

the extinct birds of New Zealand, such as the moa, upon which Dr. Oliver is an outstanding authority. There are many photographs and twelve coloured illustrations.

P. M.

THE FLAMINGOS: THEIR LIFE HISTORY AND SURVIVAL. By ROBERT PORTER ALLEN. Research Report No. 5, National Audubon Society. xv + 285 pp., 16 plates (4 coloured), 49 figs., 8 tables, 1956. \$3.95.

Robert Porter Allen is to be congratulated on his skilful presentation of the complex problem of the flamingos. His superb monograph is a most fascinating exposition of this extraordinary and lovely bird and not just a highly technical ornithological treatise. Every page is intriguingly informative, as well as of absorbing interest, and though to a certain extent inevitably repetitive, repetition serves to emphasize the disturbances and disasters to which the flamingos have been and are still subject. Happily, however, it is not all species of flamingos which are at present seriously threatened, though no corner of the earth now inhabited by these strange birds remains untouched by man—therein lies the danger. Probably no other bird has such a tragic record of prolonged and steady destruction. The flamingo whose status is causing grave concern is the greater flamingo, *Phoenicopterus ruber*, commonly known as the American or West Indian flamingo. To a lesser extent its near relative of Europe, Africa and Asia, *Phoenicopterus antiquorum*, and also *Phoenicoparrus jamesi* of the Andean highlands of South America are nearing the danger point. Fortunately, other flamingo species do not yet present serious population problems. But Allen's treatise deals generally and comprehensively with all species of flamingos wherever they occur.

His three years of intensive study in the field of the American flamingo provide the background of much that is recorded, though in a general way the report is also a revision of the basic literature of the flamingos, as well as an attempt to interpret the various aspects of their biological characteristics in relation to environment. Preceded by a 19-page "Introduction", including an entertaining dissertation on "Legend and Early History", it is admirably arranged in five parts: "Distribution and Migration," "Numbers," "Food Habits and Ecology," "The Breeding Cycle" and "Conservation".

In their behaviour and general habits all flamingos are much alike. They are to be found from sea level to an altitude of 15,000 feet; one species nests at 13,000 feet. Man is the

flamingos' main enemy and in one way and another, directly and indirectly, is responsible for the alarming contraction of its habitat generally and in particular its breeding grounds. The flamingo's selective habitat, its specialized food and its nervousness at its nesting site, in combination with adverse climatic conditions, which are frequent, all tend to produce a situation inimical to its welfare. In the Camargue during thirty-four breeding seasons there were only thirteen successful hatchings of *P. antiquorum*; in East Africa although there are widespread reports of egg laying by *Phoeniconaias minor*, only once (in 1955) has a successful hatching so far been witnessed; in the Bahamas during the last half-century *P. ruber* has had to abandon twenty-four nesting sites.

Man kills the birds and collects their eggs for food; while increasing human populations, economic development, changing land use, introduction of predators and disturbance by aircraft, all tend to make life more difficult for the flamingos. But nature, too, plays an important part, for hurricanes and hailstorms can wreak havoc amongst the close-packed mobs, while on the breeding grounds drought, floods and exposure to undue heat may result in wholesale disaster. Like ducks and geese, flamingos are especially vulnerable during the moult.

We are told that the earliest known picture of the flamingo was drawn by Neolithic man, in Spain, about 5,000 B.C., and that the fabulous phoenix is identified with this bird, which the Greeks as early as 414 B.C. called *Phoinikopterus*, from *phoinix* meaning red. Flamingos were used in pagan sacrifices. In the days of the Roman Empire the thick, oily flamingo tongues were regarded as a great delicacy and the lovely birds were destroyed in thousands to provide these titbits at Roman feasts. When the bird is feeding, with bill reversed, the fleshy tongue is used with a strange piston-like action. In the grotesquely curious bill it is the lower mandible which is fixed and the upper movable. Flamingos indulge in a fantastic pre-pairing display; some of the illustrations show the strange postures which this bird was alleged to adopt when brooding.

A most significant and encouraging feature of flamingo preservation has been the formation of the Society for the Protection of the Flamingo in the Bahamas, where there is the largest remaining stronghold of *P. ruber*. But it does seem wrong that private funds and organizations should have to provide the active protection in critical situations while Governments remain notoriously indifferent.

In conclusion, I would like to recall a memory of my own—

Lake Nakuru, in Kenya Colony, at sunset with fully a million flamingos in sight. The ruddy rays of the setting sun light up the densely packed throngs with a glowing pink, and suddenly all is dull and drab. But with another dawn the lively freshness of colour returns. Surely it is for us to ensure that there will always be those vast avian hordes to welcome another dawn. It would be to our eternal shame should we by our commissions or omissions dissipate such a heritage.

C. R. S. P.

ZOOLOGICAL PHOTOGRAPHY IN PRACTICE. By HUGH B. COTT.
Fountain Press, London, 1956. Price £2 12s.

Dr. Cott has had a long and varied experience as a photographer of zoological subjects in many different parts of the world and he is a professional zoologist well known for his work on adaptive coloration. There is thus, combined in one author, a sound knowledge of the practice of photography and a vast zoological learning. But the two aspects are kept too severely in separate compartments—the first part of the book is for the reader ignorant of photography, the last chapters for the photographer ignorant of zoology.

In the middle, it is true, photography and zoology mingle for a brief space and Dr. Cott gives good advice on dealing with photographic problems in extremes of climate, but there is nothing in the book about flash photography or the problem of getting to grips with those shy subjects which cannot normally be photographed without concealment. Colour and ciné are also excluded. In a work costing as much as this, the purchaser may reasonably expect completeness and it could have been achieved by sacrificing some of the photographic information, much of which has no particular bearing on zoological subjects.

As a well-written, simple account of the elements of still photography, with a zoological bias, the book can be warmly recommended. It is handsomely produced and illustrated with 38 text-figures and 68 half-tone plates. The text-figures also are by the author—some in his own distinctive style. He confesses to making a hobby of this type of illustration and modestly suggests that it is merely a matter of a seeing eye and patience. That this is the sum of it is hard to believe!

What is said too seldom in books of this kind (and Dr. Cott is silent on the point) is that anyone who contemplates taking up any branch of photography seriously would be well advised to take a practical course on the subject and thereby save much time in arriving at a reasonable degree of proficiency. G. F.