

SPECIAL BOOK REVIEW

Pesticides and the Living Landscape

By W. H. Thorpe, F.R.S.

IT was in 1962 that Rachel Carson published her now famous book *Silent Spring*. This was received with howls of rage and scorn by spokesmen for the big chemical combines and by many others closely associated in one way or another with modern intensive agricultural techniques. Since 1962, the swing of informed opinion towards Rachel Carson's thesis has been dramatic; although it is still much too difficult to secure unprejudiced assessment of the situation from many of those who ought to be, and consider themselves, scientific authorities on the subject. Rachel Carson was a trained biologist and had had some years of experience as a working applied biologist in a US Government Agency. But she had been divorced from this line of work for some years and so the charge, levelled from many quarters, that she was merely a woolly-minded sentimentalist, was relatively easy to make. Now comes a book on the same subject, which fulfils a great need: *Pesticides and the Living Landscape*,* by Dr. Robert L. Rudd, Associate Professor of Zoology at the University of California's campus at Davis—which has long been the headquarters of that University's research and teaching in the agricultural sciences. There is no question of the author's competence in this case and he has produced a thoroughly well documented and up-to-date scientific treatise on the subject.

A feature of the book, to which it owes much of its merit, is the emphasis throughout on the ecological relationships of pests. The main divisions of the work are entitled "Chemicals in the Control of Pests", "The Responses of Animals to Chemical Control", "The Responses of Environment to Chemical Control" and "Ecological Relationships and Chemical Control". Professor Rudd does not make the mistake of playing down the great benefits that have accrued from an insecticide such as DDT. Thus he mentions that it was estimated in 1953 that no less than five million human lives had been saved, and over 100 million illnesses prevented through the use of DDT in controlling insect-borne diseases. It is quite certain that many millions can now be added to these figures, for, as he points out, death rates in Madagascar and Ceylon were almost halved within two years of the introduction of DDT for mosquito control.

There are so many important points established in the book that it is hard to know what to select for mention. The author comes out very strongly for the view that campaigns aimed at the complete eradication of an already widespread insect pest cannot hope to be successful and are certain to have widespread, incalculable, and mainly injurious side-effects. He thus comes down to the need for integrated

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control and for 'concomitance' in the place of 'dominance'. He paraphrases the views of Professor A. W. Brown, the American authority on the subject of insecticide resistance, by saying that "a chemical weapon in biological systems must be used as a stiletto rather than a scythe". The book makes many new points of great importance. After the devastating exposure of the purely selfish and short-sighted views of agricultural interests in the USA (nearly, if not quite as evident in the old world) he goes on to discuss the illusion, created by much controlling legislation, that chemicals remain where they are applied. Residue laws allow a certain amount of an applied chemical to be removed from the area where applied; the amounts are spoken of as "tolerance levels" on foodstuffs. He continues: "the implication is that no more than these amounts escapes from the area where applied. This is simply untrue. Contaminated run off is one such avenue of escape In all cases the premise is not valid that we are protected by residue laws from exposure to crop-protection chemicals".

Many of us hoped that the trend towards more selective insecticides would quickly lead us to a point where the kinds of disaster which have resulted in the past from ignorance and careless pesticide campaigns, will no longer be liable to occur. Professor Rudd points out, however, that even selective insecticides may be dangerous. Thus, eradication attempts against the important malarial vector *Anopheles labranchiae* led to new dominance relationships within the entire anophelene mosquito assembly. It was found that three anophelene species were in fact in dynamic balance with one another and thus even a presumably selective attack on a single element in the complex unwittingly affects the others and may have the result of merely converting the unimportant species into a major hazard. He emphasises clearly that not only the economic entomologist but also the biologists concerned with vertebrate pest control and wildlife management, tend to be too preoccupied with single species.

Readers of ORYX will probably find the excellent sections on mammalian control, on fisheries, and on sub-lethal effects on birds, to be of outstanding interest. The almost invincible ignorance of farmers, legislators and the general public in the United States, on the matter of vertebrate predator control, is indeed shocking; but it at least serves to emphasise the need for continuing and increasing efforts at public education on biological and especially ecological matters. The question of sub-lethal effect of persistent insecticides on birds is very well summarised, and there is a statement that "despite the lack of clear abundant evidence for reproductive suppression under field conditions, both laboratory and field studies strongly suggest that these effects occur. Further careful investigations are certainly warranted".

The chapters on secondary poisoning, food chain poisoning and delayed expression are thorough and well balanced; and emphasis is placed upon the great dangers to wild mammal populations of poisons

such as sodium fluoroacetate. The author refers to the saddening feature that the US Fish and Wildlife Service which was almost entirely responsible for the development of the field use of this substance, "has not assumed the remainder of its responsibilities in regard to wildlife".

Finally, as to human hazards, he is not fully convinced that the argument that pesticide residues in food stuffs are insignificant as a health hazard to human beings is well grounded. He agrees that present allowable residues in foodstuffs have not demonstrably caused ill-effects of general distribution. Nevertheless, the hazards from ingestion of residues over very long periods have yet to be assessed. The question whether we have the right to insist on free choice between residue-contaminated and -uncontaminated foods is rightly regarded as a serious moral issue. The current residue legislation in effect says "No!". But it is pointed out that present governmental agencies are not yet able to guarantee continuing conformity to safety standards. The book is primarily, though not entirely, concerned with conditions in the USA, but in one way or another all the problems raised are relevant, and many of them urgent, to Europe as well as to Africa and India. The author has done us all a great service by this work which, it should be added, arises from a study commissioned by the Conservation Foundation.

African Birds on Record

More Voices of African Birds, by M. E. W. North and D. S. McChesney. Houghton Mifflin Co., \$75.00.

This second recording of African birds sponsored by the Laboratory of Ornithology, Cornell University, was well worth waiting for. By relegating explanatory matter to an accompanying leaflet, no fewer than 90 species, as compared with 42 in the earlier record, are given a very fair hearing, and the standard of reproduction shows the marked improvement to be expected. The record strikes a nice balance between the calls of widespread species, which will be highly evocative of Africa to anyone who has stayed anywhere south of the Sahara, and those of local and hence often very shy species, of especial interest to the ardent ornithologist probing "difficult" areas of bush and forest. For the short or long-term resident in Africa, with small or greater passion for birds, the value of these recordings can scarcely be exaggerated. It is not so many years ago that to link some of these splendid sounds with their owners, the doves and cuckoos, owls and nightjars, trogon, thrushes, robin-chats and "cisticola" warblers, in particular, meant patient watching over a period of years. Now it should be possible for anyone to decide at once that the patch of forest at the bottom of the garden (or near the airport) contains a tambourine dove or bronze-naped pigeon, and to proceed at once to learning more of the life history of such shy species.

The impression given in the leaflet, that many if not most of the species are birds of Kenya and Uganda only, could not be further from the truth. Of the 90 species recorded, half a dozen at most are more or less confined to Kenya and Uganda. Many of the others are far commoner in, and more typical of other parts of the continent. One could also wish that the planning had allowed for closer and more convenient comparison of closely allied songs. Would it be too much to hope that when the series is completed, a new edition will be issued to meet this need?

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