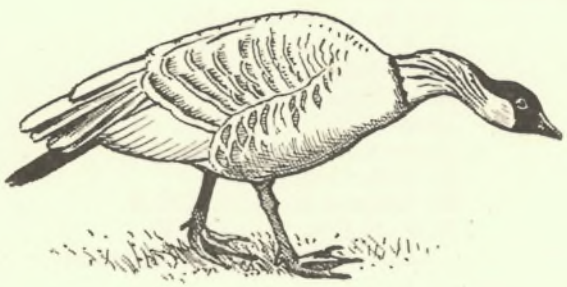
THE SIXTH ANNUAL REPORT OF

THE WILDFOWL TRUST

1952–1953

EDITED BY PETER SCOTT
AND HUGH BOYD



Published for the Wildfowl Trust by
COUNTRY LIFE LIMITED
2–10 Tavistock Street, Covent Garden, London, W.C.2
1954

THE WILDFOWL TRUST

SLIMBRIDGE . GLOUCESTERSHIRE

Tel. : CAMBRIDGE (GLOS) 333

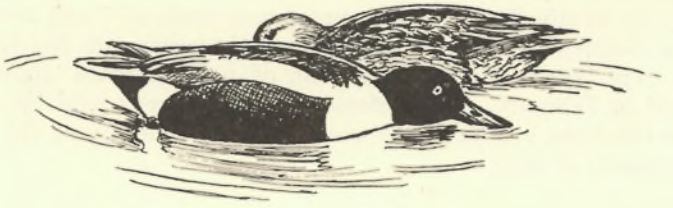
Station : COALEY JUNCTION

Patron - HER MAJESTY THE QUEEN

President	Field-Marshal the Rt. Hon. the Viscount Alanbrooke, K.G., G.C.B., O.M., D.S.O.
Vice-Presidents	The Rt. Hon. the Lord Dulverton of Batsford, O.B.E., M.A., J.P. Sir Percy Lister E. M. Nicholson, Esq., C.B.
Trustees	The Rt. Hon. the Lord Kennet of the Dene, G.B.E., D.S.O., D.S.C. His Grace the Duke of Beaufort, K.G., P.C., G.C.V.O.
Hon. Treasurers	Sir Archibald Jamieson, K.B.E. John Bevan, Esq., C.B., M.C.
Hon. Director	Peter Scott, Esq., M.B.E., D.S.C.
Council	Guy Benson, Esq. Capt R. G. W. Berkeley R. A. H. Coombes, Esq. C. T. Dalgety, Esq. H. H. Davis, Esq. James Fisher, Esq. James Robertson Justice, Esq. K. Miller Jones, Esq. Sir Norman Kinnear, K.C.B. H. F. B. Fox, Esq., O.B.E. (*Ministry of Education Assessor*)
Hon. Secretary	Michael Bratby, Esq.
Secretaries	Miss P. Talbot-Ponsonby E. A. Scholes, Esq.
Organising Secretary	Miss E. R. Gregorson
Curator	S. T. Johnstone, Esq.
Assistant Curator	D. Lea, Esq.
Resident Biologist	Hugh Boyd, Esq.
Agent	Col M. Berkeley

CONTENTS

Eytons Whistling Duck



REPORT

THE late appearance of this report is occasioned chiefly by the very heavy pressure of work which has fallen on its Editors during the past months, and partly by the disorganisation which has accompanied the Trust's move into the new buildings overlooking the Rushy Pen. One result of this delay is that some of the matters reported occurred as much as two years ago. Although Members have already read of these in their bulletins, it is felt that they should be included again in this report if only to preserve continuity in the more permanent series of annual publications. In an effort, however, to make the report a little more up to date, we have included the results of two breeding seasons in the collection —those of 1952 and 1953. In this field therefore the report covers the period from April 1952 to September 1953.

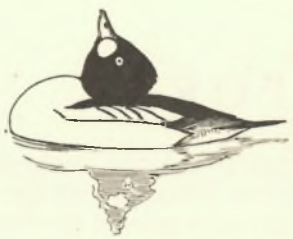
In November 1952 it was learned that the Queen had been graciously pleased to grant her Patronage to the Trust. The Council is deeply appreciative of the great honour which Her Majesty has accorded to our Society.

Satisfactory progress has been made in the field of scientific research, but final results in one of the most important investigations—the population study of the Pink-footed Goose—are not yet sufficiently advanced for publication. They will appear in the Seventh Annual Report. It will be realised that abstracting the data from 14,000 punch cards (each representing a ringed goose) and subjecting those results to statistical analysis is a long process, and the more data which can be obtained before the final calculations, the more accurate will be the results.

During the winter of 1952–53 there were more White-fronted Geese on the Severn Estuary than usual, and on 6 January 1953 nearly five thousand were present—a larger figure than has been recorded there since counts were first started by Mr H. H. Davis in 1933. Of 161 Whitefronts ringed during the three previous winters at the New Grounds 57 reappeared, and the ring-numbers of 13 of them were read. Calculations described on p. 76 suggest that of every hundred Whitefronts alive at 1 January about forty die before the following 1 January. Detailed observation, especially of ringed birds, has led to a considerable advance in the knowlege of the behaviour of these geese. An extensive paper based on the analysis of some 2200 hostile encounters between Whitefronts was published by the Resident Biologist in March 1953 (Boyd : *Behaviour*, V, pt. 2, pp. 85–129) ; a summary is given on p. 81.

Dr Frank McKinney spent the summer of 1952 at the Delta Waterfowl Research Station on Lake Manitoba, Canada, on a student exchange scheme,

supported by grants from Bristol Zoo and the Trust (pp. 51–53). His Ph.D. was obtained after a three-year study at the Trust while holding a scholarship financed by the Bristol Zoo. In the summers of both 1952 and 1953 Dr Eric Fabricius of Sweden spent some weeks in collaboration with Mr Hugh Boyd conducting experiments on the behaviour of newly-hatched ducklings (pp. 84–89); and in February 1953 Professor Konrad Lorenz paid his third visit to the New Grounds, spending two weeks studying and filming the courtship of various species of ducks.



Goldeneye displaying

The Decoy catch during the winter of 1952–53 (1148) was a great improvement on the previous year's catch when only three hundred were caught but not quite so high as in the year before that, which was the highest (1203) since the Trust put the pool back into commission in 1946.

Four Ne-ne or Hawaiian goslings were reared in 1953—a smaller triumph than the nine of 1952 (described in the Fifth Annual Report) but nevertheless a satisfactory result. It seems that the total world population of the species is unlikely to exceed sixty-seven. The function of aviculture in saving threatened species from extinction has been clearly demonstrated in this case. The Ne-ne is not the only bird with such dangerously depleted numbers. It is to be hoped that similar methods will be employed with other vanishing species. The Trust is eager to obtain and attempt to breed the Laysan Teal (40–50 individuals left), the New Zealand Brown Duck, the Auckland Island and Campbell Island Teals, the South Georgia Pintail, the Mountain Blue Duck, the Marianas Mallard and the Pink-headed Duck, for all of which the position appears to be somewhat precarious. Flourishing captive stocks of these birds would be an encouraging insurance against their disappearance, and a source from which restocking could take place when the causes of disaster had been ascertained and offset.

The breeding seasons in the collection both in 1952 and 1953 were marred by serious outbreaks of a parasitic worm *Acuaria* among the ducklings. Various steps have been taken to improve the situation, but the parasite is likely to be stubborn and the final answer may not yet have been found. The hatching and rearing results among goslings were, on the other hand, very satisfactory.

The Trust embarked upon an ambitious venture on 13 January 1953 when it took the Royal Festival Hall for a lecture by the Director with a film of the first Icelandic expedition. The Hall was filled to capacity and the occasion was so successful that the Hall was engaged for two similar lectures in the following winter.

During the year under review total membership of the Trust increased from 4479 to 5068.

WILD GEESE

EIGHT species and subspecies of geese were recorded at the New Grounds during the season 1952–53. A single Greylag appeared, after two winters without one, and there were two Barnacles and a Canada Goose.

Two Lesser Whitefronts were seen, increasing the number of British records to twenty-two.

The highest number of geese present during the winter was 4700, in early January. This is the largest total recorded since the Trust was founded. The very large number was present for a short time only, but there were over 3000 geese from the beginning of December to the middle of January and 2000 or more for most of the rest of January and February.

Attempts to catch Whitefronts with rocket-nets were relatively unsuccessful, only two small catches being made, of fifty-four on 15 February and sixteen on 17 February.

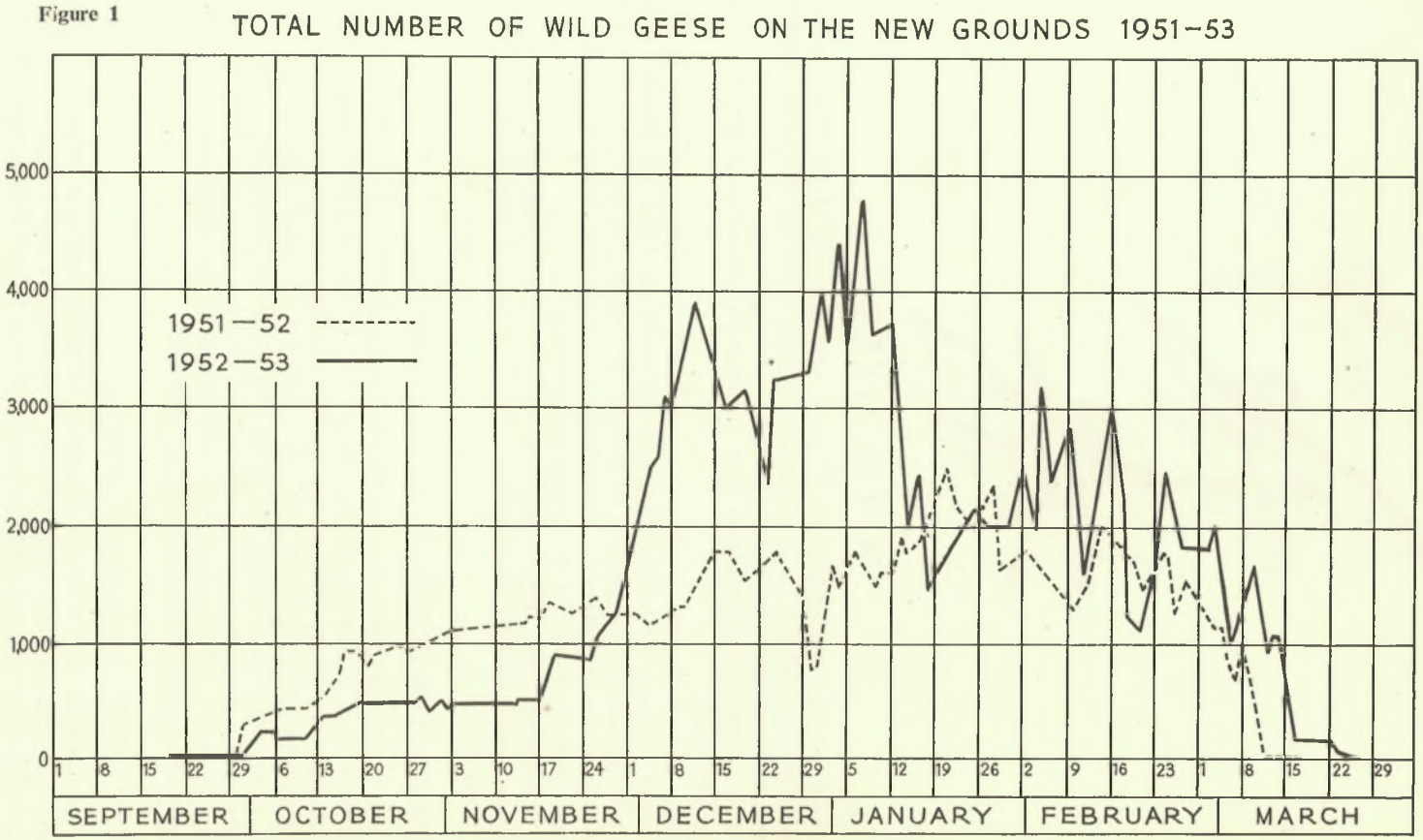
PINK-FOOTED GOOSE (*Anser brachyrhynchus*)

The arrivals and departures of this species in the autumn of 1952 resembled the pattern of earlier years, not that of 1951. The first three were seen on 20 September. There were sixteen on 30 September, thirty-seven on 1 October and sixty by 4 October. The total remained near this figure until the third week in November, with a maximum of seventy-three on 30 October, declining to forty-one on 23 November, eleven on 24th and not more than four thereafter until 2 January. None were seen during the rest of the winter until a single bird appeared on 18 March and remained until 25th.

BEAN GOOSE (*Anser arvensis* subsp.)

A first-winter bird with the orange on its bill limited to a narrow transverse band was seen on many days between 10 December and 2 March. Another first-winter bird with bill largely orange was seen from 9 February to 13 March and a third with a bill similar to that of the first on 2 and 5 March.

Figure 1


TOTAL NUMBER OF WILD GEESE ON THE NEW GROUNDS 1951–53
5,000
4,000
3,000
2,000
1,000
0
1951—52
1952—53
1 8 15 22 29 6 13 20 27 3 10 17 24 1 8 15 22 29 5 12 19 26 2 9 16 23 1 8 15 22 29
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
JANUARY
FEBRUARY
MARCH

A large, long-winged goose seen on 24 December and 25 January appeared to be a Bean × Whitefront hybrid. Its back was unusually grey, the scapulars being very sharply marked, there were no black belly-markings, the neck was dark and there was very little white at the base of the bill. The bill was orange but had a white nail and was short for a Bean Goose.

GREYLAG GOOSE (*Anser anser anser*)

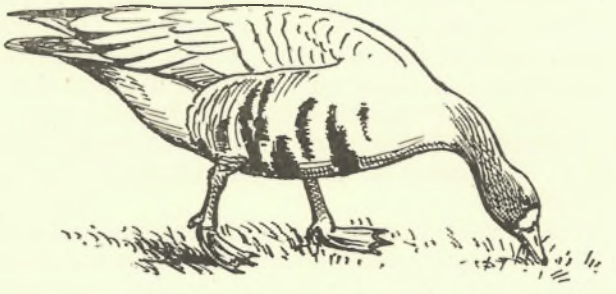
One 26 October to 27 November.

EUROPEAN WHITE-FRONTED GOOSE (*Anser albifrons albifrons*)

The first Whitefront appeared on 2 October. There were over four hundred by the middle of that month, but no further influx until mid-November. At the beginning of December there was a large and sustained increase to a peak of 3900 by 12th (see Figure 1 for a graph of the changes during the winter). The numbers then fell to 2400 on 23 December but rose to 4000 on 1 January and to at least 4700 on 6 January. By 8 January there were no more than 3700 and by 15th only 2000. From then until March the size of the flock fluctuated repeatedly, between limits of 1000 and 3100. The main departures took place from 10 to 17 March, although the last of the wintering flock did not leave until 26 March.

On 5 May 1953 a flock of thirty was seen on the river, by R. C. Philpott. This is an exceptionally late date.

Many of the geese ringed at the New Grounds in earlier years were seen again. None of the fifteen marked in February 1948 were noticed, but at least twenty of the sixty-nine marked with red rings in February 1950 were recognised, the numbers on four of the rings being read and the other birds being distinguished by individual differences in the black belly-markings. 129382, seen with a mate but no young on 9 December and 12 February, had also been identified in December 1951. Only four of the twenty-nine geese marked with blue rings in February 1951 were found, but twenty-three of the forty-eight marked with tall white rings in February 1952 reappeared. It had been hoped that the use of large numerals on these rings would make individual identification much easier, but the results were disappointing, only nine numbers being read.



GREENLAND WHITE-FRONTED GOOSE (*Anser albifrons flavirostris*)

A single adult 1 to 5 November. A group of three adults seen on several days between 18 November and 14 December and again 2 January. Single adults 4 January and 3 February.

LESSER WHITE-FRONTED GOOSE (*Anser erythropus*)

A first-winter bird seen on at least ten days between 27 November and 25 January, again from 17 February to 5 March and finally on 18 March. An adult reported on twelve days from 12 December to 1 March.

BARNACLE GOOSE (*Branta leucopsis*)

A first-winter bird remained from 30 November to 22 March. An adult was also present from 24 January to 13 March.

CANADA GOOSE (*Branta canadensis*)

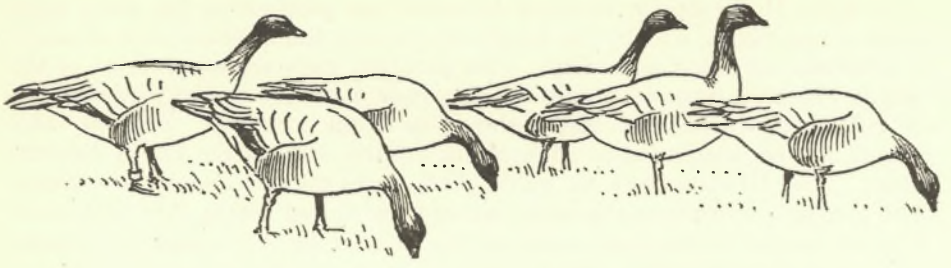
One joined the birds in the collection on 6 May 1953 and has remained.

MARKING OF GEESE

The capture of geese for ringing remains the principal activity of the Trust away from the New Grounds. In the autumn of 1952 two trips by the rocket-netting team resulted in the capture of 1219 geese. Eight catches were made in the period 12–27 October and a further eight between 12 and 25 November. Although the principal object of both trips was the capture of Pinkfeet, eighty-eight of the November catch were Greylags. The Pinkfeet caught included thirty-seven which already carried rings.

The rocket-netting technique remained much as described in the Fifth Annual Report, with only one major alteration—the substitution of cordite-propelled rockets for those using black powder as a propellent. The cordite rockets are substantially more efficient than the black powder ones, carrying the net over the geese more swiftly and, being smokeless and flashless, they are less likely to frighten the geese. Four catches of over one hundred were made. For the successful development of these rockets we are much indebted to Lord Geoffrey Percy, Lt-Col C. F. Tumber of the Royal Military College of Science, and Mr B. W. Johnson.

Although much valuable information on the numbers and movements of the Pink-footed Goose has been obtained from recaptures and recoveries reported to us by wildfowlers and others, it is proposed to await one more season's data before submitting the results to extensive analytical treatment. In view of the potential practical importance of this kind of data in providing information on which conservation policy can be based it is most undesirable to publish results prematurely. It is, however, intended to discuss both the methods and the results of this investigation at some length in the Seventh Annual Report.



RECAPTURES AND RECOVERIES OF GEESE

Tables I–III summarise the results of goose ringing which have been reported during the year. It is perhaps desirable to provide definitions of the terms ' recovery ' and ' recapture ' in the sense used by us :

A report of a bird ringed by us and subsequently killed, found dead or captured by somebody else is a *recovery*.

Any bird marked by us and caught by us again is a *recapture*, unless the second capture occurred in the same place as the first and within one month of ringing, in which case it is termed a *repeat* and is not published unless there is some feature of special interest in that particular record.

The recoveries in Table I are all those received within the period covered by this report. With the exception of the New Grounds no more precise location of the place of ringing than the county is given and a similar reticence is employed in listing the place of recovery, where this is in Britain.

The Greylag recoveries are not of any great importance, though the Icelandic one provides direct evidence of the origin of some of the Solway geese and other records indicate (as did the earliest Pinkfoot recoveries) that a good deal of moving and mixing between the Greylags frequenting most of the well-known haunts of the species takes place in the course of a winter.

Reports of Whitefronts include four more from Russia, one from a known breeding place, the others providing further indications of the route followed on the northward flight in spring and confirming that this is not directly north-eastwards from the western European wintering places but eastwards and then almost due north. For this species also it is becoming clear that the use of several different haunts in one winter is typical, despite the strong tendency to return to the New Grounds indicated by the numerous sight records of ringed birds.

The very lengthy list of Pinkfeet includes several birds worth attention. 127321, which left, after six months in the collection, in August 1948, survived over four years despite the handicap of unusual familiarity with (unarmed) man. 130393 reached Greenland in May 1951 although at the time of its capture in December 1950 it had been injured sufficiently for it to be sent to Slimbridge for recuperation. The most important recovery is undoubtedly that of 21077, ringed in Iceland in July 1951 and shot in Denmark in October 1952. This goes some way towards disproving the hypothesis that the Pinkfeet wintering in Denmark might consist exclusively of the Spitzbergen breeding population and be independent of the British wintering population, made up of birds breeding in Iceland and Greenland.

In Table II the British Pinkfoot recoveries are grouped by the seven main areas of occurrence and by the month of recovery (birds whose date of death is uncertain are listed separately). This grouping gives some indication of the way in which the times of greatest kill vary from district to district (the existence of differences in the close season should be borne in mind). But this table should not be interpreted as showing the relative sizes of the kill in different areas. Table III shows how the monthly kill varies over the country as a whole. The comparison between the recoveries of geese ringed before 1952 with those of birds marked in that autumn makes clear that the use of first-season recoveries in computing vital statistics may be very misleading, since at least a quarter of the total kill takes place in October and November, the months when the British ringing has been done.

The Pinkfoot recaptures listed in Table IV provide some examples of the movements during the autumn. Apparently the birds are as likely to move northwards as southwards within Britain at this time of year.

TABLE I

RECOVERIES OF GEESE REPORTED DURING THE YEAR

Ring No.	Species	Where Ringed	Date Ringed	Recovered
127344	Greylag	Kirkcudbright	28.3.50	Shot Mjóanes, R. Lagarfljot, E. Iceland (*c.* 65° 30′ N., 14° 20′ W.), 17.8.52
127354	Greylag	Kirkcudbright	28.3.50	Wigtown, 14.2.53
130002	Greylag	Kirkcudbright	16.1.51	Shot near where ringed, 27.11.52
142790	Greylag	Angus	21.11.52	Near where ringed, 13.12.52
142791	Greylag	Angus	21.11.52	Shot Co. Louth, 26.11.52
142793	Greylag	Angus	21.11.52	Near where ringed, 24.1.53
142800	Greylag	Angus	21.11.52	Shot Fife, 6.12.52
142815	Greylag	Angus	21.11.52	Dumfries, 17.1.53
142836	Greylag	Angus	21.11.52	Shot Perth, 7.1.53
142950	Greylag	Angus	22.11.52	Wigtown, 23.2.53
128046	Whitefront	New Grounds	18.2.48	Shot Stade, near Hamburg, Germany (53°36′N., 9°27′E.), 6.10.52
129356	Whitefront	New Grounds	27.2.50	Shot near Aurich, Ostfriesland, Germany (53°28′N., 7°28′E.), mid-10.52
129408	Whitefront	New Grounds	27.2.50	R. Sukhana, Vologda Province, Russia (60°0′N., 42°45′E.), 29.4.52
129415	Whitefront	New Grounds	27.2.50	Shot Montgomery, 26.1.53
129427	Whitefront	New Grounds	27.2.50	Kolguev Island (69°15′N., 49°30′E.),—5.50
130054	Whitefront	New Grounds	25.2.51	Shot New Grounds, 22.12.52

TABLE I—*Continued*

Ring No.	Species	Where Ringed	Date Ringed	Recovered
17	Whitefront	New Grounds	29.2.52	Shot near Blankenberghe, W. Flanders (51°18′N., 3°6′E.), early 12.52
19	Whitefront	New Grounds	29.2.52	Essex, —.1.53
33	Whitefront	New Grounds	29.2.52	Shot Flint, 10.12.52
38	Whitefront	New Grounds	29.2.52	Belev, Tula Province, Russia (53°45′N., 36°10′E.), 20.4.52
46	Whitefront	New Grounds	29.2.52	R. Oka, near Spask, Ryazan Province, Russia (54°23′N., 40°25′E.), 30.4.52
48	Whitefront	New Grounds	29.2.52	Shot near Leer, Ostfriesland, Germany (53°13′N., 7°27′E.), 31.10.52
188	Whitefront	New Grounds	15.2.53	Shot near Leer, Ostfriesland, Germany (53°13′N., 7°27′E.), 14.3.53
127321	Pinkfoot	Left New Grounds	31.8.48	Shot Lincs, 20.10.52
127331	Pinkfoot	Dumfries	22.3.50	Shot Fife, 28.1.53
129514	Pinkfoot	S.E. Scotland	9.10.50	Found dead E. Lothian, before 9.4.53
129528	Pinkfoot	S.E. Scotland	9.10.50	Shot Dumfries, 24.1.53
129564	Pinkfoot	S.E. Scotland	11.10.50	Found dead (shot), Dumfries, 24.10.52
129569	Pinkfoot	S.E. Scotland	11.10.50	Shot Angus, 16.1.53
129581	Pinkfoot	S.E. Scotland	12.10.50	Shot Cumberland, 3.10.52
129613	Pinkfoot	S.E. Scotland	15.10.50	Shot Angus, 1.12.52
129619	Pinkfoot	S.E. Scotland	15.10.50	Shot Dumfries, 27.12.52
129637	Pinkfoot	S.E. Scotland	15.10.50	Shot Lincs, 18.10.52
129661	Pinkfoot	S.E. Scotland	15.10.50	Shot Kincardine, 31.1.53
129686	Pinkfoot	S.E. Scotland	18.10.50	Skeleton found Perth, before 4.4.53
130210	Pinkfoot	S.E. Scotland	21.10.50	Shot Norfolk, 23.1.53
130213	Pinkfoot	S.E. Scotland	21.10.50	Shot Lincs, 14.1.53
130225	Pinkfoot	S.E. Scotland	23.10.50	Shot Cumberland, 31.12.52
130234	Pinkfoot	S.E. Scotland	23.10.50	Found dead Dumfries, mid 1.53
130250	Pinkfoot	S.E. Scotland	23.10.50	Shot Cumberland, 22.1.53
130251	Pinkfoot	S.E. Scotland	23.10.50	Shot Lincs, 11.10.52
130268	Pinkfoot	S.E. Scotland	23.10.50	Shot Angus, early 11.52
130320	Pinkfoot	Dumfries	27.10.50	Recaptured in rocket-nets, Fife, 20.10.52 : found dead Perth, early 3.53
130353	Pinkfoot	Dumfries	28.10.50	Remains found Cumberland, early 2.53
129884	Pinkfoot	Lincs	2.12.50	Found dead Lancs, early 3.53
129915	Pinkfoot	Lincs	2.12.50	Shot Aberdeen, —.3.53
129937	Pinkfoot	Lincs	2.12.50	Shot Lancs, early 1.53
129955	Pinkfoot	Lincs	2.12.50	Shot Lincs, 19.11.52
129959	Pinkfoot	Lincs	2.12.50	Shot Stirling, 15.12.52
130393	Pinkfoot	Caught Lincs, released New Grounds	5.12.50	Sermikikfjord, E. Greenland (*c.* 66°N., 38°W.), 9.5.51
129990	Pinkfoot	Lincs	6.12.50	Found with broken wing Lincs, 26.2.53
130073	Pinkfoot	Dumfries	4.3.51	Found dead under wires in Dundee, 7.2.53
130418	Pinkfoot	Dumfries	10.3.51	Shot Lancs, 1.1.53
130421	Pinkfoot	Dumfries	10.3.51	Found dead Cumberland, 25.3.53
130446	Pinkfoot	Dumfries	10.3.51	Shot Cumberland, 31.1.53
130453	Pinkfoot	Dumfries	10.3.51	Shot Cumberland, 23.1.53
130464	Pinkfoot	Dumfries	10.3.51	Shot Perth, 6.12.52
C529	Pinkfoot	Cent. Iceland	28.6.51	Shot Yorks, 28.11.52
C703	Pinkfoot	Cent. Iceland	11.7.51	Shot Dumfries, 16.12.52
21032	Pinkfoot	Cent. Iceland	15.7.51	Shot Cumberland, 28.12.52
21050	Pinkfoot	Cent. Iceland	15.7.51	Shot Kinross, 21.4.52

TABLE I—*Continued*

Ring No.	Species	Where Ringed	Date Ringed	Recovered
21077	Pinkfoot	Cent. Iceland	17.7.51	Shot on shore between Mariager Fjord and Randers Fjord, East Jutland, Denmark (*c.* 56°40′N., 10°20′E.), 8.10.52
21101	Pinkfoot	Cent. Iceland	17.7.51	Shot South Scotland, 3.1.53
21102	Pinkfoot	Cent. Iceland	17.7.51	Shot Yorks, 21.10.52
21142	Pinkfoot	Cent. Iceland	20.7.51	Found injured and destroyed Aberdeen, 23.11.52
21160	Pinkfoot	Cent. Iceland	20.7.51	Ring found (no remains of bird) where ringed, 17.8.52
21191	Pinkfoot	Cent. Iceland	22.7.51	Shot Lincs, 1.12.52
21259	Pinkfoot	Cent. Iceland	24.7.51	Shot Perth, 20.10.52
2509	Pinkfoot	Cent. Iceland	25.7.51	Shot Lancs, 27.3.52
2543	Pinkfoot	Cent. Iceland	25.7.51	Shot Lincs, 29.10.52
2554	Pinkfoot	Cent. Iceland	25.7.51	Shot Lincs, 13.12.52
2580	Pinkfoot	Cent. Iceland	25.7.51	Shot Norfolk, 31.1.53
2651	Pinkfoot	Cent. Iceland	25.7.51	Shot Dumfries, 24.1.53
2660	Pinkfoot	Cent. Iceland	25.7.51	Shot Perth, 26.12.52
2661	Pinkfoot	Cent. Iceland	25.7.51	Shot Lancs, 8.2.53
2675	Pinkfoot	Cent. Iceland	25.7.51	Shot Lanark, 30.12.52
2687	Pinkfoot	Cent. Iceland	25.7.51	Shot Lincs, 14.1.53
2697	Pinkfoot	Cent. Iceland	25.7.51	Shot Fife, 30.1.53
21293	Pinkfoot	Cent. Iceland	25.7.51	Shot Lincs, 14.1.53
2721	Pinkfoot	Cent. Iceland	26.7.51	Shot Fife, —.10.51
2782	Pinkfoot	Cent. Iceland	28.7.51	Shot Angus, 30.1.53
2804	Pinkfoot	Cent. Iceland	28.7.51	Shot Lincs, 18.12.52
21309	Pinkfoot	Cent. Iceland	28.7.51	Shot Perth, 6.2.53
21320	Pinkfoot	Cent. Iceland	28.7.51	Shot Angus, 29.9.52
21369	Pinkfoot	Cent. Iceland	28.7.51	Shot Dumfries, 10.1.53
21393	Pinkfoot	Cent. Iceland	28.7.51	Shot Angus, 14.1.53
21430	Pinkfoot	Cent. Iceland	28.7.51	Shot Kinross, 13.12.52
21433	Pinkfoot	Cent. Iceland	28.7.51	Shot Fife, —.10.51
21440	Pinkfoot	Cent. Iceland	28.7.51	Shot Fife, 3.12.52
21473	Pinkfoot	Cent. Iceland	28.7.51	Shot Fife, 3.12.52
2825	Pinkfoot	Cent. Iceland	31.7.51	Shot Yorks, 29.10.52
2876	Pinkfoot	Cent. Iceland	31.7.51	Shot Yorks, —.11.51
C558	Pinkfoot	Cent. Iceland	1.8.51	Shot Lincs, 20.2.52
C559	Pinkfoot	Cent. Iceland	1.8.51	Shot Angus, late 4.52
C731	Pinkfoot	Cent. Iceland	1.8.51	Shot Fife, —.1.53
C732	Pinkfoot	Cent. Iceland	1.8.51	Shot Peebles, —.3.52
2931	Pinkfoot	Cent. Iceland	1.8.51	Shot Dumfries, 26.12.52
2947	Pinkfoot	Cent. Iceland	1.8.51	Shot Fife, —.1.53
2958	Pinkfoot	Cent. Iceland	1.8.51	Shot Lancs, 19.1.53
2964	Pinkfoot	Cent. Iceland	1.8.51	Shot Angus, 28.10.52
2975	Pinkfoot	Cent. Iceland	1.8.51	Found dead Dumfries, 16.12.52
2976	Pinkfoot	Cent. Iceland	1.8.51	Shot Cumberland, 9.10.52
2983	Pinkfoot	Cent. Iceland	1.8.51	Shot Lincs, 25.10.52
2985	Pinkfoot	Cent. Iceland	1.8.51	Shot Lincs, 13.11.52
2988	Pinkfoot	Cent. Iceland	1.8.51	Shot Dumfries, 8.12.52
140029	Pinkfoot	Dumfries	11.10.51	Shot Dumfries, 8.12.52
140033	Pinkfoot	Dumfries	11.10.51	Shot Yorks, 4.11.52
140035	Pinkfoot	Dumfries	11.10.51	Shot Lincs, end 12.51
140047	Pinkfoot	Dumfries	11.10.51	Shot Cumberland, 12.10.52
140048	Pinkfoot	Dumfries	11.10.51	Shot Kirkcudbright, 19.1.53
140088	Pinkfoot	S.E. Scotland	12.10.51	Shot Aberdeen, 22.1.53

TABLE I — *Continued*

Ring No.	Species	Where Ringed	Date Ringed	Recovered
140089	Pinkfoot	S.E. Scotland	12.10.51	Shot Yorks, 28.11.52
140178	Pinkfoot	S.E. Scotland	21.10.51	Found dead Perth, 3.5.52
140180	Pinkfoot	S.E. Scotland	21.10.51	Shot Aberdeen, end 1.53
140235	Pinkfoot	S.E. Scotland	21.10.51	Shot Lanark, 28.2.53
140241	Pinkfoot	S.E. Scotland	21.10.51	Found dead Lincs, 18.11.52
140250	Pinkfoot	S.E. Scotland	23.10.51	Shot Angus, —.10.52
140253	Pinkfoot	S.E. Scotland	23.10.51	Shot Dumfries, 24.1.53
140919	Pinkfoot	S.E. Scotland	23.10.51	Shot Inverness, 7.2.53
140930	Pinkfoot	S.E. Scotland	23.10.51	Found dead Lanark, 17.4.53
140965	Pinkfoot	S.E. Scotland	23.10.51	Shot East Lothian, —.1.53
140967	Pinkfoot	S.E. Scotland	23.10.51	Shot Fife, 3.11.52
140971	Pinkfoot	S.E. Scotland	23.10.51	Shot Dumfries, 6.1.53
140801	Pinkfoot	Fife	29.10.51	Shot Lincs, mid 1.53
140817	Pinkfoot	Fife	29.10.51	Shot Perth, 17.1.53
140835	Pinkfoot	Fife	29.10.51	Shot Aberdeen, 15.4.53
140842	Pinkfoot	Fife	29.10.51	Shot Kincardine, 14.11.52
140844	Pinkfoot	Fife	29.10.51	Shot Perth, 6.12.52
140850	Pinkfoot	Fife	29.10.51	Found dead Fife, 15.12.52
140853	Pinkfoot	Fife	29.10.51	Shot Angus, 30.1.53
140863	Pinkfoot	Fife	29.10.51	Shot Kinross, 29.1.53
140889	Pinkfoot	Fife	29.10.51	Shot Dumfries, 30.11.52
140954	Pinkfoot	Fife	29.10.51	Shot Aberdeen, 9.1.53
140960	Pinkfoot	Fife	29.10.51	Shot Inverness, 19.4.53
140869	Pinkfoot	Fife	31.10.51	Shot Fife, 28.1.53
141006	Pinkfoot	Fife	31.10.51	Recaptured Angus, 22.11.52 : shot Perth, 11.12.52
141023	Pinkfoot	Fife	31.10.51	Shot Fife, 1.1.52
141034	Pinkfoot	Fife	31.10.51	Shot Angus, —.12.52
141046	Pinkfoot	Fife	31.10.51	Shot Aberdeen, 25.10.52
142001	Pinkfoot	Kinross	15.10.52	Shot Perth, 21.11.52
142006	Pinkfoot	Kinross	15.10.52	Shot Dumfries, 14.1.53
142008	Pinkfoot	Kinross	15.10.52	Shot Perth, 4.12.52
142039	Pinkfoot	Kinross	17.10.52	Shot Cumberland, 26.12.52
142044	Pinkfoot	Kinross	17.10.52	Found wounded Cambs, 6.1.53
142055	Pinkfoot	Kinross	17.10.52	Shot Kinross, —.11.52
142086	Pinkfoot	Kinross	17.10.52	Shot Norfolk, 10.1.53
142088	Pinkfoot	Kinross	17.10.52	Shot Lancs, 10.1.53
142100	Pinkfoot	Kinross	17.10.52	Shot Aberdeen, end 1.53
142106	Pinkfoot	Kinross	17.10.52	Shot Perth, 16.1.53
142167	Pinkfoot	Fife	19.10.52	Shot Midlothian, 10.11.52
142174	Pinkfoot	Fife	19.10.52	Found with broken wing, killed, Angus, 21.3.53
142185	Pinkfoot	Fife	19.10.52	Shot Angus, 16.1.53
142195	Pinkfoot	Fife	19.10.52	Shot Dumfries, 24.1.53
142201	Pinkfoot	Fife	19.10.52	Recaptured S.E. Scotland, 19.11.52 : shot Lancs, 12.1.53
142207	Pinkfoot	Fife	19.10.52	Shot Angus, 11.12.52
142211	Pinkfoot	Fife	19.10.52	Shot Lincs, 22. 12.52
142216	Pinkfoot	Fife	19.10.52	Shot Perth, 3.2.53
142227	Pinkfoot	Fife	19.10.52	Shot Lincs, 27.11.52
142234	Pinkfoot	Fife	19.10.52	Shot Cumberland, 10.1.53
142246	Pinkfoot	Fife	19.10.52	Shot Lincs, 13.12.52
142257	Pinkfoot	Fife	20.10.52	Shot Aberdeen, end 1.53
142321	Pinkfoot	Fife	20.10.52	Scattered remains found Lanark, 3.1.53
142324	Pinkfoot	Fife	20.10.52	Shot Fife, 26.12.52

TABLE IV—*continued*

Ring Number	Where Ringed	Date Ringed	Where Recaptured	Date Recaptured
21146	Central Iceland	20.7.51	Angus	22.11.52
21152	Central Iceland	20.7.51	S.E. Scotland	25.11.52
2679	Central Iceland	25.7.51	Fife	19.10.52
2737	Central Iceland	26.7.51	S.E. Scotland	25.11.52
21355	Central Iceland	28.7.51	Fife	20.10.52
21469	Central Iceland	28.7.51	Yorkshire	25.10.52
140012	Dumfries	11.10.51	Fife	20.10.52
140925	S.E. Scotland	23.10.51	S.E. Scotland	24.11.52
140941	S.E. Scotland	23.10.51	S.E. Scotland	25.11.52
140961	S.E. Scotland	23.10.51	Lincolnshire	27.10.52
140841	Fife	29.10.51	S.E. Scotland	24.11.52
141006	Fife	31.10.51	Angus	22.11.52
141015	Fife	31.10.51	Lincolnshire	27.10.52
142120	Kinross	17.10.52	Angus	21.11.52
142201	Fife	19.10.52	S.E. Scotland	19.11.52
142250	Fife	19.10.52	Lancashire	13.11.52
142272	Fife	20.10.52	S.E. Scotland	25.11.52
142373	Yorkshire	24.10.52	Lincolnshire	27.10.52
142659	Dumfries	17.11.52	S.E. Scotland	19.11.52
142666	Dumfries	17.11.52	S.E. Scotland	19.11.52
142686	S.E. Scotland	19.11.52	S.E. Scotland	24.11.52
142706	S.E. Scotland	19.11.52	S.E. Scotland	25.11.52
142728	S.E. Scotland	19.11.52	S.E. Scotland	24.11.52
142758	S.E. Scotland	19.11.52	S.E. Scotland	25.11.52
142762	S.E. Scotland	19.11.52	S.E. Scotland	25.11.52

WILD DUCKS

IN the season 1952–53 the number of ducks caught for ringing in Berkeley New Decoy at Slimbridge was 1148; at Borough Fen Decoy, Peakirk, Northamptonshire, where ringing is undertaken for the Trust by Mr Billy Williams, who operates the decoy, the total was disappointing—only 64. Ducks ringed have been made available to the Duck Adoption Scheme of the Wildfowl Inquiry Committee. The rings, issued by the British Trust for Ornithology, bear the address of the British Museum (Natural History), London.

BERKELEY NEW DECOY

After the disappointing autumn of 1951 it was reassuring to find that the numbers of Mallards frequenting the decoy in August, September and October 1952 had returned to the level of 1950, with the result that the total catch for the season (Table V) was the second highest since the decoy was repaired in 1946, and only 55 short of the record catch of two years before—1203. Mallards comprised 83% of the catch, a proportion so large as to obscure the variations in the numbers of other species caught. For Teal this was the best season since the formation of the Trust, but the catch of Wigeon was very small, as in the previous two years. The numbers of Wigeon living on the estuary and feeding on the Dumbles or in the fields near the decoy continue to be large in the mid-winter months, so that the failure to catch them must be attributed to the comparative unattractiveness of the decoy pool to this species. A similar explanation may account for the modest total of Pintails caught, but in this case the Trust enclosures provide the counter-attraction, the ducks becoming so tame that they scorn the seclusion of the decoy. The numbers of Shovelers frequenting the pool vary little from year to year. They are more numerous than the catch suggests but are little interested in the bait provided in the pipes and not very keen on dogs either.

The catch of 155 (152 Mallard, 3 Teal) on 22 September was the largest day-total yet achieved. This included 92 at one run at the west pipe (the best of the season, although well short of the record 145 of 13 September 1950), and 63 run simultaneously at the south. Other large day-totals were 76, 68, 60 and 57, all in September.

TABLE V

CATCH AND RINGING FIGURES IN BERKELEY NEW DECOY

		1946–47	1947–48	1948–49	1949–50	1950–51	1951–52	1952–53	Total
Mallard	Ringed	3	64	102	410	802	108	730	2219
	Recaptures	—	6	19	71	222	35	223	576
	Total Catch	3	70	121	481	1024	143	954	2796
Teal	Ringed	2	24	24	56	98	77	106	387
	Recaptures	—	—	7	2	12	10	42	73
	Total Catch	2	25	31	58	110	87	148	461
Wigeon	Ringed	—	19	52	19	4	—	6	100
	Recaptures	—	—	20	2	2	—	—	24
	Total Catch	—	21	72	21	6	—	6	126
Pintail	Ringed	—	2	13	17	36	22	12	102
	Recaptures	—	1	4	5	7	9	5	31
	Total Catch	—	3	17	22	43	31	17	133
Shoveler	Ringed	—	9	26	23	18	7	17	100
	Recaptures	—	—	—	3	2	2	3	10
	Total Catch	—	9	26	26	20	9	20	110
Garganey	Ringed	1	2	1	1	—	—	1	6
	Recaptures	—	—	—	—	—	—	—	—
	Total Catch	1	5	2	1	—	—	1	10
Gadwall	Ringed	—	—	—	—	—	7	2	9
	Recaptures	—	—	—	—	—	—	—	—
	Total Catch	—	—	—	—	—	7	2	9
Total	Ringed	6	120	218	526	958	221	874	2923
	Recaptures	—	7	50	83	245	56	273	714
	Total Catch	6	133	269	609	1203	277	1148	3645

BOROUGH FEN DECOY

Since 1951 the ringing of ducks at this decoy has been financed by the Trust. Lack of funds has meant that it has only been possible to make other species than Mallards available for ringing—as each bird must be paid for at its market price. 1952–53 proved to be a very poor season for other species of ducks and Mr Williams was hampered by ill-health, with the result that sixty-four Teal were the only ducks ringed, compared with over nine hundred in the previous season.

RECOVERIES OF DUCKS

COMPLETE lists of the 218 recoveries reported during the year of ducks ringed at Slimbridge and Borough Fen are given in Tables VI and VII. Recaptures and repeats (i.e. ducks caught again where ringed) are not included, unless the birds were later recovered elsewhere. Six ducks marked by the Trust were trapped by Major-General C. B. Wainwright at Abberton Reservoir, Essex, and released again. These were two Mallard and two Teal from Slimbridge and two Teal from Borough Fen. A Teal ringed at Borough Fen in January 1952 was caught at Slimbridge in September.

Some notes on the recoveries of Mallards ringed at Slimbridge and a comparison with those marked by General Wainwright at Abberton will be found later in this Report (pp. 90–99). Those notes are not concerned with the localities where the ducks were found and we may draw attention here to the Mallards recovered overseas. Though these total only eleven of 102 listed (and it is of course not possible to interpret this directly as indicating the proportion of overseas visitors in the Slimbridge population), it is remarkable that these eleven recoveries come from ten different countries. Two are from Sweden, the others from Norway, Finland, Russia, Latvia, Poland, Germany, Denmark, Holland and Belgium.

No less than 44% of the Teal recoveries are from overseas (a proportion that would be increased to 59% if Eire was granted geographical as well as political independence). Just over half these foreign recoveries were from Scandinavia (nine Sweden, eight Denmark, five Finland, two Norway). Nine were from France, five from Holland, two from Germany, and one each from Russia, Ukraine, Belgium and Portugal. A Teal ringed at Borough Fen on 9 November 1952 was shot on Barrel Island, Newfoundland, on 9 December 1952. Recoveries of this kind look well on a map, but are of little scientific interest. Seven years ago Lebret published a study of the migratory movements of the Teal in Western Europe (*Ardea* 35 : 79–131) based on the recovery of ringed birds, which largely exhausted the potentialities of small-scale ringing of this species, although there is still much more to be learned if large enough numbers can be marked.

The other species of which we have news carry foreign travel to even greater extremes, but have been marked in such small numbers that the reports are little more than curiosities. All three Wigeon were found in Russia. Two of the six Pintail were also found in Russia in summer, the others were shot in Sweden in August, in France and Holland in November, and in Italy in February. One Shoveler distinguished itself by being apparently sedentary. Others were shot in Ireland and France.

The recoveries are listed in the tables in the order in which the birds were ringed.

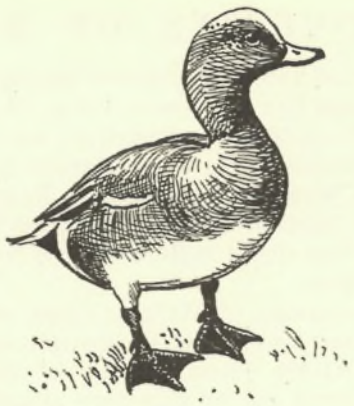


TABLE VI

RECOVERIES OF DUCKS RINGED AT BERKELEY NEW DECOY

(List does not include recaptures, except where the bird involved was later recovered elsewhere)

Ring No.	Species	Date Ringed	Recovered
926478	Mallard ♀	23.9.48	Found dead Cwmdu, Brecon, —.5.52
926521	Mallard ♀	26.12.48	Heinrichswalde, Poland (55°3′N., 21°42′E.), 9.11.51
403721	Mallard ♂	6.8.49	Shot Skövde, Västergötland, Sweden (58°23′N., 13°52′E.), —.10.51
403829	Mallard ♂	17.9.49	Shot Frampton, Glos, before 2.53
403841	Mallard ♀	24.9.49	Libau, Latvia (56°30′N., 21°1′E.), 28.9.50
927602	Mallard ♂	24.9.49	King's Stanley, Glos, 16.1.53
927623	Mallard ♂	24.9.49	Trapped and released again Abberton, Essex, 30.4.52
927683	Mallard ♂	25.9.49	Killed in decoy Wieringen, N. Holland (52°55′N., 5°0′E.), 24.9.52
927689	Mallard ♀	25.9.49	Trapped and released again Abberton, Essex, 28.6.52
927714	Mallard ♀	24.1.50	Lake Ladoga, near Keksholm, Finland (61°10′N., 30°10′E.), 29.4.50
928121	Mallard ♂	15.8.50	Found dead Inistioge, Co. Kilkenny, 21.5.52
928123	Mallard ♂	15.8.50	Shot Aylburton, Glos, 28.10.52
928196	Mallard ♀	30.8.50	Shot Walner, Glos, 31.1.52
928221	Mallard ♂	11.9.50	Shot Föhr, N. Frisian Islands, Denmark (54°43′N., 8°30′E.), 17.8.52
928244	Mallard ♀	11.9.50	Shot Loddington, Northants, —.12.52
928292	Mallard ♀	11.9.50	Shot Aylburton, Glos, 20.10.52
928313	Mallard ♂	12.9.50	Shot Ombersley, Worcs, 25.10.52
928320	Mallard ♂	12.9.50	Lutsk, Volynsk Province, Russia (51°7′N., 25°37′E.), —.3.51
928345	Mallard ♂	12.9.50	Shot March Boldon, Oxon, *c.* 14.10.52
928355	Mallard ♂	13.9.50	Shot Llangibby, Mon, 19.11.52
928387	Mallard ♂	13.9.50	Near Plön, Schleswig-Holstein, Germany (54°8′N., 10°26′E.), 12.8.52
928412	Mallard ♂	13.9.50	Shot Redmarley, Glos, end 1.53
928451	Mallard ♂	13.9.50	Shot Walner, Glos, 31.1.52
928496	Mallard ♀	16.9.50	Near Dixmude, N. Flanders, Belgium (51°2′N., 2°53′E.) 26.2.53
928515	Mallard ♀	16.9.50	Found dead Woburn, Beds, —.5.53
928530	Mallard ♂	17.9.50	Shot Walham, Glos, 16.9.52
928580	Mallard ♂	22.9.50	Found dead Mordiford, Hereford, before 4.5.53

TABLE VI—*continued*

Ring No.	Species	Date Ringed	Recovered
928647	Mallard ♂	24.9.50	Shot Frampton, Glos, 6.9.52
928650	Mallard ♀	24.9.50	Remains found near Lydney, Glos, 5.4.53
129474	Mallard ♀	27.9.50	Remains found Woolaston, Glos, 3.5.51
129480	Mallard ♀	27.9.50	Shot Frampton, Glos, autumn '52
928789	Mallard ♂	18.10.50	Shot near Speech House, Glos, 16.12.52
928791	Mallard ♀	25.10.50	Found dead (shot) Monkton Farleigh, Som, 9.11.52
928804	Mallard ♂	26.10.50	Shot mouth of R. Parrett, near Bridgwater, Som, —.12.52
928867	Mallard ♀	29.10.50	Shot R. Tacumshane, Co. Wexford, 22.2.52
929266	Mallard ♂	1.10.51	Shot Frampton, Glos, before 13.2.53
929342	Mallard ♂	3.10.51	Shot Llangrove, Hereford, 23.10.52
929354	Mallard ♂	20.10.51	Shot Fryksände, Värmland, Sweden (60°9′N., 13°1′E.), 2.11.52
929293	Mallard ♀	8.11.51	Shot near Tewkesbury, Glos, —.1.52
929375	Mallard ♂	23.11.51	Shot R. Og, Marlborough, Wilts, 5.12.52
929378	Mallard ♀	7.12.51	Shot Frampton, Glos, before 13.2.53
970003	Mallard ♂	6.8.52	Shot near Bosbury, Hereford, 6.11.52
970010	Mallard ♂	9.8.52	Shot near Cleobury Mortimer, Salop, 20.10.52
970039	Mallard ♀	13.8.52	Shot Frampton, Glos, 6.9.52
970052	Mallard ♂	14.8.52	Shot Llangyniew, Montgomery, 10.1.53
970204	Mallard ♂	23.8.52	Recaptured 18.9.52: shot Overbury, Glos, 26.10.52
970226	Mallard ♂	29.8.52	Remains found Cam, Glos, 21.9.52
970238	Mallard ♀	3.9.52	Shot Speech House, Glos, 21.1.53
970239	Mallard ♂	3.9.52	Found dead New Grounds, 18.9.52
970075	Mallard ♀	10.9.52	Found dead Kempley, Glos, 25.1.53
970077	Mallard ♂	10.9.52	Tillingham, Essex, Nov. or Dec. 1952
970081	Mallard ♂	12.9.52	Recaptured 4.10.52 : shot near Westbury-on-Severn, Glos, 31.1.53
970084	Mallard ♂	12.9.52	Shot Llangrove, Hereford, 23.10.52
970096	Mallard ♂	12.9.52	Shot Walner, Glos, 17.12.52
970263	Mallard ♂	12.9.52	Recaptured 15.10.52 : shot Llangrove, Hereford, 23.10.52
970108	Mallard ♂	15.9.52	Recaptured 22.9.52 : found dead Abbotsbury, Dorset, 11.2.53
970112	Mallard ♂	18.9.52	Shot Burton, Lincoln, 22.11.52
970122	Mallard ♀	18.9.52	Shot Kerne Bridge, Hereford, 25.11.52
970124	Mallard ♂	18.9.52	Shot Stoke Edith, Hereford, 29.9.52
970140	Mallard ♂	18.9.52	Shot Mathon, Hereford, 10.1.53
970163	Mallard ♀	19.9.52	Found dead Walford, Hereford, 4.5.53
970186	Mallard ♀	22.9.52	Shot Symonds Yat, Hereford, 26.1.53
970191	Mallard ♂	22.9.52	Shot Ozleworth, Glos, 28.10.52
970193	Mallard ♀	22.9.52	Shot Llangrove, Hereford, 23.10.52
970272	Mallard ♂	22.9.52	Shot R. Axe, near Cheddar, Som, 20.1.53
970276	Mallard ♀	22.9.52	Shot Whitchurch, Salop, 22.1.53
970284	Mallard ♂	22.9.52	Shot Tenbury, Worcs, 20.1.53
970286	Mallard ♂	22.9.52	Recaptured 22.9.52, 27.9.52 : shot Westbury-on-Severn, Glos, 15.11.52
970323	Mallard ♂	22.9.53	Shot Shifnal, Salop, 19.1.53
970338	Mallard ♂	22.9.52	Shot near Chester, Cheshire, 24.1.53
970342	Mallard ♀	22.9.52	Shot Woolaston, Glos, 23.10.52
970348	Mallard ♂	22.9.52	Shot Fawley, Hereford, 1.10.52
970357	Mallard ♀	22.9.52	Shot Winterbourne, Glos, 27.11.52
970358	Mallard ♀	22.9.52	Shot R. Severn, near Gloucester, 31.1.53
970366	Mallard ♂	22.9.52	Shot Westbury-on-Severn, Glos, 31.1.53
970373	Mallard ♀	22.9.52	Recaptured 9.10.52 : shot R. Exe, Thorverton, Devon, 29.11.52
970387	Mallard ♂	22.9.52	Shot Ozleworth, Glos, 28.10.52
970400	Mallard ♂	22.9.52	Shot Arlingham, Glos, 2.10.52
970414	Mallard ♀	23.9.52	Shot Llangarron, Hereford, 5.12.52

TABLE VI—*continued*

Ring No.	Species	Date Ringed	Recovered
970439	Mallard ♂	24.9.52	Shot Speech House, Glos, 29.11.52
970440	Mallard ♂	24.9.52	Shot Arlingham, Glos, 2.10.52
970467	Mallard ♀	27.9.52	Shot Chimney, Bampton, Oxon, 16.10.52
970491	Mallard ♀	27.9.52	Shot Stafford, 29.1.53
970501	Mallard ♂	27.9.52	Recaptured 29.9.52, 30.9.52 : shot High Ercall, Wellington, Salop, 1.12.52
970533	Mallard ♂	29.9.52	Shot Knockin, Oswestry, Salop, 30.1.53
970545	Mallard ♂	2.10.52	Shot Coven, Wolverhampton, Staffs, 21.11.52
970548	Mallard ♀	2.10.52	Shot mouth of R. Parrett, near Bridgwater, Som, 11.12.52
970559	Mallard ♀	3.10.52	Shot Gladestry, Radnor, 24.1.53
970565	Mallard ♀	4.10.52	Found dead Senja, North Norway (69°15′N., 17°0′E.), 23.5.53
970640	Mallard ♂	4.10.52	Shot estuary of R. Dovey, Montgomery, 24.12.52
970644	Mallard ♂	4.10.52	Shot Ozleworth, Glos, 22.11.52
970645	Mallard ♂	4.10.52	Recaptured 16.11.52 : shot Hambledon, Hants, 26.12.52
970656	Mallard ♀	12.10.52	Shot Ablington, Bibury, Glos, —.11.52
970660	Mallard ♂	12.10.52	Shot Mathon, Hereford, 23.11.52
970667	Mallard ♂	12.10.52	Shot Ross-on-Wye, Hereford, —.12.52
970592	Mallard ♂	15.10.52	Shot Ozleworth, Glos, 28.10.52
970693	Mallard ♀	15.10.52	Shot Fladbury, Worcs, early 3.53
970699	Mallard ♀	16.10.52	Shot Walner, Glos, 7.1.53
970711	Mallard ♀	16.11.52	Shot Hankerton, Malmesbury, Wilts, —.12.52
970715	Mallard ♀	18.11.52	Remains found New Grounds, 1.6.53
970724	Mallard ♀	3.12.52	Shot Sharnbrook, Beds, 17.12.52
970615	Mallard ♀	7.1.53	Found dead Wolvercot, Oxon, 3.5.53
906531	Teal ♂	13.9.49	Found dead Fjälläsen, Swedish Lapland (67°30′N., 20°10′E.), 16.9.50
906721	Teal ♀	17.2.50	Shot Aberkenfig, Glam, 13.1.53
906729	Teal ♀	18.3.50	Shot Wolferton, Norfolk, 8.11.52
906733	Teal ♂	30.3.50	Shot Aero, Fyen, Denmark (54°50′N., 10°25′E.), —.10.52
909545	Teal ♀	24.8.50	Shot Rebberloh, Celle, Hanover, Germany (52°38′N., 10°3′E.), 21.7.52
909596	Teal ♀	14.12.50	Ukhta district, Komi Republic, Russia (63°45′N., 54°30′E.), 18.8.51
909661	Teal ♂	5.3.51	Kirovograd Province, Ukraine (48°N., 31°E.), 15.8.51
911833	Teal ♀	7.12.51	Piltown, Co. Kilkenny, end 12.52
911835	Teal ♀	15.12.51	Recaptured 11.2.52 : shot Tagarp, Sweden (55°56′N., 12°58′E.), 22.9.52
911838	Teal ♀	29.12.51	Shot Onsöy, near Fredrikstad, Norway (59°12′N., 11°15′E.), 29.9.52
911879	Teal ♂	26.3.52	Trapped and released again Abberton, Essex, 28.8.52
914019	Teal	18.9.52	Shot Crewe, Cheshire, 29.11.52
914035	Teal ♂	19.9.52	Found dead (shot) Frocester, Glos, 26.11.52
914036	Teal ♂	22.9.52	Shot Bailieborough, Co. Cavan, —.11.52
914038	Teal ♂	24.9.52	Shot Fawsley, Northants, 13.11.52
914041	Teal ♂	27.9.52	Harbertstown, Co. Limerick, early 1.53
914043	Teal ♂	27.9.52	Hankerton, Malmesbury, Wilts, —.12.52
914050	Teal ♂	3.10.52	Found dead Sirdalen, S.W. Norway (58°40′N., 6°44′E.), early 4.53
914128	Teal ♀	8.10.52	Trapped and released again Abberton, Essex, 25.10.52 : shot Langenhoe, Colchester, Essex, 24.11.52
914133	Teal	8.10.52	Shot Lesparre, Gironde, France (45°18′N., 0°56′W.), 9.12.52
914074	Teal ♂	9.10.52	Shot Bridgwater Bay, Somerset, 15.10.52
914075	Teal	9.10.52	Shot Stonehouse, Glos, 18.10.52
914080	Teal ♂	10.10.52	Near Montemor-novo, Portugal (38°41′N., 8°6′W.), early 2.53

TABLE VI—*continued*

Ring No.	Species	Date Ringed	Recovered
914155	Teal ♂	18.11.52	Kells, Co. Meath, 25.1.53
914156	Teal ♀	18.11.52	R. Fal, Cornwall, —.12.52
904208	Wigeon ♀	27.9.47	Tumen Province, Siberia (56°30′N., 69°30′E.), 5.5.49
906670	Wigeon ♂	10.3.49	Chelyabinsk, Orenburg Province, Russia (55°12′N., 61°27′E.), 4.9.50
906770	Wigeon ♀	6.4.50	Lake Ilmen, Novgorod, Russia (58°15′N., 31°30′E.), 28.9.50
906658	Pintail ♂	23.11.49	Ulyakovsk Province, Russia (54°35′N., 47°15′E.), —.5.51
927715	Pintail ♂	28.1.50	R. Ob, Tumen Province, Siberia (65°25′N., 64°36′E.), 19.5.50
909501	Pintail ♀	11.7.50	Recaptured 4.4.52 : shot Forserum, Sweden (57°41′N., 14°28′E.), 25.8.52
911858	Pintail ♂	19.10.51	Shot Comacchio, Italy (44°42′N., 12°11′E.), 27.2.53
911922	Pintail ♂	13.2.52	Ameland, Holland (53°27′N., 5°45′E.), 20.11.52
911924	Pintail ♂	13.2.52	Mont St. Michel, Manche, France (48°39′N., 1°32′W.), 1.11.52
906774	Shoveler ♂	12.4.50	Shot Westbury-on-Severn, Glos, 15.11.52
909575	Shoveler ♂	4.12.50	Shot Tuam, Co. Galway, 13.12.52
914002	Shoveler	14.8.52	Shot St. Agnant, Charente Inférieure, France (45°52′N., 1°0′W.), 8.11.52

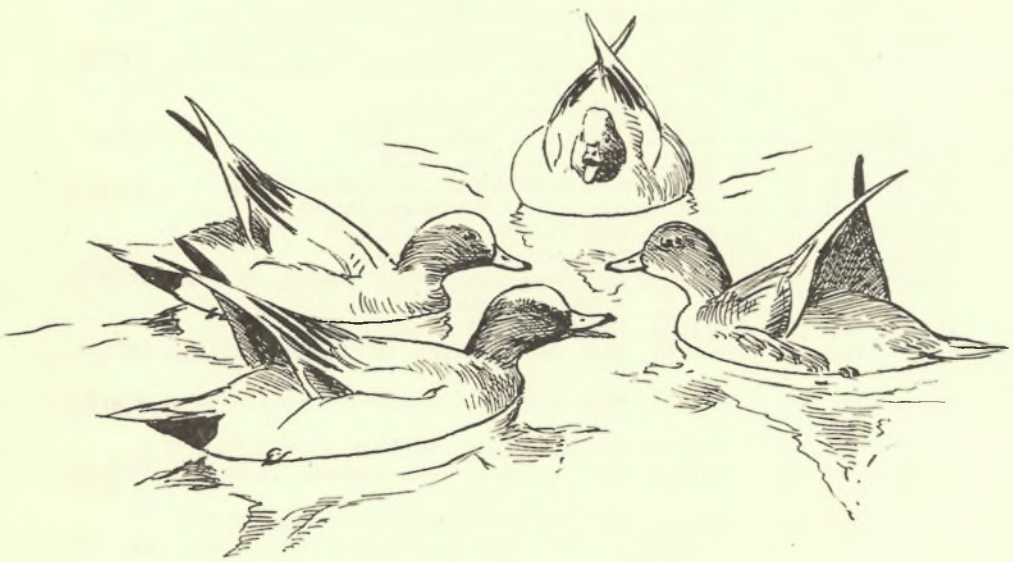


TABLE VII
RECOVERIES OF DUCKS RINGED AT BOROUGH FEN DECOY

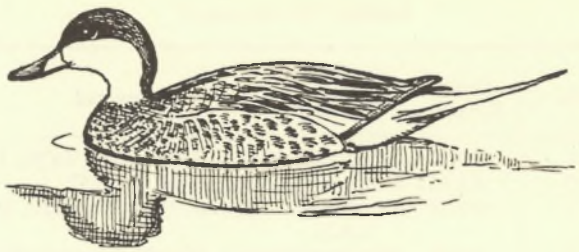
Ring No.	Species	Date Ringed	Recovered
911686	Teal ♂	2.9.51	Övertornea, Swedish Lapland (*c.* 66°25′N., 23°45′E.), 21.8.52
911716	Teal ♂	19.9.51	Shot Kirkby Underwood, Lincs, 27.10.52
911718	Teal ♂	19.9.51	Kampen, Overijssel, Holland (52°33′N., 5°55′E.), 10.10.52

TABLE VII—*continued*

Ring No.	Species	Date Ringed	Recovered
911726	Teal ♂	20.9.51	Caught and released Abberton Reservoir, Essex, 25.10.52
911738	Teal	25.9.51	Shot R. Blackwater, Co. Wexford, —.12.52
911785	Teal ♂	8.11.51	Near Angers, Maine-et-Loire, France (47°28′N., 0°33′W.), 10.12.52
911786	Teal ♀	8.11.51	Fishbourne, Chichester, Sussex, 10.1.53
911793	Teal ♀	9.11.51	Shot Sutton Bridge, Lincs, 6.9.52
911798	Teal ♀	9.11.51	Shot R. Vyrnwy, Salop, 29.11.52
912011	Teal ♂	19.11.51	Shot Skallingen Peninsula, Denmark (55°3′N., 18°15′E.), 29.8.52
912048	Teal ♂	23.11.51	Shot Piispajarvo, Finland (65°15′N., 29°2′E.), 27.9.52
912051	Teal ♀	23.11.51	Crudwell, Wilts, spring 1952
912055	Teal ♀	23.11.51	Shot Ecton, Northants, 3.11.52
912074	Teal ♀	23.11.51	Shot Clogheen, Co. Tipperary, 12.11.52
912080	Teal ♀	23.11.51	Shot Loch Shiel, Argyll, 17.9.52
912091	Teal ♀	24.11.51	Shot Alavus, Finland (62°30′N., 23°35′E.), 3.9.52
912108	Teal ♀	27.11.51	Shot L. Östen, Västergötland, Sweden (58°32′N., 13°55′E.), 2.10.52
912117	Teal ♀	27.11.51	Shot Lanesborough, Co. Longford, 20.11.52
912122	Teal ♀	27.11.51	Bintry, Foulsham, Norfolk, 8.12.52
912127	Teal ♀	28.11.51	Near Pérignac, Charente Infe., France (45°37′N., 0°29′W.), early 1.53
912131	Teal ♀	28.11.51	Shot Solberga, Bohus, Sweden (57°56′N., 11°48′E.), 23.8.52
912144	Teal ♀	28.11.52	Foot found on playing field Methwold, Norfolk, 3.7.52
912160	Teal ♂	29.11.51	Shot Kilmuckridge, Co. Wexford, 10.12.52
912171	Teal ♂	2.12.51	St. Pompain, Deux-Sèvres, France (46°27′N., 0°35′W.), —.12.52
912219	Teal ♀	3.12.51	Shot Peplow, Salop, 3.10.52
912220	Teal ♂	4.12.51	Shot Goole, Yorks, —.12.52
912225	Teal ♂	4.12.51	Ennis, Co. Clare, —.2.53
912259	Teal ♂	6.12.51	Shot R. Blackwater, Co. Tyrone, 15.9.52
912274	Teal ♂	6.12.51	Athlone, Co. Westmeath, 11.1.53
912320	Teal ♀	9.12.51	Shot Fisherton, Notts, 4.12.52
912326	Teal ♀	9.12.51	Ossington, Notts, —.12.52
912333	Teal ♀	9.12.51	Shot Ringköbing Fjord, Jutland, Denmark (56°0′N., 8°10′E.), 1.10.52
912346	Teal ♂	10.12.51	Shot Whittlesey, Cambs, 10.9.52
912357	Teal ♂	10.12.51	Shot near Nieuport, W. Flanders, Belgium (51°8′N., 2°44′E.), 10.10.52
912373	Teal ♀	16.12.51	Pont de Braye, Loir-et-Cher, France (47°47′N., 0°43′E.), 7.2.53
912383	Teal ♀	16.12.51	Picksåmå, Finland (62°15′N., 27°4′E.), 31.10.52
912389	Teal ♂	16.12.51	Shot Roskilde Fjord, Zealand, Denmark (*c.* 55°50′N., 12°5′E.), 20.8.52
912391	Teal ♂	16.12.51	Shot Penrhyn-Dendraeth, Merioneth, 15.2.53
912407	Teal ♂	23.12.51	Shot Ile d'Oléron, Charente Infe., France (45°57′N., 1°15′W.), 11.2.53
912421	Teal ♂	28.12.51	Shot Höjer, S. Jutland, Denmark (54°56′N., 8°40′E.), 6.12.52
912425	Teal ♂	28.12.51	Shot Leimuiden, Holland (52°13′N., 4°40′E.), 4.10.52
912428	Teal ♀	28.12.51	Shot Niebüll, Schleswig-Holstein, Germany (54°45′N. 8°55′E.), 26.9.52
912432	Teal ♀	28.12.51	Baie de Seine, France (*c.* 49°28′N., 0°20′E.), 9.1.53
912449	Teal ♂	30.12.51	Bembridge, I. of Wight, 10.1.53
912456	Teal ♂	31.12.51	Cappoquin, Co. Waterford, 7.1.53
912459	Teal ♀	31.12.51	R. Thame, near Warborough, Oxon, 24.1.53
912463	Teal ♂	31.12.51	Shot Haslov, Sweden (55°38′N., 13°5′E.), 29.8.52
912471	Teal ♀	31.12.51	Shot Nurmes, Finland (63°34′N., 29°5′E.), 29.8.52

TABLE VII—*continued*

Ring No.	Species	Date Ringed	Recovered
912499	Teal ♂	2.1.52	Arvidsjaur, Swedish Lapland (65°44′N., 19°14′E.), 21.8.52
912523	Teal ♂	9.1.52	Downpatrick, Co. Down, 19.12.52
912526	Teal ♀	9.1.52	Caught and released New Grounds, Slimbridge, Glos, 27.9.52
912529	Teal ♂	9.1.52	Shot near Carentan, Manche, France (*c.*99°20′N., 1°20′W.), 20.8.52
912531	Teal ♀	9.1.52	Shot Neede, Holland (52°8′N., 6°36′E.), 26.9.52
912580	Teal ♀	16.1.52	Shot Kampen, Overijssel, Holland (52°33′N., 5°55′E.), 23.8.52
912613	Teal ♀	17.1.52	Lawling Marshes, Essex, 7.2.53
912614	Teal ♂	17.1.52	Shot near Buckingham, 26.11.52
912616	Teal ♂	17.1.52	Shot near Swaffham, Norfolk, 30.8.52
912619	Teal ♀	17.1.52	Shot Maaninka, Finland (63°10′N., 27°17′E.), 21.8.52
912670	Teal ♀	17.2.52	Shot near Holeby, Laaland, Denmark (*c.* 54°50′N., 11°25′E.), 2.11.52
912689	Teal ♀	22.2.52	Storvik, Gävleborg, Sweden (60°35′N., 16°30′E.), —.4.52
912691	Teal ♂	22.2.52	Shot Farcet, Huntingdon, 22.11.52
912699	Teal ♀	22.2.52	Cliffe, Kent, 31.1.53
912702	Teal ♀	22.2.52	Carrick-on-Shannon, Co. Leitrim, 23.2.53
912705	Teal ♀	24.2.52	Shot Carraroe, Co. Galway, 28.11.52
912722	Teal ♂	29.2.52	I. of Föhr, N. Frisian Is., Denmark (54°43′N., 8°30′E.), 19.9.52
912726	Teal ♀	29.2.52	Caught and released Abberton, Essex, 17.10.52
912730	Teal ♂	29.2.52	Shot Köge, Zealand, Denmark (55°28′N., 12°11′E.), 29.9.52
912762	Teal ♂	20.3.52	South Wootton, King's Lynn, Norfolk, 26.1.53
912769	Teal ♂	20.3.52	Kall, Jämtland, Sweden (63°30′N., 13°20′E.), 25.5.52
912770	Teal ♂	20.3.52	Shot Kampen, Overijssel, Holland (52°33′N., 5°55′E.), 18.10.52
912886	Teal ♀	20.3.52	Calais, Pas-de-Calais, France (50°57′N., 1°50′E.), 1.11.52
912784	Teal ♂	24.3.52	Shot Co. Wexford, 7.12.52
912804	Teal ♀	24.9.52	Where ringed, 13.11.52
912819	Teal ♀	9.11.52	Enville, Staffs, 3.1.53
912832	Teal ♀	9.11.52	Barrel Is., Fogo, Newfoundland (49°40′N., 54°10′W.), 5.12.52
912835	Teal ♂	28.12.52	Naseby, Northants, 31.1.53
912841	Teal ♂	28.12.52	Bakewell, Derbys, 20.1.53
912845	Teal ♂	15.1.53	Guyhirne, Cambs, 30.1.53
926870	Mallard ♀	10.10.51	Shot Peterborough Sewage Farm, Northants, 11.9.52



Bahama Pintail

WATERFOWL COLLECTION

As the number of species in the collection increases, so the pens are becoming somewhat overcrowded and more space is urgently needed. It is the Trust's policy to keep three pairs of each species and subspecies, and to have larger flocks of a few selected kinds which are either particularly rare or particularly decorative. Already the Trust has nearly three quarters of the world's forms of this group of birds. Their diet consists of some grain (mainly wheat), pellets of Blue Cross Poultry Food supplied by Messrs J. V. Rank, duck weed, grass, and (for those which require fish) fresh eels supplied by the Mac Fisheries.

ADDITIONS TO THE COLLECTION

A list is given in Table VIII of the birds added to the collection between May 1952 and August 1953. Those forms marked † had not previously been represented. The brevity of this list, as compared with those in earlier reports, shows that the collection has now reached a stage in which it is difficult to make rapid progress towards the goal of complete representation of all forms of *Anatidae*. Most of the outstanding ' wants ' are species which have never been brought into captivity because of their rarity or inaccessibility (like Torrent Ducks, Salvador's Duck, etc.), those which have proved very difficult to keep (like Kelp Geese and the Scoters), or alternatively the difficulties of transporting them alive (like the Stiff-tails).

Smew

The Trust is very grateful not only to those who sent the birds, but also to the many persons who have helped in transporting them with the greatest possible speed.

TABLE VIII

†Spotted Whistling Duck	(*Dendrocygna guttata*) 3
Javan Whistling Duck	(*D. javanica*) 2
Red-breasted Goose	(*Branta ruficollis*) 8
†Sushkin's Goose	(*Anser arvensis neglectus**) 1
†Sharp-winged Teal	(*Anas flavirostris oxypterum*) 3
Baikal Teal	(*A. formosa*) 10
Indian Spotbill	(*A. p. poecilorhyncha*) 4
†Abyssinian Black Duck	(*A. sparsa leucostigma*) 2
†New Zealand Scaup	(*Aythya novae-seelandiae*) 2
Indian Pygmy Goose or Cotton Teal	(*Nettapus c. coromandelianus*) 3
European Eider	(*Somateria m. mollissima*) 5
Smew	(*Mergus albellus*) 3

*Some doubt surrounds the validity of this race which only differs from *A. a. arvensis* in the pink coloration of the bill and legs, and may ultimately be shown to be a colour variation occurring in various races of *Anser arvensis*.

Goosander Ducklings

THE BREEDING SEASONS, 1952 and 1953

(*In order to make the report as up to date as possible it has been decided to include the* 1953 *results, and to discuss the two seasons together.*—ED.)

By S. T. Johnstone, Curator

APART from the fact that some nests were flooded in early May, the 1952 season showed every sign of being a record one. Seventy-four forms of Waterfowl laid and representatives of fifty-nine species and subspecies were reared, eleven for the first time at the New Grounds.

Although better than any previous season, the 1952 results were disappointing in view of the number of eggs which were laid. In early June, when the first young birds were feathering, a large number of Carolina were lost from a heavy infection of Tape Worm (*Hymenolepis* spp.). There followed another infestation —by the parasite *Acuaria uncinata*. Unfortunately no cure could be found and large numbers of ducklings, of twenty-four species, became infected and were lost. When the infection was detected, the remaining ducklings were reared in

coops provided with trays of fresh water and no case of *Acuaria* was recorded in these birds.

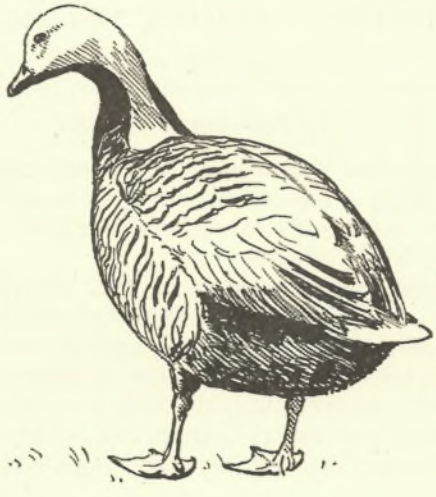
In spite of these setbacks, some 460 birds were reared—the goslings, on the whole, being particularly good. The highlight was the successful rearing of nine Hawaiian Geese (described in the Fifth Annual Report) and a Coscoroba Swan —the first to be bred in this country for half a century.

Among the ducklings, it was unfortunate that all the Silver Teal *Anas v. versicolor* died, but other interesting species which were successfully bred were African Red-billed Pintail *Anas erythrorhyncha*, Cape Shoveler *Anas smithi* and Brazilian Teal *Amazonetta braziliensis*. The amount of live food available was increased by the cultivation of mosquito larvae and through the kind offices of Dr C. Vaisey who brought a weekly supply of fresh-water shrimp from Freshford.

In 1953, seventy forms of Waterfowl laid and representatives of fifty-one species and subspecies were reared. The total number of birds reared in 1952 and 1953 may be compared with the results of previous years in the accompanying table.

TABLE IX

Year	No. of Species and Subspecies Reared	No. of Cygnets and Goslings	No. of Ducklings	Total No. Reared
1947	14	18	31	49
1948	17	20	127	147
1949	37	41	269	310
1950	39	61	221	282
1951	44	72	338	410
1952	59	111	350	461
1953	51	137	248	385



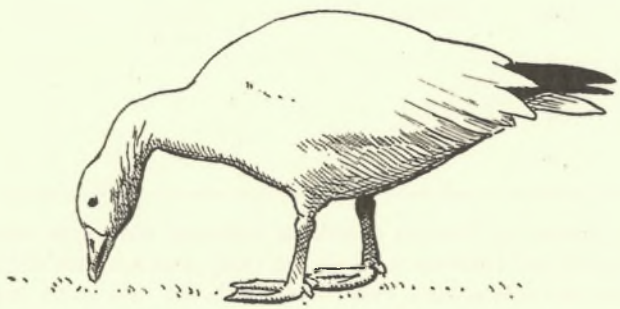
Emperor Goose

With the exception of the Red-breasted, the geese laid well in 1953 and there were no serious losses among the young. The figure of 137 shows a 20% increase on the previous best year and is equivalent to the total number of goslings reared from 1947 to 1950 inclusive. Four more Ne-nes were successfully reared. Apart from these, the most interesting species were the Swan Goose *Anser cygnoides* and Bean Goose *A. a. arvensis.*

Large numbers of ducklings were again lost from *Acuaria* infection and nearly all species were affected. As a preventative measure, most ducklings were reared in coops with trays of tap water and they escaped infection until the feathering stage when they were turned out into the main breeding pen. We are indebted to Mr J. A. J. Venn for the amount of time and patience which he has devoted to helping us with this problem ; a solution of it seems near.

The most interesting species which laid for the first time in 1953 was the Southern Pochard *Netta erythrophthalma.* Among the species which were reared for the first time were Silver Teal *Anas v. versicolor,* African Black Duck *Anas. s. sparsa* and the Philippine Duck *Anas luzonica.*

During 1952 and 1953 some experiments were made with the addition of antibiotics to the food of ducklings. The results of these preliminary experiments are shown on pp. 33–35.



Greater Snow Goose

HAWAIIAN GEESE

After the successful breeding season of 1951 (the rearing of nine goslings was reported in the Fifth Annual Report) it was noticed that Emma (one of the two adult females) did not complete her moult satisfactorily. When she was examined, it was found that the preen gland was much enlarged and the orifice was blocked by a large concretion. Dr Wynn Jones of Bristol kindly came over to the Trust and removed the obstruction. The condition of the bird's feathers continued to deteriorate, however, and the back and belly became almost bare. The bird was moved to a separate pen and was given a high vitamin diet but her condition did not improve.

The other female, Kaiulani, laid her first egg on February 13 and her first clutch of five eggs produced one gosling. On laying the first egg of her second clutch, however, she suffered a severe prolapse of the cloaca and our hopes of a second successful season were dashed. We offer our grateful thanks to

Professor A. Messervy and Dr Wynn Jones of Bristol University who came out within the hour and carried out a skilful repair. Kaiulani was taken for further treatment to the Veterinary Department of Bristol University, where she recovered rapidly and incidentally during her confinement she laid another egg. Subsequently she laid a third clutch of five eggs from which two goslings were hatched. One of these goslings proved to be blind and deformed and had to be destroyed.

Meanwhile Emma, after treatment with luteinising hormone, produced four eggs from which two healthy goslings were hatched.

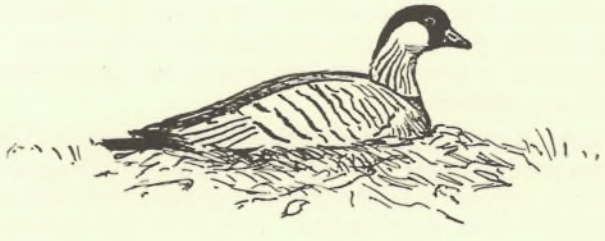
The total of four goslings reared does not compare very favourably with the 1952 results, but in view of the various setbacks, it was not so disappointing as might have been expected.

TABLE X

	Laid	Infertile	Addled	Dead in Shell	Hatched	Reared
Kaiulani ..	13	8	1	1	3	2
Emma ..	4	2	–	–	2	2

Some improvement in Emma's condition followed treatment with Tetmasol, and new body and tail feathers grew in the early autumn, but the areas of the face which had previously been only mildly affected now grew rapidly worse. The preen gland atrophied and she continued to lose feathers. It was thought that she might be suffering from a fungal condition of the skin, but she did not respond to any of the treatments which were tried. In January 1954 she died. Post-mortem examination revealed that the adrenal glands were diseased. No sign of similar symptoms has been detected in any of the other 15 Ne-nes, and it seems that the disease cannot be infectious or contagious.

Nevertheless, as a precaution, a pair of young birds (the female of which had previously recovered from a fractured femur) have been placed under the care of Mr Terry Jones at Leckford in Hampshire.



EFFECTS OF AUREOMYCIN ON THE GROWTH OF DUCKLINGS

By Hugh Boyd

DURING the last few years the addition of small quantities of antibiotics (notably penicillin and aureomycin) to the food of young poultry, in order to increase the rate of growth, has become a standard practice. It seemed important to discover whether the use of such materials was of advantage in rearing ducklings in the collection. So in 1953 aureomycin was used in the mash fed to the great majority of the ducklings. To check its effects a number of birds were fed a similar mash lacking the aureomycin.

The controlled experiments were carried out with broods of Common Pintail (8 birds), African Yellowbill (14 birds, of 2 broods), Australian Grey Duck (7 birds) and Carolina (24 birds, of 2 broods), hatched from eggs incubated by bantams. As soon as the ducklings were old enough to be transferred from the incubation boxes to the rearing-runs (and before they had fed) the members of each brood were assigned at random to receive either the mash with aureomycin or the aureomycin-free diet. Each duckling was weighed and marked after being allocated. All the broods were reared with bantams, in similar runs. Each duckling was weighed at weekly intervals until the end of the experiment, when the birds were large enough to be independent of their foster-parents. Only 33 of the 52 ducklings reached this stage, many of them falling victim to the outbreak of the parasite *Acuaria*.

The differences in rate of growth between the ducklings fed on the two diets are shown by the curves in Figure 2, where the points plotted are the mean weights (in grams) of each group at weekly intervals. The means are for the survivors only, the weights of casualties being omitted, whether they died early or late. It is clear that for each of the four species the addition of aureomycin to the food produced a marked increase in the rate of growth, effective throughout the period of the experiment. Thus, after 7 weeks the Grey Ducks receiving aureomycin weighed 64% more than those which had not had it, the Yellowbills 61%, the Pintails 41% and the Carolinas 18% more. These results are sufficiently encouraging to justify continuing the trials in 1954, when it is hoped to compare the effectiveness of penicillin with that of aureomycin, as well as to carry on the comparisons until the birds reach sexual maturity, in order to discover whether the increased growth in early life results in differences in mature weight and, perhaps, productivity.

The loss from disease of two-fifths of the ducklings used in the experiment not only resulted in rather unsatisfactory mean values for the weights (e.g. there were only 2 survivors in the class of Pintails fed with aureomycin), but also had more disquieting implications. Table XI records the distribution of the casualties. There were significantly more casualties amongst the birds fed with aureomycin (54%) than amongst the controls (22%). This is especially marked in the Pintails and Yellowbills. The possibility that the use of aureomycin increased the vulnerability of the ducklings to parasites is important enough to suggest that the general use of antibiotics as an aid in the rearing of waterfowl cannot yet be recommended.

The aureomycin used was supplied by Dr R. H. Mackay, of Messrs Spillers Ltd, for whose co-operation we are very grateful. The material supplied ('Aurofac') was incorporated into the mash prepared for the ducklings, in the concentration of 0·5% w/w.

TABLE XI

MORTALITY AMONGST DUCKLINGS IN GROWTH-RATE EXPERIMENTS

Species	Diet With Aureomycin			Diet Without Aureomycin		
	Reared	Died	Total	Reared	Died	Total
Common Pintail ..	2	2	4	4	0	4
Yellowbill	3	4	7	7	0	7
Grey Duck	3	0	3	4	0	4
Carolina	4	8	12	6	6	12
	12	14	26	21	6	27

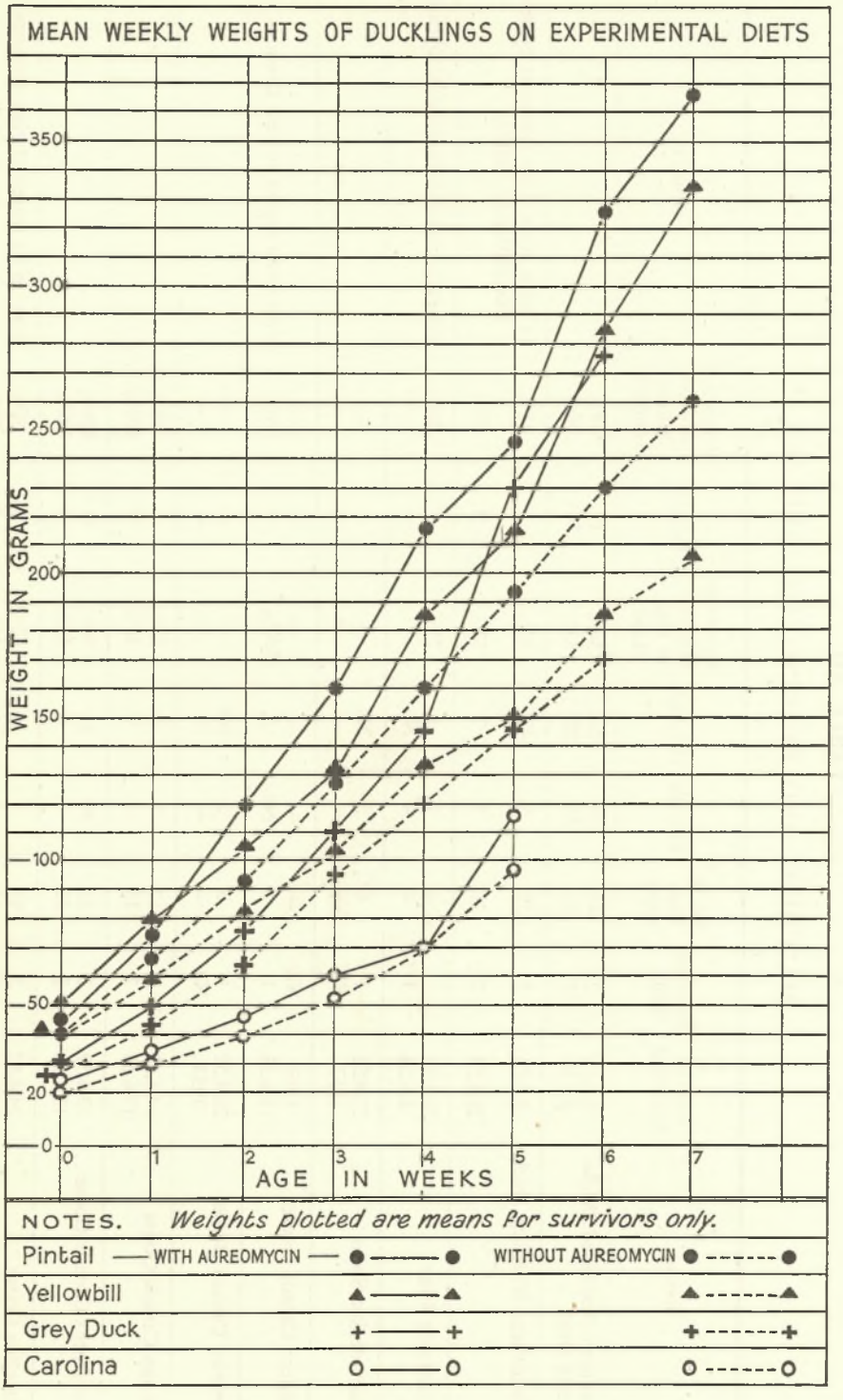

MEAN WEEKLY WEIGHTS OF DUCKLINGS ON EXPERIMENTAL DIETS
WEIGHT IN GRAMS
0
20
50
100
150
200
250
300
350
0
1
2
3
4
5
6
7
AGE IN WEEKS
NOTES. Weights plotted are means for survivors only.
Pintail — WITH AUREOMYCIN — WITHOUT AUREOMYCIN
Yellowbill
Grey Duck
Carolina

Figure 2

TABLE XII

HATCHING AND REARING, 1952 AND 1953

Species	Date of First Egg	Breeding Pairs	No. of Eggs Laid	Infertile	Hatched	Percentage Hatched of Eggs Laid	Reared	Percentage Reared of Young Hatched	Remarks
Southern Red-billed Whistling Duck	9.4.52	2	48	14	26	54%	13	50%	—
	9.4.53	3	61	35	20	33%	14	70%	—
White-faced Whistling Duck	8.5.52	3	52	5	47	90%	5	11%	14 birds were fully feathered before succumbing to *Acuaria*
	28.4.53	2	21	7	7	33%	2	28%	—
Coscoroba Swan	16.3.52	1	4	1	1	25%	1	100%	First to be reared in England for 50 years
	8.4.53	1	4	4	Nil	—	—	—	—
Black-necked Swan ..	22.4.52	1	6	5	Nil	—	—	—	—
	1953	Nil	—	—	—	—	—	—	—
Eastern Canada Goose ..	1952	Nil	—	—	—	—	—	—	—
	11.4.53	1	5	Nil	5	100%	5	100%	First to be reared at New Grounds
Interior Canada Goose ..	28.4.52	1	3	3	Nil	—	—	—	—
	1953	Nil	—	—	—	—	—	—	—
Dusky Canada Goose ..	14.4.52	2	17	7	9	53%	7	77%	—
	13.4.53	2	15	3	5	33%	5	100%	—
Taverner's Canada Goose ..	13.4.52	3	22	10	11	50%	11	100%	—
	12.4.53	3	13	7	6	46%	6	100%	—
Cackling Goose	24.4.52	2	14	7	6	42%	3	50%	First to be reared at New Grounds
	20.4.53	2	9	4	4	44%	3	75%	—

Hawaiian Goose	18.2.52	1½	19	7	9	47%	9	100%	First to be reared in England for 50 years
	13.2.53	1½	17	10	5	29%	4	80%	1 deformed gosling destroyed
Barnacle Goose	1.6.52	3	18	15	2	11%	2	100%	—
	4.5.53	3	16	5	10	63%	8	80%	—
Red-breasted Goose ..	5.6.52	1	5	Nil	5	100%	5	100%	—
	1953	Nil	—	—	—	—	—	—	—
Swan Goose	1952	Nil	—	—	—	—	—	—	—
	9.4.53	1	6	1	5	83%	4	80%	First to be reared at New Grounds
Bean Goose	1952	Nil	—	—	—	—	—	—	—
	26.4.53	1	4	3	1	25%	1	100%	First to be reared at New Grounds
Greenland White-fronted Goose	1952	Nil	—	—	—	—	—	—	—
	21.5.53	1	4	4	Nil	—	—	—	—
Lesser White-fronted Goose	27.5.52	1	4	Nil	4	100%	4	100%	—
	11.5.53	2	9	2	7	78%	7	100%	—
Greylag Goose	2.5.52	2	9	7	2	22%	1	50%	—
	6.4.53	2	12	Nil	8	67%	8	100%	—
Eastern Greylag Goose ..	23.3.52	1	4	2	2	50%	2	100%	—
	23.3.53	1	4	Nil	3	75%	3	100%	—
Bar-headed Goose	21.4.52	3	16	6	8	50%	3	37%	3 adolescent birds lost from visceral gout syndrome
	23.4.53	3	26	15	10	38%	6	60%	—
Emperor Goose	30.4.52	1	11	3	8	72%	2	25%	—
	2.5.53	1	10	3	5	50%	4	80%	—
Lesser Snow Goose ..	28.4.52	1	5	1	2	40%	2	100%	—
	1.5.53	1	6	1	2	33%	2	100%	—

[*continued*

TABLE XII—*continued*

Species	Date of First Egg	Breeding Pairs	No. of Eggs Laid	Infertile	Hatched	Percentage Hatched of Eggs Laid	Reared	Percentage Reared of Young Hatched	Remarks
Blue Snow Goose	25.4.52	1	5	2	3	60%	3	100%	—
	6.5.53	2	14	6	8	57%	8	100%	—
Greater Snow Goose ..	2.5.52	3	25	19	6	24%	4	67%	2 goslings died of aspergillosis
	5.5.53	3	29	21	6	21%	6	100%	—
Ross's Snow Goose ..	3.5.52	3	21	5	13	61%	11	84%	7 of those reared were offspring of a pair caught at Perry River
	5.5.53	4	25	6	17	68%	16	94%	—
Cape Shelduck	4.3.52	1	14	3	10	71%	7	70%	4 reared by parents
	5.4.53	2	16	2	13	81%	7	54%	—
Common Shelduck	9.4.52	1	15	8	6	40%	3	50%	—
	14.4.53	1	11	3	6	54%	4	67%	—
Egyptian Goose	11.1.52	2	32	16	16	50%	14	88%	—
	19.3.53	2	32	26	6	19%	6	100%	—
Orinoco Goose	28.3.52	1	19	5	13	68%	13	100%	First to be reared at New Grounds
	9.3.53	2	34	17	12	35%	10	83%	—
Abyssinian Blue - winged Goose	23.5.52	1	13	4	7	54%	3	42%	First to be reared at New Grounds
	26.5.53	1	9	3	5	55%	5	100%	—
Ashy-headed Goose ..	25.3.52	2	16	2	13	81%	10	77%	—
	4.4.53	2	15	2	11	73%	9	82%	2 goslings killed by weasels

Ruddy-headed Goose ..	22.4.52	1	9	3	6	67%	Nil	—	—
	27.4.53	2	10	4	5	50%	2	40%	First to be reared at New Grounds
Cereopsis Goose	26.12.51	1	9	3	6	67%	1	17%	—
	1.1.53	1	10	7	3	33%	1	33%	—
Andean Crested Duck ..	3.6.52	1	2	Nil	Nil	—	—	—	—
	24.4.53	2	8	4	2	25%	1	50%	—
Marbled Teal	15.5.52	2	21	2	19	90%	Nil	—	—
	2.5.53	3	31	3	28	93%	9	33%	—
Cape Teal	13.4.52	2	14	5	7	50%	1	14%	First to be reared at New Grounds
	1953	Nil	—	—	—	—	—	—	—
Versicolor Teal	12.5.52	1	7	1	6	85%	Nil	—	—
	27.3.53	1	16	1	13	80%	8	60%	First to be reared at New Grounds
Puna Teal	9.3.52	1½	20	6	7	30%	Nil	—	—
	14.3.53	1½	28	12	4	14%	Nil	—	—
African Red-billed Pintail..	1.7.52	1	8	Nil	8	100%	3	36%	First to be reared at New Grounds
	27.5.53	1	8	8	Nil	—	—	—	—
Bahama Pintail	21.4.52	5	36	12	20	55%	15	75%	—
	6.5.53	3	15	8	7	46%	4	57%	—
Chilean Pintail	12.4.52	2	12	9	3	25%	3	100%	—
	29.5.53	1	3	3	Nil	—	—	—	—
Common Pintail	29.3.52	6	48	5	32	67%	3	9%	—
	25.3.53	5	40	6	29	72%	15	52%	—
Green-winged Teal	1952	Nil	—	—	—	—	—	—	—
	1953	1	?	?	5	?	—	—	—

[*continued*

TABLE XII—*continued*

Species	Date of First Egg	Breeding Pairs	No. of Eggs Laid	Infertile	Hatched	Percentage Hatched of Eggs Laid	Reared	Percentage Reared of Young Hatched	Remarks
Falcated Duck	20.5.52	1	10	6	Nil	—	—	—	—
	1.6.53	1	8	8	Nil	—	—	—	—
Chestnut-breasted Teal ..	13.5.52	1	6	Nil	6	100%	Nil	—	—
	5.4.53	1	4	Nil	4	100%	4	100%	First to be reared at New Grounds
Hawaiian Duck	13.4.52	2	17	9	6	35%	3	50%	—
	1953	Nil							—
Florida Duck	1952	Nil	8	8	—	—	—	—	No male bird
	20.4.53	Nil	8	8	—	—	—	—	No male bird
Mottled Duck	25.5.52	1	5	Nil	5	100%	3	60%	—
	1953	Nil	—	—	—	—	—	—	—
N. American Black Duck..	1952	2	18	?	Nil	—	—	—	Both females left to incubate. 1 deserted, 2nd killed by vermin
	10.5.53	1	2	2	Nil	—	—	—	—
Indian Spotbill	14.5.52	1	7	3	3	42%	Nil	—	—
	1953	Nil	—	—	—	—	—	—	—
Australian Grey Duck ..	10.3.52	2	16	Nil	14	87%	3	21%	3 reared by Silkie bantam. Others left with parents, all died
	18.3.52	2	22	6	14	66%	9	64%	—
Philippine Duck	1952	Nil	—	—	—	—	—	—	—
	17.5.53	2	21	5	16	76%	—	—	—

African Yellow-billed Duck	2.3.52 1953	2 Nil	21 —	6 —	12 —	57% —	7 —	68% —	2 reared by parents All 24 eggs hatched proved to be of hybrid origin
African Black Duck ..	9.3.52 1.3.53	1 1	3 4	1 1	2 3	67% 75%	Nil 2	— 67%	— First to be reared at New Grounds
Gadwall	12.5.52 6.5.53	5 ?	33 20	6 5	26 15	78% 75%	26 12	100% 80%	— —
European Wigeon	16.4.52 21.4.53	5 4	77 50	8 5	65 42	85% 84%	33 19	50% 45%	— —
American Wigeon	21.5.52 25.5.53	3 1	16 7	7 6	6 1	38% 14%	5 Nil	83% —	— —
Chiloe Wigeon	19.4.52 8.5.53	2 3	30 36	2 22	26 14	87% 38%	22 7	84% 18%	— —
Blue-winged Teal	22.5.52 31.5.53	2 2	14 13	3 1	10 12	71% 92%	2 5	20% 42%	— —
N. American Cinnamon Teal	13.4.52 17.4.53	5 5	76 85	19 21	55 60	72% 70%	26 19	47% 32%	— —
S. American Cinnamon Teal	21.5.52 1.5.53	1 1	5 8	Nil 4	5 3	100% 38%	3 Nil	60% —	First to be reared at New Grounds —
Garganey	18.4.52 7.5.53	3 1	20 4	2 Nil	17 3	85% 75%	5 2	29% 67%	2 eggs found in pond duly hatched —
Red Shoveler	31.3.52 2.4.53	1 1	8 5	1 2	7 3	87% 60%	6 2	85% 67%	— —
South African Shoveler ..	23.4.52 24.5.53	1 1	12 10	5 Nil	7 10	60% 100%	2 Nil	30% —	First to be reared at New Grounds —

[*continued*

TABLE XII—*continued*

Species	Date of First Egg	Breeding Pairs	No. of Eggs Laid	Infertile	Hatched	Percentage Hatched of Eggs Laid	Reared	Percentage Reared of Young Hatched	Remarks
Common Shoveler	16.4.52	3	45	3	42	93%	24	57%	—
	16.4.53	3	70	10	53	76%	7	13%	—
Red-crested Pochard ..	14.3.52	3	55	3	45	81%	13	29%	—
	26.3.53	3	20	2	28	96%	7	25%	—
Rosy-billed Pochard ..	1.5.52	3	30	10	17	56%	8	47%	—
	18.5.53	3	36	13	16	44%	10	62%	—
Southern Pochard	1952	Nil	—	—	—	—	—	—	—
	30.9.53	1	4	4	Nil	—	—	—	First eggs to be laid at New Grounds
European Pochard	16.4.52	3	15	2	13	86%	7	54%	—
	24.5.53	1	6	Nil	6	100%	1	17%	—
Redhead	24.4.52	3	27	2	17	62%	8	47%	—
	18.4.53	3	42	12	27	64%	10	37%	—
Ring-necked Duck	19.5.52	Nil	6	6	Nil	—	—	—	Only females in collection at that time
	1953	Nil	—	—	—	—	—	—	—
Tufted Duck	19.6.52	1	7	Nil	7	100%	4	57%	—
	19.5.53	1	7	7	Nil	—	—	—	—
Scaup	28.5.52	3	28	2	22	77%	1	5%	Large losses from aspergillosis and visceral gout syndrome
	11.6.53	3	13	2	10	78%	4	40%	—

Brazilian Teal	30.6.52	1	7	1	6	85%	5	83%	First to be reared in England since war
	1953	Nil	—	—	—	—	—	—	—
Carolina	17.3.52	7	190	32	138	72%	16	11%	—
	23.4.53	7	148	48	80	54%	7	9%	—
Mandarin	15.4.52	6	58	22	26	45%	5	20%	—
	18.4.53	4	43	20	9	21%	5	56%	—
Eider	14.4.52	3	8	4	4	50%	2	50%	—
	2.5.53	2	11	5	6	55%	1	17%	—
Barrow's Goldeneye ..	17.5.52	1	4	4	Nil	—	—	—	—
	4.5.53	1	4	4	Nil	—	—	—	—
Red-breasted Merganser ..	4.6.52	1	6	4	1	17%	Nil	—	—
	1953	Nil	—	—	—	—	—	—	—
Ruddy Duck	5.5.52	3	42	1	40	95%	4	10%	4 reared by parents
	21.5.53	3	28	5	20	70%	Nil	—	—
EGGS BROUGHT									
Tufted Duck	1952	—	14	7	5	37%	1	20%	—
Eider	1952	—	11	3	8	72%	2	25%	—
Goosander	1952	—	12	2	10	83%	3	30%	First to be reared at New Grounds

PATHOLOGICAL INVESTIGATIONS

By J. A. J. Venn, M.R.C.V.S., D.V.S.M.

Ministry of Agriculture Veterinary Investigation Centre, Langford

IN previous years, attention was given, in the main, to the adult birds in the collection. During the period under review, which includes two breeding seasons, the investigations were directed towards an endeavour to determine whether or not there was any single factor that could be regarded as primarily responsible for the high rate of loss in the young stock.

Before discussing this investigation in detail, the position with regard to the losses in the collection as a whole can be considered briefly.

Aspergillosis

In the previous report, mention was made of the proposed investigation into Aspergillosis. It is regretted that this work is in abeyance, due to the departure from Bristol University of the worker concerned.

The possibility of a test being found that will enable Aspergillosis to be detected in birds during life has been under consideration, but one cannot, as yet, state whether this will be effective.

Nutritional Disorders

These, except in the case of newly hatched Ruddy Ducklings, appear to have been overcome. This fact is very encouraging.

Parasitism

The existence of parasitism in the adult birds continues to decrease. A few deaths in geese, from gizzard worm infestation, were encountered, but these must be regarded as inevitable in view of the concentration of the birds and the ubiquity of the parasite. There is no doubt that losses would be much higher if medication were not employed.

Losses in Young Stock

For the first time since the author has been undertaking the pathological investigations, it was decided to make a determined effort to discover the reason for the high mortality, as is indicated in the Hatching and Rearing Table.

In 1952, casualties examined early in the breeding season suggested that tape worm infestation might account for the losses encountered. Weakly birds were accordingly treated. Some recovery took place, but towards the latter end of the season the mortality rate rose alarmingly and it was found that *Acuaria uncinata* was present. This parasite was detected in the great majority of subsequent post mortems during the remainder of the season.

Here we might interpolate a short note about this parasitic Nematode worm. It is one that invades the proventriculus or stomach, damaging its wall and causing serious interference with the function of the organ. As a result of activity by the tissues of the bird, the worms may become encysted, but the damage to the stomach appears to be permanent. The intermediate host of the parasite is generally accepted as *Daphnia*, the water flea.

For the 1953 season it was hoped that small changes in management, such as having the youngest batches upstream of the older birds and also rearing broods in small units supplied with tap water, would control the infestation.

The results, in brief, were that at the commencement of the season, it appeared that the condition was under control and the rearing was satisfactory. As

the season continued, losses mounted until the end. This implied that there had been a build-up in infected *Daphnia* during the season, since it was unlikely that the intermediate stage could survive through the winter.

For the next season, more heroic measures are planned, which include alterations in the design of the pens and, at the same time, a drug that may prove effective in the control of the parasite is being used, so it is with hopes of a considerable improvement in rearing percentages that the 1954 season is awaited.

The author wishes to record his appreciation of the great help given him in these investigations by Mr S. T. Johnstone and his staff. Also he would mention his gratitude to Dr E. J. L. Soulsby, Lecturer in Parasitology at the University of Bristol Veterinary School, for his advice and active participation in the examinations undertaken during the time under consideration.

There can be no definite guarantee that 1954 will be a more successful rearing season than the previous two, but it appears likely, now we have determined what appears to be the main cause of loss, that the measures envisaged will reduce losses from this parasite to negligible amounts.

TABLE XIII

CAUSES OF DEATHS IN THE COLLECTION, 1952–53

Cause of Death	Species	Young	Adult	Total
Infectious Diseases				
Aspergillosis	Greater Snow Goose	1	—	1
	Ruddy-headed Goose	1	—	1
	Falkland Goose	—	1	1
	Andean Goose	—	1	1
	Abyssinian Blue-winged Goose	—	1	1
	New Zealand Shelduck	—	1	1
	Maned Goose	—	1	1
	Scaup	—	3	3
Avian Tuberculosis	African Yellow Bill	—	1	1
	New Zealand Scaup	—	1	1
Parasitic Diseases				
Cestode Infestation	Mandarin	1	—	1
(*Hymenolepsis* spp.)	Red-breasted Merganser	1	—	1
	Wandering Tree Duck	—	—	—
	Rosy-bill	2	—	2
	Carolina	9	—	9
	Abyssinian Black Duck	—	1	1
	Brazilian Teal	1	—	1
	Redhead	1	—	1
Nematode Infestation				
Gizzard Worms	Upland Goose	—	2	2
(*Amidostomum* spp.)	Barnacle Goose	—	1	1
	Black Brant	—	1	1
Gape Worms	Grey-breasted Whistling Duck	1	—	1
(*Cyathostoma* spp.)				
Acuaria uncinata	Carolina	20	—	20
	Bahama Pintail	7	—	7
	Eider Duck	5	—	5
	Orinoco Goose	3	—	3
	Hartlaub's Duck	—	2	2
	Mandarin Duck	2	—	2

TABLE XIII—*continued*

Cause of Death	Species	Young	Adult	Total
	White-faced Whistling Duck	1	—	1
	Chiloe Wigeon	1	—	1
	Crested Duck	1	—	1
	Gadwall	6	—	6
	African Black Duck	1	—	1
	Abyssinian Black Duck	1	—	1
	Red-crested Pochard	5	—	5
	Garganey Teal	1	—	1
	Cape Teal	1	—	1
	Chestnut-breasted Teal	3	—	3
	Cinnamon Teal	1	—	1
	Shelduck	2	—	2
	Ruddy Duck	1	—	1
	Yellow-bill	1	—	1
Renal Coccidiosis	Greater Snow Goose	1	—	1
	Bar-headed Goose	2	—	2
Nutritional				
Gizzard Erosion	Ruddy Duck	10	—	10
Indefinite Etiology				
Visceral Gout	Carolina	1	—	1
	Barrow's Goldeneye	1	—	1
	White-faced Whistling Duck	9	—	9
Nephritis	Ruddy-headed Goose	1	—	1
	Ross's Goose	1	—	1
	Philippine Duck	1	—	1
	Gadwall	5	—	5
	Indian Pigmy Goose	2	—	2
	Grey-breasted Whistling Duck	1	—	1
	Scaup	4	—	4
Hepatitis	Cereopsis	—	1	1
	Barnacle Goose	—	1	1
Various Causes				
Heart Failure	Brazilian Teal	—	1	1
Pleurisy	Ruddy Shelduck	—	1	1
Impaction of Portions of Digestive Tract	Goosander	1	—	1
	Cinnamon Teal	1	—	1
	Scaup	1	—	1
Sinusitis	Emperor Goose	1	—	1
Congestion of Lungs	Ruddy Duck	4	—	4
	Emperor Goose	1	—	1
Chilling	Chiloe Wigeon	2	—	2
	Rosy-bill	2	—	2
	African Black Duck	—	—	—
Decomposed on Receipt ..	Various Species	—	—	27
Total				181

In many instances, where young birds are under consideration, only sufficient specimens to establish a diagnosis were examined. In the case of goslings and ducklings, therefore, the total death rate was much higher than the post mortem figures imply.

TRAPPING OF THE QUEEN'S TRUMPETER SWANS IN BRITISH COLUMBIA

By R. H. Mackay

Canadian Wildlife Service, Vancouver, B.C.

(*A brief account, by Dr Harrison F. Lewis, of the capture of these swans for Her Majesty was included in the Fifth Annual Report. This is a more detailed account by the Wild Life Officer in charge of the project.*—ED.)

THE visit of Queen Elizabeth II, as the Princess Elizabeth, to Canada in 1951 was commemorated by the presentation at Charlottetown, P.E.I., of five Trumpeter Swans—the gift of the Federal Department of Resources and Development and the British Columbia Government. The swans were to be shipped, after capture, to the Severn Wildfowl Trust, Gloucestershire, England.

The task of trapping these large white birds, which winter in British Columbia, rested with the Canadian Wildlife Service. No previous attempt had ever been made to capture Trumpeter Swans in Canada and it was the problem of the author and D. A. Munro, of that Service, to select a trapping site, devise a trap, catch the swans and supervise their shipment to England.

Wintering Areas

During the winter months the Trumpeter Swans remain as far north in British Columbia as they can find suitable feeding grounds, which in the interior of the province are limited to small unfrozen areas on swift-flowing streams or at points of turbulence where streams flow into lakes. The number of birds supported by each of these areas is limited by the amount of food available, and for that reason the wintering Trumpeter Swan population is made up of small, widely-scattered flocks—family groups of five or six swans in most instances. Other flocks of Trumpeter Swans make their way to the coastal region of British Columbia at the onset of winter, and scattered groups are recorded each year at Vancouver Island, the Queen Charlotte Islands, and at other points along the coast. The largest flock, which varies from 75 to 120 birds from year to year, winters at Lonesome Lake and along the Atnarko River, some 70 miles up the Bella Coola Valley from Bella Coola, B.C. Another flock of 14 to 20 birds winters quite regularly at Lakelse Lake near Terrace, B.C.

Selection of Trapping Site

Many of the natural feeding areas in British Columbia freeze up during periods of extreme cold. When these cold periods are prolonged the Trumpeter Swans gradually become weaker and many die of starvation. In order to alleviate this situation, the Canadian Wildlife Service distributes grain supplies to several of its wardens and other co-operators for feeding purposes during critical periods. As the most extensive feeding operations are carried out at Lonesome Lake and as a large number of the swans become quite tame during these operations, it was felt that this area offered the best possibilities for capturing the rare birds.

The author made a visit to Lonesome Lake from 11 to 14 July 1951 in order to investigate the opportunities available for capturing the swans. Mr R. A. Edwards, Migratory Bird Warden for the Canadian Wildlife Service, his wife,

and their daughter Trudy, who reside near the head of Lonesome Lake, were interviewed at that time. It is pertinent to point out here that ' The Birches,' the Edwards's farmstead, is remote from civilisation and almost inaccessible except by airplane. Some twenty-one miles of arduous mountain footpath lie between it and Atnarko, B.C., on the telegraph line. This path is impassable for extended periods during the winter months, when there is virtually no contact with the outside world except by air. Hagensborg, B.C., about seventy miles down the Bella Coola Valley, is the nearest sizeable community.

When it is necessary to feed the swans, it is done for the most part by Miss Edwards. She has found that the least wasteful method of feeding is to throw the grain into an open stretch of water where it is quickly gobbled up by the hungry swans. When the temperature drops to —40°F. or lower, and even the swiftest parts of the river freeze over, it is an everyday occurrence for Trudy to take axe and saw to cut holes in the ice for feeding places while the swans eagerly wait on the ice nearby. The swans have thus come to recognise their benefactor, and the bolder ones eat out of her hand.

The Edwards family thought at first that the trapping operations might frighten the whole flock from their region, and did not take too kindly to the proposal for capturing six of their white winter friends. However, their fears were allayed by the writer—not without a little misgiving on both sides—and trapping plans were discussed. It was assumed that, as usual, feeding operations would be carried out at certain periods of the winter on the Atnarko River about 250 yards from the Edwards's home. A small creek which enters the Atnarko at this point offers an ideal feeding site for short periods each year, depending on weather conditions. This site appeared well suited for the erection of a trap and offered the best possibilities for capturing the birds.

Trap Construction

Materials for constructing the trap were transported by airplane to Lonesome Lake on 9 November 1951. The author and D. A. Munro went in at the same time to assist with the construction. Mr R. A. Edwards and Trudy also took part in setting up the trap.

Locally hewn rough cedar posts and poles were used in order to make the trap as inconspicuous as possible. The posts were embedded about 6 feet apart, on each bank of the creek near its mouth, and extended approximately 45 feet upstream. Poles about 19 feet long were then nailed on the tops of the posts to form the trap framework. The height of the poles above the level of the stream was close to 9 feet. Thirty-eight fathoms of 30-thread tarred-cotton fishing netting, 3½-inch mesh by 100 meshes deep, were used to enclose the framework. This netting was stretched over the poles and stapled securely. A sliding door, 12 feet wide and 9 feet high, which could be dropped by means of a trip wire, was erected at the mouth of the trap. A small catching pen 10 feet long, 7 feet wide and 6 feet high was erected on the bank of the creek behind a willow clump and was connected to the main trap by means of a net funnel.

Capturing the Swans

The establishment of regular communication with Lonesome Lake was a very important aspect of the capture. The British Columbia Forest Service kindly lent an S.P.F. radio set which was set up at Lonesome Lake at the time of the November visit. It was therefore possible to make contact with Mr Edwards directly from the Forest Service radio station in Vancouver. A weekly

schedule was arranged, and conditions at Lonesome Lake were reported regularly throughout the winter.

On 31 January 1952 information was received from Mr Edwards that several swans had been feeding in the trap and that weather conditions were suitable for the trapping attempt. As a ski-equipped aircraft was not available at Vancouver, it was necessary for D. A. Munro and the author to proceed to Prince George, B.C., where a ski-equipped Junkers airplane was available. Attempts to fly into Lonesome Lake were made on 3 and 4 February, but snowstorms in the vicinity of the Itcha Mountains forced returns to Burns Lake and Prince George respectively. Weather conditions grounded all aircraft on 5 February, but they cleared on the 6th and a landing was made on Lonesome Lake at 12.30 p.m.

Mortar-net equipment, lent by the United States Fish and Wildlife Service was test-fired in the afternoon. It was decided to use this equipment only as a last resort, if the box trap should fail.

Miss Edwards, who had been feeding a flock of up to 98 swans, 18 of which were cygnets, was asked to try to feed the swans into the trap on the morning of 7 February. She was successful in enticing 7 cygnets and 1 adult into the trap, but the adult and 2 cygnets escaped when the gate was dropped. The remainder of the flock were frightened by the attempts of the 5 trapped birds to escape and left the feeding area. They settled on the lake about a mile away.

The cygnets in the trap were then caught, sexed, and banded with coloured plastic bands. It was found that 3 males weighing 18, 19½ and 20 pounds and 2 females weighing 14½ and 15 pounds had been captured. These birds were then transferred to a small holding pen near the Edwards's home and the large trap was rebaited and set.

In view of the delay encountered in getting into Lonesome Lake, it was considered expedient to have the aircraft return as soon as weather conditions would permit. It did not seem advisable to keep the captured birds in the small pen for an extended period and, in any event, attempts to trap an additional cygnet might be made while awaiting the arrival of the airplane. The swans, however, did not return to the feeding area at the mouth of the trap on 8 February and the aircraft arrived in a gusty snowstorm in the late afternoon.

Transportation of the Swans

Travelling crates for the swans were constructed immediately upon their capture. Five crates, 42 inches long, 18 inches wide, and 28 inches high were designed and built by Mr Edwards with the unskilled help of D. A. Munro and the author. The lumber used was local cedar, cut and dressed by Mr Edwards in his home-constructed sawmill. Remnants of the fish net used in the construction of the trap were utilised to enclose the crates, while half-inch-mesh galvanised wire served as cage flooring 2 inches above a bottom drop board. The top and three sides of the crates were then covered loosely with gunny sacks.

On loading the Junkers it was found that only four of the crates could be accommodated. Two of the male swans had therefore to be placed in one crate, but they reached their destination with no apparent ill effects.

Trumpeters were carried from Lonesome Lake to England by air transport. Leaving Lonesome Lake at 10.30 a.m. on 9 February the swans arrived in Vancouver, via Prince George, at 6.00 p.m. on the same day, and were given food and water there. R. D. Harris and W. D. Taylor of the Canadian Wildlife Service, Ottawa, cared for the swans during their stay in Montreal from 2.10 p.m. on

10 February until noon on 11 February. The birds were in good condition and ate well. The last leg of the journey across the Atlantic was accomplished without incident, and the swans arrived in England on 12 February.

Reports received recently from the Severn Wildfowl Trust indicate that the swans have become quite tame in captivity, and will even feed from the hand.

The following is an extract from a letter from Mr Ralph A. Edwards of 'The Birches,' Lonesome Lake, dated 30 *January* 1954.

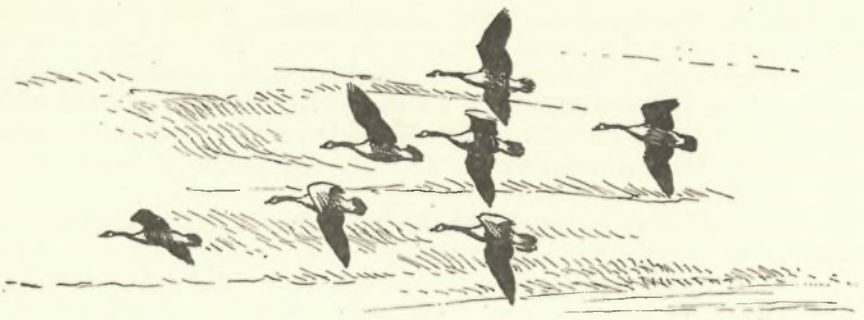
'Our swans here have had a very mild fall so that we did not have to start feeding them until mid-December and then only to a few; but as the winter advanced colder weather sealed off their food supplies and more and more came to our feeding station until now we are feeding 106 besides a lot of mallard hangers-on.

'Last year we had only a few cygnets (16) but this year nearly a third of the flock are cygnets (35), more than ever before, which pleases us greatly.

'The 106 figure does not represent the total number of Trumpeter Swans in this area, some staying at nearby lakes and there is a certain amount of rotation. . . .

'February 14. This letter has been waiting for a chance to be flown out, but weather has hindered. At this date the swan count is 146—of which 48 are cygnets.'

It will be recalled that the most recent estimates of the total population of Trumpeter Swans indicate that not more than 1300 *exist. We too are greatly pleased by the numbers of cygnets reported by Mr Edwards.*—ED.



A VISIT TO THE DELTA WATERFOWL RESEARCH STATION

By D. F. McKinney

(*Dr McKinney has returned to Delta in the Summer of* 1954 *as Assistant Director of the station.*—ED.)

DURING the summer of 1952, I was fortunate enough to be able to spend ten weeks at the Delta Waterfowl Research Station in Manitoba, Canada. This visit was initiated by an invitation from the Director of the Station, Mr H. Albert Hochbaum, who was able to arrange for a research grant. The long journey would not have been possible, however, without the help of a generous grant towards travelling expenses made by the Bristol Zoological Society.

The Delta Station is situated 75 miles north-west of Winnipeg, on the southern shore of Lake Manitoba. It is on the edge of the great Delta marsh—an expanse of *Phragmites* split up by innumerable interlocking bays and pools. This marsh supports large numbers of breeding waterfowl and it is also a concentrating point for migrants travelling to and from more northerly haunts.

Like the Trust, Delta is a centre for various types of waterfowl research. For a number of reasons, however, the work of the two organisations does not overlap. At Delta, the number of captive birds is comparatively small and no attempt is made to collect waterfowl from all over the world. The species which are kept are the local ones and these are used for experiments or close observations on behaviour. Furthermore, the aims of the Delta research projects are more directly concerned with the study and management of wild populations of waterfowl on the breeding grounds. For work of this kind the Station is ideally situated and, apart from serving as the base for studies on the Delta marsh, it controls a number of sub-stations on neighbouring breeding grounds and acts as an organising centre for the aerial surveys of breeding populations which are carried out annually over much of central Canada.

I must admit, however, that my first impressions of Delta were not concerned with these important researches. When I arrived, early in May, the northward migration to the breeding grounds was in full swing and there were birds everywhere. The last of the Whistling Swans, Richardson's Geese and Snow Geese were just preparing to leave and there were a few Buffleheads about. Most of the breeding ducks had arrived and some had already started to nest. Ruddy Ducks were displaying on the bays, Pelicans sailed round over the marsh and

great flocks of Red-winged and Yellow-headed Blackbirds were flying through. Waders were feeding at the edge of every pool—Yellowlegs, Sandpipers, Plovers and Phalaropes—all on their way north. The trees round the Station and along the shore of the lake were alive with Warblers, Flycatchers, Orioles and Nighthawks. In the marsh itself, Franklin's Gulls, Forster's Terns, Black-crowned Night Herons, Marsh Hawks, Coots, Rails and four species of Grebe were to be seen or heard at every turn.

My own interests lay first of all with the Diving Ducks, and I was particularly anxious to see something of their courtship. During most of May, there were frequent opportunities for watching the spectacular courting parties of Canvasback, Redhead and Lesser Scaup. Each party, consisting of a female and a number of males, comes together on the water, the males displaying and chasing each other. If the males crowd round the female too closely, she takes wing and an aerial pursuit-flight occurs. The ' nuptial flight ' of paired Canvasbacks provides another thrilling sight as the male speeds after the female and from time to time succeeds in catching her tail-feathers in his bill.

One of my aims was to record the display postures of the Ring-necked Duck (*Aythya collaris*) and compare them with the displays of the other Diving Ducks. Luckily there were some pinioned Ringnecks on the captive pond at the Station and often a few wild males flew in to display with them. Courtship movements often provide useful clues to relationships between different species and it was particularly interesting to note that, while giving several movements which are common throughout the group of Diving Ducks, the male Ringneck gives multi-syllabic courting whistles similar to those of the Scaups and Tufted Duck.

During June, I spent some time watching the incubation behaviour of Blue-winged Teal, Shoveler and Canvasback. These species provided interesting comparisons with the Mallard which had been studied at the New Grounds. Suitable nests were easy to find, but close observation from hides was not without its difficulties. Most wild ducks are extremely shy at the nest and long and careful conditioning is necessary before they will behave normally in view of a hide. At the nest of a Blue-winged Teal, a hide was gradually moved closer during the course of a week. I then approached the nest, flushed the bird, opened out the nest a little and entered the hide. An hour later, the duck returned and settled on the eggs. I began to record her egg-turning and nest-building movements noting especially that she devoted a great deal of energy to bending the grass down over the nest which I had opened out. So successful were these camouflaging efforts that after an hour I was forced to give up watching—from a distance of six feet, the bird was quite invisible beneath a canopy of bent grasses.

During the summer, regular seminars are held in the Great Hall of the Kirchoffer Lodge at Delta. These talks and discussions provide an opportunity for the staff and visiting research workers to keep in touch with each other's studies. It was at these seminars and in discussions with the many visitors to the Station that I learnt something of the important waterfowl research which is going on in this part of Canada. The behaviour of migrating waterfowl has been the main interest of Mr Albert Hochbaum for some years and he is now completing his book on the subject. Dr William H. Elder of the University of Missouri has been visiting Delta annually for many years and it was here that he developed the use of X-rays for determining the amount of lead shot embedded in the bodies of living ducks. This technique is now used as a means of estimating the ' gunning pressure.' Dr Elder is also carrying out an investigation of the

physiological function of the preen-gland in ducks. Mrs M. M. Nice from Chicago has spent several seasons at Delta investigating the behaviour of very young ducklings.

In addition to these senior workers, Delta provides the facilities of a field station for University research students who are able to carry out two- or three-year investigations on which to base their doctoral theses. From the University of Missouri come Ronald Balham to study the family life of the Canada Goose and Milton Weller to investigate the behaviour of Redhead broods. Alex Dzubin, from the University of British Columbia, is in charge of an important ecological study on a square mile of ' pothole ' breeding ground in the farming area of Minnedosa. Eugene Bossenmaier, of the University of Minnesota, has just completed a study of the habits of moulting ducks on Whitewater Lake, Manitoba.

Each year, teams of biologists are engaged in surveying the breeding populations of waterfowl over central Canada. These biologists are employed by various Dominion and United States organisations and it is on the results of their findings that the relative success of each breeding season is estimated. This estimate is in turn used to calculate how many ducks can ' safely ' be shot in the following winter. Local authorities all over the winter range can then adjust the bag-limits and shooting seasons accordingly. Delta, as well as providing a base for many of these survey biologists, also acts as a centre for research on the techniques of waterfowl census. Arthur Hawkins and Edward Wellein of the U.S. Fish and Wildlife Service direct this inventory research. Surveys are carried out both on land and from the air. William Keil of the University of Wisconsin has been carrying out annual transects on foot over the Minnedosa pothole country and his population estimates are carefully compared with those obtained by aerial transects over the same areas.

Although the nature of much of the research varies from year to year, the Delta Station maintains two permanent working tools in the form of the Decoy pipe and the Hatchery. The construction of the decoy pipe was described in the Fifth Annual Report and it is operated with traditional Dutch techniques by the professional decoyman Nan Mulder. All the birds which are caught are ringed and released and in addition many are marked with paint so that their movements may be studied locally. The Hatchery, which is under the supervision of Peter Ward, performs one of the most important routine functions of the Station. Every year, hundreds of first clutches of duck eggs are collected in the marsh and hatched out in a large modern incubator. The ducklings are reared in spacious indoor pens and in a large outdoor flight pen. Some of the birds reared in this way are used for experimental work of various kinds and the remainder are ringed and released.

It has not been possible to give a complete picture of the Delta Research Station. However, for those members of the Trust who are interested to know more of the Delta marsh itself, they cannot do better than refer to Mr Albert Hochbaum's book *The Canvasback on a Prairie Marsh.* There can surely be no place more suitable for the purposes of waterfowl research. My visit to the Station was long enough to enable me to enjoy the company and generous hospitality of the members of the staff and many of the summer visitors. I learnt a great deal about North American waterfowl from their stimulating discussions and I look forward to renewing many friendships when ' exchanges ' between the Trust and Delta become more frequent.


Lake Titicaca
LA PAZ
SANTIAGO
BUENOS AIRES
SOUTH AMERICA
PUNTA ARENAS
TIERRA del FUEGO

Male Torrent Duck

SOUTH AMERICA—1953

On the 19th February 1953 Mr and Mrs Peter Scott left Slimbridge on an expedition to South America. The objects of the expedition were, first, to see in their natural surroundings some of the common waterfowl of the region, which have been kept in captivity in Britain for many years—familiar members of the tame bird community at the New Grounds, such as the Chiloe Wigeon, the Chilian Pintail, the Chile Teal, the Silver Teal, the Red Shoveler, the Upland Goose, the Ashy- and Ruddy-headed Geese, the Black-necked and Coscoroba Swans; secondly, to see some of the lesser known species such as Steamer Ducks (*Tachyeres*) and Kelp Geese (*Chloephaga h. hybrida*); and finally (and most particularly of all) to see and to study three species about which very little indeed is known. These were the Black-headed Duck (*Heteronetta atricapilla*), the Bronze-winged Duck (*Anas specularis*) and the Torrent Duck (*Merganetta armata*).

All these objects were achieved and the three interesting and mysterious species were watched and photographed. The Director made sketches and took ciné films, and Mrs Scott took still pictures. They travelled by way of North America, where they spent a week quail-hunting at the Georgia plantation of Col B. C. Goss.

The journey from there to S. America was undertaken in the company of Col and Mrs Goss and two other members of an expedition from the Museum of Natural History of Cleveland, Ohio—one of them its curator, Mr Rendell Rhoades. Waterfowl were studied in five regions in S. America: the first on lakes near the Pacific coast to the west of Santiago de Chile, the second in the extreme south of the continent on the shores of the Magellan Strait and in the inland lagoons both on the mainland of Patagonia and on the island of Tierra del Fuego (the Land of Fire), the third in the marshes of the Argentine pampa near Buenos Aires, the fourth on Lake Titicaca, the great inland sea at 13,000 feet on the Andean plateau which lies partly in Bolivia and partly in Peru, and the fifth on the mountain torrents of the Bolivian Andes. The Director contributes the following notes which were written at the time, about the birds of those five regions.

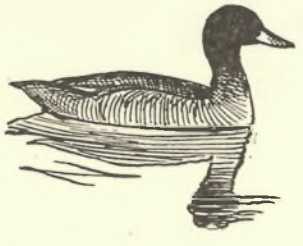
Bronze-winged Duck

CENTRAL CHILE

We had two days in Santiago and one of them was spent in going down to the coast to see some birds. We were taken by A. W. Johnson, the distinguished ornithologist and one of the authors of *The Birds of Chile*, and accompanied by J. D. Goodall, the illustrator of that excellent book. They have built up the first really good collection of Chilean birds' eggs. There is no question that this thirty-year task is of the greatest scientific value. They have been the first to find the nests of dozens of species. We saw their collection, including several sets of Coots' eggs, with Black-headed Ducks' eggs among them. They have also found the Black-head parasitic on Night Herons and the Ibis (*Plegadis falcinellus*). In one clutch there were four ducks' eggs among the Coots' eggs while several clutches held more than one duck's egg. Are these laid by the same female? Johnson was convinced that the Black-headed Duck *never* incubated its own eggs.

They took us first to a pond called El Peral (the Pear Tree) near the coast—indeed, just inside the sand dunes, near Cartagena, where they had found eggs of the Black-headed Duck. On the pond we found Chilean or Brown Pintails (*A. g. spinicauda*), Chile Teal (*A. f. flavirostris*), and two pairs of Cinnamon Teal (*A. c. cyanoptera*), which looked marvellous in flight. We also saw some of the narrow-billed Ruddy Ducks (*Oxyura vittata*). These are just like the N. American Ruddys but with more slaty grey-blue bills (perhaps because of the season) and no white cheeks, i.e., somewhat inferior birds in appearance—but there were no signs of *Heteronetta*. We moved to another lake thirty miles away, to the south—a much larger one—where it was hoped we might see some ducks and Black-necked Swans, but where *Heteronetta* had never been recorded. This lake was on a farm called El Convento. We reached it along a track which led through sun-scorched fields, full of tall seeding thistles as big as artichokes, down towards the wooded shores. At the end of the track was a eucalyptus belt, and we looked out through it on to the lake. In front of us was a large Red-necked Grebe—a Great Grebe (*Aechmophorus major*)—with a young one. There were Coots and Moorhens, and one or two Ruddy Ducks up under the sun. Across the lake in the floating weeds were either Brown Pintails or Chile Teal, but to the right up at the narrower end of the lake was a great mass of ducks among the floating weeds. At first glance I could identify Rosybills (*N. peposaca*), Chiloe Wigeon (*A. sibilatrix*) and Red Shovelers (*A. platalea*). We decided to approach these ducks along the shore, and look down on them from the cover of the eucalyptus belt, and eventually, having shown ourselves inadvertently to the nearest birds, which swam out, we took up our position with the camera tripod for rest and began to scan the flock with binoculars. For the next hour we had as thrilling a view of new and exciting birds as I can remember for many years. There were at least 2000 ducks below us, scattered, feeding and resting among the floating weeds. It was such a view as we have so often had

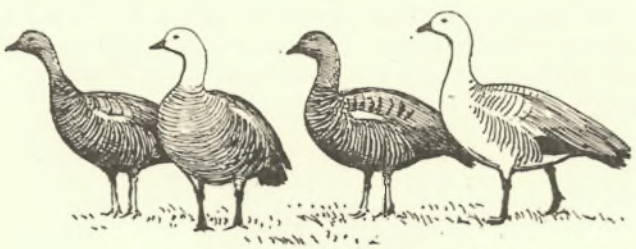
along the shore opposite St Serf's Island in Loch Leven, but instead of being familiar birds, they were birds which we had not previously seen in the wild state. The sun was full upon them, the nearest seventy yards, the farthest a quarter of a mile. The most numerous were Brown Pintails, the most conspicuous and perhaps next most numerous were Chiloe Wigeon, and next to them the Ruddy Ducks (*O. vittata*). Then came the Rosybills and Shovelers and only a pair of Cinnamon, and we did not definitely identify Chile Teal, although I have no doubt that there were many. It is surprising how difficult the Teal were to distinguish from the Pintails at a distance. The Rosybills, of which there cannot have been fewer than 200, were a surprise, for Johnson had never seen more than six together before. There were fewer Shovelers but they looked very pretty as they flew and the sun caught their yellow legs as they settled. The large Grebes had curiously curved necks which were deep chestnut red. There were various stages of immatures. So there were with the Dabchicks (*Colymbus rollandii chilensis*), the Moorhens and the Coots. The yellow shields of the adult Coots (*F. armillata*) were very pretty indeed. The Moorhens (*Porphyriops melanops*) were grey-sided like Crakes. Sitting on some posts at the back were Brown-headed Gulls (*Larus maculipennis*) and standing on the floating weed was a small flock of waders, most probably Lesser Yellowlegs (*Tringa flavipes*) from North America. I began to go over the ducks, bird by bird. In one place, quite close to us, I came upon a male Stifftail with quite a different-coloured bill—much greener-grey. It looked a little bit larger and, as it scratched its chin, its bill seemed more spoon shaped. Next to it sat a female with a more than usually prominent double eye-stripe. Could these, we thought, be a pair of the large Ruddy Ducks (*Oxyura jamaicensis ferruginea*)? The female we afterwards discovered could not have been, for a character of the female *ferruginea* is that it shows no eye-stripe.



Black-headed Drake

I worked on across the flock, and suddenly there it was, as plain as a pikestaff, preening itself—an unmistakable male Black-headed Duck—the enigmatic, parasitic and euphoneously named *Heteronetta atricapilla*. For ten minutes he preened himself in a bustling hurried manner, occasionally swimming briskly for a short distance and then stopping to preen again. The spot at the base of his bill looked yellowish rather than pink, his head was quite black, and his brown flanks were slightly barred. There was a touch of chestnut under his tail. The most important and significant part was his shape, which was quite unexpectedly elongate and in direct contrast to the Ruddy Ducks round him. He was also buoyant and high in the water, the tail itself appeared to be short, but this is no doubt due to the long upper and lower coverts which form quite a long tail-end to the body. This is comparable with the tail of the Brent Goose. The shape of the head appeared to be typical of surface-feeding ducks. Indeed the whole bird appeared to be much more of a Dabbler than anything else. Later when looking at the fine series of eggs in the Johnson-Goodall collection

in Santiago, the smooth texture of the egg surface of *Heteronetta* was very different from the rough surface of the Stifftail eggs. These *Heteronetta* eggs were perhaps a little large for the bird, but nothing like so large proportionately as the eggs of the Stifftails. They were greenish-buff in colour whereas the Stifftail eggs are conspicuously white. In short, I am now a little doubtful whether the relationship of *Heteronetta* with the Stifftail tribe can be maintained with certainty. The little drake we were watching swam over to a patch of weed in which sat five birds. Three of these were clearly Ruddy Ducks, but two with heads under wings and directly facing us we suspected of being a pair of Blackheads. This was confirmed as soon as they woke and our drake joined them. The female was more spotted on the flanks than I had expected, or perhaps more ' blotched ' would be a better word. Johnson and Goodall were very much excited about these birds, as it seems that they had never recorded the bird from this lake before, and we also learned that their co-author, Dr Phillipi, had never seen one alive in thirty years of bird-watching in Chile. Jt is, of course, remarkable what 12-power binoculars will reveal where 7's and 8's have previously been used, and then the specialist in any bird group has the advantage over the general ornithologist. But I still think we were lucky. Later the same evening Johnson took us to see a flock of about 150 Skimmers (*Rhynchops nigra cinerascens*). We walked a mile along a sandspit on the Pacific shore to the mouth of a small river to see the little flock of these strange birds from the Northern Hemisphere wheeling aerobatically in the sunset.

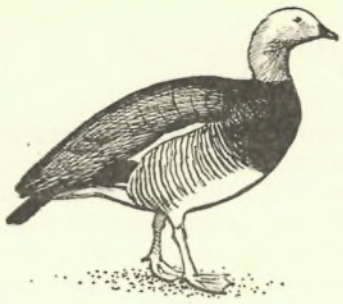


Lesser Magellan Geese

SOUTHERN PATAGONIA AND TIERRA DEL FUEGO

We had exceptionally good weather in the extreme south and saw marvellous birds and filmed most of them. The Upland Geese (*C. p. picta*) were everywhere, but mostly still in small parties from families up to fifty or sixty. Only in a few places did we see greater concentrations. On one oats stubble on the mainland north of Punta Arenas there were 600 together. The males in this area were almost fifty per cent. white and fifty per cent. barred whereas in Tierra del Fuego the white birds were well under one per cent.—positively rare.[1] On the mainland we saw quite a number of Ashyheads (*C. poliocephala*) up in the hills where apparently Ashyheads normally breed. In Tierra del Fuego they were very local and mainly in the southern part of the island which is more wooded and hilly. We did not see Ruddyhead (*C. rubidiceps*) until we got to Tierra del Fuego.

[1] Males of the mainland race of the Upland or Magellan Goose are dimorphic, some having clear white breasts, others barred. (The Falkland Island race has no barred form.)



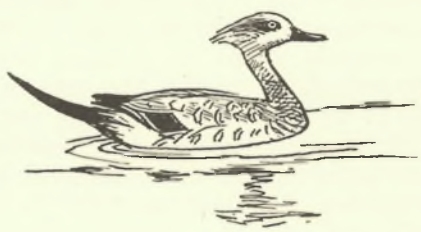
Ashy-headed Goose

Here they were the commonest goose round the farms in the open pampa of the northern part of the island, but there were also some farther south.

We stayed at four places, Punta Arenas, on the mainland in Chile, from which we made excursions northwards ; Estancia Caleta Josefina, of 600,000 acres, in the centre of the northern pampa of the island (still in Chile) ; Estancia Maria Behety, 500,000 acres, farther east, in Argentine Tierra del Fuego, and also farther south, but still in the open rolling country ; and Estancia Viamonte, a smaller one of only 150,000 acres, which is on the Atlantic shore at the edge of the woods and almost in the foothills of the southern mountains. This is the home of the famous families of Bridges and Reynolds who first settled on the shores of the Beagle Channel. At Caleta[1] there were masses of Ruddyheads but no Ashyheads. At Maria Behety the Ashyheads were the commonest goose, but there were some Ruddys and the same was true at Viamonte. The geese mix freely so that the corner of a field next to the farm at Maria Behety which was extra green on the fairly steep slope of the hill had about 300 geese on it, of which sixty per cent. were Ashyheads, twenty-five per cent. Ruddys and fifteen per cent. Uplands. In the evening light they looked absolutely marvellous. An interesting feature is that both Ashy and Ruddy are most numerous round the farms whereas the Uplands are more evenly distributed out in the country. All the geese are perfectly tame. They are practically never shot, so one can walk within about thirty yards in most places and they hardly get out of the way of a car. After rain there are puddles on the roads and the geese cluster on these, rising a few yards in front as a car approaches. The most important discovery is that I now believe they may not become flightless during moult. We have seen geese in various stages of raggedness, some with several primaries missing—others with complete new wings. Many of the people we have met, mostly English and Scottish, are good naturalists, and the geese are so ubiquitous and common

[1] Described in that remarkable book *The Uttermost Part of the Earth* by E. Lucas Bridges.

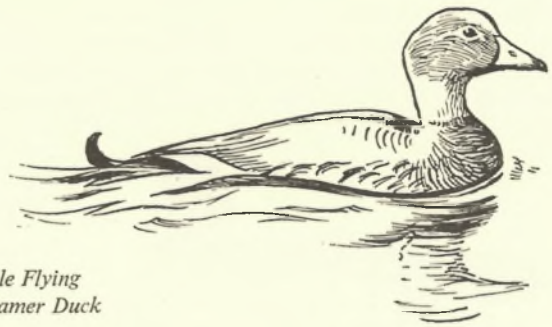
that I simply cannot believe that they could be long flightless without these people knowing it. It raises the point of how much we know about the *Chloephaga* moult in captivity. Many of the Uplands still have young which cannot fly. I have also seen one brood each of Black-necked and Coscoroba Swans unable to fly. Our best sight of Black-necked Swans (*Cygnus melanocoryphus*) was in the Fitzroy Channel north-west of Punta Arenas. Here there were flocks of up to a hundred together, and at some times nearly every bird in the flock was up-ended, looking very droll. Coscorobas (*C. coscoroba*) are less common and less gregarious—the most we have seen on one lake was thirty-two all scattered about. They evidently do not normally flock very much. As for ducks, we have



Crested Drake displaying

had a feast. Crested Ducks (*Lophonetta s. specularioides*) are without doubt the commonest ducks in Tierra del Fuego. Many of them become largely maritime in winter, but there are still quantities inland at this time of year. The largest flock seen on the seashore was about 300, but in many places there were between fifty and a hundred. I cannot see that these ducks are related to the Shelducks. They seem to me to have much closer affinities with the Dabbling Ducks. They are in many ways Pintail-like. The next commonest is probably the Brown Pintail or perhaps the Chile Teal which is everywhere seen in tiny pools and streams, roadside puddles and so on—usually in pairs. I have seen no flocks of these. In one stream we found some flightless Chile Teal skulking, and eventually they swam out with no wing feathers—so *they* moult properly anyhow. Chiloe Wigeon are the next commonest, almost equal with the Pintails and Teal, but much more noticeable and therefore probably slightly fewer. They look very decorative in bulk and are rather surprisingly wild. I found one brood of four quite small young and the drake was guarding them as effectively as the female. It is apparently normal, as I saw photos of broods with both birds in attendance. *Anas versicolor* is here called Blue Teal or Pepper Teal.[1] It was not very common, and the largest bunch I saw, which was nine, lived on a little stream and let me film them quite kindly. Small streams and open marsh is evidently their regular home. My impression is that they are a good deal larger than the ones we have at the New Grounds (*A. v. fretensis* should be) with heavier bills and heavier markings and perhaps a little darker in general impression. Shovelers were very local. I saw about a hundred on one lake at Maria Behety, mixed with Coscorobas, Pintails, Teal, Crested and Steamers. The Steamers are most intriguing. Off the shore at Punta Arenas we saw what we took to be drakes in

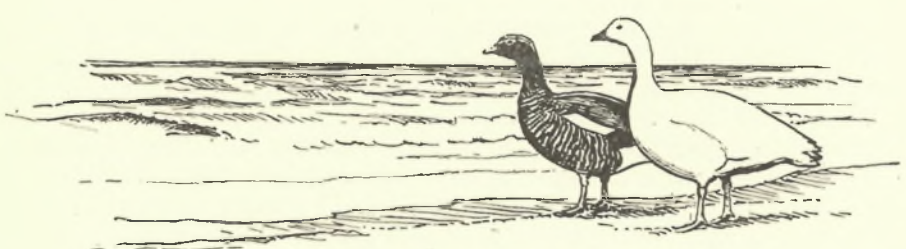
[1] Few ducks have more vernacular names. It is also called Versicolor Teal, Silver Teal and Grey Teal. Silver Teal is perhaps the most appropriate.



Male Flying Steamer Duck

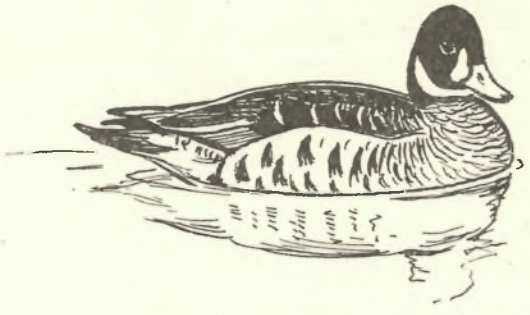
pairs, both with bright orange bills. This we were afterwards told was one of the best distinctions between the Flightless and Flying species (*Tachyeres pteneres* and *T. patachonicus*). The Flightless females have orange bills, while Flying females have greenish bills. Len Bridges, at Viamonte, probably the best naturalist in Tierra del Fuego, said Flightless and Flying Steamers were as easy to distinguish as Ashyheads and Ruddyheads. We did not find it so, from which I judge that we saw only very few Flightless ones and some Flying ones with or near them. Certainly we saw one or two pairs in which the males had very white heads and both birds had orange bills, but the bulk were of the Flying species. Flightless Steamers do not occur on the Atlantic coast of Tierra del Fuego. The turned-up tail of the Steamer Duck is much more pronounced than in any pictures. Cinnamon Teal are uncommon and we saw none in the south. Rosybills and one Bahama have been recorded from Tierra del Fuego. Both the Stifftails, *Oxyura ferruginea* and *vittata*, have been recorded breeding in Tierra del Fuego but we did not have time to go to their special lake.

We saw our first Kelp Geese on the island of Santa Magdalena in the Magellan Strait. They were a male and two females, but it was not until we got to Viamonte that we became familiar with them. There at high tide they gathered along a short high shingle beach at the mouth of a river. We counted sixty-seven pairs. When the tide went out about a mile, they were spread in the pools and puddles far out among the boulders and the seaweed. The males looked superbly beautiful in flight like white doves in the sun. The females looked surprisingly like large Shelducks when seen in flight from behind, much more white on them than one would expect. We used to pass this shingle beach each day as we went down the southerly road from Viamonte, so they became quite familiar.



Kelp Geese

All the Kelps appeared to be adults and we could not understand this until Len Bridges explained that none breed in the area. These were sexually immature birds. They breed on the islands of the south and west coast and the young were expected to appear with their parents any day now for the winter at Viamonte. But the *pièce de resistance* so far—the bird that has most delighted my



Bronze-winged Duck

eye—is the Bronze-winged Duck. In Tierra del Fuego it is scarce and local. It lives on fairly fast-moving trout streams, running in rich water meadows and pastures. The streams are just like the Test where it would be very much at home. I saw my first ones on 15 March when Bobby Huntley, the Manager of Caleta Josefina, led me to a place about fifty miles south-west of his farm where he said he had seen them three years before. We followed the valley of a small winding river and stopped to look across a quarter of a mile of water meadows at some ducks which we could see on a pool. There were Brown Pintails, Chile Teal, and at the next corner three more ducks. One of these was a Pintail and it was being chased by one of the other two. As he turned back from the chase I saw the white-faced pattern of *Anas specularis*. He returned to his mate and the pair floated downstream together—the Bronze-winged Ducks we had come so far especially to see. We started off down the hill to try to get close enough to take a film of the pair. Unfortunately they swam round the bend so that when we got near they rose with a bunch of Pintails and Teal. As they flew the female barked like a dog which is the origin presumably of one of their local names, Pato Perro, the Dog Duck. As they flew away the whole upper surface of the bird looked black except for the speculum which was bright pale green, but as they swung round to settle it changed to a brilliant light crimson. They settled on a small pool beside the river and we walked on over a little bridge past some horses until the surface of the pool came into sight. The Bronzewings had climbed ashore and stood looking at us, with their orange legs showing up brightly against the peaty heathery bank of the pool. Presently they jumped back into the water and swam to the far end of the pool where the other ducks were assembled—about thirty in all. Most of them were Pintails but there were three Chiloe Wigeon, a pair or two of Chile Teal and a pair of Silver Teal. The Bronzewings seemed to be the wildest of them all, and hung about ten yards farther away than the rest. However, I managed to stalk up on all fours to within about forty yards and to get some film. Later when we were staying with Robbie Reynolds at Viamonte we made an expedition to the mountains south of Lago Fagnano, where we hoped to see some of the southern race of the Torrent Duck. We found no Torrent Ducks there, but we did find two or three more pairs of Bronzewings and, on one small lake, a trio. They were on the far side of the lake and I stalked with infinite patience up

Tierra del Fuego

behind a small bush to a distance of about sixty yards in good light. Meanwhile, a pair of Great Grebes had seen me and come over to investigate, giving me good close-ups. Having finished, I stood up from behind my bush and prepared to leave. The three Bronzewings stopped up-ending in the shallows, and swam straight across the lake towards me as if I had been a decoy dog. They swam up to within twenty yards and when they began to lose interest I waved my handkerchief, whereupon they immediately came closer still. When they lost interest in that, I squeaked at them and they turned a third time, thus giving me some good opportunities of filming them from about ten yards range. I also had a marvellous opportunity on this occasion and through binoculars on a previous occasion to look at the birds very carefully. I have always wondered whether they do not have some relationship to the Crested Duck, but I must admit that they are rather Mallard-like in shape and it may be right to regard them as *Anas* ; anyway it is a most spectacularly handsome animal. The head and neck markings are very vivid, the male seemed to have a larger face patch than the female. In other respects the sexes are virtually indistinguishable except for a small difference in size. The flank markings are not the rather commonplace mottlings shown in most of the illustrations of the bird, but sharp, black, dog-tooth spots, quite large and not very many of them. The back is black and so are the wings above and below, primaries, coverts and all. Underneath there is a whitish patch at the base which may be the axillaries and which shows in flight, and above of course there is the incredible speculum. So bright is this crimson pink shining patch that the part which is covered by the beige-coloured flank feathers when the bird is at rest shines through it in the sun in a rich pink glow ; the orange legs set the whole bird off splendidly. Apart from the name Dog Duck, they are otherwise known in Tierra del Fuego as Wood Ducks or Black Ducks. They are the next largest duck of the region after the Steamer Ducks—quite substantially larger than the Crested Duck of Tierra del Fuego.

So much for the waterfowl. There are, of course, many other exciting birds and beasts in the region. Flamingoes (*Phoenicopterus chilensis*) in small flocks on some of the lagoons ; Darwin's Rhea (*Pterochemia p. pennata*) on the mainland

Flamingoes

sometimes in family parties of a dozen or more, and rather surprisingly tame ; a magnificent Ibis (*Theristicus caudatus melanopsis*) called locally Bandurria and extraordinarily wild, with buff head and neck, beautiful grey back rather like a Pinkfoot, pink legs and a striking metallic call note ; a curious little wader filling the Quail niche, with a short curved beak, called a Seed Snipe (*Thinocorus r. rumicivorus*) ; and yet another wader called *Attagis malouinus* which lives on moorland and pretends to be a small-sized grouse, only giving itself away by its long wings and plover whistle. There are Spur-winged Plovers (*Belonopterus chilensis fretensis*) and a little Dotterel-like Winter Plover (*Zonibyx modestus*) ; also a graceful moorland bird, the Slender-billed Plover (*Oreopholus ruficollis*) ; and from the north Baird's Sandpiper (*Eriola bairdii*), which I last saw during the Perry River expedition in 1949 ; and Greater Yellowlegs (*Tringa melanoleuca*) ; and a fine Fuegian Oystercatcher (*Haematopus leucopodus*). Among the Passerines there is a very handsome Military Starling (*Pezites m. militaris*) which is very common and gay with vermilion breast and face, otherwise rather like the North American Meadowlark (*Sturnella magna*) ; a Blackbird (*Notiospar curacus reynoldsi*) named after Percy Reynolds of Viamonte, which is really more of a Starling ; a handsome Thrush (*Turdus magellanicus*) with yellowish breast and belly, black head and tail, yellow bill and white mottled throat. A particularly appealing passerine is the Thorn-tailed Creeper (*Aphrastura s. spinicauda*)—like a brightly marked Tree-creeper with long tail shafts protruding beyond the tail. There is also a very pretty little Song Sparrow (*Zonotrichia capensis australis*) with grey-white head and chestnut collar. Perhaps the most numerous birds after the geese and ducks are the raptors. The large and small Carrion Hawks, Carancho (*Polyborus p. plancus*) and Chimango (*Milvago chimango temucoensis*) are everywhere—the great scavengers. The large one is handsome and the small one dull and brown. There is a marvellous grey Buzzard (*Buteo p. polyosoma*) with a red saddle on the shoulders of the female and a white breast—extremely handsome. Then we saw and photographed the Chilean Eagle (*Geranoaftus melanoleucus australis*), a noble grey bird, and we saw twice the Magellanic Peregrine (*Falco peregrinus cassini*), many times the Orange-chested Hobby with its impressive scientific name—*Falco fusco-coerulescens fusco-coerulescens*, and the tiny Kestrel (*Falco sparverius cinnamominus*), just like the N. American bird to my eye. There were a good many Ashy Harriers (*Circus cinereus*) just like our Hen Harrier ; Short-eared Owls (*Asio flammens suinda*), indistinguishable from ours in the field ; and a large Horned Owl (*Bubo virginianus nacurutus*) which was very tame. Night Herons (*Nycticorax n. obscurus*) were local and tame, usually sitting in the tops of the trees, and we caught a fleeting glimpse of a pair of the wonderful Woodpecker (*Ipocrantor magellanicus*) which is a very large black bird, the male with a vermilion head. Up in the mountains and also in the garden at Viamonte was the Red-eyed Tyrant (*Xolmis p. pyrope*), like a large Spotted Flycatcher, and also in the mountains in the deep forest with evergreen beeches (*Notofagus betuloides*), eighty feet high and a dark tangle of logs and moss under it, was a little mouse of a bird like a Wren, but apparently not related, called *Scytalopus m. magellanicus* with a loud voice, which came to look at us and hopped in and out of sight in an entertaining manner. The way to make it come out was to rattle a box of matches. I believe it is a Babbler. In the forests and even in the low woods of Antarctic beech (*N. antarcticus*) were small flocks of parrots—pretty green birds with red tail and belly which made a noise roughly like that of a parrot house in a zoo. This was the Magellan Conure (*Microcittace f.*

ferruginea). The most amusing native animal is the Guanaco (*Achenia huanacus*), which is like a small rather lanky llama and it is evidently the ancestor of that domestic animal. Guanacos have almost disappeared but are now protected and may survive. We saw twenty-six altogether, seven in the largest party. They are pinkish brown and off-white and they laugh with a comical giggling, neighing call.

Guanaco

Much of the pampa is still honeycombed with the burrows of the Caruro (*Ctenonys magellanicus*) which is a delightful little ground-squirrel-like rodent about the size of a water rat. But the caruros' numbers fluctuate sharply, and in many places they have now disappeared altogether. Just as the sheep have replaced the guanaco as the large grazing animals of the pampa, so the caruros are being replaced by the introduced rabbits. So serious has the plague of rabbits become that already some of the big estancias are carrying twenty per cent. less sheep than formerly. Although the rabbits are at present restricted to certain parts of the island the tradition has grown up that farm workers can sell the skins of the rabbits they catch. However many rabbit fences are built, nothing will prevent the farm hand who goes to work in a rabbit-free district from taking a pair of rabbits with him to ensure his future pocket-money.

We found the local Bat (*Vesperugo magellanicus*), a small insectivorous beast, which looked to me very much like Bechstein's Bat but rather larger.

In the Magellan Strait, quite near to the shore one day, we watched some dolphins leaping clear out of the water and rolling over before falling back. This was evidently a form of play, in which several animals took part. The species may have been Peale's Dolphin (*Lagenorhynchus australis*).

One of our most exciting days was spent going by a small wool schooner as guests of Sr. Ricardo Braun-Menendez from Punta Arenas to two islands in the Magellan Strait. For this we had a rare day of calm weather and brilliant sunshine. On the ten-mile journey up the Strait we saw Black-browed Albatrosses (*Diomeda melanophris*), the Antarctic Skua (*Catharacta skua chilensis*), and also, surprisingly enough, the Arctic Skua (*Stercorarius parasiticus*). We saw the little Diving Petrel (*Pelicanoides magellani*) which does duty for an auk in the Southern Hemisphere, lots of dolphins which played round the ship and sea lions in the sea. The first island, Santa Magdalena, has a rookery of 15,000 pairs of Magellan Penguins (*Spheniscus magellanicus*). These penguins were discovered and described by Drake. At this season most of the penguins had gone to sea, but we found some hundreds still in their holes and filmed parties of them on the beach—the beach on which we saw our first

Kelp Geese. There are also rabbits on the island which share the burrows with the penguins. They have left practically no vegetation and yet there was a family of Upland Geese on the island when we arrived. We distinguished three kinds of Cormorants—the most handsome and most numerous had white underparts and blue eyes (*Phalacrocorax albiventer*). Then there is a smaller one with orange legs and white on belly only (which was, I think, *P. magellanicus*), and the third is all black (*P. b. brazilianus* or perhaps *P. olivaceus hornensis*). The commonest gull is the Kelp Gull (*Larus dominicanus*), not quite so big as a Greater Blackback but just like it. There is a Brown-headed Gull (*Larus maculipennis*), but the most surprising and unusual is Scoresby's or the Dolphin Gull (*Gabianus scoresbii*), like a small Lesser Blackback which has been washed all over with soft dove grey. It has a bright orange bill. These gulls and also the Swallow Tern (*Sterna hirundinacea*) were much commoner on the second island called Santa Marta. It was here that we saw, too, our first Giant Fulmars (*Macronectes giganteus*). These are like rather sturdy Albatrosses, grey all over with whitish heads. The main features of Isla Santa Marta were the Sea Lions (*Otaria jubata*) and the Cormorants. The sea lion bulls are huge creatures weighing well over a ton with long tawny manes, buffy chestnut all over, and they were clustered with cows and calves on the beach in herds of fifty or sixty together. We could get within about twenty yards of them in brilliant sunshine. The cormorants were if anything more spectacular ; a part of the top of the islands, say five acres, was completely covered with the birds—at least 50,000, and when disturbed they all hustled over the cliff. Those which could get space to open their wings became airborne but many could not and crashed to the beach. A lot of these broke their wings and one was killed outright from one such burst of birds caused by a man who had climbed on top while we remained below wishing we had brought umbrellas. The stench was unbelievable from guano and corpses, plus one or two sea lion carcases. But the sight was never to be forgotten—the life of this wonderful island was virtually unaffected by man and to see all these creatures in such profusion was too much for one afternoon. I could have spent days on the island (in spite of the smell) instead of a bare two hours.

A former sea lion colony at Cabo Peñas which we visited from Viamonte, had only one remaining sea lion on its rocks. It was the last survivor of the exploitation by a fur company. There were still some Sheathbills (*Chionis alba*), one of which was intensely interested in cinematography and came to within ten feet to be photographed. These birds are apparently commonly associated with colonies of sea lions and other marine mammals.

NORTHERN PAMPAS

From Buenos Aires we made two trips into the country in order to see some of the local ducks. On the first of these we visited an estancia near Abbott, about sixty miles south of the capital where Laddie Buchanan, the distinguished

polo player, took us to a reedy swamp. Most of the water was covered with a brownish floating duckweed which I believe is *Azolla*. There was a patch of open water on either side of a fence about the size of the top pond in the Rushy Pen. On this were about eighty ducks and a few Brown-headed Gulls. Twenty of the ducks were Rosybills, twenty were Brown Pintails, about a dozen were Silver Teal (*A. v. versicolor*), much prettier than the southern ones (*fretensis*) which we saw in Tierra del Fuego. There were about ten Red Shovelers, two pairs of Chile Teal, one pair of Cinnamon Teal, two female Ruddy Ducks (*O. vittata*) and about seven or eight Black-headed Ducks. The ducks had been shot at quite regularly here so they were very wild. Presently from the reeds beyond flew a bunch of about a dozen White-faced Tree Ducks (*D. viduata*), making nine species of ducks on this one little swamp. Unfortunately it was only possible to see the open water from fairly close and all the birds were on the alert. The Blackheads (only one or perhaps two adult males—the rest non-descript brown) were rather loath to fly and what ducks remained were these (and Ruddys), but some of them rose with the other ducks and flew with them. Flying they looked just like Teal and quite unlike Stifftails. They have long wings and fly fast and quite high. We were wearing waders up to our waists and Buchanan and I stalked through the rushes eventually returning to the pool where by this time a few ducks had reassembled and I was able to get some reasonable ciné shots of two young Blackheads. Once more I was forcibly struck by their general resemblance to female Cinnamon Teal. Round the swamp dotted in pairs across the pampa were charming Crested Screamers (*Chauna torquata*), also large White Egrets (*Casmerodius albus egretta*), singly, and smaller Snowy Egrets (*Leucophoyx t. thula*) with black legs and yellow feet, in bunches of six to twelve (both these the same as the North American birds); there was a delightful long-legged rail-like bird which I believe was a Jacana (*Jacana spinosa*); there were single large unidentified Ibises and flocks up to 300 of a small glossy Ibis (*Plegadis falcinellus*), with a pale pink bill. These little ibises flew in skeins which, in the distance, over the flat landscape dotted with small plantations of trees, looked exactly like Pinkfeet in the Fens. Towards dusk they were all moving southward presumably to some communal roost. These great skeins were a special feature of the landscape. Other birds included a pretty thrush-sized bird which walks like a pheasant but is a passerine, has a bright chestnut tail and a very attractive clear whistling call. It builds mud nests on telephone poles and fence posts round about the size of a soccer football with overlapping walls at the entrance. This is the Ovenbird (*Furnarius rufus*). In the reeds I saw the Many-coloured Tyrant (*Tachuris r. rubrigastra*), a tiny handsome black, white, red and yellow bird. There was a beautiful Flicker-type Woodpecker (*Dyctiopicus lignarius*) with speckled back, black head, red nape and yellow belly, a large Cuckoo (*Guira piririgua*) with a crest and the Benteveo (*Pitangus sulphuratus*)—a kingfisher-like Tyrant, with yellow breast and sharp white eye-stripe. Burrowing owls (*Speotyto cunicularia*) like Little Owls with long legs were much in evidence as we started home in the dusk. Hawks were represented by Chimango Carrion Hawks, the Ashy Harrier and I think another Harrier (probably *Circus buffoni*), a Snail Hawk (*Rostrhamus s. sociabilis*) like a small harrier, black with white rump, and a kestrel. Apart from hosts of utterly unidentifiable small passerines and a partridge, which was evidently one of the Tinamous (*Tinamotis sp.*),[1] that was about the measure of our day's birds.

[1] The Tinamous are not related to the true partridges, but are an offshoot of the Ostriches which have become adapted to the same habit as partridges and are very much like them in appearance.

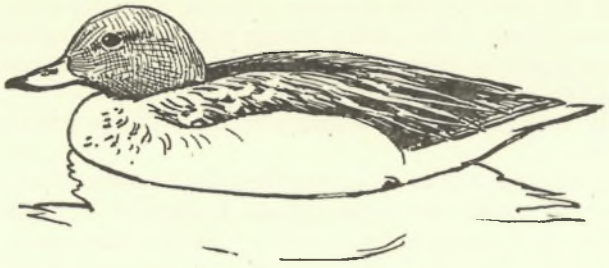
except for the ubiquitous Tero, or Queltegue, the Spur-winged Plover (*Belonopterus c. chilensis*) which makes an absolutely maddening and inescapable din as it flies round and round one's head.

With Mr. C. U. L. Behrend and his son we made a second trip from Buenos Aires, this time to some marshes south-east of the capital, and here on a large lagoon we found more Black-headed Ducks, mixed with Cinnamon Teal, Silver Teal, Red Shovelers and Brown Pintails. On one occasion I noticed that a male Cinnamon Teal was courting one of the immature Black-headed Ducks, so evidently these young Blackheads do not only look to me like female Cinnamons. In this same lake, there was a large flock of Flamingoes (*P. chilensis*) and several groups of Coscoroba Swans.

LAKE TITICACA

From Buenos Aires we flew to La Paz, the capital of Bolivia, and went thence by train past the famous pre-Inca ruins of Tiahuanaco which are believed to be 10,000 years old, to the port of Guaqui at the southern end of Lake Titicaca. On this lake, which is 13,000 ft. above sea level, bird life is rich. There are many mountain forms of familiar lowland species. These subspecies are confined to the high plateau (which in Spanish is called the ' altiplano ' and in one of the native languages is called the ' puna '). They mostly illustrate Bergmann's Law, that mountain races are larger than their lowland counterparts. The two commonest ducks were the Puna Teal (*Anas versicolor puna*), the highland version of the Silver Teal, and the Sharp-winged Teal (*Anas flavirostris oxypterum*) which bears the same relation to the Chile Teal. There were also large numbers of the Peruvian Ruddy Duck (*Oxyura jamaciensis ferrugina*). Some of the ducks had well-grown young, and others were moulting and in a flightless condition. Thus we were able to catch a few puna and Sharp-winged Teal, from a boat, by dipping them out of the clear water with a home-made net when they dived. These we brought back to Gloucestershire.[1] Round the southern end of the lake the water is shallow and overgrown with tall rushes. Amongst these rushes were numbers of the Giant Coot (*Fulica gigantea*), of Moorhens (*Gallinula chloropus garmani*), of Grebes, Night Herons, Cormorants and Yellow-winged Blackbirds (*Agelaius thilius*). On the more open shores were several of the North American Waders—Greater and Lesser Yellowlegs, Dunlins (*Calidris alpina pacifica*), and, out swimming among the floating water weeds, the graceful Wilson's Phalarope (*Steganopus tricolor*). In the mountainous parts on the plateau we found the handsome Andean Caracara (*Phalco-*

[1] The Sharp-winged Teal have since nested.



Sharp-winged Teal

boenus megalopterus) and also an interesting Woodpecker (*Colaptes rupicola*), which lives entirely in walls and banks and on the ground, as there are no trees at all in this region. The Glossy Ibis (*Plegadis ridgewayi*) was in evidence near the villages and exceptionally tame, and on a lake near Viacha, we saw one pair of the Andean Crested Duck (*Lophonetta specularioides alticola*) the only pair that we saw during the trip. The only duck of the ' puna ' that we missed was the large mountain form of the Cinnamon Teal (*Anas cyanoptera orinoma*). Not one could we find.

THE ZONGO

The main objective in Bolivia, however, was to see the Torrent Duck (*Merganetta armata*) which lives in the waterfalls of the Andean rivers. For this purpose we travelled over a 16,000-foot pass near the great mountain Huaina Potosi. Near the top of the pass is a tin mine and on the lake just below it we saw a small flock of seventeen Andean Geese (*Chloephaga melanoptera*), swimming far out on the still water. Over the pass we followed a road which leads down the River Zongo upon which we finally found a group of five Bolivian Torrent Ducks (*M. a. garleppi*). The details of the exciting encounter with these obscure and fascinating birds are described in the paper which follows.

BEHAVIOUR OF THE BOLIVIAN TORRENT DUCK

By Peter Scott

THE River Zongo is one of the sources of the Madeira, a main tributary of the Amazon. It rises in the high Andes of Bolivia about forty miles E.N.E. of La Paz. A hydro-electric scheme on the river supplies electricity to the capital.

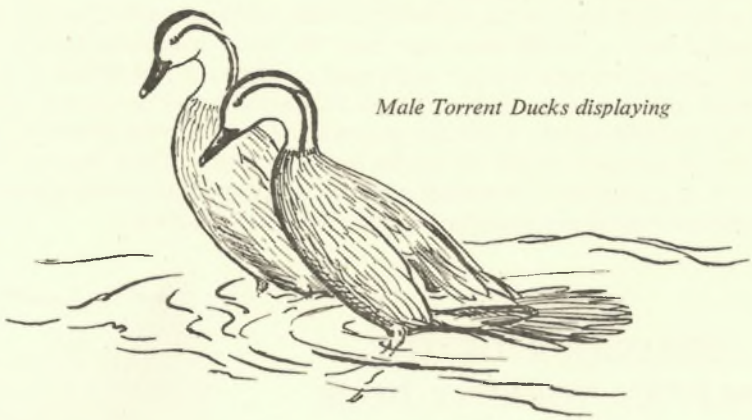
A road winds over the pass at a height of 16,000 ft. and follows the river in its steep descent down the deep cleft of the valley. At about 9000 ft. the tree-line appears and

below this the forest rapidly becomes tropical with tree ferns, a brilliant flora, and humming-birds. The valley echoes with the roar of the river which is a continuous series of cascades and waterfalls, about fifteen yards wide, the water clear and greenish blue.

The only Torrent Ducks we found were about two or three hundred feet below the tree-line.

The first view we had of them was from the window of a Camionetta (truck). As we curved round the mountainside I thought I caught a glimpse of an upright bird on a stone in mid-torrent. At the next corner we were directly above the spot. Looking down I could see a male and two females sitting on a reddish-brown rock in the middle of the stream. They were about thirty yards almost directly beneath us. As soon as we stopped the car and peered over at them they began to swim downstream with quick nervous head movements.

First impressions were that they were surprisingly like what we had expected. The most striking unexpected feature, however, was the colour of the bill, which is the brightest possible cherry red, with pale yellowish nail in both sexes. The females were very rich chestnut red (pale) on the chin and underparts, the rest dove grey. The males were spotted and streaked with dark brown on a light-grey ground, both above and below, the ground colour on the back being more yellowish. The white head with black lines was most beautiful. In a few moments they had swum out of sight downstream, stopping frequently on stones and swimming down or across waterfalls with the greatest ease.



Male Torrent Ducks displaying

A little way upstream were two more drakes, standing on a green slippery stone in mid-stream. After a few moments they flew, one after the other, upstream. They did not go far as they failed to reappear at the next corner.

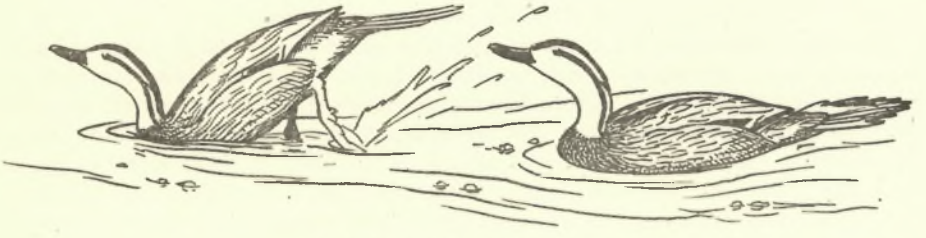
The locals reported more farther upstream, and we made the mistake of driving on in the car about two kilometres, instead of staying with these ducks while the light was fairly good. By walking down beside the river we established that no Torrent Ducks were present until we returned to the place where the two males were once more standing on their rock, and once more they flew a short distance up. As they took off the individual tail feathers were separated and gave a very ' scrawny ' look from behind. The Indian with us volunteered to go back and drive them downstream which he successfully did. One male flew downstream at once, passing below us, and showing its speculum prominently. But for the tail the bird in flight might have been a typical dabbling

duck. The second male swam down in front of the Indian—crossing waterfalls where I filmed it. Finally it also flew downstream below us. As we followed we came suddenly upon all five Torrent Ducks (probably the only ones on this stretch of river).

As soon as they saw us they all hopped into the water and swam about nervously, landing on rocks and then hopping in again. They were about seventy yards away (mainly below us). When they stood on the rocks the head was jerked forwards, the bill above the horizontal and often partly open. A call was just audible above the sound of the waterfalls, and might be described as ' keech.' Phillips[1] states that no one has previously heard any sound from a Torrent Duck. While the birds were nervous the call was being repeated almost continuously. It is evidently of a fairly high frequency.

We stood at the edge of the road filming them (although the sun had gone out of the deep valley and the light was very poor). After ten minutes, during which they played in the pool below, leaping out and running up the waterfalls (as Mergansers run over the water) and running along the tops of the rocks with an easy gait (slightly reminiscent of *Chenonetta* in its ease and complete lack of body movement), the five Torrent Ducks appeared to be satisfied that no danger threatened, and four of them (two pairs) withdrew to a patch of rapids and began to display. By now the light made ciné-photography with the telephoto lens quite impossible. The fifth Torrent Duck, a male, sometimes joined in—and may, indeed, have stimulated the display in the first place.

Two notable features of the behaviour occurred frequently. The first was when two males (once all three) raised themselves up by treading water and using the tail as ' surf-board,' in order to maintain the body in a near vertical position. The neck was then arched and the bill pointed downward at an angle 50°–60° to the horizontal. The two males were side by side during this display and one usually circled upstream of the other, crossing the current ahead of it, the other revolving so as to keep sideways-on to his rival. I could not establish that the female had any fixed relative position in this manoeuvre. The second movement occurred when the birds were swimming head to current. One would pass ahead of another, and with a quick, rather comical, jump would flick the whole of its hindquarters in front of its rival and throw out a small jet of water into the other bird's face. The water is thrown up in much the same way as it is in the display of the Goldeneye. During this display the wing is slightly open and the speculum shows plainly. This was most commonly done by one drake in front of another, but on two occasions I saw



Male Torrent Ducks displaying

[1] J. Phillips. A Natural History of the Ducks. Vol. IV, p. 214.

a female kick up in front of another female. The displays went on for between thirty and forty minutes, and all this time they were quite oblivious of the observers. From time to time one or other of the party would rest on a rock. Several times a male made his way on to a submerged rock over which the water was rushing. Here he stood with the water halfway up his body. It was amazing how he could stay there with so strong a current sweeping over the rock (which was covered with slippery weed as well).

The females landed on a rock on the far shore several times, but the splashing display went on in their temporary absence.

Sometimes a bird would fly up from the water on to a rock or to the pool above. The take-off was very steep, with no ' pattering ' across the water. The landing was made after near-hovering flight. It is quite evident that the wing-loading is as low, if not lower, than in normal dabbling ducks. Since the bird is not ' batwinged ' as in *Dendrocygna*, the wings must, in fact, be quite long, but when at rest the very elongated body and long tail give a misleading impression of the wing length.

The plumage of the male in this race is extremely smart. The black lines on the white head are sharp and extremely handsome. The edge of the streaked plumage of the body is quite sharply defined at the base of the neck. The streaking (and the wing speculum) are not unlike those of the Mallard. When one male bird was sitting on a rock I thought that without head and tail, the body would pass as a strongly marked rather grey female Mallard.

The legs are a dull dark red (in both sexes) with blackish webs, the bill is an amazingly brilliant scarlet lake—less orange than pillarbox red (also in both sexes). The iris of the male appeared black at that range ; that of the female was not carefully noted. It was not obtrusive, but may have been lightish brown, for the eyes did not look strikingly dark, as they probably would have done against the pale soft grey of the face if the iris colour had been dark brown or black.

The tail feathers are a notable feature in both sexes. The tail is carried in the water and each feather lies quite separate from its neighbour for the outer half of its length. It is an untidy looking appendage, but balances the bird gracefully.

On the following day we hoped to be able to film the birds again in improved light, when the tropical sun was almost overhead. But we could only find one female at first. When she saw us she jumped out on to a rock and ran nervously up and down jerking her head forward. After a few minutes she returned to the pool and resumed diving (presumably for food). On returning to the surface she jumped out on to a rock under the overhanging far shore. After ten minutes of very long dives she disappeared and must have used some rock under the near shore and out of sight of us. We did not see her again.

Walking downstream we came upon a pair some eighty yards away. They began to move upstream—mostly walking on the rocks, but often swimming up over the white water. Before I could get more than a short movie shot of them running along a boulder, they disappeared round a corner. Soon after disappearing they must have flown upstream, as three minutes later we were stationed above and below the hidden corner, but, after more than half an hour, our Indian had followed the stream between the two lookout places and no further trace of the Torrent Ducks was found.

In spite of this disappointment, we had had more than our fair share of good luck on the previous day when we had spent so long watching these fascinating and mysterious birds.

WHITE-FRONTED GOOSE STATISTICS, 1952–53

By Hugh Boyd

THE collection of data on the composition of the Whitefront population by the methods described in the Fifth Annual Report (pp. 14–19) was continued and extended in 1952–53. New sources of information included the identification of geese ringed in earlier years and counts of the numbers of single adults. The principal results are : (1) the mean proportion of first-winter birds in 1952–53 was 33%, a figure similar to those obtained in the two preceding winters ; (2) the mean brood-size was 3·18, less than in 1951–52 but greater than that in 1950–51 ; (3) 6·0% of families were accompanied by only one parent ; (4) only 2·2% of first-winter birds were not in family parties ; (5) estimates of the survival factor from observations of ringed geese suggest that about forty of every hundred geese alive at 1 January die before the following 1 January ; (6) analysis of the composition of the adult population indicates that the proportion of second- and third-winter birds is increasing, or the proportion of older birds decreasing, a condition characteristic of a growing population ; (7) it is shown that many second-winter birds were paired, although no birds less than 3 years old are known to have been parents.

Proportion of First-winter Birds

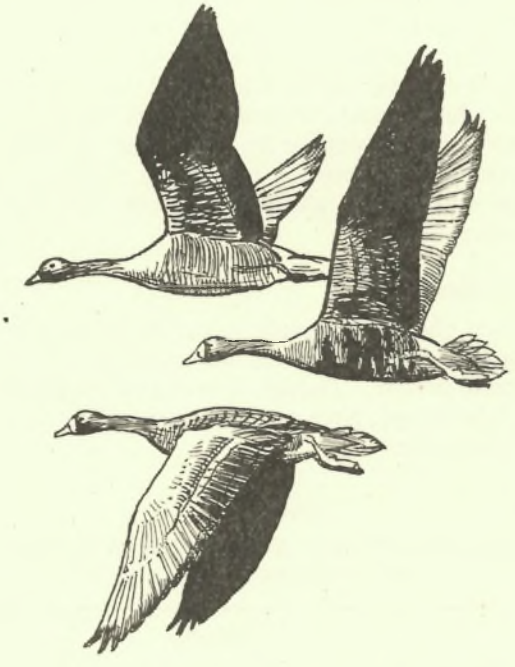
Table I summarises the counts made in earlier years and during 1952–53. The latter are grouped in seven periods, corresponding to the major changes in the number of geese present. Though it would be preferable to make counts immediately after such changes have occurred, instead of over a period of weeks, this is not often practicable.

TABLE I

PROPORTIONS OF ADULT AND FIRST-WINTER GEESE IN WINTERING FLOCKS

Season	Period	Sample			Proportions	
		Adult	1st Winter	Total	Adult	1st Winter
					Per cent.	Per cent.
1947–48		481	125	606	79	21
1948–49		532	141	673	79	21
1949–50		1957	536	2493	78	22
1950–51		1309	718	2027	64	36
1951–52		3001	1752	4753	63	37
1952–53	October	482	165	647	74	26
	November	622	378	1000	62	38
	Early December	1186	814	2000	59	41
	Early January	1998	1002	3000	67	33
	Late January	1275	525	1800	71	29
	Late February	1511	589	2100	75	25
	Early March	887	413	1300	68	32
1952–53	Whole season	7961	3886	11,847	67	33

The changes in the proportion of young birds after each large influx or departure are statistically significant in all cases except that of the increase in early December. These changes contrast interestingly with the observations of 1948–52, when the proportion of young birds remained sensibly constant from mid-November to the end of January, or even later, in each season (see Table II, p. 15, *Fifth Annual Report*). But analysis of the causes of fluctuation is not yet possible, since no reliable methods of distinguishing newcomers from established birds have been found. Small groups of new arrivals sometimes attract attention by resting apart from the main flocks, or by remaining for some time on the mud-banks in the river, but the identity of such groups is very soon lost and many others seem in no way distinguishable.



Brood-size

From Table II it will be seen that in 1952–53 the distribution of brood-sizes was similar to that found in 1949–50 and 1950–51, though with a mode of two, instead of three. This increases the likelihood that the distribution found in 1951–52 was exceptional, without enabling the difference to be explained.

TABLE II

BROOD-SIZE IN WINTERING WHITE-FRONTED GEESE

Season	No. of Broods	Size of Brood									Mean Brood-size
		1	2	3	4	5	6	7	8	9	
1949–50	145	12	34	44	26	23	5	1	—	—	3.25
1950–51	319	34	91	106	53	22	8	5	1	—	2.94
1951–52	150	21	27	23	27	27	18	4	3	—	3.64
1952–53	408	52	108	89	79	44	28	6	—	2	3.18

Anomalous Families

Most sexually mature adults and nearly all juvenile (first-winter) geese live in family parties which, unless artificially disrupted, remain united throughout the winter. A normal family comprises two adults with up to seven juveniles (seven being the largest clutch recorded), but families of abnormal composition are seen quite frequently.

In 1952–53 26 families in 408 (6·0%) were recorded as having only one adult. In a few cases this may have been due to the temporary absence of the second parent, but in most it must have resulted from genuine loss. The proportion of single-parent families (4 in 168, 2·4%) was significantly lower amongst the earliest arrivals than in the main winter flocks. This suggests that the loss of parents is due largely to winter mortality, of which shooting is apparently the most important cause.

Some families are accompanied by more than two adults. Usually there is only one additional member, but in a very few instances two have been recorded and on one occasion three. It is not easy to obtain satisfactory records of instances of this kind, because prolonged observations are needed to determine the extent of the association. In December 1947 Lebret (*Ardea* 36 : 198–200 1948) and Scott recorded one four-adult and eight three-adult families in a sample of twenty, but this proportion seems quite exceptionally high. In 1952–53 not more than 1·5% of families were accompanied by three adults and no four-adult families were seen. Three-adult families may have originated in several ways. Some cases of bigamy have been found, though there is no means of determining whether the association existed in the breeding-season or only developed subsequently. In other families the adherence of a third adult seems to be less permanent, perhaps only a matter of days. Watching of ringed birds has shown that the additional adults may sometimes be second-winter birds, very probably the offspring of the previous year. Lorenz (personal communication) has found that in flocks of Greylag Geese kept in semi-captivity immature birds may be re-admitted to the family after the breeding-season following that of their birth.

Families in which the parents are accompanied by more than seven juveniles are also seen (0·3% of families in 1950–51, 2·0% in 1951–52, 0·7% in 1952–53). Broods of eight and nine might represent true families, even though clutches of this size have not been reported. But a brood of ten seen in 1951–52 and one of twelve in 1952–53 are most unlikely to have originated in this way and it is probable that these exceptionally large broods are due to the successful admission of goslings which have lost their parents. Similarly large broods have been seen among Pink-footed Geese in autumn and Scott (*Fifth Annual Report*, 1953) has described how reshuffling of families can occur after mixing as the result of disturbance when the goslings are still small.

From observations on the White-fronted Geese it seems that acceptance of juveniles into families during the winter must be unusual. It is thus remarkable that only 29 juveniles in 1328 (2·2%) were recorded as unattached in 1952–53. The proportion in 1950–51 was closely similar and in 1951–52 probably even less. This indicates how effective the mechanisms preserving family coherence must be, since scattering of families after disturbance, especially by shooting and during fog, may be readily observed. Most of the unattached juveniles seen were single, but a few were grouped in ' broods.'

The Survival of Ringed Geese

Observations on geese marked in earlier years provide information on survival and on changes in the status of individual geese. For both purposes it is necessary that the marked birds should be individually identifiable, or at least assignable to age- or year-classes. White-fronted Geese are exceptionally suitable for studies of this kind, since the individual variations in the belly-markings of adults often make recognition possible even when ring numbers cannot be read, but comparatively few have been ringed, so that the results so far obtained are indicative rather than definitive.

In estimating mortality rate from the survival of ringed geese the small size of the samples, difficulties in recognising individuals, and lack of information on the extent to which geese visiting the New Grounds in one season or at one time of year return in later years or at different times in the same season are some of the major sources of potential error. But, assuming that the behaviour of ringed birds is typical of the wintering population, that most of the geese visiting the New Grounds in one season and surviving till the next will reappear there, and that most of the marked birds will be recognised, it is possible to estimate the survival factor from the numbers of geese seen in seasons after that in which they were marked. The geese have been caught in February, and observations made between October and March, but mortality at the New Grounds is small compared with that sustained elsewhere so that for a first approximation all data can be referred to mid-winter. Let P be the constant survival factor, so that out of a total number of individuals N_t alive at time t, PN_t are alive at time $t+1$. The unit of time is a year, from 1 January to 1 January. It can be assumed that, for White-fronted Geese which are more than six months old, the death-rate is approximately the same for all age classes in the population.

Sixty-nine geese were ringed in February 1950. At least 23 of these were seen in 1951–52 (two years after ringing) and at least 20 in 1952–53 (three years after ringing). From the 1951–52 observations, the mean value of P for the years 1950 and 1951 is 0·57. From the 1952–53 observations, the mean value of P for the years 1950, 1951 and 1952 is 0·66. In addition, at least 23 of the 48 geese marked in February 1952 were seen in the following winter, giving P (1952) = 0·48. The mean of these values is P = 0·57, i.e. of 100 geese alive at 1 January only 57 survive until the following 1 January. These estimates are very probably somewhat too low, because it is unlikely that *all* the ringed geese returning to the area were identified.

If the population can be assumed stable, with production just replacing losses, the ratio $\frac{\text{adults}}{\text{total geese}}$ found each season (Table II) provides an estimate of P. The populations described in Table II are, however, theoretical ones, when relationship to the geese actually visiting the area is uncertain, and the assumption of stability is likely to be fulfilled only imprecisely, but the indicated values of P in 1950–53 (0·63–0·67) are not far removed from the estimates based on sight records of ringed geese.

Composition of the Adult Population

Two analyses of the (theoretical) adult populations in the last four winters are summarised in Table III. In the first part of the table the proportion of parents is calculated from the mean brood-size on the assumption that all broods have two parents. The error introduced by the fact that some broods have only one parent is negligibly small.

The second part of the table shows the proportions of the population expected to belong to different age classes. This analysis replaces that used in an earlier account (Table IV, p. 17, *Fifth Annual Report*), in which a classification into ' sexually immature ' and ' mature ' adults was made. The latter involved the assumption that all second- and third-winter birds are sexually immature, which may not be correct. For the season 1950–51 two calculations were made, the first assuming a constant survival factor, the second assuming a change in the survival factor corresponding to the alteration in the $\frac{\text{adult}}{\text{total population}}$ ratio between the winters of 1949–50 and 1950–51. The modification produces no considerable difference. There is an apparent increase in the proportion of young birds in the population during the last two years. This may prove to be only temporary, the result of ' good ' breeding-seasons or a recovery from the effects of the ' bad ' season of 1949. But if sustained it would indicate a change in structure corresponding to a change from a stable population to a growing one.

TABLE III

THEORETICAL COMPOSITION OF ADULT POPULATION

Season	Parents	Adults Without Families	Age Classes			Survival Factor
			2nd Winter	3rd Winter	4th Winter and older	P
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	
1949–50	17	83	21	17	62	Constant
1950–51	38	62	22	16	62	Constant
			22	17	61	0.79 and 0.65
1951–52	32	68	36	14	50	Constant
1952–53	31	69	37	23	40	Constant

When do White-fronted Geese Pair ?

From the point of view of population dynamics it is of considerable importance to know when geese form pairs and at what age they first breed. Heinroth (*Die Vogel Mitteleuropas*, **3**, 1926) and Lorenz (personal communication) report that Greylag Geese may form pairs at a year old and breed at two years. This has also proved to be the case with the Hawaiian Geese at Slimbridge. Kossack (*American Midland Naturalist* **43** : 627–649, 1950) found that at least a fifth of the two-year-old members of a semi-captive flock of Canada Geese nested and Hanson and Smith (*Bull. Illinois Nat. Hist. Survey*, **25** : 67–210, 1950) assumed tentatively that all Canada Geese in the wild breed at two years old, although direct evidence on the point was lacking. But it is somewhat risky to assume that the behaviour of semi-captive flocks is representative of that of wild birds and dangerous to apply findings from studies of one species to another, so that it is desirable to verify the facts for wild White-fronted Geese directly, if this is at all possible.

The study of pair formation is primarily a behavioural one, but it can also be approached statistically, by the collection of data on the relative numbers of single and paired adult geese without families, if adequate criteria for the recognition of pairs can be found.

From the work of Heinroth (*loc. cit.*) on Greylags it seems likely that participation in a ' triumph ceremony ' would provide an absolute criterion for the existence of a permanent bond but this is of no practical value, since such displays are very infrequent amongst White-fronted Geese in winter. Other criteria are less absolute, but joint action in attack or defence against other geese is almost entirely limited to pairs, as opposed to temporary associates, and the closeness and attentiveness with which members of a pair follow each other will usually indicate the relationship. If a group of twenty to thirty geese is watched for half an hour there is usually little doubt of the affinities of its members. But the collection of data in this way requires much time and during 1952–53 attempts were made to determine the proportion of single adults by comparatively rapid scanning of flocks of several hundred geese. It was found possible to describe at least 90% of adults without families as ' single ' or ' paired,' provided that flock density and activity were not too high and the geese were sufficiently close to the observer. Moreover, comparison of results obtained by ' scanning ' with those from continued watching of small groups revealed satisfactory agreement between the methods at several times during the winter. Numbers counted in four periods are shown in Table IV, together with the only sufficiently large sample from earlier years, that of December 1950.

TABLE IV

PROPORTION OF SINGLE ADULT GEESE

Period	Single Adults	Paired Without Families	$\frac{\text{Single}}{\text{Single + Paired}}$ Per cent.	$\frac{\text{Single Adults}}{\text{All Adults}}$ Per cent.
December 1950	72	194	27	17
October 1952	240	584	29	20
Early December 1952 ..	196	664	23	16
Early January 1953 ..	176	466	27	19
Late January 1953 ..	115	382	23	16
1952–53	727	2096	25	17

The feeding habits of the geese prevented the collection of data in February and March 1953. The proportion of single adults is seen to vary considerably, but this variation is not simply related to the period of observation. The fluctuations may be due to the arrivals and departure of more or less unified groups, within the total flock, in which the $\frac{\text{single}}{\text{pair}}$ ratio varies widely.

It appears that in 1952–53 23–29% of adults without families (16–20% of all adults) were single. Records of the status of ringed birds show that 3 of 29 geese known to be in their third winter or older (and 1 of 20 fourth-winter or older) were single, i.e. about 10% of these older birds were single. Geese in their third or subsequent winters constituted some 63% of the adult population. Thus, single adults in their second winter made up 10–14% of the total adult population. But it is probable that second-winter birds constituted 37% of the adult geese (Table II), so that it is likely that quite a high proportion (perhaps as much as three-fifths) of the second-winter geese were in pairs by the end

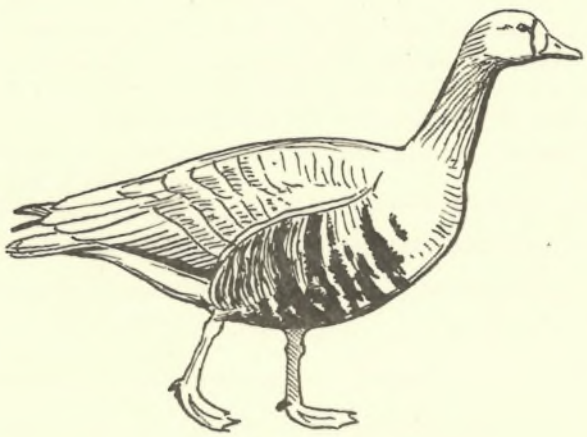
of January 1953. The proportion in December 1950 agrees very closely.

Conclusive proof that pairing takes place during the winter has yet to be provided. Though two second-winter geese were members of three-adult families, this does not indicate that they were parents. Nor can it be shown beyond doubt that any third-winter geese were parents. Table III indicates that it is quite possible for all the successful parents to have been older birds (in their fourth or subsequent winters).

SHORT NOTES ON GEESE

NOTES ON THE BELLY-MARKINGS OF WHITE-FRONTED GEESE

The occurrence of more or less extensive patches of black or blackish-brown feathers on the abdomens of adult White-fronted Geese (*A. albifrons*) and Lesser White-fronted Geese (*A. erythropus*) is one of the most obvious aids to identification of these species. Similar patches are found also in the Greylag Goose (*A. anser*), but are typically much less extensive than in *albifrons* and *erythropus*. From casual observation it is clear that the extent of these patches varies widely between different individuals and more critical examination of skins has shown that birds of the Greenland race (*A. a. flavirostris*) tend to have heavier markings than do other forms of *albifrons* (Dalgety and Scott, *Bull. B.O.C.* **68**(6) : 109–121 1948). Tucker (in Witherby *et al.*, *The Handbook of British Birds*, **3** : 1939) writes that the variability of these markings ' is not directly dependent on age or sex,' but Alpheraky (*The Geese of Europe and Asia*, 1905), although not claiming any correlation between marking and sex, has asserted with some force that in the Greylag and both species of Whitefront the black markings increase in number and size with the age of the bird, being few and small in two-year-olds and continuing to extend in fully adult birds until they ' may at last occupy almost the whole belly.' Since the vehemence of Alpheraky's pronouncements is inversely related to their truth and since his belief conflicts directly with that of Tucker it seemed desirable to re-examine the problem. Presumably both writers' opinions were based on the study of museum skins. Though it is possible when determining the sex of a goose by dissection to discover whether the bird has attained sexual maturity, no criteria are known



by which the age of sexually mature birds can be established, so that it is not clear on what evidence the conflicting opinions are founded.

The obvious method of studying the relation between age and extent of black marking is by recording the appearance of marked individuals over a period of years. This has been done by taking photographs of the Whitefronts in the Trust collection in November 1950, November 1951 and January 1953. All the geese used were adult when first caught up : unfortunately no precise information on their age at that time is available. While being photographed each goose was held vertically with its ventral surface squarely towards the camera. Complete standardisation of position was not achieved and some disarrangement of the plumage while the birds were being handled must have occurred, but these difficulties should not have introduced large errors. Sixteen *albifrons*, of four subspecies, and five *erythropus* were photographed, but for various reasons (e.g., deaths, loss of rings, unsatisfactory positioning for photograph) comparisons for all the birds for all three years could not be made. The results of the available comparisons are tabulated below.

CHANGES IN AREA OF BLACK BELLY-MARKINGS

Season	Marked Increase	Marked Decrease	Little Change	No. of Geese in Sample
1950—51	0	2	5	7
1950—53	0	4	4	8
1951—53	2	0	14	16
	2	6	23	31

There seems to be no evidence of a tendency for the area of the black patches to increase with age, but some suggestion that in any one individual it tends to remain about the same.

An attempt was then made to see how closely the patterns in successive years resembled each other. No objective method of comparison could be devised, but a single subjective classification into ' closely similar ' and ' dissimilar ' showed that 13 pairs of comparisons were similar and 18 dissimilar. This indicates that although the appearance of the markings on one bird in successive years tends to remain constant the resemblance is not likely to be constant enough to serve as a reliable means of identification (i.e. there is no close analogy with the constancy of ' finger-prints ' in human beings).

In order to discover whether the extent of marking is related to sex it is necessary to use some measure of $\frac{\text{area of black patches}}{\text{total area liable to include black patches}}$. For a first approximation estimates of the black areas in tenths of the total abdominal surface were used ($\frac{0}{10}$ = no black markings, $\frac{10}{10}$ = surface all black). Eleven males and twelve females (of all forms) were available. For each group a mean value of $\frac{5}{10}$ was obtained. A second source of data on possible sex differences in the European Whitefront (*A. a. albifrons*) was available, consisting

of drawings of the belly-markings of ringed wild geese seen at the New Grounds in the winters of 1951–52 and 1952–53. Their markings were sketched on standard outlines (made with a rubber stamp). The use of such sketches as a method of comparing areas is obviously even less accurate than the comparison of photographs, but since the drawings were made without consideration of their use for this purpose there seems no reason to suppose that a bias with respect to sex is present. Drawings of twenty-six pairs of birds were available. The sex of the individuals in these pairs had been determined by differences in relative size, especially of the head and bill, and confirmed by their behaviour during sustained observation. The area of the black patches in the sketches was determined for the left and right sides of the birds separately, and then summed. When the black areas were expressed as percentages of the lateral surface area of the breast and belly the mean value for males was 27% and for females 23%, a difference without significance. Comparison of the members of each pair showed that in sixteen of the twenty-six pairs the male was more heavily marked than the female, in two the extent of the marking was closely similar and in eight the female was the more heavily marked. It seems unlikely that any separation of the sexes by the extent of the belly-markings can be achieved.

This study confirms the view of Tucker (*loc. cit.*) that the variability of the belly-markings is not directly dependent on age or sex.

HOSTILE ENCOUNTERS BETWEEN WILD WHITE-FRONTED GEESE IN WINTER FLOCKS

During observations on the behaviour of the wild geese in years 1949–53 particular attention was paid to hostile encounters. A detailed report based on some 2200 encounters was published in March 1953 (Boyd, *Behaviour*: V, pt. 2, pp. 85–129). This note summarises that account, and does not make use of further data obtained in the winter of 1952–53.

Families (parents with young of the year) and pairs of adults form the great majority of the persistent groups within large flocks of geese. Hostile encounters result from at least three types of conflict between individuals or groups. Sexual rivalry is responsible for many of the conflicts between adults without families (pair formation occurs during the winter). Interference with freedom of movement and preservation of family coherence are the main factors leading to encounters between families.

A large majority of attacks are successful and most of them are uncontested. About half the encounters seen affected only two birds. Very few involved more than two families. There seem to be two ranking systems from which an observer can predict which geese in a conflict situation will show aggressive behaviour and what the outcome of an attack will be. First-winter birds not in families are inferior to all other classes. Paired adults are superior to single adults and also to first-winter birds still with their parents. These young birds in families, though subordinate to members of pairs, tend to be superior to single adults. Parents are superior to all other classes. Family-size provides the second criterion of rank, for large families are superior to smaller ones and the success of members of a family is affected by its size even when some of its members take no active part in an encounter.

Observations on the patterns of aggressive and submissive behaviour have shown that the postures used by adults and young are similar, but adults are more vigorous than young and parents are more vigorous than adults without families. Males attack more and are more successful than females though there is no clear difference between the sexes in vigour. There is a direct relation between intensity of threat and response, and response is also affected by the status of the attacker but apparently not by that of the victim. There is very little fighting within families. Geese of other species are tolerated within flocks.

The frequency of attacks within a flock is affected by its composition and density, by the general level of activity, by disturbance, and by the accessibility of drinking places. Conflicts for food are rare.

TRIUMPH DISPLAY IN GEESE

The following note has been received from N. G. Blurton Jones and Robert A. F. Gillmor who spent a week at Slimbridge under a special grant from Leighton Park School.

During the first week in January 1953, we carried out a comparative study of the triumph displays of the ' true geese ' (*Anser and Branta*) with especial reference to the movements involved and their relation to the colours and markings of each species. Notes, sketches, photographs and a film showing the aggressive and triumph displays of most of the geese in the Trust's collection were made. The film's main use was to help in further analysis and study. Some observations were also made of a particularly aggressive individual Andean Goose, although it does not belong to the two genera of ' true geese.'

The aggressive displays are basically the same in both *Anser* and *Branta*. They appear to be ritualised stages in a direct attack, e.g. ' high head waving,' as if the bird is swimming or walking towards its opponent, and the ' bent-necked aggressive posture,' as if the bird is about to peck its opponent.

It was found that certain species ' specialised ' in various postures, the high head aggressive posture being typical of the Bar-headed Goose, for example. The triumph display consists of an extreme aggressive posture disguised by the following movements : (1) a horizontal waving, with the head held low and outstretched ; (2) an up and down vertical waving ; and (3) a thrusting forward of the bent neck. In black geese the Red-breasted Goose has only the horizontal waving, but the Canada Goose has all three components very marked which combine to produce a snaking movement, which is characteristic of the species.

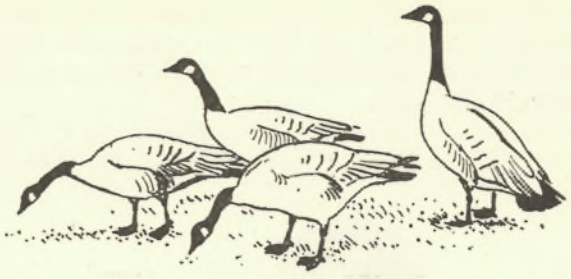
ROUNDING UP CANADA GEESE

1. Leicestershire

In the winter of 1952 Lord Gretton, of Stapleford Park, Leicestershire, asked the Trust for advice on methods of capturing Canada Geese, because the flock at Stapleford had grown inconveniently large. Since the geese were full-winged and not very tame, the simplest way of catching them promised to be by rounding-up at the time when the adults were flightless (having moulted their flight-feathers) and the goslings were not yet full-grown. It was agreed that the Trust should undertake the task.

On 25 June 1953 three members of the Trust staff went to Stapleford.[1] The

[1] H. Boyd, R. Philpott, Miss Peggy Cameron.



geese were found on the shores of the lake in the park and retired to the water when approached. After a brief inspection of the ground a ' corral ' was built at one end of the lake, in the hope that the geese could be driven into it. This consisted of a rough circle of wire-netting twenty yards across, open on the side near the water. Two ' wings ' made from rabbit-nets formed a funnel leading from the lake to the cage.

A disconcertingly large number of assistants had been obtained locally and the Press was well represented. The reputation of the Trust did not permit of failure. Fortunately a most impressive-looking boat with paddles at the stern was available. This was in itself almost enough for the geese and, with only a little encouragement from the shore party, the whole flock, except two old birds that flew off, was secured at the first attempt. The catch was ninety-two.

Thirty-four of the adult geese were ringed and returned to the lake. Some adults and some of the largest goslings were taken by local farmers. A large white domestic goose, which had been living with the Canadas, went with them too. But seventeen adults and twenty-four goslings were put in crates and taken to the New Grounds. These were later released on a lake on the estate of Major P. Clifford at Frampton-on-Severn. They have shown little inclination to wander and should soon become established.

HUGH BOYD.

2. BERKSHIRE

A twelve-hour operation on 28 June 1953 at Englefield Park, near Reading, resulted in the capture and marking of forty adult and gosling Canada Geese. As the geese were moulting and unable to fly, it was possible to round them up and drive them into a cage of netting where they were ringed and individually colour-ringed, measured, weighed, had the numbers of feathers in their tails counted and had their tail coverts dyed blue.

Some of the birds that had been ringed by the same party two years before were recovered. From the number of recaptures made it was estimated that nearly two hundred Canada Geese are in Berkshire.

The party consisted of Jones, national organiser of the B.T.O. enquiry into the population of Canada Geese in Britain ; Gillmor, who filmed the catch in detail ; G. H. Kay, C. J. R. Thorne, Q. O. N. Kay and K. E. L. Simmons.

M. H. Pitt, C. C. Hutchinson and O. J. C. Wellbelove assisted in 1950 when sixteen were caught without nets and 1951 when, with nets, a catch of eighty was made.

The Severn Wildfowl Trust provided blue anodised rings and dye for use in 1953.

There have been some interesting recoveries of birds ringed at Reading in 1951. One was found dead on Ascot racecourse in October of the same year. A bird ringed as a gosling was seen paired with an unringed female, also at

Ascot, in April 1952 and another was shot in Autumn 1952 twenty miles south-east at Dogmersfield. Another pair bred at Queensmere, twelve miles away, in 1952 and 1953 when we went specially to catch the five goslings, which were again ringed and colour-ringed.

ROBERT A. F. GILLMOR.
N. G. BLURTON JONES.

EXPERIMENTS ON THE FOLLOWING-REACTION OF DUCKLINGS

By Eric Fabricius and Hugh Boyd

THE useful study of animal behaviour, like any other kind of scientific enquiry, requires a point of view. Because of the complexity which characterises the activities of all living organisms and the comparative novelty of persistent investigation of these activities students of behaviour approach their tasks from many different standpoints. In recent years the most important, because most fruitful, basis of investigations by European workers has been that of *ethology*, the study of the causes of innate behaviour. The principal exponents of this method of approach, Lorenz and Tinbergen, have both published in recent years accounts in English of their aims and methods. In addition to a rather austere paper on ' The comparative method in studying innate behaviour patterns ' (1950), Lorenz has, in *King Solomon's Ring* (1952) provided a wealth of anecdote about what animals do, and why, in a language without technicalities but informed by his exceptional insight. Tinbergen, in *The Study of Instinct* (1951), has provided a more formal ' programme ' and in his very recent *Social Behaviour in Animals* (1953), a survey of some of the results of applying their ' objective ' method. Since these expositions are readily available, it is not necessary here to do more than state the fundamental tenets of the method to which the writers have attempted to adhere in studying some aspects of the behaviour of very young ducklings.

The ethological approach is characterised by especial attention to *innate* behaviour and to the problem of *causation*. ' Innate behaviour is behaviour that has not been changed by learning processes ' (Tinbergen, 1951). The ethologist's account of causation is essentially similar to that of the physiologist, but whereas the latter usually concern themselves with the functions of particular organs the ethologist is concerned with the functions of the animal as a whole. This equation of the problem of causation with the study of function may be

philosophically ingenuous, but is justified by the opportunities it creates for the experimental method.

Though the ethologist attaches great importance to innate behaviour this does not imply a lack of interest in learning processes. The interaction of the growth and maturation of innate motor patterns with the effects of learning provides data of crucial importance for the understanding of behaviour. These experiments on the following-reaction of young ducklings were intended to provide additional material in this field.

Attention was first drawn to some peculiar features of the response of young waterfowl to their parents by observations of Heinroth (1911) on the attachment shown by incubator-reared goslings to the first moving object they saw (the observer), resulting in a persistent preference for this object as a ' parent,' rather than for adult geese. Lorenz (1935, and also 1952) followed up this work by rearing goslings with himself as ' parent-companion ' and also carried out a few experiments with Mallard (*Anas platyrhynchos*) ducklings. These provided the only available data on the following-reaction of ducklings (other than incidental anecdotal references in the literature dealing with the rearing of ducklings in captivity) until Fabricius (1951a, 1951b) published the results of a two-year study on young Tufted Ducks (*Aythya fuligula*), Eiders (*Somateria mollissima*), Shovelers (*Anas clypeata*) and Mallards. Subsequently Ramsay (1951) and Nice (1953) have provided further, less extensive, experimental and observational material on various species of ducks. Comparable studies of species other than waterfowl have also been made [see Collias (1952) and Tinbergen (1953)] but will not be discussed here.

Fabricius's (*loc. cit.*) earlier work was based on experiments with ducklings hatched in incubators and confronted on removal with various ' parent-substitutes,' including the experimenter, models of ducks, living ducks and ducklings of other species. The experiments in 1951–53 made use of a similar approach, but with increasing attention to rigour in the conditions of isolation and initial exposure and the greatest possible simplification of the models employed. In 1951 small numbers of Mallards (18 birds), Pintails (*Anas acuta*) (2), and Carolina Ducks (*Aix sponsa*) (12) were used in the experiments and in 1952 8 Mallards and 19 Gadwalls (*Anas strepera*), but in 1953 attention was concentrated on the Mallard, of which 191 were tested in various ways.

For the present account a simple classification of the possible responses to moving objects is sufficient. A full positive response consists of movement towards the object with persistent close following, accompanied by repeated bursts of chirruping calls, called by us ' content notes.' Close following unaccompanied by calls, or with occasional distress calls, ' lost piping,' represents a less intense positive response. Hesitant approach and non-persistent following, for perhaps only a few inches at a time, are still lower positive responses. Failure to follow, the negative response, also varies in intensity, from absence of overt response to violent escape with loud ' lost piping ' and sometimes the ' note of alarm.'

Nearly a third of the ducklings also behaved aggressively towards models. Aggression is usually limited to a threat, with the head lowered and stretched forward, accompanied by more or less vigorous and persistent running towards the model, but sometimes culminates in an attack, when the duckling strikes the model with its bill.

Any one object may elicit all these responses from different ducklings, and indeed most of them, in various sequences, from any one duckling.

The apparatus used for the experiments with moving models in 1953 consisted of a runway 8 feet long, 2½ feet wide and 2½ feet high, of buff-brown fibre board. Two tracks were fitted above the runway, along which trolleys could be pulled in either direction. The trolleys consisted of model railway trucks adapted so that thin threads could be suspended from them, to which the models were attached by small hooks. The baseboards for the tracks largely obscured the view of the trucks from the floor of the apparatus, so that the trucks themselves were not treated as models by the ducklings. The movement of the trucks was by no means silent, but the noises produced no significant responses from the birds being tested. The models used for most of the experiments were two flat boxes 24 × 21 × 4 cm., one white, the other brown, and a blue balloon of 14 cm. diameter. A series of five smaller models, all brown cubes, was used to discover how small a model could elicit following, and a red box, a brown cylinder, a stuffed stoat and living male and female Mallards were used at other times.

The earlier work with diving ducks (Fabricius *loc. cit.*) had indicated that the potential ' parent ' could be a simple model, whose size could vary within very wide limits. In the present experiments a man walking upright was the largest model used (not in the runway !) and produced high-intensity following by some ducklings. The smallest model followed was about the size of a match-box. Still smaller models were avoided, ignored, or pursued as food-objects, like flying insects. From the diving-duck experiments it had appeared that neither features of shape nor the movement of the whole object were of importance for the first release of the following-reaction of the ducklings, but it had seemed that it was necessary for the model to show internal movement, comparable with the relative motion of head and trunk or limbs in living animals. In 1951 we found that a model devoid of such movement (e.g. a simple box, without a ' head ' or any movable appendages) could elicit close and persistent following. In the 1953 experiments the flat boxes and the balloon were of about equal effectiveness.

As Fabricius (*loc. cit.*) found in his earlier work, all the models eliciting the following-reaction also elicited escape-reactions, and the responses of most ducklings at the first showing could be described in terms of dominance of one kind of reaction, or alternation between the two, or the gradual replacement of one by the other. The existence of this antagonism creates difficulties in the study of the following-reaction itself. But it appeared from the diving-duck experiments that readiness to respond to models by following diminished rapidly with increase of the interval between hatching and first showing, while the readiness to escape increased (i.e. very young ducklings tended to follow, not to escape, rather older ones tended to escape and not to follow). In the young Tufted Ducks used in 1945 and 1946, birds under 6 hours (from hatching) showed following without escape while those between 6 and 48 hours showed both. Ducklings more than 60 hours old were not employed in the experiments. This indicated the existence of a limited interval to which the capacity to respond by following to the visual stimuli from a ' parent ' might be restricted, this *sensitive period* in Tufted Ducks lasting from the time of hatching to at least 36–38 hours, but with the capacity to respond decreasing throughout the period.

Such a result being of considerable interest with respect to interaction between innate behaviour patterns and learning processes, most of the Mallard experiments were with the object of confirming the existence of the sensitive period, finding out its length and seeing how ability to respond by following varied

with age. The picture obtained is less simple than that given by the Tufted Duck experiments.

Restricting attention to the following of ' silent ' models, it was found that about 60% of Mallard ducklings of age 3–25 hours showed following, compared with about 80% of those between 25–50 hours at first showing and 60% of those from 65 to 72 hours. Amongst older birds following was much less liable to occur, but 1 of 6 kept in isolation for 10 days followed a model at first showing. It appears that the sensitive period in the Mallard is not very sharply limited but must extend to at least 72 hours after hatching, ability to respond by following falling off rapidly at greater ages than this. The possible significance of the highest proportion of followers being found amongst ducklings of 25–50 hours, rather than in younger birds (as had been expected) will be considered in detail in a later paper, but the failure of some very young birds is almost certainly due in part to their inability to move readily or rapidly. ' Followers ' varied greatly in the ease with which they began following. Some responded to the very first movement of a model, others might not begin to follow for many minutes. Older birds tended to show initial avoidance more often than following.

A number of experiments were carried out to see if the time spent in following at the first showing affected the persistence of following. Since most of the birds could only be ' exercised ' for quite short periods (5, 10, or 15 minutes of following in a day) it is not surprising that no very clear differences were established, especially as most of the ducklings ceased following within the first ten days of life, even if exercised daily. Very few continued following for more than four weeks, though one still followed very well at 18 weeks.

Two experiments with groups of twelve ducklings in each were made in a search for discriminatory responses towards two models. The birds in one group were shown the balloon at first showing, those in the second group the brown box. At subsequent showings after intervals of two days or more, some were given the ' strange ' model, others the ' familiar ' one, and others a choice. While several followed the strange model in addition to the familiar one, in all cases the response to the former was less intense, notably with the absence of content-notes, and in choice experiments the original model was preferred.

In the experiments in 1952 and 1953 the ducklings were tested singly, as it had become apparent in 1951 that if small groups were used misleading results were obtained, due to the ducklings responding to each other as well as to the model. The reactions to siblings were not studied systematically but it became evident that ducklings which failed to follow, or avoided, the models also tended to avoid other ducklings on first meeting them. But even the most ' asocial ' birds (notably those kept isolated for ten days before testing) developed positive responses to siblings within a few hours.

It proved difficult to get live adult Mallard to serve as satisfactory models in the experimental runway, but some cases were found in which the previously-experienced model was unmistakably preferred to the living duck. In other cases, however, ducklings that had failed to follow models followed a duck at once when released nearby (usually, but not always, the duck was calling as well as moving). One duckling taken from a brood that had been swimming with a duck for about 36 hours showed some following of a model, but others of the brood only showed avoidance. Ducklings hatched by a female Mallard, but removed from the nest before they were old enough to have been led away

from it, followed models as often as did birds of the same age hatched in isolation. Some instances were found of model-followers developing a tendency to follow men after some weeks, and these did not seem to be the result of conditioning to man as a food-source.

The limited brooding equipment available made it necessary to rear the ducklings in large groups after they had received their first test. This prevented the study of the effects of continued isolation, and was probably in part responsible for the general falling-off of model-following at an age when wild ducklings would still be very closely devoted to their mother.

Acoustic stimuli may also elicit a following-reaction with or without the presence of a moving object. But strong avoidance of noises was not seen. The experiments were, however, principally concerned with response to visual stimuli, even though, as Lorenz (1935) had found and Fabricius (*loc. cit.*) had confirmed, acoustic stimuli have a stronger ' releasing ' effect on the following-reaction of ducklings than do visual ones. This concentration on visual stimuli was decided on because of the relative difficulty of controlling the acoustic stimuli to which the birds might be subjected. The principal results of the experiments with sounds were (1) the confirmation of Fabricius's (*loc. cit.*) finding that the effective acoustic stimuli are very simple (any rhythmical short bubbling sounds or monosyllabic words will serve, no exact imitation of the sounds produced by ducks being necessary), (2) positive response to sounds occurs more readily than response to moving objects, the response often appearing after a very few sounds, and also in long-isolated ducklings that fail to follow models, (3) ducklings failing to follow moving models could be induced to do so by the use of sounds and in some cases followed the ' silent ' model closely when the sounds were no longer made.

One of the most interesting and obscure features of the experiments was the great variation in response to models shown by ducklings with similar 'histories.' Of any brood successively shown one model at the same age (measured in hours from hatching) some would follow unhesitatingly, others reluctantly and others not at all. How much of this variation is due to genetic differences remains to be discovered. It is quite possible that some at least may be due to differences in treatment of the egg during incubation, particularly after ' pipping ' or chipping and a careful study of the immediate pre-hatching stage might prove informative. During the experiments we became increasingly impressed by the possibility of predicting the performance of a duckling from its appearance on first being transferred from its hatching box to the floor of the runway. Much more intensive observations and experiments will be required before the significance, or indeed the existence, of such a relationship can be established.

Experimental studies such as this deliberately make use of simplified situations. In the wild the young duckling is never presented with so restricted a set of stimuli. Not only does the mother provide shape, movement and sound, but also warmth, conduction to food and away from danger, and perhaps odour, with the likelihood of conditioning being rapidly established. Other members of the brood too provide similar attractions. Thus even ducklings with marked genetic incapacity to follow moving objects, if such ducklings exist, would not necessarily come to grief. One of the most fascinating and rewarding features of severely restricted experimental study is the heightened realisation it affords of the complexity and variety of the interactions between different processes that make up even a simple behaviour pattern.

ACKNOWLEDGMENTS

The experiments on which this study was based were carried out during visits by Fabricius to Slimbridge in June 1951, June 1952 and April and May 1953. The visits in 1952 and 1953 were made possible by grants from the Swedish Natural Science Research Council, to whom we are very grateful. We also wish to thank Dr D. F. McKinney and Mrs Helena Fabricius for help with the experiments in 1951 and 1952 respectively, Mr S. T. Johnstone for his co-operation, especially in rearing the ducklings used in 1953 after the experiments had ended, and Mr Peter Scott for making a film illustrating the work, as well as his continued interest and encouragement.

NOTE

This report consists of no more than a preliminary outline in general terms. A more detailed account of the work is in preparation and will it is hoped be published elsewhere.

REFERENCES

COLLIAS, N. E. (1952). The development of social behaviour in birds. *Auk*, **69** (2) : 127–159.

FABRICIUS, E. (1951a). Zur Ethologie junger Anatiden. *Acta. Zool. Fennica*, **68** : 1–178. (1951b.) Some experiments on imprinting phenomena in ducks. *Proc. Xth Int. Ornith. Congress*, Uppsala 1950 : 375–379.

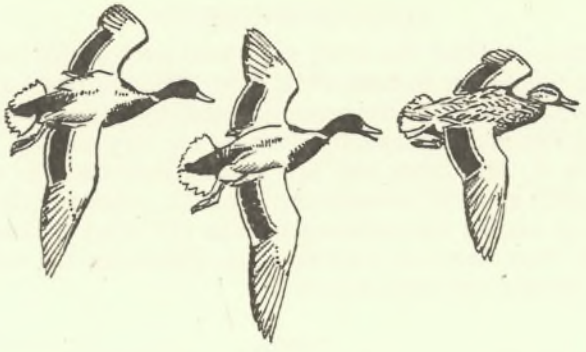
HEINROTH, O. (1911). Beiträge zur Biologie, namentlich Ethologie und Psychologie der Anatiden. *Verh. V. Internat. Ornith. Kongresses*, Berlin, 1910 : 589–702.

LORENZ, K. Z. (1935). Der Kumpan in der Umwelt des Vogels. *Journ. f. Ornith.*, **83** : 137–213, 289–413. (1950.) The comparative method in studying innate behaviour patterns. In : Physiological Mechanisms in Animal Behaviour. *Symposia Society for Experimental Biology*, IV : 221–268. (1952.) *King Solomon's Ring*. Methuen, London.

NICE, M. M. (1953). Some experiences in imprinting ducklings. *Condor*, **55** (1) : 33–37.

RAMSAY, A. O. (1951). Familial recognition in domestic birds. *Auk*, **68** (1) : 1–16.

TINBERGEN, N. (1951). *The Study of Instinct*. O.U.P., Oxford. (1953.) *Social Behaviour in Animals*. Methuen, London.



SOME RESULTS OF RECENT BRITISH MALLARD RINGING

By Hugh Boyd

SINCE the Mallard is the most numerous and widely distributed duck in Britain as a breeding species and probably as a wintering species also, information on its status, and particularly on changes in the dynamics of the British population, is of especial importance to wildfowlers and other students of ducks. In recent years investigations by several American biologists have enabled great advances to be made in the techniques of interpreting recovery data and in knowledge of the Mallard populations of North America. These American studies have been based on extensive ringing in many parts of Canada and the United States. Hickey (1952) found that 275,000 Mallards had been ringed and 40,000 recovered by the end of 1946 and since that time the American ringing effort has been greatly increased. By comparison, the scale of British ringing is very small indeed, only about 13,000 Mallards having been marked from 1909 to 1952.

Landsborough Thomson (1941) has summarised the information on the status and migrations of Mallard given by ringing before 1939. The movements of the species will not be considered in this paper, except for their effects on the use of recoveries of ringed birds in the study of mortality and its causes.

Between 1939 and 1949 very few Mallard were ringed in Britain. Almost all those ringed since 1949 have been caught at Abberton Reservoir, Essex (about 1600 birds), where intensive trapping is carried on by Maj-Gen C. B. Wainwright, or at Berkeley New Decoy, Slimbridge (about 2000 birds). Captures of ducks at these places and their recoveries there or elsewhere, with some references to earlier ringing, are used to answer three questions and illustrate some of the problems involved in making valid inferences about the distribution and mortality of the species from recoveries of marked birds. The questions considered are : (1) Is the mortality of British Mallards in their first winter higher than that of older birds ? (2) Why is the proportion of males recovered higher than that of females ? (3) What is the significance of variations in the sex-ratio amongst ducks caught at different times of year ?

The Relative Mortality of Adult and Young Mallard

Höhn (1948) has published an analysis of recoveries of Mallard ringed in Britain up to 1946. He found that of 305 recoveries of ducks ringed as adults, 65·3% were obtained during the first year after ringing, 23·9% during the second year, 6·6% during the third year and 4·2% in subsequent years, while

of 828 recoveries of ducks ringed as young, 89·0% were obtained during the first year after ringing, 9·6% during the second year, 0·6% during the third year and 0·8% during succeeding years. Blake (1949) has criticised these findings on statistical grounds, but used Höhn's published data to provide a simpler demonstration of the decline of mortality with increasing age. Blake's method, the calculation of age-specific mortalities (i.e. the percentages the losses in any year bear to the number exposed to risk at the beginning of the year) leads to the result that the mortality in the second year of life of ducks ringed as juveniles is closely similar to that in the first year (87·0% as compared with 89·0%) but drops sharply in the third (41·6%) and fourth years (42·9%).

The figure of 89% for first-year mortality is at first sight very large though Hickey (*loc. cit.*) believes ' that the high degree of reproductive success necessary to maintain the British Mallard population at the replacement rate entailed by this mortality is within the limits of reproductive efficiency in this species.' Scott (1951) used Höhn's results to assert that ' 89 *per cent.* of Mallards in Britain die in their first year,' which provoked Parish (1951) to declare: 'To wildfowlers this is a ridiculous statement, and it appears that Dr E. O. Höhn's analysis of the *recoveries* of ringed Mallards published in *British Birds*, *may* have been misread and wrongly interpreted.' Parish offers an alternative interpretation of the data. He points out that the 736 young and 199 adults recovered within one year of being ringed constitute 13·3% of all Mallards ringed, ' not the 89 per cent. upon which Commander Scott appears to have based his case against the shooting man,' apparently with the intention of substituting the former for the latter as an estimate of the first-year mortality rate. He had already noted that the total of recoveries at all ages represents only 16% of the ducks ringed. This attempt to confer immortality on 84% of ringed ducks invites ridicule not merely from wildfowlers.

Scott's generalisation of Höhn's result is valid only if recoveries of ringed birds may be taken as representative of the mortality of all British Mallards. It would be surprising if this were so because of the many sources of bias in the use of recovery data for estimating mortality, and particularly because of the preponderance of hand-reared and possibly-hand-reared birds in the sample available in 1947. The ringing at Abberton and Slimbridge in the last four years cannot provide estimates of mortality rates for another seven years or so (when the number of ducks marked in 1949–51 still liable to recovery will be negligibly small), but it is possible to derive from the recoveries *mortality quotients* which should indicate whether first-year mortality is greater than that in subsequent years. The first-year mortality quotient M_1 is given by the equation

$$\text{mortality quotient } M_1 = \frac{\dfrac{\text{number of juveniles recovered within 1 year of ringing}}{\text{number of juveniles ringed}}}{\dfrac{\text{number of adults recovered within 1 year of ringing}}{\text{number of adults ringed}}}$$

This equation was suggested by Bellrose (Bellrose and Chase 1950) for the calculation of V_1, the vulnerability quotient, but the same author has also drawn the useful distinction between *mortality* as deaths from all causes and *vulnerability* as deaths from shooting. Thus V_1 should be calculated for recoveries from shooting only, where M_1 is derived from recoveries from all sources.

The use of the mortality quotient (M_1) depends on several assumptions. An initial difficulty is the identification of juveniles and adult birds. The principal criterion of immaturity used at Slimbridge was the presence of juvenile rectrices.

These are replaced in the early autumn, so that by the end of September many ducks cannot be assigned to age-classes by this means. In the calculations reported here only those birds ringed on or before 15 September and confidently assigned to one or other class have been used. At Abberton, General Wainwright has employed the width of the rectrices as a criterion (the first-winter as well as the juvenile feathers being relatively narrow) and has assigned birds to age-classes even as late as March, but to assist comparison a restriction to birds ringed prior to 15 September has been imposed on the Abberton data also. There is an additional reason for giving particular attention to birds ringed in the late summer. Most of the recoveries are due to shooting. It has been argued that young birds are more vulnerable than old ones, but also that they become less vulnerable with experience during the shooting season. The season opens on 12 August. Ideally, therefore, comparison should be limited to birds ringed before that date, but this would make it very difficult to obtain a large sample, for very few adults can be caught in June and July. The inclusion of birds ringed after the opening of the shooting season must, however, be expected to tend to obscure any difference in vulnerability between young and old birds that is consequent upon experience.

TABLE I

First-season Mortality Quotients of British-ringed Mallard. (Restricted to recoveries before 1 August after ringing)

Locality and Period	Juveniles			Adults			Mortality Quotient M_1
	Ringed	Recovered	%	Ringed	Recovered	%	
Abberton (1950–52) ringing before 15 Sept.	293	91	32·2	162	27	16·7	1·86 (statistically significant)
Abberton (1950–52) ringing later than 15 Sept.	520	55	10·6	552	60	10·9	0·97 (not significant)
Slimbridge (1949–52) ringing before 15 Sept.	361	26	7·2	112	10	8·9	0·81 (not significant)
Abberton + Slimbridge, early ringing only	654	117	17·9	274	37	13·5	1·32 (not significant)

Table I records the values of the mortality quotient (M_1) for birds ringed at Abberton and Slimbridge. No earlier British marking effort has included sufficient numbers of both adults and juveniles to be used for comparison. There is an evident lack of agreement among the samples. The mortality of juveniles ringed early in the season at Abberton is much greater than that of adults ringed there at the same time. The Slimbridge figures actually suggest the opposite, a lower rate amongst young birds. While the Abberton data show a statistically significant difference between the age-classes, the apparent difference in the Slimbridge data may have been due to sampling errors, but in any event the latter give no support to the hypothesis of greater juvenile vulnerability and when combined with the Abberton results give a value of M_1 which, though greater than 1·0, is not significantly so. Thus if both samples are admitted as

representative, the hypothesis of high juvenile vulnerability is not adequately verified.

The discrepancy between the first-season recovery rate of juveniles ringed early in the season at Abberton (32·2% of birds ringed) and Slimbridge (7·2%) is very marked. The comparison of M_1 for early-ringed and late-ringed Abberton birds is of considerable interest in this connection. It appears that young birds not ringed till late in the autumn show a recovery rate during the period before the next shooting season almost the same as that of adults ringed at the same time (and, incidentally, similar to that of early-ringed Slimbridge adults). This suggests that in a population like that sampled at Abberton the high mortality rate of young birds is due mainly to deaths early in the first autumn. These deaths are almost all due to shooting and nearly all in the vicinity of the ringing station. Of the 91 first-season recoveries of early-ringed Abberton juveniles 87 (96%) were local (i.e. within 30 miles), whereas only 17 (65%) of the 26 early-ringed Slimbridge juveniles were local. Bellrose and Chase (*loc. cit.*) studying a Mallard population in Illinois, U.S.A., obtained a similar result, the mortality rate and vulnerability rate of juveniles being each about one-and-a-half times those of adults. Though it is not possible to determine values of M_1 from the data published by Hickey (*loc. cit.*), he calculates the first-year mortality rate of a small sample of juveniles as 68%, and a mean adult mortality rate (from a large sample) of 47·8%, indicating a similar ratio between juvenile and adult mortality.

The anomalous results from the Slimbridge data may be due in part to the presence among the young birds of a high proportion of ducks reared in or near the S.W.T. enclosures, although no *hand-reared* birds are included in the sample (and, at least since 1950, the adults also must be supposed to include many birds of similar origin). Some Mallards were hand-reared at Slimbridge in 1948 and 1949, primarily to provide a ' lead ' for the decoy in which the wild birds are caught. Recoveries from these 139 ' call-ducks ' totalled only 6 (4·3%) within 1 year of ringing, compared with 7·2% for other Slimbridge juveniles and 31·1% for Abberton juveniles, and only 3 of these 6 were shot. Thus the apparent vulnerability of these ducks is very low, in strong contrast to that of most of the hand-reared ducks marked elsewhere in Britain and used by Höhn in his analysis. Presumably this is due to the absence of shooting close to the Trust enclosures, together with less than the usual amount of local movement, as well as little migration in the customary sense, though one of these ducks has been recovered in Germany. The absence of recoveries at a distance is very striking in the pre-war hand-reared samples also. Höhn (*loc. cit.*) considers that ' there is no *a priori* reason to assume a difference in survival of young birds hand-reared as compared to those reared by their mothers,' but Hickey (*loc. cit.*) believes that ' it would be more conservative to assume that—until facts are available—some hand-reared waterfowl will adopt human beings as " social companions " and become unduly vulnerable to hunting as a result.' He demonstrates also that, although no differences in first-year mortality between wild-reared and hand-reared ducks is apparent in Höhn's data, hand-reared birds have a significantly higher *adult* rate of mortality than wild-reared birds. The present study confirms the existence of differences in survival among hand-reared and wild ducks, and the undesirability of using samples of mixed or uncertain origin for the determination of population parameters. Hickey based his belief that hand-reared waterfowl will tend to adopt human beings as ' social companions ' on the work of Lorenz (1937), but it is doubtful whether ' imprinting ' occurs in

the Mallard (Fabricius and Boyd, unpublished). It seems probable that the abnormal mortality rates of hand-reared young are due to their sedentary habits, not to tameness. Reared for shooting they get shot, reared with protection they survive exceptionally well.

Blake's (*loc. cit.*) finding that mortality in the second year of life is similar to that in the first year but is much reduced in subsequent years requires verification for a sample free of hand-reared birds, but the recent ringing does not enable this point to be satisfactorily explored. Hickey (*loc. cit.*) reports on a comparison of hand-reared and wild-reared North American birds. The wild-reared birds showed mortality rates of 68% in the first year and 50% in the second and subsequent years, whereas the mortality rate of hand-reared birds was 82% in the first year, 70% in the second, and 49% thereafter.

Sex Differences in Recovery Rates

Table II records the number of Mallards of each sex ringed and recovered (birds ringed before 1 March, 1953, recovered before 1 June, 1953).

TABLE II

Ringing and Recoveries of Male and Female Mallard

Where Ringed	Males			Females		
	Ringed	Recovered	%	Ringed	Recovered	%
Abberton	901	170	18·9	651	135	20·7
Slimbridge	975	158	16·2	930	93	10·0

Recoveries here are *final recoveries* of dead birds, excluding recaptures where ringed or captures elsewhere if the bird was subsequently released. For Abberton-ringed birds there is no significant difference in the recovery rates of males and females, but for Slimbridge-ringed birds the male recovery rate is much higher than that of females.

The American studies (see especially Hickey *loc. cit.*) have shown that the *recovery* rate of males is higher than that of females but that the *mortality* rate of females is higher than that of males. The higher female mortality rate is ascribed to the increased hazards to which females are exposed in the breeding season, while the higher male recovery rate is a consequence of their greater vulnerability. (Rings on shot birds are more likely to be reported than those on birds dying from natural causes.) Discussion of the British data must be restricted to inferences from recovery rate and causes of death.

Table III groups recoveries by the cause of death (recoveries for which no information on cause of death is available are omitted here). The proportion of recoveries due to shooting does not vary importantly with the place of ringing but there is a significantly higher proportion of shooting casualties amongst males than females. The apparently greater proportion of females captured in decoys could result from chance but the greater proportion of losses due to predators and accidents amongst females seems very likely to be a genuine indication of a higher mortality rate. This is probably largely brought about in the breeding-season (74% of female casualties in this category occurred from March to July, inclusive, compared with 57% of similar male casualties in the same period). This sample is as yet too small to establish the sex difference in

TABLE III

Reported Causes of Death of Male and Female Mallard

Sex	Where Ringed	Cause of Death			Total Recoveries
		Shot	Killed in Decoy	Predators or Accident	
Male ..	Abberton	119 (76·2%)	25 (16·0%)	12 (7·7%)	156
	Slimbridge	98 (79·6%)	7 (5·7%)	18 (14·6%)	123
	Total	217 (77·6%)	32 (11·5%)	30 (10·8%)	279
Female ..	Abberton	75 (64·7%)	27 (23·3%)	14 (12·1%)	116
	Slimbridge	51 (70·8%)	2 (2·8%)	19 (26·4%)	72
	Total	126 (67·0%)	29 (15·4%)	33 (17·6%)	188

mortality rate beyond doubt. The British results seem to be in agreement with the North American ones. It remains to be explained why males are more likely to be shot than females. Is this due to selection by wildfowlers or to differences in the behaviour of the sexes?

Can Abberton- and Slimbridge-ringed Mallard be Regarded as Representative?

The section on the relative mortality of young and adult ducks showed a discrepancy between the results obtained from ringing at the two stations. Table III reveals further differences. The greater proportion of Abberton-ringed ducks taken in decoys is due to the proximity of one of the three British decoys still being used to catch ducks for the market. The apparently greater proportion of Slimbridge birds falling victim to accidents is almost certainly due to the very high density of the local breeding population, in an area very carefully searched for ducks' nests (and bodies). Such variations are bound to occur and the obvious way to prevent local factors from unduly influencing results which are intended to reflect regional conditions is to catch ducks in as many places as possible. But, even if this can be done, it is necessary to show that the behaviour of ringed birds is similar to that of unringed ones. It is, of course, not possible to do this directly. The best that can be done is to correlate population parameters of marked and unmarked birds if any opportunity arises and, if no serious disagreement is found, proceed on the hypothesis that marked birds are representative. The following section illustrates one such correlation and, on the basis of agreement, some deductions about the movements of Mallard populations.

Age- and Sex-Ratios of Ringed Mallards

The decoy at Slimbridge constitutes a rather complicated kind of trap, for ducks may be taken in three more or less distinct ways. Birds using the pipes as resting places are liable to be caught by being frightened at the sudden appearance of a human being at the show-place. Birds resting on the pond, rather than in the pipes, may be first lured by the use of a dog and then frightened. Third, at the times when most Mallard are visiting the pond, the pipes are made more attractive by baiting with grain. Ducks using the pond as a refuge may be

regarded as wild, in contrast to the not inconsiderable number of Mallards which are virtually resident in the pens adjacent to the decoy. At the time when the decoy is being baited there is probably some movement of pen-inhabiting birds into the decoy, but even so the birds that are caught are more typical of the estuary population than of the resident population as the tame birds often are not sufficiently frightened to be caught. Though many Mallards caught in August and September are recaptured once or even twice in the same season very few are repeatedly recaptured, and comparatively few reappear in subsequent years. Table II shows, incidentally, that the sex-ratio amongst ducks caught at Slimbridge is very nearly 100 : 100. Counts of the sex-ratio of duck in the pond give a similar result when considered as a whole, so that there is no reason to suppose that the sexes differ greatly in their liability to capture in the decoy. Mackworth Praed (1941) also found males and females equally susceptible to trapping after comparing catches and counts at Orielton Decoy in 1934–39, even though females of all species were more numerous than males there.

From Table II it is seen that there is a marked preponderance of males in the catch at Abberton. At this station catching is done with baited traps, sited around a large reservoir which is in itself a refuge more than a feeding-place (for dabbling ducks at least). Some ducks develop a ' trap-habit,' using the traps as a source of food and being repeatedly recaptured. There is some evidence of differences between the sexes in this respect and observations show that males tend to push into traps ahead of females. Consequently the sex-ratio in the trapped ducks is unlikely to be typical of the unmarked population so that hypotheses derived from the sex-ratio should be treated with reserve.

TABLE IV

Catches of Male and Female Mallard at Abberton and Slimbridge

Period	Abberton				Slimbridge			
	1950–51		1952–53		1950–51		1952–53	
	Male	Female	Male	Female	Male	Female	Male	Female
April–July ..	6	5	34	26	10	1	5	4
August	3	8	101	62	45	36	51	48
September ..	19	12	58	60	292	225	227	201
October ..	30	32	77	24	63	74	69	78
November ..	37	25	138	83	2	2	4	8
December ..	27	39	106	62	6	7	4	3
January ..	5	7	29	31	6	5	6	15
February ..	6	6	13	9	1	7	3	5
March	21	25	—	—	2	4	—	—
Total ..	154	159	556	357	427	361	369	362

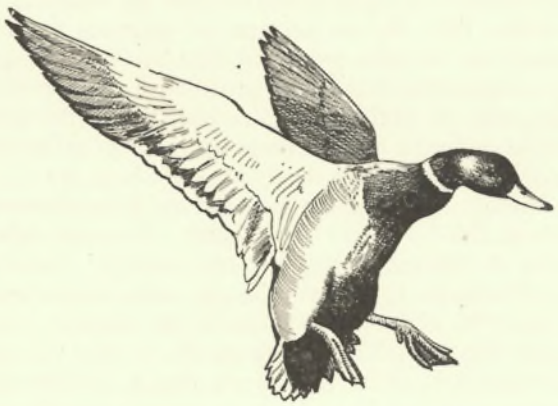


TABLE V

Sex-Ratio in Catches of Mallard at Abberton and Slimbridge. Ratios expressed as males per 100 females. Derived from data in Table IV

Period	Abberton		Slimbridge	
	1950–51	1952–53	1950–51	1952–53
April–July ..	—	131	—	—
August	—	163	125	106
September ..	158	97	130	113
October	94	321	85	88
November ..	148	166		
December ..	69	171		
January	84	105	78	55
February				
March	84			
Season ..	97	156	118	102

Table IV records the numbers of each sex caught in each month at Abberton and Slimbridge in the seasons 1950–51 and 1952–53. These two seasons are those in which most of the Mallard have been caught at each station. Inclusion of the smaller catches of other seasons would confuse and not improve the analysis. In Table V these data are converted to sex-ratios, in the form x ♂♂ : 100 ♀♀, omitting or combining those periods in which the numbers of ducks caught were very small. The Slimbridge data show considerable consistency, both in the overall ratio for each year and in the changes from month to month. More males than females are caught in August and September (particularly early in that month, though this is not shown in the tables), but fewer in October and the winter months. At Abberton there is a great difference between the two seasons : 1952–53 is seen to be largely responsible for the appearance of a preponderance of males in the total catch, Table IV. Violent fluctuations during each season are also apparent.

Understanding of the movements producing these changes should be greatly assisted by the information being collected through the National Wildfowl Count (see Atkinson Willes 1953 for an account of methods employed and some illustrative findings) but relevant published data are very meagre. Perhaps the most interesting comparative material is provided by Lebret (1949), from field counts of the sex-ratio of Mallards in Zeeland, the Netherlands, in 1947–48 and 1948–49. These showed a marked preponderance of males from late August to the beginning of November and a steady ratio of about 113 ♂♂ : 100 ♀♀ during the rest of each winter. The disparity between the sexes decreased through the autumn, from about 230 ♂♂ : 100 ♀♀ in August. No great influx of migratory Mallards occurred in Zeeland during the two winters. Lebret attributes the autumn scarcity of females to the wing-moult, since ducks seek cover during this moult, and since the males moult earlier in the summer. He further points out that only *adult* females suffer a wing moult, so that his counts show that in late August at least 50% of the total stock already consists of adult birds.

The sex-ratios in adult and juvenile ducks caught at different times during the autumn provide a simpler approach to the problems discussed by Lebret. The Abberton catch in the autumn of 1952 (Table VI) provides the only set of monthly totals large enough for use in this way. These totals are still too small for much significance to be attached to the numerical values of the sex-ratios. But they indicate clearly enough that no steady downward trend in the preponderance of males, such as Lebret found in the Zeeland counts, occurred at Abberton in 1952. This suggests that the population at Abberton alters in composition during the autumn and winter and that the scarcity of females cannot be ascribed to the wing-moult of adult females.

TABLE VI

Monthly Changes in Age- and Sex-Ratios of newly-caught Mallard at Abberton, Autumn 1952

Month	Autumn 1952						Adults as % Total Catch
	Adults			Juveniles			
	♂♂	♀♀	♂♂ : 100 ♀♀	♂♂	♀♀	♂♂ : 100 ♀♀	
August ..	53	26	204	48	36	133	43
September ..	30	37	81	28	23	122	56
October ..	44	11	400	33	13	254	55
November ..	78	18	434	60	65	92	43
December ..	64	28	229	42	34	134	57
	269	120	224	211	171	123	50

ACKNOWLEDGMENTS

I am much indebted to Major-General C. B. Wainwright, C.B., for permission to make use of his data on ringing of ducks at Abberton and for helpful discussions and criticisms, to Miss E. P. Leach, Hon. Sec. of the Bird-Ringing Committee of the British Trust for Ornithology, for access to the schedules completed for Mallard ringed in Britain before 1952, and to Professor W. H.

Elder, of the University of Missouri, for a critical reading of the first draft of this paper.

SUMMARY

Most of the Mallard ringed in Britain since 1949 have been caught at Abberton, Essex, and Slimbridge, Gloucestershire. Analyses of the catches at these stations and the recoveries of ringed ducks so far reported provide evidence on the relative mortality of juveniles and adults, and of males and females.

The conclusion of Höhn (1948), from earlier ringing of Mallard in Britain, that juvenile mortality is greater than adult is confirmed for the ducks ringed at Abberton but not for those ringed at Slimbridge. This disagreement is probably due to differences in the extent of local movements by juveniles and adults and particularly to much heavier shooting pressure in the immediate vicinity of Abberton. Additional evidence is provided for the undesirability of using data from hand-reared ducks in the estimation of mortality rates for wild populations. The difference in juvenile and adult mortality is shown to result principally from casualties in the early autumn.

Males appear to be more vulnerable to shooting than females, but more females than males fall victims to predators and accidents. Casualties of this kind occur mainly from March to July.

The age- and sex-ratios amongst Mallard caught at Abberton and Slimbridge show great variation between the two localities, between different years at each locality and during each autumn, but insufficient data are available to enable these variations to be explained satisfactorily. At Slimbridge more males than females are caught in August and September, but fewer from October to February. At Abberton males are nearly always more plentiful than females. The sex-ratios of adults and juveniles seem to vary independently.

REFERENCES

Bellrose, F. C., and Chase, E. B. (1950). Population losses in the Mallard, Black Duck, and Blue-winged Teal. *Illinois Natural History Survey, Biological Notes*, **22** : 1–27.

Blake, C. H. (1949). Letter : " Mallard mortalities." *British Birds*, **42** : 256.

Hickey, J. J. (1952). Survival studies of banded birds. *U. S. Fish and Wildlife Service. Special Scientific Report ; Wildlife, No.* **15** : 1–177.

Höhn, E. O. (1948). Mortality of adult and young Mallards. *British Birds*, **41** : 233–235.

Lebret, T. (1949). Eenden tellen. *De Nederlandse Jager*, **54** : 4–5, 26, 36–37.

Lorenz, K. Z. (1937). The companion in the bird's world. *Auk*, **54** : 245–273.

Parish, E. L. (1951). Letter : The decrease in our wildfowl. *The Field*, 23 June, 1951.

Praed, C. W. Mackworth (1941). Orielton Decoy, Pembrokeshire. *In* : Factors affecting the general status of wild geese and wild duck. *International Wildfowl Inquiry*, volume I : 67–72.

Scott, P. (1951). Letter : The decrease in our wildfowl. *The Field*, 28 April, 1951.

Thomson, A. Landsborough (1941). Results of ringing duck : general survey of data from all sources. *In* : Factors affecting the general status of wild geese and wild duck. *International Wildfowl Inquiry*, volume I : 84–105.

Willes, G. Atkinson (1953). Wildfowl counts in the British Isles. *In* : Wildfowl counts 1947–1952. *International Wildfowl Research Institute, Publication No.* 3 : 2–19.

Goosander

GENERAL ACTIVITIES & ADMINISTRATION

VISITORS

On Wednesday 22 April 1953, which was a fine sunny day, the Trust was honoured by a visit from Her Royal Highness the Princess Royal—who has been a member for many years but had not previously been able to come to the New Grounds—and Their Royal Highnesses the Duke and Duchess of Gloucester, Prince William and Prince Richard.

On Monday 31 August Her Royal Highness Princess Alice and the Earl of Athlone had equally delightful weather for their visit.

Over the year the number of visitors steadily increased. At times the enclosures were rather too crowded, but it must be remembered that it is constant association with large numbers of people which makes the birds tame—and this remarkable tameness is in its turn one of the principal attractions of the place.

The number of organised parties between 1 March 1952 and the same date in 1953 was 275, of which 133 were from schools. This compares favourably with 223 and 114, the corresponding figures for the previous year.

DIRECTOR'S LECTURES

The Director gave eleven lectures during the year and the total sum raised for the Trust was £876. The most ambitious lecture took place in the Royal Festival Hall on Tuesday 13 January 1953. The colour film of the first Icelandic Expedition was shown. The lecture was under the patronage of H.E. The Icelandic Minister and the Director was introduced by the President, Field-Marshal Lord Alanbrooke. Mr Robert Aickman acted as Master of Ceremonies and great credit is due to the Organising Secretary, Miss E. R. Gregorson, for the success of the occasion. The hall was filled to capacity and some 400 people had to be turned away.

EXHIBITION

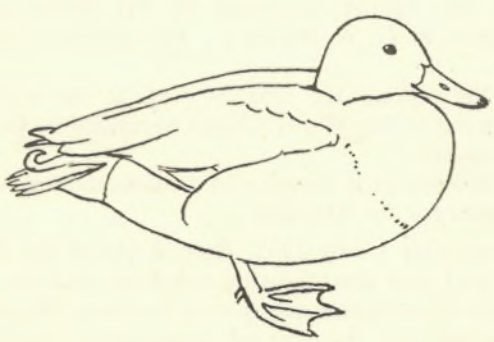
An exhibition of the Trust's work was staged in the Ceremonial Foyer of the Royal Festival Hall, and timed to coincide with the lecture. Ringing and rocket-netting equipment was exhibited, there was a series of photographs

showing the Trust's work and the Icelandic Expedition, and a number of the Director's paintings were also on view. The Council is most grateful to Mr T. L. Outhwaite and Mr Keith Shackleton, who organised it.

OBITUARY

The Council has learned with deep regret of the deaths (notified since the last issue of the Annual Report) of the following Members :—

E. H. Allen
Sir Alan Anderson, G.B.E.
Lt-Col R. Auld
Lt-Col F. G. G. Bailey
The Duke of Bedford
Miss C. Biddle
The Rev F. L. Blathwayt
A. G. Brackenbury
S. H. Bratby
Major F. E. Briscoe, D.S.O.
W. R. Bufton
Mrs F. Caswell
T. Chadwick
R. W. Champion
R. J. H. Cole
J. H. B. Dixon
Miss J. Dykes
J. W. Ebden
E. W. Fry
T. Grant
Miss B. A. M. Grist
Major C. E. Hare
Major H. R. Hendy
J. C. Higgins, C.I.E.
Mrs K. M. Hope
F. G. Hurt
The Rev H. F. N. Inge
G. Kay
R. G. Kilburne, O.B.E.
E. L. Koechlin
J. D. Lane
Rev F. K. Lawrence
R. K. Liddon
Sir John Lloyd
N. D. Lupton
H. J. Massingham
Commander C. D. Milward
Dr C. E. Moorhead
Col T. J. McLeod, D.S.O.
D. D. Napper
Mrs J. M. Pulman
E. Scot-Skirving
Miss G. Simister
A. A. Soames
Col R. Sparrow, C.M.G., D.S.O.
F. E. Spicer
Mrs K. N. Spinks
Mrs H. Stock
G. C. N. Sturt
Major W. O. Times
Rt. Hon. Lord Vestey
Mrs E. Waltham
H. T. Weeks
The Duke of Westminster, G.C.V.O., D.S.O.
A. M. Wilson
Mrs C. R. Woodward



SIXTH ANNUAL GENERAL MEETING

MINUTES

THE Sixth Annual General Meeting of the Severn Wildfowl Trust was held at the Royal Society of Arts, John Adam Street, London, W.C.2, on 6 May 1953. The President, Field-Marshal Lord Alanbrooke, was in the chair. The Minutes of the Fifth Annual General Meeting, which had been circulated in the printed Report, were taken as read and signed by the President.

The President moved the adoption of the Report of the Council and the Accounts to 31 December 1952. He referred to the great honour accorded to the Trust by the Patronage graciously conferred by Her Majesty the Queen.

In seconding the adoption the Hon. Director, Mr Peter Scott, described the recent visit to the New Grounds of Their Royal Highnesses the Duke and Duchess of Gloucester, Prince William, Prince Richard and the Princess Royal. Mr Scott reported that a recent Television programme from the New Grounds had resulted in more than 1000 visitors being dealt with in one day by the staff at the New Grounds. He also referred to the Trust's success in increasing the world population of the Hawaiian Goose ; to the population studies which were in progress ; to the proposed ' follow-up ' expedition to Iceland planned for this summer ; to the recent trip made by himself and his wife to South America to study waterfowl and to bring back specimens for the collection ; and to the financial position of the Trust, which was still causing anxiety.

The Report of the Council and the Accounts were adopted unanimously.

The re-election to the Council of the following retiring Council Members was proposed by Mr Bratby, seconded by Mr Miller Jones and carried unanimously : Captain R. G. W. Berkeley ; James Fisher, Esq. ; Guy Benson, Esq.

The election of the officers for 1953–54 was, at the wish of the Meeting, taken en bloc, proposed by Mr Rufus Clarke, seconded by General Wainwright and carried unanimously.

The President called upon the Director to propose the following motion under item 3 on the Agenda for the Meeting :

> ' That from and after 1 July 1953, Rule 6 (1) of the Rules of the Trust shall be deleted and that the following sub-Rule shall be substituted therefor :—The Annual Subscription payable by Ordinary Members shall be Two Guineas per annum and the Annual Subscription payable by Associates

shall be Ten Shillings per annum ; provided that in the case of Ordinary Members who are for the time being liable under Deed of Covenant entered into before 1 July 1953 to pay to the Trust a sum of not less than One Guinea per annum after deduction of United Kingdom Income Tax at the current rate for the time being for a period of not less than seven years the subscription shall be One Guinea per annum.'

Mr Scott explained that the Council felt impelled to increase the subscription in order to ensure the safe future working of the Trust, and pointed out that most other charitable bodies had been compelled already to do likewise. He felt that, even at two guineas, the Trust was offering exceptional value for money. The Meeting was thrown open to discussion, and among points raised by Members, Mr H. K. Hallam remarked that the Annual Report of the Trust alone was worth a guinea for interest and high standard. Mr Hallam added that the Trust could not possibly continue its valuable work handicapped by financial worries, and was supported by various Members, one of whom asked if it would be permissible in future to Covenant for the increased subscription even though it was proposed to allow those with current Covenants to continue at the old rate. After further discussion the Resolution was put to the Meeting and carried with only two dissentient votes.

Messrs S. J. Dudbridge, of 8, Lansdown, Stroud, were reappointed Auditors for the ensuing year.

Under the heading of Any Other Business the question of the effect of aircraft on the geese at the New Grounds was raised and the Director replied that both the Air Ministry and the Ministry of Civil Aviation had been most co-operative in issuing instructions to pilots to avoid the area. Pilots from the neighbouring jet station at Moreton Valence had also been co-operative but there were those from farther afield who either did not know where they were or had not read their Notices to Airmen, or just forgot. These still disturbed the geese very often, especially when the flocks were fairly small during October and November. When the large flocks arrive in December they allow aircraft to pass much closer without disturbance. Although the situation had improved, he said, the problem was by no means solved.

The President then moved a vote of thanks and gratitude to the Director, without whom, he said, the Trust would never have come into being, or reached the high level of achievement for which it was now so famous. The amount of time, energy, and work which the Director had put into the Trust, painting, lecturing, travelling all over the world on the Trust's affairs, was more than anybody had the right to expect of any one man. The vote of thanks was carried with acclamation. The Director replied that he hoped the Trust would long be an organisation ' of which we could all be proud.'

THE SEVERN WILDFOWL TRUST

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31 DECEMBER 1952

EXPENDITURE

£		£ s. d.	£ s. d.
8,842	To Valuation, 31 December 1951 ..	9,475 0 0	
1,000	,, *Less* Narrow Boat	1,000 0 0	
7,842			8,475 0 0
2,166	,, Food for Wildfowl	2,313 13 4	
999	,, Purchase and Transport of Wildfowl and Eggs	622 1 11	
3,402	,, Wages and National Insurance..	3,996 10 8	
180	,, Rent, Rates and Insurance ..	179 12 11	
37	,, Purchase of Hens for Sitting ..	39 10 0	
965	,, Materials, Repairs and Replacements	875 3 0	
60	,, Carriage on Birds Sold	68 15 6	
265	,, Land Rover Expenses	269 3 7	
29	,, *Maintenance of Mower*	—	
435	,, Staff Travelling Expenses.. ..	353 7 1	
809	,, Narrow Boat *Beatrice*, Running Expenses	156 14 9	
413	,, Office Expenses, Postages, etc. ..	583 1 0	
589	,, Printing and Stationery, General..	565 3 6	
1,102	,, Printing Christmas Cards ..	388 14 3	
2,003	,, *Printing Third Annual Report* ..	—	
—	,, Printing Fourth Annual Report..	1,743 15 11	
306	,, *Printing Booklets*	—	
—	,, Reprinting 'Key to The Wildfowl of the World'	926 10 0	
1	,, Photographs for Fourth Annual Report	1 1 0	

INCOME

£		£ s. d.	£ s. d.
4,525	By Subscriptions		5,691 2 11
343	,, Income Tax Repayments on Covenants		2,775 4 0
74	,, Gift Tokens		56 15 0
1,462	,, Donations		503 9 2
	,, Takings :—		
1,042	Gate	2,230 7 7	
419	Narrow Boat	123 13 2	
1,461			2,354 0 9
1,143	,, Fees and Collections at Lectures..		608 13 10
	,, Sales :—		
1,062	Surplus Wildfowl	1,326 7 2	
57	First Annual Report	19 5 0	
29	Second Annual Report ..	4 15 5	
904	Third Annual Report	360 16 4	
—	Fourth Annual Report.. ..	169 4 9	
12	'Key to The Wildfowl of the World'	341 4 4	
121	Booklets	88 0 10	
237	Books	69 16 0	
974	Christmas Cards	872 15 0	
—	Prints	284 12 4	
—	Paintings..	172 3 10	
3,396			3,709 1 0

—	To Books			71	5	10		
110	,, Telephone			98	6	3		
120	,, Bank Charges			144	13	6		
95	,, Expenses of Annual Dinner			120	1	0		
166	,, Miscellaneous			289	17	0		
41	,, *Research Grant for Dr. Lorenz's Visit* (less *contributions by Dr Lorenz*)				—			
887	,, Rocket-netting			362	6	10		
312	,, *Construction of Aviary and Alterations and Repairs at Headquarters*				—			
508	,, *Construction of New Road*				—			
90	,, *Two Huts for Storage*				—			
210	,, *Expedition to Iceland*				—			
43	,, *Public Conveniences*				—			
16,343							14,169	8 10
	,, Expenses of Research Student to Canada			152	9	8		
	Less Grant received from Bristol University			125	0	0		
—							27	9 8
—	,, Icelandic Film						60	18 9
24,185							22,732	17 3
32	,, *Loss on Realisation of* £1,000 2½% *Funding Stock*, 1956/61						—	
—	,, Transferred to Pilgrim Trust Reserve Account (to replace amount transferred in year ended 31 December 1951)						1,000	0 0
£24,217							£23,732	17 3

92	By Receipts from Annual Dinner			135	5	6		
53	,, Dividends and Interest			152	17	5		
30	,, *Sale of Roto Scythe*				—			
—	,, Surplus on Realisation of 3% Defence Bonds			5	0	6		
1,000	,, *Transfer from Pilgrim Trust Reserve Account*				—			
8,475	,, Valuation, 31 December 1952			7,725	0	0		
22,054				23,716	10	1		
2,163	,, Excess of Expenditure over Income for the year			16	7	2		
£24,217							£23,732	17 3

NOTE.—The figures to the left of each column are those for the year ended 31 December 1951 and are given for the purpose of comparison only.

THE SEVERN WILDFOWL TRUST

BALANCE SHEET, 31 DECEMBER 1952

LIABILITIES

£		£ s. d.	£ s. d.
	Sundry Creditors :—		
793	On Open Accounts	1,567 16 8	
1,000	Berkeley Estates Company ..	1,000 0 0	
1,793			2,567 16 8
	Loan Accounts :—		
500	Mr Peter Scott	500 0 0	
500	Mr J. H. Bevan	500 0 0	
1,000			1,000 0 0
	Reserve Account :—		
	Grant from Pilgrim Trust :—		
	Balance, 31 December 1951 ..	3,000 0 0	
	Add Transfer from Income and Expenditure Account ..	1,000 0 0	
3,000			4,000 0 0
	Income and Expenditure Account :—		
	Balance, 31 December 1951 ..	5,137 14 3½	
	Less Excess of Expenditure over Income for the year	16 7 2	
			5,121 7 1½
5,138			

ASSETS

£		£ s. d.	£ s. d.
11	Cash in Hand		27 0 9½
	Cash at Bank :—		
188	Westminster Bank Ltd., No. 3 Account	1,216 6 8	
	Less Overdrafts :—		
2,063	Westminster Bank Ltd. No. 1 Account .. £583 13 2		
43	Lloyds Bank Ltd. .. 190 1 3		
		773 14 5	
(overdrawn) 1,918			442 12 3
	Sundry Debtors :—		
165	On Open Accounts	118 14 2	
—	Messrs J. & A. Scrimgeour (deposit)	2,584 0 3	
165			2,702 14 5
	Investments (at cost) :—		
501	£500 2½% Funding Stock, 1956/61	500 11 4	
2,497	£2,500 3% *Defence Bonds, 2nd Post Office Issue*	—	
200	£225 Northern American Trust Co., Ltd., 3% Redeemable Debenture Stock, 1956/75 ..	199 17 0	
3,198			700 8 4

			Valuation :—				
		6,068	Wildfowl	6,450 0 0			
		400	Land Rover	230 0 0			
		1,504	Coops, Henhouses, Huts, etc. ..	1,045 0 0			
		7,972		7,725 0 0			
		503	*Stock of Publications*	—			
		8,475				7,725 0 0	
			Narrow Boat :—				
			Valuation, 31 December 1951 ..	1,000 0 0			
			Less Rent in year ended 31 December 1952	25 0 0			
		1,000				975 0 0	
NOTE.—The figures to the left of each column are those for the year ended 31 December 1951 and are given for the purpose of comparison only.			NOTE.—The Narrow Boat is hired from the Trust under a ten-year agreement at £100 per annum, payable by quarterly rents of £25 in advance, as from 21 October 1952, with the option to purchase for ten shillings, after rents amounting to £1,000 have been paid.				
			Festival Hall Lecture held in January 1953 :—				
		—	Amount expended thereon to 31 December 1952	350 2 0			
		—	*Less* Advance Sales of Tickets, etc., to 31 December 1952 ..	233 14 0			
		—					
		—				116 8 0	
£10,931		£10,931				£12,689 3 9½	

We have examined the above Balance Sheet of The Severn Wildfowl Trust, dated 31 December 1952, together with the accompanying Income and Expenditure Account, with the Books and Vouchers of the Trust and find them to be in accordance therewith.

Stroud, Gloucestershire.
17 March 1953.

(Signed) S. J. DUDBRIDGE & SONS,
Auditors.

ANNUAL DINNER

After the Annual General Meeting on 6 May 1953 a Dinner was held for Members and their guests at the Waldorf Hotel. The following were present :

R. Aickman, Mrs R. Aickman, Lord Alanbrooke, D. Allen and guest, K. Allpress, B. Armstrong and guest, W. A. Ashby and Mrs Ashby, Miss Bailey and Mrs Bailey, A. A. Batchelor and guests, G. Benson and Lady Violet Benson, B. Boggust and Mrs Boggust, Gordon Booth and Mrs Booth, W. J. A. Boyle and Mrs Boyle, Michael Bratby and Mrs Bratby, E. R. Brown, Miss J. Leith Buchanan and guest, P. J. K. Burton, Miss D. Butterfield and guest, J. Christmas and guest, Gordon Chapman and Mrs Chapman, J. S. Gordon Clark and Mrs Gordon Clark, Mrs M. D. Clayton, E. Cohen and guest, Dr Lorna Cooke, Major J. Coleman Cooke, M. Thompson Coon and Mrs Thompson Coon, Lady Craven, Miss J. Crone, C. T. Dalgety and Mrs Dalgety, Miss C. Dalgety, Miss M. Sinclair Davidson and Miss S. Sinclair Davidson, J. Death, Mrs K. Digby and guests, G. A. Drew, J. Drummond Dunn, Miss B. Edmonds, K. Elphinstone, Miss E. Forster, G. Nelson Haden and Mrs Nelson Haden, H. K. Hallam and Mrs Hallam, Lt-Col Hughes Hallett, Macdonald Hastings, R. E. Heath and guest, C. Ingram and Mrs Ingram, Dr M. J. Ingram and Mrs Ingram, T. Ingram, R. O. Jackson, J. C. Jacobs and Mrs Jacobs, Sir Archibald Jamieson, Miss M. Jervis, Mrs S. T. Johnstone, Miss Barbara Jones, K. Miller Jones and Mrs Miller Jones, Terry Jones, J. Robertson Justice, Major Maxwell Knight and Mrs Maxwell Knight, Miss E. Koch, L. E. Kroger, Miss M. Lea, Hon. Mrs C. B. Leaf and guest, Col Elizabeth Macfie, Miss D. Martindale, Mrs D. Metcalfe, Dr G. A. Metcalfe, Beecher Moore and guest, P. R. Muxlow and guest, E. M. Nicholson, T. Outhwaite and guest, E. R. Parrinder and guest, Group Captain Smyth Piggott, G. L. Pilkington, G. M. Pilkington, R. G. Pilkington, T. C. Ribchester and Mrs Ribchester, B. M. Robbins and guest, C. Astley Roberts, Mrs de Rougemont and guest, E. A. Scholes, Peter Scott and Mrs Scott, K. Shackleton and Mrs Shackleton, W. B. Singleton and guest, E. S. Skinner, L. E. Spinks, Miss M. Spinks and guests, A. Storey, H. Strang and guest, Mrs M. D. Tapp and guest, Lord Templewood, Miss H. C. Thomae and guest, Miss P. Townsend and guest, Major-General C. B. Wainwright, Sir Hereward Wake and Lady Wake, Admiral J. M. Waller and guest, G. Atkinson Willes and guest, H. L. Wilson, C. de Worms, Mrs R. M. Worsley, Major H. J. Wyld, J. Yealland.

The Toast List was as follows :

H.M. The Queen.

Proposed by the President, Field-Marshal the Viscount Alanbrooke, K.G., G.C.B., O.M., G.C.V.O., D.S.O.

The Severn Wildfowl Trust.

Proposed by the Rt. Hon. the Viscount Templewood, G.C.S.I., G.B.E., C.M.G.

Reply by Peter Scott, Esq., M.B.E., D.S.C.

The Guests.

Proposed by Miss Barbara Jones.

Reply by Macdonald Hastings, Esq.

Male Torrent Duck

MEMBERSHIP

Members

Annual subscription 2 guineas. Free access to pens and to observation huts. May bring one guest. One copy of Annual Report and periodical Bulletins. Vote at General Meetings.

Associates

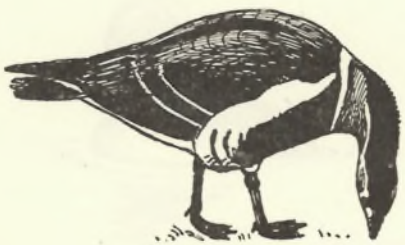
Annual subscription 10s. Free access to pens and to observation huts. Bulletins but no copy of Report.

Corporate Membership

Annual subscription 2 guineas. Free access to pens and to observation huts, but only in parties of not less than 10. Not before 2 p.m. on Sundays. One copy of Annual Report and of Bulletins for each Corporate body. (This membership is open only to Schools, Universities, Youth Clubs, and Teachers' Training Colleges.)

Parish Members

Annual subscription 2s. 6d. Free access to pens only. May bring a guest. (This membership is only open to those residing in the Parish of Slimbridge.)



Red-breasted Goose

Estancia in Tierra del Fuego

Contributors

Societies, Clubs, Institutes, Libraries and other organisations not qualifying for Corporate Membership, also private firms, may be enrolled as Annual Contributors, and as such, if their contribution is 1 guinea or more, they receive Annual Reports and Bulletins. One Member's Card, in the name of a Director, Secretary or other officer, will be issued, if desired.

General Public

Admitted to the pens only, at 2s. 6d. (children under 16, 1s.), but not before 2 p.m. on Sundays. The enclosures are open from 9 a.m. till sundown every day of the week with the exception of Sunday mornings, which are reserved for Members only.

Parties

Arrangements can be made for a warden to show round parties of not less than 10 and not more than 35, but applications must be made in writing well in advance.

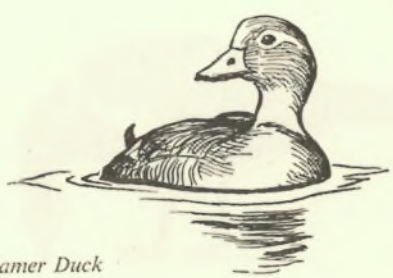
Enrolment in any form of Membership can be arranged on the spot at Slimbridge.

Hostel

Accommodation is available in the new Hostel as follows :

Room with 2 beds : £6 6s. per person per week.
Room with 4 bunks : £5 5s. per person per week.
Daily terms : £1 1s. per day ; 15s. Bed and Breakfast.

Application should be made in writing to the Secretary.



Flying Steamer Duck

MEMBERS OF THE WILDFOWL TRUST JUNE 1953

We apologize for any errors which may appear in this list and shall be grateful if Members will inform us so that our records can be corrected.

LIFE MEMBERS

Field-Marshal Viscount Alanbrooke, K.G., G.C.B., O.M., G.C.V.O., D.S.O.
H.E. Ahmed Abboud Pasha
Mrs. Y. M. Baker
Duke of Bedford
G. Benson
Lt.-Col. R. L. Benson, D.S.O., M.C., M.V.O.
F. A. Kemmis Betty
J. H. Bevan, C.B., M.C.
Michael Bratby
A. V. Bridgland
Major Hon. Henry Broughton
Miss V. M. Bury
R. J. Buxton
Miss D. A. Cadbury
H. G. Calkin
Major R. C. R. M. Clarke
Mrs. M. W. Clayton
G. R. Cobb
Edwin Cohen
J. M. Craster
Lord Dulverton of Batsford, O.B.E.
Lord Egerton of Tatton
C. Engelhard
A. Ezra, O.B.E.
P. Fleming
Mrs. J. H. B. Forster
Hon. Geoffrey Gibbs, C.M.G.
P. L. Gordon
Mrs. M. Greenslade
Mrs. J. B. S. Haldane
G. P. Harben
Sir Archibald Jamieson, K.B.E.
James Robertson Justice
Miss E. M. Knobel
J. A. Lister
Sir Percy Lister
J. W. Livermore
S. L. Lloyd
Mrs. J. M. Macmillan
I. D. Malcolmson
Miss T. A. Miller
A. F. Moody
Henry S. Morgan
P. Murray
C. D. Norton
R. W. Parkyn
C. W. Mackworth Praed
Kerrison Preston
D. Robarts
Peter Scott, C.B.E., D.S.C.
Sir William Seeds, K.C.M.G.
Mrs. W. J. Short
R. Simpson
Sir Keith Smith
W. Proctor Smith
Group-Capt. R. Smyth-Pigott
Whitney Straight, C.B.E., M.C., D.F.C.
Lt.-Col. A. H. C. Sutherland
Mrs. Carll Tucker
Sir George Usher
H. Whitbread
G. T. Wilkins
Capt. W. D. M. Wills

MEMBERS

H.R.H. The Princess Royal
Major C. Abbott
Rev. R. B. Abell
Miss C. M. Acland
Mrs. A. E. Adam
A. M. Adam
C. Forbes Adam
Mrs. E. C. Adam
L. M. Adam
Professor N. K. Adam
Mrs. N. K. Adam
P. G. Adam
A. W. Adams
H. Adams
W. C. Adams
Dr. E. I. M. Addenbrooke
Sir Michael Adeane, K.C.V.O.
S. Adlard
Mrs. S. Adlard
Mrs. H. S. Adshead
J. W. Agar
N. M. Agnew
P. N. Agnew
R. F. Aickman
Mrs. R. F. Aickman
Mrs. I. Aiken
Miss A. M. Ainger
C. J. Ainscough
A. F. Airey
Col. E. A. Airy
Miss D. Albright
Lord Aldenham
Mrs. M. Alder
Miss D. M. Alderson
Mrs. J. R. Alderson
R. F. N. Aldrich-Blake
Mrs. A. W. S. Aldridge
Dr. G. Aldridge
Miss N. M. Aldridge
H. G. Alexander
J. F. Alexander
S. M. Alexander
C. Aliband
Mrs. H. J. Allan
J. H. P. Allan
Capt. W. Allan
Professor A. A. Allen
A. D. Allen
A. E. Allen
A. W. Allen
D. W. Allen
Miss G. R. Allen
Miss L. M. Allen
Mrs. M. G. E. Allen
R. Allen
Mrs. R. P. Allen
S. J. Allen
Viscount Allendale, C.B., C.B.E., M.C.
Lt.-Gen. Sir Charles Allfrey, K.B.E., C.B., D.S.O., M.C.
Lady Allfrey
Major D. S. Allhusen
Mrs. R. Allhusen
Lt.-Col. R. C. Allhusen
Miss J. Allison
Mrs. D. A. Allman
Mrs. A. T. Allott
C. R. Allott
J. D. Allpass
K. P. Allpress
Major Hon. Henry Allsopp
Hon. Mrs. H. Allsopp
Miss T. Almack
Lt.-Col. W. E. Almond
Viscount Althorp
Lady Altrincham
R. N. H. Ambler
J. G. Ambrose, O.B.E., M.C.
Mrs. B. Anderson
D. Anderson
E. Anderson
G. F. Anderson
W. A. Anderson
J. W. Anderton
F. E. Andrews
Mrs. H. A. Andrews
H. K. Andrews
R. Angorly
R. W. Angus
Miss C. Anson
R. H. Anson
Sir Wilfrid Anson
Mrs. M. E. Antill
R. Appleyard
Mrs. E. M. Archdale
Miss C. Archer
Miss M. Archer
T. Archer
Mrs. N. B. Arkell
A. G. Arkle, M.B.E.
Major-General R. H. B. Arkwright, C.B., D.S.O.
Miss W. Armer
D. F. H. Armitage
Miss E. Armitage
Dr. G. Armour
Miss B. Armstrong
H. J. Armstrong
Miss M. Armstrong
J. M. Arnold-Wallinger
G. Arthur
G. E. Arthurs
B. G. V. Ash
C. R. Ashby
W. A. Ashby
Miss L. B. Asher
E. M. Ashford
Miss J. Ashmore
Mrs. A. H. Ashwin
Miss M. Ashworth
P. Ashworth
T. C. Askew
Mrs. J. B. Aspden
D. A. N. Asterley
W. E. Astin
Capt. A. Astley-Jones
R. A. Aston
S. N. Aston
J. J. Astor
Hon. Michael Astor
W. A. Athey
Miss B. M. Atkey
J. A. L. Atkins
A. Atkinson
Miss H. M. Atkinson
G. L. Atkinson-Willes
Mrs. N. Atteridge
Miss E. Atwell
F. W. Auburn
C. E. Audry
Miss L. Auerbach
Miss J. Aumonier
Capt. E. A. Aylmer, R.N.
Mrs. E. A. Aylmer
R. J. Ayshford-Sanford
Mrs. R. J. Ayshford-Sanford
Miss M. A. Bach
R. M. Bache
Mrs. G. E. Backhouse
W. O. Backhouse
M. Baddeley
Mrs. T. R. Badger
H. A. Badham
F. L. Badman
F. C. Bagnall
Mrs. A. G. Bailey
A. J. M. Bailey
D. L. A. Bailey
L. Bailey
J. S. Bain
Canon H. W. Baines
J. F. Baines
Mrs. N. E. Baines
T. Baines
F. A. Bak
A. Baker
Mrs. A. Baker
Miss B. M. Baker
Miss C. E. Baker
Miss E. P. Baker
G. F. Baker
Mrs. H. Baker
Miss K. E. Baker
L. Baker
Miss L. Baker
Miss M. Baker

Mrs. L. M. Balch
S. J. H. Balchin
J. M. Balcon
Sir Michael Balcon
Miss F. E. Baldwin
H. J. Baldwin
W. Baldwin
A. N. Balfour
Mrs. G. Balfour
H. G. Balfour
L. Balfour
Mrs. M. M. Balfour
Miss E. Balfour-Browne
E. Ball
P. A. J. Ball
Miss O. Balme
J. W. Banbury
F. Bancroft
A. H. Banks
Miss M. Banks
Michael Banks
J. M. Bannerman, Jr.
C. Barbarin
Miss E. G. Barber
Dr. R. F. Barbour
Brigadier F. P. Barclay
J. T. Barclay
D. G. W. Barham
J. N. Barhan
Lady Mary Baring
Hon. Robin Baring
Dr. A. S. Barling
Dr. G. M. Barling
C. D. Barlow
Mrs. C. D. Barlow
F. R. Barlow
J. Barlow
Cmdr. T. E. Barlow, R.N.
T. R. Barnard
Miss W. M. Barnard
R. H. H. Barneby
D. Barnes
Mrs. E. Barnes
W. Barnes
Col. G. A. Barnett
M. D. Barnett
S. D. Barnwell
J. T. Baron
Air Chief Marshal Sir Arthur Barratt, K.C.B., C.M.G., M.C.
G. A. Barratt
Capt. G. A. Barratt, R.N.
J. Barratt
J. H. Barrett
Viscount Barrington
F. J. F. Barrington
J. S. Barrington
Major W. E. Barrington-Browne
Lt.-Col. R. C. Barrow
R. L. Barrow
Mrs. H. Barton
A. Barwell
B. R. Basset
R. L. Basset
R. H. Bassett, C.B.E.
P. M. Bassindale
R. Bassindale
J. Bastow
A. A. M. Batchelor
Mrs. A. A. M. Batchelor
R. M. Bateman
Sir Geoffrey Bates, BART., M.C.
G. Bather
Hon. Mrs. Bathurst
C. Battaille
R. J. Batterbury
Mrs. E. M. Battie
W. R. Batty
Wing-Cmdr. A. R. G. Bax
Miss G. O. Bax
H. L. Baxendale
Major W. L. Baxendale
G. V. Baxter
Miss S. K. Bayley
D. R. Baylis
R. H. Beach
D. O. Beale
Miss K. M. Beard
Mrs. M. Beard
Lt. J. H. Beattie, R.N.
Duke of Beaufort, K.G., P.C., G.C.V.O.
Duchess of Beaufort
Hon. Mrs. Beaumont-Nesbitt
Miss W. A. Beausire
Miss E. D. Beazley
L. A. Beck
Mrs. L. A. Beck
Mrs. J. S. Becke
Dr. F. G. A. Beckett
H. Bedford
L. G. Bedford, D.F.C.
W. Bee
Miss D. H. de Beer
D. W. Beharrell
C. U. L. Behrend
A. Behrendt
Mrs. F. H. Bell
L. R. Bell
Miss M. Bell
Mrs. V. M. Bell
Miss D. W. Bellhouse
G. W. F. Bellward
R. H. R. Belsey, M.S., F.R.C.S.
Miss J. Belville
R. E. G. Benbow
C. H. Benmore
Brigadier C. V. Bennett
Mrs. G. R. Bennett
H. W. Bennett
Lt. J. H. C. Bennett
Miss R. Bennett
Air Commodore C. E. Benson, C.B.E., D.S.O.
Miss G. Benson
G. B. Benson
J. H. Benson
Lt.-Cmdr. N. R. Benson, R.N.
Lady Violet Benson
R. M. Beresford
Rev. P. Beresford-Peirse
M. M. Berger
C. L. Bergne-Coupland
Capt. R. G. W. Berkeley
F. W. W. Bernard
Mrs. F. C. Berry
Dr. John Berry
Mrs. K. Berry
M. F. Berry
W. G. Berry
G. C. L. Bertram
Lt.-Col. W. R. Bertram, C.M.G., D.S.O.
Miss A. Bethell
Capt. J. S. Bethell, C.B.E., R.N. (ret.)
Major L. B. B. Beuttler, M.B.E.
D. M. E. Bevan
L. E. D. Bevan
Rear-Admiral Sir Richard Bevan, C.B., D.S.O., M.V.O.
C. T. Beverley
Dr. J. A. R. Bickford
P. Bicknell
Mrs. C. Biddell
Miss C. M. Biddell
Miss C. Biddle
Mrs. G. B. Biddle
W. J. Biddle
A. Biddulph
Miss C. M. Biggs
G. T. Biggs, D.S.O., T.D.
T. H. A. Biggs
F. B. Bigland
H. Bingham
Mrs. H. Bingham
R. A. Bingham
Miss E. Binyon
Lady Birchall
Mrs. P. Birchall
R. C. Bird
N. H. Birdsall
J. Birkett
T. C. A. Birley
Miss W. Birt
Mrs. E. W. Bishop
Mrs. J. Bissell
Mrs. E. Bisset
Mrs. G. T. Black
M. D. G. Black
Miss P. Blackburn
Dr. C. P. Blacker
Col. C. J. Blaikie
Mrs. C. J. Blaikie
C. B. Blake
G. G. Blake
Mrs. L. A. Blake
P. Blake
R. F. N. A. Blake
T. V. Blake
G. B. Blaker
Mrs. L. Blandy
Mrs. N. Blizard
Lt.-Col. N. R. Blockley
Rev. G. V. Blois
Hon. Mrs. G. V. Blois
Miss E. E. Bloodworth
J. Blott
J. A. Blott
C. R. Blount
Miss A. Blumer
Mrs. B. S. Blundell
J. K. Blundell
L. Blundell
Capt. H. S. Blunt
D. F. Blyth
M. R. Boardman
W. H. Boardman
Mrs. J. R. Boase
G. S. Bocquet
Dr. F. Bodman
A. E. V. Boggust
Mrs. H. E. Boggust
C. L. Boileau
C. H. Bois
H. Bois
C. H. de Boislambert
Mrs. H. E. Bolden
Miss E. Bolton
Brigadier E. A. E. Bolton (ret.)
P. C. Bomford
Mrs. M. E. H. Bonar
Major-General J. A. M. Bond
Mrs. E. Bonner
C. G. Booth
Capt. D. McD. Booth
C. A. Boothroyd
Brigadier L. Bootle-Wilbraham
R. Borden
A. F. Borrow
Major A. R. Bosanquet, M.C.
Miss A. E. Bostock
Mrs. E. R. Bostock
H. Bostock
T. H. G. Bostock
Mrs. B. Boston
W. H. Boston
Mrs. Boswell
Mrs. H. Bott
A. G. Bottomley
Capt. S. Boucher, C.B.E., R.N.
Dr. D. Boultbee
C. H. Boutflower
Major W. F. Bovill, O.B.E.
D. J. H. Bowden-Smith
Miss C. E. Bowen
Miss M. Bowen
J. Bowlby
Maria Lady Bowlby
Miss E. M. Bowles
Mrs. W. C. Bowman
A. W. Boyd
H. J. Boyd
H. J. Boyd
R. O. Boyd
Dr. T. Boyd
W. Boydell
J. Boyes
Mrs. C. L. Boyle
W. J. A. Boyle
Viscount Boyne
C. Braby
C. H. Brackenbury
Miss J. A. Bradbury
Lt.-Col. J. M. A. Braddell
T. Brading
P. Bradish
Miss H. W. Bradley
Miss W. E. Bradley
R. G. Bradshaw
R. H. Bradshaw
H. W. Brady
Miss L. Braham
Mrs. G. Braithwaite
Miss M. G. Braithwaite
Miss J. Brand
A. G. Brant
W. R. B. Brash
H. J. Bratby
S. H. Bratby, M.B.E.
Mrs. Michael Bratby
Mrs. B. Bray
R. P. Bray
Dr. M. K. Braybrooke
Air Vice-Marshal J. D. Breakey, C.B., D.F.C.
Mrs. M. R. Brenan
W. G. Bretherton
Miss D. Brewer
F. R. H. Brian
H. M. Brice-Smith
Mrs. H. M. Brice-Smith
R. Brice-Smith
Miss M. E. Bridge
Col. Hon. Henry Bridgeman, D.S.O.
Hon. Mrs. Bridgeman
Miss M. H. Bridgeman
Miss V. Bridgeman
Dr. C. E. Brierley
G. van den Brink
Dr. D. H. Brinton
Miss E. M. Briscoe
W. S. Brittan
Mrs. J. H. Britton
C. A. Brobyn
F. Brock
Mrs. K. J. Brock
Miss M. M. Brock
Major J. M. Brockbank
Mrs. C. G. Brocklebank
F. K. Bromley

R. Bromley
P. E. Bromley-Martin
Miss E. M. Broodbank
Miss M. H. Broodbank
G. H. H. Brooke
Cmdr. H. J. A. Brooke, D.S.C., R.N.
Mrs. K. T. Brooke
O. Brooke
Lord Brookeborough, P.C., C.B.E., M.C.
Miss F. C. Brookes
Miss H. Brotherton
Miss S. I. Browell
Miss B. E. Brown
B. St. John Brown
Miss B. W. Brown
Mrs. C. Brown
C. E. Brown
C. H. A. Brown
Capt. D. H. W. Brown
E. R. Brown
E. T. Brown
Miss J. Brown
J. J. G. Brown
Col. J. R. Brown
Miss J. R. Brown
M. S. Brown
P. P. Brown
Hon. Lady Richmond Brown
R. C. Brown
S. Brown
S. W. Brown
W. A. Brown
Mrs. W. S. A. Brown
Col. C. C. L. Browne, O.B.E., R.A.
Dr. E. M. Browne
Col. J. B. Browne
Miss N. Browne
Lt.-General Sir Frederick Browning, K.B.E., C.B., D.S.O.
Lady Browning
Lt.-Col. H. G. Brownlow, R.E.
Mrs. K. M. Brownlow
A. H. Bruce
Miss M. Bruce
Miss M. E. Bruce
M. R. Bruce
Miss R. H. Bruce
J. W. Bryan-Brown
Major H. M. Bryans
Mrs. G. Bryant
Dr. N. Bryce
Dr. R. G. Bryce
Mrs. R. G. Bryce
W. J. Brymer
Lady Buchanan
Miss B. E. Buchanan
D. H. Buchanan
Dr. J. H. S. Buchanan
C. Budenberg
M. Budgen
Miss M. Bufton
W. R. Bufton
A. Bull, O.B.E.
A. J. Bull
Miss L. Bull
M. A. Bullen
Miss M. M. Bullingham
J. F. H. Bulman
Major P. Bulman
B. Bulmer
P. S. Bulson
Sir Charles Bunbury, Bart.
Mrs. G. M. Burge
Miss H. M. Burge
S. F. M. Burge
Mrs. E. H. Burn
C. E. Burnell
Dr. J. Burns
Cmdr. H. M. Burrows, R.N.
Miss W. Burt
P. J. K. Burton
Capt. V. D. Burton
M. G. Burtt
Cmdr. A. P. Bush, R.N.
Lt.-Cmdr. G. de Lisle Bush
M. de Lisle Bush
E. P. Butler
Lt.-Col. E. P. Butler
E. W. Butler
F. K. Butler
Miss F. S. Butler
Miss O. Butler
Miss R. F. Butler
T. H. Butler
Miss D. Butterfield
Miss M. H. Butterworth
Mrs. M. L. Butterworth
Miss B. Buttfield
Miss N. H. Buttsworth
E. J. M. Buxton
M. Buxton
Mrs. M. Buxton
Col. R. V. Buxton
D. Byford
Dr. J. W. Byrne
C. J. Cadbury
E. Cadbury
J. C. Cadbury
Mrs. J. C. Cadbury
Mrs. L. A. Cadbury
Miss D. M. R. Cade
Mrs. C. M. A. Cadell
W. A. Cadman
C. T. Cain, M.B.E.
Brigadier The Earl of Caithness, C.B.E., D.S.O.
S. G. Calcott
M. A. Callender
J. W. A. Calver
Lt.-Col. A. L. Cameron, D.S.O., M.C.
Miss P. Cameron
R. McL. Cameron
Miss U. M. Cameron
Mrs. A. M. G. Campbell
Dr. Bruce Campbell
Miss E. F. Campbell
N. A. Campbell
Mrs. S. Candy
Mrs. D. A. Cannell
J. A. Cantley
Col. A. S. Capper, D.S.O.
G. Capper
W. D. O. Capper
Miss M. G. Carew
I. F. Carlile
Miss B. M. Carlisle
D. G. Carmichael
Mrs. H. E. Carnes
R. A. Carr
Mrs. H. G. C. Carr-Ellison
J. F. Carson, O.B.E.
Miss Z. R. Carson
Mrs. B. V. Carter
C. T. Carter
G. F. Carter
Mrs. I. L. Carter
Lt.-Col. S. L. A. Carter, M.B.E., M.C.
T. E. C. Carter
Lt.-General Sir Adrian Carton de Wiart, V.C., K.B.E., C.B., C.M.G., D.S.O.
J. Cartwright
C. N. Carver
Col. W. H. Carver
Miss D. Casdagli
K. A. H. Cassels
H. D. Cassini
H. V. Casson
Mrs. E. Castle
C. H. Caswell
J. V. Catlin
Lt.-Col. H. J. Cator
Capt. J. R. L. Caunter
Major H. S. Cayzer
J. Chadwick
P. Chadwick
Mrs. T. Chadwick
Mrs. G. M. Chadwyck-Healey
F. H. Chaffer
E. L. Chalif
Mrs. E. L. Chalif
Miss P. N. Challoner
Miss O. L. C. Chamberlain
A. W. Chambers
Miss M. A. Chambers
A. F. S. Chance
Dr. D. A. Chandler
F. Chandler
J. R. F. Chandler
S. Chanler
K. Chaperlin
Viscount Chaplin
A. F. Chapman
C. Chapman
E. C. Chapman
Mrs. F. J. Chapman
Mrs. G. Chapman
H. B. Chappell
P. H. Chard
Miss E. Charles
G. H. Charman
Mrs. E. S. Charrington
G. A. Charrington
T. S. Charrington
G. B. Charter
Hon. Guy Charteris
Lt.-Col. Hon. Martin Charteris
R. F. Chatfield
Miss E. F. Chawner
J. Chayen
Dr. C. Chessex
Viscount Chetwynd, F.S.A.
R. Chichester-Clark
Mrs. P. M. Chignell
Mrs. R. Childs
Mrs. B. F. C. Childs-Clarke
H. F. Chittenden
J. Christmas
J. C. Christopherson
F. R. Clafton
Miss E. M. Clapham
B. Clark
C. P. G. Clark
Miss G. M. Clark
H. J. S. Clark
H. R. Clark
M. Clark
Lady Clarke
C. Clarke
Dr. C. A. Clarke
G. C. Clarke
L. F. Clarke
R. D. C. Clarke
Miss D. Clark-Lewis
Miss A. E. Clay
A. T. Clay
F. Clay
C. N. Clayden
J. W. Clayton
Mrs. H. W. Clemens
Miss G. G. Clement
Miss S. Clements
W. Cliff-Hodges
A. W. Clifford
Sir Geoffrey Clifford, K.B.E., C.M.G.
Mrs. H. H. E. C. Clifford
Miss M. Clifford
Major P. F. S. Clifford
W. L. Clinton-Baker
J. W. Clissold
Mrs. A. Clive
J. R. Clive
Miss V. Close
H. Clutton-Brock
C. H. Coad
Mrs. C. Coaker
Mrs. C. A. Coaker
P. W. R. Coate
R. Cobb
Mrs. A. H. Cochrane
Col. J. C. Cockburn, D.S.O., M.B.E.
Major W. G. la Trobe Cockcraft
A. Coggins
Mrs. B. Cohen
Mrs. E. Cohen
Mrs. E. S. W. Cohen
M. Cohen
Mrs. A. M. Colborne
W. M. Colby
D. D. Cole
G. B. Cole
Miss M. Y. Cole
Mrs. R. M. Cole
E. Coles
Mrs. J. D. D. Coles
Dr. J. H. Coles
Miss W. M. Coley
Miss L. Collett
Lt.-Cmdr. O. Collett
Capt. G. de E. Collin, R.A.
Miss A. V. Collingwood-Charleton
P. C. Collyns, M.R.C.S.
Mrs. R. C. Collyns
Mrs. M. L. Colthurst
S. H. Combe
R. M. Comely
J. W. Comins
Mrs. E. M. Commeline
N. Conant
P. J. Conder
K. M. Coni
Dr. M. Connell
Mrs. M. Connelly
C. M. Cook
G. J. Cook
Miss H. K. Cook
Miss I. M. Cook
A. G. Cooke
Mrs. E. W. F. Cooke
J. C. Cooke
Dr. L. Cooke
R. G. Cooke
Mrs. N. Cooke-Hurle
R. A. H. Coombes
Dr. C. J. F. Coombs
C. E. T. Cooper
Dr. E. T. D. Cooper
F. C. A. Cooper
Miss J. L. Cooper
K. Cooper
Miss L. Cooper
Major R. J. Cooper
Mrs. R. J. Cooper
T. C. S. Cope
Miss C. L. Corbett
R. H. Corbett

Miss E. G. Cordiner
Miss P. Coriat
A. W. Cork
Mrs. F. E. Corley
Mrs. H. V. Corley
Sir Kinahan Cornwallis, G.C.M.G., C.B.E., D.S.O.
Mrs. W. L. Corrigall
T. Cott
Miss L. Cottam
Mrs. B. M. Cotts
T. R. Coughtrie
Miss A. E. Courts
Mrs. J. C. Coutts
T. M. Coventry
W. S. Cowin
Miss G. R. Cowing
Miss C. H. Cox
Miss E. Cox
F. T. Cox
Dr. G. L. Cox, C.B.E., M.D.
Major H. F. Cox
Lt.-Col. M. H. Cox
T. F. Cox
Capt. T. H. S. Cox
Lt.-Col. G. G. Cox-Cox
R. E. Crabtree
Lt.-Cmdr. J. Cracroft-Amcotts, D.S.C.
Sir Walter Craddock, D.S.O. M.C.
Capt. Rt. Hon. C. C. Craig, P.C., D.L.
E. N. G. Crane
Major J. A. Crankshaw, M.C.
Lady Nancy Craven
Dr. A. R. Crawford
F. J. S. Crawford
Dr. M. P. Crawford
J. C. Crawshaw
Major T. M. Creasey
N. C. B. Creek
J. E. Crewe
P. Crewe
Hon. Mrs. A. Crichton
B. J. Crichton
M. H. Crichton
Lady Cripps
Dame Isobel Cripps, G.B.E.
Capt. J. H. Cripps
J. H. Crompton
Miss J. Crone
J. A. Crook
Miss N. G. Crook
J. W. Cropper
Miss M. D. Crosby
K. Crosland
F. N. Cross
D. P. Crossman
Capt. H. Crossman, R.A.
Mrs. C. H. Crowther
Major J. C. T. Crozier
Miss M. Cruddas
Miss R. Cruddas
Major M. Cruickshank
B. H. Cudmore
Miss D. M. Cuer
D. F. Cullen
F. A. Cullum
Miss D. E. G. Culmer
W. D. Cummings
Miss J. S. Cumsdaine
D. Cunliffe-Lister
J. Cunningham
G. R. Cunningham-van-Someron
A. Currey
Capt. C. N. E. Currey, C.B.E., R.N.
I A. Currey
J. D. Currey
Mrs. M. M. Currey
R. M. Currie
Miss M. M. Curtis
Capt. R. C. Curtis
C. M. Curtis-Hayward
G. E. Curwen
Mrs. D. I. Dadswell
Dr. S. L. Dahne
L. F. Dale
C. T. Dalgety
P. Dalglish
Earl of Dalhousie, M.C.
Miss C. A. L. Dalrymple
D. H. M. Dalrymple
Capt. R. Dalrymple
Admiral Sir Frederick Dalrymple-Hamilton, K.C.B.
Mrs. A. D. Dalton
D. Dandridge
H. M. Daniel
H. E. Danks
Mrs. H. E. Danks
V. E. Danks
C. R. Daplyn
Dr. P. F. L. Daplyn
A. M. G. Darby
Col. C. G. Darby
Major J. L. Darell
Col. Sir Lionel Darell, Bart., D.S.O., D.L.
V. M. Dark
Dr. A. Darlington
A. F. Darvall
D. B. Dash
Miss C. M. Date
E. C. Davey
F. U. David
Major H. E. David
Miss N. R. Davids
Lady Davidson
Major-General A. E. Davidson, C.B., D.S.O.
Dr. J. G. Davidson
Miss R. S. Davidson
Mrs. S. S. Davidson
Very Rev. Dr. A. W. Davies
C. A. Davies
E. G. Davies
Miss E. M. Davies
H. Davies
H. B. Davies
Mrs. H. C. Davies
H. O. Davies
Miss K. H. Davies
H. H. Davis
Mrs. H. H. Davis
J. C. Davis
J. K. N. Davis
Mrs. J. K. N. Davis
T. F. S. Davis
Mrs. N. C. Davison
E. B. Day
J. C. Day
Miss H. Deacon
A. W. S. Dean
Lady Deane
Miss B. B. Deane
Mrs. M. Deane
Mrs. M. H. Dearmer
J. O. Death
P. W. Deerns
P. Dehn
Jean Delacour
Lt.-Col. A. C. S. Delmege
P. A. Delme-Radcliffe
R. P. Demuth
V. Denley
N. L. Denning
Sir Francis Dent, C.V.O.
J. Y. Dent
Mrs. R. Dent
Mrs. J. H. Dent-Brocklehurst
Miss P. M. Denty
Mrs. F. M. Derrick
Lt.-Col. Sir Thomas Devitt, Bart.
Hon. J. J. E. Dewar
Col. F. W. Dewhurst
J. H. Dick
Cmdr. P. Dickens, D.S.O., M.B.E., D.S.C., R.N.
Miss A. C. Dicker
Mrs. D. M. Dickinson
Dr. W. H. Dickinson
Dr. A. D. Dickson
Dr. J. W. Dickson
Mrs. K. Digby
Miss S. Diggle
Lady Dilke
Miss L. R. Dilke
Miss D. G. Dilloway
H. Dirkx
D. Divine
Mrs. E. Divine
A. G. Dixon
Miss K. A. Dobbs
Miss V. Dobson
H. A. Dod
R. Dodd
P. J. Dodds
Miss M. Dodson
A. M. Dolmon
Rev. C. S. Donald
C. C. Doncaster
Miss K. M. Donne
G. E. Dono
T. L. S. Dooly
G. C. Dorling
R. Doughty
N. Douglas-Jones
R. S. Dove
Miss V. M. Dover
E. H. Down
Miss P. K. Downes
Mrs. E. B. Downie
B. Downing
Mrs. B. Drew
G. A. Drew
L. S. Drew
W. Dreyer
Mrs. J. R. Drinkwater
Major C. Druce
T. R. Drury
Rev. G. F. Drysdale
Mrs. N. Duckham
C. Duckworth
F. D. Duckworth
D. C. Duclos
Col. J. Dufour
Miss P. Dugdale
Lt.-Col. W. D. H. Duke
Mrs. H. Dumas
Miss M. L. Duncan
W. Duncan
Brigadier W. E. Duncan, C.V.O., D.S.O., M.C.
Viscount Duncannon
Capt. R. T. Duncanson
C. C. Duncum
Lord Dunleath, C.B.E., D.S.O.
C. Dunlop
E. E. Dunn
Miss H. G. Dunn
J. D. Dunn, M.R.C.V.S.
Mrs. K. Dunn
Brigadier K. F. W. Dunn, C.B.E.
H. Dunnicliff
A. C. Dunsdon
Lady Durand
Brigadier A. Durand
Mrs. A. Durand
G. R. Duval
W. C. Duyzend
F. P. N. Dyer
Miss J. Dykes
Mrs. K. Dyson
Miss F. P. Eacott
Miss G. M. Eacott
Miss H. C. Eames
Lt.-Col. R. F. P. Eames
F. J. Eardley
C. Eardley-Wilmot
Mrs. T. Eardley-Wilmot
Mrs. E. East
J. R. East
J. H. Easter
Miss R. Easton
Lady Eastwood
C. W. Eastwood
Lt.-General Sir Ralph Eastwood, K.C.B., D.S.O., M.C.
J. W. Ebden
Miss A. Eccles
D. Eccles
D. L. Eccles
D. Eccleston
R. B. Eddleston
Mrs. R. B. Eddleston
Hon. Terence Eden
Miss B. Edmonds
Miss E. M. D. Edmunds
H. V. Edmunds
M. R. Edmunds
Miss B. Edwards
G. C. Edwards
Miss H. M. Edwards
M. Edwards
Mrs. M. A. Edwards
Mrs. V. Edwards
V. S. Edwards
Sir Philip Egerton, Bart., D.L.
Miss P. Egerton-Green
Major-General W. J. Eldridge, C.B., C.B.E., D.S.O., M.C.
Mrs. G. C. G. Elers
G. Elgar
J. W. O. Elliot
G. G. Elliott
H. F. I. Elliott
P. Elliott
Lt.-Col. A. S. Ellis
Miss D. M. Ellis
Miss J. L. Ellis
Miss M. C. Ellis
R. A. Ellis
N. F. Ellison
Miss P. F. Elmes
K. V. Elphinstone
Mrs. N. C. Elvey
Miss G. Ely
Miss J. M. England
Miss P. M. England
P. R. England
E. A. R. Ennion
H. J. Enthoven
Hon. Mrs. Erskine
Sir John Erskine, C.B.E., D.L.
Lt.-Col. C. L. Estridge, D.S.O.
Miss M. P. Estridge
A. R. Evans
Miss B. Evans
D. Evans

D. T. Evans
Miss G. M. Evans
Mrs. R. E. Evans
Mrs. S. Evans
F.-Lt. W. E. Evans
F. W. S. Evens
Mrs. A. K. Everest
W. H. Everett
W. M. Everett
Mrs. C. M. Everidge
W. D. Everington
Lady Evetts
Lt.-General Sir John Evetts, C.B., C.B.E., M.C.
Mrs. M. L. van Eysson
Dr. E. Fabricius
C. R. Fail
Dr. W. A. Fairbairn
S. W. Faire
J. Fairfax-Ross
Lt.-Col. Sir Terence Falkiner, Bart.
Miss C. R. Falwasser
Major-General E. D. Fanshawe, C.B., C.B.E.
H. D. Fanshawe
Dr. N. B. Farman
J. H. Farmer
J. H. J. Farquhar
M. F. H. Farquhar
J. Farrand
G. B. Farrar
Mrs. J. C. Farrell
Mrs. E. M. Farrer
R. L. Faulkner
Miss A. C. Favell
Miss E. W. Favell
L. R. Fawcus, C.S.I., C.I.E.
Air Commodore T. Fawdry, C.B., C.B.E.
Miss A. Fawssett
Dr. B. W. D. Fayle
D. C. F. Fayle
Mrs. I. B. S. Fayle
Miss M. Fayle
R. Fear
Mrs. A. B. Fearnley
R. B. Feast
B. R. Feaver
H. C. M. Felce
Dr. C. M. Fenn
A. W. Ferguson
Miss E. M. Ferguson
Major R. Ferguson
R. Ferguson
E. D. Fergusson
M. L. Fergusson
Capt. J. A. Fergusson-Cunninghame, M.C.
Miss J. M. Ferrier
E. A. Fiddian
W. E. Fiddian
A. W. Field
J. Field
Mrs. J. M. Field
S. Field
F. J. Fielding
Mrs. M. H. Fielding
C. E. W. Finch
Col. H. B. Finch
Miss G. H. Findlay
Cmdr. N. C. M. Findlay
Miss H. Finlay
N. P. Finlay
Major-General C. L. Firbank
Miss E. H. Fisher
Major E. H. L. Fisher
G. Fisher
James Fisher
Rev. J. H. W. Fisher
Mrs. S. Fisher
Miss S. E. Fisher
Miss U. M. Fisher
R. S. R. Fitter
Miss S. M. Fitzgerald
A. Fitzherbert
D. O. Flanagan
R. E. Fleming
Lady Fletcher
G. W. Fletcher
R. A. Flower
C. M. Floyd, O.B.E.
Mrs. E. W. S. Foljambe
Miss R. Follett
Miss U. Fookes
R. B. H. Foot
C. L. G. McK. Forbes
T. L. Forbes
B. C. Forder
D. H. Fordham
Col. Lord Forester
C. Forester
A. J. Forrester
S. Forselius
Miss E. Forster
Miss E. Forster
I. Lindsay Forster
J. M. Forsyth
Hon. Denzil Fortescue, M.C., T.D.
G. Foster
K. J. Foster
Miss M. Foster
R. J. Foster
Lt.-Col. R. T. Foster, D.S.O.
E. J. B. Fowler
H. F. B. Fox, O.B.E.
J. P. Fox
Lt.-Cmdr. (E) J. P. N. Fox
Dr. W. S. Fox
Major-General W. A. Fox-Pitt
P. H. Francis
Mrs. H. Francis-Fisher
K. A. Franey
C. H. Frankland
T. S. Frankland
Major J. H. Franklin
H. A. Franklyn
Major A. C. Fraser
Major A. J. Fraser
Dr. D. Fraser
Mrs. H. M. Fraser
I. H. C. Fraser
M. H. A. Fraser
P. Fraser
Professor R. Fraser
Mrs. V. H. Fraser
Mrs. J. Frederick
Mrs. V. A. L. Freeman
W. P. Freeman
Dr. C. R. E. Freezer
Mrs. D. M. French
R. D. French
C. Frend
Mrs. C. Frend
Lt.-Col. L. Frewen
Mrs. M. Frewen
Mrs. W. Frick
W. Friling
J. C. Frith
O. H. Frost, M.B.E., M.C.
C. E. Fry
Miss D. Fryer
G. M. Fuller
J. R. Furse
W. G. Fussell
Mrs. T. Fyfe
A. E. Fyffe
Miss R. M. Fynes-Clinton
A. G. Fyshe
Mrs. G. J. Fyshe
Mrs. D. Fyson
Miss M. M. Gabriel
G. C. Gadd
Mrs. C. F. M. Gadesden
R. J. de M. Gainher
S. T. Gainher
Capt. T. O. H. Gairdner
L. G. Gale
G. E. H. Gallia
Mrs. D. M. Galliford
Miss M. G. Galloway
Lt.-Col. L. P. P. Gallwey, O.B.E., M.C.
F. Galvin
P. H. Gamble
Mrs. D. J. Gardener
E. H. Gardener
N. H. Gardiner
J. Gardner
C. P. A. Garnett
Dr. D. G. Garnett
Miss M. Garnett
Miss L. S. Garrad
A. Garrard
M. Garratt
Mrs. G. H. Garrett-Cox
D. A. Garrity
C. H. S. Garton
Mrs. E. J. Gartrell
E. F. O. Gascoigne
J. Gascoigne
J. Gaselee
Lady Constance Milnes Gaskell
Lt.-Col. G. W. Gaskell
D. B. Gates
A. Gaunt
A. G. Gaydon
P. R. Geary
Mrs. M. K. Gedge
Mrs. E. V. Gee
Major G. C. Geertsema
G. W. Gemmell
Mrs. H. W. Gemmell
Lt. D. E. P. George, R.N.
F. F. George
K. W. N. George
Hon. Robert Gerard
M. Gerrard
C. Gething
R. Getley
A. Gibb
A. Gibbes
A. D. Gibbon
Miss B. Gibbon
A. J. Gibbs
Major B. N. Gibbs, M.B.E.
Major G. M. Gibbs
L. C. M. Gibbs
Brigadier L. M. Gibbs, C.V.O., D.S.O., M.C.
Miss M. Gibbs
Major M. St. J. V. Gibbs
N. Gibbs
Capt. P. H. Gibbs
Capt. R. C. Gibbs
R. C. B. Gibbs
Col. W. O. Gibbs
A. J. F. Gibson
C. W. Gibson
Dr. D. Gibson
Dr. J. C. Gibson
Mrs. J. C. Gibson
M. G. Gibson
Miss S. M. Gibson
W. A. Gibson
C. J. Gidley
R. S. Gidley
W. L. Giffin
R. E. Gifford
Miss B. Gilbert
J. G. Gilbey
Miss B. D. Giles
Miss B. Gillam
R. Gillespie, C.B.E.
C. W. Gillett
M. J. Gilliat
Sir Harold Gillies, C.B.E., F.R.C.S.
R. A. F. Gillmor
Air Vice-Marshal A. D. Gillmore, C.B.E.
Miss S. E. F. Gilson
A. H. Giuseppi
Miss H. L. Gjers
Mrs. W. R. Gladstone
Mrs. H. S. Gladwin
Miss E. M. Glasier
P. E. B. Glasier
P. N. Glazebrook
W. R. Glazebrook
K. D. Gledhill
W. L. Glegg
W. H. E. Glennie
Brigadier F. R. L. Goadby
P. A. W. Goddard
W. J. Goddard, M.C.
H. Godfrey
Miss M. G. Godlonton
Miss E. M. Godman
H. S. Godsmark
F. H. Godwin
J. H. Godwin
Manual Gonzalez
Mauricio Gonzalez
Mrs. E. Gooch
G. B. Gooch
G. A. Gooderham
Miss A. R. H. Goodhart
G. C. Goodhart
H. J. Goodhart
Mrs. M. S. Goodhart
Miss P. Goodrum
Miss E. M. Goodwin
J. Goodwin
Miss K. M. Goodworth
Major A. F. Gordon
Miss I. R. Gordon
Seton Gordon, C.B.E.
Mrs. J. Gordon-Clark
J. S. Gordon-Clark
Col. Sir Eric Gore-Browne, D.S.O., O.B.E.
Major-General A. A. Goschen, C.B., D.S.O.
Miss C. C. B. Gosling
J. A. Gosling
R. W. Gossage
Miss V. H. Gotch
Major G. V. H. Gough
Col. C. Goulburn, D.S.O.
Miss D. Gould
H. G. R. Goulden
P. A. Gouldsbury
Mrs. R. Goundry
Mrs. J. Govett
C. Gowing
Miss C. Graham
C. S. Graham
Sir Fergus Graham, Bart., T.D., D.L.
I. M. Graham
Brigadier Lord Malise Graham, C.B., D.S.O., M.C.
Lady Malise Graham
Mrs. M. Graham-Clarke
G. A. Grain
P. Grainger

H. P. Granlund
Sir Allan Grant
F. Grant
Mrs. F. Grant
Major R. Grant
W. G. Grant
Capt. P. Grant-Sturgis
V. A. Grantham
E. L. Grassby
L. J. Graves
Dr. A. H. Gray
A. R. Gray
Miss M. J. Gray
Miss N. M. Gray
E. Greasley
Lady Greaves
B. J. Greaves
Dr. J. H. Green
Miss M. C. Green
R. C. Green
T. G. L. Green
Mrs. W. Green
Lt.-Col. H. Greenaway
Sir Edward Greene, Bart., M.C., T.D.
G. C. Greene
N. D. G. Greene
Miss I. Greenshields
A. Greenway
J. D. Greenway, C.M.G.
R. Greenway
Mrs. E. M. Greenwell
C. Greenwood
F. Gregory
Capt. L. Gregory, O.B.E., R.N.
P. S. Gregory
Rev. Canon L. W. Grensted
Miss A. M. Grey
Miss D. Griffin
Major S. J. Griffin
Dr. C. C. Griffiths
Miss D. M. Griffiths
J. Grime
I. R. Grimwood
Miss B. A. M. Grist
R. D. Grist
R. L. Grist
F. Grocott
A. Groppi
H. Grose-Hodge
Lt.-Col. G. H. Grosvenor, D.S.O.
J. Grotrian
Lt.-Col. L. F. B. Groube, M.C.
D. B. Grubb
Mrs. D. B. Grubb
P. H. de Gruchy
Lady Gueterbock
Sir Anselm Guise, Bart.
E. H. Gunter-Jones
G. H. Gush
Mrs. J. E. Guthe
Miss M. Guthe
Sir Evan Gwynne-Evans, Bart.
J. A. Habbin
R. J. Hackman
N. G. Hadden
G. N. Haden
Miss C. Hadfield
R. T. Hadfield
J. H. T. Hadley
Miss C. A. Hadow
Miss E. Hadow
Dr. P. F. Haggart
F. J. L. Haigh
Mrs. E. M. Haine
R. A. Haines
Miss R. M. Haines
H. C. Haldane
Mrs. Hale
Dr. J. Hale
Lady Hall
G. Hall
Sqdn.-Ldr. H. S. H. Hall
I. S. Hall
J. T. Hall
Miss M. Hall
Mrs. M. G. Hall
R. A. Hall
H. K. Hallam
C. M. Hallett
Miss N. E. Halliday
R. C. Hallowes
Miss J. L. Hallum
Miss V. M. Halsey
F. D. Ham
Miss M. Hambly-Parker
Sir Charles Hambro, K.B.E.
D. J. J. Hambro
R. G. Hamilton
C. R. A. Hammond
E. C. Hammond
M. C. Hammond
Mrs. P. Hammond
Mrs. K. E. Hammond-Davies
Cmdr. C. E. Hamond, D.S.O., D.S.C., R.N. (ret.)
Major R. Hamond
W. H. Hampton
Mrs. L. M. Hamzavi
Lt.-Col. C. L. Hanbury, M.B.E., T.D.
Mrs. I. M. Hanbury-Sparrow
M. Hancock
R. O. Hancock
Miss M. Hancox
A. N. Handley
C. B. C. Handley
J. W. Hanes, Jr.
Sir John Hanham, Bart.
Miss M. T. Hankin
R. H. Hannaford
J. G. Hannay
B. Hannibal
Miss M. Hansen
Major H. L. Harclerode
Col. D. C. J. Harcourt-Woods
C. B. Hardcastle
Lt.-Col. R. N. Hardcastle, D.S.O.
Miss E. M. Harding
Miss J. M. D. Harding
R. D. Harding
G. L. C. Hardinge
Mrs. R. E. Hardinge-Francis
J. L. M. Hardwick
C. J. Hardy
G. St. J. Hardy
Mrs. M. E. Hardy
W. Hardy
B. W. T. Hare
Major C. E. Hare
Mrs. E. C. Hare
A. H. Harford
G. A. Harford
Miss M. Harfst
Mrs. G. M. B. Hargood-Ash
J. F. D. Hargreaves
B. H. Harley
G. H. Harley
Miss K. E. Harling
J. L. Harman
G. P. Harnwell
Miss A. C. Harper
E. C. Harper
H. Harper
D. V. Harradine
H. G. Harraway
A. J. M. Harris
D. C. Harris
Lt.-General F. Harris, C.B., C.B.E., M.C.
Miss F. Harris
F. H. Harris
G. H. Harris
Mrs. G. H. Harris
J. E. Harris
Mrs. J. E. Harris
K. A. Harris
M. Harris
M. J. Harris
P. Harris
S. Harris
Mrs. W. R. Harris-St. John
Sqdn.-Ldr. A. G. Harrison
A. H. Harrison
Mrs. D. Harrison
H. J. Harrison
Capt. H. L. Harrison
J. C. Harrison
Miss P. J. M. Harrison
W. R. D. Harrisson
J. M. Harrop
Dr. L. R. Hart
R. V. O. Hart-Synnot
Miss K. A. Hartfree
G. L. Hartley
P. H. G. Horton-Smith Hartley, O.B.E.
Miss C. Harvey
H. W. Harvey
J. M. Harvey
Miss J. W. Harvey
Dr. M. W. Harvey
P. I. W. Harvey
Dr. R. M. Harwin
M. Haselock
Mrs. M. A. Haslam
J. F. Hawkes
J. W. Hawkins
Mrs. V. Hawkins
Miss A. I. Hawksbee
W. A. S. Hawthorn
E. F. A. Hay
Miss R. A. Hay
Major R. T. Hay
Mrs. V. E. Hay
W. Hay
I. R. P. Hayden
T. A. Hayden
C. E. Hayes
Mrs. N. L. Hayes
Capt. A. S. Hayward
L. W. Hayward
R. R. H. Hazell
Miss V. A. M. Hazledine
Miss L. E. Hazleton
W. J. Healing
F. T. Hearle
Miss I. Hearle
Miss A. V. Heath
R. E. Heath
M. Hedley
Miss E. Heinemann
D. Hellen
Dr. R. E. Hemphill
Mrs. H. N. Henderson
L. B. Henderson
Miss M. F. Henderson
T. L. Henderson
T. L. Henderson
Major H. R. Hendy
J. D. Hendy
Col. W. F. Henn, M.V.O.
Miss E. Henney
Miss M. M. Henney
Miss K. H. Henrey
Mrs. N. Henshaw
W. H. Henson
Mrs. C. W. Henwood
I. Hepburn
L. M. Herapath
Lady Herbert, C.V.O.
T. W. Herrick
Miss A. Hervey
Lt.-Col. J. L. Heselton, D.S.O., M.C.
C. E. Hett
Mrs. A. Hewer
A. L. Hewer
H. P. Hewett
D. Hewitt
F. Heys
R. G. M. Heysham
Major G. B. Heywood
Sir Oliver Heywood, Bart.
R. H. Heywood-Lonsdale
Miss B. H. G. Heyworth, M.B.E.
Mrs. B. G. Hickey
Dr. N. E. Hickin
Mrs. D. Hicks-Beach
M. D. Higgins
Air Commodore T. C. R. Higgins, C.B., C.M.G.
A. H. Higginson
Mrs. A. H. Higginson
K. D. Higgs
W. E. Higham
Col. F. F. G. Highway
Mrs. G. W. Hignett
J. Hignett
Miss A. M. Hill
C. L. Hill
Mrs. C. L. Hill
C. N. A. Hill
Mrs. E. M. Hill
G. G. Hill
L. C. Hill
Miss M. Hill
Mrs. M. Hill
M. T. Hill
R. M. J. Hill
Brigadier S. J. L. Hill, D.S.O., M.C.
T. A. M. Hill
W. H. Hill
R. E. M. R. Hilleary
J. E. Hilliard
Mrs. S. V. Hillier
H. T. Hills
Dr. H. W. Hills
Miss M. Hill-Smith
D. B. Hill-Wood
Col. H. F. Hilton-Green
Hon. Wayland Hilton-Young
Hon. Mrs. Wayland Hilton-Young
D. Hinchliff-Mathew
G. B. Hindle
J. R. Hines
R. R. Hines
R. W. Hines
Mrs. E. M. Hinton
W. P. C. Hinton
Mrs. C. A. Hippisley
Dr. T. F. Hird
P. A. S. Hirst
W. R. Hitchmough
G. C. Hix
Mrs. C. Hoare
Lady Peggy Hoare

Sir Reginald Hoare, K.C.M.G.
Mrs. E. C. M. Hobbs
Lady Hobhouse
Lady Hobhouse
Sir Arthur Hobhouse
Miss D. Hobhouse
Sir John Hobhouse, M.C.
R. D. Hoblyn
Miss I. van Hoboken
H. A. Hochbaum
A. C. Hoddell
Dr. G. Hodge
C. Hodgkinson
Col. C. R. Hodgson, D.S.O.
Miss M. Hodgson
P. K. Hodgson
Wing-Cmdr. Sir John Hodsoll, C.B.
G. Hodson
L. Hoffmann
J. G. Hogan
C. Hogben
J. N. Hogg
S. R. Hogg
Miss G. F. Holbech
G. B. Hole
F. M. Holl
R. J. Holland
Lady Anne Holland-Martin, M.B.E.
C. J. Holland-Martin, M.P.
T. Holland-Martin
E. J. Hollebone
G. T. Hollebone
R. C. P. Hollond
D. A. Holmes
H. R. J. Holmes
R. Holmes
G. E. Holroyd
Miss C. Holt
E. G. Holt
Miss R. Holt
Mrs. H. C. Holt-Needham
H. G. W. Homer
R. C. Homes
O. Hook
R. Hook
C. R. Hooke
Mrs. E. Hooley
G. E. Hooley
M. L. Hooper
C. C. Hope
D. E. C. Hope
D. F. Hope
Mrs. E. Hope
Mrs. E. M. C. Hope
S. Hope
Major A. E. Hopkins, M.C.
D. A. Hopkins
W. F. M. Hopkins
Mrs. A. D. Hopkinson
Col. H. S. P. Hopkinson
Miss C. Hopps
Miss M. S. Hopton
R. C. Hopwood
Hon. Mervyn Horder
C. E. C. Hore
J. D. Hore-Kennard
Lt.-Col. J. N. Horlick, O.B.E., M.C.
Mrs. E. M. Horn
M. C. St. J. Hornby
Mrs. W. M. Hornby
E. Horsfall
H. Horsman
D. J. Horton
Miss E. E. Horton
Mrs. M. Horton
Miss M. A. Horton
Dr. C. Horton-Smith
Mrs. E. M. Hoseason
Dr. R. D. Hotston
P. Houghton-Brown
Mrs. H. M. Houldsworth
E. F. Housden
H. House
S. Hovell
Hon. Lady Howard
Sir Algar Howard, K.C.B., K.C.V.O., M.C., T.D., D.L.
Mrs. E. M. Howard
Mrs. J. A. Howard
H. A. C. Howard
Mrs. K. M. Howard
Miss R. C. Howard
P. S. Howe, Jr.
Miss W. N. Howell
Mrs. C. J. Howell-Evans
J. C. Hoyland
A. L. Hoyle
Miss V. Hubert
B. J. Huddart*
Dr. A. J. R. Hudson
Dr. E. Hudson
F. C. Hudson
G. P. L. Hudson
Major H. G. Hudson, M.C. R.A.
Mrs. J. C. Hudson
Miss M. Hudson
Miss R. A. Hudson
Dr. T. G. F. Hudson
Miss E. D. Hughes
Mrs. G. M. J. Hughes
Miss K. Hughes
Miss M. A. Hughes
M. C. Hughes
Dr. M. G. Hughes
Sir Thomas Hughes, Bart.
Lt.-Col. J. Hughes-Hallett
Lt.-Col. N. M. Hughes-Hallett
A. G. Hughes-Onslow
Dr. J. P. Huins
A. Humbert
C. A. Humbert
J. Humphrey
M. Humphrey
Miss P. Humphreys
Mrs. M. Humphries
A. F. W. Humphrys
Lt.-Col. Sir Francis Humphrys, G.C.M.G., G.C.V.O. K.B.E., C.I.E.
Miss E. M. Hunt
O. D. Hunt
S. C. A. Hunt
Mrs. G. Hunter
Major J. Hunter
Miss P. M. Hunting
Cmdr. Sir Maurice Huntington-Whiteley, Bart., R.N. (ret.)
Lord Hurcomb, G.C.B., K.B.E.
G. Hurle
H. W. Hurlock
H. G. Hurrell
Miss E. Hurtley
Air Commodore P. Huskinson
Mrs. M. Hutchinson
Major R. G. Hutchinson
Miss B. Hutchison-Smith
Lt.-Col. G. F. Hutton, D.S.O.
Mrs. M. A. L. Huxley
Miss R. Huxley
J. H. Hyatt
H. J. Hyde
Miss J. G. Hyde
M. J. Hyde
W. G. Hyde
Lt.-Col. Lord Hylton
Earl of Ilchester, O.B.E.
Rev. K. Ilderton
Mrs. W. G. Illingworth
Mrs. J. M. Impey
Rev. C. E. Inchbald
R. B. H. Ingleby
E. R. Ingles
R. J. E. Inglis
J. A. Ingoldby
C. Ingram
M. J. Ingram
G. A. Innes
Dr. J. A. Innes
Mrs. N. Innes
Miss M. A. Ironside
Miss E. M. Irvine
Major A. S. Irwin
Dr. H. F. G. Irwin
Mrs. J. M. Isaac
Mrs. S. E. Isaacs
R. S. Isaacson
General Lord Ismay, K.C.B., D.S.O.
Mrs. D. M. Jack
D. McL. Jack
C. O. Jackson
Mrs. H. F. Jackson
Miss H. J. C. Jackson
K. I. M. Jackson
Miss M. B. Jackson
R. Jackson
A. A. Jackson-Stops
T. Jackson-Stops
J. Jacobs
Mrs. S. L. G. Jacobs
T. C. Jacobs
Mrs. E. E. Jacques
Mrs. H. A. Jaffray
Miss C. K. James
David James
Miss D. M. James
Miss E. M. James
I. M. James
P. G. James
Miss P. G. James
Capt. P. V. James, R.N.
Hon. Robert James
Mrs. T. E. James
T. O. James
J. V. McC. Jameson
Miss M. D. Jameson
Major D. Jamieson, V.C.
G. Jamieson
Miss J. Jamieson
J. A. J. Jamieson
Mrs. N. Jamieson
Miss K. M. Jane
C. O. Janson
C. W. Janson
R. T. Janson
Mrs. E. G. Jarratt
R. F. Jarrett
T. B. W. Jeans
Mrs. A. Jeffreys
H. B. Jellett
Rev. Canon A. T. Jenkins
Major-General F. A. Jenkins, D.S.O., O.B.E., M.C.
O. T. Jenkins
Lt.-Col. S. R. M. Jenkins, M.C.
Dr. S. M. Jenner
Miss J. F. Jennings
A. M. C. Jenour
R. C. Jephcott
Miss G. Jobling
T. John
Lt.-Col. A. A. Johnson, M.C.
Mrs. I. Johnson
Miss K. M. Johnson
R. B. Johnson
Lt.-Col. R. H. Johnson
Miss A. M. Johnston
Dr. I. L. Johnstone
Miss L. Johnstone
Mrs. M. Johnstone
Dr. W. Johnstone
Col. Lord Joicey, D.S.O.
Lady Joicey
Capt. Hon. Michael Joicey
F. R. Jolley
I. G. R. Jolley
Dr. B. M. Joly
A. H. B. Jones
B. H. Jones
C. Jones
Major D. Fleming Jones
E. R. Jones
G. C. Jones
Mrs. G. M. Jones
J. E. Jones
J. H. Jones
J. H. Jones, O.B.E.
K. Miller Jones
Miss K. M. Jones
L. E. Jones
N. G. B. Jones
P. Jones
P. E. S. Jones
R. Jones
Rev. R. A. Jones
R. E. Jones
R. R. M. Jones
Col. S. W. Jones
Terry Jones
T. P. Jones
W. J. Jones
Mrs. W. J. Jones
E. Jonklaas
H. B. Joseph
J. A. Josey
R. G. Joslin
A. H. Jotcham
Miss A. Joyce
H. S. Joyce
Miss M. Joyce
Miss F. E. Juckes
Miss U. Juckes
A. C. Jupe
G. Kay
G. T. Kay
Miss D. Keane
Miss P. Keats
J. F. Keeble
E. P. M. Keeling
W. Kelly
E. L. Kelting, O.B.E.
Cadet R. Kemp
Miss A. M. Kempe
Sir Norman Kendal, C.B.E.
N. O. Kendal
Mrs. A. R. Kennedy
Major-General Sir John Kennedy, G.C.M.G., K.C.V.O., K.B.E., C.B., M.C.
J. R. M. Kennedy
Mrs. V. B. Kennett
H. Kenrick
J. B. Kenrick
W. E. Kenrick
Miss S. Kent
Mrs. A. Kerr
Mrs. Rait Kerr
Miss W. A. Kerr
Mrs. E. B. Kershaw
J. A. Kershaw
L. W. Kersley

W. H. B. Key
G. T. Keyes
Miss A. Keyser
Miss S. Keyser
V. J. Keyte
Miss J. Kift
Marquess of Kildare
Miss E. M. Killick
W. Killingworth
K. C. Kimbell
Bernard King
Mrs. B. P. King
Capt. C. M. King
Mrs. E. E. King
G. L. King
Major Sir James King, Bart.
Dr. L. R. King
P. G. King
Mrs. P. M. King
Miss R. M. King
W. L. King, M.C.
T. J. A. Kingan
A. W. G. Kingsbury
Capt. M. J. Kingscote
Mrs. V. O. Kingscote
Col. C. H. Kingsford-Lethbridge, O.B.E.
Miss C. Kinman
Mrs. D. D. Kirkbride
Miss M. Kirke
Major-General J. M. Kirkman, C.B., C.B.E.
H. R. Kirkwood
Cmdr. C. A. de W. Kitcat, R.N. (ret.)
E. N. Kitcat
Mrs. E. N. Kitcat
Miss J. B. Kitson
Mrs. D. Knappett
Col. C. R. B. Knight
Esmond Knight
G. A. Knight
Major H. G. B. Knight, M.C.
Major M. Knight, O.B.E.
M. D. R. Knight
Miss J. P. Knott
Mrs. E. C. M. Knowles
Miss Erica Koch
Dr. Ludwig Koch
Mrs. E. B. Koechlin
L. Kroger
C. Kruyfhooft
R. M. Labdon
G. S. E. Lacon
Miss S. M. Ladbrook
J. C. Laidlay
D. A. Laing
A. Lamb
Miss B. Lambert
Miss D. Lambert
Mrs. D. de G. Lambert
G. C. Lambourne
R. S. Lamming
J. C. Lancaster
H. R. H. Lance
R. Landray
Col. C. M. Lane
Mrs. C. M. Lane
Mrs. J. D. Lane
Miss K. J. Lane
Miss M. A. Lane
Mrs. N. E. Lane
R. Lane
Dr. H. G. Langdale-Smith
E. J. B. Langhorne
Lady Langman
Capt. O. P. Lanyon
H. Lapworth
L. Latham
Major-General G. W. Lathbury, C.B., D.S.O., M.B.E., D.S.C. (U.S.A.)
H. G. Law
Miss M. H. Lawley
C. L. Lawrence
Cmdr. J. Lawrence, R.N.
Mrs. R. A. Lawrence
H. B. Lawson
Mrs. V. Lawson
D. M. Layton
E. C. Layton
C. M. Lazenby
Mrs. S. R. Lazenby
Miss M. E. Lea
A. C. Leach
Mrs. L. C. Leach
Hon. Mrs. Leaf
C. R. Leake
Miss D. A. Leake
Mrs. K. R. M. Leat
A. G. F. Leather
W. F. Leather
A. R. Lee
B. Lee
D. S. W. Lee
K. C. Lee
Mrs. M. E. Lee
R. E. R. Lee
Viscountess Lee of Fareham
Mrs. F. Lee-Michell
W. F. Leeming
J. W. R. Lees
Mrs. M. Lees
Mrs. H. Lees-Milne
J. R. Leggate
Miss B. Legge
Mrs. M. W. Legge
J. Leigh
Mrs. J. H. Leigh
Miss J. Leith-Buchanan
W. H. Lemburg
H. C. Lepard
L. J. Leppard, D.F.C.
Hon. John Leslie
Hon. Mrs. Ian Leslie-Melville
D. N. Letts
M. C. Levi
Sir Richard Levinge, Bart., M.B.E.
C. G. Levitt
Cmdr. A. M. Lewis, R.N.
E. J. Lewis
J. Spedan Lewis
Miss K. B. Lewis
Miss M. Lewis
M. E. Lewis
W. A. S. Lewis, O.B.E.
R. C. Lightbown
Miss A. Lightfoot
E. S. Lindley
Mrs. E. S. Lindley
Miss M. Lindley
Mrs. B. M. Lindsay-Fynn
F. J. Lintern
Mrs. M. H. Lintott
L. Lippens
Brigadier C. G. Lipscomb, D.S.O.
G. Lipscomb
L. M. Lipsey
Earl of Lisburne
Mrs. F. J. Lister
Mrs. E. L. Livingstone-Learmonth
Mrs. J. M. Livsey
L. R. Llewellyn
Lt.-Col. Sir Rhys Llewellyn, Bart.
Rev. W. Llewelyn
Dowager Lady Lloyd
C. E. Lloyd
E. Lloyd
Mrs. F. N. Lloyd
Dr. G. M. Lloyd
G. P. Lloyd
Col. H. W. Lloyd
Major L. W. Lloyd
Mrs. M. Lloyd
Lt. R. C. Lloyd
R. F. Lloyd
Col. H. Lloyd-Carson
R. W. Lloyd-Davies
Miss E. M. Lobly
T. H. Lockett
R. M. Lockley
Mrs. J. Lockwood
G. E. Lodge
H. S. Loebl
F. P. Lole
Countess of Londesborough
Miss C. Longfield
J. B. Longhurst
B. B. Longridge
W. Longstaff
P. Longueville
D. J. Lord
Miss M. M. Lord
Major G. Lorimer
Marquess of Lorne
W. N. Loseby
A. L. Louis
Dr. W. B. Loveless
W. F. B. Lovett
R. J. Lovett-Turner
I. C. Low
R. C. S. Low
Mrs. R. C. S. Low
Rev. J. R. Lowe
Miss V. A. Lowe
Miss L. K. Lowndes
Hon. Mrs. John Lowther
Mrs. W. Loxton
Wing-Cmdr. W. W. Loxton
A. R. Lucas
Mrs. D. Lucas
Capt. J. Lucas
F. M. Luce
F. A. Luke
Mrs. L. S. Lumsdaine
H. G. Lumsden
Lt.-Col. W. V. Lumsden
C. F. Lundeval
N. D. Lupton
Mrs. C. H. B. Lyall
Hon. Mrs. Lyell
C. H. Lynes
Major E. H. Lynn-Allen, M.C.
Mrs. K. M. Lynn-Allen
F. H. Lyon
Lady Mary Lyon
D. R. Lysaght
R. McAdam
F. G. Macalpine
J. C. McArthur
Mrs. M. McArthur
Lt.-Col. A. A. McBean
R. McBride
R. A. McCabe
Miss H. McCall
G. McCaskie
Miss G. P. MacCaul
Miss M. McCombie
Miss M. McCombie
A. F. V. McConnell
Dr. V. O. McCormick
C. S. McCririck
Lt.-Cmdr. M. E. G. McCullagh, R.N.
Major-General Sir Andrew McCulloch, K.B.E., C.B., D.S.O.
W. J. McCulloch
W. F. MacDonagh
A. Macdonald
Mrs. N. A. Macdonald
P. G. Macdonald
R. Macdonald
Dr. S. C. C. MacDonald
T. McDonald
D. S. A. McDougall
K. A. McDougall
Miss K. McDowell
Miss V. MacEwen
Miss M. Macfarlane
Col. C. Macfie, D.S.O.
Col. E. S. Macfie
Miss E. V. MacGregor
Mrs. N. MacGregor
Dr. W. G. MacGregor, F.R.C.S.
W. G. MacGregor
R. B. McGrigor
Mrs. D. M. McIlroy
H. G. Mack
A. D. MacKay
G. M. Mackay
R. H. Mackay
Sqdn.-Ldr. P. A. H. McKeand, D.S.O., D.F.C.
M. McKeever
Dr. R. S. Mackensen
Dr. A. McKenzie
A. I. Mackenzie
R. R. Mackenzie
Dr. D. F. McKinney
A. Mackinnon
C. Mackintosh
D. R. MacKintosh
Sir Sortain Macklin
Mrs. M. M. McLachlan
Colin McLean
K. MacLean
Mrs. M. B. McLean
Major C. A. MacLeod
Miss F. MacLeod
Col. T. J. McLeod, D.S.O
D. McMichael
A. McMillan
Miss V. J. Macmillan
A. R. MacNeal
J. H. McNeile
Lt.-Col. D. I. MacPherson
Group-Capt. G. F. MacPherson
W. E. Macve
Mrs. C. G. McWatters
W. I. Madge-Forman
R. B. Magor
Mrs. A. H. Mahler
Lt.-Col. J. Mahoney, O.B.E., M.C.
Miss J. M. Maidment
Mrs. E. B. Mainwaring-Burton
Capt. A. Maitland-Dougall, R.N.
Mrs. V. F. Maitland-Dougall
E. M. de M. Malan, M.B.E.
A. E. Male
Miss P. Malet du Cros
Mrs. D. Malim
Mrs. M. C. Mallaby
Lt.-Col. W. Mallalieu
Major-General C. M. Maltby, C.B., M.C.
H. F. Mance

Miss D. Mander
D. Mann
Dr. F. G. Mann
Miss H. S. A. Mann
P. W. Mann
E. Mannering
Lord John Manners
Earl of Mansfield
Sir Philip Manson-Bahr, C.M.G., D.S.O.
Lady Manton
D. Margesson
Mrs. A. E. Marks
J. D. Marks
C. J. S. Marler
S. Marling
Mrs. W. J. P. Marling
N. E. Marlor
R. D. Marriott
H. H. Marsden
A. B. Marsden-Smedley
F. Marsh
H. W. Marshal
Mrs. C. Marshall
E. H. Marshall
H. F. Marshall
Mrs. H. F. Marshall
Mrs. J. R. Marshall
W. K. Marshall
Miss K. H. Marston
A. T. Martin
Miss B. S. Martin
E. S. D. Martin
Mrs. F. S. Martin
Dr. J. J. Martin
O. Martin
Lt.-Col. R. B. R. Martin
R. F. Martin
Miss S. P. Martin
Miss W. M. Martin
W. T. Martin
Miss D. Martindale
E. W. Martland
Major A. G. Martyr
J. Masefield
A. Mason
Miss D. C. Mason
Miss E. C. Mason
M. H. Mason
Mrs. S. J. Mather
Dr. P. W. Mathew
G. V. Mathews
T. H. G. Mathews
Mrs. A. Matthews
A. T. Matthews
G. V. T. Matthews
J. B. L. Matthews
Capt. T. F. V. Matthews, M.C.
Miss V. S. Matthews
R. L. E. Maude
M. C. P. Maurice
Miss V. Maxse
E. A. Maxwell
Gavin Maxwell
Capt. H. H. Maxwell
P. H. Maxwell
B. F. May
M. G. Meade-King
Mrs. D. A. Meanley
W. S. Medlicott
Dr. B. R. Medlycott
J. A. Medwell
M. F. M. Meiklejohn
Lt.-Col. A. Mellor
Lt.-Col. M. E. Melvill
Major I. G. Menzies
Mrs. I. Meredith
Lt.-Col. E. J. H. Merry
Mrs. J. T. Merry
Lord Merthyr
A. E. Messer, C.B.E.
Cmdr. B. Metcalfe
Mrs. D. E. Metcalfe
Dr. G. A. Metcalfe, M.B.E.
Mrs. P. Mewburn
Mrs. N. M. Mews
Major H. Meynell
Rev. M. Meynell
Capt. W. L. Meynell, R.N. (ret.)
Miss S. V. G. Miall
W. N. Miall
Major E. E. Michell
R. J. Michelmore
R. Micklethwait
Lady Middleton
R. E. Midwinter
C. Midwood
C. R. Miles
D. G. Miles
R. W. Miles
J. Millais
Mrs. E. R. Millard
F. J. Millard
C. C. D. Miller
J. A. d'E. Miller
Lt.-Col. J. A. T. Miller O.B.E.
Mrs. J. A. T. Miller
S. M. Miller
S. Miller-Mundy
A. B. Milligan
Miss E. L. Millington
Mrs. D. W. Mills
E. C. Mills
H. H. E. Mills
Dr. J. D. Mills
J. P. Mills
Miss M. L. Mills
V. S. Mills
L. W. Millward
C. D. Milne
J. E. Milne
C. E. Milner
Very Rev. E. Milner-White, C.B.E., D.S.O.
Miss W. Milnes-Walker
C. D. Milward
Mrs. C. D. Milward
Miss P. Milward
A. Mitchell
C. Mitchell
D. J. Mitchell
F. G. Mitchell
F. J. L. Mitchell
Dr. G. Mitchell
G. B. Mitchell
J. W. Mitchell
Dr. M. Mitchell
R. W. B. Mitchell
W. M. Mitchell
Miss G. A. Mizen
Brigadier G. M. Moffatt, O.B.E. (ret.)
Mrs. C. M. Moir
L. G. Moir
Mrs. G. H. C. Mold
Miss N. Moller
Mrs. B. M. Mollison
Lt.-Col. P. G. Molloy, M.C.
D. J. Molteno
Hon. Lady Monckton C.B.E.
Mrs. P. Moncrieff
R. M. Moncrieff, O.B.E.
Miss S. Money
R. S. Money-Kyrle
Dr. J. F. Monk
A. Monk-Jones
Miss C. D. Monro
Hon. Ewen Montagu, O.B.E., Q.C.
H. E. Montgomery
Miss O. M. Montgomery
Duchess of Montrose
Miss A. H. Moore
B. Moore
Mrs. F. D. Moore
Cmdr. H. H. R. Moore, R.N.
H. J. Moore
Dr. I. G. Moore
J. W. Moore
Dr. C. E. Moorhead
J. Moorhead
Mrs. J. More
Mrs. T. More
K. Morford, C.B.E.
D. W. J. Morgan
Miss F. Morgan
Miss G. Morgan
Major-General H. de R. Morgan, D.S.O., D.L.
Miss H. M. A. Morgan
J. S. Morgan
Miss L. E. Morgan
L. E. B. Morgan
Mrs. M. J. Morgan
Miss M. L. Morgan
Miss P. Morgan
S. T. G. Morgan
P. Moriarty
N. A. Morling
Capt. C. M. Morrell, R.N.
A. J. Morris
Mrs. A. K. F. Morris
Miss C. H. L. Morris
F. C. Morris
L. J. H. Morris
Miss M. A. Morris
Miss M. T. Morris
R. O. Morris
Stewart H. Morris
Miss J. Morrish
Miss A. E. Morrison
Brigadier C. E. Morrison
Miss R. Morrison-Bell
Dr. B. Morson
Dr. C. Morson, F.R.C.S.
F. D. B. Morton
Sir George Morton, O.B.E., M.C.
S. Morton
W. R. C. Morton
P. J. Mosedale
Mrs. P. J. Mosedale
Lt.-Col. R. B. Moseley
F. Mosford
J. I. Mosley
Lady Moss
Miss M. P. Moss
R. H. Mosse
M. Mostyn-Owen
Wing-Cmdr. J. E. M. Mould
G. W. H. Moule
Sir William Mount, Bart.
A. J. Mountford
G. R. Mountfort
J. L. Muckle
P. H. Muirhead
W. J. H. de W. Mullens, D.S.O.
Mrs. C. Mullins
Mrs. C. Mumford
A. G. Munday
Major P. M. Mundy
H. C. Munnings
F. A. C. Munns
Major G. F. A. Munns, R.A.
R. D. G. Munns
Miss M. Munro
J. E. Murphy
Mrs. A. D. Murray
B. C. Murray
Miss C. Murray
Lt.-Col. D. W. Murray
Miss E. Murray
Mrs. E. M. Murray
J. I. Murray
Mrs. L. J. Murray
Miss M. H. Murray
Major P. W. Murray-Threipland
Miss P. B. Muscott
P. R. Muxlow
A. Myles
H. de Smet de Naeyer
R. H. Nailer
Dr. J. M. Naish
Miss F. M. Naismith
Brigadier V. J. L. Napier
Brigadier V. M. C. Napier C.B., C.M.G., D.S.O.
M. A. Narborough
Dr. F. J. Nattrass, F.R.C.P.
J. Neal
Mrs. A. I. Neale
Miss A. S. Neale
Professor A. V. Neale
M. H. Neale
W. G. Neat
J. Nedderman
M. A. Nedham
Major A. E. P. Needham
Major Hon. Francis Needham, M.V.O.
R. Needham
J. R. Neighbour
Col. R. E. Negus
Mrs. C. Neilson
L. C. Nelms
H. K. Nelson
C. C. Nesling
E. W. Newbold
Dr. E. M. Newham
R. A. Newland
C. A. Newman
L. Hugh Newman
P. Newman
Viscount Newport, T.D., D.L.
Miss B. Newton
Mrs. C. J. Newton
J. Newton
Mrs. J. E. Newton
Mrs. M. G. Newton
R. C. Newton
Dr. R. G. Newton
S. W. Newton
W. E. M. Newton
E. N. J. Nias
E. G. M. Niblett
Dr. L. Nicholls
Mrs. V. Nicholls
W. H. T. Nicholls
W. T. Nicholls
Miss A. A. Nichols
E. M. Nicholson, C.B.
Sir John Nicholson, Bart. C.I.E.
M. J. Nicholson
J. T. Nickels
J. H. Nicoll
F. Nightingale
H. K. Nisbet
I. Nisbet
J. P. M. Niven
Hon. Robert Nivison
Mrs. K. Noel
M. G. Noll

Duke of Norfolk K.G., P.C., G.C.V.O.
Earl of Normanton
C. A. Norris
C. E. Norris
Mrs. C. E. Norris
J. Norris
Mrs. J. M. Norris
Mrs. N. F. C. Norris
Major N. F. H. C. Norris
Miss S. F. Norris
H. H. Norsworthy
K. North
Miss M. M. Northcott
Duke of Northumberland
Helen, Duchess of Northumberland, G.C.V.O., C.B.E.
Mrs. C. D. Norton
H. C. Norton
R. A. Notley
Mrs. J. Nunn
L. W. Nunn
Mrs. M. Nuttall
G. C. Oades
J. M. Oakey
Mrs. R. J. L. Oakley
G. N. Oates
A. N. Odling, O.B.E.
Dr. D. Odlum
Brigadier H. R. Officer
Mrs. D. L. Offord
Mrs. D. K. R. Ogilvie
Sir Heneage Ogilvie, K.B.E.
Miss F. H. O'Keefe
G. Oldfield
R. D. Oldham
Lt.-Col. E. N. Oldrey, O.B.E.
Mrs. O. Olive
P. L. Oliver
W. K. Oliver
Miss K. N. Ollier
Miss A. O'Loughlin
S. B. Olsen
Mrs. C. V. Orde
M. T. O'Rourke
Miss E. Osborn
G. Osborne
Miss M. E. Osborne
Mrs. V. Osborne
K. H. Osborne-Young, D.F.C.
Miss E. Otter
T. L. Outhwaite
Miss E. D. Overend
B. A. Owen
H. Owen
M. B. Owen
Lt.-Col. M. S. Oxley
Mrs. M. S. Oxley
A. W. O. Pacey
R. K. Packer
Miss E. L. Pagan
Miss A. Page
Mrs. E. I. Page
P. W. K. Page
J. P. Paige
R. H. Palethorpe
Hon. Mrs. A. R. Palmer
D. Palmer
Mrs. E. Palmer
Mrs. E. A. B. Palmer
I. R. Palmer
Miss J. Palmer
Lt.-Col. K. R. Palmer
Mrs. R. Palmer
Lt.-Col. R. H. Palmer
R. H. R. Palmer
Hon. William Palmer
W. E. Palmer
Major Albert Pam, O.B.E.
Mrs. E. M. Parbury
Mrs. F. L. Pardoe
Mrs. D. M. C. Parish
A. F. Park
C. J. Park
Miss P. Park
Miss J. B. Parker
J. C. N. Parker
J. F. Parker
Mrs. J. F. Parker
J. P. Parker
Mrs. M. Parker
R. M. Parker
Sir William Parker, Bart., O.B.E.
Miss J. F. H. Parkinson
Dr. P. W. J. Parks
N. J. C. Parmenter
Hon. Christopher Parnell
W. B. Parr
E. R. Parrinder
A. E. Parrott
Mrs. C. Parrott
C. F. Parry
J. Parry
W. S. Parry
A. J. Parsons
A. M. Parsons
Dr. C. G. Parsons
Mrs. F. H. Parsons
Col. Sir John Parsons, C.B.E., E.D.
P. W. Parsons
W. J. Parsonson
E. J. Partridge
Mrs. G. E. Partridge
Mrs. H. F. Partridge
R. F. J. Partridge
W. R. Partridge
A. D. Pass
A. E. Paterson
Mrs. A. B. Paton
Miss K. A. Paton
Miss M. Paton
H. A. Patrick
C. R. Patterson
L. C. Patterson
Mrs. D. Pattinson
J. L. Pattinson
S. E. B. Pattinson
J. R. Pattisson
D. L. Pattullo
G. H. Paul
Mrs. A. P. Payne
C. S. Payne
Col. W. P. Paynter
K. S. Peacock
M. Peacock
Miss M. G. Peak
J. M. L. Peake
O. M. Peall
C. Pearce
R. Pearce
Wing-Cmdr. R. S. Pearce
Miss J. Pearn
Hon. Clive Pearson
Miss C. A. Pearson
Mrs. D. E. Pearson
Mrs. P. W. Pearson
Major P. J. S. Pearson-Gregory
Gregory Peck
G. R. Peck
J. A. Peck
Miss P. Pedlar
Lady Delia Peel, C.V.O.
Miss M. B. Peiniger
Miss I. M. Pelly
F. P. Penfold
Mrs. F. C. Penley
R. H. Penley
Sir Arthur Penn, K.C.V.O., M.C.
J. D. Penn
W. E. Penn
A. G. Penny
H. J. Penrose
Mrs. V. Penrose-May
Mrs. M. V. Penruddocke
Capt. D. S. Peploe
Miss E. A. Peplow
W. A. Peplow
Mrs. D. K. Percival
Lord Geoffrey Percy
Col. Lord William Percy, C.B.E., D.S.O.
F. R. Perkins
W. R. D. Perkins, M.P.
D. H. Perrett
Mrs. D. H. Perrett
E. N. Perrett
C. W. D. Perrins
Mrs. F. Perrins
Professor B. Perry
Miss F. Perry
F. C. Perry
R. Perry
S. S. Peters
R. T. Peterson
Lt.-Col. W. G. Petherick
Brigadier D. V. Phelps
O. J. Philipson
Miss J. M. Phillips
Mrs. R. Phillips
Miss V. A. Phillips
Lt.-Col. W. L. C. Phillips, T.D., D.L.
W. W. A. Phillips
G. M. Phillipson
Dr. J. S. Phillpotts
R. Philpott
A. J. B. Phipps
Mrs. L. N. G. Phipps
P. E. Pickering
B. P. Pickess
Cmdr. (S) F. C. Pidcock, R.N.
M. Piercey
I. D. Piercy
H. K. Pierson
Miss A. C. Piggott
Dr. R. E. M. Pilcher
A. D. Pilkington
G. L. Pilkington
G. M. Pilkington
R. C. L. Pilkington
R. D. Pilkington
T. D. Pilkington
L. H. Pimm
Mrs. P. Pinfold
Mrs. M. G. Pinnegar
N. Pirie
M. D. Pirnie
J. A. M. Pitcairn
F. A. H. Pitman
Miss Frances Pitt
M. H. Pitt
J. Platt
E. W. Player
S. D. Player
Miss E. A Playne
Rev. E. W. Plowright
Miss C. F. Plunkett
D. R. Pochin
R. E. Pochin
D. C. E. Pockney
Col. J. H. L. Poe
Lady Pole
Miss R. Polehampton
P. H. Pollen
Mrs. M. Pollett
Miss I. B. Pollit
A. Pollock
Mrs. D. Pollock
J. W. Pooley
Dr. S. Pope
Miss C. Popham
Hon. Mrs. C. W. Portal
M. Portal
J. Porter
Sydney Porter
C. W. Potter
Major G. E. W. Potter, M.C.
Miss J. Potter
Mrs. J. A. Pottinger
R. H. Pough
A. Powell
H. A. R. Powell
J. B. Powell
K. J. Powell
L. A. Powell
M. D. G. Powell
Mrs. V. Powell
W. M. J. Powell
J. D. Powne
R. L. Prain
Dr. C. A. Pratt
Miss B. Prescott
Miss A. C. Pressburger
E. Pressburger
A. W. Preston
E. G. Price
E. H. Price
Mrs. K. L. H. Price
M. P. Price, M.P.
W. B. Price
A. K. Priday
Wing-Cmdr. R. G. Prier
C. H. Priestley
Mrs. J. B. Priestley
Miss W. M. Primrose
A. W. R. Pring
Miss A. Pritchard
E. H. Pritchard
Mrs. I. P. B. Probert
Miss A. W. Prowse
Dr. D. C. Prowse
Mrs. D. E. Prowse
G. E. Pugh
J. G. Pugh
Professor L. P. Pugh
Dr. S. L. Pugmire
Miss C. R. Pullen
Miss J. Pullin
H. Purdie
T. W. Purdy
J. B. Purnell
Major G. H. R. Pye-Smith
H. D. Pyke
Major A. R. Pym
J. W. A. Pyman
L. N. Pyrah
P. Quail
Lt. C. E. Queckett
Mrs. K. H. de Quetteville
Capt. R. G. de Quetteville, D.S.O., M.C.
Mrs. P. G. Quinn
T. G. Quinn
Mrs. P. C. Raban
P. A. D. Radcliffe
T. Radcliffe
C. P. I. Radclyffe
Dr. A. P. Radford
Miss M. A. Radford
P. Radley
K. E. B. Rae
C. Raeburn
Sir Harry Railing
Lady Ralli
G. V. Ralli
Dr. C. Ramsdale

A. C. Ramsden
G. G. Ramsden
W. Ramsden
F. A. Ramsey
Capt. G. A. F. Rands
D. J. Ranger
G. E. Ranken
Mrs. G. E. Ranken
Lt.-Col. N. Rankin
C. Ransford
Mrs. P. Ransom
P. W. Ratcliff
C. J. E. Rathborne
Baroness Ravensdale
Capt. C. S. Rawlins
F. H. Rawlins
Rev. R. G. Rawstorne
G. W. Rayner
J. M. Reakes-Williams
R. G. T. Reckitt
M. J. Reddin
P. H. Redley
Miss M. Reed
Miss M. J. Reed
P. J. Reed-Marr
J. E. H. Rees
Miss O. V. Rees
H. K. Reeves
Mrs. H. K. Reeves
Lt.-Col. I. L. Reeves, D.S.O., M.C.
R. J. Regnart
Mrs. Reid
Miss A. Reid
A. H. Reid, C.B.E.
D. Reid
G. L. Reid
M. Reid, M.B.E., M.C.
R. M. Reid
Miss S. Reid
D. M. Reid-Henry
Mrs. R. F. R. Reilly
J. E. Reinold
J. A. E. Reiss
Miss L. Rendall
W. Rendell
N. E. A. Renner
Mrs. H. D. Rennoldson
H. F. Rennoldson
Miss P. Renold
Sir Stephen Renshaw, Bart.
Sir Robert Renwick, Bart., K.B.E.
Countess Reventlow
Lady Reynolds
Miss E. C. Reynolds
F. L. Reynolds
Capt. R. A. W. Reynolds
Major-General R. C. Reynolds
Mrs. H. C. Ribchester
T. C. Ribchester
Mrs. M. C. Rich
A. Coombe Richards
Miss C. M. Richards
Mrs. H. M. Richards
Mrs. M. Richards
R. M. Richards
A. Richardson
Mrs. A. Richardson
Mrs. G. Richardson
J. F. Richardson
J. L. Richardson
J. M. Richardson
R. S. Richmond
Miss J. Rickard
Mrs. M. J. Rickett
Lady Ricketts
J. A. Ridge
R. F. Ridgers
F. Ridgway
N. Ridley
Miss S. K. Rigg
Major J. W. Riley
Miss M. Ring
Dr. S. Dillon Ripley
Major B. Ritchie
Miss M. C. Ritherdon
Lt.-Col. W. Ritson
B. B. Riviere
J. Robarts
Mrs. B. M. Robbins
E. C. G. Robbins
Brigadier B. L. de Robeck
A. D. Roberts
C. B. A. Roberts
Mrs. D. C. Roberts
Mrs. F. M. Roberts
H. D. Roberts
J. C. N. Roberts
Mrs. M. A. Roberts
M. C. Roberts
Mrs. E. B. Robertson
G. J. J. Robertson
J. Robertson
Mrs. K. M. Robertson
Mrs. V. A. Robins
A. E. Robinson
C. B. Robinson
Mrs. C. W. Robinson
E. R. W. Robinson
F. G. Robinson
H. G. Robinson
Miss H. R. Robinson
J. E. Robinson
Miss K. G. Robinson
Miss L. M. Robinson
M. Robinson
N. B. Robinson
Mrs. P. Robinson
P. N. Robinson
R. Robinson
H. Robinson-Smith
J. C. Robson
Mrs. L. E. Robson
Mrs. E. L. Rochester-Williams
Mrs. C. Rochfort-Boyd
Earl of Rocksavage, M.C.
Countess of Rocksavage
A. S. Rodman
J. Roebuck
Miss B. Rogers
Mrs. E. M. Rogers
H. C. I. Rogers
Miss M. H. Rogers
P. M. Rogers
T. P. Rogers
F. Rollett
Mrs. L. Romanes
Miss N. L. Rome
Dr. K. B. Rooke
W. G. Rootes
G. D. Roper
D. G. Rose
J. Rosen
W. L. Roseveare
Rev. Father V. Rosner, S.J.
W. G. M. Ross
Lt.-Col. W. J M. Ross, M.C.
Mrs. M. de Rougemont
Professor W. Rowan
Miss E. Rowbury
Mrs. B. V. W. Rowden
Miss C. Rowe
F. W. Rowe
A. Rowland
R. J. Rowland
D. V. Rowles
R. V. Rowles
Mrs. R. V. Rowles
Lt.-Col. Sir Charles Rowley, Bart., E.D., D.L.
M. Rowling
Duke of Roxburghe
Mrs. A. B. Royce
Viscount Royston
R. C. Royston
R. S. Rudd
Lt.-Col. S. Rudd-Clarke, R.A.
S. Rudd-Clarke
Mrs. M. K. Ruddock
M. Rudlin
Miss D. M. Ruff
J. W. B. Ruffle
Capt. J. Rushbrooke, R.N. (ret.)
A. T. Russell
F. R. Russell
J. A. S. Russell
Dr. J. C. Russell
J. L. Russell
L. V. Russell
Mrs. P. L. Russell
T. J. Russell
Duke of Rutland
Dr. S. Ruttle
Lt. M. J. Ryall
Mrs. I. M. N. Ryan
Miss H. Rycroft
Ens. R. A. Ryder, U.S.N.R.
D. R. Rye
L. M. Ryland
A. Rylands
E. C. Rymer
J. H. Rymer
Mrs. E. Saarinen
A. V. Sainsbury
Lt.-Col. R. E. W. Sale, M.C.
A. Salisbury
Col. H. M. Salmon, C.B.E., M.C.
W. G. L. Salmon
Mrs. M. M. Salmond
R. G. Salter
Miss R. J. Samson
L. P. Samuels
J. F. Sandars
Capt. M. P. Sandbach
R. E. Sandell
A. K. Sanderson
Mrs. M. L. D. Sanderson
G. J. Sandy
Dr. P. R. B. Sankey
Miss C. L. Sansom
Sir Malcolm Sargent
Miss E. Sartoris
Group-Capt. W. A. J. Satchell, D.S.O.
C. D. W. Savage
J. H. Savage
R. G. D. Savage
A. F. Savory
W. J. Sayles
N. Schexnyder
Dr. A. T. Schofield
Mrs. A. T. Schofield
R. L. S. Schofield
E. A. Scholes
Mrs. H. Schroder
Major J. B. Schuster
Mrs. J. B. Schuster
C. Schwerdt
C. H. Schwind
C. D. Scotland
E. Scot-Skirving
Lady Scott
Miss B. A. Scott
Miss Dafila Scott
Miss F. M. A. Scott
Mrs. J. Scott
Major J. B. Scott
J. D. Scott
Miss J. V. Scott
Miss K. S. Scott
Miss M. Scott
Miss Nicola Scott
Peter Scott
Mrs. Peter Scott
P. F. Scott
W. E. Scott
P. Scott-Archer
H. C. Scrimgeour
S. Scrimgeour
G. W. R. Scudamore
A. A. Scull
Miss J. Scurfield
Mrs. G. Seabroke
Edward Seago
M. J. Seago
A. F. Sealey
L. J. Sealy-Lewis
Miss E. M. Seaman
H. R. Searby
Brigadier E. E. G. L. Searight, C.B.E., M.C.
G. S. Seaward
Col. P. Selbie
B. de Selincourt
Cmdr. A. K. Sellar
Mrs. O. N. Senior
Mrs. J. Senter
R. B. Sergeant
W. J. Serjeant
David Seth-Smith
Keith Shackleton
W. S. Shackleton
F. J. R. Shadbolt
L. Shaddick
Col. G. P. Shakerley
Dr. W. P. Shand
R. E. Sharland
Miss K. M. H. Sharman
Dr. C. G. K. Sharp
Mrs. M. Sharpe
A. Shaw
Miss B. M. Shaw
J. R. Shaw
L. Shaw
Mrs. M. B. Shaw
Miss M. I. Shaw
Col. Q. A. Shaw, Jr.
J. Shaw-Mackenzie
E. O. Shebbeare
Miss E. Shedden
J. B. Shekleton
Miss H. R. Shelah
J. W. V. Sheldon
Mrs. S. M. Sheldon
M. Shephard
Mrs. B. Shepherd
Miss C. Shepherd
H. L. Shepherd
D. L. Sherborne
A. Sherriff
Dr. E. Shipman
W. E. Shipton
Miss C. A. Shirley
Earl of Shrewsbury and Waterford
Mrs. K. M. Shuffrey
Mrs. E. N. Shulman
Dr. J. Shulman
Capt. T. M. Sibly
W. A. Sibly
R. B. Sibson
Miss P. B. Sillar
S. Sillem
R. H. Simcock
Mrs. A. Simmons

J. F. Simoes
C. G. H. Simon
Major M. H. Simonds
Wing-Cmdr. W. Simonds
A. B. Simpson
Mrs. B. B. Simpson
Dr. R. E. H. Simpson
Major The Master of Sinclair
Wing-Cmdr. H. M. Sinclair
Sir Robert Sinclair, K.C.B., K.B.E.
W. B. Singleton
R. J. M. Skarratt
C. D'Arcy Skelton
Dr. R. B. Skeoch
E. S. Skinner
R. A. Skinner
Miss M. G. Skipworth
Lt. N. T. J. Skitt, R.N.
R. Slack
W. T. Slade
Mrs. C. M. Sladen
Capt. G. M. Sladen, D.S.O., D.S.C., R.N.
Mrs. G. M. Sladen
Dr. W. J. L. Sladen, M.B.E.
Miss S. Slingsby
E. Slocock
W. A. Smallcombe
Lt.-Col. A. D. Smith
Major D. A. Smith
Mrs. D. A. Smith
D. M. Smith
Miss F. M. W. Smith
Dr. H. E. Smith
Mrs. H. H. T. Smith
H. M. L. Smith
Mrs. I. Smith
J. E. Smith
Mrs. J. J. E. Smith
J. M. Smith
K. Smith
K. D. Smith
L. C. Smith
Miss M. Smith
Lt. P. J. S. Smith, R.M.
R. S. Smith
Miss T. D. Smith
Dr. T. R. Smith
W. J. Smith
Mrs. W. J. Smith
F. Smithies
Miss L. G. Smooker
E. H. Smouha
Major J. M. Smyth
A. A. Soames
Lt.-Col. A. A. Soames
Miss M. Soames
Lord Somerleyton, M.C.
Rt. Hon. The Lord Justice Somervell, P.C., O.B.E
L. C. Somervell
J. L. Somerville
F. Sommer
A. F. Soper
Miss M. B. Sorby
Sir William Souter
N. Southern
Mrs. P. Southern
T. M. Sowerby
Col. R. Sparrow
Dr. J. B. Spearman
C. H. Speel
Mrs. D. M. Spence
Sir Reginald Spence
T. Spence
Miss B. I. Spencer
H. N. E. Spencer
Dr. J. G. C. Spencer
Mrs. J. G. C. Spencer
Mrs. K. T. Spencer
M. Spencer
R. D. E. Spencer
Capt. F. Spicer
F. E. Spicer
J. Spicer
D. R. Spiers
J. J. Spilman
Miss M. Spinks
J. J. Spooner
Lt.-Col. E. W. H. Sprot
Miss J. Spurgin
Mrs. M. J. Spurgin
E. O. Squire
J. D. Squire
Miss V. E. Stack
H. J. Stafford-Badger
R. J. Stainsby
Hon. Lady Stainton
Miss S. C. Stainton
R. W. Stallybrass
Mary, Lady Stamer
Lt.-Col. J. K. Stanford
Dr. R. Stanford
W. Stanford, D.F.C.
Mrs. A. W. Stanton
J. W. Stanton
Miss M. V. Stanton
Dr. W. Steadman
L. R. Steel
R. O. Steel
T. W. M. Steele
M. R. M. Steele-Mortimer
G. S. Steele-Perkins
Mrs. J. M. Stephens
J. S. Stephens
P. T. Stephens
R. W. Stephenson
G. T. S. Stevens
Miss J. D. Stevens
Miss K. F. Stevens
N. Stevens
Miss N. B. Stevens
Mrs. R. Stevens
R. H. Stevens
R. N. H. M. Stevens
Miss J. C. Steward
Mrs. M. W. Steward
Brigadier R. H. R. Steward, C.B., C.B.E., D.S.O., M.C.
A. B. Stewart
Miss M. Stewart
Mrs. P. M. Stewart
Dr. C. H. Stewart-Hess
F. H. Stileman
P. C. Stileman
Major M. Stilwell
A. P. Stinchcombe
Lt.-Col. J. A. Stirling
A. B. Stobart
J. D. W. Stobart
Mrs. H. Stock
Miss N. R. Stock
Major P. C. Stocker
J. Stone
M. B. Stone, Jr.
Viscount Stonehaven
Viscountess Stonehaven
Miss I. M. W. Stooke
A. Storey
Mrs. A. Storey
Capt. K. L. Storey
Miss E. D. Stott
I. J. Stoyel
Lady Mary Strachey
Mrs. M. Strain
H. Strang
R. B. Strangeways
Lady Strathcona
Mrs. G. Stratton
Group-Capt. J. A. C. Stratton
Miss S. M. Stratton
J. J. Strawbridge
P. H. Strode
A. T. Strong
Mrs. A. T. Strong
Miss J. M. Strong
Miss M. U. Strong
Mrs. H. C. T. Stronge
P. Strutt
Miss F. W. Stubbins
Sir Eric Studd, Bart., O.B.E.
E. F. Studd
R. W. Sturge
Mrs. G. Sturt
C. M. Le Sueur
Miss F. Le Sueur
Margaret, Countess of Suffolk
S. G. Sullings
A. Sullivan, Q.C.
R. A. Summerfield
Mrs. J. Summers
Capt. C. G. C. Sumner, O.B.E., R.N.
F. D. C. Sumner
J. B. Sumner
Major L. R. C. Sumner, M.C.
E. B. Sunderland
H. K. Sutcliffe
Mrs. H. K. Sutcliffe
J. K. Sutherland
R. J. M. Sutherland
Mrs. R. J. M. Sutherland
Sir Kenneth Swan, O.B.E., Q.C.
Miss S. R. M. Swann-Mason
Dr. G. Swapp
Dr. A. Swindale, C.B.E.
A. E. B. Swindale
Miss M. Swindlehurst
J. Swinfen-Cottrell
Capt. J. Swinton
J. A. Swire
R. Swyer
P. H. Sykes
Miss M. A. Symes
Mrs. A. H. Tabor
G. F. Talbot
Miss M. F. L. Talbot
Mrs. E. Talbot-Ponsonby
E. J. Talbot-Ponsonby
Miss M. Tamplin
Dr. Y. L. Tan
F. N. Tanner
T. C. Tanner
Mrs. W. Tanner
Mrs. M. D. Tapp
Miss B. L. H. Tasker
N. Tate
Miss E. Tatham
Miss I. M. Tattershall
Miss A. B. Taylor
A. C. Taylor
C. L. Taylor
C. W. G. Taylor
Miss E. Taylor
E. W. Taylor, C.B.E.
G. B. Taylor
Mrs. K. M. Taylor
N. A. Taylor
Mrs. P. H. Taylor
R. C. Taylor
R. J. F. Taylor
Mrs. S. M. Taylor
W. R. Taylor
W. W. Tee
Miss D. M. Telford
P. J. M. Temple
Rt. Hon. Viscount Templewood, G.C.S.I., G.B.E., C.M.G.
Admiral Sir William Tennant, K.C.B., C.B.E., M.V.O., R.N.
Miss V. Tessier
Mrs. C. H. Tetley
Mrs. E. A. Tetley
Miss M. S. Thair
G. E. R. Thatcher
R. G. Thin
Miss H. C. Thomae
Dr. A. J. Thomas
C. H. Thomas
Dr. D. J. Thomas
Miss D. P. Thomas
F. Thomas
H. H. Thomas
Miss P. V. Thomas
P. W. Thomas
Sir William Beach Thomas, K.B.E.
Rev. Canon W. H. Thomas
A. Thompson
A. G. G. Thompson
Major G. M. Thompson
Mrs. G. M. Thompson
Mrs. J. A. Thompson
K. B. Thompson
Mrs. K. B. Thompson
W. N. A. Thompson
M. Thompson-Coon
Lt.-Col. D. Thomson
Sir Ivo Thomson, Bart.
Sir Landsborough Thomson, C.B., O.B.E., D.SC.
E. Thornhill
Major G. M. Thornycroft
C. C. Thorp
J. Thorpe
S. J. Thorpe
Dr. W. H. Thorpe, F.R.S.
R. E. Threlfall
Mrs. M. B. Thrower
Mrs. M. Thursfield
H. Thwaite
T. E. Tildesley, M.C.
W. O. Times
G. F. Timpson
Professor N. Tinbergen
M. S. Tinne
Miss B. G. Tinsley
P. C. Tinsley
R. C. Tinsley
W. G. Tinsley
G. C. Todd
Miss H. C. Todd
Lady Tollemache, M.B.E.
Major J. E. H. Tollemache, M.C.
Miss J. H. Toller
Major J. M. H. R. Tomkin
Mrs. E. P. Tomkinson
Miss M. G. Tomkinson
Mrs. S. D. Tomlin
Miss Tonks
Mrs. H. M. Tonks
Miss M. Toovey
Hon. Carmelo Torreggiani
Lady Clementina Tottenham
H. W. Toulmin
Miss K. Tousey
Lt.-Col. K. F. B. Tower
Lt.-Col. F. H. Towill
Miss P. Townsend
Miss M. L. Trahair
Mrs. L. A. Train
Miss A. Travers

Miss G. Treeborn
W. L. Tregoning, C.B.E.
R. B. Treleaven
Capt. C. H. Tremayne
C. W. Tremlett
Miss J. Trench
Miss O. Trewby
A. J. E. Tritton
A. M. Tritton
Sir Geoffrey Tritton, Bart., M.B.E.
Cmdr. P. F. T. Trollope, R.N.
Miss L. Trotter
L. B. C. Trotter
M. F. Trotter
Miss B. Trueman
Hon. Anthony Tryon
C. Tucker
R. L. Tufnell
Mrs. G. Tugendhat
Miss C. M. Tunnard
Miss M. L. Turnbull
Miss A. R. Turner
D. M. Turner
F. Turner
H. B. Turner
Miss K. M. Turner
Mrs. M. L. N. Turner
S. F. Turner
S. T. C. Turner
C. J. Tweedy
Miss M. G. Twining
Mrs. D. Twitchett
Eleanora, Lady Twysden
C. W. Tyler
G. Tyler
Mrs. T. Tyler
J. R. Tyrie
H. D. Tyringham
Miss E. Tyrwhitt
Mrs. J. W. B. Tyser
R. D. Unwin
Mrs. P. V. Upton
G. C. Urwick
Miss A. Usborne
Miss C. I. Usher
Miss E. C. Usher
Dr. C. N. Vaisey
G. P. Vale
A. B. B. Valentine
Lt.-Col. G. A. M. Vandeleur
Miss C. M. D. Vanner
Miss L. M. Vaughan
C. Vaughan-Lee
Mrs. C. Vaughan-Lee
Mrs. D. P. Vaughan-Morgan
Mrs. G. C. Veal
Mrs. F. W. Vennell
Miss D. M. Verini
Miss E. M. Verini
Major-General G. L. Verney, D.S.O., M.V.O.
Mrs. J. M. L. Vernon
Major M. S. B. Vernon
Miss C. M. R. Vesey
J. E. Vesey
Miss D. E. de Vesian
Miss C. N. Vevers
M. H. Vigne
T. H. Vinnicombe
Mrs. H. Vitzthum v. Eckstaedt
R. A. Vlasto
Mrs. C. Waddicor
R. N. Waddingham
C. T. Wade
Col. G. A. Wade
N. J. P. Wadley
A. R. Wagg
Major-General C. B. Wainwright, C.B.
M. C. Wainwright
S. Wainwright
Sir Hereward Wake, Bart., C.B., C.M.G., D.S.O.
R. Wake
Mrs. V. G. Wakefield
G. W. Wakeford
A. Walker
Lt.-Col. A. R. Walker
B. C. Walker
Dr. C. W. Walker
Dr. D. M. Walker
Miss D. M. Walker
E. H. Walker
Mrs. E. W. Walker
J. W. Walker
M. Walker
Lt.-Col. P. L. E. Walker
R. E. Walker
Capt. R. H. Walker
R. M. Walker
T. Walker
Miss M. A. Walkinshaw
Mrs. C. E. Wall
Miss A. Wallace
D. I. M. Wallace
Lt.-Col. E. G. Wallace
A. W. Wallbank
Vice-Admiral J. W. A. Waller, C.B.
Miss M. D. Waller
Rev. G. C. W. Wallis, M.C.
Major E. G. W. T. Walsh
T. P. Walsh
Mrs. I. Walshaw
Mrs. A. H. Walter
C. N. Walter
Col. A. B. Walters
Mrs. D. E. Walters
Mrs. E. Waltham
Miss G. A. Walton
G. O. Warburg
A. F. Ward
F. W. Ward
H. Ward
Miss K. M. Ward
Miss M. A. Ward
Miss E. F. Warden
J. N. Warden
Miss C. A. L. Wareham
Major C. C. Waring
Rev. G. J. S. Warner
Mrs. O. Warner
Mrs. V. Warner
Miss D. Warren
E. F. Warren
Mrs. M. S. Warry
Miss D. I. Warton
W. I. Washbrooke
A. T. Waterhouse
Major R. T. C. Waters
E. S. Watkins
K. Watkins
Mrs. M. M. Watkis
Mrs. C. M. Watson
J. B. Watson
J. N. Watson
J. W. Watson
Mrs. M. C. Watson
R. Watson
Mrs. R. H. Watt
Mrs. W. B. Watt
Miss M. M. Watters
J. Watts
P. L. Wayre
W. Weaver
A. L. Webb
C. M. Webb
H. F. Webb
Miss K. I. Webb
C. V. Webber
R. H. Webster
Miss M. F. Weedon
Lt.-General Sir Ronald Weeks, K.C.B., C.B.E., D.S.O., M.C.
Mrs. R. P. Weeks
D. A. Weir
Miss M. Weir
A. E. Welch
Mrs. A. E. Welch
E. G. H. Welch
Mrs. E. G. H. Welch
O. J. C. Wellbelove
R. Wellesley
Mrs. L. Wellington
O. N. Wells
W. Welstead
Mrs. V. Welton
W. K. Welton
Earl of Wemyss
Mrs. A. M. West
Miss B. M. West
Miss B. R. S. West
Lt.-Col. J. R. West
Duke of Westminster, G.C.V.O., D.S.O.
A. J. Weston
H. Weston
Brigadier-General S. V. P. Weston, D.S.O., M.C.
Rev. R. M. L. Westropp
Lady Wetherall
Lt.-General Sir Edward Wetherall, K.B.E., C.B., D.S.O., M.C.
Miss D. M. Wethered
T. D. Whately, M.C.
G. Whatoff
L. R. Wheeler
P. A. Wheeler
H. F. Wheway
Miss J. Whillis
G. Whitaker
Mrs. G. Whitaker
G. White
G. White
Rev. R. L. White
Sir Stanley White, Bart.
Miss S. White
Mrs. C. L. Whitehead
E. G. Whitehead
F. W. Whitehead
Mrs. J. C. Whitehead
Mrs. L. E. Whitehead
Miss M. A. Whitehead
Mrs. M. E. Whitehead
Lt.-Cmdr. P. A. Whitehead
R. Whitehead
H. Whitelegg
A. R. Whitfield
Miss P. Whitfield
G. S. Whiting
E. Whitley-Jones
A. I. Whitlock
Ralph Whitlock
Miss U. H. Whittaker
J. Whittall
Mrs. J. Whittingham
O. L. Whittle
Mrs. E. L. Whyte
Dr. M. Wickham
Dr. P. Wiedel
Mrs. M. Wigfield
R. Wigglesworth
J. A. Wigzell
Miss C. G. Wilcox
E. O. Wild
G. E. Wild
M. A. Wild
Major J. C. Wilder
Miss H. E. Wilding
T. Wilding-Davies
P. E. Wilkes
Mrs. G. C. Wilkins
W. G. Wilkins
Mrs. A. F. L. Wilkinson
Miss J. Wilkinson
W. H. Wilkinson
T. J. Willcocks
T. V. W. Willes
H. R. Willett
Lt.-Col. D. G. Williams
E. Williams, Jr.
Miss E. C. Williams
Mrs. E. M. Williams
Mrs. G. E. Williams
G. H. Williams
Capt. H. W. Williams, R.N.
I. Williams
J. P. Williams
Miss M. Williams
Mrs. M. Williams
Miss M. M. K. Williams
Major M. McC. Williams
Miss V. S. Williams
W. Williams
J. R. Williams-Ellis
Sir Walter Williamson, C.M.G.
Marquis of Willingdon
Miss J. M. de Q. Willott
Lt.-Col. E. de W. Wills
Miss F. M. Wills
Major H. D. H. Wills
Sir John Wills, Bart.
M. T. N. H. Wills
Hon. Robert Wills
W. D. Wills
Fl.-Lt. G. A. Willsher
Rev. M. W. Willson
L. Wilshire
A. M. Wilson
A. M. Wilson
Cmdr. A. T. Wilson, V.R.D., R.N.V.R.
Lt.-Col. B. Wilson
Mrs. C. M. Wilson
C. W. Wilson
C. W. G. Wilson
D. Wilson
Miss E. E. Wilson
Mrs. E. M. Wilson
Miss J. Wilson
Rev. J. Wilson
J. M. Wilson
K. L. Wilson, F.R.C.S.
R. H. Wilson
Miss E. M. Wilson-Taylor
T. Wilton, C.B.E.
T. N. P. Wilton, M.R.C.S.
Miss M. O. P. Wiltshire
J. O. Wimshurst
Dr. W. Winch
Lt.-Col. J. K. Windeatt
R. N. Winnall
T. J. Winnall
M. P. Winser
Miss J. Winsor
John Winter
M. Winter
R. P. Winter
Mrs. C. Winterbotham
Miss C. I. Winter-Irving
W. A. Winter-Irving
D. S. Wintle
Miss G. A. Wise
Miss H. C. Wise
Lt.-Col. H. D. Wise
J. H. Wiskin

R. A. Witchell
Mrs. M. D. J. Wocke
K. J. de C. Woldringh
Miss A. Wood
A. D. Wood
B. W. L. Wood
C. J. Wood
D. Wood
Miss D. R. Wood
E. Wood
J. A. Wood
J. E. C. Wood
M. G. Wood
Miss E. M. Woodard
Lt.-Col. E. D. S. Woodruffe
Dr. W. R. Wooldridge
J. Woolgar
F. J. Woolley
L. M. Woolner
R. A. Woolner
G. C. Wooltorton
Miss B. Workman
M. P. Workman
C. de Worms
Mrs. G. de Worms
Mrs. E. R. Worsley
M. Wray
Miss L. I. Wren
A. Wright
C. W. Wright
E. F. F. Wright
Miss G. R. Wright
Mrs. H. L. Wright
H. M. V. Wright
Miss J. S. Wright
N. P. Wright
R. M. Wright
Mrs. V. D. Wright
J. P. Wunder
M. Wybergh
Mrs. C. J. Wykeham-Musgrave
Miss M. Wykeham-Musgrave
Mrs. A. R. B. Wylam
Major H. J. Wyld
P. H. Wyld
A. H. Wyllie
Miss F. E. Wynne
Professor V. C. Wynne-Edwards, F.L.S., F.R.S.C. F.R.S.E.
T. A. Yardley
I. L. Yarrow
J. J. Yealland
G. K. Yeates
A. J. Yeatman
J. W. Yeend
Miss E. F. Yeld
P. H. Yeld
Mrs. P. H. Yeld
F. G. Yeo
B. Yeoward
Mrs. E. Yeoward
J. M. A. Yerburgh
O. G. de B. Yerburgh
Mrs. E. N. Yorke
W. M. Yorke
B. A. Young
C. J. Young
G. A. Young
H. J. S. Young
H. V. Young
J. Young
J. D. Young
R. Young
T. M. D. Young
G. W. Younger
Mrs. L. Younger
K. Zabell
A. H. Zair
Mrs. A. H. Zair
Aziz Zaki
G. V. Zatloukal-Williams
Mrs. P. Zatloukal-William
R. J. Ziegeler

ASSOCIATE MEMBERS

F. A. Abbey
Miss E. M. Adams
L. E. G. Adams
D. Affleck
J. Alder
R. Alder
W. J. Alder
R. C. Aldworth
C. E. Aliband
Miss D. Allen
Mrs. F. M. Allen
V. H. Allen
Mrs. V. H. Allen
J. Alsopp
T. R. Ammonds
E. Anderes
Mrs. A. R. Anderson
Miss C. R. K. Anderson
Miss G. R. Anderson
G. W. K. Anderson
R. Angles
Marquis of Anglesey
Miss A. C. Anstis
P. B. Anthony
Miss S. Ardley
J. Arney
S. E. Arney
Mrs. C. Arrowsmith
Mrs. J. Asterley
Mrs. W. Attenborough
Mrs. J. d'Avon
S. Ayland
Mrs. S. Ayland
J. A. Bailey
R. H. Baillie
Major V. S. Baily
M. E. Baker
Dr. W. H. J. Baker
C. C. Balch
Miss S. Baldwin
S. E. Balkwill
R. D. Ball
M. J. Banbury
D. E. Barbour
Miss I. Barlow
Miss J. Barrett
Miss P. Barry
R. B. Barstow
L. M. Barton
R. Barwick
C. Bassingham
Mrs. J. D. S. Bassingham
Mrs. V. C. Batchelor
L. R. Bayes
Miss G. D. Beale
R. M. Beattie
Miss F. Benfield
D. A. Bennet
Mrs. N. Bernays
R. Bernays
Mrs. A. G. Bicknell
R. Biddulph
Miss E. A. Billimore
Miss D. Bindloss
Miss H. Binnie
Mrs. E. E. Birkett
J. Birkett
H. L. H. Birley
Miss A. J. Blackie
Miss I. Blakeston
H. R. Board
D. G. Boddington
Miss E. M. Boggett
Mrs. P. M. Booth
Mrs. I. V. Bowell
Mrs. D. R. Bracher
P. Bracher
Miss M. Bradbrook
Miss Bray
C. J. Brecknell
Miss E. Brickenden
A. Bridgman
Mrs. A. Bridgman
Mrs. E. A. Briggs
H. M. Briggs
P. A. Briggs
Miss A. M. Bright
Mrs. W. A. Brimacombe
Miss C. A. Brobyn
Miss P. J. Brobyn
Miss P. M. Brobyn
Mrs. D. Brocklebank
F. S. Bromley
B. R. Brooks
Miss H. M. Brookshaw
R. G. Brown
D. K. Bryson
A. Buchanan
F. W. Buglass
A. Burden
F. Burgess
Mrs. E. P. Bush
G. C. Buxton
Mrs. G. C. Buxton
R. H. Buxton
Miss D. M. Cake
Major F. G. Caldwell, M.B.E., M.C.
Mrs. A. L. Cameron
E. D. Cameron
Miss M. R. Campbell
R. H. Candy
Miss R. V. Candy
Miss M. O. Canham
R. H. Cannell
Mrs. F. E. Carter
Miss M. Carter
Miss K. M. Cary
J. A. Castle
M. E. Castle
Miss M. B. Chadwick
T. Chadwick
Mrs. E. Challoner
Miss M. K. Chamberlin
G. Chapman
C. B. Chatwin
H. P. Chatwin
I. Cheeseman
B. G. Child
D. R. Christie
C. F. R. Clark
Miss J. A. Clark
Miss L. Clark
Miss M. C. Clark
Mrs. M. E. Clark
Mrs. B. A. Clarke
Miss P. M. G. Clarke
J. Clegg
D. Clews
Mrs. D. Clews
Miss J. Clews
P. Cliff
P. J. R. Clifton
G. E. Clothier
A. R. Cobb
Miss V. Cochran
Miss G. Cochrane
H. Cochrane
R. Cochrane
T. F. Coghlan
Miss B. C. Cole
Miss A. S. Collett
V. H. Collier
Hon. Margaret Colville
Miss B. M. Cook
C. F. Cooke, O.B.E.
Mrs. I. T. Cooke
Mrs. M. O. Cooper
N. L. Cooper
R. A. H. Cooper
P. G. Cope
A. S. Corbett
N. F. Coulam
Mrs. D. W. Coyne
B. Craddock
Miss M. Crooks
C. Cullimore
P. F. Cumberlege
G. M. Cummings
Mrs. F. Curry
Mrs. M. C. Curwen
Miss A. A. Cutter
Mrs. B. J. Dainton
Hon. Mrs. Danks
A. R. Danks
Miss C. D. Darby
Miss A. Davies
Miss M. B. W. Davies
R. Davison
P. L. Day
J. E. Deacon
M. Deacon
C. D. Deeprose
Miss E. M. Deeprose
E. R. Deeprose
Mrs. P. E. Deeprose
P. Dennington
Mrs. Dibben
Miss J. Dickson
G. S. T. Diggory
G. Dillingham
Miss V. Dixon
Miss B. E. Dobney
Mrs. I. Doncaster
W. C. Doughty
Mrs. F. E. Down
F. G. F. Drake
C. M. Ducasse
G. Duggan
Miss D. N. Dunn
Capt. J. Dunster
Miss M. P. Earl
Miss P. Eastgate
Miss M. M. Ede
Mrs. E. Edmunds
J. Edwards
Miss M. A. Edwards
J. R. McD. Elliot
Miss D. M. Ellis
Rev. G. F. H. Elvey
Miss W. M. Enwright
A. C. Evans
Miss D. C. Everett
R. Fairclough
Miss P. Farmer
B. W. K. Fayle
Miss J. A. Fayle
Mrs. D. E. Felce
Miss S. E. Felce
Miss G. D. Ferguson
Miss H. Findlater
M. C. Findlay
T. J. E. Fisher
Mrs. E. Fitzgerald
A. K. Fleet
J. L. W. Flood
Mrs. F. L. Fogwill
J. Fogwill
A. C. Foottit
G. A. Forrest
E. H. Forrester
Hon. Mrs. Charles Fortescue

C. T. L. Fowler
Major A. J. Fraser
P. Frederick
Miss S. Frederick
Miss K. A. Gabb
Miss M. Galbraith
Miss M. Garner
J. V. Garrett
I. P. E. Gay
I. Gemmell
Miss M. M. Gibbon
Miss A. E. Gibbs
Mrs. F. Gibson
Mrs. H. Gibson
Dr. W. Gilges
Miss M. Gladding
Dr. A. E. Glanvill, M.C.
W. Gleed
Miss C. E. Godman
Miss W. L. Goodworth
J. Gore, C.V.O.
Miss V. Gore
K. J. Gould
Mrs. K. J. Gould
Mrs. O. W. Gower
J. A. C. Grant
H. Gray
Miss N. M. Greening
Miss E. V. Griffiths
Miss S. Grove
F. M. Gurteen
J. O. Hadfield
Miss J. E. Hague
R. W. Hale
Miss R. M. Hales
G. R. Hall
H. Hall
Mrs. L. M. Ham
D. Hamblett
Dr. E. Hamblett
Miss L. Hamilton
Mrs. M. E. Hamilton
H. Hanham
Miss M. Hanham
J. P. Hannifan
Miss K. M. Hannifan
H. V. Harris
J. Harrison
C. E. Hart
Mrs. H. W. L. Hartley
D. L. Haviland
Miss C. Hawes
Miss M. Hawkes
Miss A. J. Hawkins
T. L. Hawkins
R. A. Hayes
C. Hayhurst-France
G. Hayward
Miss K. R. Hazell
E. A. Hazledine
Miss J. M. Hazledine
C. T. L. Heale
G. A. Hebditch
T. W. Henderson
W. L. Henman
H. Henshaw
N. Henson
Miss E. M. Hepburn
N. J. Hepden
Miss M. Hewitt
J. Heyworth
Miss D. Higgins
Miss D. E. Higgins
Mrs. C. Hill
Mrs. E. Hill
Lt.-Col. H. F. Hobbs, D.S.O., M.C.
L. G. Hodgkinson
Miss M. Hodgson
G. Hodson
Mrs. C. Holden
W. Holden
J. Holland
Mrs. M. Holland
Mrs. S. C. Holland
D. G. W. Hollands
G. Holman
K. Holman
Mrs. K. Holman
A. C. D. Holmes
F. D. Holmes
Miss M. L. Holmes
P. Holmes
Mrs. P. Holmes
R. M. Holmes
P. D. P. Hope
Mrs. M. Hotston
E. W. Houghton
J. Howard
Miss L. J. Howell
P. N. Humphreys
Miss A. L. Hunt
H. S. Huxley
Miss D. J. Ingham
Miss E. D. Innes
N. Jackson
J. P. Jacques
D. G. James
W. M. James
Mrs. W. M. James
Capt. G. J. Jameson
Mrs. G. J. Jameson
J. H. Jenkins
B. W. John
Mrs. C. J. John
D. D. John
Miss D. Johnson
K. Johnson
Miss S. Johnson
Mrs. L. Johnstone
Miss A. F. U. Jones
C. E. Jones
Mrs. E. Jones
Miss E. R. U. Jones
L. A. Jones
Miss M. M. Jones
G. Kay
Miss M. L. Kay
Miss C. R. A. Kearse
Miss M. W. Kendall
Mrs. M. Kennett
S. Kennett
P. G. Kenning
Miss I. R. Kilmarnock
R. B. Kilmarnock
Mrs. B. King
Miss E. King
J. Kinton
Mrs. J. Kinton
Hon. Miss Verona Kitson
C. W. Knight
Mrs. C. W. Knight
Miss D. E. Knight
Miss C. Kuoni
Mrs. A. H. Lamb
Mrs. E. M. Lamb
J. D. B. Lambert
J. S. Land
J. T. Lane
Cmdr. J. R. Lang
E. R. Langford
Miss R. A. Langman
Miss S. Lasing
H. D. Lavin
Miss H. Lawrence
Miss I. E. Lawrence
Mrs. E. G. Lawson
Miss J. P. Lawson
J. Lawton
Mrs. J. Lawton
Miss P. Lawton
Mrs. J. E. Lea
M. H. Leach
Miss E. R. Lee
R. W. M. Lee
R. Lee-Warner
Mrs. R. Lee-Warner
Miss C. M. Leigh
Miss I. J. Lenny
Miss D. R. Levey
L. Lewis
J. Lewton
Mrs. J. Lewton
B. Linney
Miss J. F. Lipscomb
Mrs. P. Lipsey
A. B. Little
Miss D. M. Little
Miss M. Llewelyn
Miss L. D. M. Lloyd
Miss R. M. Lloyd
D. R. Lomax
D. R. Lovell
Mrs. C. M. Lucas
G. Lutyens-Humfrey
Mrs. K. M. Luxford
Mrs. C. M. E. Lyon
E. F. Lyons
Dr. J. F. Lyons
Mrs. M. V. Lyons
R. Lytle
Miss J. M. McAlister
J. G. McDowell
A. C. MacIntosh
Miss J. A. McK. Main
Miss M. N. McKinney
I. A. McLean
P. B. McLean
Miss E. A. McMeekin
J. McMeekin
L. McMeekin
Mrs. L. McMeekin
A. C. Macrae
Miss F. M. Mager
Mrs. E. M. Malyon
Mrs. E. Mann
Miss M. C. Mansell
Mrs. L. D. Manser
R. J. Manser
D. J. Marling
Mrs. P. M. Marriott
Miss A. D. Marsh
R. Marsh
Miss D. H. Marshall
Mrs. M. Marshall
W. A. Martin
Miss E. Maskell
Miss J. R. Matheson
M. W. V. Maude
Dr. N. E. Mawby
Miss M. Maxwell-Jackson
W. E. Menzies
Mrs. W. E. Menzies
F. L. Michell
Miss M. A. Micklethwait
Cmdr. E. P. Milburn, R.N.
Miss M. E. Miles
D. Millar
B. R. Miller
A. G. Millett
J. Milligan
H. E. Milliken
Mrs. G. M. Mills
J. C. Mills
Miss P. Mills
Mrs. M. Minipio
Miss M. Mirfin
Mrs. D. Missen
C. Mitchell
Mrs. F. J. L. Mitchell
Miss F. Molteno
R. Money
Mrs. M. E. Monk-Jones
Miss N. T. Monnington
Miss B. Moore
D. Moorehead
R. E. Moreau
Miss E. Morgan
F. E. Morgan
T. Mosedale
Miss V. Nash
D. H. Naylor
H. W. Neal
R. Nedderman
E. N. Nicholas
Miss J. M. Nicholls
J. Nightingale
Mrs. M. Nightingale
Rev. Canon G. R. G. Norris
Mrs. T. A. Norsworthy
Mrs. E. A. Norton
Mrs. M. Nowell
E. Ogilvie
Miss E. Ogilvie
Mrs. M. Ogilvie
J. C. O'Hanlon
Mrs. E. M. Olivey
G. S. Ormiston
M. Osborne
Miss S. M. B. Ottley
Mrs. M. C. Owen
P. Page
Miss O. M. Pain
Mrs. H. Parker
Miss H. Parker
Mrs. H. Parker-Jervis
Miss A. D. Parry
Miss S. K. Parry
C. C. Patrick
Miss R. A. C. Patrick
Mrs. M. T. Payne
J. F. Peake
Miss G. Pearce
Miss H. Pearce
Miss Pearson
Miss F. Penrose
Miss M. Penrose
C. C. Perkins
Dr. H. C. Petch
J. M. Petit
N. K. Phillips
K. F. Philliston
M. E. Pickering
Miss E. Pidgeon
H. E. Piggott
Miss N. L. Pinder
Miss R. Pitts
Mrs. G. Pole
A. Pollett
Dr. A. L. Poole
Mrs. V. E. Poole
S. Pope, Jr.
Miss M. Powell
E. J. Power
D. Powis
Miss M. H. Powis
K. G. Pratt
C. R. M. Prentice
C. W. Preston
Miss N. K. Price
Miss P. N. Price
J. Prichard
R. Prichard
Miss V. Prioleau
Mrs. D. C. M. Pritt
A. J. Pullin
R. E. Pye
Miss I. Radcliffe
G. S. Ralston
C. Ransom
Miss M. Rawle
M. F. Rawlence
M. G. Rawstorne

F. D. Read
Miss J. E. Rebbeck
F. Reddan
D. Rees
W. Rees
C. Riach
B. A. Richards
Miss E. M. Richards
H. M. Richards
P. Richards
Miss P. Ridgway
Miss G. M. Ridout
Miss N. Ritchie
Mrs. E. H. Roach
F. V. Roberts
Mrs. W. G. Roberts
T. M. Robinson
N. Robson
M. C. F. Rogers
P. J. F. Rogers
J. Rossborough
H. W. Rudd
Miss G. Russell
Miss J. Russell
R. H. Ryall
Mrs. E. Sadler
B. Saidman
F. A. Sandell
Mrs. F. A. Sandell
J. H. Sandell
Mrs. D. A. Scott
E. D. Scott
R. C. Scott
R. R. Scott
Major W. Scott
Miss B. L. Searle
Miss Seman
O. N. Senior
J. B. Serjeant
L. M. Seth-Smith
Mrs. U. M. Seth-Smith
Miss M. O. Shaul
Mrs. M. Shaw
Miss L. M. Shears
R. Sheppard
M. Shortt
Miss R. I. Sidebottom
Miss I. W. T. Silcock
Miss B. F. Simpson
Miss E. M. H. Simpson
Mrs. H. Simpson
Miss J. Simpson
R. Simpson
D. V. Sinclair
Mrs. A. M. Skinner
Miss Sladden
Cmdr. H. D. Smallwood, R.N. (ret.)
S. R. Smallwood
E. Smith
J. G. Smith
L. Smith
L. F. T. Smith
Miss M. Smith
Miss S. H. Smith
F. M. Sneed
J. Southern
Miss E. R. Spalding
Mrs. A. D. Spearman
Miss M. H. Spearman
L. Spinks
Miss E. F. Stanford
Dr. D. C. Staveley
J. Stephens
P. A. Stephens
Miss I. A. W. Stevens
Miss S. Stevens
D. R. M. Stewart
Mrs. D. Stewart-Ross
Mrs. K. H. Straker
Hon. Mrs. Arthur Strutt
Mrs. C. Stuart
F. G. Stuart
Mrs. F. G. Stuart
Miss Summers
C. M. Summers-Smith
D. Summers-Smith
Miss D. Sutcliffe
Mrs. G. Swayne
D. Sweeting
Mrs. D. Sweeting
C. R. Talbot
C. V. Talboys
D. Tate
J. F. Taylor
R. Taylor
C. F. Tebbutt
Miss A. G. B. Thomas
Miss V. Thomas
Miss N. L. Thompson
R. N. Thorpe
M. J. Todd
Miss M. S. Todd
L. Trelfa
C. D. Trinder
Miss E. J. Trinder
Mrs. H. Turner
Mrs. S. F. Turner
Miss D. R. Turton
Miss D. K. Udell
B. D. Underhill
M. Upsall
J. Urquhart
P. Urquhart
G. B. Vaile
C. L. Vandiest
E. J. W. Vaughan
Mrs. N. A. Vaughan
P. D. W. Vaughan
Miss O. Wace
M. Waddicor
Miss V. M. Waldy
Miss H. Wallis
Miss M. Wallis
Miss V. Z. Walmisley
Miss G. E. Walsh
Miss Y. K. Ward
Miss E. H. E. Wareham
Miss E. M. Warnington
E. J. Warren
Mrs. R. H. Warren
E. Waters
A. J. Watkins
J. Watts
Miss F. A. Way
L. M. Webb
C. G. Webster
Miss E. R. Webster
C. W. Wells
D. E. H. Westby
Mrs. N. Wharton-Tigar
A. Wheeler
Mrs. A. Wheeler
Miss D. L. Wheeler
Miss E. Wheeler
Miss I. Whitehill
Mrs. C. J. Whittaker
A. McI. Whyte
Mrs. L. Whytte
Miss D. Wight
Mrs. H. M. Wild
T. J. Wildblood
Miss N. B. Wilkes
Miss E. J. Wilkins
J. Wilkins
Miss O. Willetts
Miss B. Williams
E. S. Williams
J. H. Williams
P. R. Williams
Miss P. W. Williams
Miss R. Williamson
K. J. Wills
S. C. F. Wills
Miss P. Wilmot
Mrs. D. Wilson
Miss D. M. Wilson
H. C. Wilson
Mrs. J. C. Wilson
J. R. Wilson
Miss S. C. Wilson
Mrs. A. Wilton
Dr. W. H. D. Wince
Miss A. J. Winton
Miss E. Wiseman
Mrs. D. Witherby
R. G. Woodcock
C. A. Woodhouse
Mrs. M. K. Woodhouse
Mrs. C. R. Woodward
Mrs. L. Woolner
Mrs. R. Wotherspoon
Miss M. A. Wray
J. B. Wright
W. B. K. Wright
D. E. Yates
G. H. E. Young
G. R. Young
M. R. Young

PARISH MEMBERS

S. A. Acreman
Mrs. A. M. Baker
Mrs. P. M. Bourke
Mrs. L. Elliott
Mrs. C. Gray
R. J. Gray
L. R. Hyam
A. B. James
Mrs. N. James
G. A. Lintern
J. A. Lintern
J. Macaulay
Miss M. Mirfin
C. E. Nelmes
A. S. Noad
D. A. Noad
Mrs. H. Noad
W. Noad
D. Passey
F. Seaman
Mrs. N. Seaman
Miss A. D. Smith
Mrs. A. L. Tarr
Miss B. Tarr
F. C. Tarr
T. Tarr
R. G. L. Weaver
J. F. Wherrett
J. L. Whittard
Mrs. J. L. Whittard

Ashy-headed Goose

CONTRIBUTORS

Ackworth School
Bath & West & Southern Counties Society
Birmingham & West Midland Bird Club
Bristol City Museum
Bristol Clifton & West of England Zoological Society
Bristol Public Libraries
British Trust for Ornithology
Cardiff Ornithological Society
Cornwall Bird Watching & Preservation Society
Cotteswold Naturalists' Field Club
Divisional Council of the Cape
Ducks Unlimited (Canada)
The Dyers' Company
Edmunds Epping, Ltd.
Essex Institute of Agriculture
Gloucester City Libraries
Gloucester City Museum
Grimshaw-Kinnear Ltd.
Hawk Mountain Sanctuary Association
Hazell, Watson & Viney Ltd.
Hill & Rockhampton Women's Institute
I.C.I. Game Services
Leeds Public Libraries
Medici Society Ltd.
Morecambe Bay Wild Fowlers' Association
National Museum of Wales
Netherlands Section, International Committee for Bird Preservation
News Chronicle (Daily News Ltd.)
Henry W. Peabody & Co. of London, Ltd.
Royal Society for the Protection of Birds
Royal Zoological Society of Scotland
Science Museum, South Kensington
Stoneham Museum & Research Centre
Woolhope Naturalists' Field Club
Yorkshire Naturalists' Trust Ltd.
Zoological Society of London
Zoological Survey of India

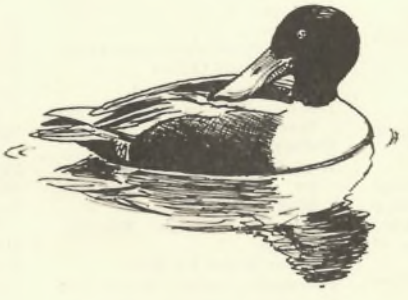
CORPORATE MEMBERS

Margaret Allen Preparatory School
Badminton School
Bath High School
City of Bath Training College
Beaudesert Park School
Birkenhead School
Bournemouth School for Girls
Bredenbury Court School
Bristol Grammar School
Cathays High School for Boys
Charborough Road Secondary Modern School
Cheltenham Branch Workers' Educational Association
Cheltenham College Junior School Natural History Society
Cheltenham College Natural History Society
Chester Park Junior Girls' School
Cinderford Wesley Youth Club, Natural History Society
Clifton College Natural History Society
Clifton High School for Girls
Colston's Girls' School
Dean Close Junior School
Denmark Road Girls' High School
Doncaster Road Junior Mixed School
Downs School Ornithologists' Club
Dragon School Oxford
Dudley Grammar School
Dudley Training College for Teachers
Dursley Grammar School
King Edward's Grammar School for Boys Natural History Society
Fishponds Diocesan Training College
Gateway School for Boys
Gloucester Teachers' Nature Club
Gloucester Technical College
Godolphin School
Bredon Hancock's School
Hereford High School for Boys
Hereford Training College
Highgate School Natural History Society
St. James's School
St. Julian's High School for Boys, Newport, Mon.
King's High School for Girls, Warwick, Science Club
Kings School
Leyhill Evening Institute
Linden Secondary School for Boys
Lordsfield School
Lucton School Field Club
Lydney Grammar School Field Club
Malvern College Natural History Society
Marlborough College Natural History Society
Marling School Field Club
St. Mary's C.E. Primary School (Junior Mixed)
St. Mary's School Natural History Society
Monkton Combe Junior School
Monmouth School for Girls
Monmouth School Natural History Society
National School Nature Club, London Road Junior Boys' School
Newport & District Naturalists' Society
Oak Bank Open Air School
Osler Street Secondary Modern Girl's School, Birmingham
Alice Ottley School
Oxford Branch of Universities Federation for Animal Welfare
St. Paul's School
Portway Girls' School
Redland Training College
Rendcomb College
Shrewsbury School Ornithological Society
Slimbridge Branch Workers' Educational Association
Slimbridge Council School
Somerset Teachers' Nature Club
Southville Secondary Modern Boys' School
Staple Hill Secondary Girls' School
Stubbington House School
Taunton School Natural History Society
Thornbury Grammar School
Trowbridge Girls' High School
Trowbridge High School for Boys
Wallasey High School
Wells High School for Girls
Wells House School
Westham House Adult College
Westhill Training College (Natural History Section)
Whiteway Branch Workers Educational Association
Winchcombe Secondary Modern School
Worcester Royal Grammar School
City of Worcester Training College
Wyggeston Grammar School for Girls

PHOTOGRAPHS

The Trust is greatly indebted to the following for permission to reproduce the photographs they have taken

Lt-Col J. Braddell
P. Glasier
Hulton Press
Dr D. F. McKinney
C. Rossiter
Miss P. Talbot-Ponsonby
Peter Scott



P. Talbot-Ponsonby

Young Bewick's Swan which flew in during the winter of 1952-53, and has now joined the collection.

(Top) Lesser Magellan or Upland Geese rising from a stubble field in southern Patagonia. (Centre and below) Ashyheaded geese in a typical river valley in eastern Tierra del Fuego.

Photos P. Talbot-Ponsonby

Antarctic Sea Lions, Blue-eyed Cormorants, Kelp and Dolphin Gulls on Isla Santa Marta in the Magellan Straits.

Magellan penguins on Isla Santa Magdalena—some of the colony described by Sir Francis Drake, now estimated at 15,000 pairs.

Photos P. Talbot-Ponsonby

Flamingoes near Peckett Harbour in southern Patagonia.

Black-necked Swans and Flying Steamer Ducks in the Fitzroy Channel, southern Patagonia.

Photos P. Talbot-Ponsonby

The manager's house at Estancia Caleta Josephina, the 600,000-acre sheep farm at the head of Useless Bay, Tierra del Fuego. Ruddy-headed geese nest at the foot of the garden.

Kelp Geese near the Bridges/Reynolds Estancia on the east coast of Tierra del Fuego, with Cabo Viamonte in shadow.

Photos P. Talbot-Ponsonby

Llamas in the Bolivian Andes.

The shores of Lake Titicaca, the typical habitat of Puna and Sharp-winged Teal.

Photos P. Talbot-Ponsonby

The Zongo Valley on the east side of the Bolivian Andes, the home of Garlepp's Torrent Duck. Five ducks are in the distance, with (inset) two females and a male swimming. There were Hummingbirds in the surrounding tropical shrubbery.

Photos P. Talbot-Ponsonby and P. Scott (inset)

(Above and centre) Sharp-winged Teal, the mountain race of *Anas flavirostris*, caught by the Director on Lake Titicaca. It is a paler and more handsome bird than the typical race (below) of the yellow-billed or Chile Teal, which is common in waterfowl collections in Europe.

Photos J. Braddell

J. Braddell

Male Andean Goose (*Chloephaga melanoptera*).

Male Lesser Magellan or Upland Geese (*Chloephaga picta picta*). White form above, barred form below. This is the race from the mainland and Tierra del Fuego.

Photos J. Braddell

(Above) Pair of Greater Magellan or Upland Geese (*Chloephaga picta leucoptera*). This is the race from the Falkland Islands, and there is no barred form of the male.

(Below) Female Lesser Magellan Goose.

Photos J. Braddell

Looking north-west across the Dumbles from the Graham

P. Glasier

›bertson Tower. Part of the Severn flock of Whitefronts.

Coscoroba Swan (*Coscoroba coscoroba*), native of southern South America, incubating on an island in the Rushy Pen.

Coscoroba cygnet 'Oscar' with foster parent. The white band over the back of the head indicates relationship with the Whistling Ducks.

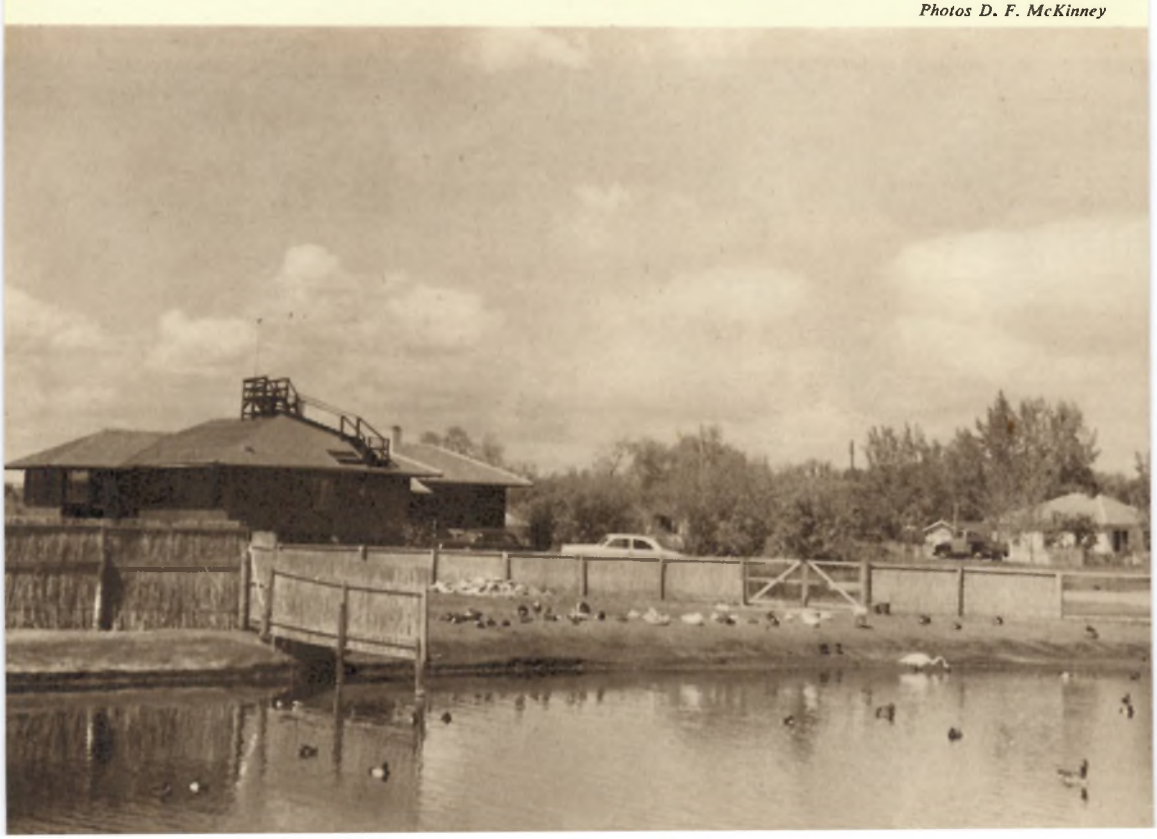
Photos P. Talbot-Ponsonby

Stages in the development of the Coscoroba cygnet 'Oscar.' The mottled feathers are a further indication of relationship with the Whistling Ducks. It is thought that the Coscoroba may form a link between them and the true swans.

Photos P. Talbot-Ponsonby

The headquarters of the Delta Waterfowl Research Station, Manitoba, Canada. (Above) The laboratory with the flying cage on the right. (Below) The Kirchoffer lodge from which the upper picture was taken.

Photos D. F. McKinney



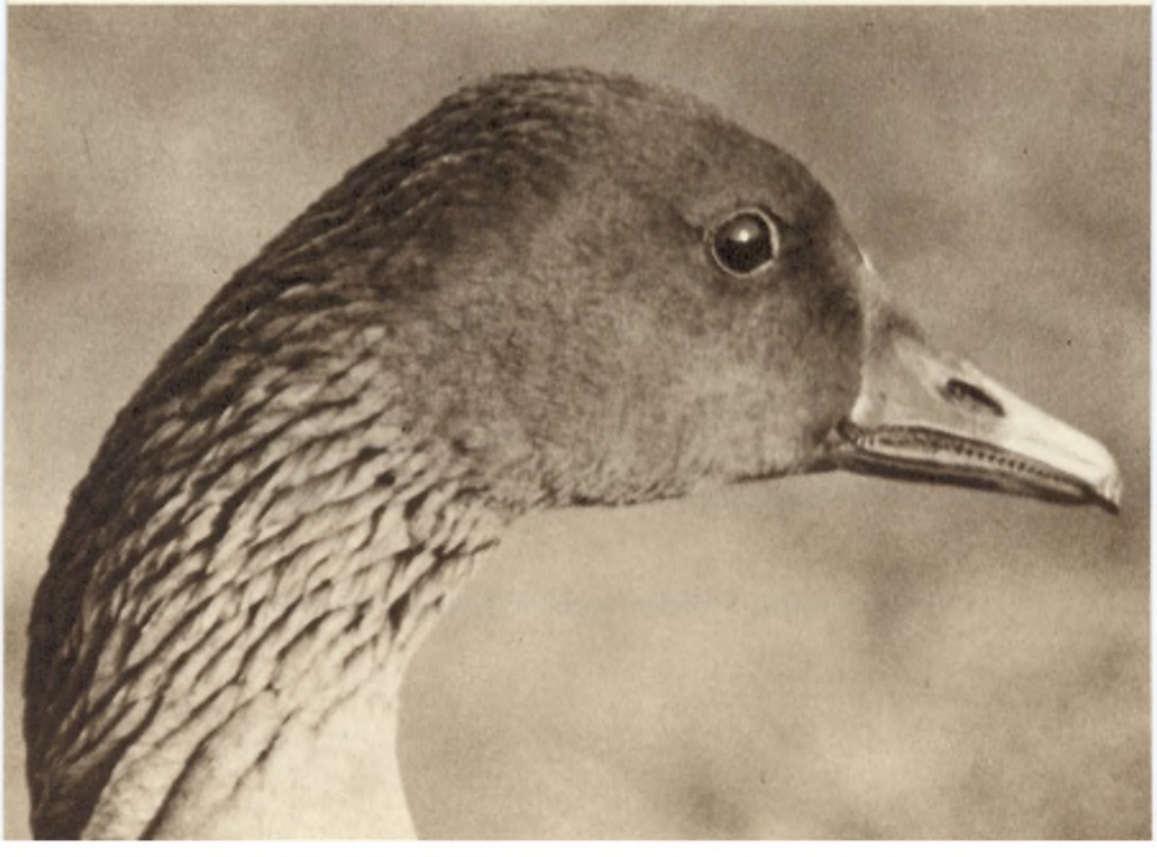
Hulton Press

Ringing a female Shoveler caught in Berkeley New Decoy.

Trumpeter Swan (*Cygnus cygnus buccinator*), native of western North America.

Bean Goose (*Anser arvensis arvensis*), the forest-breeding race which winters, now in very small numbers, in Britain.

Photos J. Braddell



Egyptian Goose (*Alopochen aegyptiacus*) and family.
Male African Black Duck (*Anas sparsa sparsa*).

Photos J. Braddell

(Above) Indian or Lesser Whistling Duck (*Dendrocygna javanica*).

J. Braddell

(Opposite) Cuban or Black-billed Whistling Duck (*D. arborea*).

C. Rossiter

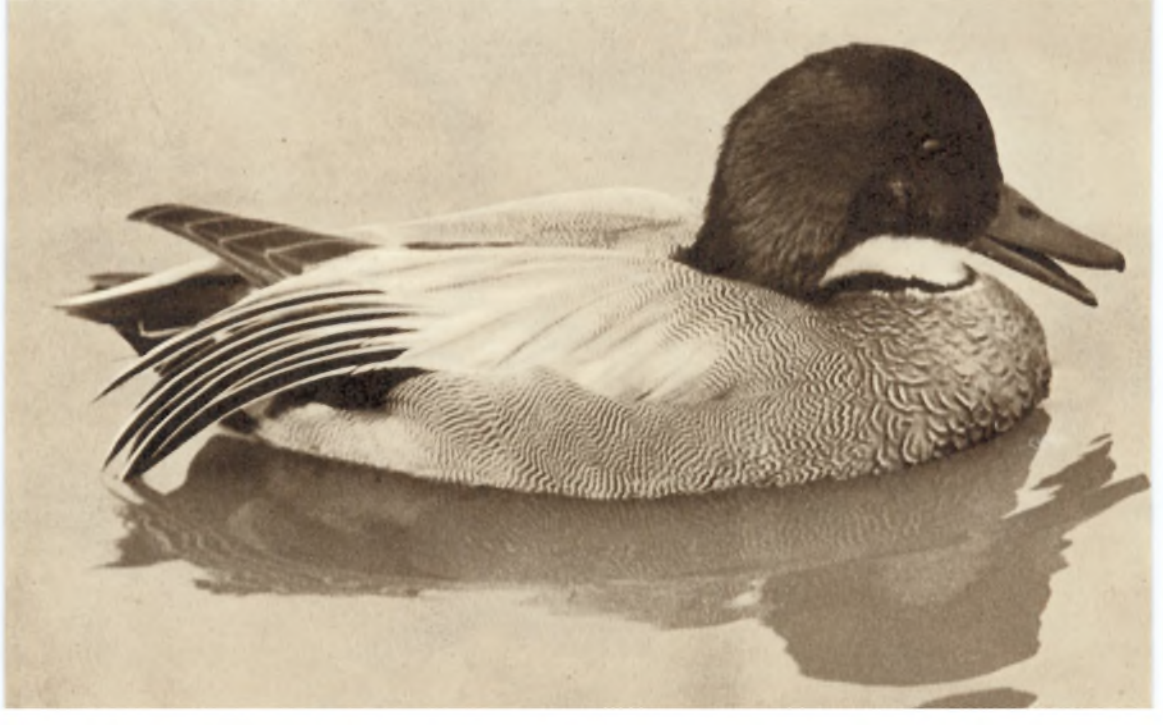
(Below) Eyton's or Plumed Whistling Duck (*D. eytoni*) from Australia, and (right) the rare Spotted Whistling Duck (*D. guttata*) from New Guinea.

J. Braddell

Pair of Gadwall (*Anas strepera strepera*), native of Europe, Asia, and North America.

Male Falcated Duck (*Anas falcata*), native of China and Japan, which may be related to the Gadwall.

Photos J. Braddell



The full-winged Greater Snow Geese (*Anser caerulescens atlanticus*) on the pond in the Big Pen.

Female Australian Shelduck (*Tadorna tadornoides*), called, in Australia, the Mountain Duck.

Photos J. Braddell

Hulton Press

A pair of Southern Bahama Pintails (*Anas bahamensis rubrirostris*) preening.

THE SWANS, GEESE AND DUCKS

of the British Isles

By PETER SCOTT

Part Four

The first three parts are contained in the Third, Fourth and Fifth Annual Reports. This final part deals with the Scoters, the remaining Sea Ducks and the Mergansers. At a later date it is proposed to publish the four parts in book form—for handy reference.

In presenting the very short life histories, the author wishes to acknowledge the following sources of information : *Handbook of British Birds* ; Witherby, Ticehurst and Tucker, 1939. *Check List of Birds of the World* ; J. L. Peters, 1931. *Natural History of the Ducks* ; J. C. Phillips, 1922. *Grønlands Fugle* ; F. Salomonsen, 1950. *British Diving Ducks* ; J. G. Millais, 1913. *Records of Birds Bred in Captivity* ; Emilius Hopkinson, 1926. *Waterfowl and Game Birds in Captivity* ; A. F. Moody, 1934.

He also wishes to express his grateful thanks to Hugh Boyd for the work he has done on the text of the book.

The original oil paintings (30 in. × 20 in.) reproduced here have been presented to the Trust and are for sale in aid of the funds.

THE SWANS, GEESE AND DUCKS of the British Isles

PLATE XII. (SCOTERS)

COMMON SCOTER *Melanitta nigra nigra* (L)

[American Scoter *M. n. americana* which breeds in north-eastern Asia, Aleutian Islands and northern North America, differs in colour of bill (largely brilliant yellow in adult male, female with small yellow patch) and has nail more sharply hooked downward.]

Breeds in Scotland, Ireland, Iceland, northern Europe from Norway east to the Taimyr Peninsula in N. Siberia. Not recorded as breeding in Scotland until 1855, but probably overlooked earlier ; has expanded its regular breeding ground during this century, though numbers still small. Only one regular Irish breeding place. Flocks of non-breeding birds may be found throughout summer off coasts of Scotland and Wales.

Nests close to fresh water on shores of lakes or islands. 5–10 eggs, most often 6–7, first half of June in Britain and Iceland, later farther east. Incubation 27–28 days (artificially brooded). Has not bred in captivity, the species being difficult to keep.

Outside breeding-season a marine species, wintering on western coasts of Europe south to Rio de Oro (N.W. Africa) occurring casually inland and on the shores of the Mediterranean, Black and Caspian Seas. Common on south and east coasts of Britain in winter, less plentiful in north-west and much of west coast, scarce in southern Ireland.

Food : mainly animal, especially molluscs, also crustaceans and (on fresh water in summer) insects and worms. Some water plants eaten in summer.

Voice : female a hoarse ' hurr ' resembling that of other diving ducks. Male several types of utterance, including a low polysyllabic piping call, a double ' tuk-*tuk*,' and a prolonged rattling, perhaps derived from the double call.

Identification : Adult male wholly glossy black, except for an orange-yellow patch between and around the nostrils, and extending on to knob at base of bill. Females and immature males dark brown, with whitish-brown cheeks and throat, bill greenish-black. Females resemble those of Red-crested Pochard but darker, bill shorter and more upturned, cheeks in greater contrast with breast and flanks. Wings in both sexes uniform shades of brown, without bars. No true ' eclipse ' plumage, males merely becoming duller with flanks browner.

VELVET SCOTER *Melanitta fusca fusca* (L)

[*M.f. stejnegeri*, breeding in eastern Asia from the Altai to Anadyr, Kamchatka and the Commander Islands, *M. f. dixoni*, breeding in Western Alaska, and *M. f. deglandi*, of north-western Canada, south to North Dakota, differ from the typical race in the size and colouring of the bill, more markedly in the males.]

Breeds in Scandinavia and the Baltic countries, eastward to Transcaucasia and the Yenisei. Suspected, but not proved, to have bred in Scotland on several occasions.

On Baltic islands nests in cover of bushes or under a tree, in north on tundra. 5–8 eggs (up to 14 recorded), late May in south-west of range, mid-June farther north. Has never bred in captivity, and is evidently difficult to keep in good health.

Winters on coasts of Europe south to Portugal and east to Black and Caspian Seas. Regular on east and south-east coasts of Britain and off N.W. England, though not in large numbers, scarce elsewhere in west and south-west, rare Ireland.

Food : in winter almost entirely marine molluscs and crustaceans, in breeding-season some aquatic plants as well as fresh-water animals.

Voice : very silent. Male a double whistling ' whurr ' and a low-pitched purring note. Female harsh ' kerr,' usually double.

Identification : resembles Common Scoter, but with white patch on wing, conspicuous in flight or when birds flap wings on water, although usually hidden when at rest. At close range white mark under eye and yellow or orange side of bill help to distinguish male. Immatures and females have two whitish patches on face in front of and behind eye, especially pronounced in immatures, bill dusky.

SURF SCOTER *Melanitta perspicillata* (L)

[No subspecies.] Breeds in northern North America, principally west of Hudson Bay, and central Labrador.

Nests on dry ground near fresh water, site usually well concealed. 5–9 eggs early June to early July. Incubation period not recorded. Has not been kept in captivity.

Winters on coasts from Alaska to California and Nova Scotia to South Carolina ; also on Great Lakes. Casual visitor to Greenland, western Europe and Atlantic islands. British records mainly from Orkneys and Shetlands.

Food : predominantly animal, molluscs 60% (especially mussels), crustaceans 10%, insects (in summer), echinoderms and fish spawn. Wide variety of plants taken, but quantities small.

Voice : A very silent bird. Female utters a rough guttural ' hrraah.' Male has an explosive but liquid ' puh-puh.'

Identification : females and immature males brown with two whitish patches on side of head, like Velvet Scoter, but lacks white on wings (dividing line between face patches sometimes almost absent in immatures). Some females have whitish patch on nape. Adult males black with white patches on forehead and nape and bright yellow bill, with red at base of upper mandible and white patches proximally on sides. Bill very large and high, giving an Eider-like profile distinct from that of other Scoters.

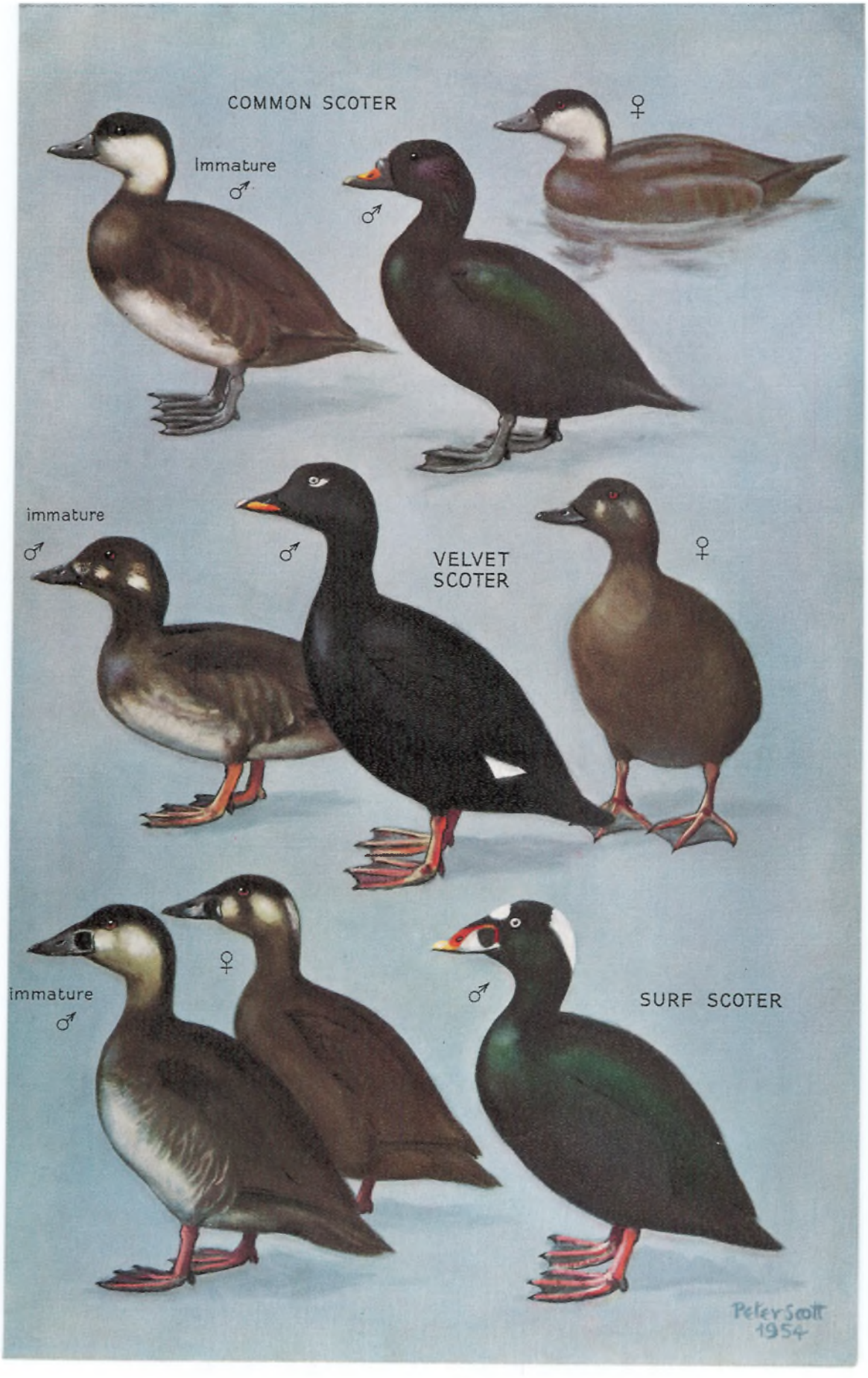

COMMON SCOTER
Immature
♂
♂
♀
immature
♂
♂
VELVET
SCOTER
♀
immature
♂
♀
♂
SURF SCOTER
Peter Scott
1954

PLATE XIII. (SEA DUCKS)

HARLEQUIN DUCK *Histrionicus histrionicus histrionicus* (L)

[Western Harlequin Duck *H. h. pacificus*, breeding in north-western North America and north-eastern Asia very closely resembles the typical form, but is larger and has a larger bill, higher at the base and usually broader, although females cannot always be distinguished.]

Breeds in Iceland, Greenland, N.E. Canada, Labrador and Newfoundland.

Nests in rock-crevices or in scrub or bushes, close to fast-flowing streams or rivers. Tends to form small colonies, several pairs nesting close together. Usually 6 or 7 eggs (5–10 recorded), June, occasionally late May. Incubation period uncertain, 31–32 days for eggs hatched artificially, probably several days less under natural conditions. Has not bred in captivity, and is difficult to keep.

Iceland birds are resident, remaining off coasts in winter, North American birds move southwards to the rocky coasts and offshore islands of the maritime provinces. Stragglers have been found in many European countries. There are six English and two Scottish records.

Food : almost entirely animal, mainly crustaceans and molluscs, including *Chiton*, rare as a food for all other ducks, also insects, echinoderms and fishes. Vegetable matter found in stomachs probably taken incidentally, if not accidentally.

Voice : Apparently a rather silent bird. Calls of male include a low, piping whistle, a hoarse 'heh-heh,' and a squeak. Female has a low, harsh croak, 'eh-eh-eh-eh ' and both sexes use a two-syllabled note ' gi-eh ' in the breeding season.

Identification : markings of drake very distinct, notably the white streaks on neck, breast, and back, and the chestnut flanks. Duck may be confused with young Long-tailed, though it has two light spots in front of the eye and a round spot behind it and is uniform dull brown. Buoyant manner of swimming is characteristic.

LONG-TAILED DUCK *Clangula hyemalis* (L)

[No subspecies.] Of circumpolar distribution, breeding in Europe in Iceland, Bear Island, Spitzbergen, northern Norway, Sweden and Finland and North Russia, in Siberia and across North America from the Aleutian Islands and Alaska to Labrador and Greenland. A few British breeding records.

Nests in hollow on ground on islands and shores of lakes and on tundra, in willow-scrub or among rocks. 6–8 eggs (5–17 recorded, larger numbers probably due to two females), from late May to end of June. Incubation about 24 days. Has not bred in captivity, though young have been reared from wild-taken eggs.

European birds winter on coasts of Iceland, Britain, Faeroes, Scandinavia, Northern France, Holland, Belgium and the Black Sea, and casually in many other parts of Europe. In Europe (though not America) essentially a sea duck, found only occasionally inland in winter. Common off the east coasts of Scotland and England October–May, scarcer west coasts, very common Orkneys and Shetlands. Individuals sometimes remain through the summer and breeding has been reported in Shetlands and Orkneys on several occasions.

Food of adults largely animal of great variety, especially crustaceans, also molluscs, insects and fish, often obtained by deep diving, to 15 fathoms or more. Vegetable matter taken includes grain, algae, roots of aquatic plants. Young also feed largely on crustaceans (insects forming only a small part of the diet in some areas), though many other kinds of food, both animal and vegetable, have been found in stomachs.

Voice : Calls of male, frequently heard and uttered both on water and in flight, are loud, resonant and unusually musical, ' Aa-aardelow.' Female has a low single-syllabled ' ved,' infrequently heard.

Identification : the sequence of moults in this species is exceptionally complicated so that birds in a great variety of plumages may be seen, but at all seasons the shape of the head and the short bill are characteristic in both sexes and the very long pointed tail of the male is also distinctive except during the short eclipse period. The male plumages are always boldly dark brown and white, the female browner. Winter females and immatures have a pale ' washed-out ' appearance. The wings of both sexes are blackish, the drake in winter plumage having two broad white streaks on the scapulars.

GOLDENEYE *Bucephala clangula clangula* (L)

[American Goldeneye *B. c. americana*, breeding in Alaska and across Canada from coast to coast, is not distinguishable in the field. Adult males of American race larger, females may be larger.]

Breeds in northern Scandinavia, the Baltic States, Germany, Yugoslavia, N. Bulgaria and Russia, across Asia to Kamtschatka and N.W. Mongolia, southern limits Kirghiz Steppes and Altai. Only two definite records of breeding in Britain (Cheshire 1931, 1932).

Nests in holes in trees on shores of rivers and lakes, occasionally in burrows. Takes readily to nesting-boxes, now provided on a large scale in Sweden and Finland. 6–15 eggs (usually 8–12), from mid-April in south of breeding range but not till June in north. Incubation 26–30 days. Believed to have bred only once or twice in captivity.

European birds winter in south of breeding range and south and west to France, northern Mediterranean and Black Sea. Passage-migrant and winter-visitor in Britain, widely distributed, though not usually in large numbers, on coasts, estuaries and inland waters. Frequently seen in summer also, but does not breed (except as noted above).

Food : very largely animal, principally molluscs, crustaceans and insects. Worms, leeches and small fish also recorded. Vegetable matter usually algae.

Voice : little heard. Male has a harsh but quiet double note used in display and female a hoarse note similar to that of other diving ducks.

Identification : on the water bold black-and-white pattern and high-crowned appearance make male very distinctive. Brown-headed females and immatures may also be recognised by the shape of the head and the short bill. In flight black wings with a broad white patch on inner half extending nearly to leading edge are a striking feature of both sexes. Wings whistle loudly in flight.

BUFFLEHEAD *Bucephala albeola* (L)

[No subspecies.] Breeds in northern North America, in Alaska, Yukon, British Columbia and south to Montana in the west, across Canada from the Mackenzie River and the shore of Hudson's Bay south to the Great Lakes in the east.


LONG-TAILED DUCK
immature ♂
winter ♀ ♂
summer ♂ ♀
♂ in eclipse
HARLEQUIN DUCK
♂ ♀
BUFFLE-HEAD
♂ in eclipse
♂ ♀
immature ♂
♂ in eclipse
GOLDENEYE
♂ ♀
Peter Scott 1954

PLATE XIV. (MERGANSERS)

SMEW *Mergus albellus* (L)

[No subspecies.] In Europe breeds only in north of Norway, Sweden and Finland, across north of Russia to Siberia, south to the Volga, Turkestan and the Amur.

Nests in holes in trees (or nesting-boxes where available), close to freshwater lakes or backwaters of large rivers. 6–9 eggs (5–14 recorded), late May and June. Incubation period about 28 days, but not yet reliably recorded. Believed to have bred only once in captivity.

European birds move south in winter as far as Mediterranean and Black Seas. Found on reservoirs, lakes and estuaries in southern England in small numbers September to May, infrequent northern England, Wales, scarce Scotland and Ireland.

Food : very largely animal, chiefly fish, of many species. Also crustaceans, molluscs, insects and frogs. Grass and other vegetable matter has been found in stomachs.

Voice : A rather silent bird. Male has a short hissing whistle and a prolonged grunt. Female a hoarse ' harr-r,' like other sawbills.

Identification : smallest species in this group. Adult male very conspicuous, largely pure white with black patch on face and black band on back of head. In flight much more pied, wings being black with white patch on coverts. Adult female also distinctive, with red-brown crown and nape and white cheeks. Young birds resemble female and males in eclipse are similar, but blacker on the back and with more white in wing.

GOOSANDER *Mergus merganser merganser* (L)

[Asiatic Goosander *M. m. orientalis* (breeding Afghanistan, Turkestan, Altai, Tibet) is smaller, with a shorter bill ; in American Merganser *M. m. americanus* (breeding in North America south of line from south-eastern Alaska to James Bay) female and young have back and flanks greyer, male has thin black wing bar and bill less hooked than in typical form.]

Breeds in Europe and Asia from Iceland, British Isles (Scotland and northern England) and Switzerland in the west through Scandinavia, Germany, Balkans and Russia east to Kamchatka and the Kurile and Commander Islands.

When trees are available most common nesting site is in hollow tree, otherwise in holes in banks or amongst boulders, makes use of nesting boxes where provided. Nests usually close to fresh water, sites often used year after year. 7–13 eggs (up to 19 recorded), from April in south of range to late June in north. Incubation 32–35 days. Not recorded breeding in captivity.

Winters south to Mediterranean, Black, Caspian and Aral Seas. Found in Britain in winter on estuaries and larger inland waters, scarcer in south-west England, Wales, Ireland, Outer Hebrides, infrequent Orkneys and Shetlands.

Food : entirely animal, principally fish, of many kinds, uually small but up to 12 in. long recorded. Supposed to interfere with sporting fishing and much persecuted on that account. Other food crustaceans, insects, worms and frogs.


♀
SMEW
♂
♂ in eclipse
HOODED
MERGANSER
♂
♀
♂ in eclipse
♂ in eclipse
♂
RED-BREASTED
MERGANSER
♀
♂ in eclipse
♂
GOOSANDER
♀
Peter Scott
1954

Voice : male reputed silent except in display, when uses a soft crooning call. ' croo-croo-croo ' becoming more metallic in excitement and forming ascending sequences. Female has a hoarse ' harr-r.'

Identification : the largest of the ' sawbills,' of characteristic shape, only liable to be confused with Red-breasted Merganser, which is smaller, slimmer and rarely seen inland except in breeding season. Bill of male is hooked, the breast and sides are white, more or less suffused with yellowish-pink, and there is no distinct crest. The female and juveniles have blue-grey backs (not brownish-grey as in the Red-breasted Merganser), the chestnut of the head is sharply demarcated at the neck instead of merging into the white throat patch. In flight more white in wings of both sexes than in the smaller species.

RED-BREASTED MERGANSER *Mergus serrator serrator* (L)

[Greenland Red-breasted Merganser *M. s. schioleri* is very similar but has a longer wing and a broader, stronger bill.]

Breeds in British Isles (Scotland and Ireland), Iceland, Faeroes, northern Europe south to North Germany, Poland and America, eastwards across northern Asia and North America.

Nests on ground, in shelter of scrub or boulders or in shallow burrow, on islands in sea-lochs as well as by inland lakes and rivers. 7–12 eggs usual (up to 19 recorded), late May or early June. Incubation 29 days. Has bred in captivity.

Some European birds are resident, others move south for winter as far as Mediterranean and Black Seas. Occurs on most coasts of Britain as passage-migrant or winter-visitor though rarely abundant and infrequent inland.

Food : entirely animal, principally fish. Like the Goosander persecuted by man for this reason. Also crustaceans, and a few worms and insects.

Voice : usually silent, except in display or alarm. Male calls include a loud rough ' da-ah,' a low rattling sound and a soft cooing note. Female a hoarse ' harr ' like Goosander's and a harsh ' quark ' when disturbed.

Identification : resembles the Goosander but smaller and slimmer. Adult male readily distinguishable by brown breast and much less white on sides, with pronounced erect crest, divided into two. Adult female has brownish-grey back, brown of head shading off gradually into dingy white neck and usually more prominent crest than in Goosander. Males in eclipse and juveniles resemble females but have shorter, less conspicuous crest.

HOODED MERGANSER *Mergus cucullatus* (L)

[No subspecies.] A North American species, breeding from north of British Columbia through south central Canada to New Brunswick and eastern and south-eastern United States.

Found only in wooded areas with ponds and streams, nesting in holes in trees, close to water where possible. Usually 10–12 eggs (6–18 recorded), late April to early June, varying with latitude. Incubation period said to be 31 days, but this requires confirmation. Has not bred in captivity.

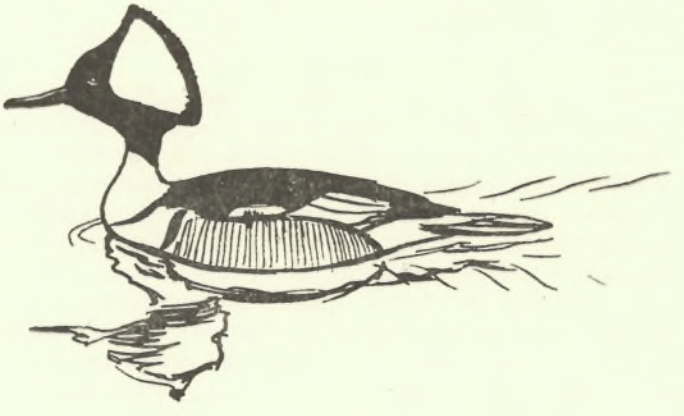
Winters chiefly in southern states of U.S., but also Great Lakes, remaining as far north as open water can be found. Accidental in Bermuda, Alaska and western Europe. Four fully-authenticated British records (three Ireland, one Wales), at least nine others less certainly established.

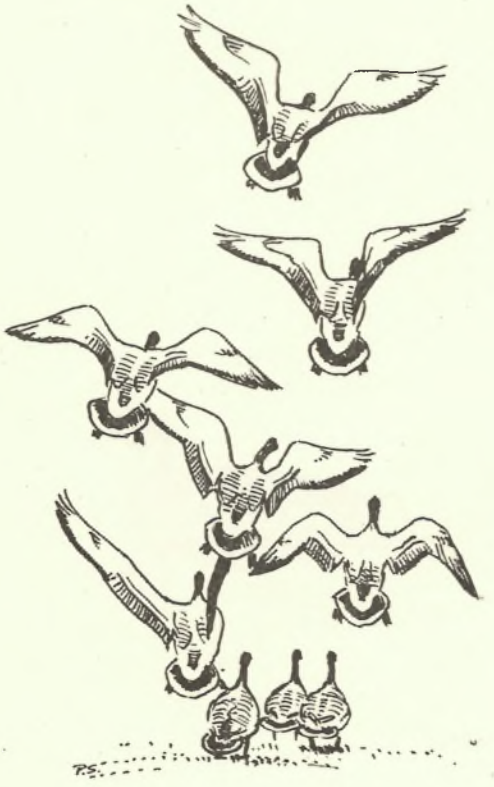
Food : mainly animal, including insects, small fish, crustaceans, molluscs and

amphibia. Fish less important than in diet of other sawbills. Some vegetable food : seeds, grasses and aquatic plants.

Voice : male a rough grunting ' crooh, crooh, crooh.' Female has low croaking note like three related species and a guttural chattering alarm call, when with young.

Identification : only a little larger than Smew. Adult male readily recognised by black-and-white markings and prominent fan-shaped white crest, constantly raised and depressed. Wing dark with white patch. Female distinguished from other mergansers by small size, dark coloration, dark head and neck and buffy-brown crest. Juveniles and yearling males like females. Males in eclipse show brownish mottling of head and neck and breast and flanks like those of female.





PRINTED IN ENGLAND BY
HAZELL, WATSON & VINEY, LTD
LONDON AND AYLESBURY