

other flowers, and a New Guinea species makes a platform of moss to which it brings flowers, bright coloured fruits and fungi.

Many Australian ornithologists consider that bower-birds are "specially intelligent and their display activities are largely 'relaxative', consciously æsthetic and unconnected with the sexual drive". With this Dr. Marshall does not agree and the whole object of the book is to show that the building of bowers and stages are all part of the nuptial display when the reproductive organs are in the early stages of the seasonal development often some weeks before the nest is built and the eggs laid. The nest is always some little distance from the bower, or display ground, and the male takes no part in the building or the feeding of the young.

Two chapters are devoted to a discussion on the seasonal development of the reproductive organs in birds and more particularly in bower-birds. This is followed by another chapter on the seasonal effect on the reproductive organs. Dr. Marshall has done much work both in this country and in Australia on this subject, but unfortunately these two chapters are written in such highly technical language that few laymen will be able to understand many of the terms used. The greater part of the book is devoted to a very readable account of the different species, their habits and description of these bowers and play-grounds. A final chapter gives the author's views on the evolution of the different kinds of bowers.

This work, as Dr. Marshall points out, is only a preliminary statement and much more work is needed before we can come to a proper understanding of this remarkable phenomena.

N. B. K.

THE SEALS AND THE CURRAGH. R. M. LOCKLEY.

J. M. Dent and Sons. 15s.

If you do not know what a curragh is you will be puzzled by the title of this book and may pass it by. The éurragh is a fine, light Irish boat of laths and pitch-tarred canvas. It plays an important but subordinate part in this story.

We know we can expect from Mr. Lockley entertaining and accurate accounts of islands and of birds, in lucid even poetic style. He does not fail us here. We have the day-to-day story of individual seals on a lonely Welsh beach. The ceremony of recognition, the water dance, the mating of the seals could not be more delightfully described. There are

moments of high drama—man and curragh against wind and sea, bull seal versus bull seal, a cow seal's valiant fight to save her calf from the fury of the gale. All these, together with the author's gift of description—the waves, the clouds, the sunshine and the flowers—would by themselves have made a good natural history book, and I suspect that little more was the author's intention.

Then came Tessa. A child separated from her father by the fall of Singapore and moved from war-time London, where her mother had been killed.

It is by his treatment of the chance appearance of Tessa and his companionship with her that Mr. Lockley has raised his book from just good natural history into an exhibition of very high talent. I had almost said into a work of genius. It is not merely the introduction of the "human element". Tessa displays both for herself and for the author, that true love of the living wild creature without which this book could not have been written. It is through Tessa also that what might have been rather dry anatomical information is brought to life.

The problem of the gestation period of the grey seals will be new to most of us. On the Welsh coast the mother seal gives birth in the late autumn. Having fed her young for a fortnight, she deserts it and, after courtship, mates with the bull which from off-shore has been guarding her breeding territory. Pregnancy thus lasts a little under a year. But there is another mating in the spring on the assembly ground when there are no territories, and when both virgin seals and adult females seem to mate with any attractive bull. The explanation, very tentatively offered, is that both matings produce young in the autumn, but that the ova fertilized in the autumn suffer delayed implantation and do not start to develop until the spring, whereas ova fertilized in the spring develop at once. If this be so, the true pregnancy is only five and a half months.

Mr. Lockley makes a strong plea for the preservation of the Atlantic grey seal. Probably only about 40,000 still remain, spread from the Baltic to Nova Scotia. Half of this population occupies British waters where it is protected from 1st September to 31st December, a period chosen to cover the breeding season on the Farne Islands, but perhaps inadequate for the different breeding seasons of the other colonies on our coasts. Grassholm is now a sanctuary under the Royal Society for the Protection of Birds; but seals do not breed there, presumably because of past persecution. A hopeful sign is that in Britain the "sport" of seal

shooting is gradually becoming shameful; but nearly everywhere else the grey Atlantic seal is persecuted and its numbers are decreasing.

C. L. B.

SQUIRRELS. MONICA SHORTEN. Collins, 1954. 15s.

This is one of the shorter New Naturalist volumes, and a worthy successor to Ernest Neal's *The Badger*, the only previous book in the series devoted to a single mammal. Miss Shorten's book is actually about two mammals, the native red and the introduced grey squirrel in Britain, and is a very thorough account of their life history, habits and distribution.

There are an extraordinary number of misconceptions about the two British squirrels, and it is one of the book's great merits that it leaves no excuse for their survival. To start with, I was very glad to see Miss Shorten take a firm stand against the misapplication to the grey squirrel of the name tree-rat, which as she points out rightly belongs to quite a different animal, *Rattus rattus frugivorus*. The grey squirrel, hated foreigner though it may be, is a true squirrel, and squirrels, though it may be regrettable to those who think the red squirrel our most attractive wild mammal, can be destructive pests, injurious to the interests of the forester, farmer, gardener, and bird-watcher. Ask any forester in Scotland what he thinks of the red squirrel—and he won't bother to call it a red tree-rat either.

Though it is fairly generally known that the grey squirrel is an introduction from North America, it is much less well known that the red squirrels of both Scotland and Ireland are introduced too, the animal having become extinct in Scotland and perhaps never having inhabited Ireland. Even in Epping Forest it is possible that the red squirrels are not native British ones, but deliberate introductions from the Continent about forty-five years ago.

There is a widespread idea that the grey squirrel has driven out the red in England and Wales, but Miss Shorten shows that there is no certainty about this. What appears to have happened is that the red squirrel, having occupied a habitat that was not its ancestral one of conifer forest, suffered a severe epidemic in the early years of the present century. When it began to recover, the already firmly established grey squirrel prevented it from regaining its former ground. Though there are many eyewitness accounts of red and grey squirrels fighting, with the grey usually winning, there is no reason to suppose that this represents anything more than resistance by the grey to the reoccupation of its former territory by the red.