

REPORT

IN ITS third year of work the Trust has laid emphasis on the scientific research which is one of its principal objects. Members will recall that it was established in order 'to promote the study of wildfowl' and also 'to establish and maintain a wildfowl research observatory'. It is satisfactory, therefore, to record that the New Grounds are now included in the Bird Observatories Scheme of the British Trust for Ornithology. The promotion of the study of wildfowl has not only scientific and educational significance, but also a particular application to the decline in the world-stocks of many species of ducks, geese and swans. Although this downward trend is recognised by many, it is very difficult, especially in Europe, to determine the rate of decline and to supply data which make the trend apparent. Much attention has therefore been given to the extension of the ringing effort and to the development of quantitative techniques for the measurement of wildfowl production. This work requires the support of all who are concerned with the continued survival of the birds; it is in the interests of the wildfowler no less than of the ornithologist and bird lover.

Another important project during the past year was the active part taken by the Trust in the attempt to save the Hawaiian Goose (*Branta sandvicensis*) from imminent extinction.

The Council presents a full report of these activities in the pages which follow. The first part deals with the ornithological results, which occupy the period from April 1949 to April 1950. April is the most convenient break in the Trust's year because by then the wild geese have left the estuary, the wild ducks have left the decoy and the breeding season of the waterfowl in the collection has scarcely begun.

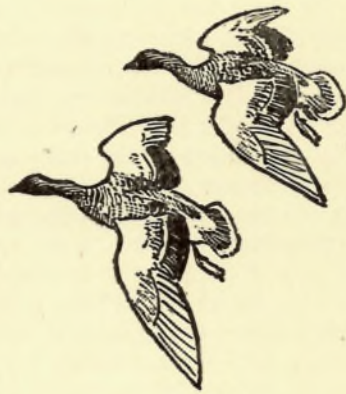
Administrative and financial arrangements follow the ornithological data, and the Minutes of the Annual General Meeting appear on page 70. After the section of photographs, there is a coloured key to the swans and geese of the British Isles. It is hoped to complete the series of plates of the British wildfowl in subsequent reports.

WILD GEESE

GEESE were present on the estuary from 25th September to 15th March. Seven kinds were seen during the period: Pink-footed (*Anser brachyrhynchus*), Bean (*A. f. fabalis*), White-fronted (*A. a. albifrons*), Greenland White-fronted

(*A. a. flavirostris*), Lesser White-fronted (*A. erythropus*), Greylag (*A. a. anser*), Barnacle (*B. leucopsis*).

The earliest arrival was a single White-front which appeared on 25th September. For nearly a week, however, it was alone and the first Pink-feet, a flock of 31, arrived on 1st October. On the following day 18 White-fronts joined them, and subsequently the numbers increased to about 700 in the normal manner. But the main influx was more than two weeks later than usual and took place during the first week in January. As usual the flocks consisted mainly of White-fronts. The Pink-feet never numbered more than 62 and left, as they have previously done, during the last week of November. Although they arrived late the main flocks of White-fronts reached a peak on 29th January, when the estimated number was 3,500. There were over 2,000 geese on the estuary from 22nd January until the last week of February. The main departure took place on 4th-5th March and odd birds only were left by 7th March.



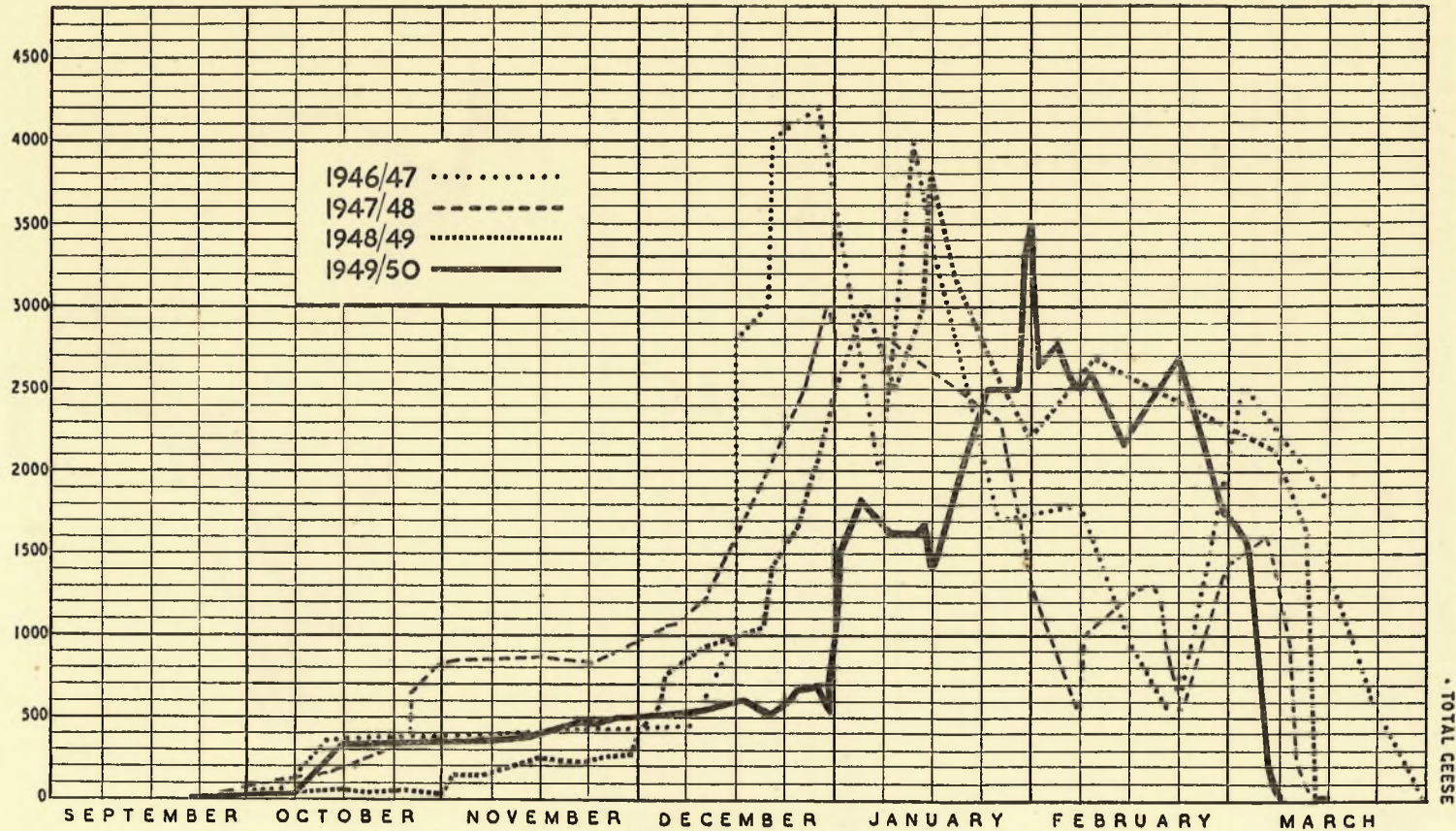
PINK-FOOTED GOOSE (*A. brachyrhynchus*)

TABLE I
COUNTS OF PINK-FOOTED GEESE

Date	Number	Date	Number	Date	Number
October 1st	31	October 17th	60	December 2nd	22
" 2nd	24	" 30th	60	" 3rd	22
" 4th	30			" 10th	7
" 6th		November 5th	56	" 12th	7
a.m.	44	" 16th	61	" 14th	7
" 7th	52	" 17th	55	" 15th	7
p.m.	52	" 22nd	24	" 16th	7
" 8th	52	" 23rd	18	" 17th	7
" 9th	52	" 25th	29	" 18th	7
" 13th	52	" 28th	27	" 19th	7
" 14th	52	" 29th	28	" 21st	7
" 15th	58	" 30th	28	" 23rd	7
" 16th	62				

One present 3rd February to 2nd March.

TOTAL NUMBER OF WILD GEESE ON THE NEW GROUNDS 1946-50



GRAPH I—TOTAL NUMBERS OF GEESE (COMPARED WITH PREVIOUS SEASONS)

The following Table of maximum numbers of Pink-feet, although incomplete, demonstrates the remarkable decrease in numbers of this species on the New Grounds during the last 12 years :

TABLE II
MAXIMUM NUMBERS OF PINK-FOOTED GEESE SINCE 1933

1933	1250	1944	105
1934	1250	1945	80
1935	550	1946	97
1937	1050	1947	120
1938	650	1948	58
1941	55	1949	62
1943	110		

BEAN-GOOSE (*A. f. fabalis*)

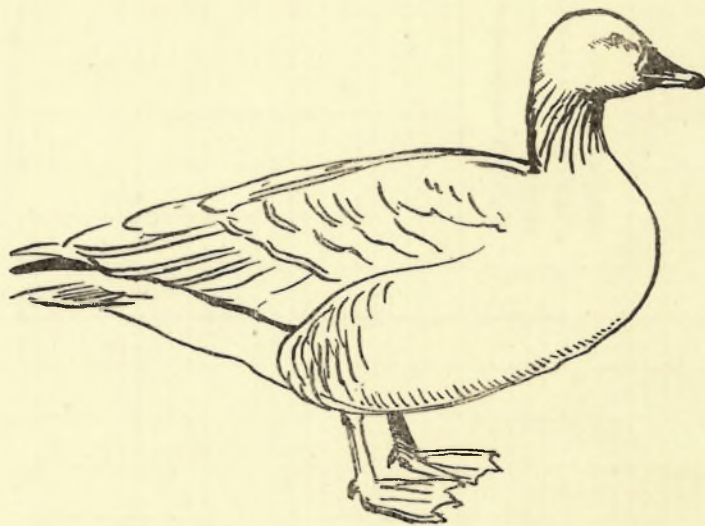
Two Bean Geese visited the Dumbles during the season, as follows:—

One; adult seen 7th February (H. J. B.), 17th February (H. J. B.).

Second; possibly second winter seen 8th February (H. J. B.), 10th February (P. S.), 24th February (H. J. B.), 28th February (H. J. B.).

Single bird (identity not established) seen 23rd February (H. J. B.), 1st March (H. J. B.).

Two seen at the same time 26th February (K. Shackleton).



Bean Goose

WHITE-FRONTED GOOSE (*A. a. albifrons*)TABLE III
COUNTS OF WHITE-FRONTED GEESE

Date	Time	Total	Accuracy	Date	Time	Total	Accuracy
1949				1950			
Sept. 25th	—	1	—	Jan. 1st	Morning	1020	± 20
				2nd	Morning	1347	± 50
Oct. 2nd	—	18	—		Morning	1317	—
4th	—	18	—	3rd	Morning	1408	± 50
6th	—	20	—		Late		
7th	—	20	—		morning	1464	—
8th	—	34	—		? Afternoon	1545	—
9th	Morning	72	± 1	4th	Morning	1730	± 50
	Afternoon	78	± 1	5th	Morning	1526	—
13th	—	323	—		Late		
14th	—	357	—		afternoon	1820	± 40
15th	—	360	—	7th	Early		
16th	—	360	—		morning	1790	± 30
17th	—	354	—		Late		
30th	—	361	± 5		morning	1555	± 40
				9th	Morning	1656	± 50
Nov. 5th	—	371	—	13th	Afternoon	1609	± 50
13th	—	400	—	14th	Morning	1680	± 100
17th	—	455	± 5	15th	Morning	1470	± 10
22nd	Afternoon	462	—	16th	Morning	1530	± 50
23rd	Morning	485	—	17th	Morning	1520	± 50
24th	Morning	452	—	18th	Morning	1590	± 20
25th	Morning	476	—	20th	Early		
26th	—	475	—		afternoon	1693	± 75
27th	Morning	531	—		Late		
28th	Morning	497	—		afternoon	1978	± 50
30th	Morning	535	± 15	22nd	Morning	2430	± 100
				23rd	Morning	2500	± 200
Dec. 2nd	Afternoon	545	± 50	27th	Afternoon	c.2500	± 300
3rd	Morning	518	± 10	28th	Afternoon	c.2800	—
5th	Morning	510	± 30	29th	Morning	c.3500	± 500
7th	Morning	556	± 30	30th	Mid-		
9th	Morning	535	± 10		afternoon	2630	± 50
12th	—	607	—				
13th	Morning	598	± 10	Feb. 2nd	Morning	2776	± 50
14th	Morning	623	—	7th	Morning	2470	± 300
16th	Morning	676	± 20	9th	Morning	2640	± 100
17th	Morning	642	± 20	13th	Morning	2150	± 100
18th	Morning	638	± 10	14th	Afternoon	2260	± 50
19th	Morning	662	± 10	17th	Morning	2470	± 50
20th	Morning	570	± 20	21st	Morning	2700	± 40
21st	Morning	564	± 10	28th	Morning	1726	± 50
23rd	Morning	540	± 10				
	Afternoon	630	—	Mar. 1st	Morning	1712	± 20
24th	Morning	610	± 10	2nd	Morning	1890	± 100
	Afternoon	680	—	3rd	Morning	1616	± 50
26th	—	712	—	4th	Morning	1543	± 30
28th	Morning	660	± 20	5th	Morning	212	± 2
29th	Morning	673	± 10	6th	Morning	77	± 1
30th	Morning	555	—	8th	Morning	1	—
31st	Morning	370	± 30	9th	Morning	1	—
	Afternoon	780	—	12th	Morning	4	—
				15th	Morning	4	—

The Proportion of Immature Birds

Observations have again been made of the numbers of young birds present in the flock, and the size of family parties ; these have tended to diminish confidence in the results previously obtained. It has been established that estimates of the proportion of immatures in the flock as a whole, which are based on counts of sample portions only, may be subject to error so large as to render such estimates useless for purposes of comparison. There is a tendency for families to aggregate, so that the distribution of young birds within the flock is far from random. If it is possible to examine the whole flock this source of error is, of course, eliminated, but this has not been found practicable when the total number of geese exceeds a thousand or so. A method of sampling which will increase the accuracy of estimates is being sought.

The data on family size are tabulated below. The absence of significant differences between the means for each month would seem to indicate that the families arriving at the New Grounds after Christmas were little, if at all, different in size from the earlier arrivals. No counts were made in November. The 'family' is here equivalent to the number of young in each party, excluding the adults. In compiling these data parties with three or more attendant adults were omitted.

TABLE IV
FAMILY SIZE IN WHITE-FRONTED GEESE

Period	No. of Families	Size of Family							Mean Size	σ_m (= standard error of the mean)
		1	2	3	4	5	6	7		
October ..	7	0	2	3	1	0	1	0	3.29	0.46
December ..	45	4	9	16	5	8	3	0	3.29	0.21
January ..	60	5	14	19	12	10	0	0	3.30	0.15
February ..	33	3	9	6	8	5	1	1	3.09	0.26
Whole season ..	145	12	34	44	26	23	5	1	3.25	0.11

Dominance Relationships

The Resident Biologist, Mr. H. J. Boyd, contributes the following note on one of the special studies he has been undertaking during the past winter:

As a first step in an examination of the social structure of the flocks of wild geese, a study of dominance relationships has been begun. This aspect of social behaviour was selected for two reasons: first that the subject has already received a good deal of attention, and secondly that it permits of quantitative, or quasi-quantitative treatment. The latter reason is important because the use of numerical data capable of statistical evaluation minimises the need for intuitive skills in the observer.

The existence of dominance relations (i.e., super- and sub-ordination) between individuals in flocks of domesticated birds, especially poultry, has long been appreciated, and during the last 30 years a number of detailed investigations



into their nature have been made. The great majority of such studies have been made on birds in captivity, and the exceptions have related mainly to passerines and game birds. No extensive study appears to have been made with large flocks of wholly wild birds. Hence the desirability of an attempt to study dominance in the geese on the Dumbles. It is necessary to write of 'an attempt' because there are considerable practical difficulties in observing groups of hundreds or thousands of birds. All studies of dominance have depended on the ability of the observer to distinguish between the individuals in the group (usually by means of colour-ringing). The colour-marking of the whole of the wintering flock of White-fronts is an unlikely eventuality, and even if it were achieved it would be impossible to study the relationships of all the birds with each other. It is necessary, therefore, to resort to some kind of sampling, and in the work carried out last winter the procedure followed was to pick out readily identifiable birds (such as, for example, those with unusual breast-markings or other peculiarities of plumage) and follow them for as long as possible, noting the nature and frequency of their contacts with neighbouring birds and the results of their conflicts.

The accumulation of such records for individuals, *qua* individuals, is unlikely to produce much of value, but note was taken of the family status (i.e., whether adult or juvenile, paired or single, size of family if paired) of all the birds studied and it became apparent that this was important in determining the attitude of the individual to its neighbours, and their attitude to it. The detailed working out of relationships on these lines will require the accumulation of a large number of observations. The limited information so far available indicates that birds initiating conflicts are almost always successful and that adults with families take the initiative more than those without young, and much more than do single birds.

It might seem that dominance should be regarded as something tending to break up a group rather than keep it together, but there are arguments suggesting that it has survival value. In any event there must be other cohesive factors, especially those which hold together the family as a unit. Such possibilities as the use of signal movements and calls have still to be fully investigated, and it is here that the geese in the collection should be of use for experimental checking of observations on the wild birds.

Marked and Distinguishable Geese

The White-front gander with the unusual head-markings known as 'White-eyebrows' appeared for the third consecutive season on 10th January (N. G.

Blurton Jones) and remained at least until 22nd February. This time, it was unpaired whereas throughout the previous season it was paired.

Rings were seen on White-fronts indicating that four ringed birds were present during the winter. These are probably some of the 15 ringed on the original rocket-net occasion on 18th February, 1948. They were as follows:

- (a) Adult (probably ♀) with mate and three young: metal ring right leg, seen 18th January, 22nd February.
- (b) Adult (no note of family): metal ring right leg. (1204--) seen 7th February.
- (c) Adult (? sex) with mate and four young: metal ring right leg, seen 8th February.
- (d) Adult, perhaps paired but without young: metal ring *left* leg, seen 22nd February.

During the season 1947-48 all birds were supposedly ringed on the right leg. Bird (d) is therefore either one ringed elsewhere (we have no information that White-fronted geese of this subspecies have been ringed elsewhere) or was ringed on the left leg in error—a possibility in view of the general haste which follows a catch with the rocket-net.

Rocket-nets

On 27th February the nets were thrown over 71 Geese. They were ringed and marked with red dye (Rodamine) on the tail coverts (upper, lower and sides). The rings were standard B.T.O. No. 5 clip type, dyed red and anodized. They were put on the right legs of the geese. Two of the 71 which seemed to have been slightly damaged by the nets were brought into the pens. The remainder were released immediately.

The geese flew in over the Dumbles again before the last birds had been extricated from the net, and on the following day the main flock was feeding about 300 yards from the scene of operations.

Ringed and dyed birds were seen frequently during the remaining week before the departure of the geese on the northward migration. The red dye appeared to have washed out considerably on some of them. Further experiments on a more lasting dye are in progress.

Migration Routes

The following notes have been received concerning the movements of geese in March 1950 which may have been on their way from the New Grounds.

4th March. 5.15-5.30 p.m. Stroud, Glos.

'Two V's flying north.' Reported by H. Bassett.

4th March. 6 p.m. Burford, Oxon.

'Several hundreds, travelling in an easterly direction, at a not very great height. They were formed in about six skeins'. Reported by P. Thomas.

8th March. Early afternoon. Codsall (west of Wolverhampton).

'Hundreds, flying from west to east'. Reported by the Birmingham and West Midland Bird Club.

8th March. 3.15 p.m. Sutton Coldfield.

'150-200 birds, flying east'. Reported by the Birmingham and West Midland Bird Club.

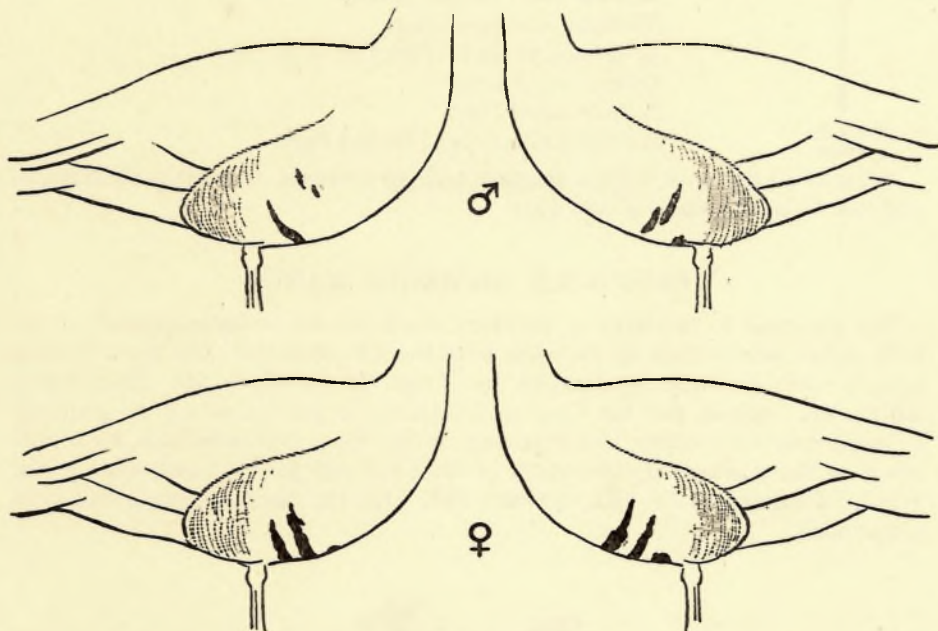
There is some possibility that flocks of White-fronts in Cheshire and Lancashire may have been augmented from the Severn during the first week of March.

GREENLAND WHITE-FRONTED GOOSE (*A. a. flavirostris*)

A family party of two adults and three young was first noticed on 9th November, and remained throughout the winter. The birds were last seen on 3rd March (possibly 5th March). One of the young birds had a malformed bill, with lower mandible projecting beyond the upper. The arrival of this party coincided with the arrival of a similar family party—also of five—which spent the winter on Bellfields Reservoir, Staffordshire.

LESSER WHITE-FRONTED GOOSE (*A. erythropus*)

An adult pair was first seen 6th January and remained until 1st March. Their breast-markings are figured below. This is the first time that two of these birds have ever been recorded in company in this country.



An immature (the first immature recorded since the original bird was shot in 1881 in Northumberland), was seen on the following dates: 15th January (R. S. R. Fitter, J. Fisher, J. S. Huxley), 22nd January to 12th February (H. H. D., P. S., P. T. P., H. J. B.), 1st March (E. Overend, P. Glasier).

These three birds are the tenth, eleventh and twelfth authentic records for the species in this country.

GREYLAG GOOSE (*A. a. anser*)

A single bird, probably immature, was present from 3rd January till 1st March. Two were reported seen at once in widely separated parts of the flock on 1st March, and thereafter one was present, possibly the new one, until 15th March.

BARNACLE GOOSE (*Branta leucopsis*)

One; adult present from 5th November till 27th February.

CANADA GOOSE (*B. c. canadensis*)

Five in pens from 27th March to 13th April,

VEGETATION OF THE DUMBLES

A preliminary study of the botany of the principal feeding ground of the geese has been made by Mrs. M. L. Davis and Mr. I. W. Evans. The following species of *Gramineæ* were recorded on the Dumbles and the strip of vegetation now in process of formation on the mud bank (scientific names from British Ecological Society's "Check List of British Vascular Plants").



*Puccinellia
maritima*

- Phleum pratense* Linn.
Agrostis tenuis Sibth.
Holcus lanatus Linn.
Spartina townsendii Groves.
Lepturus incurvus (L.) Druce.
Hordeum nodosum Linn.
Agropyron pungens (Pers.) R. & S.
Festuca ovina Linn.
Festuca rubra Linn.
Puccinellia maritima (Huds.) Parl.

A list of all plants is being compiled with an estimate of relative abundance, and will be published at a later date.

PROPOSED BOMBING RANGE

The proposal to establish a bombing range on the roosting ground of the wild geese, with a part of its circle covering the Dumbles—the main feeding ground—was strongly opposed by the Trust. In its efforts the Trust found widespread support and the Council is anxious to put on record its gratitude to those who took action in Parliament, in the Press and elsewhere. As a final result of these efforts the Secretary of State for Air gave an assurance in the House of Commons on 19th October, 1949, that the whole proposal had been abandoned.

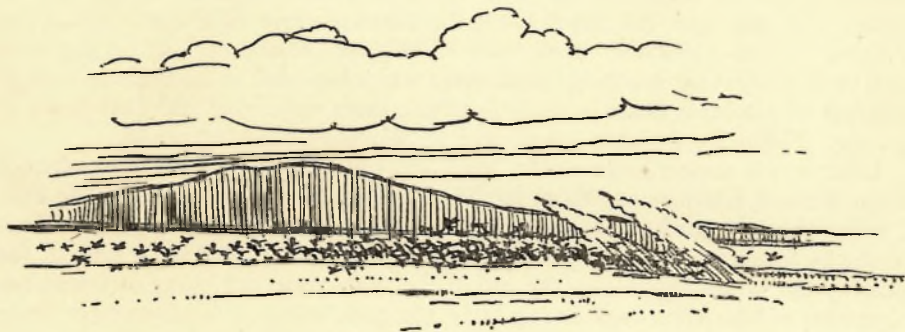


DISTURBANCE BY AIRCRAFT

Although the threat to open a bombing range on the estuary has happily been averted, the disturbance of the geese by aircraft was nevertheless very great. For some reason wild geese, and particularly White-fronted Geese¹ do not become used to aeroplanes. They take wing at once in great alarm at the approach of any aircraft which is heading towards them at a height of less than 5,000 feet and within a mile. This is particularly noticeable in the early part of the season when the flock is not very large. The geese appear to develop a kind of neurosis and fly out to the mudflats where they fancy themselves more secure. So serious did this disturbance become during November and December that the geese

¹ Barnacle Geese behave in the same manner.

were kept continuously off their feeding grounds by day and became largely nocturnal. An approach was made to the Air Ministry and to the Ministries of Civil Aviation and Supply in order to try to reduce the disturbance, and the situation was slightly improved. It has been observed for several seasons that the geese are less easily disturbed when the flocks are large. They seem to take confidence from their numbers. Thus the aircraft, although hardly less numerous after the arrival of the main flocks in mid-January, constituted a much reduced disturbance and the geese returned to daylight feeding on the Dumbles. Even then, however, they normally rose at the approach of aircraft. This is usually disastrous for the watchers, because the geese settle further from the sea wall and the observation huts. By the time that they have fed in towards the bank the next aircraft has raised them again, so that in the average day of good flying weather serious observation of the geese has become almost impracticable. It is greatly to be hoped that, with the co-operation of the Ministries concerned, it will be possible to keep the area more free from low-flying aircraft during next winter. In view of the unique opportunities offered by the Trust in the scientific and educational field if this disturbance can be averted, it would seem that the effort is fully justified.



Rocket Nets. Scotland, Spring 1950

MARKING OPERATIONS AWAY FROM THE NEW GROUNDS

Between 21st and 28th March a team from the Trust consisting of the Director, H. J. Boyd, Lord G. Percy, R. J. F. Taylor and Miss P. Talbot Ponsonby, ringed 36 geese on the Solway Firth by means of the rocket-nets. Four small catches were made: 7 Pink-feet, 3 Greylags, 25 Greylags, 1 Greylag. The birds were ringed with red anodized rings on the right leg, and a number of them had the tail coverts dyed purple with gentian violet. With the co-operation of the International Wildfowl Research Institute, ornithologists throughout Europe, were informed of these catches and of the White-fronts marked on the New Grounds in order to make the best use of even this small sample.

Although the catch in Scotland was disappointingly small, owing to a number of material failures and mishaps, so much was learnt and so much improvement in the equipment was planned that much larger catches are confidently expected next season.