Alwyne Wheeler, a member of the scientific staff of the British Museum (Natural History), South Kensington, London, conducted a survey of the fishes in the tidal reaches of the Thames between 1967 and 1973. The second part of his book deals with the results of this research in monitoring the return of fishes to the heart of London—a return which began in 1957 after the great clean-up of the Thames, and was still not complete by the time Wheeler had finished his survey. Indeed, large increases in fish populations have occurred following improvements to major sewage works between 1976 and 1978.

The restoration of London's river, and the re-establishment of its wildlife, is a feat of unsurpassed credit—an inspiration to environmentalists and conservationists throughout the world. This attractively illustrated and well-written volume is a worthy testimonial to that success.

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Assimilative Capacity of U.S. Coastal Waters for Pollutants (Proceedings of a Workshop at Crystal Mountain, Washington, July 29–August 4, 1979), Edited by Edward D. GOLDBERG. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Environmental Research Laboratories, Boulder, Colorado 80303: v + 284 pp., figs & tables, 28 x 21.5 x 1.7 cm, stiff paper cover, [no price indicated], mimeogr., 1979.

This volume, comprising the proceedings of a workshop held at Crystal Mountain, Washington, in mid-1979, represents the collective view of a group of North American scientists assembled under the auspices of NOAA and guided by Edward Goldberg. It is an interesting volume, if only because it records and acknowledges that the oceans do have a capacity to receive waste material without suffering unacceptable loss of quality. This idea, long accepted in relation to artificial radioactivity, has been gaining ground in recent years after the euphoria of the early 'seventies, when it became fashionable to talk of prohibition of introduction of certain materials—even to the extent that the annexes of the two international conventions dealing with the regulation of dumping, the London and Oslo Conventions, prohibit the introduction of certain materials without any credible scientific basis for doing so. It is of course widely accepted that the introduction of noxious materials to the environment requires careful regulation, and that a balance has to be struck between the costs of suffering environmental degradation on one hand and the value accruing from so avoiding it on the other.

This Workshop considered the problem from the points of view of: sources of pollutants, the receiving capacities of estuarine coastal and open-ocean waters, and four case-studies of the deep-water dump-site (No. 106 off the Atlantic coast), the New York Bight, Puget Sound, and the Southern Californian Bight. The general conclusion reached was that U.S. coastal waters are not used to their full assimilative capacity, and that judicious use of this spare capacity could help to solve some acute waste-disposal problems without leading to unacceptable environmental degradation. There was concern, however, that the New York Bight and Puget Sound might already be exhibiting signs of stress, indicating that their capacity may have been reached, or marginally exceeded, for some pollutants.