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CONTENTS

	PAGES
The birds of Tees-side ... ... by P. J. STEAD	1-59
Ornithological report for Northumberland and Durham for 1963 ... ... by D. G. BELL	61-94
Ornithological report for the Farne Islands for 1963 ... by GRACE HICKLING	95-108
Norwegian-ringed mandarin drakes in Northumberland by THE VISCOUNT RIDLEY	108
Roe deer in Northumberland and Durham ... ... by G. A. COWEN, THE VISCOUNT RIDLEY and H. S. TEGNER	109-120
The grey seals of the Farne Islands. Report for the period 1st May 1963 to 31st March 1965 ... ... by J. C. COULSON and GRACE HICKLING	121-139
Observations on the occurrence of *Cercaria patellae* Lebour in *Patella vulgata* L. on the Inner Farne ... ... by M. L. H. THOMAS	140-146
The Permian outcrop at Down Hill, Co. Durham ... by J. FERGUSON	147-151
Ornithological report for Northumberland and Durham for 1964 ... ... by D. G. BELL	153-180
Ornithological report for the Farne Islands for 1964 ... by GRACE HICKLING	181-196
Book Review	196
Contributions to the biology of the Inner Farne ... by T. E. THOMPSON, S. TYRELL SMITH, M. JENKINS, K. BENSON-EVANS, D. FISK, G. MORGAN, J. E. DELHANTY and A. E. WADE	197
Records of the Phryganeidae (Trichoptera) in northern England 1961—1964, with a summary of the distribution of British species ... ... by R. P. BRAY	226

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ILLUSTRATIONS

		PAGE
Plate 1	Cowpen Marsh - winter landscape	*facing* 1
,, 2	Seal Sands, Tees estuary	,, 7
,, 3	Sandwich terns, Brownsman	,, 61
,, 4	Roe deer	,, 109
,, 5	Seal No. A0438 swimming in Hunnebostrand harbour	,, 121
,, 6	(1) *Pygopterus humboldtii* Ag. Trunk of a specimen collected from the clay bed of the Marl Slate at Down Hill. Specimen P.44382 British Museum (Nat. Hist.) (2) Natural cast of the posterior portion of the above. Specimen P.44383 British Museum (Nat. Hist.)	,, 147
,, 7	Greenfinch taken in the grounds of the Hancock Museum 17 June, 1927 by the late T. Russell Goddard (then Curator)	,, 153
,, 8	Some common Inner Farne marine animals (1) Colonial sea-squirt *Botryllus schlosseri*, showing the grouping of individuals around common exhalent apertures (2) Active cowry *Trivia arctica* (3) Edible sea-urchin *Echinus esculentus* (4) Colonial polyzoan *Flustrella hispida*, showing the feeding nets of many of the individual polyps extended	,, 197
,, 9	(1) The shore of transect 1, area F (2) The shore of transect 2, area E; observations being made on flood tidal elevation over marked stations (3) The quartz dolerite rock of the Inner Farne shores, showing the effects of weathering	,, 203
,, 10	(1) Pool 3, area D, showing proximity to the cliff-top (2) Pool 6, area D, showing the relatively smooth rock of the pool-bottom, and the proximity to the cliff-top (3) Tidal stream producing dangerously disturbed water off the west tip of the Inner Farne in area D ...	,, 203

MAPS, DIAGRAMS AND FIGURES

		PAGE
The birds of Tees-side		
Map of Tees-side		*facing* 60
Roe deer in Northumberland and Durham		
Map 1	Distribution of roe deer in Northumberland and Durham, 1 February 1963	,, 113
Map 2	Spread of roe deer in Northumberland and Durham prior to 1925	,, 112
Map 3	Spread of roe deer in Northumberland and Durham, 1925 to 1945	,, 112
The Permian outcrop at Down Hill, Co. Durham		
Fig. 1	Northern end of quarry on Down Hill, showing the thinning of the Lower Limestone and the Yellow Clay member of the Marl Slate ...	148
Fig. 2	Southern end of quarry on Down Hill, showing apparent merging of the Reef Limestone and the Lower Limestone	149
Contributions to the biology of the Inner Farne		
Fig. 1	Map of the Inner Farne, showing the collecting areas and the positions of the two belt transects	,, 200
Fig. 2	Tidal flow over the stations of transect 1 on the morning flood and afternoon ebb tides of 26 March 1963	205
Fig. 3	Tidal flow over the stations of transect 2 on the mid-day flood tide of 27 March 1963	206
Fig. 4	Fauna and flora over belt transect 1, in area F	,, 206
Fig. 5	Fauna and flora over belt transect 2, in area E	,, 207
Fig. 6	Some Inner Farne pools	211
Records of the Phryganeidae (Trichoptera) in northern England 1961—1964, with a summary of the distribution of British species		
Map 1	*Agrypnia pagetana*	232
Map 2	*Trichostegia minor*	233
Map 3	*Oligotricha clathrata*	234
Map 4	*Oligotricha ruficrus*	235
Map 5	*Phryganea grandis*	236

		PAGE
Map 6	*Phryganea striata*	237
Map 7	*Phryganea obsoleta*	238
Map 8	*Phryganea varia*	239

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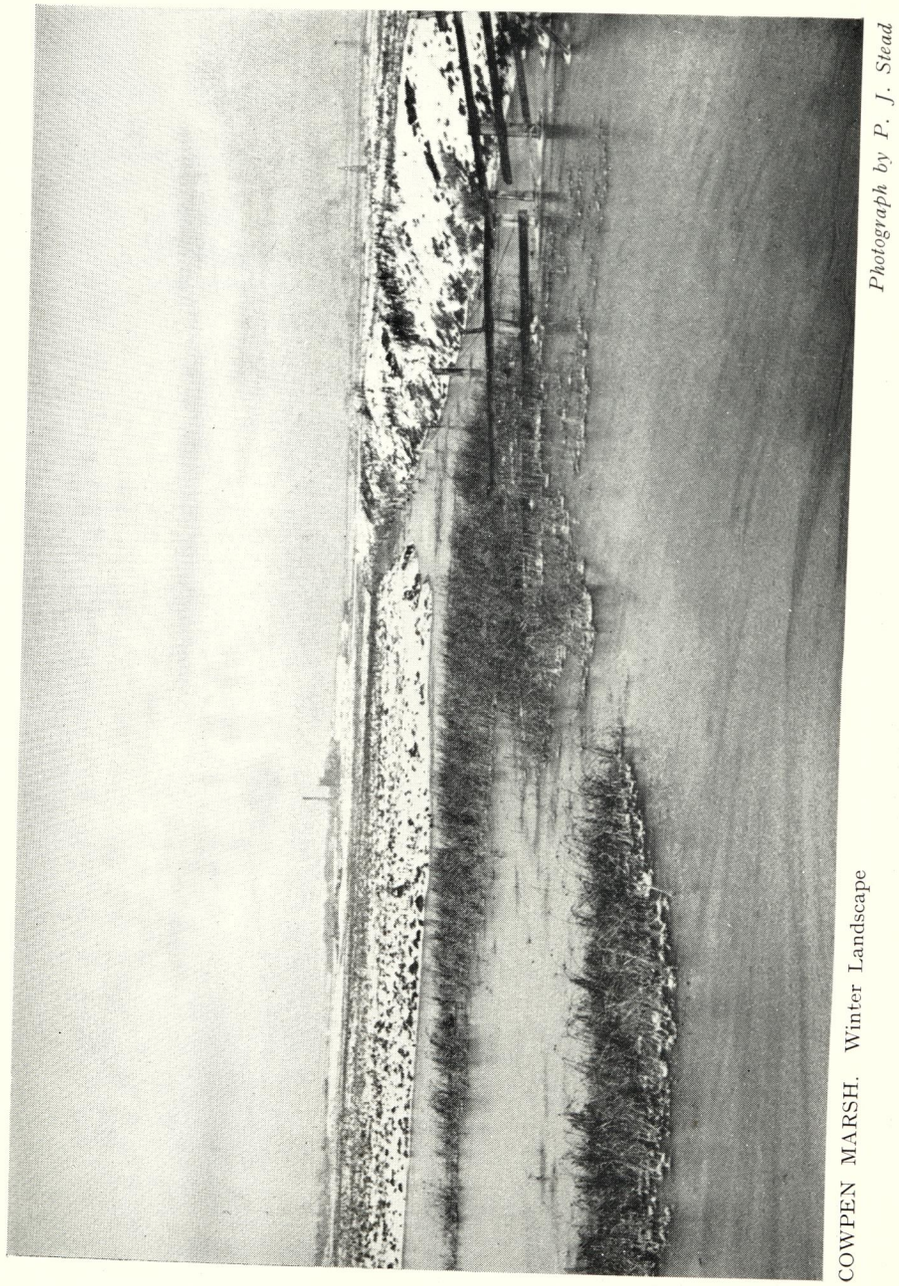
PLATE 1



Photograph by P. J. Stead

COWPEN MARSH. Winter Landscape

THE BIRDS OF TEES-SIDE

by

P. J. STEAD

INTRODUCTION

Ornithologists on Tees-side have long suffered from the fact that the river itself forms the boundary between Yorkshire and Durham and for this reason observations from opposite banks of the river are published in different county reports. Excellent as these reports are, under these circumstances it is difficult for anyone to get a balanced picture of the bird life of the region and there has been a long-felt need for a check-list dealing with the area as a whole.

The aim of this work is to bring up-to-date the list published by Almond, Nicholson and Robinson (1939) on the birds of the Tees Valley in so far as the estuary and coastal plain are concerned and to treat the species at greater length than has hitherto been possible.

Since 1950 there has been a considerable increase in the number and capability of observers resident in the area. Consequently, in the last decade, it has been possible to obtain a much fuller and more reliable picture of the bird life of Tees-side. Indeed some species, formerly considered to be rare visitors, are now known to occur annually, whilst others have proved to be more regular than was supposed.

The boundaries of the area considered are shown on the map and all records up to the end of December 1961 are included. Species are arranged in the order given in the *Check-list of the birds of Great Britain and Ireland* (1952), published by the British Ornithologists' Union, although the Latin and English names are those in current usage.

RECENT INDUSTRIAL AND URBAN DEVELOPMENTS AND THEIR EFFECT ON THE BIRD LIFE

The industrialisation of the Tees estuary and the growth of Middlesbrough, Stockton, Billingham and, to a lesser extent, West Hartlepool, have brought about many changes in the bird life of the area.

Since 1950 industry has spread rapidly along the south bank of the estuary, so that today Middlesbrough and Redcar are almost linked by a vast complex of steel plants, chemical works and industrial estates. On the north bank of the river, factories have sprung up

alongside the Portrack road and another steel plant has arisen between Greatham and West Hartlepool. Most of this development, however, has taken place in flat arable country which was not of any particular ornithological interest.

On the shores of the estuary itself a new oil wharf has been built at Teesport and an oil refinery is at present under construction on reclaimed land on the opposite bank. As yet, a large area of the mudflats known as Seal Sands, which is vital to much of the bird life of the estuary, remains untouched. These mudflats are scheduled for eventual reclamation, but are likely to remain in their present state for some years to come. On the other hand, the Bran Sands, on the Yorkshire side of the river, which ten years ago teemed with waders and ducks, now lie deserted, because effluents that are discharged there have killed off the shellfish and animal life on which the birds fed.

In line with the industrial expansion and the slum clearance schemes, the housing estates have sprung up around the major centres of population. Much of the coastal plain south and south-east of Middlesbrough is now built over, whilst Stockton is expanding to the north and west.

The two breeding species which have obviously benefited most from the urban spread of Tees-side are the house-sparrow and the starling, but the house-martin, too, has colonised some of the housing estates and new school buildings.

Although no accurate estimates of the winter gull population are available it is fairly safe to say that this must be at least double what it was fifty years ago. The huge rubbish tips at Middlesbrough, Coatham and Seaton Carew are partly responsible for this in that they provide an ever-increasing food supply within easy reach of the estuary.

On the debit side, though, the areas suitable for such species as the skylark, meadow-pipit, yellow hammer, greenfinch, dunnock and corn-bunting have been considerably reduced, at least in the southern part of the area. The pollution of some of the freshwater marshes at the turn of the century led to the disappearance of the water-rail and the spotted crake as breeding species. The filling in and drainage of these areas has continued, resulting in a reduction in the populations of snipe and redshank and the extinction of the reed-warbler.

Increasing human disturbance, particularly on the beaches, has become a serious factor in recent years. The little tern and ringed plover now have great difficulty in rearing any young, at least on their traditional sites. Human disturbance of the breeding site may also be the reason for the tufted duck and pochard ceasing to breed.

PRINCIPAL AREAS OF ORNITHOLOGICAL INTEREST

CRIMDON DENE — A steep-sided valley with good cover for woodland species and passage-migrants.

HARTLEPOOL — The promontory of Hartlepool is the best point on the Tees Bay for observing coastal movements of sea-birds. The private and public gardens, the bowling green and tennis courts, give good cover for passage-migrants. Turnstone and purple sandpiper winter on the rocks there.

SEATON CAREW — In winter the mussel bed opposite the Staincliffe Hotel attracts a resident flock of scoter and other sea-ducks.

NORTH GARE — The smaller of the two breakwaters at the mouth of the Tees. An ideal vantage point for watching movements of birds in and out of the estuary—divers, ducks, skuas, etc. The sea buckthorn growing on the sand dunes between North Gare and Seaton Carew affords excellent cover for passage-migrants, but is difficult to work.

SEATON SNOOK — A large sandspit within the estuary. This is the principal gull, tern and wader roost, as it remains uncovered at high tide.

GREATHAM CREEK — A tidal channel with areas of salting nearby.

COWPEN MARSH — A large tract of cattle-grazed pasture intersected by freshwater channels, lying west of the Port Clarence/Seaton Carew road. Excellent for passage-waders and ducks and the most interesting breeding area of the whole region.

SALTHOLME MARSH — Reclaimed salting now largely fresh marsh, lying mainly east of the Port Clarence/Seaton Carew road. Saltholme Pool, which lies on each side of the road, and the nearby Dorman's Pool, are excellent for waders at high tide.

RECLAMATION POND — An area of salting and open water, surrounded by a high slag wall. This is an important resting and feeding area for waders, particularly at high tide.

SEAL SANDS — An area of mudflats over three square miles in extent. At low tide this is the principal feeding ground of the waders and surface-feeding ducks. The Seal Sands, which are completely covered at high water, are best observed from the slag revetment wall.

HAVERTON HOLE — Two small reed-fringed pools lying east of Haverton Hill.

BILLINGHAM OR CHARLTON'S POND — A disused brickpond. A mixed flock of tufted duck and pochard winter there and it is occasionally visited by other species.

BILLINGHAM BOTTOMS — An area of fresh marsh between Billingham and Norton, now largely drained, although it still floods in winter.

SOUTH GARE — The larger of the two breakwaters at the mouth of the Tees. A fairly good vantage point for observing coastal movements of sea-birds, although not as good as Hartlepool. The promontory lacks adequate cover and passage-migrants seldom stay long. Turnstone and purple sandpiper winter on the tipped slag.

COATHAM SANDS — A fine stretch of sand some three miles long, particularly favoured by snow-bunting and sanderling. Knot and other waders concentrate there at high tide.

COATHAM MARSH — Originally an area of fresh and salt marsh which stretched from Coatham to Grangetown. Only remnants now remain, principally near Warrenby.

REDCAR — The coastal fields and dunes between Redcar and Marske are good for passage-migrants, excellent cover being afforded by the fox covert. Scoter and other sea-ducks congregate east of the pier.

SALTBURN AND WILTON WOODS — Areas of mature, largely deciduous woodland, which hold most of the woodland species to be found in north Yorkshire.

HUNTCLIFF — The northernmost headland of the cliffs of the Yorkshire coast, some 300 feet high. Fulmar, herring-gull, cormorant and house-martin breed there.

RUBBISH TIPS AT COATHAM AND SEATON CAREW — The principal feeding areas for the gulls. Glaucous and Iceland gulls occasionally visit them and hooded crows are regular visitors in winter.

DEFINITION OF TERMS

The following terms are used to denote the status of the various species :—

Breeding resident — Present throughout the year and breeds in the area.

Breeding summer-resident — Present every year between April or May, and August or September, and breeds in the area.

Summer-visitor — Visits the area between May and August, but does not generally breed. Summer-visitors, which have on occasion nested, are denoted by the phrase " has bred."

Winter-visitor — Visits the area between November and March.

Passage-migrant — Passes through the area in spring and/or autumn. In some cases the end of the spring passage merges with the beginning of the autumn passage.

Vagrant — Has occurred less than three times in the past hundred years.

Regular — Recorded annually.

Irregular — Although not recorded every year, its visits show some degree of frequency.

Abundant — Large numbers present.

Common — Easily found, often in substantial numbers.

Small numbers (applied to passage-migrants, winter and summer-visitors) — Numbers seldom exceed twenty.

ditto (applied to residents and summer-residents) — Difficult to find, local.

Scarce — Less than five records in the past decade.

Rare — Implies isolated occurrences.

It should be borne in mind that the status of any particular species given in this check-list applies only to the coastal plain of Tees-side ; it does not necessarily hold good for Cleveland and south-east Durham generally. For example, the red grouse, which is a common resident of the north Yorkshire moors, only ten miles inland, is classified here as a vagrant because there is only one record for the coastal plain.

CHECK-LIST OF THE BIRDS OF TEES-SIDE

1. Black-throated Diver *Gavia arctica*

An irregular passage-migrant and winter-visitor to the bay ; in small numbers, Sept. to Apr.

Essentially a bird of the shallow inshore-zone, the black-throated diver seldom ventures inside the estuary. Annual occurrences usually number less than 5 and in some years none is recorded, this being the rarest of the divers known to visit the Tees Bay. Some are probably overlooked, however, as specific determination of divers is difficult at long range. A party of 4 off Saltburn on 13 Apr. 1939 (WKR) is worthy of special mention.

2. Great Northern Diver *Gavia immer*

A regular passage-migrant and winter-visitor to the bay ; in small numbers, Sept. to May.

A fairly frequent visitor to the Tees Bay in winter, individuals occasionally entering the river mouth and even Hartlepool dock basin. In spring and autumn the species is often associated with red-throated diver movements in the bay, when as many as 10 have been recorded in a day. Adults in breeding plumage have occurred in spring and twice recently in mid-summer, but it is likely that the majority of the visitors are immature birds.

4. Red-throated Diver *Gavia stellata*

A regular passage-migrant and winter-visitor to the bay and estuary ; common, Sept. to May ; occasional in summer.

Like the other divers the red-throated is principally a bird of the shallow inshore-zone, although it is frequently recorded inside the estuary and has even occurred

on Billingham Pond. Movements of this species offshore in spring and autumn seldom reach the spectacular proportions of those at Spurn, but counts of passing birds at Hartlepool have exceeded 50 in a day. Over 95% of the divers recorded in the Tees Bay are of this species.

5. Great Crested Grebe *Podiceps cristatus*

A regular passage-migrant and winter-visitor to the bay and estuary; in small numbers, Sept. to Apr.; occasional in summer.

This species is now a much more frequent visitor than at the turn of the century when the British population was almost exterminated by the demand for grebe feathers. Some 5 to 10 occur annually in the bay and estuary, the largest party recorded in the last decade being 3 off Greatham Creek in Feb. 1954. It has occurred in summer.

Breeding was attempted at Billingham Pond in 1944, but the eggs were taken.

6. Red-necked Grebe *Podiceps griseigena*

An irregular passage-migrant and winter-visitor to the bay and estuary; in small numbers, Oct. to Apr.

Between Jan. 1953 and Dec. 1961 at least 16 red-necked grebes are known to have visited the Tees Bay and estuary and whilst none was recorded in 1954, 1958 or 1959, it is likely that odd birds occur annually. A bird off Hartlepool on 22 Apr. 1957 was in full breeding plumage (AV). During severe weather in the early months of 1891 and 1895 Nelson (1907) recorded flocks of red-necked grebes on the sea off Redcar.

7. Slavonian Grebe *Podiceps auritus*

An irregular passage-migrant and winter-visitor to the bay and estuary; scarce.

Nelson stated that this species was an annual visitor to the coast, but this is certainly not the case today. Records since 1907 are:

Dec. 1931: 1, Billingham Pond (Almond, Nicholson and Robinson, 1939)
Nov.-Dec. 1932: 1, Billingham Pond (Almond, Nicholson and Robinson, 1939)
20 Feb. 1947: 1 dead, Greatham Creek (PLH)
2 Feb. 1950: 1, South Gare (KB)
18-28 Feb. and 24-28 Mar. 1954: 1, Greatham Creek (AB, PJS)
26 Feb. 1956: 1, Greatham Creek (PJS, AB, BJC)
5 Jan. 1957: 1, North Gare (AV)
5 Mar. 1961: 1, North Gare (DSS)

8. Black-necked Grebe *Podiceps nigricollis*

An irregular passage-migrant and winter-visitor to the bay and estuary; scarce.

Records since 1907 are:

13 Nov. 1908: 2 shot from a party of 3 off Redcar Rocks (Chislett, 1952)
22 Feb. 1947: 1 shot, South Gare (AB)
11-13 Aug. and 21 Oct. 1948: 1, Billingham Pond (DRS)
14 Feb. 1954: 1, Greatham Creek (KB)
22-27 Aug. 1954: 1, Saltholme Pool (PJS, AB, DSS)
15 Apr. 1956: 1 in breeding plumage, Hartlepool Docks (RT)
14-15 Dec. 1957: 1, Hartlepool timber ponds (PJS, BJC, DGB)
15 Jan. 1961: 1, Hartlepool (PR, DSS, JVH)

PLATE 2



Photograph by P. Evans

SEAL SANDS, TEES ESTUARY

9. Little Grebe *Podiceps ruficollis*

A breeding resident and regular winter-visitor to the fresh marshes and ponds; common.

A few pairs breed annually at Billingham Pond and Haverton Hole. There is also a regular winter flock on Hartlepool timber ponds, birds occasionally visiting the estuary, Cowpen and Coatham Marshes.

12. Leach's Petrel *Oceanodroma leucorrhoa*

An irregular passage-migrant to the bay: rare.

This petrel is a pelagic species, normally staying well offshore, but it is subject to "wrecks" in extremely severe gales. The last major "wreck" in Britain occurred in Sept. 1952 when Teesmouth was inadequately covered by observers. Records since 1907 are:

*Sept. 1914: 1, Cowpen Marsh
27 Sept. 1932: 1 picked up near Middlesbrough (Almond, Nicholson and Robinson, 1939)
22 Oct. 1955: 1, South Gare during a N. gale (PJS)
27 Oct. 1960: 1, Hartlepool (KB)

14. Storm-Petrel *Hydrobates pelagicus*

An irregular passage-migrant to the bay; rare.

This species is subject to "wrecks" in extremely severe gales although none has occurred in recent times. Normally the oceanic storm-petrel stays well offshore. Records since 1907 are:

June 1908: large numbers 5 m. offshore (Chislett, 1952)
29 Oct. 1927: 2 over Bran Sands after a W. gale (Almond, Nicholson and Robinson, 1939)
10 Nov. 1955: 5, Hartlepool Docks, and 1, Seaton Carew in calm misty weather (PLH)
19 Oct. 1961: 1, Hartlepool in a N. gale (ALC)

16a. Manx Shearwater *Procellaria puffinus puffinus*

A regular passage-migrant offshore: in small numbers, Apr., May, Sept. and Oct.; common, June to Aug.

The oceanic shearwaters seldom venture far inside the Tees Bay, even less the estuary; however, onshore winds in July and Aug. often produce spectacular movements of Manx shearwaters off Hartlepool. Presumably these birds are on foraging expeditions from the Scottish colonies though they may include elements of a non-breeding population. On several occasions counts of passing birds have exceeded 70 in an hour, no less than 419 being recorded at Hartlepool on 30 Aug. 1959 (JVH, RAM). A bird at Redcar on 18 Jan. 1888 (Nelson, 1907) and 2 there on 12 Feb. 1955 (DRS) were unusually early.

16b. Balearic Shearwater *Procellaria puffinus mauretanicus*

Status obscure, probably an irregular passage-migrant offshore, Aug. to Oct.; rare.

There is a single satisfactory record:

4 Oct. 1959: 3 Balearic shearwaters with 3 typical Manx shearwaters, off North Gare (VFB)

19. Great Shearwater *Procellaria gravis*

An irregular passage-migrant offshore ; rare, but probably more frequent than was formerly supposed.

The great shearwater breeds on Tristan da Cunha and summers in the North Atlantic. There are 3 records for the Tees Bay previous to 1907, 1 of these in Jan. More recent records are :

18 July, 1931 : 2 some 3 m. off Teesmouth (Almond, Nicholson and Robinson, 1939)
29 Aug. 1959 : 1 flying north, Hartlepool (PJS, BJC, JVH)
20 Sept. 1959 : 1 flying south, South Gare (VFB)
10 Oct. 1959 : 1 flying south, Hartlepool (MB)

21. Sooty Shearwater *Procellaria grisea*

Now known to be a regular passage-migrant offshore ; in small numbers, Aug. to Nov.

The sooty shearwater breeds on the coast of South America and summers in the North Atlantic, some birds entering the North Sea. Records off Teesmouth are principally from Hartlepool and usually number about 5 annually, most of these being in periods of onshore winds. During a strong easterly gale on 28 Aug. 1959, 22 flew north off Hartlepool and 10 flew south (RTM, JN, PR). Birds rarely venture far inside the Tees Bay, but on 18 Aug. 1955 1 flew into the estuary and bathed off Seaton Snook (AB, BJC).
The first example of this species to be obtained in Britain was shot in the Tees Bay in Aug. 1828.

26. Fulmar Petrel *Fulmarus glacialis*

A breeding summer-resident at Huntcliff, Saltburn, and a regular passage-migrant to the bay ; common Feb. to Sept.

Prior to 1920, when birds began prospecting the nearby coastline, the fulmar was a rare and casual visitor to the Tees Bay. Today it is common in the bay from Feb. to Sept. and there are many breeding pairs on the cliffs south of Saltburn. In spring and autumn, counts of passing birds at Hartlepool have exceeded 500 in a day, spectacular movements of this order usually taking place in onshore winds. Single fulmars are occasionally recorded in winter.

27. Gannet *Sula bassana*

A regular summer-visitor and passage-migrant offshore ; common, Apr. to Oct. ; occasional in winter.

Gannets are most common in late summer when the birds follow the mackerel shoals into the Tees Bay. Large flights are a feature of most autumnal gales and on a number of occasions counts in excess of 500 birds in a day have been made from Hartlepool. Due to the protection afforded it at its breeding stations the gannet is now much more numerous than it was 60 years ago.

28. Cormorant *Phalacrocorax carbo*

A breeding resident at Huntcliff, Saltburn, and a regular visitor to the bay and estuary ; common.

Cormorants returned to their former nesting ledges on Huntcliff sometime during the first quarter of this century and about 20 pairs now breed there. In addition, there is a large non-breeding population in the bay and estuary, some of which originate from other colonies further north.

29. Shag *Phalacrocorax aristotelis*

A regular winter-visitor to the bay ; in small numbers, Sept. to May, increasing.

Essentially a bird of rocky coastlines, shags seldom venture inside the estuary and are most frequent about the Tees breakwaters and off Hartlepool. In Dec. 1954 a flock of 37, an unusually large party, was present off South Gare for about a month. Small coastal passages take place in spring and autumn.

30. Heron *Ardea cinerea*

A regular winter-visitor and passage-migrant to the marshes ; in small numbers, occasional in summer.

Herons, some of which are probably of continental origin, are frequently seen crossing the coast in autumn and gatherings of 10 to 15 are not unusual on Cowpen Marsh in Sept. Birds occasionally visit the coastal plain in spring and summer, although the nearest heronry is some 20 miles away.

37. Little Bittern *Ixobrychus minutus*

A vagrant of which there is a single record :

26 Sept. 1852 : 1 shot, Redcar (Nelson, 1907)

38. Bittern *Botaurus stellaris*

Now an irregular passage-migrant and winter-visitor to the marshes ; scarce. Probably bred on the Tees marshes prior to 1840.

Recent records are :

26 Oct. 1932 : 1 shot, Haverton Hill (Almond, Nicholson and Robinson, 1939)
1 Jan. 1947 : 1 picked up injured, Billingham Bottoms (OCH)
22 July 1949 : 1, Billingham Pond (DRS)
Nov. 1956 : 2 shot, Reclamation Pond and Haverton Hole (RP)
8 Feb. 1958 : 1 picked up dying, Stewart Park, Middlesbrough (PJS, AB)

40. White Stork *Ciconia ciconia*

A vagrant of which there are 2 records :

Spring 1830 : 2, Cowpen Marsh (Hogg, 1845)
Oct.-Dec. 1938 : 1 near West Hartlepool and later at Brambles Farm, Middlesbrough (Chislett, 1952)

41. Black Stork *Ciconia nigra*

A vagrant of which there is a single record :

Aug. 1862 : 1 shot near Greatham (Temperley, 1951)

42. Spoonbill *Platalea leucorodia*

An irregular summer-visitor to the marshes ; scarce.

Recent records are :

1929 : an immature female shot, Seal Sands (Temperley, 1951)
11 June 1941 : an adult, Seaton Carew (Temperley, 1951)
19 Apr. 1951 : an adult, Cowpen Marsh (Temperley, 1951)
15-17 June and 1 July 1956 : 2 adults, Cowpen Marsh and Seal Sands (BG PJS, AV, JRC)
14-24 May 1959 : an adult, Greatham Creek (AT, EGB, DGB)

43. Glossy Ibis *Plegadis falcinellus*

A vagrant of which there is a single record :

25 Nov. 1900 : An adult shot, Billingham Bottoms (Nelson, 1901)

44. [Flamingo *Phoenicopterus ruber*]

7-15 Feb. 1953 : 1, Reclamation Pond (DRS, PE)

This bird was thought to be an escape from captivity and probably the same individual which had been living on Texel prior to the inundation of the island on 31 Jan. 1953.

45. Mallard *Anas platyrhynchos*

A breeding summer-resident on the marshes ; common. A regular passage-migrant and winter-visitor to the estuary ; abundant.

The breeding population is now principally confined to the Cowpen/Saltholme region where some 10 pairs nest annually. Spectacular movements of mallard and other duck sometimes occur in autumn when migratory parties are driven against the coast by onshore gales. The resident winter flock in the estuary seldom exceeds 500, maximum numbers usually being present in Jan.

46. Teal *Anas crecca*

A regular passage-migrant and winter-visitor to the estuary and marshes, common ; occasional in summer ; has bred.

The maximum numbers of teal are usually present in the estuary in spring and early autumn, but the flock seldom exceeds 100. At these times birds on passage occur in the bay. Broods on the wing have been seen thrice in Cowpen Marsh in recent years.

47. Garganey *Anas querquedula*

A regular passage-migrant and summer-visitor to the marshes ; in small numbers, Apr. to Sept. ; has bred.

All recent records refer to the Durham side of the estuary, in particular to Cowpen and Saltholme Marshes. Breeding has been proved there on 4 occasions in the present century, the most recent being in 1957 when a brood of 5 was seen just on the wing. Single birds are occasionally recorded in mid-Mar. Even at the peak of the spring passage it is unusual for more than 5 to be present.

49. Gadwall *Anas strepera*

A regular passage-migrant to the estuary and marshes ; in small numbers, Mar. to Oct.

Before 1948 there were only 5 records for Teesmouth, involving 9 birds altogether. Today the gadwall is regarded as a regular passage-migrant with up to 6 recorded per year. No doubt, the increase in competent observers is partly responsible for this, although the species is generally more numerous than it was 30 years ago. The majority occur in Mar., Apr., Aug. and Sept., virtually all the recent records referring to the Durham side of the estuary. 4 gadwall flying north off Hartlepool on 4 Oct. 1961 (PR) is the largest party to be noted.

50. Wigeon *Anas penelope*

A regular winter-visitor and passage-migrant to the bay, estuary and marshes ; abundant ; occasional in summer.

Spectacular movements of wigeon sometimes occur in the spring and autumn, when migratory parties are driven against the coast by onshore gales. In Oct. and Mar. counts of passing birds at Hartlepool have reached 500 in a day under such conditions. In calm weather large flocks may settle in the Tees Bay. On 23 Sept. 1955 some 350 gathered off Seaton Carew, whilst no less than 430 were present there on 22 Oct. 1961. The resident winter flock in the estuary normally reaches a maximum of about 200 in Oct. and Mar., but has on occasion topped 300.

52. Pintail *Anas acuta*

A regular winter-visitor and passage-migrant to the estuary and marshes ; in small numbers ; has bred.

Small flocks of up to 20 pintail arrive in the estuary in Aug. and Sept., but few stay to winter. Numbers in Feb. seldom exceed 10, but in early Apr., at the height of the spring passage, as many as 30 may be present in the Saltholme area. Single pairs bred successfully in Cowpen Marsh in 1954 and 1961. Since 1959 the position has, however, been complicated by the introduction of feral stock to Rossmere Park, West Hartlepool, the young birds being allowed to remain full-winged.

53. Shoveler *Spatula clypeata*

A breeding summer-resident, a regular passage-migrant and winter-visitor to the estuary and marshes ; in small numbers.

2 to 4 pairs breed annually in the Cowpen region and birds are particularly numerous in late summer when the young are on the wing. A flock of 53 in the estuary on 23 Oct. 1961 (JAB), and 42 on the Reclamation Pond on 24 Aug. 1956 (AJV), are the largest parties recorded in recent years. A few birds winter in the estuary, numbers rising to about 10 in late Mar. Small parties on passage pass along the coast in spring and autumn.

54. Red-crested Pochard *Netta rufina*

A vagrant of which there is a single record :

*20 Jan. 1900 : a drake shot, Coatham Marsh (Nelson, 1907)

Any future records will be suspect due to the introduction of feral stock at Rossmere Park, West Hartlepool, in 1959, the young birds being allowed to remain full-winged.

55. Scaup *Aythya marila*

A regular winter-visitor and passage-migrant to the bay, estuary and marshes ; normally in small numbers ; occasional in summer.

Flocks in excess of 20 scaup are unusual in the estuary and winter peaks are often less than 10. During hard weather in early Jan. 1939, however, 250 were present off Coatham and 170 inside the estuary (MGR, WKR). There was a similar influx in Feb. 1954, when 250 gathered in Greatham Creek (AB, PJS). Essentially a saltwater species, small numbers of scaup are frequently associated with the autumn duck movements in the bay, though a count of 112 scaup flying north off Hartlepool on 18 Oct. 1958 was unusual.

56. Tufted Duck *Aythya fuligula*

A regular winter-visitor and passage-migrant to the ponds, bay and estuary; in small numbers; occasional in summer.

Tufted ducks usually appear on the estuary in periods of severe drought or frost when the local reservoirs are untenable—flocks seldom exceed 10 birds. In the autumn small numbers pass along the coast, frequently associating with the scoter flocks in the bay. Prior to 1939 a few pairs bred annually on Billingham Pond where up to 20 birds still resort in winter.

57. Pochard *Aythya ferina*

A regular winter-visitor and passage-migrant to the ponds, bay and estuary; in small numbers; occasional in summer.

Flocks of pochard usually occur on the estuary in hard weather or severe droughts and seldom exceed 10 birds. A few pochard pass along the coast in autumn, being more numerous in some years than others. 1, sometimes 2 pairs, bred irregularly on Billingham Pond in the first quarter of this century and up to 30 pochard still resort there in winter.

58. Ferruginous Duck *Aythya nyroca*

A vagrant of which there are 3 records:

17 Jan. 1850: 1 taken Coatham Decoy (Nelson, 1907)
23 Dec. 1876: 1 displayed for sale in Redcar was shot locally (Nelson, 1907)
3 Oct. 1878: 1 shot and another seen, Coatham Marsh (Nelson, 1907)

60. Goldeneye *Bucephala clangula*

A regular winter-visitor and passage-migrant to the bay and estuary; common, Oct. to Apr.

The winter peak in the estuary seldom exceeds 20 birds, but on 6 Mar. 1955 41 were present in Greatham Creek (AB, PJS). Birds are particularly numerous over the sea in Oct. and Mar., when the bulk of the passage takes place. However, no movement in recent years has quite equalled that of 5 Nov. 1961 when 63 flew north at Redcar in a watch lasting 65 minutes (DRS). There are 2 recent mid-summer records for the estuary.

61. Long-tailed Duck *Clangula hyemalis*

A regular winter-visitor to the bay and estuary; in small numbers, Oct. to Apr.

In winter, single birds and small parties of long-tailed ducks frequently associate with the resident scoter flocks off Redcar and Seaton Carew. 9 birds at Seaton Carew in Nov. 1957, 8 there in Dec. 1961 and 7 at Saltburn in Feb. 1958, are the largest flocks recorded. Adult drakes occur annually. This is essentially a marine species, but individuals sometimes visit the freshwater pools and reservoirs inland. Single birds were recorded on Billingham Pond in Dec. 1931 (Almond, Nicholson and Robinson, 1939) and on 25 Nov. 1961 (MS, PD).

62. Velvet Scoter *Melanitta fusca*

A regular winter-visitor and passage-migrant to the bay and estuary; in small numbers, Aug. to Apr.; occasional in summer.

Winter numbers in the bay seldom exceed 10 at any one time although 24 were present on 7 Apr. 1956 and 31 on 1 Jan. 1961. The velvet, like the common scoter with which it associates, is essentially a marine species and seldom ventures far inside the river mouth. The bulk of the passage takes place in Oct. and Mar.

64. Common Scoter *Melanitta nigra*

A regular winter-visitor and passage-migrant principally to the bay: abundant; frequent in mid-summer.

The resident winter flocks usually congregate off Seaton Carew and Redcar where the mussel beds are a great attraction. Peak numbers seldom exceed 250 at either place, but in Jan. 1951 the Seaton flock numbered 600. Some interchange occurs between the 2 parties. Counts of migratory movements have exceeded 300 in a day: e.g. 850 seen flying north off Hartlepool on 10 Aug. 1958.

67. Eider-Duck *Somateria mollissima*

Now a regular winter-visitor to the bay and estuary; in small numbers, Oct. to May; occasional in summer.

Nelson mentions only 6 occurrences of this species in the Tees Bay before 1907, a flock of 20 at South Gare on 2 Feb. 1905 being most unusual. Since 1950 the eider has become increasingly common and parties of up to 10 now occur regularly. There is little doubt that this is largely due to the protection afforded it at its breeding station on the Farne Islands. In Jan. 1958 34 eiders were present off Hartlepool and North Gare, the largest number so far recorded in the bay at any one time. Most of the visitors are ducks and immature birds, but adult drakes occur annually.

69. Red-breasted Merganser *Mergus serrator*

A regular winter-visitor and passage-migrant to the bay and estuary; in small numbers; occasional in summer.

A party of some 20 mergansers is usually resident off Crimdon Dene throughout most of the winter; elsewhere in the bay and estuary, however, numbers rarely exceed 5. 16 mergansers in Greatham Creek on 18 Feb. 1956 is the largest flock recorded inside the estuary. In 1954 and 1958 1 or 2 summered in the bay.

70. Goosander *Mergus merganser*

An irregular winter-visitor and passage-migrant to the bay and estuary; in small numbers, Oct. to Apr.

Between Jan. 1950 and Dec. 1961 there were 8 records of goosanders from the bay and estuary. The majority occur in Nov. when the bulk of the birds arrive in this country from Scandinavia, or in hard weather when the local reservoirs are frozen over. All the records refer to single birds or pairs.

71. Smew *Mergus albellus*

An irregular winter-visitor to the bay and estuary; scarce.

Essentially a freshwater species the smew seldom visits the bay and estuary. Recent records are:

10 Feb. 1937: a drake, Billingham Pond (Almond, Nicholson and Robinson, 1939)
28 Feb. 1954: a drake, Greatham Creek (AB, PJS)
26 Feb. 1956: a duck, Seaton Carew (AB, PJS)
5-19 Mar. 1956: a duck, Billingham Pond (ALC)
13 Jan. 1957: a duck flew south, Hartlepool (BJC, AV)
31 Dec. 1957: a drake flew north, South Gare (AV)

73. Sheld-Duck *Tadorna tadorna*

A breeding resident in the estuary and marshes; common. A regular winter-visitor and passage-migrant; abundant.

3 or 4 pairs breed in the slag retaining walls on the Durham side of the estuary and about 30 young are fledged annually. In addition, some 50 non-breeding adults are present throughout the early summer. These birds depart on their moult migration, probably to Germany, in July, returning in Oct. and Nov. A wintering population, perhaps of Baltic origin, swells the numbers until a peak is reached in Feb. or early Mar. Maximum counts in recent years have usually been in the order of 600, but in late Jan. 1960 over 1,000 were present in the estuary (DGB).

75. Grey Lag-Goose *Anser anser*

An irregular winter-visitor and passage-migrant to the estuary and marshes; in small numbers.

Satisfactory records of this species have been few in recent years:

12, 13 Apr. 1953: 1, Reclamation Pond (DRS, AB)
13 Jan. 1955: 1, Seal Sands (CJH)
31 Mar. 1958: 35 flew south with brent geese, Hartlepool (JKS, GP)
2 Jan. 1960: 13 flew south-east, South Gare (PS)
23 Apr. 1961: 1, Cowpen Marsh (PJS, ECG)

76. White-fronted Goose *Anser albifrons*

A vagrant of which there are 2 records:

27 Jan. 1884: 1 shot from a party of unidentified geese, Redcar (Nelson, 1907)
21 Feb. 1954: an adult off Greatham Creek (PJS, AB)

This species is probably a more regular visitor than the 2 records in the past century suggest. (A party of 31 whitefronts frequented Scaling Reservoir in Oct. 1959).

78a. Bean-Goose *Anser arvensis arvensis*

An irregular winter-visitor to the estuary and marshes; rare.

Records during the last century are:

*Early 1879: 1 shot from a flock of 15, Redcar (Nelson, 1907)
17 Nov. 1887: 1 shot, Marske (Nelson, 1907)
Dec. 1954: 1 shot from a flock of 20, Greatham Creek (PJS). 19 geese over Seal Sands on 27 Feb. 1955 were probably the remaining birds (BJC)

78b. Pink-footed Goose *Anser arvensis brachyrhynchus*

A regular passage-migrant; common Oct. and Nov. A regular winter-visitor to the estuary and marshes; in small numbers, Nov. to Apr.

Pinkfeet on their way to the Humber and Wash are a frequent sight over Tees-side in the autumn, occasionally as early as Sept. The skeins usually follow the Durham coastline and continue southwards overland from the vicinity of Middlesbrough. There is some interchange between the different wintering populations in Britain with a general movement towards the Solway in January. Small parties are not infrequent during the winter and spring, the birds sometimes alighting to spend a few days on the marshes and coastal fields.

79. [Snow-Goose *Anser hyperboreus*]

11 Sept. 1961: an adult, white phase, flew south off Hartlepool (PR)
27 Dec. 1961: an adult, white phase, flew south off North Gare in company with 2 Canada geese (PH, RJL)

These records no doubt refer to the same individual, a lesser snow-goose which was present on Scaling and Lockwood Beck Reservoirs from 12 June 1961 to 9 Jan. 1962 and which in view of the arrival date was almost certainly an escape from captivity.

80. Brent Goose *Branta bernicla*

A regular winter-visitor and passage-migrant to the estuary and salt marshes; in small numbers, Dec. to Mar.; formerly abundant.

Today, brent seldom stay for any length of time in the estuary and parties in excess of 5 are unusual. 17 on Seal Sands on 29 and 30 Jan. 1961 (ECG) is the largest party to visit the estuary recently. The large reduction in the European wintering population of this species is due to the virtual extermination by disease of its principal food plant *Zostera marina*. Coastal movements occur irregularly, a southerly one at Hartlepool on 31 Mar. 1958 involving a total of 63 birds (JKS, GP).

81. Barnacle-Goose *Branta leucopsis*

An irregular passage-migrant to the estuary and marshes; scarce.

Records in the last 100 years are as follows:

*28 Sept. 1883: 11 over Coatham Sands (Nelson, 1907)
Oct. 1912: 9 on Marske Sands (Chislett, 1952)
1933: 1 shot, Greatham Creek (CH)
9-14 Oct. 1958: 1 near Seaton Carew (JVH, PJS)
11 May 1959: 1 near Greatham Creek (ES)
Oct. 1961: 1 flew south at Hartlepool on 6 Oct. (JKS, KB). 6 flew north at Redcar (DRS) and 1 at Hartlepool on 17 Oct. (BJC). Next day a skein of 28 flew north at Hartlepool (PJS, BJC), followed by 2 stragglers on 22 Oct. (JAB)

82. Canada Goose *Branta canadensis*

An irregular summer and winter-visitor to the estuary and marshes; in small numbers.

There were no records of this species for Teesmouth in the present century until 17 May, 1957, when 2 were present in the Reclamation Pond (DSS). Since then it has occurred annually, a skein of 17 birds over Acklam on 9 June 1957 (AJV) being the largest recorded to date. There is a large resident population of Canada geese on the lakes and reservoirs of the West Riding, but it is likely that the recent spate of occurrences in Cleveland is the result of introductions by local wildfowlers.

84. Mute Swan *Cygnus olor*

A breeding resident and regular winter-visitor to the ponds, marshes and estuary; in small numbers.

This species is increasing in numbers and, although 10 years ago a flock of 15 was considered unusual, today the winter herd in the Saltholme area may number twice that figure. In addition to the stock on the various parks a single pair breed annually on both Haverton Hole and Billingham Pond. Breeding was also attempted on Cowpen Marsh in 1959 and 1960, but the eggs were taken.

85. Whooper-Swan *Cygnus cygnus*

A regular winter-visitor and passage-migrant to the estuary and marshes; in small numbers, Sept. to Apr.

Single birds often resort to the Cowpen and Saltholme area in winter, sometimes staying several months. Small parties are occasionally seen flying in from the sea in the autumn, although there is no recent record to equal the herd of 1,000 whooper-swans which flew north-west over the Tees estuary in "the Winter of 1880" (Nelson, 1907). This species prefers large sheets of fresh water and is a much more frequent visitor to the local reservoirs than to the Tees marshes.

86. Bewick's Swan *Cygnus columbianus bewickii*

An irregular winter-visitor and passage-migrant to the estuary and marshes; in small numbers, Nov. to Apr.

Prior to 1954, this species had only been recorded twice in this century at Teesmouth. Since that year it has occurred almost annually, principally in the Cowpen/Saltholme region. Details of the larger herds recorded at Teesmouth are given below:

27 Feb. - 18 Apr. 1954: up to 16, Cowpen Marsh (PJS)
27 - 30 Mar. 1955: 14, Saltholme Marsh (CJH)
20 Jan. 1960: 9, Cowpen Marsh (ES)
25 Mar. - 3 Apr. 1960: 33, Saltholme Marsh (ES, DGB)

Due to the drainage of the Ijselmere, formerly the Bewick's swan's principal wintering area in western Europe, part of the population now winters in Ireland; this no doubt accounts for the recent spate of records.

91. Buzzard *Buteo buteo*

An irregular passage-migrant and casual visitor; scarce.

Large birds of prey of the buzzard type are now reported annually over the coastal plain and it is likely that the majority are of this species. Most of the records are in May and Sept., there being no less than 7 in 1960. Nevertheless, there are only 3 satisfactory records of this species in the past 20 years, these are:

9 May 1959: 1 circled north-west over Redcar (DRS)
22 May 1960: 1, Crimdon Dene (PR)
17 Sept. 1960: 1 flew in from the sea, Hartlepool (BJC)

92. Rough-legged Buzzard *Buteo lagopus*

An irregular passage-migrant on the coast; rare.

Records during the past 100 years are:

25 May 1877: 1 washed up at Redcar (Nelson, 1907)
10 Oct. 1903: 1, Teesmouth (Yorks.) with over 20 recorded in Cleveland during the ensuing 3 months (Nelson, 1907)
Oct. 1915: 1 tried to roost on Grangetown slag tip, but was driven off by 2 white-tailed eagles (Temperley, 1951)
*30 Oct. 1926: 1 shot, Port Clarence
23 Oct. 1936: 1, Teesmouth (Co. Durham) (Almond, Nicholson and Robinson, 1939)
Oct. 1938: 2, Teesmouth (Co. Durham) (JB)

93. Sparrowhawk *Accipiter nisus*

A breeding resident in woodland; in small numbers. A regular passage-migrant on the coast; in small numbers.

Sparrowhawks have declined in numbers over the past 15 years, but a few pairs still breed in the woodlands fringing the coastal plain. On the coast, they usually occur in Apr. and Oct., there being 1 to 3 records annually. Some of the birds are of continental origin.

94. Goshawk *Accipiter gentilis*

A vagrant of which there is a single record:

2 Jan. 1934: 1 near Grangetown Station (Almond, Nicholson and Robinson, 1939)

95. Kite *Milvus milvus*

A vagrant of which there are 2 records:

1837: 1 killed, Redcar (Nelson, 1907)
*15 Sept. 1883: 1 flew in from the sea and was killed in the estuary (Nelson, 1907)

97. White-tailed Eagle *Haliaetus albicilla*

A vagrant of which there are 3 records:

5 Nov. 1823: 1 off Teesmouth (Hogg, 1845)
Oct. 1836: 1 killed near Marske Church (Nelson, 1907)
Late Oct. 1915: 2 frequented the estuary for several days, roosting on Grangetown slag tip. 1 was killed at Guisborough on 17 Nov. and the other was seen near Great Ayton on 1 Dec. (Temperley, 1951)

98. Honey-Buzzard *Pernis apivorus*

An irregular passage-migrant on the coast; rare.

Records are:

4 Sept. 1896: 3 at Redcar, 1 of which was shot (Nelson, 1907)
3 Oct. 1903: 1 shot, Redcar (Nelson, 1907)
27 May 1909: 1, Teesmouth (Chislett, 1952)
June, 1911: 1 washed up dead, Marske (Chislett, 1952)
*21 June 1924: 1 picked up injured, Acklam, Middlesbrough (Almond, Nicholson and Robinson, 1939)
2 June, 1949: 1 shot, Skelton, near Saltburn (Chislett, 1952)
17 Sept. 1960: 1, Hartlepool (JVH, RTM, GP)

99. Marsh-Harrier *Circus aeruginosus*

A vagrant of which there are 2 records:

‡Autumn 1829: 1 shot, Cowpen Marsh (Temperley, 1951)
17 - 23 May 1959: a female, Cowpen Marsh (AV, GP, JKS, IM, DSS)

100. Hen-Harrier *Circus cyaneus*

An irregular winter-visitor and passage-migrant to the marshes; rare.

Records since 1900 are:

28 Apr. 1901: a female, Teesmouth (Co. Durham) (Milburn, 1903)

24 May 1901 : a male, Teesmouth (Co. Durham) (Milburn, 1903)
17 Jan. 1959 : a female, Reclamation Pond (EGB)
26 Mar. - 3 Apr. 1960 : a female, Saltholme/Cowpen area (GP, JKS, VFB)
A male harrier over Seal Sands on 10 Apr. 1958 was probably of this species.

102. Montagu's Harrier *Circus pygargus*

An irregular summer-visitor and passage-migrant to the marshes ; rare.

Records are :
2 Sept. 1932 : an immature shot near Port Clarence (Almond, Nicholson and Robinson, 1939)
18 May 1949 : a male, Greatham Creek (DRS)
9 June 1956 : a female, Cowpen Marsh (PJS)
20 - 30 Aug. 1959 : an immature, Cowpen Marsh (KB, PJS)
" Ringtails " at Fairfield, Stockton, on 12 May 1955 and Crimdon, on 3 May 1958, were probably of this species.

103. Osprey *Pandion haliaetus*

An irregular passage-migrant to the estuary ; rare.

The osprey occurred fairly frequently at Teesmouth in the early nineteenth century, but none was recorded between 1850 and 1955. Records since then are :
31 Aug. 1955 : 1 over Seal Sands (NY, AJV, AV)
24 July 1960 : 1 in the estuary eventually flew off west-south-west over Billingham (PR, GC, JAB)
17 Sept. 1960 : 2 flew in from the sea at Hartlepool, and 1 at Crimdon. All went inland west-south-west, without alighting (BJC, GP, PJS)
29 Sept. 1960 : 4 flew south off Hartlepool (RS)

104. Hobby *Falco subbuteo*

A vagrant of which there are 3 records :
1868 : 1 shot, Greatham (Temperley, 1951)
18 Sept. 1960 : a male flew in from the sea, Hartlepool (BJC, JKS)
24 Sept. 1961 : 1, Redcar (DRS)

105. Peregrine *Falco peregrinus*

A regular winter-visitor and passage-migrant to the estuary and marshes ; in small numbers, Aug. to Apr., decreasing.

In some recent years up to 8 peregrines have been recorded at Teesmouth, usually singly, but occasionally in pairs. Sometimes a bird will frequent the estuary for several days, Seal Sands and the Cowpen/Saltholme area being particularly favoured localities. Few have been reported since 1960, probably due to the lethal effects of toxic seed dressings.

106. Gyr Falcon *Falco rusticolus*

A vagrant of which there is a single record :
†March 1837 : an immature male of the Icelandic race shot, Normanby (Hogg, 1845)

107. Merlin *Falco columbarius*

A regular winter-visitor and passage-migrant to the marshes ; in small numbers, Sept. to Apr.

The merlin is a rather more frequent visitor to the estuary than the peregrine, 10-15 being recorded annually. Merlins often hunt over the coastal fields at Seaton Carew and Redcar, where flocks of finches and larks abound, and individuals will occasionally venture into the suburbs of the larger towns in search of prey.

108. Red-footed Falcon *Falco vespertinus*

A vagrant of which there is a single record :
30 Oct. 1949 : an adult female near North Gare (CG, DB)

110. Kestrel *Falco tinnunculus*

A breeding resident, regular passage-migrant and winter-visitor to the marshes and coast fields ; common.

2 or 3 pairs breed annually on the slag tips and derelict buildings, the birds foraging over the industrial areas as well as in open country. Slag reclamation projects have caused some disturbance at the breeding sites in recent years. In Aug. and Sept. kestrels, presumably of continental origin, are frequently seen coming in from the sea. On 14 Aug. 1954 20 were present between Port Clarence and Seaton Carew and on 17 Sept. 1960 some 15 were seen on the coast between Crimdon and Redcar.

111. Red Grouse *Lagopus scoticus*

A vagrant to the coast of which there is a single record :
Winter 1878-1879 : 5 shot and 1 seen, Redcar (Nelson, 1907)
The species is an abundant resident of the north Yorkshire moors and Pennines.

115. Red-legged Partridge *Alectoris rufa*

Formerly an irregular visitor to the coastal plain ; rare.

The following records result from the unsuccessful introductions of this species in Cleveland in 1860 and 1890 :
Jan. 1899 : 1, Coatham (Nelson, 1907)
Mar. 1903 : 1 in the centre of Middlesbrough (Nelson, 1907)
*Apr. 1909 : 1, Baker Street, Middlesbrough

116. Partridge *Perdix perdix*

A breeding resident on pasture and arable land ; common.

Essentially a bird of open country, coveys are particularly frequent in the coastal fields near Redcar and Seaton Carew. Partridges occasionally venture into the suburbs of the larger towns and in 1935 1 was killed by a car in Linthorpe Road, Middlesbrough (ECG).

117. Quail *Coturnix coturnix*

An irregular passage-migrant to the coast ; rare.

Nelson (1907) unfortunately did not particularise occurrences at Teesmouth. There are only 3 recent records :
11 June 1949 : 1 calling, Eston Nab (PJS)
2 Sept. 1952 : 1, South Gare (JH)
1 and 3 June 1958 : 2, Redcar (DRS)

118. Pheasant *Phasianus colchicus*

A breeding resident in mixed woodland and open country; common.

Due to the heavy stocking at Wynyard Park pheasants are particularly numerous in the Wolviston area. Nelson (1907) stated that pheasants occasionally resorted to the beach at Redcar. There are, however, no recent records of this habit.

119. Crane *Grus grus*

A vagrant of which there are 2 records:

†May 1865: 1 shot, Dyke House Farm, now part of West Hartlepool (Almond, Nicholson and Robinson, 1939)

4 Aug - 1 Nov 1959: an adult present on Cowpen Marsh. It occasionally roosted in the Reclamation Pond (EGB, GP, DGB *et al.*)

120. Water-Rail *Rallus aquaticus*

Now an irregular passage-migrant and winter-visitor to the marshes; in small numbers, Oct. to Apr. Formerly a breeding resident; in small numbers.

A nest was found on the Durham side of the estuary in 1883 and birds were present in the breeding season, on both sides of the river, at least until 1907 (Nelson, 1907). 11 water-rails were recorded in the vicinity of the Tees estuary between Jan. 1948 and Dec. 1961. 6 of these records refer to the area between Cowpen Marsh and Graythorp, and only 2 to the Yorkshire side of the river.

121. Spotted Crake *Porzana porzana*

A vagrant. Formerly an irregular summer-visitor and passage-migrant to the fresh marshes; scarce, May to Sept.; has bred.

Before 1900 the spotted crake was recorded with some regularity on the Tees marshes, principally in May and Sept. On 25 May 1899 a fully-formed egg was taken from a female killed on the Durham side of the estuary. The following year breeding was conclusively proved when a pair was seen with young (Milburn, 1901 and 1901a). Since then the spotted crake has only been recorded once—a male, killed against telegraph wires on the Durham side of the estuary on 21 May 1933 (Temperley, 1951).

123. Baillon's Crake *Porzana pusilla*

A vagrant of which there is a single record:

*16 Sept. 1882: 1 shot with two spotted crakes, Saltholme Marsh (Nelson, 1907)

125. Corncrake *Crex crex*

Now an irregular passage-migrant in fields of cereal crops; scarce. Formerly a breeding summer-resident; in small numbers.

The disappearance of the corncrake as a breeding species in Cleveland commenced about 1925 and was almost complete 10 years later. Modern agricultural methods and machinery are thought to have been the main cause. Apart from an isolated breeding record near Middlesbrough in 1950, there is only a single record in the last decade, a bird heard calling at Tollesby, Middlesbrough, in May 1954 (AEF, PJS).

126. Moorhen *Gallinula chloropus*

A breeding resident and regular winter-visitor to the fresh marshes and ponds; common.

At least 20 pairs breed on the park lakes and ponds in the area, a few pairs resorting to Cowpen and Coatham Marshes, where it is particularly numerous under flood conditions. On 22 Oct. 1961 a moorhen alighted on the sea off Hartlepool (JAB), a most unusual occurrence.

127. Coot *Fulica atra*

A regular winter-visitor and passage-migrant to the fresh marshes and ponds; in small numbers.

Locally common as a breeding-resident in the surrounding area, coot frequently visit the pools and marshes near the coast, parties seldom exceeding 5 birds. It occasionally occurs on the bay and estuary, usually in hard weather. Breeding was unsuccessfully attempted in Cowpen Marsh in 1958.

130. Houbara Bustard *Chlamydotis undulata*

A vagrant of which there is a single record:

†5 Oct. 1892: 1 shot Windy Hill, Marske (Nelson, 1907). This constituted the second British record of this species.

131. Oystercatcher *Haematopus ostralegus*

A regular passage-migrant and winter-visitor to the estuary and coast; abundant and increasing; has bred. Small numbers of immature birds summer.

In recent years peak numbers in the autumn and winter have frequently topped 250 whilst in late Dec. 1959 at least 650 were present in the estuary. Most of the birds arrive in August and stay until May, though numbers fluctuate somewhat throughout the winter.

In 1933 and subsequent years a pair made several unsuccessful attempts to breed on the Durham side, until finally, in 1939, 2 pairs successfully reared young (JB). In 1951 a nest at Greatham Creek contained 6 eggs (KB) and 3 young were reared nearby in 1959 (PJS).

133. Lapwing *Vanellus vanellus*

A breeding resident, passage-migrant and winter-visitor on arable fields and marshes; abundant.

A regular feature of the autumn is the large immigration of lapwings which takes place in Oct. and Nov. At this time flocks flying south-westerly over Tees-side on a broad front may form an almost uninterrupted stream, which sometimes continues for several days. Similar movements take place in June and mid-winter. The breeding population is widespread, though it is particularly dense in the Cowpen/Greatham area.

134. Ringed Plover *Charadrius hiaticula*

A breeding resident, regular passage-migrant and winter-visitor to the coast and estuary; common.

Flocks of over 100 birds, often mixed with dunlin, have been recorded in recent years, usually in Sept. and May. Though it is not confined to a single habitat, the ringed plover is essentially a bird of the sandy beaches rather than the mudflats. Despite high tides, and increasing human disturbance on the beaches, the scattered breeding pairs have some success, particularly those which resort to the slag and tipped land around the estuary.

136. Kentish Plover *Charadrius alexandrinus*

An irregular passage-migrant to the coast and marshes; scarce. Records are:

8 June 1902: 1, Teesmouth (Temperley, 1951)
*20 May 1904: 1 picked up dead, near North Gare (Temperley, 1951)
11 May 1924: 2, Teesmouth (Temperley, 1951)
28, 29 May 1954: 1, Cowpen marsh (PJS, JG)
30 Apr., 1 May 1961: 1 female, Saltholme pool (PR, JAB, IFS)

139. Grey Plover *Charadrius squatarola*

A regular passage-migrant and winter-visitor to the estuary; common in the autumn.

A flock of 340 on Coatham Sands on 28 Sept. 1957 is the largest recorded in recent times, although numbers in excess of 200 have more than once been counted. Peak numbers are usually present between Sept. and Nov., a few immature birds occasionally summering in the estuary. Essentially a wader of the mudflats, birds resort to the Reclamation Pond and Coatham Sands at high tide.

140. Golden Plover *Charadrius apricarius*

A regular passage-migrant and winter-visitor to the coastal fields and marshes; common, locally abundant, Aug. to Apr.

Resident winter flocks near Graythorp and Redcar normally total about 600 and 200 birds respectively. However, these numbers are subject to considerable fluctuation, upwards of 1,000 being present at Graythorp in Nov. 1960 (AJV), while 657 resorted to Redcar beach in hard weather on 15 Jan. 1955 (DRS). Birds of the northern race are often noted in Apr.

142. Dotterel *Charadrius morinellus*

Formerly a regular passage-migrant to one area of grassland, probably on the Durham side of the estuary; in small numbers. Present status obscure.

T. H. Nelson and, later, J. Bishop recorded dotterel annually at Teesmouth in both spring and autumn, the birds seldom staying more than a few days. Most of the spring occurrences were between 25 Apr. and 6 May, whilst in autumn the period between 15 Aug. and 7 Sept. seems to have been particularly favoured, although birds have been seen as late as 29 Nov. Between Jan. 1937 and Dec. 1939 14-18 were noted each spring, the autumn trips being smaller in size. A party of 30 in May 1903 is the largest recorded. Unfortunately, J. Bishop died in 1939 without divulging the locality which the dotterel frequented. Since then, the species has been observed only once, a single bird seen in a field between Redcar and Marske on 12 Sept. 1959 (DRS).

143. Turnstone *Arenaria interpres*

A regular passage-migrant and winter-visitor to the coast and estuary; common; occasional in summer.

From Sept. to May the turnstone is a common bird about the rocks at Redcar and Hartlepool and the slag promontories of the Tees breakwaters. Flocks seldom exceed 50 birds, although on 11 Jan. 1959 about 150 were present at South Gare (BJC). Adults in breeding plumage are frequent in May and Aug.

145. Snipe *Capella gallinago*

A breeding resident on the fresh marshes; in small numbers. A regular winter-visitor and passage-migrant; common.

The breeding population of some 10 pairs is now restricted to the Saltholme/Cowpen region and the remnants of Coatham Marsh At the height of the autumn passage in Sept. wisps of 50-60 snipe are not unusual in the Saltholme area.

146. Great Snipe *Capella media*

A vagrant of which there are 2 records:

About 1825: 1 shot, Newport, Middlesbrough (Hogg, 1845)
1 Sept. 1901: 1 shot, Teesmouth (Milburn, 1903)

Nelson (1907) stated that there were 18 records for the North Riding, but did not particularise them. This species is much rarer than it was 60 years ago, due to the shooting of these birds at their leks in Scandinavia.

147. Jack Snipe *Lymnocryptes minimus*

A regular winter-visitor and passage-migrant to the fresh marshes; in small numbers; late Sept. to Apr.

Normally a solitary species, parties in excess of 3 are unusual. Most of the recent occurrences have been in the Saltholme/Cowpen region, and near Graythorp shipyard, but birds doubtless occur on the other marshes, which are less frequented by observers.

148. Woodcock *Scolopax rusticola*

A breeding resident in mixed woodland; in small numbers. A regular passage-migrant to the coast; in small numbers.

The woodcock is a well distributed breeding species in Cleveland and south-east Durham, although on the coastal plain suitable habitats are few. During Oct. and Nov. there is an influx of continental birds on the coast. Numbers fluctuate, but in an average autumn about 20 individuals may be recorded. They sometimes occur on the coast in winter and early spring, but generally speaking the return movement is much less noticeable.

150. Curlew *Numenius arquata*

A regular passage-migrant and winter-visitor to the marshes and estuary; abundant.

During recent years some reduction seems to have taken place in the numbers visiting the estuary. Prior to 1950 flocks exceeding 1,000 were frequent, but between Jan. 1955 and Dec. 1961 the number rose to 500 on only 3 occasions. Doubtless the pollution of the Bran Sands, and increased shooting pressure, are principally to blame for the decrease. Peak numbers are normally present between late July and Nov. with some 200 wintering in the estuary. A few non-breeding birds summer. Curlews now breed in several localities within 10 miles of the coastal plain.

151. Whimbrel *Numenius phaeopus*

A regular passage-migrant to the estuary and marshes; in small numbers, Apr. and May; common, July to Sept.

A few birds are recorded annually at Teesmouth in Apr. and May on their way northward, but the return passage in July and Aug. is much heavier. At this time

parties of whimbrel are a frequent sight crossing the coastline as they arrive from Scandinavia. Most of the birds halt for a short while in the estuary, but it is unusual for a flock of more than 50 to build up. Stragglers occur until the end of Sept.

154. Black-tailed Godwit *Limosa limosa*

A regular passage-migrant to the estuary and marshes; in small numbers, Apr. to Sept.

Because of an increase in the European breeding population, this species is now a more frequent visitor to the estuary than it was 50 years ago. Today there are 3-5 records annually, mostly of solitary individuals or parties of up to 5 birds, with occurrences in both spring and autumn. The following records are worthy of special mention:

3 May 1944: 13, Teesmouth (Co. Durham) (Temperley, 1951)
25 July 1954: 12, Reclamation Pond (AB)
26 July 1961: 17, Reclamation Pond and 8, Cowpen Marsh (RAM)
7 Aug. 1961: 35, Seal Sands and 6, Saltholme Pool (AV, WA)

155. Bar-tailed Godwit *Limosa lapponica*

A regular passage-migrant and winter-visitor to the estuary and coast; abundant, Aug. to Apr. A few non-breeding birds often summer.

Autumn and winter flocks approaching 300 birds are not unusual; 600 at Seaton Snook on 12 Sept. 1953 and 420 there on 26 Jan. 1955 being the largest flocks recorded in recent years. The majority of the godwits scatter over the mudflats at low tide, but when these are covered the birds gather on Seaton Snook and Coatham Sands, where the largest congregations occur. A few flight inland with the curlew.

156. Green Sandpiper *Tringa ochropus*

A regular passage-migrant to the fresh marshes; in small numbers, July to Sept.; occasional in winter and spring.

This species is a good deal more common at the local sewage farms and reservoirs than on the coastal marshes. There are usually 5-10 records annually of single individuals, mainly in the Cowpen/Saltholme region during July and Aug. A bird at Cowpen Marsh on 20 Apr. 1957 (AV) and 2 at Billingham Bottoms on 22 Nov. 1952 (DRS) constitute the only spring and winter records for the coastal plain.

157. Wood-Sandpiper *Tringa glareola*

Now known to be a regular passage-migrant to the fresh marshes; in small numbers, July to Sept.; less frequent in May and June.

In the Cowpen/Saltholme region this species is generally more common in late summer than the green sandpiper. Numbers fluctuate somewhat from year to year, but parties in excess of 3 birds are unusual. A flock of 7 at Saltholme Pool on 22 Aug 1954 (AB, PJS) is the largest recorded. Single birds have occurred in May in 4 of the years from Jan. 1954 to Dec. 1961.

159. Common Sandpiper *Tringa hypoleucos*

A regular passage-migrant to the estuary and marshes; in small numbers, Apr., May and July to Sept.

A solitary species on passage, a few birds frequent the slag revetment walls and marshy pools in the spring and late summer. Essentially a freshwater species,

individuals do not normally tarry long in the estuary, although in 1954 a bird stayed at Greatham Creek until 14 Nov. (KB). A pair bred successfully on Cowpen Marsh from 1927 to 1931 (Milburn, 1932).

161. Redshank *Tringa totanus*

A breeding resident, passage-migrant and winter-visitor to the estuary and marshes; abundant.

Breeding pairs are widespread in the marshes and fields between Port Clarence and Seaton Carew, the population being particularly dense in the Cowpen/Saltholme region. A few pairs still breed on Coatham Marsh and Billingham Bottoms. Autumn and winter flocks frequently exceed 200 birds, but it is difficult to assess the total numbers present at any one time, as the parties are scattered over a wide area. A roost of upwards of 1,000 at Grangetown pool on 22 Sept. 1960 is the largest concentration recorded (PJS, DGB). Out of the breeding season the redshank is essentially a wader of the mudflats and rocks, seldom resorting to the sandy beaches.

162. Spotted Redshank *Tringa erythropus*

A regular passage-migrant to the estuary and marshes; in small numbers, July to Oct.; less frequent, late Mar. to June.

Pairs and single birds occur regularly on the marshes in July and Aug., particularly in the Cowpen/Saltholme region. Although stragglers sometimes stay into Oct., the species was not known to winter at Teesmouth until 1960-61, when birds were seen at Greatham Creek, South Gare and Billingham Bottoms. In spring it has been noted in 5 out of the last 8 years and odd birds probably occur annually. A party of 5 at Grangetown pool on 22 Sept. 1960 is the largest recorded (PJS).

165. Greenshank *Tringa nebularia*

A regular passage-migrant in the estuary and marshes; in small numbers, Apr., May and July to Oct.

At the height of the autumn passage in late Aug., it is not unusual for some 15 birds to be scattered over the Cowpen/Saltholme region and recently, on 12 Aug. 1958, 31 were present on the Durham side of the estuary (AV). The spring passage is much lighter, with up to 5 records of single birds per year.

168. Terek Sandpiper *Xenus cinerea*

A vagrant of which there is a single record:

27, 28 Sept. 1952: 1 near Greatham Creek (Evans, 1953). This constituted the third British record of this species.

169. Knot *Calidris canutus*

A regular passage-migrant and winter-visitor to the estuary and coast; abundant. A few non-breeding birds often summer.

The autumn passage usually commences in early July, though it is not until Oct. that the winter flock begins to build up to the peak of 4,000-5,000 birds which is normally reached in Jan. and Feb. Most of these birds depart in Mar., although parties continue to pass through the estuary until May. Before the pollution of the Bran Sands in 1953, flocks of 10,000 were not considered unusual. Since then, however, this number has been reached only once, in Jan. 1962. Unless disturbed, the majority roost on Coatham Sands at high water, foraging over the mudflats and rocks as the tide recedes.

170. Purple Sandpiper *Calidris maritima*

A regular passage-migrant and winter-visitor to the coastal rocks ; locally common, Sept. to May ; occasional in summer.

A resident flock of some 50 purple sandpipers winters on the rocks at Hartlepool from Nov. to Mar. whilst small parties of up to 5 birds forage on the slag outcrops at North and South Gare. At Redcar, it is considered unusual, perhaps because the extensive Salt Scar Rocks are only exposed for relatively short periods at low water.

171. Little Stint *Calidris minuta*

A regular passage-migrant to the estuary and marshes ; in small numbers, Aug. to Oct. ; occasional in Apr. and May.

A few adults may occur in early Aug., but it is not until mid-Sept. that the passage of juveniles reaches its peak. Numbers fluctuate, but in most years seldom exceed 10. Flocks of 50 were recorded more than once by Nelson. More recently, 113 were present on the Durham side of the estuary on 24 Sept. 1960, most of these in the Saltholme region (PJS, BJC). Single birds and small parties have occurred in spring in 4 out of the last 8 years, no less than 12 being present on Cowpen Marsh on 6 June 1960 (IM, RAM). There is a single winter record : a party of 3 at Hartlepool on 19 Feb. 1950 (PLH).

173. Temminck's Stint *Calidris temminckii*

A vagrant of which there are 2 records :

Autumn 1833 : 1 shot, Seaton Snook (Backhouse, 1834)
30 Aug. - 3 Sept. 1954 : 1, Saltholme Pool (PJS, JG)

176. Pectoral Sandpiper *Calidris melanotos*

A vagrant of which there are 3 records :

Oct. 1841 : 1 shot near Hartlepool (Hogg, 1845)
30 Aug. 1853 : 1 shot, Teesmouth (Rudd, 1853)
17 Oct. 1853 : 1 shot, Coatham (Rudd, 1853)

178. Dunlin *Calidris alpina*

A regular passage-migrant and winter-visitor to the estuary and marshes ; abundant ; frequent in summer.

The autumn passage starts in early July, over 1,000 being present on Seal Sands by Sept. Maximum numbers are normally achieved with the build-up of the wintering flock in Dec., by which time there are usually 2,000-3,000 present. In Apr. and May there are fresh arrivals of birds on their way north, some non-breeders summering in the estuary. Nelson (1907) stated that a few pairs nested on the Tees marshes, implying that this was an annual occurrence. Single nests were certainly found in the Cowpen region in 1899 and 1902. There are no more recent breeding records.

179. Curlew-Sandpiper *Calidris testacea*

A regular passage-migrant to the estuary and marshes ; in small numbers, Aug. to Oct. ; occasional in May.

A few adults normally occur in early Aug., but it is not until the end of the month, when the juveniles pass through, that the passage reaches its height. The numbers fluctuate from year to year, but flocks of more than 10 are unusual. A party of 55 at Saltholme Pool on 2 Sept. 1954 (AB) is the largest concentration noted in recent

years. Nelson, however, recorded much larger movements of this species, upwards of 100 being shot at Teesmouth in 1890. Birds have been recorded in May in 3 out of the last 8 years.

181. Sanderling *Crocethia alba*

A regular passage-migrant and winter-visitor to the coastal sands ; common, often abundant.

This species is essentially a wader of the open beaches, shunning the mudflats and marshes. The autumn passage commences in July, flocks of up to 500 birds being present by Sept. as the juveniles pass through. The normal winter population is usually between 200 and 300, the majority on Coatham Sands. In May there is a fresh arrival of birds on their way north, a few lingering into June.

183. Broad-billed Sandpiper *Limicola falcinellus*

A vagrant of which there is a single record :

13-19 Aug. 1962 : 1 adult, Seal Sands and Saltholme Marsh (JAB, PJS, FGG *et al.*)

184. Ruff *Philomachus pugnax*

A regular passage-migrant to the marshes ; in small numbers, Apr. to Sept.

The annual autumn flock in the Saltholme region usually builds up to some 15 birds in late Aug. On 25 and 26 Aug. 1956, however, it consisted of 41 birds, whilst on 22 Sept. 1957 66 ruffs were present in the Tees estuary, half of these on Coatham Marsh where the species is normally only a casual visitor (PJS). Stragglers occur into Oct. and at least 2 were present in the Saltholme region in Jan. and Feb. 1961 and 1 in Dec. 1961. Single birds and small parties are recorded every spring. 2 reeves successfully reared young in Cowpen Marsh in 1902, breeding being suspected in the previous year (Nelson, 1907 a).

185. Avocet *Recurvirostra avosetta*

An irregular passage-migrant to the estuary ; rare.

Records are :

Winter 1827-1828 : 1 shot near the Tees (Hogg, 1845)
Spring 1849 : 1 shot, Teesmouth (Nelson, 1907)
About 1870 : 1 shot, Teesmouth (Nelson, 1907)
22-25 May 1931 : up to 3 near Greatham Creek (Milburn, 1932)
9 Sept. 1947 : 1, Coatham Marsh (Chislett, 1952)
21-30 May 1960 : 1, Seal Sands and Reclamation Pond with 2 on 24 May (GST, DGB, ALC *et al.*)

187. Grey Phalarope *Phalaropus fulicarius*

An irregular passage-migrant and winter-visitor to the estuary and coast ; in very small numbers, late Aug. to Mar.

10 grey phalaropes were recorded at Teesmouth between Jan. 1950 and Dec. 1961, 4 of these in 1954. The majority occur between Sept. and Nov., but birds have been seen in every month from Aug. to Mar. and once in June (in 1850). Seaton Sands, the South Gare lagoon and Greatham Creek seem to be particularly favoured localities. Most of the birds are recorded during or just after severe gales.

188. Red-necked Phalarope *Phalaropus lobatus*

An irregular passage-migrant to the estuary; rare.

Records are:

22 Nov. 1851: 1, Redcar (Nelson, 1907)
*23 Oct. 1891: 1 dead, Teesmouth (Nelson, 1907)
6 Sept. 1901: 1 shot, Seaton Carew (Milburn, 1903)
2 Oct. 1943: 1, Graythorp shipyard (Temperley, 1951)
12 Oct. 1947: 1, Bran Sands (Chislett, 1952)

189. Stone-Curlew *Burhinus oedicnemus*

A vagrant of which there are 3 records:

1843: 1 killed, Saltholme (Hogg, 1845)
*16 Dec. 1899: 1 shot, Redcar (Nelson, 1907)
10 or 11 Jan. 1901: 1 shot, Coatham (Duncan, 1903)

193. Arctic Skua *Stercorarius parasiticus*

A regular passage-migrant to the estuary and bay; common, Aug. to Nov.; less frequent in spring and early summer.

In August, this species is particularly numerous, being attracted by the concentration of some 2,000 terns in the estuary and bay. From mid-Sept. onwards, however, the numbers diminish as the terns depart for Africa. Onshore gales in the autumn sometimes produce large flights of arctic skuas; under such conditions, counts of passing birds at Hartlepool occasionally exceed 50 in a day. On 17, 18, 19 Oct. 1961 366 flew south off Hartlepool during a northerly gale, 258 of these on 18 Oct. (BJC). Small parties of up to 5 birds are frequent, one of 35 off South Gare on 29 Sept. 1957 (DRS) being the largest concentration recorded.

194. Great Skua *Stercorarius skua*

A regular passage-migrant to the bay; in small numbers, July to Nov.; occasional in winter.

Due to the protection afforded it at its breeding stations the great skua is much more numerous than it was at the turn of the century. Some 40 are now recorded in the bay every year. Essentially an offshore species, it is often associated with the spectacular flights of other sea-birds during onshore gales in Sept. and Oct. A flight of 32 at Hartlepool on 9 Oct. 1960 is the largest on record.

195. Pomarine Skua *Stercorarius pomarinus*

A regular passage-migrant offshore; in small numbers, Aug. to Nov.; occasional in winter.

The pomarine is less frequent than the great skua and its appearances more unpredictable even during onshore gales in Oct., the month when most birds are recorded. Details of some of the more notable flights of the last decade are given below:

16 Oct. 1954: 27 flew south, North Gare (CJH)
15 Oct. 1955: 80 large skuas sought shelter in the Tees estuary during a very fierce N.E. gale; 50 at least were pomarine (DGB, AJV, AV)

25 Sept. 1958: 44 large skuas flew south, Hartlepool; 20 at least were pomarine (AB)
17, 18, 19 Oct. 1961: 60 pomarines flew south, Hartlepool; 42 of these on 18 Oct. (BJC, PJS, JAB)

These records, however, pale by comparison with Nelson's spectacular flights, particularly that of 14 Oct. 1879 when several thousand pomarine skuas crossed the Tees Bay in a violent N.E. gale.

196. Long-tailed Skua *Stercorarius longicaudus*

Now known to be a regular passage-migrant offshore; in very small numbers, Aug. to Nov.

Seemingly more pelagic than the other skuas, this is the rarest of the 4 species. Up to 5 are recorded annually, mainly at Hartlepool and Redcar. Normally its occurrences are associated with the flights of the larger skuas and other sea-birds in onshore gales. During that of 14-15 Oct. 1879 15 adults were taken at Redcar and others seen.

197. Ivory Gull *Pagophila eburnea*

A vagrant of which there are 2 satisfactory records:

‡Mar. 1837: an immature shot, Seaton Carew (Hogg, 1845)
2 Nov. 1879: an immature shot, Redcar (Nelson, 1907)

198. Great Black-backed Gull *Larus marinus*

A regular passage-migrant and winter-visitor to the estuary and coast; abundant.

In July and Aug. large numbers of adults and juveniles arrive from Scandinavia to join the few immature birds which summer in the estuary. At this time some 2,000 may be present, the majority staying to winter in the area. Parties fly inland daily to feed on the rubbish tips, whilst considerable numbers forage offshore, around the drifters and along the coast. Spectacular movements of this species are a feature of the autumnal gales and often involve several hundred individuals.

199. Lesser Black-backed Gull *Larus fuscus*

A regular passage-migrant to the estuary and coast; in small numbers, mainly in May and Sept.

Records of this species are surprisingly few, normally about 20 annually, although doubtless some immature birds are overlooked. A party of 17 on Seaton Snook on 3 June 1961 (DGB) is the largest concentration noted. Birds of the Scandinavian race occur almost annually, usually in winter.

200. Herring-Gull *Larus argentatus*

A breeding summer-resident on Huntcliff, Saltburn; common. A regular passage-migrant and winter-visitor to the estuary and coast; abundant.

At the close of the summer large numbers of herring-gulls gather in the estuary and by Sept. some 5,000 are roosting there. Most of these birds forage on the rubbish tips and at the sewage outfalls along the coast. The drifters in the bay also have their attendant flocks of herring-gulls during gutting operations. Because of the abundance of food provided by the greatly expanded fishing industry, this species is a good deal more common than it was 50 years ago.
Since 1959 2 pairs have attempted to nest on floating buoys in Hartlepool Dock. 2 young were successfully reared in 1961.

201. Common Gull *Larus canus*

A regular passage-migrant and winter-visitor to the estuary, coast and open country; abundant.

Aug. and Sept. see a large influx of this species into the Tees Bay region. The majority forage inland on the pastures and arable land, only resorting to the coast in hard weather. Some 3,000 probably roost in the estuary though accurate estimates are difficult to obtain as many do not arrive until after dark. The winter flocks disperse in Mar., a few immature birds summering.

202. Glaucous Gull *Larus hyperboreus*

A regular passage-migrant and winter-visitor to the estuary and coast; in small numbers, Nov. to Apr.

There may be as many as 10 records annually although the number of individuals involved seldom exceeds 5. On 24 Apr. 1955, however, 4 were present on Seaton Snook (KB). The glaucous associates with the other large gulls foraging on the rubbish tips at Seaton Carew and Coatham. At the former locality, in 1954, an immature stayed until 1 June (CJH), whilst in 1961 a sub-adult was seen on Seaton Snook on 29 July and 7 Aug. (RTM, PJS). Adult glaucous gulls are rare.

203. Iceland Gull *Larus glaucoides*

An irregular passage-migrant and winter-visitor to the estuary and coast; in small numbers, Oct. to May.

At least 10 Iceland gulls have visited the Tees Bay and estuary between Jan. 1951 and Dec. 1961. It is likely that odd birds occur annually, there being no less than 4 records in 1961. Hartlepool and Seaton Snook are the most favoured localities. Immature birds occasionally appear in summer, 1 picked up dead at Seaton Carew in July 1951 having been ringed as a juvenile in west Greenland in Aug. 1949. Other immatures occurred on Seaton Carew rubbish tip on 6, 7 June 1959 (JVH) and on Seaton Snook on 9 June 1961 (PJS). There are no recent records of adult Iceland gulls for the Tees Bay.

205. Mediterranean Gull *Larus melanocephalus*

A vagrant.

An adult, first noted at Hartlepool on 29 Oct. 1956 (DGB, AJV, AV), wintered there in 4 successive seasons, arriving in Aug. and departing in Mar. or early Apr. In 1960, however, it arrived on 6 Aug., but only stayed until 18 Sept. In 1961 it arrived at Hartlepool on 11 Aug. and again stayed through the winter.

207. Little Gull *Larus minutus*

A regular passage-migrant and winter-visitor to the estuary and coast; in small numbers, July to Feb.; occasional in spring.

In an average year there may be as any as 20 records, but there is little doubt that it is becoming increasingly common. A few adults in breeding plumage arrive in July and Aug., followed by birds in their first summer plumage and a few juveniles. The peak of the passage usually occurs in Sept. Details of some of the more notable flocks are given below:

26 Aug. 1957: 10 adults, Crimdon Dene (PR)
4 Sept. 1958: 12 immatures, Hart Reservoir (RT)
17 Oct.-15 Nov. 1959: 102 recorded at Hartlepool, 39 of which flew north on 29 Oct. (BJC)

16 July-24 Sept. 1961: a party present on Hurworth Burn Reservoir, just outside the area. Maximum numbers were 28 on 14 Sept. (ES), but at least 45 individuals were involved.

208. Black-headed Gull *Larus ridibundus*

A regular winter-visitor and passage-migrant to the estuary, coast and lowland fields; abundant, Aug. to Apr.

A large influx, mainly from the Baltic region and further east, takes place in Aug. and Sept. Many of these birds pass on, but a resident winter population, probably in the region of 8,000 individuals, gradually builds up in the estuary. The majority forage inland on the rubbish tips and arable fields, whilst others resort to the sewage outfalls and coastal rocks. The bulk depart in Mar. and Apr., though a few immature birds are present throughout the summer. A few pairs bred sporadically on the marshes between 1930 and 1938 without much success.

209. Sabine's Gull *Xema sabini*

An irregular passage-migrant to the coast and estuary; rare. Records are:

*30 Sept. 1911: 2 immatures and an adult shot, Coatham Sands (Chislett, 1952)
15 Aug. 1954: an adult, Seaton Snook (CJH)
24 July 1960: a sub-adult, Seaton Snook (JAB, PJS)
2 Aug. 1960: a sub-adult, Hartlepool (RAM, RJL, RTM)

The last 2 records probably refer to the same individual.

211. Kittiwake *Rissa tridactyla*

A regular passage-migrant and summer-visitor to the coast; common, Mar. to July; abundant, Aug. to Nov.; occasional in winter.

From Mar. to Nov. parties of kittiwakes frequent the coast. Some of these are no doubt foraging birds from the colonies at Marsden Rock and Staithes, but large numbers of sub-adults are also included. A roost of some 2,000 kittiwakes builds up in the estuary during Aug. as birds disperse from the breeding stations. Onshore winds in the autumn, and occasionally in spring, produce spectacular flights of this species across the bay, daily numbers frequently running into four figures. During a N.E. gale on 9 Nov. 1957 some 10,000 flew north past Hartlepool (AV). 6 pairs reared young on the window ledges of a derelict warehouse in Hartlepool docks in 1959, but, unfortunately, the building was demolished soon afterwards.

212. Black Tern *Chlidonias niger*

A regular passage-migrant to the estuary, coast and marshes; in small numbers, late July to Oct.; occasional in May and June.

Adults, sometimes in breeding plumage, occur mainly at the commencement of the autumn passage, the bulk of which is composed of juveniles. By the end of Aug., parties of 5-10 birds are frequent, the largest on record being one of 55 at the Reclamation Pond on 28 Aug. 1958 (AB). Southward movements along the coast in autumn are seldom of any magnitude, though an unusually heavy passage was noted at Hartlepool on 28 Aug. 1960 when 39 were counted (JAB, RAM). Small parties occur in most years during May.

213. White-winged Black Tern *Chlidonias leucopterus*

A vagrant of which there is a single record:

†15 May 1869: an adult shot, Port Clarence (Temperley, 1951)

217. Common Tern *Sterna hirundo*

A breeding summer-resident in the estuary ; in small numbers. A regular passage-migrant to the coast and estuary ; common May to July ; abundant Aug. and Sept.

A breeding colony of this species was established in the Greatham Creek region in 1922 when 2 pairs nested. From 1928 to 1930 the colony numbered some 50 pairs and since then has fluctuated from about 10 to 25 pairs. In 1950 and 1961 a pair nested on Coatham Marsh without success. In Aug. a roost of some 500 to 800 common terns builds up on Seaton Snook as the autumn passage reaches its height. Numbers fall off rapidly in Sept., though stragglers continue to pass through until Oct. and, occasionally, Nov.

218. Arctic Tern *Sterna macrura*

A regular passage-migrant to the coast and estuary ; in small numbers, May and June ; abundant July to Sept.

A few arctic terns are recorded every spring on their way northwards, but no doubt many of them pass by offshore, unspecifically identified. The return movement starts in early July, and by the month end some 400 to 1,300 may be roosting on Seaton Snook. Numbers fall off in mid-Aug. as the main stream of common terns arrives, but birds continue to pass, through Sept. into Oct.

219. Roseate Tern *Sterna dougallii*

A regular passage-migrant to the coast and estuary ; in small numbers, early July to late Sept.

In July and early Aug. single birds and parties of up to 5 are recorded annually at the tern roost on Seaton Snook. Their northward progress in the spring is much more hurried and there is only a single record for this time—a bird on Seaton Snook on 31 May and 1 June 1958. The roseate is occasionally identified fishing amongst other terns off Hartlepool or in the bay. The majority of the records, however, refer to the roost, where on occasions it is possible to see 6 species of terns together.

222. Little Tern *Sterna albifrons*

A breeding summer-resident on the coast ; in small numbers. A regular passage-migrant to the estuary and coast ; in small numbers, May to July ; common, Aug. and Sept.

The little tern first bred at Teesmouth in 1910, when 3 pairs nested on Coatham Sands. A colony quickly established itself there, 10 pairs nesting in 1912. In 1922 the birds spread to the Durham side of the estuary, the total breeding population rising to about 30 pairs in 1931. The Coatham Sands colony was deserted in 1954, but 5-6 pairs still attempt to breed on the Durham side, despite ever-increasing human disturbance of the colony. In 1961 7 pairs returned to another site on the Yorkshire side of the river, but it is doubtful if any succeeded in bringing off young. Some 50 to 60 little terns gather at the tern roost at Seaton Snook in Aug. and Sept.

223. Sandwich Tern *Sterna sandvicensis*

A regular summer-visitor and passage-migrant to the estuary and coast ; common, Apr. to June ; abundant, July to Sept.

Throughout most of the spring and summer the Sandwich is probably the commonest of the terns in the Tees Bay and is frequently seen fishing well offshore. At the

height of the autumn passage in July and early Aug. numbers at the tern roost on Seaton Snook may rise to 600, but in most years 250 is the maximum. 2 pairs attempted to breed on the Durham side of the estuary in 1929. In 1930 1 out of 4 nesting pairs hatched young, but in 1931 6 pairs had their eggs destroyed by gulls.

224. Razorbill *Alca torda*

A regular passage-migrant offshore ; in small numbers, Apr. to July ; common, Aug. to Oct. ; occasional in winter.

The razorbill rarely ventures within the estuary or, indeed, much inside the bay, the majority of the birds staying well offshore. Gatherings of auks off Hartlepool in Aug. usually contain some razorbills and parties of 60 have been recorded at this time. Accurate assessments of numbers are not easy to make, because of the difficulty of separating this species from the guillemot at long range.

226. Little Auk *Plautus alle*

An irregular passage-migrant and winter-visitor offshore ; normally in very small numbers, Oct. to Feb.

The main wintering population seldom penetrates into the North Sea, but odd birds occur nearly every year, usually in Nov. A strong N.N.E. gale in winter, particularly if of some duration, may result in spectacular flights of little auks and, if severe, the birds may be blown inland and "wrecked." 2 flights have been recorded in the last decade under such conditions. On 22 Oct. 1955, about 100 flew north across Tees Bay in 4 hours and on 9 and 10 Nov. 1957, 344 flew north in a total of 15 hours watching at Hartlepool. These flights, however, are eclipsed by that of Jan. 1895, which lasted for a fortnight.

227. Guillemot *Uria aalge*

A regular passage-migrant offshore ; in small numbers, Apr. to July ; common, often abundant, Aug. to Oct. ; occasional in winter.

In the autumn, the guillemot is the commonest of the auks, parties being present offshore throughout Aug. and Sept. Like the razorbill it prefers the open sea to the sheltered waters of the bay and estuary. The larger auks seem to be less susceptible to weather movements than other sea-birds, but, nevertheless, counts of passing birds have more than once exceeded 100 in Sept. and Oct. On 17 Oct. 1961, during a severe northerly gale, 458 auks flew south off Hartlepool (BJC), the majority of which were probably of this species.

229. Black Guillemot *Cepphus grylle*

An irregular passage-migrant and winter-visitor to the bay and estuary ; scarce.

Nelson (1907) did not particularise the Teesmouth records of this species, mentioning only 1, an adult bird captured at Redcar on 6 Mar. 1883. Records since then are :

25 Nov. 1953 : an immature inside Hartlepool breakwater (CJH)
30 Jan. 1954 : an immature off Seaton Snook (DGB)
27 Apr. 1957 : an adult, Hartlepool (AV, IM, RAM)
28 Oct. 1959 : an adult flew north off Hartlepool (KB)
20 Feb. 1960 : an adult, dead, Saltburn (GST)

230. Puffin *Fratercula arctica*

A regular passage-migrant offshore ; in small numbers, Mar. to Oct. ; occasional in winter.

Bearing in mind the huge colonies of puffins which exist on the east coast of Britain, a total of perhaps 10 records in a year seems remarkably few. Out of the breeding season this species appears to be more pelagic than either the guillemot or razorbill and rarely ventures close enough to the coast to be identified satisfactorily. Most of the records refer to the early spring, Aug. and Sept.

231. Pallas's Sand-Grouse *Syrrhaptes paradoxus*

A vagrant subject to population irruptions in the past.

This Asiatic species underwent several population irruptions between 1863 and 1909, the birds spreading westwards across Europe and occasionally reaching Britain. Records for the Teesmouth region are :

1863 : a party, originally numbering 17, arrived at Port Clarence on 13 May and stayed several weeks. Other flocks were reported from Cowpen Marsh and Seaton Carew until July (Temperley, 1951)

Late Aug. 1876 : 3, Coatham Sands (Nelson, 1907)

*1888 : a party of 6 arrived at Teesmouth on 15 or 16 May, 30 or 40 were seen near Marske on 7 June and 20 at Ormesby on 10 June (Nelson, 1907)

14, 15 Feb. 1889 : 7, South Gare (Nelson, 1907)

17 May 1909 : 9, West Coatham (Chislett, 1952)

232. Stock-Dove *Columba oenas*

A breeding resident on the marshes and in deciduous woodland ; in small numbers.

Between 1939 and 1945, when access to the coast was prevented, stock-doves started to breed in rabbit burrows in the sand dunes. A few pairs now resort annually to the slag tips overlooking the marshes on the Durham side of the estuary whilst others nest beneath a nearby road bridge. Elsewhere on the coastal plain breeding pairs are very scattered. There is little, if any, immigration of continental birds in winter.

233. Rock-Dove *Columba livia*

Formerly a breeding resident on Huntcliff, Saltburn.

Whilst birds, which appear to have the characteristics of this species, still occur along the Yorkshire coast from Huntcliff southwards, the stock is now so interbred with feral pigeons that it is doubtful it any true rock-doves still exist in north-east England.

234. Wood-Pigeon *Columba palumbus*

A breeding resident in mixed woodland ; common and widespread. A regular passage-migrant and winter-visitor in open country and woodland ; abundant.

Pairs of wood-pigeons can be found in most woods in the area, particularly those with a high proportion of conifers. A few breed in the more secluded surburban gardens and the town parks. There is a large influx of birds into Cleveland in the late autumn. The origin of these wintering flocks is not known, but it is likely that birds from northern England and Scotland move south in winter. Evidence of immigration on a large scale from the continent is lacking and records of birds crossing the coast are few.

235. Turtle-Dove *Streptopelia turtur*

A breeding summer-resident and regular passage-migrant in open country ; in small numbers, May to Sept.

Since the turn of the century the turtle-dove has gradually extended its range northwards into north Yorkshire and Durham, although proof of breeding in Cleveland was not obtained until 1945. Suitable habitats are few on the coastal plain and, although occurring there annually, the species is more frequent in the rolling country inland, where it is now locally established. Occasional coastal records in the autumn and spring may perhaps refer to birds of continental origin.

——. Collared Dove *Streptopelia decaocto*

A breeding resident, principally in suburban gardens ; in small numbers, but increasing rapidly.

This species has extended its breeding range westwards across Europe in the last 50 years and first bred in this country in Norfolk in 1955. In Mar. 1960 2 pairs arrived in the Linthorpe area of Middlesbrough and a nest was subsequently found, at least 1 young being reared (IFS). In Mar. 1961 there appears to have been a fresh influx, several pairs being located on the outskirts of West Hartlepool (PJS) whilst numbers in the Linthorpe area built up to 10 (RAM).

237. Cuckoo *Cuculus canorus*

A breeding summer-resident and regular passage-migrant in open country ; common, Apr. to Sept.

The cuckoo is perhaps even more frequent on the marshes surrounding the estuary than in the cultivated country inland. No doubt the heavy population of meadow-pipits on the lower lying land is the reason for this. However, the cuckoo seems to be rather less numerous generally than it was 10 years ago.

241. Barn-Owl *Tyto alba*

A breeding resident in open country ; in small numbers. A casual visitor to the marshes.

There seems to have been a general decline in numbers in recent years. Until about 1950 2 or 3 pairs bred along the southern edge of the coastal plain, but have now apparently ceased to do so. A few pairs can still be found around Wolviston and West Hartlepool, whilst in 1961 a single pair bred near Graythorp (DGB). As a casual visitor to the marshes, principally to the Cowpen/Saltholme region, its visits have decreased since 1956, although 1 or 2 birds are still recorded annually.

243. Eagle-Owl *Bubo bubo*

A vagrant of which there is a single record :

Oct. 1915 : 1 near Redcar (Almond, Nicholson and Robinson, 1939)

246. Little Owl *Athene noctua*

A breeding resident in open country with scattered trees ; in small numbers.

The British population of this species derives from introductions made in Northamptonshire in 1889. Spreading gradually northwards, the little owl reached Cleveland in 1930 and was well established on both sides of the Tees 10 years later. A few birds occur annually on the marshes and coastal fields, but it is much commoner inland on the higher ground with scattered trees.

247. Tawny Owl *Strix aluco*

A breeding resident, in woodland and parkland ; common.

This species is quite common in the wooded suburbs and parks of Middlesbrough, Stockton and West Hartlepool, often venturing well into the town centres in search of food. Elsewhere it is well distributed in suitable habitats, being particularly numerous in the wooded country between Marton and Wilton.

248. Long-eared Owl *Asio otus*

An irregular passage-migrant on the coast ; rare. Formerly a breeding resident in coniferous and mixed woodland ; in small numbers.

There has been a general decline in the numbers of long-eared owls since about 1935. Breeding was proved at Eston Nab 4 times between 1941 and 1945 (NWH) and at Nunthorpe, just outside the area, in 1945 (GAE). Since then no nests have been reported from Cleveland, although a bird was seen near Marton in the summer of 1958 (ECG). A small breeding stock still nests in the remoter woods of south-east Durham. As a passage-migrant, in small numbers, Nelson recorded this species annually at Teesmouth, usually in Nov. and Dec. There have, however, been no coastal records since 1911.

249. Short-eared Owl *Asio flammeus*

A regular passage-migrant and winter-visitor to the marshes and coastal fields ; in small numbers.

An immigration of continental birds takes place between Sept. and Nov., at which time coastal records are frequent. This species is particularly attracted to the flat marshy fields in the Cowpen/Saltholme region, a concentration of 14 birds being present there on 29 Sept. 1957. Normally 2 or 3 winter on these marshes, departing in Apr. or May, though in 1958 2 stayed throughout the summer.

250. Tengmalm's Owl *Aegolius funereus*

A vagrant of which there is a single record :

Nov. 1861 : 1 shot near Cowpen Bewley (Temperley, 1951)

252. Nightjar *Caprimulgus europaeus*

An irregular passage-migrant on the coast ; scarce, May and Sept.

Although in summer the nightjar is locally distributed along the bracken-covered escarpment of the Cleveland Hills, on the coast it is a scarce passage-migrant. Nelson recorded it almost annually at Redcar, usually in Sept., but occasionally in May. There are only 2 recent records, a male found dead near Hart Station on 7 June 1954 (FW) and a female flushed from the sand dunes near North Gare on 8 Sept. 1956 (PJS).

255. Swift *Apus apus*

A breeding summer-resident in urban areas ; common May to Sept. A regular passage-migrant on the coast and marshes ; abundant in both spring and autumn.

The swift is quite common in the older residential districts of Middlesbrough, Stockton and West Hartlepool, where suitable nest sites are available. Most of the smaller villages and towns in the area have their resident flock, often centred on the church tower. As a passage-migrant in May, but particularly in July and Aug., it abounds, some vast concentrations building up over the Tees marshes at these times. Birds are occasionally recorded in Oct., but 1 in Stockton on 8 Nov. 1961 (DGB) was very late.

258. Kingfisher *Alcedo atthis*

An irregular winter-visitor to the marshes : scarce.

Until about 1955, the kingfisher was recorded with some regularity in the autumn and winter months in the Cowpen/Saltholme region. The paucity of more recent records suggests that there has since been a decline in numbers of the local breeding population. Birds have also occurred from time to time on the various park lakes in the area. Kingfishers almost certainly bred on Billingham Beck until about 1953, but there have been no recent reports of birds in that vicinity.

260. Roller *Coracias garrulus*

A vagrant of which there is a single record :

21 Sept. 1901 : 1 killed, Acklam, Middlesbrough (Nelson, 1907)

There are several other records from Cleveland, including a pair at Skelton in July 1847, the female of which, when killed, was discovered to be carrying eggs in the oviduct (Nelson, 1907).

261. Hoopoe *Upupa epops*

An irregular passage-migrant ; rare.

Records are :

Mid-Sept. 1880 : 1 shot, Marske (THN)
2 Oct. 1881 : 1, Redcar (THN)
Before 1897 : 1, Albert Park, Middlesbrough (Lofthouse, 1920)
Sept. 1932 : 1, Marton (Almond, Nicholson and Rohinson, 1939).
25 Apr. 1956 : 1, Redcar (DRS)

Single birds were recorded in the vicinity, at Neasham on 3 May 1958 and at Nunthorpe from 24 to 26 Apr. 1959.

262. Green Woodpecker *Picus viridis*

A breeding resident in deciduous woodland and open country with scattered trees ; in small numbers.

This bird is fairly well distributed throughout Cleveland and south-east Durham wherever there are stands of old timber. A few pairs breed annually in the Wilton area, near Ormesby and around Wolviston, individuals occasionally wandering onto the marshes and coastal dunes in search of ants.

263. Great Spotted Woodpecker *Dendrocopos major*

A breeding resident in deciduous woodland and open country with scattered trees ; in small numbers. An irregular passage-migrant on the coast ; scarce.

This species is well distributed in suitable habitats throughout Cleveland and south-east Durham and frequently penetrates into the wooded suburbs of the larger towns. It has been recorded recently from the Linthorpe area of Middlesbrough. Coastal records in the autumn probably refer to birds of the migratory north European race. On 24 Sept. 1949 1 was seen ascending a flagpole at South Gare (AB).

264. Lesser Spotted Woodpecker *Dendrocopos minor*

An irregular visitor, usually in winter, to woodland on the southern edge of the area ; scarce ; has bred.

Nelson stated that this species was recorded annually in Cleveland, mentioning occurrences at Marton and Redcar between 1898 and 1901. It has been recorded

on about 4 occasions in Cleveland in the past decade. Only 2 of these records refer to the coastal plain : a pair which nested in Saltburn woods in 1956 and a single bird seen in Wilton woods on 18 May 1959 (IM, AV). North of the Tees this woodpecker is even less frequent, although it has been recorded from Wynyard in recent years.

265. Wryneck *Jynx torquilla*

An irregular autumn passage-migrant on the coast ; scarce.

Increased watching on the coast is proving this species to be of more regular occurrence than was formerly supposed. Records since 1900 are :

2 Sept. 1905 : 1 killed, Middlesbrough (Nelson, 1907)
Summer 1935 : 1, Stewart Park, Middlesbrough (ECG)
28, 29 Aug. 1954 : 1 near Graythorp (DRS)
3 to 6 Sept. 1958 : 1 at Hartlepool and 3 on the Durham side of the estuary
17 Sept. 1960 : 1 at Hartlepool and another near North Gare (RTM, RAM)

271. Wood-Lark *Lullula arborea*

A vagrant of which there is a single record :

*Jan. 1891 : a small party on Redcar beach, of which 6 were shot (Nelson, 1907)

272. Skylark *Alauda arvensis*

A breeding resident on pasture and rough ground ; abundant and widespread. A passage-migrant and winter-visitor ; abundant.

Amongst the sparse vegetation of the slag tips, and on the pastures and marshes, the skylark is everywhere abundant, often penetrating into the heavy-industrial belt. It is probably the commonest breeding bird of the area. Coasting movements of skylarks are a feature of the spring and autumn passages at Redcar. The majority of these are north-westerly in direction and take place between late Feb. and early Apr., mid-Sept. and Nov. At Hartlepool parties are frequently seen coming in from the sea in autumn, but the movements are of much smaller magnitude.

273. Shore-Lark *Eremophila alpestris*

An irregular winter-visitor and passage-migrant on the coast ; in small numbers, Oct. to Mar.

The shore-lark is recorded in most years at Teesmouth, although seldom in parties of more than 5 birds. The South Gare lagoon, and the adjacent Coatham Sands, are the most favoured localities, the majority of records being in Jan. and Feb. In the early years of this century it appears to have been much more common—Nelson recording 200 at South Gare on 22 Dec. 1900. The largest flock seen in recent years was a party of 20 at Greatham Creek on 4 Jan. 1953 (PE).

274. Swallow *Hirundo rustica*

A breeding summer-resident, principally in farm buildings ; common, Apr. to Sept. A regular passage-migrant in open country ; common.

Outside the industrial belt the swallow is a widespread and common breeding species, nesting in farm buildings and in the concrete blockhouses on the marshes. The main passages take place in May and Sept., but early arrivals are sometimes recorded in late Mar. and stragglers occur into Oct. In 1954 a bird was present at Redcar from 30 Nov. to 3 Dec. (DRS).

276. House-Martin *Delichon urbica*

A breeding summer-resident on buildings and coastal cliffs ; common, late Apr. to Sept. A regular passage-migrant in open country ; common.

The house-martin is a common and fairly well distributed breeding species about villages and on farm buildings in the area, nesting in at least one of the housing estates on the outskirts of Middlesbrough. Scattered pairs can also be found along the cliffs of the Yorkshire coast from Saltburn southwards. The main passages take place in May and mid-Sept. with stragglers occurring in Oct. and sometimes Nov. In 1888 a bird was present at Redcar from 14 to 20 Dec. (THN).

277. Sand-Martin *Riparia riparia*

A breeding summer-resident in quarries ; in small numbers, Apr. to Sept. A regular passage-migrant in open country ; common, Apr. to Sept.

Small colonies of sand-martins exist in at least 2 quarries in the area and there are several other breeding sites inland in Cleveland and south-east Durham. The main passage takes place in Apr. and Aug., but early arrivals are often recorded in the last week of Mar. and stragglers may occur into Oct.

278. Golden Oriole *Oriolus oriolus*

A vagrant of which there is a single record :

17 May 1929 : a male, 2 m. south of West Hartlepool (Temperley, 1951)

279. Raven *Corvus corax*

A vagrant of which there is a single record in the present century. Formerly a breeding resident on Huntcliff, Saltburn.

There is no recorded instance of ravens breeding at Huntcliff since 1845, although a pair resorted to the nearby Boulby Cliff, until 1860 (Nelson, 1907). Since then there has only been a single record—a party of 3 seen at Eston Nab in the summer of 1936 (ECG).

280. Carrion-Crow *Corvus corone corone*

A breeding resident in open country ; in small numbers. A regular winter-visitor to the marshes ; common.

This species is well distributed and common in the open country of south-east Durham and Cleveland, nesting in copses and isolated trees. Suitable sites on the coastal plain are fewer, but some birds resort to the larger suburban gardens and at least 1 pair succeeded in raising a brood on top of a pylon near the Reclamation Pond in 1961. In winter it is common on the marshes, being particularly numerous in the vicinity of rubbish tips.

281. Hooded Crow *Corvus corone cornix*

A regular winter-visitor and passage-migrant to the coast and marshes ; in small numbers, Oct. to Apr.

Although hooded crows may occur anywhere on the coastal plain during the winter months, the biggest congregations are usually in the vicinity of rubbish tips, particularly those at Seaton Carew and Coatham. A party of 34 near Graythorp on 19 Feb. 1961 (AV, RAM) is the largest recorded in recent years. Birds are occasionally seen crossing the coast and there seems little doubt that the majority of the visitors are of continental origin. Nelson recorded several spectacular flights at Redcar—for example, on 25 Oct. 1881 200 birds were seen in 4 hours.

282. Rook *Corvus frugilegus*

A breeding resident in deciduous woodland : common. A regular winter visitor in open country ; abundant.

The rook is a well established breeding species on the coastal plain and there are several colonies on both sides of the estuary. Equally common on pasture and arable land, birds regularly forage on the beaches at Redcar and Seaton Carew. The winter population, swollen by immigration from both continental and British sources, reaches a high density.

283. Jackdaw *Corvus monedula*

A breeding resident in deciduous woodland, sea cliffs, slag tips and old buildings ; common. A regular winter-visitor in open country ; abundant.

The jackdaw is widely distributed on the coastal plain, some pairs penetrating well into the larger towns in the area. There are large colonies on the slag tips at Port Clarence and scattered pairs nest along the cliffs of the Yorkshire coast from Saltburn southwards. Some immigration from the continent takes place in the autumn.

284. Magpie *Pica pica*

A breeding resident in open country ; in small numbers.

The coastal plain is now too heavily built up to support a high population of magpies and the species is a good deal more common on the flat arable country inland. However, a few pairs still continue to breed in the less frequented areas where there is suitable cover.

286. Jay *Garrulus glandarius*

A breeding resident in deciduous and mixed woodland ; in small numbers.

A few pairs still breed in the woodland on the southern edge of the coastal plain between Marton and Wilton. Due, however, to increasing human disturbance the species is less frequent than it was 10 years ago. Jays sometimes occur in the more heavily wooded suburbs of Middlesbrough, Stockton and West Hartlepool, as the bird is fairly common in south-east Durham and Cleveland.

287. Chough *Pyrrhocorax pyrrhocorax*

A vagrant of which there is a single record :

27 Apr. to 22 May 1957 : 1, Huntcliff, Saltburn (HPKR *et al.*)

288. Great Tit *Parus major*

A breeding resident in mixed woodland and gardens ; common. An irregular passage-migrant on the coast ; in small numbers.

This is a common and well distributed breeding species wherever there are suitable habitats. In some autumns a few occur on the coast with other passage-migrants.

289. Blue Tit *Parus caeruleus*

A breeding resident in mixed woodland and gardens ; common. An irregular passage-migrant on the coast : usually in small numbers.

A common and well distributed breeding species wherever there are suitable habitats, it nests well into the suburbs of the larger towns. In most autumns a few occur on the coast. Occasionally there are huge rushes, as in 1957, when, after 2 consecutively good breeding seasons, the population in southern England and France outran its food supply and enormous numbers of blue tits migrated northwards. Birds were recorded in the centres of Middlesbrough and Stockton throughout the winter of 1957-58 whilst some even penetrated the heavy-industrial areas.

290. Coal-Tit *Parus ater*

A breeding resident in small numbers in coniferous and mixed woodland ; common. An irregular passage-migrant on the coast ; in small numbers.

Suitable habitats for coal-tits are scarce on the coastal plain, but it is a common resident in the woods at Normanby, Wilton, Wolviston and Saltburn, whilst a few penetrate the suburbs of the larger towns. Small numbers were associated with the blue tit irruption in the autumn of 1957, a party of 15 at Redcar on 18 Oct. (DRS) being the largest recorded.

292. Marsh-Tit *Parus palustris*

A breeding resident in mixed woodland ; locally common.

The marsh-tit is a common, though somewhat local, bird in the woodland areas at Normanby, Wilton and Saltburn. It also occurs in Crimdon Dene and the Wolviston area, preferring drier situations than the willow-tit, a bird with which it was formerly confused.

293. Willow-Tit *Parus atricapillus*

A breeding resident in marshy woodland ; in small numbers. Possibly an irregular passage-migrant on the coast ; scarce.

In the wetter woodlands of south-east Durham, in particular those where birch, willow and alder predominate, the willow-tit is well distributed, birds occurring regularly around Billingham, Wolviston and Crimdon Dene. Strangely, however, it appears to be extremely local in Cleveland where it has only 2 known stations. Single willow-tits recorded at Redcar between Aug. and Oct. in 1957, 1959, 1960 and 1961 (DRS) may have been passage-migrants from outside the area.

294. Long-tailed Tit *Aegithalos caudatus*

A breeding resident in mixed woodland and hedgerows, in small numbers. An irregular passage-migrant on the coast ; scarce.

This species is well distributed in the open country of south-east Durham and Cleveland, although suitable habitats are fewer on the coastal plain. The woodland areas between Marton and Wilton hold a few pairs, as do those near Wolviston and Crimdon Dene. Considerable numbers were associated with the blue tit movement in the autumn of 1957, several parties being recorded at Redcar and Hartlepool. A party of 15 at Marske in early Oct. 1958, and another of 14 flying east over the centre of Middlesbrough on 30 Sept. 1959, may also have been migrants (DRS).

295. Bearded Tit *Panurus biarmicus*

A vagrant of which there is a single authentic record :

6, 7 Dec. 1948 : 2 males and 1 female in a reed-bed at Ingleby Barwick (Chislett, 1952)

296. Nuthatch *Sitta europaea*

An irregular winter-visitor to deciduous woodland ; scarce.

Although this species is resident in many of the woodlands along the middle reaches of the Tees, as a breeding species it now appears to be completely absent from

Cleveland, whilst its distribution in south-east Durham is extremely patchy. It formerly bred at Wilton and Saltburn, but there are no recent records. It is now only a casual winter-visitor to the coastal plain, there being 6 records in the past 20 years, 4 of these from the Marton/Ormesby area.

298. Tree-Creeper *Certhia familiaris*

A breeding resident in mixed woodland; common. An irregular passage-migrant on the coast; scarce.

The tree-creeper is a common and widespread resident wherever there are suitable habitats and birds penetrate well into the wooded suburbs of the larger towns. In 1961 very pale birds occurred at Hartlepool on 9 and 24 Sept. (PJS, RAM) and at South Gare on 22 Oct. (BF). There seems little doubt that these were of the northern race *C.f. familiaris* which breeds in arctic Scandinavia.

299. Wren *Troglodytes troglodytes*

A breeding resident in mixed woodland and gardens; common. A regular passage-migrant on the coast; in small numbers.

Wherever sufficient cover exists the wren is a widespread and common species, nesting in woods, gardens and municipal parks. As a passage-migrant, it occurs annually in the coastal dunes in Oct. and Nov., though only in small numbers.

300. Dipper *Cinclus cinclus*

A casual visitor, principally in winter, to the streams; rare.

The dipper is a common breeding resident on the upper reaches of the Leven and other Cleveland streams, but rarely ventures onto the coastal plain. Nelson stated that in severe weather birds had been seen on the rocks by the seashore, but there are no recent records of this habit.

301. Mistle-Thrush *Turdus viscivorus*

A breeding resident in mixed woodland and gardens; common. A regular passage-migrant on the coast; in small numbers.

This species is fairly well distributed throughout the area, but seems particularly numerous in the older established suburbs and municipal parks. A few occur on the coast in autumn and spring. Most of these are no doubt of Scandinavian origin as their arrival often coincides with that of redwings and fieldfares.

302. Fieldfare *Turdus pilaris*

A regular winter-visitor and passage-migrant on the coast and in open country; common, Oct. to Apr.

In Oct. and Nov. large numbers of fieldfares pour into this country from Scandinavia at which time birds are abundant throughout the area. Numbers fall off somewhat in the ensuing months, but the bird is quite common on hedgerows and in open country throughout the winter. Unless delayed by adverse weather, the return movement in Mar. and Apr. is less well marked on the coast.

303. Song-Thrush *Turdus ericetorum*

A breeding resident in hedgerows, mixed woodland and gardens; abundant. A regular passage-migrant on the coast; abundant.

Wherever suitable habitats occur this species is a common and widespread resident. Ringing has shown that many British song-thrushes move southwards and westwards in winter and it is likely that much of the winter population of Tees-side is of continental origin. Considerable numbers arrive on the coast in Oct. and Nov., although as a migrant the song-thrush is seldom as numerous as the fieldfare or redwing.

304. Redwing *Turdus musicus*

A regular winter-visitor and passage-migrant on the coast and in open country; common, Oct. to Apr.

Like the fieldfare this species is particularly numerous on the coast in Oct. and Nov. when large numbers arrive in this country from Scandinavia. At this time redwings can frequently be heard as they pass over Tees-side after dark. The fall-off in numbers, as the flocks disperse inland, and the return movement in the spring, follows much the same pattern as that of the fieldfare.

305. Dusky Thrush *Turdus eunomus*

A vagrant of which there is a single record:

12 Dec. 1959—24 Feb. 1960: 1, Hartlepool bowling green (Coates, 1960). This constituted the second British record of this Siberian species.

307. Ring-Ouzel *Turdus torquatus*

An irregular passage-migrant on the coast; in very small numbers.

Ring-ouzels occur on the coast in most years, with as many as 5 records in some years. The favourite localities for this species on passage appear to be the South Gare breakwater and Hartlepool town moor, but on 25 Feb. 1900 1 occurred in Stewart Park, Middlesbrough (Milburn, 1901 a). Most of the records are in Mar., Apr. and Oct., and it is probable that many of these birds are of Scandinavian origin.

308. Blackbird *Turdus merula*

A breeding resident in mixed woodland, gardens and hedgerows; abundant. A regular passage-migrant on the coast; abundant.

A familiar bird of the suburban garden, it abounds wherever there is suitable cover. Some blackbirds winter near the areas where they nest, whilst others move westwards. Large numbers arrive on the coast in Oct. and Nov. and it is known from ringing recoveries that some of the winter population of Tees-side is of Scandinavian and continental origin.

311. Wheatear *Oenanthe oenanthe*

A breeding summer-resident on the slag tips; in small numbers, Apr. to Sept. A regular passage-migrant to the coast; common.

Usually the first of the summer visitors to arrive in March, wheatears are established on their breeding territory on both sides of the estuary by mid-Apr. About 8 pairs nest annually. As a passage-migrant on the coast the bird is common in Apr. and Sept.: movements often include individuals of the larger Greenland race *O. o. leucorrhoa*. Stragglers occur into Oct., and in the winter of 1959-60 wheatears were seen at Hartlepool and North Gare in Dec. and Jan.

317. Stonechat *Saxicola torquata*

A regular winter-visitor and passage-migrant to the slag tips, marshes and coast; in small numbers, Sept. to Apr.

Now virtually extinct as a breeding species in Yorkshire and Durham, the stonechat is much less frequent in winter than it was even 30 years ago. Apart from a pair which takes up residence annually in the cliff-top gorse at Crimdon Dene, its appearances are somewhat erratic. It is most frequently recorded in the Saltholme area, South Gare and Hartlepool. 4 at Crimdon Dene in Feb. 1960, and 5 at Saltholme in Jan. 1961, are the largest parties recorded.
A small stonechat at Hartlepool on 26 Oct. 1960 showed the distinctive characteristics of one of the 6 Asiatic races, which are inseparable in the field (AV, RAM).

318. Whinchat *Saxicola rubetra*

A breeding summer-resident in open country; in small numbers, May to Sept.
A regular passage-migrant on the coast; in small numbers.

The whinchat is a common summer-resident of the bracken-covered escarpment of the Cleveland Hills, but its distribution on the coastal strip is extremely local. A few pairs nest near Billingham Bottoms and Acklam, and broods have, on occasion, been seen near Greatham Creek. Although it occurs on the coast in the spring passage, it is much more numerous in autumn, particularly in Sept. On 17 Sept. 1960, during the largest rush of small migrants to occur in recent times, about 100 were recorded between Crimdon Dene and Marske.

320. Redstart *Phoenicurus phoenicurus*

A breeding summer-resident in mixed woodland; in small numbers, Apr. to Sept.
A regular passage-migrant on the coast; common.

Scattered pairs breed in the woodland areas on the southern edge of the coastal plain between Ormesby and Wilton and also in Saltburn Woods. On the coast it occurs as a passage-migrant in both spring and autumn, though much more numerous in the latter season. During the big fall of migrants on 17 Sept. 1960, 325 were recorded between Crimdon Dene and Marske.

321. Black Redstart *Phoenicurus ochruros*

A regular passage-migrant and occasional winter-visitor to the coast; in small numbers.

In recent years black redstarts have been recorded from many points on the coast, but most frequently from South Gare and the vicinity of the Heugh Battery at Hartlepool. No less than 8 were present at these 2 localities in late Oct. 1960. Most occurrences fall either between Mar. and May, or Sept. and Nov., but the species has been recorded on 3 occasions in winter. An adult cock stayed at Hartlepool from 27 Nov. 1960 until Feb. 1961.

322. Nightingale *Luscinia megarhynchos*

A vagrant of which there is a single record:

15-28 May, 1932: a pair, Flatts Lane, Normanby (Milburn, 1932)

324. Bluethroat *Cyanosylvia svecica*

An irregular passage-migrant on the coast; in small numbers.

Increased watching is proving this to be a much more frequent visitor than was formerly supposed. Records during the present century are:

19 Sept. 1903: 2, Seaton Carew (Almond, Nicholson and Robinson, 1939)
16 Aug. 1929: 1, Saltholme Marsh (Almond, Nicholson and Robinson, 1939)
1-7 Sept. 1958: several, Hartlepool, North Gare and Redcar; maximum 4 on 4 Sept.
6 Oct. 1959: 1, Hartlepool (RTM)
16-18 Sept. 1960: Many between Crimdon Dene and South Gare; maximum 20 on 17 Sept.—9 of these at Hartlepool and 6 at South Gare (PJS, BJC *et al*). This probably represents the heaviest concentration of bluethroats ever recorded on the English coastline.

325. Robin *Erithacus rubecula*

A breeding resident in gardens, hedgerows, and mixed woodland; common. A regular passage-migrant on the coast; common.

The robin is a common and widespread breeding species wherever suitable habitats exist. Ringing has shown than many British robins winter close to the areas where they breed, whilst birds of northern European origin move southwards into Italy, Spain and southern France in considerable numbers. Continental robins occur on the coast in Mar., Apr. and between mid-Sept. and Nov., the autumn movement usually being much the heavier. In recent times, particularly notable invasions occurred between 1 and 5 Oct. 1951, when the South Gare breakwater was "carpeted" with robins, and on 29, 30 Mar. 1958.

327. Grasshopper-Warbler *Locustella naevia*

An irregular passage-migrant on the coast; scarce.

Along the bracken-covered escarpment of the Cleveland Hills the grasshopper-warbler is fairly well distributed as a breeding summer-resident from May to Sept. It nests at 3 localities just outside the boundary of the area—near Wilton, Nunthorpe and Crimdon—and previous to 1907 it bred at Redcar.
Coastal occurrences are:

13 May 1950: 2, South Gare—one of them "reeling" (AB)
21 Sept. 1957: 1, South Gare (DRS)
9 May 1959: 1, Hartlepool (RTM, GP)

333. Reed-Warbler *Acrocephalus scirpaceus*

Formerly a breeding summer-resident at 1 pond in the area, May to Sept.

A pair nested annually in a reed-bed at Linthorpe brick pond, Middlesbrough, until at least 1907 (Nelson, 1907). The pond was filled in shortly afterwards and has now been built over.

337. Sedge-Warbler *Acrocephalus schoenobaenus*

A breeding summer-resident in reed-beds and marshes; common, Apr. to Sept.
A regular passage-migrant on the coast; in small numbers.

Sedge-warblers breed in several localities on the coastal plain, though the species is perhaps most common in the reed-beds at Billingham Bottoms and Haverton

Hole. The marshy ditches around Graythorp and Coatham hold a few pairs, whilst others resort to drier situations such as Redcar fox covert. Isolated pairs can even be found on the slag tips, nesting in small bushes. Birds occur on the coast in Apr., May, Aug. and Sept., although the species is less frequent in spring.

343. Blackcap *Sylvia atricapilla*

A breeding summer-resident in deciduous woodland with dense undergrowth; in small numbers, May to Sept. A regular passage-migrant on the coast; in small numbers.

This species has a rather local distribution on the coastal plain, but scattered pairs breed in the denser woodland areas principally near Normanby, Wilton and Norton. On the coast it occurs regularly in Sept. and Oct. and occasionally in May. A female was caught and ringed in Linthorpe, Middlesbrough, on 5 Dec. 1959 (IFS), proof that this species occasionally winters in the area.

344. Barred Warbler *Sylvia nisoria*

Now known to be an irregular passage-migrant on the coast; scarce.

Records are:

13 and 20 Sept. 1959: an immature, South Gare, thought to be the same individual (KB, VFB)

21 Sept. 1960: an immature, Hartlepool (PJS)

346. Garden-Warbler *Sylvia borin*

A breeding summer-resident in deciduous woodland with dense undergrowth; common, May to Sept. A regular passage-migrant on the coast; in small numbers.

The garden-warbler is a fairly well distributed species in the more secluded woodland areas around Normanby, Wilton, Norton and Crimdon. On the coast it occurs in late Aug. and Sept. and, to a lesser extent, in May.

347. Whitethroat *Sylvia communis*

A breeding summer-resident in hedgerows and deciduous woodland with dense undergrowth; abundant, May to Sept. A regular passage-migrant on the coast; common.

The whitethroat is probably the most common warbler in the open country of south-east Durham and Cleveland, nesting in hedgerows, isolated bushes and thick undergrowth. It is a common migrant on the coast in late Aug. and Sept., a few also occurring in May.

348. Lesser Whitethroat *Sylvia curruca*

A regular passage-migrant on the coast; in small numbers; has bred.

A few lesser whitethroats are recorded annually on the coast, rather more frequently in Sept. and Oct. than in May. A skulking species whilst on passage, preferring thick undergrowth, the bird is easily overlooked. Most recent records are from the vicinity of the Heugh Battery at Hartlepool and Redcar fox covert. As a breeding summer-resident it is virtually unknown on the coastal plain, although an unconfirmed report of nesting was received from Normanby in 1955, and a clutch of eggs in the Middlesbrough Museum was taken at Stockton.

354. Willow-Warbler *Phylloscopus trochilus*

A breeding summer-resident in mixed woodland; abundant, Apr. to Sept. A regular passage-migrant on the coast; common.

Few woodland areas on Tees-side are without their complement of willow-warblers in summer, birds penetrating well into the more heavily wooded suburbs of the larger towns. Birch woods seem to hold a particular attraction for it, although it abounds wherever suitable habitats exist. On the coast it is a common migrant in Apr., May, late Aug. and Sept., with stragglers occurring into Oct. Most of these birds are probably of Scandinavian origin, and under drift conditions in the autumn, heavy falls sometimes take place. In a period of easterly winds and overcast skies on 17 Sept. 1960 over 200 were recorded between Redcar and Crimdon Dene and many more must have gone unnoticed.

355. Greenish Warbler *Phylloscopus trochiloides*

A vagrant of which there is a single record:

20 Oct. 1961: 1, Redcar (DRS)

356. Chiffchaff *Phylloscopus collybita*

A breeding summer-resident in deciduous woodland; in small numbers, early Apr. to Sept. A regular passage-migrant on the coast; in small numbers.

The chiffchaff prefers well-grown deciduous woodland and has, therefore, a rather local distribution in south-east Durham and Cleveland. A few pairs breed in the wooded areas between Wilton and Ormesby, at Saltburn and in Crimdon Dene. As a passage-migrant on the coast, it occurs in late Mar., Apr. and Sept., but is most frequent in Oct.

357. Wood-Warbler *Phylloscopus sibilatrix*

A breeding summer-resident in deciduous woodland; in small numbers, May to Sept. An irregular passage-migrant on the coast; scarce.

The wood-warbler has an extremely local distribution on Tees-side, its preference for deciduous woodland growing on a steep slope virtually restricting it to the woods at Wilton and Saltburn. There are only 2 coastal records of this species on migration: a single bird at Hartlepool on 23 Aug. 1959 (JAB) and another at Port Clarence in late Apr. 1961 (ECG).

364. Goldcrest *Regulus regulus*

A breeding resident and regular winter-visitor to coniferous woodland; common. A regular passage-migrant on the coast; common.

The goldcrest is a fairly well distributed resident wherever there are sizeable stands of conifer. A few pairs penetrate into the suburbs and parks of the larger towns, particularly in winter when the numbers are swollen by an influx from Scandinavia and northern Europe. On the coast it occurs regularly in Apr., but is much more numerous in late Sept. and Oct.

366. Spotted Flycatcher *Muscicapa striata*

A breeding summer-resident in deciduous woodland; common, late May to Aug. A regular passage-migrant on the coast; in small numbers.

Principally a woodland species, the spotted flycatcher is well distributed in suitable habitats throughout the area in summer. There are odd coastal records in Sept., but as a passage-migrant it is generally outnumbered by the pied flycatcher, the latter being much the more common in Scandinavia.

368. Pied Flycatcher *Muscicapa hypoleuca*

A regular passage-migrant on the coast; usually in small numbers.

In summer the pied flycatcher has an extremely local distribution in Cleveland and south-east Durham and none is known to breed on the coastal plain itself. During late Aug. and Sept. there are frequent coastal records as birds of Scandinavian origin move southwards. Under drift conditions it may become quite numerous, as on 2 Sept. 1958, when D. R. Seaward recorded at least 50 in Redcar fox covert with others in the surrounding area. Pied flycatchers occur occasionally in spring, usually in May.

370. Red-breasted Flycatcher *Muscicapa parva*

Now known to be an irregular passage-migrant on the coast; in very small numbers.

Records are:

2 Oct. 1959: an immature, Hartlepool (RTM)
6 Oct. 1959: an immature, Hartlepool (PR, RJL)
1-3 Oct. 1960: an immature, Hartlepool (BJC, RAM)
22 Oct. 1960: an immature, Hartlepool (JKS, PJS)
20 Sept. 1961: an immature trapped and ringed, Hartlepool (ECG, PR, RTM)
4 Oct. 1961: an immature, Hartlepool (RTM, PR)
12 Oct. 1961: an immature, Acklam, Middlesbrough (PH)

371. Dunnock *Prunella modularis*

A breeding resident in gardens, hedgerows and mixed woodlands; abundant. A regular passage-migrant on the coast; in small numbers.

The hedge-sparrow, or dunnock, is a widespread and abundant resident in all except the heavy-industrial areas and the open marshland where there is little cover. The local breeding stock is probably fairly sedentary. On the coast, birds occur in Sept. and Oct. and, to a lesser extent, in April and May. Some of these are of continental origin.

373. Meadow-Pipit *Anthus pratensis*

A breeding resident on the marshes and in open country; abundant in summer. A regular passage-migrant on the coast: abundant.

The meadow-pipit abounds in open country during spring and summer, being particularly numerous in the low lying areas close to the estuary. Most local birds appear to move south in autumn, but a few remain on the marshes and coastal fields throughout the winter.

As a passage-migrant it is abundant on the coast in Mar., Apr. and Sept. At Redcar, where the movement is generally north-westerly in spring, the configuration of the coastline concentrates the birds into a flyway, which extends about half a mile inland. D. R. Seaward has witnessed several flights in excess of 200 to 300 birds an hour at Redcar, but even these were eclipsed by the movement of 31 Mar. 1961, which lasted all day, and involved many thousands. In the early morning, birds were coasting north-west at an average rate of 780 per hour. The autumn passage at Redcar is much less concentrated and tends to include a proportion of south to south-east movements in addition to those of a north-westerly direction.

376. Tree-Pipit *Anthus trivialis*

A breeding summer-resident in open deciduous woodland; in small numbers, Apr. to Sept. A regular passage-migrant on the coast; in small numbers.

The tree-pipit is a thinly distributed resident in Cleveland and south-east Durham in summer. On the coastal plain it is largely confined to the Wilton/Normanby area and Crimdon Dene. A few are recorded regularly on the coast in Sept. and occasionally in Apr. and May.

379a. Rock-Pipit *Anthus spinoletta petrosus*

A regular winter-visitor and passage-migrant to the coast; common, Sept. to Apr.; has bred.

The rock-pipit nests in some numbers along the rocky coastline south of Saltburn, but at the Tees estuary itself breeding has only twice been proved satisfactorily, on both occasions on the Durham side of the estuary, in 1909 and 1933 (Temperley, 1951). Several more recent records are highly suspect. From Sept. to Mar. rock-pipits are quite common about the rocky headland of Hartlepool, at the 2 Tees breakwaters and along the slag revetment walls of the estuary. Whether these birds are of local origin or not is uncertain.

379b. Water-Pipit *Anthus spinoletta spinoletta*

Now known to be an irregular passage-migrant on the coast; scarce.

Records are:

29 Mar. 1956: 1, Greatham Creek (BJC)
13 Apr. 1961: 1, Crimdon Dene (ES)

380a. Pied Wagtail *Motacilla alba yarrelli*

A breeding resident in old buildings, walls and gardens; common. A regular passage-migrant on the coast; common.

Many pairs breed on the slag tips and waste ground close to the estuary, but the species is fairly widespread throughout the area wherever suitable habitats exist. A few remain throughout the year, but ringing has shown that many migrate to southern France and Spain in winter. On the coast and marshes it is a common migrant in spring and autumn.

380b. White Wagtail *Motacilla alba alba*

A regular passage-migrant on the coast; in small numbers, May and Sept; has bred.

Although more frequently recorded in spring than autumn, this is doubtless due to the difficulty of identifying birds of this race in the latter season. Numbers fluctuate, but as many as 20 have been recorded in a day in the Cowpen/Saltholme region. A pair of white wagtails with young was recorded by T. H. Nelson on the Yorkshire side of the estuary in June 1909, a most unusual occurrence.

381. Grey Wagtail *Motacilla cinerea*

A regular passage-migrant on the coast; in small numbers, Mar., Apr. and Sept. A regular winter-visitor on streams; in small numbers.

Whilst this species is a breeding resident of the hillside streams of Cleveland, its range does not extend to the coastal plain. A few are recorded annually among the coasting migrants at Redcar and occasionally at Hartlepool and elsewhere. Although the possibility of continental immigration cannot altogether be excluded

it is probable that the majority of these birds originate in the high Pennines which the species vacates in winter. Some birds winter on the coastal plain along the lower reaches of some of the streams.

382a. Yellow Wagtail *Motacilla flava flavissima*

A breeding summer-resident on the marshes; common, Apr. to Sept. A regular passage-migrant on the coast; common.

This species has adapted itself very well to the industrialisation of the area. Many pairs nest on the slag tips adjacent to Grangetown and Port Clarence and, indeed, in some places are even more numerous there than on the marshes. Seldom found far away from water, the yellow wagtail is a common migrant in May and Sept.

382b. Blue-headed Wagtail *Motacilla flava flava*

A vagrant of which there are 2 records:

6 May 1900: 3 males, Teesmouth (Milburn, 1901 b)
30 Apr. 1955: a male, Greatham Creek (NY)

383. Waxwing *Bombycilla garrulus*

A regular winter-visitor and passage-migrant to gardens, parks and hedgerows; usually in small numbers, Nov. to Mar.

In recent years the waxwing has proved to be a regular winter-visitor to Tees-side, although numbers fluctuate considerably from year to year. Birds occur throughout the area, but usually in the vicinity of hawthorns or cotoneasters, the berries of which form its principal food during the winter months. The stands of old hawthorns in Albert Park, Middlesbrough, are a great attraction and it is there that the largest concentrations normally occur. During the big invasions of Nov. 1946 and 1959 about 100 birds were present in the park.

384. Great Grey Shrike *Lanius excubitor*

An irregular passage-migrant on the coast; in very small numbers, Oct., Nov. and Apr.

This species does not appear to winter in the area and individuals seldom linger long on passage. Records during the past decade are:

11 Oct. 1952: 1, South Gare (JH, DRS)
Nov. 1953: 1, Hartlepool (FW)
23 Oct. 1955: 1, Hartlepool (PLH, AB, PJS)
15 Apr. 1956: 1, Greatham (DR & PS)
11 Oct. 1959: 1, Redcar (DGB, FGG, ELA) and 1 near Crimdon Dene (FW)
Oct. 1960: Redcar — 1 on 21 Oct. (DRS)
Hartlepool — 1 on 21 Oct.; 2 on 24 Oct., 1 of which stayed until 25 Oct. (BJC, AV, RAM)
14 Oct. 1961: 1 near Seaton Carew (DSS)

388. Red-backed Shrike *Lanius cristatus collurio*

An irregular passage-migrant on the coast; in very small numbers, May, Aug. and Sept. Formerly an irregular summer-resident.

Records during the past decade are:

21 May 1951: a male, South Gare (PJS)
Aug. 1954: Seaton Snook — an immature on 22 Aug. (PJS, AB)
Hartlepool — 2, later 1, immature from 25 to 27 Aug. (PLH, CJH)

21 Nov. 1954: a male, South Gare (MA)
6 Sept. 1958: 2, Crimdon Dene
13 May 1960: 1, Hartlepool (FW)
17-21 Sept. 1960: 2, later 1, immature, North Gare (PJS, RTM, AV)

T. H. Nelson recorded 2 nests near Redcar about 1870 and 1 at Gunnergate, Marton, in June 1898.

389. Starling *Sturnus vulgaris*

A breeding resident, a regular passage-migrant and winter-visitor; abundant and widespread.

The starling is generally distributed throughout the area, nesting in holes in trees, industrial structures, houses and outbuildings. Well adapted to living in close association with man, there is little doubt that the species has benefited from the suburban sprawl of Tees-side in recent years. In late June and early July there is an influx of birds of the year from the continent followed by the main immigration in Oct. and Nov. These starlings from Germany, the Baltic region and Russia, stay until Apr. and concentrate at night in vast roosts, 1 of which, the Transporter Bridge at Middlesbrough, has been in regular use for at least the last 20 years. In the winter of 1955 to 1956 an enormous roost, estimated at 1,500,000 birds, built up in I.C.I.'s Billingham Works and resisted all efforts to disperse it.

390. Rose-coloured Starling *Sturnus roseus*

A vagrant of which there are 3 records:

28 Aug. 1851: 1, Coatham Marsh (Nelson, 1907)
12 Aug. 1855: 1, Middlesbrough (Nelson, 1907)
*23 Nov. 1889: a male shot, Redcar (Nelson, 1907)

391. Hawfinch *Coccothraustes coccothraustes*

Present status obscure, probably a breeding resident in 1 area of deciduous woodland; in very small numbers.

The hawfinch is a local bird in Cleveland and south-east Durham, its only station on the coastal plain being the woodland belt between Ormesby and Wilton. In 1902 a colony of some 30 pairs existed in Ormesby. The birds were much persecuted by local gardeners as the damage they caused to the pea crop was considerable. Breeding has not been proved in the area for many years, but a remnant of this population still survives despite the encroaching housing estates.

392. Greenfinch *Chloris chloris*

A breeding resident in hedgerows and gardens; common. A regular winter-visitor and passage-migrant throughout the area; common.

In the open country of Cleveland and south-east Durham the greenfinch is a common and widespread resident, although on the coastal strip itself large areas once suitable for it have been transformed into modern housing estates. Where suitable cover exists, however, it penetrates well into the suburbs of the larger towns. It is doubtful if there is any large scale immigration of continental birds in autumn, although on the coast at Redcar there is a well defined north-westerly movement of greenfinches in Sept. and Oct. The majority of these are probably of a fairly local nature.

393. Goldfinch *Carduelis carduelis*

A breeding resident in gardens, deciduous woodland and open country ; in small numbers.

The goldfinch is rather local in Cleveland and south-east Durham and it is only thinly distributed on the coastal plain. The areas of open woodland between Marton and Wilton hold a few pairs, as do those near Wolviston and Norton, whilst a few penetrate the more secluded suburban areas of Tees-side. Out of the breeding season small parties may occur almost anywhere, but particularly where there is a plentiful supply of thistles.

394. Siskin *Carduelis spinus*

A regular passage-migrant on the coast ; usually in small numbers, Apr., Sept. and Oct. An irregular winter-visitor to mixed woodland ; in small numbers.

Siskins are recorded on the coast annually in Sept. and Oct., but numbers fluctuate considerably from year to year. The largest fall to occur recently was that of 17 Sept. 1960 when 70 were recorded between Hartlepool and Redcar. Most of the flocks pass on inland, but occasionally small parties will winter on Tees-side, usually in coniferous plantations or marshy woodland with a high density of alder.

395. Linnet *Carduelis cannabina*

A breeding resident in hedgerows and gardens ; common. A regular passage-migrant and winter-visitor in open country ; abundant.

The linnet is a common resident in open country with hedgerows or isolated bushes. Numbers are probably highest along the coast in localities where there is a growth of gorse, sea buckthorn or hawthorn. In Sept. and Oct. flocks of migrant linnets occur on the coast, movements at Redcar usually being north-westerly at this time. Some of these birds winter in the area, frequenting the stubble fields, salt marshes and stackyards.

396. Twite *Carduelis flavirostris*

An irregular passage-migrant and winter-visitor to the coast and salt marshes ; scarce, Oct. to Mar.

Nelson implied that this species was a regular winter-visitor in some numbers to the Yorkshire coast, mentioning Teesmouth as one of the localities where it occurred. This is certainly not the case today and recent records are few :

3 Jan. to 24 Feb. 1936 : a flock of up to 20, South Gare (MGR)
21 Oct. 1947 : 1, Teesmouth (Co. Durham) (JRC)
8 Jan. 1950 : 1, South Gare (PJS, JH)
12 Feb. to 15 Mar. 1950 : a flock of 50, near Redcar Steelworks, South Gare (AB)

397a. Lesser Redpoll *Carduelis flammea cabaret*

A breeding resident in coniferous and mixed woodland ; in small numbers. A regular passage-migrant on the coast ; in small numbers.

The lesser redpoll is a common woodland resident in Cleveland and south-east Durham, but suitable habitats are rather few on the coastal plain. It is perhaps most common around Wolviston and Crimdon Dene, but birds will occasionally penetrate well into the suburbs of the larger towns. On the coast redpolls occur annually in late Sept. and Oct., although they are seldom numerous. Sub-specific determination is rarely possible, but the majority are probably referable to this race.

397b. Mealy Redpoll *Carduelis flammea flammea*

Status obscure, probably an irregular passage-migrant to the coast although there are only 3 records :

24 Oct. 1881 : 7 at Redcar and several at South Gare (Nelson, 1907)
About 1938 : 3, Normanby (ECG)
31 Dec. 1961 and 1 Jan. 1962 : 6, Acklam Whin, Middlesbrough (LM)

This race is very likely a more frequent visitor than the few records suggest.

401. Bullfinch *Pyrrhula pyrrhula*

A breeding resident in deciduous woodland and gardens ; in small numbers.

Rather a local bird in Cleveland and south-east Durham, the bullfinch has a limited distribution on the coastal plain. A few pairs, however, nest in the more secluded gardens and woodland between Marton and Wilton, in the Wolviston area and near Crimdon Dene. Bullfinches are occasionally recorded on the coast in spring and late autumn ; some of these are probably of continental origin.

404. Crossbill *Loxia curvirostra*

An irregular passage-migrant on the coast ; scarce.

Crossbills are now recorded in most years in the conifer plantations along the escarpment of the Cleveland Hills. These birds of Scandinavian origin normally arrive in this country in mid-summer, their numbers depending on the success of the cone crop in Norway and Sweden. Very few have, however, been recorded on the coastal plain—only records are :

6 Aug. 1898 : a male, Redcar (Nelson, 1907).
16 June 1903 : a male killed, Redcar (Nelson, 1907)
4 July 1958 : a male, Hartlepool (PR)

407. Chaffinch *Fringilla coelebs*

A breeding resident in gardens, hedgerows and mixed woodland ; abundant and widespread. A regular passage-migrant on the coast ; common.

One of the most common species in the open country of south-east Durham and Cleveland, it is also a familiar bird of the suburban garden. In winter, flocks of chaffinches mixed with other finches frequent the hedgerows and stackyards. On the coast it is a common migrant in Sept. and Oct., a few birds usually occurring in spring.

408. Brambling *Fringilla montifringilla*

A regular passage-migrant on the coast ; common. A regular winter-visitor in open country ; common, Oct. to Apr.

Bramblings arrive in this country from Scandinavia in Oct., at which time they occur along the coast, though seldom in large numbers. Most of the birds pass on inland, but a few small flocks stay to winter on Tees-side. They often consort with chaffinches in the stackyards and hedgerows and are particularly fond of beech mast. The return movement in Apr. is normally much less noticeable on the coast.

409. Yellow Hammer *Emberiza citrinella*

A breeding resident in hedgerows and open country ; abundant and widespread.

Essentially a bird of open arable country intersected by hedgerows, the yellow hammer is abundant and widespread throughout most of south-east Durham and

Cleveland at all seasons. It is largely absent from the marshes, where there is little cover, neither does it appear to penetrate the suburbs of the larger towns to any extent. It occurs on the coast in autumn, but evidence of immigration from the continent, on a large scale, is lacking.

410. Corn-Bunting *Emberiza calandra*

A breeding resident on the marshes and in open country; common.

The corn-bunting has rather a local distribution in Cleveland and south-east Durham, but it is a common bird on the coastal fields and marshes from Seaton Carew to Port Clarence and from Grangetown to Saltburn. A few breed south of Middlesbrough, near Tollesby, but much of the area is now built over. In hard weather, flocks may frequent the saltings and tidewrack along the shore.

415. Cirl Bunting *Emberiza cirlus*

A vagrant of which there is a single record:

18 Sept. 1960: a male, Redcar (DRS).

419. Rustic Bunting *Emberiza rustica*

A vagrant of which there is a single record:

7 Sept. 1958: 1 near North Gare (AV, PR, JKS)

420. Little Bunting *Emberiza pusilla*

A vagrant of which there is a single record:

11 Oct. 1902: 1 shot, Seaton Snook (Milburn, 1904)

This constituted the second British record of this species.

421. Reed-Bunting *Emberiza schoeniclus*

A breeding resident in reed-beds, marshes and thickets; common. A regular passage-migrant on the coast; in small numbers.

The reed-beds at Billingham Bottoms, Portrack and Haverton Hole support a high density of reed-buntings. Small numbers nest on the remnants of Coatham Marsh and odd pairs in the sea buckthorn near North Gare. On the coast it occurs regularly in September and Oct. and less frequently in early spring, but is seldom numerous. The origin of these birds is not known.

422. Lapland Bunting *Calcarius lapponicus*

A regular passage-migrant and winter-visitor to the coastal fields and marshes; in small numbers, Sept. to Apr.

Since the discovery of a flock of Lapland buntings near Graythorp in Sept. 1953 by P. Evans and D. R. Seaward, the species has proved to be a regular winter-visitor to the coastal fields, both in that area and around Redcar. Numbers are difficult to assess, but it is probable that in an average year the total population at both localities does not exceed 50. In hard weather, parties may frequent the saltings and tidewrack along the shore, where they associate with snow-buntings.

423. Snow-Bunting *Plectrophenax nivalis*

A regular passage-migrant and winter-visitor to the coastal dunes and beaches; abundant, Oct. to Apr.

A few passage birds are recorded in early Oct., but it is not until Nov. that the resident winter flocks on Coatham and Seaton Sands begin to build up. In most

winters the peak population is probably in the order of 300, but numbers are difficult to assess as there is a good deal of interchange between the 2 parties and some resort to the stubble fields inland. It was estimated that about 1,000 were present near Graythorp on 25 Nov. 1961 (PR, CB), by far the largest flock ever recorded at Teesmouth. The majority leave in Mar., but stragglers occur into Apr.

424. House-Sparrow *Passer domesticus*

A breeding resident in industrial and urban areas and farm buildings; abundant and widespread. A regular passage-migrant on the coast; in small numbers.

Universally distributed in all urban areas, the house-sparrow is familiar to all. This is one of the few species that succeeds in penetrating the heavy-industrial areas where it forages around the factory canteens. In late summer, flocks of house-sparrows move into open country, where the ripening corn is a great attraction. Flocks of very clean-looking birds are recorded on the coast in spring and autumn, but it is doubtful if these are undertaking more than local movements.

425. Tree-Sparrow *Passer montanus*

A breeding resident in open country and deciduous woodland; in small numbers. A regular passage-migrant on the coast; sometimes common.

The open country of south-east Durham, with isolated trees and small copses, is ideal for this species and it is well distributed in small numbers about Norton, Wolviston and Greatham. South of the Tees it is rather less numerous, though colonies still exist near Brambles Farm, Marton, Acklam and just outside the area at Upleatham.

As a passage-migrant it occurs regularly at Redcar, and elsewhere on the coast, in Sept. and Oct. and less frequently in Apr. and May. On occasion, coasting movements of tree-sparrows at Redcar can reach spectacular proportions, as on 16 Oct. 1960 when 130 flew north-west in 90 minutes (DRS). The origin of these birds is not known.

DOUBTFUL RECORDS

It has not been found possible to accept all the published occurrences of the more unusual species. Given below is a list of those records to which an element of doubt attaches or on which previous authors have cast suspicion. In some cases the identification may very well have been correct, but the supporting evidence is insufficient for its acceptance as an authentic record.

83. Red-breasted Goose *Branta ruficollis*

About 1845: 2, Cowpen Marsh (Hogg, 1845, and Temperley, 1951)

124. Little Crake *Porzana parva*

Before 1887: Cowpen Marsh area (Lofthouse, 1887)

There is a specimen of little crake in the Middlesbrough Museum which may be of local origin.

197. Ivory Gull *Pagophila eburnea*

Before 1845: 1 found dead, Cowpen Marsh (Hogg, 1845)

14 Feb. 1880: 1 shot, Teesmouth (Lofthouse, 1887)

209. Sabine's Gull *Xema sabini*

*6 Oct. 1889 : 1 immature obtained Tees Bay (Nelson, 1907)—this bird is a juvenile little gull.

9 May 1932 and 17 May 1944 : 2, Greatham Creek (Temperley, 1945)

216. Caspian Tern *Hydroprogne caspia*

23 Aug. 1948 : 1, South Gare (Chislett, 1952) — the possibility of royal tern was not entertained at the time.

220. Sooty Tern *Sterna fuscata*

Autumn 1896 : 1 shot, Teesmouth (Clayton, 1899)

256. Alpine Swift *Apus melba*

25 July 1948 : a party of 10, South Gare (Chislett, 1952)

Blue-tailed Bee-eater *Merops superciliosus philippinus*

Aug. 1862 : 1 shot near Grangetown, not Seaton Snook as was originally stated (Hancock, 1874, and Nelson, 1907)
This eastern race of the blue-cheeked bee-eater has not been accepted onto the British list, nor has it occurred elsewhere in Europe. Recent efforts have been made to trace this specimen, without success, but as it was examined by Hancock himself there would seem no reason to doubt that it was identified correctly.

295. Bearded Tit *Panurus biarmicus*

1841 or 1842 : a male, Kirkleatham (Booth, 1845)

374. Richard's Pipit *Anthus richardi*

20 Aug. 1958 : 1, Teesmouth (Grey, 1960) — this record was rejected by the *British Birds* Rarities Committee.

ACKNOWLEDGMENTS

I wish to thank the many Tees-side ornithologists without whose help this check-list could never have been compiled. A list of those recent watchers whose observations are included in the text is given below. Special mention should be made of T. H. Nelson (died 1916), C. E. Milburn (died 1933) and J. Bishop (died 1939), whose pioneer work on the birds of this area was outstanding.

My thanks are especially due to D. R. Seaward, Dr. D. Summers-Smith and D. G. Bell, whose advice and assistance in the preparation of this work have been invaluable. I am also grateful to the Dorman Memorial Museum, Middlesbrough, for the loan of various transactions and Nelson's own annotated copy of *The Birds of Yorkshire*.

Contributors are as follows :—W. B. Alexander, M. Allison, W. E. Almond, W. Anderton, Mr. E. L. Arnold, J. A. Bailey, A. Baldridge, K. Baldridge, Miss D. Bell, D. G. Bell, M. Bell, C. Bielby, E. G. Brown, V. F. Brown, B. J. Coates, G. Coates, Mrs. A. L. Cooper, J. R. Crawford, P. Dent, the late N. K. Duncan, the late G. A. Ewbank, Dr. P. Evans, A. E. Felgate, B. Foster, B. Garland, E. C. Gatenby, Miss C. Greenwell, Miss J. Greenwell, Mrs. A. M. Golson, F. G. Grey, P. Harland, N. W. Harwood, J. V. Henderson, C. J. Henty, the late O. C. Hill, P. L. Hogg, C. Horner, J. Hyatt, D. Leng, R. J. Lightfoot, R. T. McAndrew, I. McKinlay, the late R. A. McKinlay, L. Magee, J. Nicholson, the late R. Povey, G. Procter, P. Reid, W. K. Richmond, H. P. K. Robinson, M. G. Robinson, D. R. Seaward, Mrs. P. Seaward, E. Shearer, M. Sidgwick, R. D. Sistern, J. K. Smith, R. Smith, Dr. D. Summers-Smith, P. J. Stead, I. F. Stewart, A. Taylor, G. W. Temperley, R. Thomas, G. S. Tuffnell, J. P. Utley, A. Vittery, A. J. Vittery, F. Wrigglesworth, N. Yule.

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SPECIMENS

Where a record refers to a specimen in one of the local museums the following symbols have been adopted :—

* Dorman Memorial Museum, Middlesbrough

† Hancock Museum, Newcastle upon Tyne

‡ Sunderland Museum

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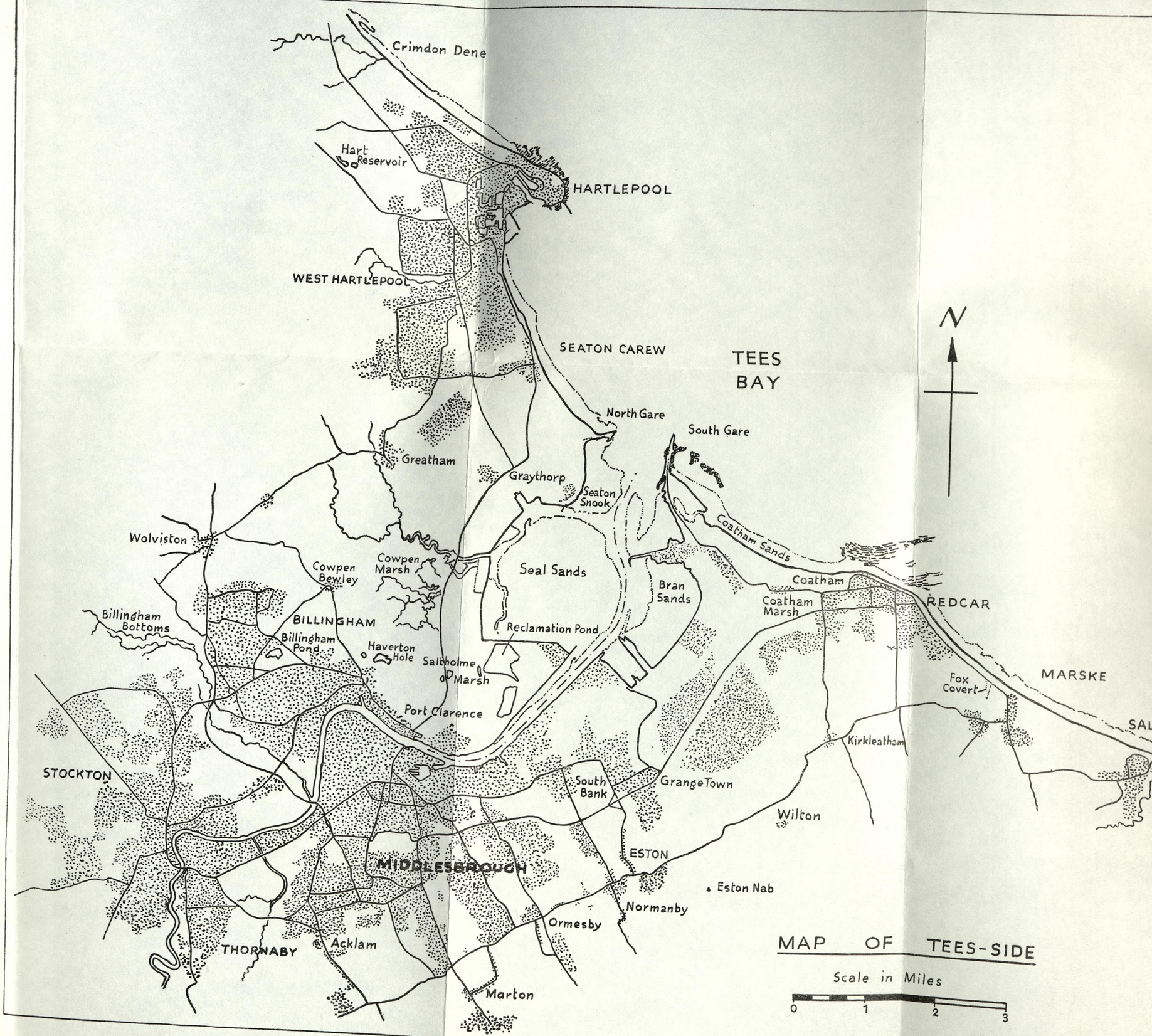
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Wolviston
Cowpen Bewley
Cowpen Marsh
Seal Sands
Bran Sands
Coatham Sands
Coatham
Coatham Marsh
REDCAR
Billingham Bottoms
BILLINGHAM
Billingham Pond
Haverton Hole
Saltholme Marsh
Reclamation Pond
Port Clarence
Fox Covert
MARSKE
Kirkleatham
STOCKTON
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Wilton
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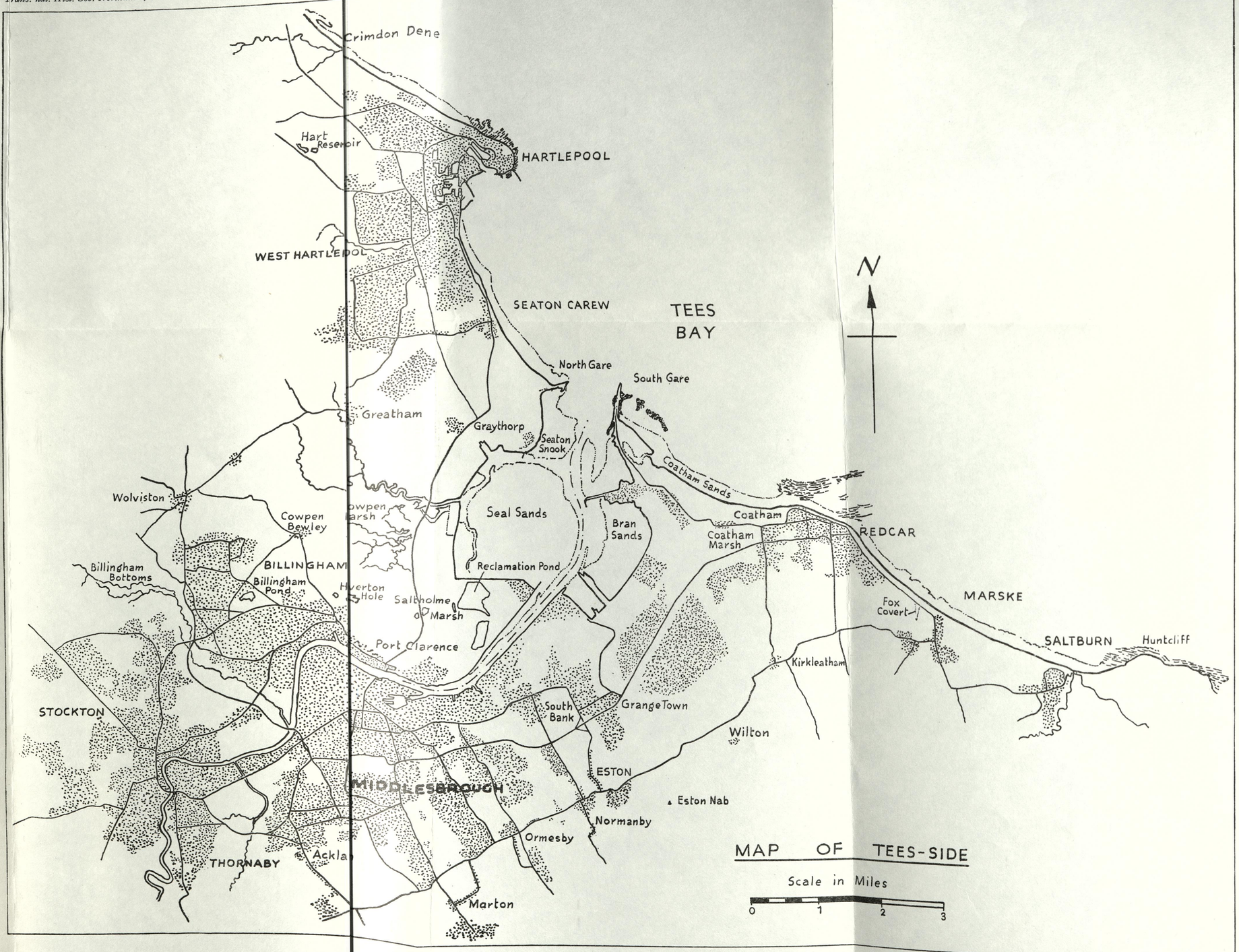
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Port Clarence
Fox Covert
MARSKE
SALTBURN
Huntcliff
Kirkleatham
STOCKTON
South Bank
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ESTON
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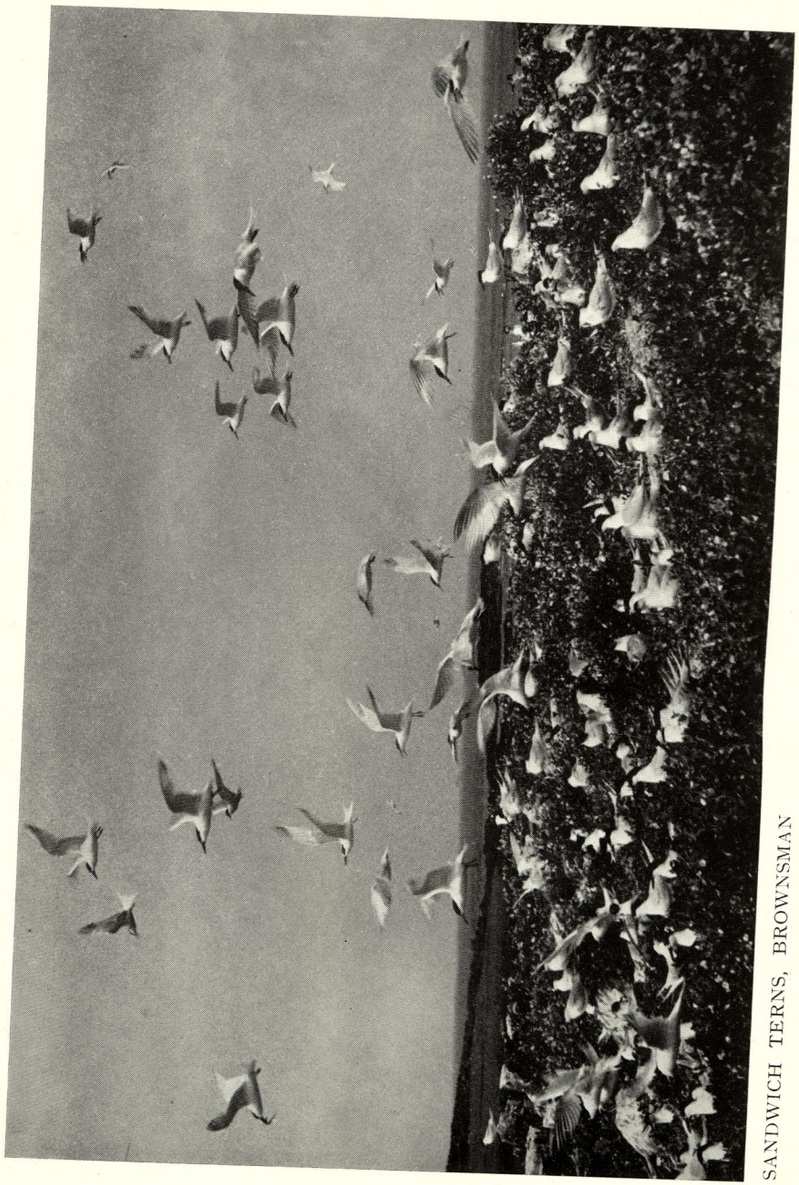
PLATE 3



Photograph by Grace Hickling

SANDWICH TERNS, BROWNSMAN

ORNITHOLOGICAL REPORT FOR NORTHUMBERLAND AND DURHAM FOR 1963

Compiled from the notes and records of members of the Natural History Society of Northumberland, Durham and Newcastle upon Tyne, the Teesmouth and Tyneside Bird Clubs, and other observers

by

D. G. BELL

INTRODUCTION

A special effort was made to produce this Report earlier than has been the case in recent years. In particular, contributors were asked to submit their records by 15 January and almost everybody did so, enabling compilation to begin promptly: contributors are most sincerely thanked for their co-operation, and are requested to submit their records by this date every year in the future.

The new "UNUSUAL RECORD" sheet was also successful and resulted in a greater amount of information on scarce and out of season birds than has been available in the past. Consequently, fewer records have had to be rejected, and it is hoped that even more observers will obtain and use these sheets in the future.

OUTSTANDING FEATURES OF 1963

The arctic winter of 1962-3. Exceptionally severe conditions prevailed from mid-December until early March, with widespread frost and deep snow. Though many of the suburban birds were undoubtedly saved by bird-table feeding, most species were beyond human aid, and untold thousands perished. Countless redwings and fieldfares were found starved to death shortly after the cold spell had begun, and apparently disappeared altogether about mid-January. Blackbirds and thrushes fared little better, though in the early stages many gathered on the dunes and shore, where the sea kept snow and frost at bay; at Monk's House weakened song-thrushes were even seen feeding on shell-fish on the rocks. By the end of the month few of the passerines that had stayed in the area remained alive. A similar situation prevailed elsewhere, and starving birds were found in very unlikely situations, desperately seeking food. In the Hamsterley, Shildon, and West Auckland areas, considerable numbers of red grouse fed on hawthorn buds, balanced precariously several feet up in the

hedges, miles from their usual haunts. Round Coxhoe, snipe often fed in roadside gutters and puddles, and even in the middle of the road, while in a Durham City bus-station a dunlin was observed running along the street. A water-rail scratched about on a suburban manure-heap in South Shields, while in Darlington a house-sparrow ate quantities of frost-pulverised soil. Birds noted eating snow included dunnock, blackbird, robin, starling and great spotted woodpecker—this last bird also bathed in it !

All inland waters remained frozen for nearly three months, so water-birds were also greatly affected. A little grebe at Belsay lake on 17 February proved upon dissection (by the M.A.F.F. at Lasswade) to have died of cold—a rare diagnosis, as birds can withstand very low temperatures and usually die through having their food supply cut off rather than as a direct result of the cold itself. Up to twelve little grebes occurred on the Wear at Durham City, and up to forty-four coot thronged the shores of Greatham Creek ; a moorhen was even seen off Skate Road, and goosanders sheltered and fed near the break-waters at Hartlepool. A wonderful assemblage of wildfowl gathered in the Tees estuary, comprising marine species sheltering from bitter conditions on the open coast, and fresh-water species frozen out of their usual haunts.

Unfortunately, however, the water-birds on the coast had to face another hazard : oil. In early February many oiled birds were washed up, alive and dead, all along the coast. On 10 February, between Holy Island and Cresswell alone, some three hundred guillemots, four razorbills, twenty-four eiders, some fifteen common scoter, two velvet scoter, a Slavonian grebe, a long-tailed duck and a merganser were picked up. On 25 February twenty-eight common scoter were washed up at Bamburgh, while at Teesmouth the list of victims include divers, grebes, sea-birds, ducks, swans, waders and gulls.

In early March came the thaw, and birds began to reappear in their usual haunts, though many species had evidently been much reduced. A few small emigrating parties of redwings and blackbirds were the first signs for weeks that there were any of these birds left to return to the continent. However, it was not until the nesting season was over that one could be at all sure just what the losses were. The following were noticeably reduced : lapwing, redshank, kingfisher, great tit, blue tit, coal-tit, tree-creeper, wren, mistle-thrush, song-thrush, blackbird, robin, goldcrest, dunnock, pied wagtail, grey wagtail, and chaffinch. In contrast to the resident species, summer-visitors, which had escaped the cruel winter, appeared to have a good breeding season.

The autumn drift. The autumn provided a much brighter picture, with numbers of most migrants well up to, or in many cases well above, average. Wader passage in August-October was exceptional : curlew-sandpiper, wood-sandpiper and greenshank arrived in unprecedented numbers, while five American waders of four species arrived during the same period.

Even more notable was the spectacular drift of continental passage-migrants on to the north-east coast during the period 30 August–3 September. Migrants leaving Scandinavia in fine weather, and light south-east winds resulting from an extensive high pressure area over eastern Europe, flew into strengthening east winds, overcast skies and a rain front, caused by a vigorous low pressure area centred over Ireland and gradually moving south-east. They arrived all along the Northumberland coast and, in much smaller numbers, in Durham. Successive influxes occurred, but though some new individuals arrived and others lingered, the influx was virtually over by 4 September. Redstarts and wheatears were the dominant species (probably well over a thousand of each), followed, in order of abundance, by several hundred each of garden-warblers, pied flycatchers, whinchats and *Phylloscopi* ; spotted flycatchers—usually scarce on migration—also reached three figures. Unprecedented numbers of icterine, barred and reed-warblers, and lesser whitethroats, occurred at the same time, along with many red-backed shrikes, wrynecks, seven bluethroats and two ortolan buntings. Later influxes brought continental migrants from further afield : a subalpine warbler, a yellow-browed warbler, two red-breasted flycatchers, two firecrests and a red-throated pipit, and the year closed with a widespread invasion of waxwings.

CLASSIFIED NOTES

1. Black-throated Diver *Gavia arctica*

Odd reports for Cresswell Bay, St. Mary's Island and Hauxley constitute a smaller total than usual for Northumberland. However, 1 on the sea at Marsden on 21 Jan. (ES) was the first Durham record since Feb. 1960 ; the bird remained until 29 Jan. and on 28 Jan. there were 2. Also 1 at Seaham on 29 Jan. (ES), 1 (dead) at Tees-mouth on 23 Mar. (GST) and 1 in Hartlepool docks 24-29 Dec. (GCS, PJS, ECG).

2. Great Northern Diver *Gavia immer*

Occasional in Northumberland Jan.-Apr., and in Dec. ; maximum 4 in Holy Island harbour in Jan. and Feb. (GB, JMB, MM). The only Durham record was 1 on Hurworth Burn 27 Nov.-15 Dec. (JKS, PJS).

4. Red-throated Diver *Gavia stellata*

As usual, by far the commonest diver, and present all months. Considerable move-ment of divers (mainly this species) in late Jan. and early Feb., e.g. 52 flew north in 75 minutes at Crimdon Dene on 25 Jan. (ES), 48 flew north in 90 minutes at

Cresswell and 37 south at Hartlepool on 9 Feb. (JD, MB) ; the biggest movement was 153 (all but 3 going north) in 70 minutes at Seaham in a fresh south-east wind on 5 Feb. (ES). The biggest concentrations of resting and feeding birds gathered in Cresswell Bay and off Ross Links, numbers reaching 3 figures in Apr. and Dec. The only inland red-throat was an oiled bird on Cresswell Pond on 10 Mar. (JD).

5. Great Crested Grebe *Podiceps cristatus*
Of 2 pairs which nested in Northumberland, 1 failed and the other brought off 4 young. In Durham a pair succeeded in rearing 1 young from a brood of 3. Birds occurred widely in ones and twos at all times of the year.

6. Red-necked Grebe *Podiceps griseigena*
Recorded only Jan.-May. Of 4 reported on the Durham side of Teesmouth Jan.-Mar., 2 were oiled. 2 on the Wear at Chester-le-Street 17 Feb.-3 Mar. (JAB). The only other Durham bird was at Seaham in Feb. and had assumed full summer plumage by 7 Mar. (ES). Seen on 15 occasions in Northumberland, maxima being 4 in Holy Island harbour on 10 Feb. (MM, JMB) and *ca.*12 off Skate Road on 23 Feb. (BL, ER). The last was 1 in full breeding dress at Holy Island on 5 May (ER).

7. Slavonian Grebe *Podiceps auritus*
Recorded Jan.-Apr. and Nov.-Dec. Skate Road showed 5 on 19 Jan. (BE), as many as 100 on 23 Feb. (BL, BE), 2 on 25 Feb. (MB, DH), 2 on 24 Mar. (PJS) and 3 on 3 Nov. (PJS, DGB). Stag Rocks showed 9 on 25 Feb. (MB, DH), 1 in almost full summer plumage on 25 Apr. (PRE) and 2 on 31 Dec. (MB, CW). Single records from Holy Island and Cresswell. 1 at Seaham on 14 Feb., and 1 at Marsden on 6 Mar. (ES), were the only Durham records.

8. Black-necked Grebe *Podiceps nigricollis*
1 at Holy Island on 30 Jan. (GB) ; 1 in full summer plumage on Harbottle Lake on 11 Apr. (JTP) ; 1 on Havannah and Seaton Burn ponds 12-15 Aug. (SRB, BG, ER).

9. Little Grebe *Podiceps ruficollis*
The biggest Northumberland and Durham counts were respectively 8 on Newton Pool on 18 Sept. (PRE) and 21 on Hurworth Burn on 30 Sept. (PJS).

16a. Manx Shearwater *Procellaria puffinus puffinus*
Scarce before late June, when northerly passage suddenly increased : on 28 June, 106 at Hartlepool and 133 at Seaham ; on 29 June, 35 at Hartlepool, 369 at St. Mary's Island (in 3¼ hours a.m.) and 72 at Dunstanburgh (in 55 minutes p.m.). In July, Aug. and Sept. the species was recorded on only 14 days, maximum 26 in a day. Also 3 records for Oct.

16b. Balearic Shearwater *Procellaria puffinus mauretanicus*
A party of 4 seen several times in mid-June at Marsden (ES). Another flew south at Hartlepool on 17 Aug. (GB, PJS, RTM).

21. Sooty Shearwater *Procellaria grisea*
2 at Cresswell on 7 Aug. (JDP), 1 at Hartlepool on 19 Aug. (CB, DGS) and 1 at Hauxley on 21 Sept. (ER), all flew north.

26. Fulmar *Fulmarus glacialis*
Recorded every month. 162 on the cliffs on the east side of Holy Island on 30 Jan. (GB) and 34 on the castle cliffs at Tynemouth on 17 Feb. (AJ). Bamburgh cliffs held *ca.*23 young in Aug. (PRE). The biggest movement was on 29 June when 300-400 flew north at Hartlepool and 592 at St. Mary's Island (ECG, MB, JMB). Individuals occurred inland at Alnwick, Wooler, Holywell Ponds, Forest Hall and (dead) at Plessey Reservoir.

27. Gannet *Sula bassana*
Present all months, but totals of 20 or more were only recorded between the end of Mar. and Oct. Northerly movement involving hundreds of birds was noted in Apr., June, Aug. and even in the last 3 days of Sept. Several hundred fished off Bamburgh on 23 Oct. (JSB). A dead gannet found in a field 1 mile west of Stocksfield on 6 Apr. was 22 miles from the sea. If it had been flying in the same direction as it was facing, it would have been following the Tyne westwards. No really strong winds had been recorded in the previous week (LGM).

28. Cormorant *Phalacrocorax carbo*
17 occupied nests on Marsden Rock in May (MN). Up to 60 cormorants occurred regularly in the Tees estuary. 1 on the Tyne at Ryton on 11 Mar. (ER).

29. Shag *Phalacrocorax aristotelis*
The population of shags on the Farnes has increased steadily in recent years, and there has been a correspondingly larger number seen along the adjacent coastline. Even as far south as Teesmouth records are nowadays too frequent to be worth detailing, though, as usual, only odd birds and small groups were involved in 1963. By Sept. many young began moving down the Northumberland coast, and on 17 Oct. 4,000 were counted on the Farnes, this number dropping to 1,700 by Dec. (GRP). At least 3 pairs bred at Dunstanburgh (PRE, CMA).

30. Heron *Ardea cinerea*
15 young reared at the Durham colony from *ca.*9 nests. The last remaining Northumberland colony has finally been abandoned, after a steady decline of this bird as a breeding species, and no others are known in either county. Birds occurred widely, both inland and coastally, with up to 13 together in Cowpen Marsh in summer.

31. Purple Heron *Ardea purpurea*
1† at Cresswell Ponds 24-25 Apr. (MM, CW, MB, OPJ *et al.*). The first record for Northumberland.

42. Spoonbill *Platalea leucorodia*
An adult was watched feeding for 1½ hours at Greatham Creek on 13 July (GST). Next morning it rose from Greatham Creek, flew over the Tees estuary and across the South Gare peninsula (RT *per* PJS).

45. Mallard *Anas platyrhynchos*
In the Tees estuary, where the biggest concentrations occurred, a peak of 590 on 13 Jan. was no doubt augmented by birds from frozen inland waters, but numbers had reached a new peak of 910 by 16 Oct. (PJS) and similar numbers persisted into the new year, when they rose even higher.

46. Teal *Anas crecca*

The largest Durham flock was 150 off Seaton Carew on 1 Dec. (DGB), but Teesmouth numbers were usually well below this figure. In Northumberland, Gosforth Park again showed the biggest flocks, with a peak of 450 on 13 Sept. (ER). Over 100 frequented Cresswell Bay in Feb. and Dec. (MM, BE) and *ca.*200 flew north at Hauxley on 26 Oct.

47. Garganey *Anas querquedula*

The first arrival was a drake at Teesmouth on 23 Mar. (DME, PJS) and up to 4 birds were seen there intermittently until the end of Aug. In the Chevington-Cresswell-Ashington area up to 4 were noted during the same period, though the first arrival, a drake, was not noted until 26 Apr. (BG).

49. Gadwall *Anas strepera*

Single birds occurred at Holy Island in Mar. and Oct., at Gosforth Park in Mar., July and Aug. (a pair on 31 Mar.), at Cresswell in July, and at Capheaton, Seaton Burn and Newton in Aug. A flock of 8 flew south over the sea at Bamburgh on 3 Nov. (DGB). The only Durham record was also coastal: 1 flying south with 9 wigeon at Hartlepool on 24 Sept. (BU).

50. Wigeon *Anas penelope*

Present all months, 1 summering in Gosforth Park and 13 in the Tees estuary, while 2 drakes appeared temporarily near Durham City in June. The Fenham Flats area, the usual winter stronghold of this species, held 4,000-5,000 in Jan.-Feb. and again in Nov.-Dec. A large influx took place on 26 Oct.: thousands passed Hauxley, while a similar movement was noted at Seaton Sluice. The same day 954 flew north at Hartlepool, 296 appeared on the sea at Seaton Carew and 800 in the Tees estuary, giving a total (2,050) higher than any in Durham in recent years.

52. Pintail *Anas acuta*

Noted from 24 Feb. to end of year, and on 10 June a female with 5 ducklings was seen in Durham. 17 on the Reclamation Pond on 28 Dec. (ECG) was over twice the next largest party recorded in the county, but *ca.*20 occurred near Holy Island in autumn (PRE, BL).

53. Shoveler *Spatula clypeata*

1 young reared in Durham, but 3 broods were seen in Northumberland, where in Sept. *ca.*90 occurred in Gosforth Park and *ca.*60 at Capheaton (ER, IH). Apparently absent from both counties Jan.-Feb. In contrast, exceptionally numerous at Teesmouth in Aug.: on 6 Aug. 50 on Cowpen Marsh, 40 on the Reclamation Pond and 20 in the estuary provided the largest total (110) recorded in recent years (PJS, EC, RTM). At least 94 were still present on 8 Aug. and 60 on 14 Aug. During the same period up to 20 occurred on a small pond near Sedgefield (ES).

[54. Red-crested Pochard *Netta rufina*

1 on the river Wear at Durham City 3 Feb.-5 Mar. was doubtless an escape (JHL, JS, RO, BJC *et al.*)**]**

55. Scaup *Aythya marila*

Present every month. Most noticeable during the very cold spell Jan.-early Mar.: 30 in Blyth estuary on 10 Jan. (RC), 200 in Berwick harbour on 20 Feb. (ELA), 50 at Holy Island on 3 Mar. (JD) and up to 84 in the Tees estuary. In the second part of the year the only sizeable flocks were seen flying north off Hartlepool: 36 on 26 Oct. and 56 on 16 Nov. Summer records are: 3 off St. Mary's Island on 29-30 June (MB), 1 at Cresswell on 6 July (CED), 2 at Shotton Colliery on 31 July (DWS) and 2 at Teesmouth June-July (ALC). There was the usual scattering of inland records.

Correction to *1962 Ornithological Report*: the record total for Hartlepool on 18 Nov. was 1,063, not 788.

56. Tufted Duck *Aythya fuligula*

Whittledene is undoubtedly the stronghold of this species in the 2 counties, though 1963 numbers were bigger than any previous counts: 345 on 27 Jan. reached 360 on 17 Feb. and there were still 351 on 2 Mar. (MM, BE, BL). Only 8 remained by 24 Mar., but numbers built up again to 307 in Dec. (JSB, IHA). Biggest counts elsewhere were 150 on Capheaton Lake in Dec. (CM, AM), 120 at Holywell Ponds in Nov. (CED), 70 at Gosforth Park in Mar. and Dec. and 46 at Hurworth Burn in Apr. (ES). Coastal records of tufted duck have, in recent years, become too numerous to be worth detailing, but up to 41 with the scaup in Greatham Creek in Jan. and a total of 175 flying north at Hartlepool on 15 Dec.—both during periods of heavy frost—are particularly noteworthy (ECG, DD). (The Hartlepool total is the biggest ever recorded in Durham.) At Holywell Ponds 2 pairs bred (CED) and on Rossmere Park Lake, West Hartlepool, 3 pairs (2 unpinioned) reared 27 ducklings (PJS); a brood of 6 ducklings was seen at another Durham locality.

57. Pochard *Aythya ferina*

Up to 17 in Greatham Creek in Feb. and a total of 81 flying north at Hartlepool on 26 Oct. (DGB *et al.*) were the biggest of several coastal counts. Inland maxima were: 147 at Whittledene on 3 Nov., *ca.*90 at Capheaton on 29 Sept., 80 at Wingates on 6 Oct. and *ca.*75 at Seaton Burn on 30 Mar. In Durham 3 females with 2, 3, and 4 young respectively were seen in June at a locality where the species has bred for a number of years.

60. Goldeneye *Bucephala clangula*

No records between 5 May and 8 Aug. Numbers in the Tees estuary exceeded 30 in Feb., Mar., and Nov., but no large parties reported anywhere else in Durham. Small parties also occurred widely in Northumberland, 45 on Newton Pool and 35 on Bolam Lake in Mar. (MM, JMB, ER) being easily the biggest concentrations.

61. Long-tailed Duck *Clangula hyemalis*

No reports between 30 Apr. (36 off Bamburgh) and 3 Oct. (1 off Hauxley). Birds appeared in unusual numbers all along the coast from Durham to Norfolk in late autumn, and on 28 Dec. a flock of 19 females/immatures appeared on the sea at Hartlepool while at least 9 others flew north: a record total (28) for Durham. In the Holy Island-Budle Bay area, where the species is nearly always present in the winter months, up to 100 occurred in Feb. (JDP) and over 50 in Nov. and Dec. (DGB, JMB, MM). Odd birds occurred at Seaton Sluice and in the Tees Bay, and in Dec. 1 kept very close company with a black-throated diver in Hartlepool docks (PJS, ECG).

62. Velvet Scoter *Melanitta fusca*
Occurred all months, on too many occasions to mention individually. On 5 Aug. 8 off Cresswell (IH) and *ca.*12 off Bamburgh (PRE) were flying north, as were 27 off Hartlepool on 18 Aug. (PJS, ECG). In view of the habitual silence of this species when not breeding, it is worth recording that 1 in Greatham Creek on 17 Feb. called loudly when approached (ECG).

64. Common Scoter *Melanitta nigra*
Present all months. Over 1,000 congregated off Bamburgh in Jan., but the largest Durham party was 279 on 26 Dec. at Seaton Carew (PJS)—a favourite feeding ground.

67. Eider-Duck *Somateria mollissima*
The regular Seaton Sluice flock reached a peak of 168 on 17 Mar. (MB), the biggest concentration south of Amble. Absent from Teesmouth May-July, but up to 30 females/immatures moved about between Hartlepool and North Gare in the opening months of the year and up to 11 in the closing months. At Seaham 18 flew north on 12 Feb. (ES). Of 8 nests on the Northumberland mainland, 6 were smashed, but 5 young were reared (HHC, PRE).
The duck ringed at Seahouses in 1959, and shot in Denmark on 9 Oct. (see p. 88), is the first foreign recovery of a British eider.

69. Red-breasted Merganser *Mergus serrator*
Absent between 30 Apr. (12 off Bamburgh) and 29 June (4 off St. Mary's Island and 2 off Hartlepool). The Crimdon Dene flock reached a peak of 31 on 21 Feb. (ES). Others occurred regularly at Holy Island, Bamburgh, Cresswell and Greatham Creek, and rather less regularly in several other localities.

70. Goosander *Mergus merganser*
40 on Whittledene on 9 Jan. (ELA) was nearly twice the next largest flock reported : 21 at Colt Crag on 29 Dec. (MM). Two coastal occurrences were : a pair at Holy Island on 4 May and 2 in Hartlepool harbour during Feb. and early Mar.—the latter being the only appearance of the species in Durham in 1963.

71. Smew *Mergus albellus*
A remarkable occurrence was that of a female on Mowbray Park Lake, Sunderland, from 1 July to 25 Oct. Though wild when it flew in, it soon became very tame and was seen by scores of people, allowing an approach to within 5 yards. This small lake has a resident population of mallard and 2 Canada geese ; nowhere deeper than 3 feet, the only fish it contains are sticklebacks. The bird dived regularly, and moulted during the course of its stay (DB *et al.*). It is possible this was the bird seen on Hurworth Burn on 8 Nov. (PJS). At Whittledene 2 on 15 Jan. had increased to 5 by 9 Feb. (IH, LGM, BE), of which 1 remained until 16 Mar. In the Tees estuary 1 remained from 13 Jan. to 2 Mar., with 2 on 24 Jan. (GST, JKS, DW) ; 1 at Bolam Lake 12-16 Dec. (BEY, TW) ; 1 at Greenlee Lough on 15 Dec. (AJC). All the above were females or immatures, but on 17 Feb. a beautiful " white nun " accompanied the scaup in Greatham Creek (DGB).

73. Sheld-Duck *Tadorna tadorna*
In the Tees estuary peak numbers were 1,530 on 2 Feb. and 1,600 on 26 Dec. (PJS, ECG), and in Budle Bay *ca.*1,000 on 2 Jan. (PRE). 30 ducklings seen in Northumberland and 46 at Teesmouth. Inland : *ca.*50 flew east quite high over Stocksfield at 2100 on 8 June (BL), 2 at Swallow Ponds 1-18 Sept. (FC) and 1 at Whittledene on 15 Dec. (JSB, IHA).

75-78. Grey Geese sp.
Several hundred unidentified grey geese flew in during the autumn, the first being 2 skeins going south over Middlesbrough on 21 Sept.

75. Grey Lag-Goose *Anser anser*
On 25 May 3 late birds near Rothbury, where 139 wintering birds occurred in Nov. (MM, IH). About 200 also fed near Holy Island in Nov. (ER). The only other sizeable party was 33 at Longhorsley in Oct. (MM). Odd wanderers appeared at Gosforth Park in Apr. (BG, SRB), Colt Crag in Oct. (CMA) and Capheaton in Dec. (CMA). The first of the autumn were 2 flying south with a pinkfoot off Seaton Sluice on 29 Sept. (DGB), these birds being also noted at Hartlepool and at South Gare (Yorkshire) shortly afterwards. Grey-lags are far less often identified in Durham than are pinkfeet so all other records are given : 1 on the Reclamation Pond on 18 Feb. (RTM, PS, MK), 1 on Cowpen Marsh on 5 May (DD), 16 over Hartlepool on 28 Sept., 11 more on 5 Oct. and 3 on 6 Oct., and 1 or 2 over the estuary on 19 Oct. and 28-29 Dec. (EB, CB, DD).

78. Bean-Goose *Anser arvensis arvensis*
1 on Whittledene on 13 Nov. (ELA) was the only definite record, though 11 distant grey geese near Grindon Lough on 22 Dec. may well have been this species (AJC).

80. Brent Goose *Branta bernicla*
The Fenham Flats wintering flock reached a peak of 1,800 on 26 Jan., most of them of the pale-breasted form (BL, ER) ; on 8 Dec. there were *ca.*200 (ELA). A late bird on the Farnes 26-27 Apr. (BPS). All the other records are from Teesmouth : 5 on 17-21 Feb., 1 on 23 Mar., 2 on 8 Oct., 3 on 1 Nov., 4 on 9 Nov. and 3 on 29 Dec.

81. Barnacle-Goose *Branta leucopsis*
More records than usual : dozens of restless birds at Holy Island 30 Sept.-14 Oct., including a flock of 80 on 8 Oct. (FS). Elsewhere, barnacle geese passed Hauxley on 6 Oct. (21), Teesmouth on 8 Oct. (2) and 14 Oct. (16), and St. Mary's Island on 22 Oct. (19) and 23 Oct. (11). Late individuals noted at Teesmouth on 25 Apr. (EC), and at Newton Pool on 1 May (CMA).

82. Canada Goose *Branta canadensis*
Occurred at Holy Island (3), Farnes (1), Colt Crag (8), Sweethope (2), Holywell Ponds (1), Newton Pool (1) and Hartlepool (9), but the biggest parties were 19 flying south at Cresswell on 24 Aug. (ER, IH, BE) and 16 over North Gare next day (JW, BGC).

84. Mute Swan *Cygnus olor*
The Budle Bay-Fenham Flats herd exceeded 200 in Jan. and Nov. (IH, JDP). The next biggest concentration was 20 in Greatham Creek in Jan.-Feb. Most of the latter became badly oiled and were collected by the R.S.P.C.A. They were cleaned and released on the Wear at Durham, but were soon oiled again.

85. Whooper-Swan *Cygnus cygnus*
Absent between 12 May and 19 Sept. Occurred widely both winters, the biggest herds being 47 on Fenham Flats in Nov. (JDP), 32 at Holywell Ponds in Dec. (CED), 30 at Hartburn in Nov. (IH), 23 at Ashington in Mar. (BE) and 19 at Grindon in Dec. (BE).

86. Bewick's Swan *Cygnus columbianus*
1 at Fenham Flats Jan.-Feb. and 17 on Holy Island lough on 16 Mar. (ER). In Mar., 7 also occurred at Ashington (BE) and odd birds at Grindon, Swallow Ponds, Thornley and Teesmouth. Flooded land near Sedgefield attracted 2 on 11 Apr. (ES). At the end of the year the only ones reported were at Teesmouth : 4 on Seal Sands on 25 Dec. and 7 on Seaton rubbish tip pool from 28 Dec.—the latter in company with 4 whoopers and 10 mutes (PJS *et al.*).

91. Buzzard *Buteo buteo*
1 near Bellingham in late Mar. and 1 near Prudhoe on 21 Apr. (BL) ; 1 at Wingates on 5 May (MM, BE, IH) ; 2 near Darlington on 26 May (KWR) ; 1 flew east over the Inner Farne on 6 June (PRE) ; 1 in Weardale on 17 Aug. (GAC) ; 1 over Seaton Burn on 16 Nov. (BG). No breeding reports.

93. Sparrow-Hawk *Accipiter nisus*
Still rare in both counties, though the score or so records concern most months. A pair reared young near Hexham, but a nest was destroyed at Blagdon and another near Alnwick (BL).

99. Marsh-Harrier *Circus aeruginosus*
1 at Teesmouth on 26 May (PJS, ECG).

100. Hen-Harrier *Circus cyaneus*
A male at Crag Lough on 10 Oct. (BE).

103. Osprey *Pandion haliaetus*
An immature on the Tyne at Wark for a fortnight in early June (BL, ER).

104. Hobby *Falco subbuteo*
An immature at Swallow Ponds on 29 Aug. (FC, MB) : the first Northumberland record since 1955.

105. Peregrine *Falco peregrinus*
1 breeding record : a pair reared 2 young in Northumberland. 5 other sightings : 1 at Greatham Creek on 18 Feb. (RTM, PS, MK) ; 1 at Durham on 26 Feb. (BJC) ; 1 at Cresswell on 19 Oct. (MM) ; 1 at Hauxley on 23 Nov. ; 1 at Bamburgh on 21 Dec. (MM, DC).

107. Merlin *Falco columbarius*
Young reared in 5 nests in Northumberland (BL) ; widespread outside breeding season.

110. Kestrel *Falco tinnunculus*
A pair again nested inside an Elswick factory, rearing 2 young (LPH) ; 10 young seen at 2 nests in Newcastle (BE, MM). Fewer records than last year.

113. Black Grouse *Lyrurus tetrix*
Numbers at a known lek in Weardale on 20 Apr. were apparently the same as in 1962 (VFB) ; 1 bird at Sweethope on 20 Apr. (FC) and 1 at Grindon on 1 June (JSB, TW).

117. Quail *Coturnix coturnix*
Only 1 report, from a farmer, of a bird seen several times in a stubble field near Haydon Bridge in Sept. (*per* AJC).

120. Water-Rail *Rallus aquaticus*
No definite records between 15 Apr. and 17 Sept., but outside this period reports cover 8 localities in Northumberland and 4 in Durham ; 1 picked up on board a ship off Sunderland on 30 Oct. ; the biggest concentration was 16 in Gosforth Park on 23 Dec. (IH).

121. Spotted Crake *Porzana porzana*
1 trapped and photographed in Benridge Marsh, near Ponteland, on 14 Aug. (BR).

125. Corncrake *Crex crex*
5 reports of birds craking near Warden Law, Hexham, Corbridge, Ovington and Ashington.

126. Moorhen *Gallinula chloropus*
On 30 June, near Darlington, a moorhen in juvenile plumage was found on a nest containing 5 eggs. Next day there were 7 eggs, and the same bird was sitting ; the nest was later robbed (KWR). Concentrations of over 70 occurred at Ponteland in Mar. (BE) and at Swallow Ponds in Dec. (MN).

127. Coot *Fulica atra*
On 16 Nov. there were 115 on Hartburn and 130 on Seaton Burn, and on 17 Nov. 115 on Fishburn Lake and 56 on Hurworth Burn. Other sizeable concentrations were 70 at Newton Pool in Sept. and 75 at Holywell Ponds in Dec.

131. Oystercatcher *Haematopus ostralegus*
Over 600 at Teesmouth in Jan. and again in Dec. (GST, ML, DGS) and 550 in Budle Bay in Sept. (PRE). The only other stretch of coast where numbers exceeded 100 was that between Meggie's Burn and St. Mary's Island (AB, BG, VFB). The 4 eggs from a nest in Weardale were said to have been taken by gulls.

133. Lapwing *Vanellus vanellus*
The number of nesting pairs was much reduced after the severe winter. The few in the Monk's House area, however, reared large broods safely (PRE). Numbers down by half in the Swallow Ponds and East Benton areas (FC) and also much scarcer than usual in Holywell Dene. Along a stretch of road in north-east Northumberland, which in previous years has held up to 50 pairs, none was seen (CMA). On 14 Apr., on the road to and from Langdon Beck via Stockton, Darlington and Staindrop, PJS saw only 2 pairs near Darlington and 4 or 5 pairs near Langdon Beck. From June onwards flocks became frequent, though these undoubtedly contained continental immigrants.

134. Ringed Plover *Charadrius hiaticula*
300 passage birds in the Tees estuary on 9 May (EC) and 35 on 4 June (GST). A pair reared 4 young at an inland site near Newcastle.

135. Little Ringed Plover *Charadrius dubius*
A juvenile on Cowpen Marsh 27-31 July (PJS, ECG *et al.*) is the first record for the Tees estuary ; 2 adults occurred near Coxhoe on 24 July (JCM).

139. Grey Plover *Charadrius squatarola*
Present every month in the Tees estuary, where there were 12 in June and 8 in July, but the peak was *ca.*200 in Oct. Budle Bay had *ca.*40 adults on 4 Sept. (PRE) and the Cresswell area 27 on 3 Nov. (IH, MM) ; 24 flew south at Hauxley on 6 Oct. A lone bird at Whittledene on 29 Sept.-1 Oct. (JAB, PJS), increasing to 2 on 5 Oct. (JSB).

140. Golden Plover *Charadrius apricarius*
Big flocks were recorded at Hauxley—*ca.*2,500 on 3 Oct. (BL, ER) and *ca.*3,000 in Nov., increasing even further in Dec. Nothing comparable with the Northumberland flocks was reported from Durham, where the maximum was 179 at Teesmouth in Jan.

143. Turnstone *Arenaria interpres*
Present all months, including 26 on Holy Island on 5 June (PRE), the biggest summering party. Well distributed on rocky parts of the coast, though the Farnes were the only place where numbers exceeded 100.

145. Common Snipe *Capella gallinago*
Again a noticeable increase in Northumberland in late July and Aug. ; 5 at Ashington Ponds on 23 July had increased threefold by 30 July (DR), while 71 at Cresswell Ponds on 3 Aug. had increased to 450 by 21 Aug., easily the largest concentration reported.

147. Jack Snipe *Lymnocryptes minimus*
No records between 16 Feb. and 18 Aug., but outside this period occurred at some 11 localities in Northumberland and 5 in Durham, mostly singly.

148. Woodcock *Scopolax rusticola*
Jan. was the peak month : at least 17 at Teesmouth was the most for many years, while 52 were shot in 2 days on the Craster estate (JMC).

150. Curlew *Numenius arquata*
Biggest numbers on Longstone, Farne Islands, where 300 in late June increased to a peak of *ca.*500 on 14 Aug. (GH *et al.*).

151. Whimbrel *Numenius phaeopus*
Spring passage first noted on 21 Apr., with 5 at Teesmouth, increasing to 12 by 29 Apr. (ECG, EC), while the first Northumberland birds were 6 at Cresswell on 26 Apr. (MB). There were only 4 Northumberland records for May and June, but up to 10 occurred fairly regularly throughout the same period at Teesmouth. Widespread on autumn passage, July being the peak month ; 75 in the Reclamation Pond area on 20 July (RTM) were, however, exceptional.

154. Black-tailed Godwit *Limosa limosa*
Most in spring, between 15 Apr. and 18 May, maximum 7 at Teesmouth on 8 May (GST, DD). 1 at Grindon on 21 Apr. (AJC) and calls heard at night on 26 and 28 Apr. from birds (presumed to be this species) flying west up the Tyne valley (BL). Holy Island and Cresswell were other spring localities. In autumn some 5 individuals occurred between 12 July and 6 Oct.

155. Bar-tailed Godwit *Limosa lapponica*
About 500 at Holy Island on 2 Sept. and 14 Sept. (SRB). The Tees estuary contained about 300 birds in Mar. and Oct. Inland, 1 fed on earthworms in soft turf at Holywell Ponds on 5 Oct. (JEO).

156. Green Sandpiper *Tringa ochropus*
2 spring records : 1 near Greatham Creek on 19 Apr. (AC) and 1 in Holywell Dene on 24 Apr. (SRS, RMW). Innumerable autumn records from 1 July ; up to 10 near Coxhoe in July and Aug.—the peak months—were the most seen together (ES). Exceptional dates :

1 Jan.-15 Feb. : 1 at a Durham City sewage works (BJC)
2 Nov. : 1 at Dalton Piercy (DGS)
30 Nov. : 1 at Holywell Ponds (CED)
8 Dec. : 1 in Gosforth Park (ER)
Dec. : 1 wintering near Ponteland (*per* ER)

157. Wood-Sandpiper *Tringa glareola*
6 spring records between 12 May and 15 June—at Hazelrigg, Cresswell, Swallow Ponds, Beamish and Teesmouth. 5-8 at Ashington daily between 30 June and 6 July (MB, MM, BE) represent an early start to the large-scale autumn passage, though only odd birds were seen during the rest of July. An influx in Aug., however, brought unprecedented numbers to both counties. The first indications of exceptional movement were 18 at Teesmouth on 6 Aug., but the peak was 38 at Teesmouth on 8 Aug. and 32 at Cresswell on 11 Aug. High numbers persisted until 17 Aug.—23 at both Teesmouth and Cresswell—but slowly diminished thereafter, not more than 7 being seen together after 25 Aug. Last recorded on 22 Sept.

159. Common Sandpiper *Tringa hypoleucos*
1 at Swallow Ponds on 23 Mar. (DC, PG) was very early and no others were noted before 16 Apr.—2 at Hurworth Burn (ES). Widespread on return passage, mainly on or near the coast. The last date was 14 Sept. : 7 on Holy Island (SRB).

161. Redshank *Tringa totanus*
Maxima : *ca.*1,500 in the Tees estuary on 10 Nov. (PJS), 600 at Holy Island on 14 Sept. (ER) and *ca.*300 in Budle Bay on 9 Aug (PRE). Only 1 pair near Langdon Beck on 14 Apr., in an area where usually 5 or 6 pairs nest (PJS), and nesting pairs appeared fewer at Teesmouth.

162. Spotted Redshank *Tringa erythropus*
1 on Fenham Flats on 26 Jan. (NR), and near Holy Island causeway on 31 Dec. 1963, was perhaps the same wintering bird ; another at Teesmouth on 30 Jan. (GST). Seen continually, if sporadically, from 31 Mar., numbers increasing noticeably in Aug., the biggest flock being 10 at Cresswell on 31 Aug. The last of the passage birds lingered at Teesmouth until 19 Oct.

165. Greenshank *Tringa nebularia*
Occurred between 25 Apr. (1 at Teesmouth : EC) and 19 Oct. (1 at Cresswell : MM). Though only 5 or 6 were seen on spring passage, autumn passage was exceptionally heavy. Aug. was the peak month, maxima being 15 at Cresswell and 23 at Teesmouth on 17 Aug., but 21 were recorded at Teesmouth 4-21 Sept. 1 seen regularly at Teesmouth from 10 Dec. (ALC *et al.*).

166. Marsh-Sandpiper *Tringa stagnatilis*
1† on Cowpen Marsh 25-29 May (ECG, PJS, DGB *et al.*). The first record for Durham.

169. Knot *Calidris canutus*
Up to 7,000 in the Tees estuary in Mar. (PJS), 500 at Hauxley in Sept. (EM) and 300 at St. Mary's Island in Mar. and Dec. (VFB, MN).

170. Purple Sandpiper *Calidris maritima*
Still 12 at Hartlepool on 28 Apr. and over 40 at Bamburgh on 30 Apr. 2 records for the Farnes in May—*ca.*100 on 12 May and 15 on 25 May. No others before 7 July, when 20-30 were seen ; numbers had increased to 40 by 13 July and to 92 by 28 July. On the mainland, the first of the autumn was 1 at Seaton Sluice on 27 Aug. (BE).

171. Little Stint *Calidris minuta*
1 at Teesmouth on 1, 16 and 30 June (ECG, DD, JAB) and widespread in small numbers from 28 July ; maxima 16 at Teesmouth on 8 Sept. (DD) and 12 at Budle Bay on 4 Sept. (PRE). Of 2 still at Teesmouth on 13 Oct., 1 stayed until 17 Oct. (PJS).

173. Temminck's Stint *Calidris temminckii*
1 on Cowpen Marsh 17-20 May (EC, ECG, DD, WA, DME) and 1 on 20 June (DD, AC) ; 1 on Seaton Snook on 15 Sept. (FGG).

175. White-rumped Sandpiper *Calidris fuscicollis*
1† at Teesmouth 13-17 Aug. (PJS *et al.*) ; 1† at Whittledene reservoir 29-30 Sept. (BL, PJS, ELA). These constitute the first records for Durham and Northumberland.

176. Pectoral Sandpiper *Calidris melanotos*
1 on Cowpen Marsh 20-30 July (PJS *et al.*).

177. Sharp-tailed Sandpiper *Calidris acuminata*
1† on Cowpen Marsh 21-24 Aug. (PJS *et al.*). The first record for Durham.

178. Dunlin *Calidris alpina*
Though breeding was recorded (including several pairs at an altitude of 750 feet in Northumberland), very few juveniles were present among the autumn passage birds in the Seahouses-Holy Island area (PRE). Maximum concentration : 4,000-5,000 at Teesmouth in Nov. (PJS).

179. Curlew-Sandpiper *Calidris testacea*
No spring records, but exceptionally numerous in autumn in both counties. First arrival on 8 Aug. at Teesmouth, but a big influx later brought 31 in (counted on 24 Aug : ECG). High numbers persisted, and the Reclamation Pond showed

44 on 28 Aug. (AC). No comparable numbers reached Northumberland, though 10 at Holy Island on 2 Sept. had increased to 17 by 14 Sept. (ER), while Teesmouth had up to 22 between these dates. 2 lingered at Teesmouth until 29th Oct. (PWH).

181. Sanderling *Crocethia alba*
Though the biggest Durham concentration was 85 on Seaton Snook on 21 July (RTM), Holy Island had about 350 on 14 Sept. (ER, SRB) and Cresswell 250 on 10 Mar. (BE).

184. Ruff *Philomachus pugnax*
About 10 on spring passage 2 Apr.-2 June. Again a strong autumn passage, 43 in Aug. and 48 in Sept. being the peak Teesmouth numbers. About 40 on flooded pastures near Beal on 10 Sept. (MGR) and at Holy Island on 14 Sept. (ER).

187. Grey Phalarope *Phalaropus fulicarius*
1 found badly injured below wires at St. Mary's Island on 17 Apr. eventually died (SSM, AB *et al.*).

—. Wilson's Phalarope *Phalaropus tricolor*
1† at the Reclamation Pond, Teesmouth, 12-13 Oct. (PJS, BL, GWT, DGB *et al.*). The first record for Durham.

193. Arctic Skua *Stercorarius parasiticus*
Seen regularly from end of June until mid-Nov., but in far fewer numbers than have been usual in recent years : 40 was easily the highest daily total in both counties.

194. Great Skua *Catharacta skua*
Occurred on 29 days between 30 June and 3 Dec. : once in June, 4 times in July, 7 times in Aug., 5 times in Sept., 8 times in Oct., once in Nov., and 3 times in Dec. The last records concern a single bird (possibly the same one) at Hartlepool on 1, 14 and 15 Dec. (ECG, PJS, RTM). 7 on 5 Oct. was the biggest total seen in a day.

195. Pomarine Skua *Stercorarius pomarinus*
Most flying north in Oct., 26 at Hauxley on 2 Oct. and 18 at Hartlepool on 14 Oct. being the biggest totals. Records for 8 other days between 25 July and 20 Oct. concern 15-20 birds.

199. Lesser Black-backed Gull *Larus fuscus*
Weekly visits to the Newcastle Quayside, between the Swing Bridge and the mouth of Ouseburn, produced 1 on 23 Jan., but no others until 27 Mar., after which the species was always present until 27 Nov.—maximum 50 on 11 Sept. ; none in Dec. (AM). Elsewhere, birds occurred spring to autumn in small numbers, plus 2 Dec. records : 1 at Swallow Ponds on 28 Dec. and 5 at Hallington on 29 Dec. No breeding records away from the Farne Islands, but 2 were standing on Marsden Rock on 15 June, a few feet from the 1962 nest (DGB).

200. Herring-Gull *Larus argentatus*
Bred in a quarry about 1 mile from the sea at Embleton—4 young on the ledges and 40-50 adults present (JEO). An apparently healthy immature, 2-3 years old, at the Newcastle Quayside on 7 Nov., had the upper mandible bent downwards at right angles, half way along its length (AM).

201. Common Gull *Larus canus*
An all-white bird—except for buff marks on the back of the wings—flew past Hartlepool with another common gull and a kittiwake on 16 June (ECG).

202. Glaucous Gull *Larus hyperboreus*
About 10 recorded. Single immatures occurred as follows: at Hartlepool in Feb.-Mar., on 29 Sept. and in Dec.; at Seaham in Mar.; at Ashington on 16 Feb.; at North Shields in late Feb.; at the Farnes on 18 Apr.; at Amble on 3 Nov. In addition, a full adult was in the Tees estuary on 10 Mar. (PJS, JAB, ECG), while an adult or sub-adult flew south at Hauxley on 19 Oct. (ER).

203. Iceland Gull *Larus glaucoides*
An immature at Cresswell Bay on 27 Jan. (JD); an immature at Bamburgh on 28 Feb. (PRE); 1 or 2 immatures at Hartlepool on 10 Mar. (PJS, JAB, ECG, DD).

205. Mediterranean Gull *Larus melanocephalus*
The Hartlepool bird was seen 7 times Jan.-Feb. On 31 July it made its earliest re-appearance in autumn since it was first noted in 1956, and was seen on 9 further occasions before the end of the year.

207. Little Gull *Larus minutus*
4 Northumberland records: 1 at Newton Pool 24-28 Apr. (CMA, FGG); 1 at Cullernose 30 June (WSC); 1 at Cresswell 5 Aug. (IH, BE); 1 at Cullernose 18 Aug. (WSC). In Durham, Hurworth Burn had 2 on 23 July, 4 on 26 July and 1 (in breeding dress) on 13 Aug. 21 there on 1 Sept. were mainly sub-adults, but included 2 juveniles and 1 or 2 adults in winter plumage, while 27 on 8 Sept. included 6 juveniles and again only 1 or 2 adults; in a fresh north-west wind birds were arriving from the east and departing to the west or north-west. No more were seen at Hurworth Burn, apart from 1 winter adult on 15 Sept., possibly owing to the high water level in the second half of Sept. (ES). A pool recently formed at the base of Seaton Carew rubbish tip was regularly frequented by up to 4 throughout Aug. and the first half of Sept. Odd birds occurred elsewhere, but not after 14 Sept.

208. Black-headed Gull *Larus ridibundus*
A Northumberland colony moved to a new locality, probably through persistent robbing by boys; another of about 60 pairs only produced 4 chicks, also owing to nest-robbing; yet a third had a poor season. A leucistic bird on Holy Island on 5 June and 18 July: black-brown primaries, and whitish mantle and scapulars; smudge behind eye; legs normal colour, but bill orange-red (PRE). An albino at Seaton Sluice on 28 Sept. was creamy-white all over, with a faint brownish sub-terminal tail-band and only a hint of the usual cheek patch; bill deep yellow with red tip; legs pink (DGB). A similar, if not the same, individual was at Ashington on 6 Dec. (MM).

209. Sabine's Gull *Xema sabini*
A sub-adult at Hartlepool on 24 Nov. (ECG, JHL).

211. Kittiwake *Rissa tridactyla*
3 nests at the Gateshead site produced 7 eggs and 4 young; 1 of the adults carried a ring. The North Shields colony was again active (AM). The kittiwake found dead at Blyth in Apr. 1961 (see p. 92) is the first Russian-ringed kittiwake recorded in Northumberland.

212. Black Tern *Chlidonias niger*
Spring passage: 7 at Grindon on 1 June (TW) and 4 next day at Swalwell (FGG). Some 40 occurred between 30 July and 27 Sept., with a peak of 19 on 11 Sept. at Teesmouth, the locality most favoured by this species.

217 and 218. Common Tern *Sterna hirundo* and **Arctic Tern** *Sterna macrura*
A very early bird (probably *hirundo*) flew north at Seaham on 28 Mar., shortly after a Sandwich tern (ES), and another was recorded at St. Mary's Island on 5 Apr. (JDP). No others before the third week of Apr. A nest of *hirundo* was found at the same inland site in south-west Northumberland as last year, but the 3 eggs were washed away by floods. Several other inland records, including 3 flying north-west near Newton Aycliffe on 18 Apr. and a flock of 13 flying south-west at the same place on 10 Aug. (ES); 2 at Billingham Pond on 3 Oct. appeared to be feeding on sticklebacks (DIG). 1 at Teesmouth on 10 Nov. (PJS) is the last of several late records for both counties.

219. Roseate Tern *Sterna dougallii*
Away from the Farnes, noted on many occasions between 29 June (2 at Teesmouth: DGB) and 4 Oct. (1 at Bamburgh: WSC, PRE).

222. Little Tern *Sterna albifrons*
4 known Northumberland nests failed to produce young, despite 2 replacement clutches. No breeding attempted in Durham this year. 12 and 10 were the biggest concentrations recorded for Northumberland and Durham respectively.

223. Sandwich Tern *Sterna sandvicensis*
Seen daily from 28 Mar.—1 flying north at Seaham (ES). Away from the Farnes the biggest concentration was 500 on Seaton Snook on 6 Aug. (PJS). Inland, I occurred at Hurworth Burn on 2 Sept. (ES). There are 3 Oct. records.

224. Razorbill *Alca torda*
Easily the biggest count was during a movement of auks at Hartlepool on 29 June, when 81 razorbills flew north and 11 south (ECG).

226. Little Auk *Plautus alle*
The only record is that of a slightly oiled bird found dead at Fenham Flats on 19 Jan. (MM *et al.*).

227. Guillemot *Uria aalge*
Maximum away from the Farnes was over 400 flying north, with a few razorbills, on 29 June at St. Mary's Island (MB). This auk movement was also noted at Hartlepool, where razorbills appeared to predominate.

229. Black Guillemot *Cepphus grylle*
1 in breeding plumage off Bamburgh on 1 and 3 May (PRE). It or another seen several times in summer at the Farnes (GH *et al.*).

230. Puffin *Fratercula arctica*
70 flew north at Hartlepool on 28 June and 30 next day, when 73 also flew north at St. Mary's Island. Such numbers are exceptional away from the Farnes.

232. Stock-Dove *Columba oenas*
At least 100 (probably many more) feeding on corn near Darlington sewage farm on 26 Aug. (ES) : exceptional.

235. Turtle Dove *Streptopelia turtur*
Records for the Farnes on 5, 6 and 8 June, and on 6 July, perhaps refer to the same bird. At least 3 pairs nested in the Durham locality mentioned last year, and 4 or 5 juveniles were seen there several times. A very tired late migrant roosted at Hauxley on 5 Oct. (ER, BG).

——. Collared Dove. *Streptopelia decaocto*
Reports from Bamburgh, Seahouses, Craster, Alnmouth, Old Hartley, Tynemouth, Holywell Dene, Gosforth, Hart and Darlington. By far the densest population reported was in West Hartlepool, where 20-25 resident pairs had some breeding success (RTM).

237. Cuckoo *Cuculus canorus*
First noted on 16 Apr. at Hauxley (*per* BL), but again rather scarce in most areas, except on the Northumberland moors.

241. Barn-Owl *Tyto alba*
2 young were reared from a Northumberland nest and another was robbed. A pair at Sacriston reared 2 young. Hunting birds seen occasionally in both counties in all months.

246. Little Owl *Athene noctua*
3 nests near Newcastle produced 10 young (FC, BE).

248. Long-eared Owl *Asio otus*
Influx in early Nov. : 2 at Hauxley, 2 at Tynemouth and 2 at Whitley Bay cemetery on 2 Nov., and 1 at Hartlepool on 3 Nov. Only 2 communal roosts, both in Northumberland in Dec., with 7 birds in each (ER, JDP).

252. Nightjar *Caprimulgus europaeus*
4 pairs in 1 Northumberland locality and 1 in another (JMB, JEO).

255. Swift *Apus apus*
1 at Corbridge on 24 Apr. (TW) and 4 others before the month was out. Substantial southerly movement first noted at Cresswell on 21 July (EM, MM). None reported after 3 at Killingworth on 2 Sept. (BG).

258. Kingfisher *Alcedo atthis*
Nested at 2 localities in Durham, but no other sightings reported. Numbers much reduced.

261. Hoopoe *Upupa epops*
1 in the timber storage grounds, Queen Street, Seaton Carew, on 17 May (MJF, JFF).

263. Great Spotted Woodpecker *Dendrocopos major*
3 at Old Blyth on 2 Nov.—day of the long-eared owl influx—were almost certainly immigrants (JDP).

264. Lesser Spotted Woodpecker *Dendrocopos minor*
Only 1 report : on 7 Dec. in a south Northumberland locality.

265. Wryneck *Jynx torquilla*
At least 26 arrived in the Sept. drift :
1 Sept. : 3 Cresswell, 1 Whitley Bay cemetery, 1 North Gare
2 Sept. : 2 Holy Island, 2 Bamburgh, 1 Newton, 6 Craster
3 Sept. : 1 Bamburgh, 3 Hauxley, 1 Scremerston, 1 Inner Farne, 1 Marsden
4 Sept. : 1 Greatham Creek
6 Sept. : 1 Kimmer Lough
15 Sept. : 1 St. Mary's Island
24 Sept. : 1 St. Mary's Island
Several of the above stayed for some days, including an adult at Hauxley 3-8 Sept. which was white, with very fine buff vermiculations and a brown iris (BL).

273. Shore-Lark *Eremophila alpestris*
1 at Whitburn on 13 Jan. (AHB) was the only record.

274. Swallow *Hirundo rustica*
First noted on 9 Apr. : 1 near Darlington (KWR) ; others from 11 Apr. An albino hawked for flies with other swallows and martins below Corbridge on 16 Aug. (BH). No spring passage noted at Monk's House after 14 May, and the return passage began there on 1 and 2 Aug., becoming marked on 9 Aug. (PRE). Late lingerers noted on 2 Nov. (2), 3 Nov. (1), 4 Nov. (7), 8 Nov. (3), 9 Nov. (3), 10 Nov. (3) with the last on 28 Nov.—1 at Corbridge (TH *per* GWT).

276. House-Martin *Delichon urbica*
First noted on 17 Apr. : 4 near Darlington (KWR) ; others on 18 and 22 Apr. Several late birds still present in Nov., the last being 1 at Warkworth on 16 Nov. (ER). A white house-martin was seen in several places in the Longhorsley valley in Sept.-Oct. (PO *et al.*), and another with the upper surfaces of both wings completely white was noted in Sept. at Riding Mill (WSM).

277. Sand-Martin *Riparia riparia*
First noted on 11 Apr. : 1 at Bamburgh (PRE) ; next on 14 Apr. : 2 or 3 at Fishburn (ES). There are 2 late records : 2 at Bondicar on 1 Oct. and 2 at Whittledene on 22 Oct. (IH). A pure white bird was present at a colony near Haydon Bridge in the spring (AJC).

279. Raven *Corvus corax*
1 flying south over Stocksfield on 19 July was the first recorded there since 1939, when 2 flew north (GWT) ; 1 at Ovingham in the same day (JMB, MM) was probably the same bird. 1 over Bamburgh on 9 Nov. (AB, MB). At least 4 broods reared in Northumberland, but the only nest reported in Durham was probably unsuccessful.

281. Hooded Crow *Corvus corone cornix*
Between 16 Feb. and 6 May a total of 10 noted on the Northumberland mainland, while hooded crows occurred regularly on the Farnes in Apr., with a late bird on 12 May. Occasional again from 3 Nov. to the end of the year, all single birds except for 15-20 at Prestwick Carr on 26 Dec. (ER, SRB). A *cornix X corone* nest at

Rothbury in Apr. was destroyed by farmers and the birds disappeared. 1 at Chester-le-Street on 2 Mar. (JAB) was the only hooded crow reported from Durham in 1963, despite a careful watch at Teesmouth and elsewhere.

282. Rook *Corvus frugilegus*
The Haymarket (Newcastle) colony was estimated to contain 11 occupied nests in Apr. (RMP).

284. Magpie *Pica pica*
29 young fledged from 6 nests in south-east Northumberland (FC).

290. Coal-Tit *Parus ater*
Some large parties roamed the countryside in the arctic conditions of Jan.-Feb. : *ca.*100 at Dipton on 5 Jan. (IH, BE), 37 at Shotton Colliery on 19 Jan. (DWS) and 40 at Blagdon on 24 Feb. (MN). However, many must have perished, as, for example, in the south Tyne valley where hardly any were seen in the summer in areas where they are usually plentiful (AJC). Nesting-boxes in Kielder State Forest, which usually house equal numbers of tits sp. and redstarts, were this year occupied almost entirely by redstarts (BL).

293. Willow-Tit *Parus montanus*
Seen with some regularity in the winter months near Shotton Colliery, Durham City and Newcastle, and on 8 June a pair was feeding young near Durham City.

294. Long-tailed Tit *Aegithalos caudatus*
40 in Gosforth Park on 13 Jan. (BE), and 29 at Shotton Colliery on 19 Jan. (DWS), are the biggest parties reported. Rather scarce after the severe winter.

296. Nuthatch *Sitta europaea*
A pair again nested in Durham City (JR), but 1 at Prudhoe on 22 Apr., 2 in Chester-le-Street and up to 3 in Castle Eden Dene are the only other reports.

299. Wren *Troglodytes troglodytes*
Decidedly scarce, or even absent, in many areas after the severe winter.

301. Mistle-Thrush *Turdus viscivorus*
A party of 23 fed on rowan berries near Hexham on 11 Sept. (ELA).

302. Fieldfare *Turdus pilaris*
Generally scarce in the early months, most being seen on return passage in Mar.-Apr. : 2 flocks of *ca.*500 at Allenheads on 24 Mar. (JDP) and 400 near Wark on 10 Apr. (ELA) ; the last was 1 at Newcastle on 9 May (CMA). 1 at Shotton Colliery on the remarkable date of 6 June was watched for 5 minutes, but then flew off to the east and was not seen again (DWS). In the autumn no large-scale influx was evident until 23 Oct., when thousands (with redwings and blackbirds) came in : 700 at St. Mary's Island and " hundreds " at Hartlepool. Similar scale immigration was noted over the Farnes and at Prudhoe on 26 Oct.

304. Redwing *Turdus iliacus*
On 14 Oct., in the Reclamation Pond, 1 seen swimming for some 30 yards—using its wings in a " butterfly " stroke. It came to land on some green weed and, when approached, took off and flew normally (ALC, JKS).

307. Ring-Ouzel *Turdus torquatus*
About 20 were on the moors near Haltwhistle on 19 Apr. (PR) and 1 at Hartlepool next day (DME). On 19 Aug. a considerable southerly passage took place at Smiddyshaw reservoir, flocks of up to 10 passing frequently. Some of the birds alighted and 29 were flushed from a small area of moorland, from which many hundreds of meadow-pipits were also flushed (ES). Apparently the only autumn record was 1 at North Gare on 2 Nov. (HM, DW).

308. Blackbird *Turdus merula*
The autumn immigration of this species started much earlier than that of other Turdidae : over 30 at Craster and over 12 at Bamburgh on 19 Sept. (PRE) and *ca.*50 at Hauxley on 21 Sept. Hundreds came in during Oct. and Nov.

311. Wheatear *Oenanthe oenanthe*
At least 6 arrived in Mar., including 1 near Housesteads on 20 Mar. (DB). Hundreds occurred in the drift of 1-2 Sept., most on the Northumberland coast. In the same county 3 lingered into Nov., the last being 1 at Acklington on 5 Nov. (ELA).

317. Stonechat *Saxicola torquata*
No breeding records, but 1 near Beal on 14 July was a juvenile, perhaps bred locally (MGR) ; a pair on Cowpen Marsh on 29 May was a strange occurrence (DD). Other records are all coastal : Berwick on 3 Sept., Bamburgh on 28 Mar. and 1 Apr., Alnmouth on 28 Sept., Cresswell on 4 Aug. and 1 Sept., Crimdon Dene on 27 Dec. and Teesmouth on 28 Dec.

318. Whinchat *Saxicola rubetra*
First noted on 20 Apr. ; 1 at Bamburgh (SRS, RMW). Few breeding data were submitted, but whinchats were very common in the Cheviot valleys in June (PRE). On 22 Aug. at least 30 on rough ground near Shildon, some 17 miles inland, were doubtless part of a post-breeding dispersal, as the species nests in the area (ES). Common in the early Sept. drift, several hundred occurring along the Northumberland coast 31 Aug.-1 Sept., although only 17 at Hartlepool at the peak of this passage.

320. Redstart *Phoenicurus phoenicurus*
Seen almost daily from 17 Apr., when a female occurred at Bamburgh (PRE). The peak of the autumn passage was reached on 1 Sept. when over 290 were reported along the coast between Blyth and Whitley Bay ; by late evening of the same day 280 were at Cresswell (ER). On 3 Sept. there were over 100 on Inner Farne alone, but numbers dwindled rapidly thereafter.

321. Black Redstart *Phoenicurus ochruros*
1 at Dunstanburgh on 21 Apr. (ER) ; 1 at Hartley on 3 and 7 Apr. (JDP) ; 1 at Fairfield, Stockton, 7-11 Apr. (PJS, ECG) and 1 at Hartlepool on 28 Apr. (DGB). This last bird was in full song, its song-posts ranging from the observatory buildings to the wall and houses flanking the Henry Smith school grounds. Apart from the Farne records, only other report was 1 at Teesmouth on 31 Dec. (PWH).

324. Bluethroat *Cyanosylvia svecica*
8 records : 1 at Hartlepool on 1 Sept. and another on 2 Sept. (AJV, JKS, RTM, PJS) ; 1 at Hartley on 2 Sept. (BE, MM) ; 1 at Hauxley on 3 Sept. (BL) ; 2 on Inner Farne 3-4 Sept. (PRE) ; 1 on Brownsman on 4 Sept. (PRE) ; 1 at Craster on 7 Sept. (*per* PRE).

325. Robin *Erithacus rubecula*
An influx of *ca.*40 at Hauxley on 21 Sept. and other smaller influxes along the Northumberland coast on 30 Sept., 20 Oct. and 2-3 Nov.

327. Grasshopper-Warbler *Locustella naevia*
Regular from 27 Apr., when 1 was seen near Seahouses (PRE). Birds reeling in June at Heddon (JSB), and near Sedgefield (ES), were the first the observers had noted there. Common in the Kielder area in June.

333. Reed-Warbler *Acrocephalus scirpaceus*
Again nested in Northumberland, and autumn migrants trapped as follows :

19 Aug. : 1 Craster (PRE)
22 Aug. : 1 Craster (PRE)
31 Aug. : 1 Hauxley
1 Sept. : 1 St. Mary's Island (MB)
2 Sept. : 5 Craster (PRE)
3 Sept. : 1 Hauxley, 2 Inner Farne (PRE)
8 Sept. : 1 Hauxley
2 Nov. : 1 Hauxley

In addition, an *Acrocephalus* at Hauxley on 3 Sept., with the notch on the inner web of the second primary 9-10 mm. from the tip and falling between the seventh and eighth primaries, may have been *palustris*, but as these measurements are now thought to be within the range of *scirpaceus* the record cannot be accepted. The marsh-warbler has never been recorded from either county.

337. Sedge-Warbler *Acrocephalus schoenobaenus*
First noted at Red Row on 25 Apr. (FC) and 2 at Chevington Burn on 26 Apr. (BG). Passage birds continued to be recorded until 1 June at Monk's House, where the first chick was fledged 3 days later (PRE).

340. Icterine Warbler *Hippolais icterina*
Birds were trapped and ringed at Cresswell on 31 Aug. (BE), at Wallsend on 1 Sept. (DC, FC), 2 on Inner Farne on 3 Sept. (PRE) and at Craster on 7 Sept. (PRE). In addition, 1 was seen in Whitley Bay cemetery 1-5 Sept. (MB, BG *et al.*).

343. Blackcap *Sylvia atricapilla*
Regular in Durham from 20 Apr. : 2 in Castle Eden Dene (BU)—and in Northumberland from 25 Apr. Surprisingly, only 1 recorded in the early Sept. drift, though odd birds were seen throughout the rest of the month. Also 3 in Oct. and 7 in Nov., 1 at Hartlepool on 10 Nov. being the last. No wintering records this year.

345. Barred Warbler *Sylvia nisoria*

1 at Monk's House 31 Aug.-2 Sept. (PRE)
2 at Meggie's Burn 1 Sept. (BG, CW)
1 at Hartlepool 2 Sept. (RTM, EB, PJS *et al.*)
1 at Holy Island 3 Sept. (SRB)
1 at Monk's House 4-6 Sept. (PRE)
1 at Craster 5 Sept. (PRE)
1 at Hauxley 26 Oct.—an adult (BL, ER, BG)

346. Garden-Warbler *Sylvia borin*
First noted on 20 Apr. in Castle Eden Dene (BU) and many near Darlington (KWR). Conspicuous in the early Sept. drift : on 1 Sept. 180 between Blyth and Whitley Bay cemetery, and 160 at Cresswell. Over 100 on Inner Farne on 3 Sept., most of which had left by next morning (PRE). 3 in Oct., 1 trapped in Gosforth Park on 20 Oct. (JPD, CW) being the last.

347. Whitethroat *Sylvia communis*
First noted on 20 Apr. : 1 at Haltwhistle (PR), and the next 1 near Seahouses on 27 Apr. (PRE). The maximum was about 12 at Hauxley on 31 Aug., at the start of the drift movement. A late bird at Monk's House on 10 Oct. (PRE).

348. Lesser Whitethroat *Sylvia curruca*
1 seen and heard singing at Arcot Hall on 28 Apr. (CED, JDP) and another at Craster next day (WSC), while in May birds were noted at Beal and Hauxley. No precise breeding records this year, but a bird seen and heard at Holwick Bridge, on the Durham side of the Tees, on 10 June (HAS *per* ALC) and another caught and ringed at Seaton Delaval on 7 July (AB), no doubt indicate nesting pairs. 1 near Coxhoe on 31 Aug. (VFB) was followed in the next few days, during the drift, by 2 or 3 others nearer the coast at Teesmouth, while in the same period about 25 occurred along the Northumberland coast.

351. Subalpine Warbler *Sylvia cantillans*
A male†, trapped and ringed at Hauxley on 2 Nov., was still present next day, when it sang from a row of sycamore trees (ER, BG, PY, BL, GB). The first record for Northumberland.

354. Willow-Warbler *Phylloscopus trochilus*
First noted on 13 Apr. : 1 near Greenhaugh (LGM) and 1 in Holywell Dene, where some 20 were singing by 20 Apr. (AB) ; *ca.*4 in Gosforth Park on 18 Apr., when 1 also sang at Bamburgh. In the return passage " a considerable fall on the morning of 14 Aug. left many everywhere in the Graythorp area," with 16 at Hartlepool on 16 Aug. (RTM). On 31 Aug. 70 *Phylloscopi* at Hauxley represented the peak, though dozens were present at several coastal localities during the next few days, most in Northumberland.

356. Chiffchaff *Phylloscopus collybita*
First noted in Gosforth Park on 9 Apr. : 1 bird, which remained until the end of the month (BG). Others elsewhere on 12, 15 and 20 Apr. Generally scarcer than usual, particularly in Durham, in the nesting season, and few identified during the early Sept. drift. 1 trapped at Hauxley on 21 Sept. showed characteristics of the Siberian race *tristis* (ER, BL). About 6 *Phylloscopi* at Hauxley on 2 Nov., and 3 on 3 Nov., were probably all chiffchaffs ; they included a *P. c. collybita* trapped. On 29 Dec. 2 chiffchaffs were in dead willow-herbs bordering a stream near Bamburgh ; 1 of them was trapped and its wing formula checked ; both had dark legs, and were present until spring 1964 (PRE, MB).

357. Wood-Warbler *Phylloscopus sibilatrix*
Nested in upper Teesdale (VFB) and on 11 June 1 sang in the Langleeford Valley (PRE).

360. Yellow-browed Warbler *Phylloscopus inornatus*
1 at Hartlepool 7-8 Oct. (MGR, IR, DGB, PJS).

364. Goldcrest *Regulus regulus*
Only 1 report in the opening 3 months of the year and, judging by the paucity of summer records, anxiety about the numbers left to breed appears to have had some foundation. The first sign of increase was in autumn when influxes from the continent occurred, the most notable being at Hauxley : *ca.*45 on 21 Sept., 12 on 4 Oct. and *ca.*80 on 2 Nov.—this last influx affecting many other areas of coastline.

365. Firecrest *Regulus ignicapillus*
2 at Hauxley 2-3 Nov. (BL *et al.*).

366. Spotted Flycatcher *Muscicapa striata*
First noted near Gainford on 9 May (WPS) and in Castle Eden Dene on 12 May (BU, DD). In Stocksfield, 4 pairs nested in a garden where in recent years there had been only 2 pairs (GAC). Exceptionally numerous in the early autumn drift, maxima being *ca.*20 on Holy Island 2-3 Sept. (SRB) and 30 at Berwick on 3 Sept. (ELA).

368. Pied Flycatcher *Muscicapa hypoleuca*
First noted on 28 Apr. : 1 at Bywell (JSB). Nested in upper Teesdale (VFB). Numerous in the early autumn drift, e.g., *ca.*130 between Blyth and St. Mary's Island and *ca.*100 at Cresswell on 1 Sept., *ca.*20 on Holy Island on 2 Sept. and *ca.*60 at Berwick churchyard on 3 Sept. ; many hundreds must have been involved. There were subsequent influxes on a much smaller scale, the last being 3 at Whitley Bay cemetery on 21 Oct. (JDP *et al.*) and a first-winter at Hauxley 2-3 Nov.

370. Red-breasted Flycatcher *Muscicapa parva*
A juvenile trapped at Craster on 19 Sept. (PRE) and another seen at Marsden Hall on 21 Sept. (FGG).

371. Dunnock *Prunella modularis*
A pure white bird at Howick Hall in Nov. (JMC). Several small influxes noted between 16 Sept. and 3 Nov.

373. Meadow-Pipit *Anthus pratensis*
Inspector R. Roberts of the Darlington R.S.P.C.A. was called when a meadow-pipit was seen in difficulty near Middleton-in-Teesdale. On catching the bird he found it to have 4 perfectly-developed legs and accordingly put it to sleep. It was also seen by VFB, who identified is as a juvenile.

376. Tree-Pipit *Anthus trivialis*
About 6 on Inner Farne, and 1 at Berwick, on 3 Sept., during the drift (PRE, ELA).

378. Red-throated Pipit *Anthus cervinus*
1† in breeding dress on Cowpen Marsh on 26 May (DGB, PJS, ECG, RTM, RJL); another† trapped at Hauxley on 7 Sept. (BL, ER, BG, PY). These constitute the first records for Durham and Northumberland.

381. Grey Wagtail *Motacilla cinerea*
The exceptionally hard winter of 1962-3 apparently took heavy toll of this species. The Tyneside Bird Club reported it as " very, very scarce " in Northumberland, with only 2 sightings for the first 6 months. Absent in several areas where usually nesting. Pied wagtails also appeared scarce.

382. Yellow Wagtail *Motacilla flava*
1 at Teesmouth on 13 Apr. (BU) was the first, and at least 5 had reached Northumberland by 17 Apr. 55 at Cresswell on 24 Apr. and *ca.*100 there on 6 May (MM, BL). Appeared unusually numerous in spring in Durham also. 5 young fledged successfully from a nest on the N.C.B. sidings at Derwenthaugh (LPH). Cresswell was equally attractive to the species on return passage—*ca.*30 on 17 Aug. and over 70 on 24 Aug. (ER).

383. Waxwing *Bombycilla garrulus*
None reported before autumn, when 1 on Holy Island on 30 Oct. (BL), and 3 at Ross on 3 Nov. (DGB), were the heralds of an invasion affecting both counties over a very wide area. Birds occurred at far too many localities to detail, but only in one and twos and small parties ; 20 in North Shields and in Witton Park were the biggest concentrations.

384. Great Grey Shrike *Lanius excubitor*
7 reports : 1 at Fenham Lowmoor on 5 Jan. (RPJ, CNJ) ; 1 at Thorpe Thewles on 16 Feb. (BCG, RAS, JW) ; 1 at Hurworth Burn on 31 Mar. and 7 Apr. (JAB) ; 1 in Holywell Dene on 2 Nov. (JDP) ; 1 at Tynemouth on 4 Nov. (FC) ; 1 at Craster on 7 Nov. (WSC) ; 1 at Bamburgh 14-15 Dec. (MM, CW, DC).

388. Red-backed Shrike *Lanius collurio*
Some 2 dozen were drifted onto the coast between 31 Aug. and 21 Sept., 14 individuals being separable on 7 Sept. All were in Northumberland, except for 1 at Marsden Hall on 21 Sept. (FGG) and 1 at Hartlepool 2-10 Sept. (PWH, PJS). A juvenile at Beal from at least 4 Sept. to 13 Sept. kept a larder of bees : it was clearly seen to impale 1, and 3 others were found within 60 yards in the same hedge on 6 Sept. ; 1 taken for identification proved to be a common garden bee *Bombus agrorum*. All the bees had gone by 11 Sept. (MGR).

389. Starling *Sturnus vulgaris*
The striking success of this species continues and numbers seem bigger than ever. A new roost, estimated to contain at least a million birds, blackened the sky at Hartburn, Northumberland, in Nov. (MM, IH, PY, MB). A starling with a beak twice as long as normal, and downcurved, was seen in the grounds of King's College, Newcastle, on 7 Jan. and 5 Apr. It was smaller in the body than its fellows, perhaps owing to retarded growth as a result of being handicapped in feeding—though it fed on bread crumbs quite easily (RMP).

391. Hawfinch *Coccothraustes coccothraustes*
3 at Cronkley, near Minsteracres, on 3 Jan. (GAC) ; 1 near High Force, upper Teesdale, on 14 Apr. (PJS, ECG) ; 1 at Bywell on 16 June (JSB). " For the first time for over 20 years, no hawfinches have come to feed upon the cherrystones lying under a tree on my lawn in Stocksfield. This is a sad loss. Normally they used to come regularly every morning from the first week in Feb. to about the

end of Mar., according to the crop of stones available. This year the stones were covered with thick snow until recently; but now they lie temptingly and no birds come" (GWT, 18 Mar.).

392. Greenfinch *Chloris chloris*
3,000 roosting in Gosforth Park in Feb. decreased to less than half that number in Mar. One of those trapped had been ringed at Monk's House during the cold spell (FC, MM *et al.*). Frequently in mid-Jan., and progressively less frequently into July, greenfinches were observed feeding on nuts hung up for titmice in Sanderson Road, Newcastle, hovering beside the suspended nuts in order to do so. The suppliers of the nuts left the district in July, but on 20 Dec., during hard weather, greenfinches were again seen feeding in a similar manner at another house in the same road (MGR).

394. Siskin *Carduelis spinus*
Only scattered records in the early months, about 20 in Castle Eden Dene on 28 Apr. (BU) being easily the largest flock—presumably birds on return passage. In the autumn, 2 flew in at Bamburgh on 11 Oct. (CW, MM) and 4 appeared in bushes at the North Gare on 2 Nov. (DW, HM). A party of 15-20 above Beamish Burn, near Stanley, on 22 Dec. (EMD) was the only other report before the end of the year.

395. Linnet *Carduelis cannabina*
About 400 in a finch flock at Monk's House on 2 Jan. had moved on 2 days later (PRE). A few coasted north-west there on 11 and 13 Apr., and a flock of over 100 gathered there in the evening of the latter date—perhaps prior to emigration; 6 were on Inner Farne next day (PRE). In the autumn a flock of 100 flew in from the north-east at Hauxley on 21 Sept. (ER), a movement also noted at Hartley (MN).

396. Twite *Carduelis flavirostris*
7 at Holy Island in Jan. (GB) and 6 on the north Northumberland coast in autumn.

398. Arctic Redpoll *Carduelis hornemanni*
Addendum to *1962 Ornithological Report*: 1† at Shotton Colliery on 3 Dec. (DWS).

401. Bullfinch *Pyrrhula pyrrhula*
The numerous 1963 reports compare very favourably with those of previous years: the species seems to be increasing.

404. Crossbill *Loxia curvirostra*
9 scattered reports for Northumberland Jan.-June, maximum 65 at Blagdon on 2 Feb. (MM). In early autumn fresh immigration took place. Flocks were seen flying over the North Sea towards England several hours out from Newcastle on 7 and 22 Aug. (DGB). 7 at Hartlepool on 17 Aug. were freshly arrived and very tired (EB, RTM, CB), and others arrived singly at Seaton Sluice on 1 Sept. (CW, JPD), at Monk's House on 2 Sept. (PRE) and at Hauxley on 3 Sept., when 3 were also on Holy Island (SRB). 40 in Kyloe Woods on 5 Sept. were stated by woodsmen to have been there some weeks and remained until the end of the year.

408. Brambling *Fringilla montifringilla*
No records between 11 Apr. (1 at Hartlepool) and 3 Oct. (1 at Monk's House), apart from a remarkable record of a cock in breeding dress in Crimdon Dene on 4 July (BU). 50, with other finches, near Monk's House on 2 Jan. was the largest flock reported at the start of the year, and no large flocks were reported in the autumn, except for *ca.*60 at Prestwick Carr from 26 Dec. (ER).

410. Corn-Bunting *Emberiza calandra*
As usual, most records are coastal, but Holywell, Swallow Ponds and Wallsend are also favoured localities, 13 newly-fledged young being seen at Wallsend in June (FC). A bird singing on 31 July at Haydon Bridge is "a very rare occurrence for this part of Northumberland" (AJC). A roost at Bamburgh in Feb. reached about 35 in Apr. (PRE) and a peak of 58 was reached at Shotton Colliery on 6 Feb. (DWS).

416. Ortolan Bunting *Emberiza hortulana*
Single adult cocks on Inner Farne on 3 Sept. during the drift (PRE) and at Hauxley on 8 Sept. (ER).

422. Lapland Bunting *Calcarius lapponicus*
The only report was of a hen bird (which allowed a very close approach) on a manure-heap at Killingworth on 9 Feb. (BG).

423. Snow-Bunting *Plectrophenax nivalis*
At Teesmouth there were 150 at Graythorp on 2 Feb. (PJS), but this was exceptional and none was seen after the end of the month. 2 arrived at Teesmouth on 20 Sept., but 35 at North Gare in Dec. was the biggest flock and birds were again scarce and elusive. In Northumberland a similar situation prevailed after the first arrival at Hauxley on 8 Sept., although there had been about 300 at Swallow Ponds in Jan. and at Cresswell in Feb. (BE *et al.*). Several inland records again include a small party on Newcastle Town Moor in Jan. and Dec. (PR).

425. Tree-Sparrow *Passer montanus*
Some big flocks were: over 300 with finches near Monk's House on 2 Jan. (PRE); *ca.*200 at West Newsham on 2 Mar. (BE) and *ca.*100 at Whittledene in Dec. (JSB, IHA). A nest with 4 deserted eggs was found in a nest-box at Stocksfield though "during 27 years of residence, I have never seen a tree-sparrow in or near Stocksfield" (GWT).

RINGING

Several individual ringers and ringing groups are now operating in the two counties, but not all of them have submitted details of recoveries. This report deals, therefore, with birds ringed by the following:—Messrs. Belshaw and Colley, Dr. P. R. Evans (Monk's House Bird Observatory), Mr. C. J. Gent, Natural History Society of Northumberland, Durham and Newcastle upon Tyne, Northumbria Ringing Group, Messrs. Parrack, Bell and Watson and Mr. P. Yeoman. Much of the information given in list (b) below has also been furnished by these ringers while others who have reported recoveries have been included in the list of contributors.

RECOVERIES OF RINGED BIRDS

(a) Ringed in Northumberland and Durham

Date and place ringed		*Place recovered*	*Date recovered*
Eider-Duck			
28.8.59(juv.)	Seahouses, Northd.	Frederiksvaerk, Sjaelland, Denmark	9.10.63
Mute Swan			
2.9.60	*Beadnell, Northd.	Amble, Northd.	27.8.63
6.4.63	*Berwick upon Tweed, Northd.	Whitley Bay, Northd.	1.6.63
Merlin			
6.7.63	Kielder, Northd.	Peckfield, S. Milford, nr. Leeds, Yorks.	(23.10.63)
Lapwing			
8.6.56	Edmundbyers, Co. Durham	La Capela, Coruña, Spain	3.2.63
27.6.60	Wooler, Northd.	Locquirec, Finistère, France	31.12.62
15.6.61	Langdon Beck, Co. Durham	Bilbao, Vizcaya, Spain	13.1.63
Snipe			
2.12.61	*Seaton Burn, Northd.	Dundrum, Down, N. Ireland	1.1.63
6.10.62	*Warkworth, Northd.	Nr. Crediton, Devon	1.1.63
20.11.62	*Bamburgh, Northd.	Sefrou, Morocco	21.3.63
Green Sandpiper			
13.9.63	*Gosforth, Northd.	Seaton Sluice, Northd.	21.12.63
Redshank			
26.5.62	Nr. Seaton Burn	Oosterschelde Estuary, Zeeland, Netherlands	Apr.1963
Common Gull			
10.1.59	*Fenwick, Northd.	Inderöy, Nord-Tröndelag, Norway	13.5.63
Black-headed Gull			
14.6.62	Belford, Northd.	Killorglui, Kerry, Eire	20.1.63
7.7.63	Rookhope, Weardale, Co. Durham	Nr. Castleford, Yorks.	6.10.63
Barn-Owl			
1.7.62	Sacriston, Co. Durham	Nr. Driffield, Yorks.	14.2.63

Date and place ringed		*Place recovered*	*Date recovered*
Wood-Pigeon			
20.2.60 (w)	Fenwick	Powburn, Northd.	23.1.63
14.7.62	E. Benton, Newcastle upon Tyne, Northd.	Hexham, Northd.	23.2.63
House-Martin			
21.7.62(juv.)	Nr. Beal, Northd.	Allanton, nr. Chirnside, Berwickshire	15.7.63
Sand-Martin			
11.8.57	*Haydon Bridge, Northd.	Mickley, Northd.	8.6.63
21.7.61(juv.)	Crawcrook, Co. Durham	Ilkley, Yorks.	7.7.63
2.6.62	*Corbridge, Northd.	Jerez de la Frontera, Cadiz, Spain	1.11.63
15.6.62	*Corbridge	Stapleton, nr. Darlington, Yorks.	21.5.63
29.6.63(juv.)	Nr. Wooler	Nr. Canterbury, Kent	25.7.63
4.7.63(juv.)	Mickley	Nr. Romford, Essex	25.8.63
13.7.63(juv.)	Prudhoe, Northd.	Ednam, Kelso, Roxburgh-shire	24.7.63
,,	(juv.)Prudhoe	Nr. Canterbury	25.7.63
,,	(juv.)Prudhoe	Ancaster, Grantham, Lincs.	27.7.63
,,	(juv.)Shincliffe, Co. Durham	Dunkirk, Kent	31.7.63
,,	(juv.)Prudhoe	Acklington, Northd.	5.8.63
,,	(juv.)Prudhoe	Chichester, Sussex	30.8.63
30.7.63(juv.)	Prudhoe	Nr. Romford	27.8.63
Carrion-Crow			
21.5.61	Ross, Belford	Elsdon, Northd.	23.5.63
Song-Thrush			
11.3.62	*Bamburgh	Nr. Clifden, Co. Galway, Eire	Feb.1963
24.3.62	*Fenwick	Nr. Moy, Tyrone, N. Ireland	(19.12.63)
5.4.62	*Gosforth	Nr. Tullamore, Offaly, Eire	(26.1.63)
5.6.62	*Gosforth	Swinford, Co. Mayo, Eire	26.1.63
21.11.62	*Bamburgh	Ballymoney, Co. Antrim, N. Ireland	18.1.63
Redwing			
3.1.62	*Bamburgh	Whitehaven, Cumberland	(28.1.63)
Blackbird			
3.4.58	*Bamburgh	Roscrea, Co. Tipperary, Eire	24.1.63
7.4.58	*Fenwick	Odense, Fyn, Denmark	10.5.63

Date and place ringed		*Place recovered*	*Date recovered*
BLACKBIRD—*continued*			
3.1.59	(w)Fenwick	Kaavi, Island of Saaremaa, Estonia	6.1.63
23.3.60	*Fenwick	Tollesbury, nr. Maldon, Essex	(12.8.63)
21.1.61	(w)Fenwick	St. Quentin, Aisne, France	4.1.63
5.11.61	*Hartley, Northd.	Inistioge, Co. Kilkenny, Eire	30.1.63
27.12.61	*Fenwick	Menosten Kylä, Koijärvi, Häme, Finland	20.10.63
13.10.62	(w)Hartley	Egersund, Rogaland, Norway	9.10.63
14.10.62	(w)Holywell Dene, Northd.	Ashfield, Dronmore, Down, N. Ireland	23.1.63
7.11.62	*Craster, Northd.	Weymouth, Dorset	13.2.63
11.11.62	(w)Fenwick	Sheeptown, Newry, Down, N. Ireland	*ca.*23.1.63
9.12.62	*Gosforth	Reposaari, Pori, Finland	10.6.63
6.1.63	*Holywell Dene	Tostamaa, Parnu, Estonia	27.7.63
2.2.63	*Gosforth	Nr. Dalane, Rogaland, Norway	22.10.63
17.2.63	(w)Gosforth	Nr. Tors, Jutland, Denmark	30.3.63
25.3.63	(s)Seahouses, Northd.	Kish L.V., off Dublin, Eire	27.10.63
REDSTART			
21.6.63	Hamsterley S.F., Co. Durham	Sanlucar de Barrameda, Cadiz, Spain	14.10.63
ROBIN			
2.6.62	Holywell Dene	Newton Aycliffe, Co. Durham	23.1.63
GARDEN-WARBLER			
31.8.63	(w)Craster	Whitley Bay, Northd.	10.9.63
MEADOW-PIPIT			
4.9.63	*Seahouses	Seixal, Estramadura, Portugal	8.11.63
STARLING			
29.11.58	*Beal, Northd.	Norton-on-Tees, Co. Durham	9.6.63
6.12.58	(w)Beal	Belfast, N. Ireland	(31.1.63)
,,	*Beal	Middlesbrough, Yorks.	(3.6.63)

Date and place ringed		*Place recovered*	*Date recovered*
STARLING—*continued*			
11.1.59	*Fenwick	Blankenberge, W. Flanders, Belgium	20.10.63
31.12.61	*Seahouses	At sea, 10 m. E. of Flamborough Head, Yorks.	25.10.63
1.1.62	(w)Seahouses	't Zand, Netherlands	(9.3.63)
13.1.63	*Gosforth	Haddington, E. Lothian	4.3.63
GREENFINCH			
4.1.60	*Belford	Chester-le-Street, Co. Durham	13.1.63
3.9.61	*Wallsend Swallow Ponds, Northd.	Edzell, Angus	26.1.63
5.1.62	*Bamburgh	Gosforth	28.1.63
,,	(w)Bamburgh	New Cumnock, Ayrshire	23.2.63
17.3.62	*Gosforth	Longhoughton, Northd.	8.6.62
3.1.63	(w)Seahouses	Gosforth	22.3.63
2.2.63	(w)Gosforth	Low Row, nr. Brampton, Cumberland	8.6.63
LINNET			
26.1.63	*Marsden, Co. Durham	Spurn Point Bird Observatory, Yorks.	9.2.63 ; 17.2.63
27.8.63	(juv.)Whitley Bay	Christchurch, Hants.	20.10.63
6.9.63	(w)Gosforth	Arbonne, Bidort, Basses-Pyrenees, France	23.10.63
REDPOLL			
29.8.62	(juv.)Craster	Rumes, Hainault, Belgium	12.11.63
REED-BUNTING			
27.10.62	*Gosforth	Birtley, Co. Durham	3.4.63

(b) Interesting local recoveries of birds ringed outside the two counties (including foreign-ringed birds)

Date and place ringed		*Place recovered*	*Date recovered*
SHAG			
28.7.62	Bass Rock, Firth of Forth	Nr. Warkworth	(3.1.63)
GREATER BLACK-BACKED GULL			
15.7.59	Shandwick, nr. Balintore, Ross and Cromarty	Graythorp, nr. W. Hartlepool, Co. Durham	1.2.63

Date and place ringed		*Place recovered*	*Date recovered*
REDSHANK			
29.8.61	*Dawsmere, Holbeach Marsh, Lincs.	Budle Bay, Northd.	(7.3.63)
COMMON GULL			
14.7.59	Tyrsay Island, nr. Bergen, Norway	Wallsend Swallow Ponds	20.1.63
14.6.62	Pentti Linkola, Saaksmaki, Alttosaari, Finland	Holywell Ponds, Northd.	23.10.62
BLACK-HEADED GULL			
8.6.57	Tirmo, nr. Porvoo, Uusimaa, Finland	Cambois, Northd.	13.1.63
18.6.62	Kemiö, Sjölax, Finland	Druridge Bay, Northd.	17.5.63
24.6.62	Jokijärvi, Hauho, Finland	W. Hartlepool	3.2.63
KITTIWAKE			
3.7.60	Kharlov Island, Murmansk, U.S.S.R.	Blyth, Northd.	*ca.*21.4.61
SANDWICH TERN			
25.7.63	Firth of Forth	Bamburgh	6.9.63
SAND-MARTIN			
13.7.58	*Fairburn, Castleford, Yorks.	(1) Crawcrook	9.6.62
		(2) Prudhoe 30.7.63 ;	2.8.63
27.7.61(juv.)	Romford	Staward, Northd.	9.7.63
5.8.61(juv.)	Ilkley	Mickley 8.6.63 ;	11.6.63
12.8.61(juv.)	Fairburn	Nr. Wooler 22.6.63 ;	29.6.63
18.8.61(juv.)	Fairburn	(1) Shincliffe	14.7.62
		(2) Stapleton, nr. Darlington	15.5.63
		(3) Shincliffe	20.6.63
19.8.61(juv.)	Fairburn	Shincliffe	13.7.63
20.8.61	*Fairburn	Mickley	11.6.63
30.6.62(juv.)	Eggleston, Barnard Castle, Co. Durham	Prudhoe	13.7.63
9.7.62(juv.)	Brotherton, Knottingley, Yorks.	Prudhoe	13.7.63
30.7.62(juv.)	Abberton, Colchester, Essex	Shincliffe 20.6.63 ;	6.7.63
16.8.62	*Brotherton	Mickley	8.6.63
,,	(juv.)Romford	Nr. Felton, Northd.	16.8.63
9.9.62(juv.)	Adwick-le-Street, Doncaster, Yorks.	Shincliffe	13.7.63

Date and place ringed		*Place recovered*	*Date recovered*
SAND-MARTIN—*continued*			
10.9.62(juv.)	Chichester	Haydon Bridge, Northd.	8.7.63
,,	(juv.)Chichester	Prudhoe	13.7.63
26.6.63(juv.)	Kelso	Shincliffe	13.7.63
BLACKBIRD			
12.7.61	Bakkum, Noord Holland, Netherlands	Warkworth	16.3.63
STARLING			
15.4.62	*Kleiva, nr. Hol, Buskerud, Norway	Bamburgh	21.1.63
12.10.62	*Revtangen, Klepp, Rogaland, Norway	Gosforth	26.12.63
LINNET			
21.4.63	*San Sebastian, Spain	Gosforth	6.7.63

NOTES :
1. * Indicates bird ringed as adult or full-grown
2. (w) Indicates bird ringed as 1st winter
3. (s) Indicates bird ringed as 1st summer
4. (juv.) Indicates bird ringed as juvenile
5. All other birds have been ringed as pullus
6. Where the date of recovery is unknown, the date of the reporting letter is given in brackets

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† signifies a record accepted by the *British Birds* Rarities Committee.

ORNITHOLOGICAL REPORT FOR THE FARNE ISLANDS FOR 1963

Compiled by

GRACE HICKLING

INTRODUCTION

Principal contributors to this report are F. Y. Bodger, J. C. Coulson, P. R. Evans, G. R. Potts, W. Shiel, B. P. Springett and the compiler. Others who have helped with the ringing, or have provided records, include M. Gilbertson, J. Richardson, students from the University of Durham (in particular N. P. E. Langham and I. Marshall) and members of the Natural History Society, including C. M. Adamson, C. Almond, Mrs. F. Appleby, Miss S. Appleby, M. Bell, Mrs. A. M. Clark, Mr. and Mrs. Dale, C. L. Davidson, W. J. Douglas, Mr. and Mrs. Gibson, J. Gledson, R. Graham, A. E. Hingston, P. Hurley, J. R. Johnstone, A. Macdonald, D. Mann, M. Marquiss, B. Mortimer, J. H. Neesham, D. A. Quine, J. Ratcliffe, M. Riley, Miss G. Salkeld, I. M. Telfer and Mrs. W. M. Tweedy. Much valuable and detailed information about the shags has been supplied by G. R. Potts: this was obtained largely as a result of the study of colour-marked birds.

Most of the birds dealt with are easily recognised, but in the case of a species that is difficult to identify, or occurs infrequently, the initials of the observer have been given. In this report, as in the county ornithological report, the classified notes, and ringing recoveries, are arranged in the order given in the *Check-list of the birds of Great Britain and Ireland* (1952), published by the British Ornithologists' Union.

GENERAL

Snow started on 26 December 1962 and conditions during the next three months made this one of the worst winters of the century. With the exception of 28 January, when an unexpected lull occurred, no visits could be made to the Farnes until early April. On 28 January there was widespread evidence of past storms, for the vegetation on the tops of the islands was flattened by waves, while heaps of debris and seaweed were piled on the beaches and in the gullies leading down to the sea. Much of the ground was still frozen hard and the rock

pools were covered with ice. Despite this, there was a guillemot on the Staple Island cliffs and several shags had returned to their nesting sites.

On Brownsman, spring records of passerines started on 2 April when six blackbirds and a dunnock were on the island. During the next eight days birds seen included seven skylarks, two song-thrushes, a mistle-thrush, a robin, two black redstarts, two pied and one white wagtail, three dunnocks, two chaffinches and a linnet. Observations on Inner Farne began a week later and among the birds present on 9 April were six blackbirds, two wheatears, a robin, a wren and a goldcrest. Others arrived on the following day; these included four song-thrushes, two redwings, two dunnocks and a chaffinch, while in the evening the first eiders came ashore.

Although there was no decrease in the numbers of nesting birds, bad weather had an adverse effect on the breeding success of some species. Rain and gale force winds on 18 and 19 June caused the deaths of at least twenty-seven young shags and several fairly well-grown cormorants; some young Sandwich terns also died. On 21 and 22 June there were exceptionally high spring tides and the whole of the flat below the Brownsman cottage was flooded, with water lapping against the campion bank and, as a result, some seventy or eighty pairs of arctic terns lost their eggs. Heavy rain and north-east winds (which reached gale force on 29 June) were followed, at the beginning of July, by a week of persistent drizzle and fog, broken only by a very heavy rainstorm. Terns suffered severely: on Inner Farne on 2 July several of the arctics' scrapes were waterlogged, with the young lying dead, while many eggs were partially covered with water. Two days later conditions were still bad; some nests were abandoned, chicks and hatching eggs were dead, while other chicks were wet and cold. Fortunately, there were still many healthy young birds. Mortality was high, too, among shags and cormorants, while flooding of the burrows affected the young puffins.

Large numbers of passage-migrants were recorded on 3 September when Dr. P. R. Evans saw some fifty wheatears, fifteen whinchats, at least a hundred redstarts and a similar number of garden-warblers, over twenty willow-warbler/chiffchaffs, two reed-warblers, two icterine warblers, two bluethroats, a whitethroat, a wryneck, a robin, six tree-pipits and an ortolan bunting on Inner Farne. These were part of the drift movement recorded all along the north-east coast and a few were still there on 20 September. Unfortunately, at that time there were no resident observers on the islands and records are, accordingly, incomplete. There was another marked movement at

the end of October. Several blackbirds and redwings, as well as other unidentified passerines, were seen on 24 October and by 26 October large numbers of birds were on both groups, while flocks were flying overhead. The majority were blackbirds, song-thrushes, redwings, fieldfares and starlings, but they also included some snow-buntings, a few snipe and woodcock, two short-eared owls, a wheatear, a blackcap, a robin, a skylark and a lesser whitethroat. Two days later, although there was no sign of an incoming movement of Turdidae from the east, many starlings, together with smaller numbers of blackbirds, redwings and fieldfares, as well as one or two blackcaps and chaffinches, and a black redstart, were still present.

One addition, the icterine warbler, was made to the systematic list of birds recorded for the islands.

CLASSIFIED NOTES

26. Fulmar Petrel *Fulmarus glacialis*

24 pairs nested on Inner Farne, 4 on Brownsman, 6 on Staple Island and 1 on Big Harcar, but only 1 young reared (on Inner Farne). F. Y. Bodger recorded an unusual incident. On 3 July he wrote: "Today, fishing for puddlers and getting 3 or 4 on at once, a fulmar swam up to the side of my boat and tried to get the fish off the line. Once it dived for a fish being hauled up and swam down about 1½ feet, using both feet and wings. I held out a fish 7 or 8 inches long; it took it gently, but firmly, as a well-trained dog would, and swallowed it without trouble and came back for more. I gave it another, which seemed to be enough, for it then swam away. What was presumably the same bird gave a repeat performance 3 days later, after which I did not see it again."

27. Gannet *Sula bassana*

1 spent Apr. among cormorants on North Wamses where it was later found dead.

28. Cormorant *Phalacrocorax carbo*

Again nested on both North Wamses and Megstone. On 30 Apr. 83 nests (at least 51 with eggs) counted in 2 adjacent, but separate colonies on North Wamses. By 14 May, when numbers had increased to 87, there were 2 tiny young, and 4 young were still in the nests on 27 Aug. 52 nests were on Megstone on 28 Apr., with 62 on 28 May, and colony never exceeded 80 pairs.

29. Shag *Phalacrocorax aristotelis*

G. R. Potts found that the number of occupied nesting sites was slightly higher than the number of nesting pairs—Staple Island: 208 pairs, 216 sites; Brownsman: 77 pairs, 82 sites; Inner Farne: 38 pairs, 39 sites. 2 nests were built on East Wideopens, but no eggs laid; 4 nests on Megstone contained 12 eggs and 1 young was fledged. This is the first nesting attempt on the Wideopens, and probably also the first on Megstone, for Nelson's (1887) comment on his visit to the Megstone "I think one clutch belonged to the Green Cormorant (*Phalacrocorax graculus*) of which there are one or two pairs supposed to nest on the Megstone" is, in view of other inaccuracies in his account, of doubtful credibility.

Average of 3.8 eggs per laying pair, with 3.0 as average maximum clutch size. 38% hatching success, 10% of all clutches being washed away by heavy seas while 21% of all pairs did not lay eggs. 85% fledging success, an unsuitable site being the cause in 50% of the cases where the entire clutch was unsuccessful. (The male chooses the site, improving in his choice as he gets older, and thus, as the age of the male in the pair increases, so also does the number of young reared.) Nests with young were on Inner Farne and Staple Island on 6 Oct. and 2 young were still on Staple on 17 Oct. Most of the young reared on the Farnes in 1963 moved away in early Sept. although the adults remained. None of these young birds could be identified on 29 Feb. 1964.

Shags from the Farnes are now known to have bred at Dunstanburgh and the Isle of May while another was seen on the Bass Rock during the breeding season. At least 3 Scottish-ringed shags summered on the islands, but none bred.

56. Tufted Duck *Aythya fuligula*

Again recorded : 1 off Knoxes Reef on 17 July.

67. Eider-Duck *Somateria mollissima*

An unusually early season with 30 nests on Inner Farne by 21 Apr. Numbers built up rapidly and a total of 320 on 5 May had increased to 620 by 2 June. Laying started on Brownsman on 20 or 21 Apr. Some 839 ducks are known to have nested : 653 on Inner Farne, 4 on Wideopens, 3 on Knoxes Reef, 5 on Staple Island, 3 on North Wamses, 1 on South Wamses and at least 170 on Brownsman. Among ducks nesting on Inner Farne was a bird ringed as an adult on this island in 1953 and retrapped here in 1958 and 1961. Another had been ringed as a juvenile in Budle Bay in 1955. Many of these birds show little fear of humans, but among the tamest was a duck that nested under the seat outside St. Cuthbert's chapel. The seat was used continually by watchers and visitors, but, despite this, she remained undisturbed and hatched off 5 ducklings.

A duck with 8 ducklings (less than 10 days old) seen off Harcar on 11 Aug. may have been the last brood of the year.

69. Red-breasted Merganser *Mergus serrator*

Again recorded : single birds off Blue Caps on 1 May and near Inner Farne on 24 July.

73. Sheld-Duck *Tadorna tadorna*

Some 14 birds seen on Brownsman and Staple Island during Apr., but only 1 pair known definitely to have nested (on Inner Group).

75. Grey Lag-Goose *Anser anser*

A small party again spent some time on the Outer Group. 3 seen on Little Harcar on 4 July and 2 (both flightless) on Big Harcar on 18 and 20 July ; birds also visited North Wamses.

80. Brent Goose *Branta bernicla*

Knoxes Reef : 1 (pale-breasted form) on 26 and 27 Apr. (BPS). Only 4 other records, all of single birds, since 1882.

81. Barnacle-Goose *Branta leucopsis*

1 flew over Inner Farne to Knocklin Ends on 17 Oct. (GRP). Fifth occurrence since 1882.

82. Canada Goose *Branta canadensis*

1 flew off Knoxes Reef towards Bamburgh on 27 Apr. (BPS). Only 2 previous records (flocks of 40 on 2 June 1957 and of 24 on 31 May 1959) since 1882.

91. Buzzard *Buteo buteo*

Inner Farne : 1 flew over island on 6 June (PRE *et al.*). Second definite record for the Farnes.

107. Merlin *Falco columbarius*

A female on Brownsman and Staple Island on 30 Apr.

127. Coot *Fulica atra*

South Wamses : 1 found dead on 28 Jan. Third record for the Farnes.

131. Oystercatcher *Haematopus ostralegus*

Minimum of 30 nesting pairs : 4 on Inner Farne, 1 on Wideopens, some 12 on Knoxes Reef, 2 on Staple Island and 11 on Brownsman.

133. Lapwing *Vanellus vanellus*

No attempt at nesting.

134. Ringed Plover *Charadrius hiaticula*

Some 12 pairs nested.

143. Turnstone *Arenaria interpres*

Many records, with maximum of 400 on Inner Group on 3 Aug. On 23 Apr. a bird was found sitting in a well-scraped nest on Brownsman, but no eggs were laid (GRP).

156. Green Sandpiper *Tringa ochropus*

Inner Farne : 1 present from 7 to 12 Aug. (GRP).

165. Greenshank *Tringa nebularia*

Inner Farne : 1 on 20 Aug. Last recorded in 1960.

179. Curlew-Sandpiper *Calidris testacea*

Longstone : 1 on 31 July (GRP). Last recorded in 1956.

195. Pomarine Skua *Stercorarius pomarinus*

2 records : an adult on 13 Aug. and a first winter bird on 17 Oct. (GRP). Fourth and fifth records for the Farnes.

Gull sp.

During the summer months a pure white adult gull, the size of *Larus argentatus* or *L. fuscus*, was present on the islands.

202. Glaucous Gull *Larus hyperboreus*

An immature seen flying north past Longstone End on 18 Apr. (PRE).

208. Black-headed Gull *Larus ridibundus*

A nest with 3 eggs found on Brownsman on 24 June : 2 young hatched, but died later. In early July a second pair, with 2 well-grown young, were seen on this island. No nesting on Inner Farne.

211. Kittiwake *Rissa tridactyla*
Numbers continue to increase. No counts made on Brownsman or Staple Island, but 525 nests on Inner Farne on 30 May with 4 nests on West Wideopens, and 25 on East Wideopens, on 4 July. First egg laid on Outer Group on 7 May with laying in full swing by 18 May ; on Staple Island, hatching commenced on 3 June. The oldest kittiwake retrapped had been ringed as young in 1952.

217 and 218. Common Tern *Sterna hirundo* and **Arctic Tern** *Sterna macrura*
First seen on 28 Apr. Last record : 2 off the Megstone on 17 Oct. The main Brownsman colony of common terns was near the upper garden, but, probably as the result of heavy rain in early July, fewer young than usual were reared.
For the first time since 1958 arctic terns nested on Knoxes Reef (23 pairs) and West Wideopens (22 pairs). 6 pairs attempted to nest on the Staple Island flat and 2 young were reared. There was little apparent change in numbers on Brownsman and Inner Farne. Laying started on Inner Farne on 24 May and on Brownsman on 26 May ; on both groups the first chick hatched on 16 June. Considerable numbers of well-grown young (both arctic and common), many fully-fledged, were found dead on Brownsman in late July and early Aug., possibly because they had been deserted by their parents.
An arctic tern, ringed as young on Inner Farne in 1960, was seen on Coquet Island on 1 July while retraps included 3 13-year-old birds.

219. Roseate Tern *Sterna dougallii*
On Brownsman, the main colony (17-19 nests) was again above the lower garden with a further 10 nests near the old windlass in the North Cove and a third colony (8-9 nests) near the pond and upper garden. Some 30-40 pairs were on Inner Farne ; 26 young were ringed here and 37 on Brownsman.

223. Sandwich Tern *Sterna sandvicensis*
First recorded on 11 Apr. None nested on Inner Farne, the whole colony (estimated to be about 1,500 pairs) being above the North Cove of Brownsman. The first birds settled, and laid eggs, on 16 May and hatching started on 11 June. The build-up of the colony continued for some time and the final group of eggs did not hatch until 20 July. 2 were seen off the islands on 26 Oct. Ringing recoveries have provided further evidence of the way in which Sandwich terns change their colonies. 4 birds from the Farnes (1 ringed in 1957 and 3 in 1959) were seen on Coquet Island, while a 1958 Farne-bred bird was found nesting in the Newburgh, Aberdeenshire, ternery. By contrast, 2 terns, ringed in the Firth of Forth in 1959, were among the Brownsman colony.

224. Razorbill *Alca torda*
No nesting on Outer Group. 6 pairs on Inner Farne, but only 2 young fledged.

227. Guillemot *Uria aalge*
1 on Staple Island on 28 Jan. Eggs were seen on Pinnacles on 19 Apr. and by 10 July many young had left although a chick was still present on Skeney Scar on 28 Aug. As in 1961, birds nested on the north end of Brownsman (2 pairs) and among the cormorants on North Wamses (5 pairs). 3 nesting birds had been ringed as adults in 1956.

235. Turtle-Dove *Streptopelia turtur*
Records of single birds seen on Staple Island on 5 and 8 June, and on Inner Farne on 6 June and 6 July, may perhaps refer to the same bird. Only 4 other records in past 50 years—last seen in 1960.

249. Short-eared Owl *Asio flammeus*
At least 2 seen on 26 Oct. Seventh and eight records since 1886.

265. Wryneck *Jynx torquilla*
Inner Farne : 1 on 3 Sept. (PRE). Ninth record for the Farnes.

280. Carrion-Crow and **Hooded Crow** *Corvus corone*
Both carrion-crows *C. corone corone* and hooded crows *C. corone cornix* occurred regularly on the Outer Group in Apr. There are several carrion-crow records for Inner Farne in Apr. and May while a hooded crow was seen on 12 May. Since the Migration Reports of the 1880s there have been only 2 previous reports of hooded crows—single birds seen on Inner Farne in 1952 and 1961.

301. Mistle-Thrush *Turdus viscivorus*
Inner Farne : 2 on 11 Apr. ; Brownsman : 1 from 6 to 12 Apr. This is the rarest of the Turdidae and only 9 have been recorded since 1886.

321. Black Redstart *Phoenicurus ochruros*
An unusually large number of records. Brownsman : 1 on 11-14 Apr. and 9 May ; 2 on 10, 15 and 16 Apr. Staple Island : a pair on 26-29 May ; a female on 5 June. Inner Farne : a female on 31 May ; a female or immature male on 28 Oct.

324. Bluethroat *Cyanosylvia svecica*
Inner Farne : 2 on 3 Sept. ; Brownsman : 1 on 4 Sept. (PRE). Only 4 previous records.

333. Reed-Warbler *Acrocephalus scirpaceus*
Inner Farne : 2 on 3 Sept. (PRE). These are the second and third definite, and fourth and fifth probable records for the Farnes.

337. Sedge-Warbler *Acrocephalus schoenobaenus*
Inner Farne : 1 on 8 May. Third record since influx of 6 Sept. 1958.

340. Icterine Warbler *Hippolais icterina*
Inner Farne : 2 on 3 Sept. (PRE). First record for the Farnes.

343. Blackcap *Sylvia atricapilla*
North Wamses : 1 on 26 Oct. ; Inner Farne : 2 on 28 Oct. Latest date recorded on the Farnes.

346. Garden-Warbler *Sylvia borin*
Over 100 on Inner Farne on 3 Sept. (PRE) is largest number ever recorded on the Farnes. Single birds also seen on Inner Farne on 1 June and 20 Sept., and on Brownsman on 20 Sept.

348. Lesser Whitethroat *Sylvia curruca*
North Wamses : 1 on 26 Oct. Fourth seen since 1955 and latest date recorded on the Farnes.

380. Pied Wagtail and **White Wagtail** *Motacilla alba*
A pair of pied wagtails again nested on Inner Farne, but later deserted their eggs. A white wagtail was seen with 2 pied wagtails on Brownsman on 7 and 11 Apr. and 1 was found dead on this island on 30 Apr.

382. Yellow Wagtail *Motacilla flava*
Single birds on Brownsman on 22 Apr. and on Inner Farne on 10 May. Yellow wagtails are infrequent visitors and these are seventh and eighth recorded since 1955.

389. Starling *Sturnus vulgaris*
A few pairs nested as usual on Inner Farne and Brownsman. In early June, starlings were seen breaking open and eating arctic terns' eggs in St. Cuthbert's Cove.

393. Goldfinch *Carduelis carduelis*
Inner Farne : 2 on 11 Apr. (BPS). Goldfinches are rarely seen on the Farnes and the only previous records were in 1954 and 1955.

404. Crossbill *Loxia curvirostra*
Single juveniles seen on Inner Farne on 3 Aug. and on Brownsman on 12 Aug. First records since 1956.

416. Ortolan Bunting *Emberiza hortulana*
Inner Farne : an adult male on 3 Sept. (PRE). Second record for the Farnes.

OTHER SPECIES

The following species, although not dealt with in detail, were recorded : Diver sp., Manx shearwater, heron, mallard, teal, wigeon, common scoter, golden plover, common snipe, woodcock, curlew, whimbrel, redshank, knot, purple sandpiper, dunlin, arctic skua, great skua, great black-backed gull, lesser black-backed gull (breeding), herring-gull (breeding), black tern, black guillemot, puffin (breeding), wood-pigeon, swift, skylark, swallow, house-martin, sand-martin, jackdaw, wren, fieldfare, song-thrush, redwing, blackbird, wheatear, whinchat, redstart, robin, whitethroat, willow-warbler, chiffchaff, goldcrest, spotted flycatcher, pied flycatcher, dunnock, meadow-pipit, tree-pipit, linnet, chaffinch, brambling, snow-bunting, tree-sparrow.

RINGING

During the year 6,120 young and 446 adults were ringed : this is 431 more than in 1962. The numbers of individual species were as follows, the 1962 figures being given, for comparison, in brackets :— fulmar 1 (7) ; cormorant 159 (76) ; shag 374 (349) ; eider-duck 95 (158) ; ringed plover 6 (6) ; lesser black-backed gull 596 (410) ; herring-gull 71 (36) ; kittiwake 631 (895) ; common tern 150 (166) ; arctic tern 2,617 (2,115) ; roseate tern 63 (30) Sandwich tern 1,324 (1,169) ; razorbill 1 (—) ; guillemot 43 (182) ; puffin 417 (533) ; redwing 1 (—) ; blackbird 2 (—) ; redstart 1 (—) ; black redstart 1 (—) ; robin 3 (—) ; garden-warbler 1 (—) ; whitethroat 1 (—) ; dunnock 2 (—) ; rock-pipit 6 (3). In addition, 52 adults (87 in 1962) were re-ringed.

There were 460 recoveries of birds marked on the Farnes—a decrease of 229 on the figure for 1962. This decrease is partly due to a fall in the numbers of kittiwakes and arctic terns retrapped and partly because full details of all the colour-marked shags seen by Mr. Potts during the year (and, accordingly, counted as retraps) are not yet available.

Among cormorant recoveries are three birds of the year killed, or found dead, in France in November and December, while the shag found dead at Cuxhaven is the first from the Farnes to be recovered in Germany. Kittiwake recoveries include eight from Greenland (including two shot in 1960, but not previously reported) and three from Newfoundland. As usual, recoveries of arctic terns illustrate the northward dispersal movement of young birds and the recovery at Corran marks the present limit of this movement on the west coast of Scotland. One of the most interesting recoveries of the year—the eider-duck shot at Sjaelland, Denmark, on 9 October (Bell, 1964)—cannot definitely claim to be a Farne bird, but, as it was ringed as a juvenile at Seahouses, it is probable that it was, indeed, hatched on the islands.

RECOVERIES OF RINGED BIRDS

(a) Ringed on the Farne Islands

CORMORANT

(Total : 21 ; Farne Is. : – ; local : –)

Date ringed	*Place recovered*	*Date recovered*
31.8.55	R. Tweed, nr. Norham, Northd.	6.4.63
21.7.58	Boulmer, Northd.	3.11.63
1.8.58	Sudbury, R. Stour, Suffolk (shot)	23.1.63
,,	Burnmouth, Berwickshire	(25.11.63)
10.7.59	Pagham Harbour, Sussex	*ca.*25.2.63
,,	Berwick upon Tweed (shot)	1.4.63
2.6.61	Jarrow, Co. Durham	21.11.63
20.6.61	Surlingham, nr. Norwich, Norfolk (ring only found in water)	*ca.*27.6.63
31.7.61	Amble, Northd.	17.2.63
14.8.61	Newhaven, Edinburgh, Midlothian	8.5.63
23.7.62	Little Oakley, Harwich, Essex (shot)	4.1.63
,,	Spittal, Berwick upon Tweed	9.1.63
,,	Dean, nr. Workington, Cumberland	18.4.63
29.7.62	Nr. Cockburnspath, Berwickshire (found unable to fly)	17.2.63
28.5.63	Nr. Burntisland, Fife	(30.8.63)
14.5.63	Usan, Montrose, Angus (shot)	24.11.63

Date ringed	*Place recovered*	*Date recovered*
CORMORANT—*continued*		
16.6.63	Carnac, Morbihan, France	(5.11.63)
21.6.63	Ars-en-Ré, Île de Ré, Charente Maritime, France (killed)	8.12.63
,,	Bassin d'Arcachon, Gironde, France (killed)	30.12.63
18.7.63	Torryburn, Dunfermline, Fife (shot)	(11.11.63)
,,	Waterloo, Liverpool, Lancs.	(22.11.63)
SHAG		
	(Total : 185 ; Farne Is. : 161 ; local : 11)	
26.5.59	Druridge Bay, Northd.	3.6.63
2.8.60	Stonehaven, Kincardineshire (caught in fishing net — released)	8.5.63
,,	Whitburn, Co. Durham	(4.6.63)
24.6.61	Cambois, Blyth, Northd.	20.2.63
,,	Nr. Burnmouth, Ayton, Berwickshire	1.8.63
16.6.62	North Gare, Teesmouth, Co. Durham	26.1.63
,,	Nr. Tynemouth, Northd. (found in weak condition and destroyed)	18.2.63
,,	Bass Rock (controlled)	21.7.63
,,	Arbroath, Angus	9.11.63
23.6.62	Cuxhaven, Niedersachsen, Germany	14.7.63
7.7.62	Isle of Grain, Kent	19.2.63
18.6.63	Whitby, Yorks.	1.12.63
12.7.63	Aberlady Bay, E. Lothian	9.10.63
EIDER-DUCK		
	(Total : 57 ; Farne Is. : 51 ; local : 6)	
LESSER BLACK-BACKED GULL		
	(Total : 21 ; Farne Is. : 1 ; local : 1)	
23.8.60	Kibworth, Leics.	20.10.63
31.7.61	Agadir, Morocco	(22.2.63)
14.8.61	Baie de Bourgneuf, Loire Atlantique, France (found oiled)	10.11.63
22.8.61	Greysteel, nr. Limavady, Londonderry	early July 1963
6.8.62	Seville, Spain (shot)	25.5.63
8.8.62	Marbella, Malaga, Spain	23.8.63
13.8.62	At sea, off Cabo Blanc, Spanish W. Africa (caught on boat)	8.1.63
,,	Oporto, Duora Litoral, Portugal (shot)	winter 1962-63
,,	Oporto (controlled)	6.5.63
,,	Alverca, Ribatejo, Portugal	(2.8.63)
,,	Gilwern, nr. Abergavenny, Monmouthshire (found in poor condition — being cared for)	22.8.63
,,	Matosinhos, Douro Litoral, Portugal (shot)	(6.9.63)
29.8.62	Safi, Morocco (killed)	1.1.63

Date ringed	*Placed recovered*	*Date recovered*
LESSER BLACK-BACKED GULL—*continued*		
8.8.63	Hucclecote, Gloucestershire	3.10.63
9.8.63	Coray, Finistère, France	27.10.63
,,	Porto de Leixões, Douro Litoral, Portugal (caught on fishing boat)	5.11.63
,,	Vila do Conde, Douro Litoral, Portugal (killed)	*ca.*29.11.63
12.8.63	Off Vila do Conde (caught at sea)	(29.10.63)
14.8.63	Viana do Castelo, Minho, Portugal (shot)	*ca.*24.12.63
HERRING-GULL		
	(Total : 1 ; Farne Is. : – ; local : –)	
14.8.61	Newbiggin-by-Sea, Northd.	15.8.63
KITTIWAKE		
	(Total : 67 ; Farne Is. : 47 ; local : 2)	
19.5.56	*Westkapelle, Walcheren, Zeeland, Netherlands	Oct.1958
3.7.56	*Sardloq, Julianehåb, Greenland	summer 1963
11.7.58	*Cresswell, Newbiggin-by-Sea (released)	18.8.63
18.7.58	South Shields, Co. Durham	14.6.63
27.6.59	Atà, Jacobshavn District, Greenland (shot)	17.7.60
,,	Hundr Ejland, Egedesminde District, Greenland (shot)	29.7.60
9.7.59	Frederikshåb, Greenland (shot)	24.8.63
6.7.60	Off St. Anthony, Newfoundland	17.9.63
9.7.60	Whitby	27.2.63
29.6.61	Scarborough, Yorks.	(8.8.63)
10.7.61	Julianehåb District, (shot)	1961-1963
23.6.62	3 m. S.W. of Burgeo, Newfoundland (taken)	(15.1.63)
7.7.62	Julianehåb District — 2 birds (shot)	20.11.63 ; 1963
7.7.63	Skjeberg, nr. Sarpsborg, Ostfold, Norway (shot)	20.10.63
11.7.63	Easington, Kilnsea, Yorks.	(3.8.63)
,,	Cape Dan, Angmagssalik, S.E. Greenland (shot)	19.9.63
16.7.63	Change Islands, Notre Dame Bay, Newfoundland (shot)	2.11.63
ARCTIC TERN		
	(Total : 47 ; Farne Is. : 29 ; local : 5)	
5.7.60	Coquet Island, Northd. (controlled)	1.7.63
20.6.63	Vilslev, Ribe, Jutland, Denmark	*ca.*10.8.63
26.6.63	Newbiggin-by-Sea	3.8.63
3.7.63	Longniddry, E. Lothian (killed by car)	(21.8.63)
4.7.63	Bay of Biscay (caught on fishing boat)	2.10.63
5.7.63	Sherburn-in-Elmet, Yorks. (**inland recovery**)	23.8.63
,,	Villiers, Indre, France (**inland recovery**)	(5.9.63)
9.7.63	Nr. Dunbar, E. Lothian	26.8.63

Date ringed	*Place recovered*	*Date recovered*
ARCTIC TERN—*continued*		
13.7.63	Edinburgh	31.7.63
,,	Loch Linnhe, nr. Corran, Inverness-shire	Aug.1963
,,	North Sea, 45 m. E. of Aberdeen (injured wing against wires on trawler)	1.8.63
,,	Kirkintilloch, Dumbartonshire (**inland recovery**)	1.8.63
,,	Horden, nr. Easington, Co. Durham	(9.8.63)
SANDWICH TERN		
	(Total : 47 ; Farne Is. : 2 ; local : –)	
29.6.57	Coquet Island (controlled)	11.6.63
7.7.58	Newburgh, Aberdeenshire (controlled)	3.6.63
,,	(1) Cockenzie, E. Lothian (caught on fishing line—released)	3.8.63
	(2) Between Lower Largo and Elie, Fife	14.8.63
26.6.59	Coquet Island (controlled)	11.6.63
,,	Paramos, Espinho, Douro Litoral, Portugal	15.9.63
,,	†Nhime Beach, nr. Cuio, Benguela, Angola	(28.10.63)
27.6.59	Coquet Island — 2 birds (controlled)	1.7.63
4.7.59	†Nhime Beach — 2 birds	(28.10.63)
9.7.59	†Nhime Beach	(28.10.63)
11.7.59	Warkworth, Northd.	9.6.63
15.7.59	Salin-de-Giraud, Bouches-du-Rhône, France (released)	28.7.63
18.7.59	†Nhime Beach	(28.10.63)
22.7.59	†Nhime Beach	(28.10.63)
22.6.60	Aberlady Bay	30.6.63
25.6.60	Faro, Algarve, Portugal (killed)	7.7.63
22.6.61	Caòrle, Venezia, Italy (killed)	23.6.63
24.6.61	Takoradi, Ghana (shot)	8.4.63
1.7.61	Perroquet Island, nr. Libreville, Gabon	18.8.63
23.6.62	Nr. Keta, Ghana (caught)	(9.1.63)
,,	Nr. Lagos Lagoon, Nigeria	15.2.63
,,	Mossel Bay, S. Africa (caught on boat — released without ring)	(2.5.63)
25.6.62	Grand-Lahau, Ivory Coast	18.2.63
3.7.62	Dakar, Sénégal (found with injured wing)	(19.1.63)
,,	10 kms. from St. Louis, Sénégal (killed)	20.6.63
7.7.62	Villagarcia de Arosa, Pontevedra, Spain	May 1963
9.7.62	Benguela (caught alive — died later)	15.11.63
14.7.62	Richard Toll, Sénégal (killed — **inland recovery**)	(11.2.63)
20.7.62	†Nhime Beach	Feb.-Oct.1963
23.7.62	Freetown, Sierra Leone (shot)	16.9.63
28.7.62	Libreville	28.1.63
17.6.63	Inverkeithing, Fife	19.8.63
,,	Pointe-Noire, French Congo	Nov.1963
,,	Cape Palmas, Liberia (released)	24.11.63

Date ringed	*Place recovered*	*Date recovered*
SANDWICH TERN—*continued*		
10.7.63	Nr. St. Trojan, Île d'Oléron, Charente Maritime, France	11.9.63
,,	Rufisque, Sénégal (taken)	12.10.63
,,	Rufisque (released)	1.11.63
,,	Boa Vista, Cape Verde Islands	(16.10.63)
,,	Nr. Dakar (caught on fishing line)	27.10.63
13.7.63	Cross Sands L.V., 8 m. N.E. of Great Yarmouth, Norfolk (caught and released)	20.8.63
,,	Findhorn Bay, Forres, Morayshire	23.8.63
,,	Boddam, nr. Peterhead, Aberdeenshire	26.8.63
,,	Cultness Marsh, Rosyth, Fife	(12.9.63)
20.7.63	Musselburgh, Midlothian	13.8.63
GUILLEMOT		
	(Total : 17 ; Farne Is. : 8 ; local : 1)	
24.6.61	Bacton, Norfolk	*ca.*15.3.63
29.6.61	*Amble	3.2.63
31.7.61	Staithes, nr. Whitby	14.9.63
16.6.62	*St. Abbs, Berwickshire	10.2.63
,,	Le Havre, Seine Maritime, France	14.2.63
23.6.62	Nr. Lindesnes, Vest-Agder, Norway (shot)	5.2.63
,,	Kvitsøy, Boknfjord, Rogaland, Norway (shot)	12.2.63
,,	Seaham Harbour, Co. Durham (found oiled — died later)	10.3.63
PUFFIN		
	(Total : 16 ; Farne Is. : 12 ; local : –)	
20.6.61	*Hornsea, Yorks.	27.1.63
11.7.62	Withernsea, Yorks.	*ca.*9.2.63
14.7.62	Dunbar	11.1.63
19.7.63	Faerder Fyr, Oslo Fjord, Norway (shot)	5.10.63

(b) Recovered on the Farne Islands, but ringed elsewhere

Date and place ringed		*Date and method of recovery*
SHAG		
21.7.62	Isle of May, Fife	July-Aug. 1963 (controlled)
14.7.62	Isle of May — 2 birds	2.4.63 ; 5.4.63
EIDER-DUCK		
10.7.55(juv.)	Budle Bay, Northd.	26.4.63 (controlled)
LESSER BLACK-BACKED GULL		
30.8.59(juv.)	Isle of May	15.6.63
SANDWICH TERN		
8.7.59	Firth of Forth — 2 birds	3.6.63 ; 22.6.63 (controlled)

NOTES : 1. * Indicates bird ringed as adult.
2. (juv.) Indicates bird ringed as juvenile.
3. Unless otherwise stated all birds have been found either dying or dead, or are presumed dead.
4. Where the date of recovery is unknown, the date of the reporting letter is given in brackets.
5. " Local " recoveries include all birds (other than those on the Farnes) recovered within 15 miles of the islands.
6. " Controlled " indicates that a bird ringed by one ringer has been trapped (and released) by another ringer.
7. † Indicates that this is one of 15 birds (14 ringed in 1959) reported together to the Ringing Office and said to have been found Feb.-Oct. 1963, but which may well have been found earlier.

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NORWEGIAN-RINGED MANDARIN DRAKES IN NORTHUMBERLAND

At approximately 1700 on 9 November 1962 two ducks, believed to be teal, were shot near Seaton Burn, Northumberland. It was a very dark night, with a north-east gale blowing, and on examination the birds, both of which carried Stavanger Museum (Norway) rings, were found to be mandarin drakes. As the result of enquiries by Viscount Ridley (then the Hon. M. W. Ridley) it was learnt that the mandarins, which were kept on a pool at Ekeberg, Oslo, had been frightened by an explosion that took place at about 1200 on 8 November. Accordingly, they had covered a distance of 900 kilometres (560 miles) in 29 hours at a minimum average speed of 31 kilometres (19.3 miles) per hour. It is not known when, or where, they arrived in Northumberland, but Dr. Holger Holgersen of the Stavanger Museum considered, in view of the fact that their potential speed of over 20 miles per hour must have been augmented by the strong north-east wind, that they might have been resting and feeding at Seaton Burn for some few hours before they were shot.

PLATE 4



Photograph by Peter Delap

ROE DEER

ROE DEER IN NORTHUMBERLAND AND DURHAM

by

G. A. COWEN, THE VISCOUNT RIDLEY and H. S. TEGNER

SUMMARY

This paper attempts to show the history and spread of the roe deer *Capreolus capreolus* (L.) in Northumberland and Durham over the past one hundred years, during which period the population has increased from something under one hundred to approximately two thousand three hundred and fifty in 1963.

Maps showing the distribution at various dates have been drawn.

A census of deer as at February 1963 is also shown on a map, statistics of roe killed over the five years 1958-63 are given, together with notes on the natural history of the species in the two counties.

A final section on the control of roe deer is included.

INTRODUCTION

In 1962 we decided to try and make a census of roe deer *Capreolus capreolus* (L.) in the two counties. All landowners owning woodland in the area were asked to complete a questionnaire which asked among other questions :—(a) how many deer were in their woods on 1 February 1963, (b) how many deer had been killed in the five-year period ending 1 February 1963 and (c) whether there had been any changes in the population of roe deer present in the last forty years.

This paper sets out the results of the questionnaires. Very few were not answered and a few more were corrected in the light of subsequent evidence (e.g. overlapping of deer territory). We, therefore, believe that a reasonably accurate answer to (a) above has been obtained. Certain woodland owners (mostly of small areas) were not included, and in other cases deer may have been counted twice, so that the inaccuracies may have had a tendency to cancel each other out. Much help in checking was also given by other persons (e.g. Masters of Foxhounds). Unfortunately, the abnormal winter of 1962-63 was no help to accuracy, as deer wandered considerably and many died. The Forestry Commission, who keep careful records of the deer population, were particularly helpful. Our grateful thanks are due to them as also to the many landowners who helped us so generously, to the local Masters of Foxhounds, to the Geography Department, University of Newcastle upon Tyne, for assistance with the maps, to Mrs. Edgar for her help in the preparation of this paper and to the Country Landowners Association for their assistance with the questionnaires.

HISTORY

There is no doubt that the roe deer is an indigenous mammal of the counties of Northumberland and Durham. Fossilised bones of this deer have been found in company with those of extinct British mammals such as the wolf *Canis lupus* L. and the great prehistoric woodland stags. Such remains, for example, have come to light in the Heatheryburn Cave, near Stanhope, in Durham. There is plenty of evidence in the old Roman middens of roe deer bones and antlers. It would appear from these relics that the Romans, during their occupation of Northumberland and Durham, were not averse to a dish of venison. When the land, which is now within the confines of these two counties, was a great afforested countryside, roe deer would undoubtedly have been numerous in the woods. The bear *Ursus arctos* L, the wolf and the lynx *Felis lynx* L. would all take their toll of these small deer. Long after the Romans left there were apparently plenty of roe in the two counties. The early Bishops of Durham (A.D. 1123) used to hold annual meetings of the villeins and farmers for the purpose of constructing " hays " (traps) and assisting at roe hunts. The author of the ballad " The Battle of Otterbourne " introduces the roe, in this poem, as one of the characteristic animals of Northumberland in 1388. Wallis (1769, page 410), writes " There were near 6000 head of deer, red, roe and fallow, in the forefts and parks of the Right Honourable the Earl of Northumberland, in the northern counties, 4 Henry VIII. 1512; according to an account given by his Majefty's commiffioners." Leland, who wrote about the year 1538, testifies that the roe was still common in Northumberland at that date. Thus, he states: " In Northumberland, as I heare say, be no forest except Chivet Hills and there is plenty redde-deare and row-bukkes." We learn from *The Durham household book* that in about 1530-34 roe deer were to be found in the adjoining county. This may possibly refer to Yorkshire and not to Northumberland. On 29 June 1663 an entry was made in the *Household book* of the owner of Naworth, Lord William Howard, to the following effect: " To severall persons for takeinge 31 Roe Kidds as appeareth by bill." This may have been part of a consignment of roe deer which was sent by coach from Cumberland to Wimbledon, for Charles I.

In Percy (1765), in a footnote to the passage on the " Battle of Otterbourne " already referred to, it is stated that roebucks were to be found upon wastes not far from Hexham in the reign of George I (1714-1727). Up till this time, it would seem justifiable to assume that roe deer were far from uncommon in the counties of Durham,

Cumberland and Northumberland. We may now refer to the writers who began to state that the roe deer was an extinct animal in England, but not in Scotland. In 1818, Scott (1820) speaks of the last of the English roe. There is also a reference to the death of a wild roe, in Northumberland, in Bewick (1790). This was believed to be a visitor from Cumberland or Scotland. Mennell and Perkins (1864, page 152), describing the roe deer, say " This beautiful little deer is, like the Red, now no longer an inhabitant of our counties." Harting, at one time editor of the *Zoologist* and also of *The Field*, writes (1883, page 49): " When the Roe-deer became extinct in England is not quite certain " which seems to imply that at that time he considered roe to be an extinct English mammal. However, Millais (1906, page 161) says: " A few (roe) still remain at Naworth and Netherby in Cumberland and Northumberland " and again (page 163): " As a matter of fact the roe never became extinct in England."

Cowen (1955) states that in 1847 a pack of hounds was formed by Mr. Richardson of Woodlands Hall, Consett, for the purpose of hunting roe deer in the Lord Bute's area. They soon found that roe provided no sport with hounds and turned their attention to foxes *Vulpes vulpes* (L.). This is a valuable piece of evidence, in-so-far as the suggested extinction of roe deer in the county is concerned, for it shows that, about the time that the extinction theorists were proclaiming roe to be extinct in the north of England, a pack of hounds was actually established to hunt these deer! Again, Richardson (1922), writing of the period 1867-72, refers to roe deer being found in the Lord Bute's woods where they bred at that time. He adds that there are still some there.

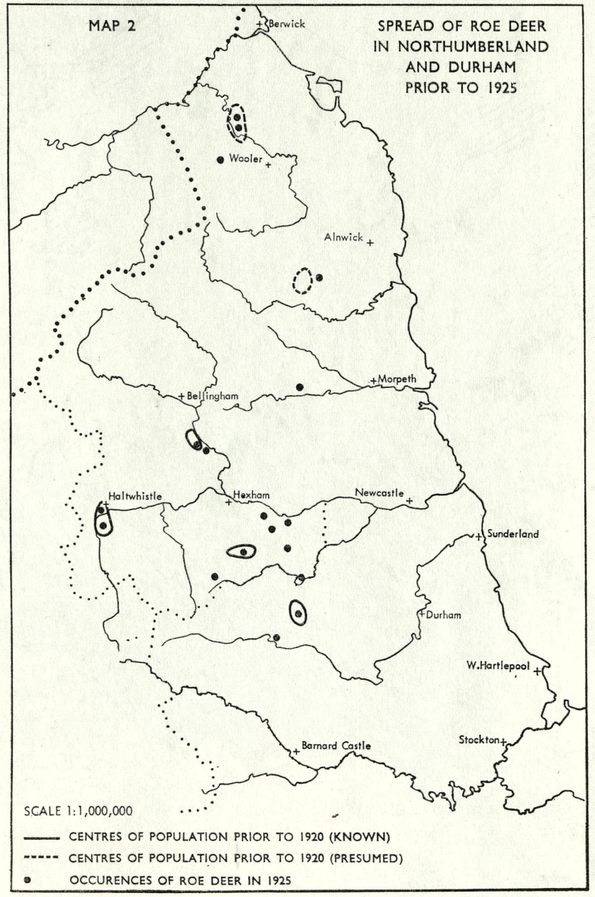
Whether roe deer became extinct or not in northern England, there is little doubt that they were not unduly numerous in the nineteenth century and the early part of the present century. Much of the evidence of extinction comes from writers with second-hand knowledge, but there were Bewick, and Mennell and Perkins, who were local naturalists, and all three appear to have agreed with the extinction credo. It was not until after the first world war that the population of roe deer in these two counties began to build up. This increase, which has been particularly great during the last thirty years, commenced shortly before the afforestation of considerable areas in Durham and Northumberland. The Forestry Commission, as the greatest single planter of trees, started their operations in 1919. The question arises as to how and where the original stock came from which began the present population of roe deer in these two counties. There is no evidence whatsoever of any artificial introductions such as happened

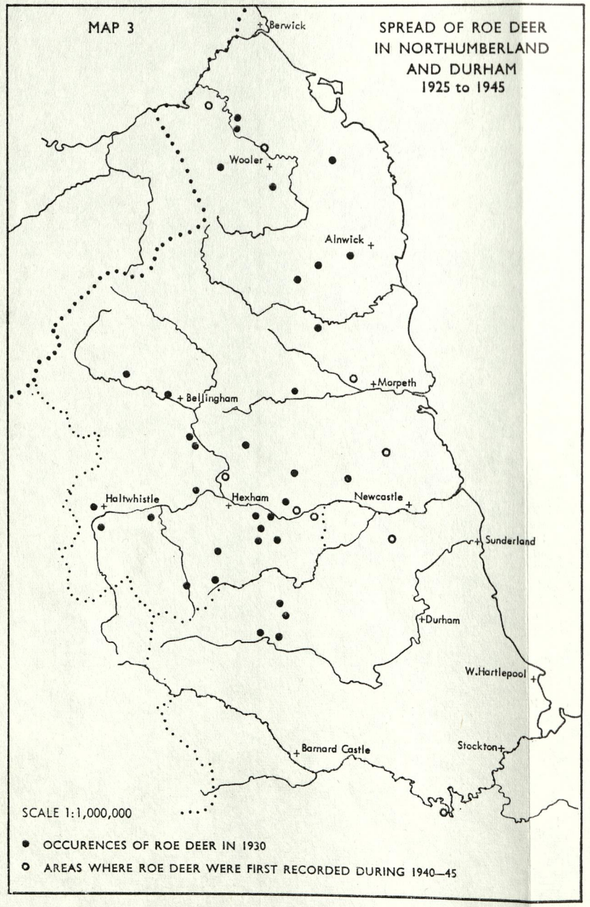
in one or two places in the south of England, particularly the much publicised introduction of roe into Dorset from Perthshire in 1800 by Lord Dorchester. The parent stock of our present roe deer must have therefore come, of their own accord, possibly from Scotland or more probably from Cumberland ; alternatively, there may have been odd pairs of roe who survived the so-called extinction period in such places as the North Tyne valley, upper Coquetdale and the Derwent valley. If we can assume that something like this happened, and that it was unlikely that Scottish roe of their own volition moved into England, then there is quite a case for the theory of roe survival in England.

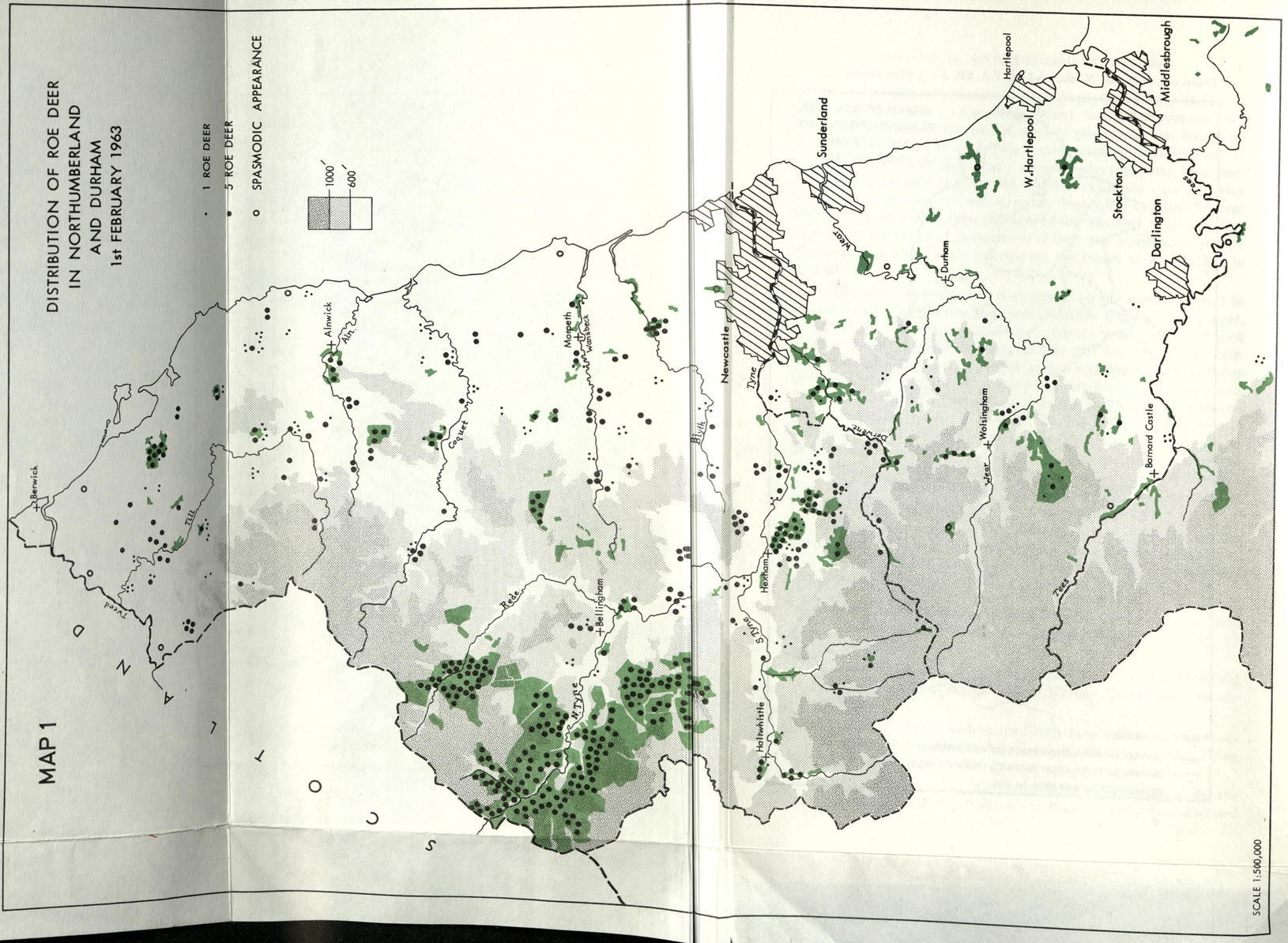
With very few exceptions most writers on the subject seemed to take it for granted that roe deer were extinct in England during most, if not all, of the nineteenth century. Careful consideration of such small evidence as exists convinces us that this was not so. It must be remembered that the number of people with first-hand knowledge of certain remote parts of the country was very limited, largely because difficulties of transport added greatly to the inaccessibility of remote areas. Moreover, there was then far less mingling between people of different districts and in particular between town and country people. It is most noticeable when studying the work of naturalists of the nineteenth century, writing about one or both of our two counties, that they have certain limited sources of information, which they continually quote, thus leaving vast areas quite uncovered.

Evidence has now come to light, collected in the course of this survey, that there were small populations of roe in four distinct areas of the two counties in the latter part of the nineteenth and early part of the twentieth century. These four areas were as follows :—

1. The Castleside area of County Durham—in the vast woodland known as Lord Bute's Plantations, stretching from Rowley to Salters Gate.
2. The Slaley area of Northumberland—in the big Dukesfield Woods, lying between Slaley, Whitley Chapel and Blanchland.
3. The Haltwhistle area in the South Tyne valley—in the woodlands of the Featherstone and Blenkinsopp estates, lying on either side of the river.
4. The Wark area in the North Tyne valley—centred on the Houxty estate and from time to time including Park End and other adjoining properties.



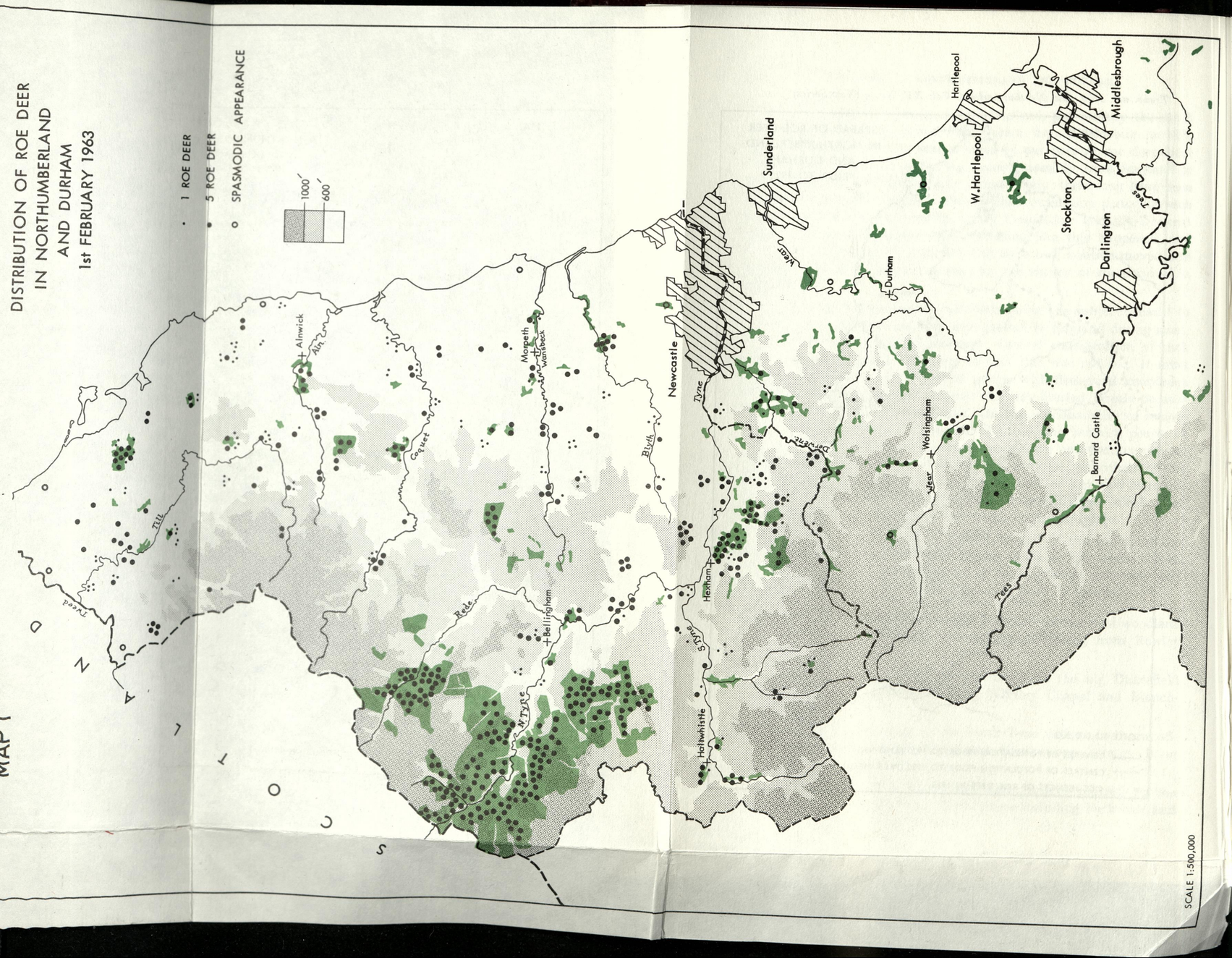




It seems probable that the Haltwhistle and Wark stocks may have had some contact with one another as early records from the Bonny Rigg Hall area might well have formed a connecting link, or have referred to deer in transit between the two. There is a distinct possibility that throughout this period there may have been a small stock of roe deer in the Whittingham area, probably centred on Thrunton and occasionally visiting Beanley and Swarland. It seems almost certain that there was a small resident stock here prior to 1914, but definite proof and actual records have not been obtained.

Our survey has not, of course, covered the neighbouring counties, but encroachment from just across the county borders must always be borne in mind as a possibility. There is a good deal of evidence to point to such an inflow having taken place at only two points. First, from the Naworth estate in Cumberland, which is so close to the Haltwhistle area mentioned above that there was probably always an interchange of stock between the two. Second, there is no doubt that during the rapid population expansion from about 1925 onwards there was an inflow of roe deer from Roxburghshire into the middle reaches of the Bowmont Water around Mindrum and Mindrum Mill. These came over from the Hoselaw and Graden Moss area, just to the north of Yetholm, and even prior to 1914 made occasional visits to the Ford-Etal area where they were not uncommon about 1910. The north Northumberland area was almost certainly repopulated from this source rather than from one of the four sources mentioned above, all of which were in the south-west corner of Northumberland or the north-west corner of Durham. Whether the repopulation of the north was assisted by a source around Whittingham is not certain, but must be considered as possible. It should be noted that the Lord Bute's Plantations, Dukesfield Woods and Thrunton Wood, were almost clear felled during the 1914-18 war and that at the same period a great deal of timber was cut at Featherstone, Blenkinsopp and Houxty, all of which led to simultaneous dispersal of these small in-bred local populations of roe. These spread out slowly between 1920-25, more quickly and more widely between 1925-30, and nearly covered the two counties during the 1930's. It seems probable that the total population of roe in the two counties at the turn of the century was well under one hundred. At that time there would seldom be more than about a dozen deer at any one time at any of the four known centres and probably less at the two presumed centres in the north of the county.

This story is illustrated in maps 2 and 3. Map 2 shows the known, and presumed centres of roe deer population prior to 1920 and the extent of dispersion which had taken place by 1925. Map 3 shows the



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further spread that took place in the next twenty years. It will be seen that expansion was well under way by 1930 and it was undoubtedly helped by the shortage of keepers and foresters during the war of 1939-45.

CENSUS OF DEER IN FEBRUARY 1963

Map 1 shows the distribution of roe in the two counties in February 1963. On this map a large dot represents five adult deer and a small dot represents a single deer. It is inevitably subject to considerable inaccuracies, but it is as correct as we can make it. It also shows (shaded green) the main woodland areas in the two counties, from which it becomes clear that the main concentrations of deer are in the larger woods, which is a fact obvious to anyone conversant with their habits.

The total acreage of woodland in the two counties is as follows (Forestry Commission figures) :—

	Northumberland	*Durham*
Dedicated woodlands in private ownership	34,840	12,330
Other woodlands, generally not suitable for resident deer	16,360	9,140
Forestry Commission woodlands ...	108,161	9,361

Our survey included an area of private woodland of approximately 40,000 acres for Northumberland and 10,000 acres for Durham, but this figure is not accurate as many owners included farm and parkland in their returns.

Other interesting trends shown by this map are as follows :—

1. The spread since 1930 would appear to be largely complete, in that all suitable localities are occupied. Roe deer, except in exceptional winter conditions, are not gregarious, the younger animals tending to colonise new ground as a result of pressure from established deer, and this would account for the spread of a rising population expanding in all directions. There is evidence that this rise in population is now falling off, at least in Northumberland (but it would probably spread to newly-planted areas if allowed to do so).
2. The population in County Durham appears much less dense, reflecting the higher human population and the less suitable terrain. At the same time, the roe population is now definitely increasing faster in County Durham and may well be on the increase in the newly-colonised Teesside areas. It is most noticeable how many County Durham localities report roe as first appearing in the 1950's. Records from fresh areas in this county have been received since the census of February 1963.
3. The occurrence of roe south of the Tees in north Yorkshire was unexpected and apparently so far not published. The population at Neasham, south-east of Darlington, has, however, existed spasmodically for at least twenty years, and possibly more.
4. The areas marked with a circle on this map show where roe are occasionally seen, probably travelling beasts in search of new territory, which, if unmolested, would remain and breed in any suitable woodland area. Gosforth Park, just north of Newcastle, had a resident stock until recently and one has been killed by a dog in Jesmond Dene inside the City boundary. There are doubtless other areas where they occasionally occur of which we have no record, but this spasmodic appearance is of interest as showing the expansion which is going on.
5. The heaviest concentrations of roe occur in the extensive Border Forests of Kielder and Redesdale, which are now sufficiently established to hold a large head of deer. The area to the south-east of Hexham, between the Tyne and Derwent, is also very heavily populated.

The total number of roe in the returns made by private owners amounts to approximately 1,400 head. This gives an average density of one deer per 350-360 acres of woodland, but an average of this kind is most misleading. We know of woods where nine or ten deer winter regularly in an area of less than one hundred acres and of large tracts of woodland which are untenanted. One roe per hundred acres has been mentioned as a satisfactory stock on the continent.

The total number of deer officially killed in the returns over five years in private woodlands is 1,315 or approximately 20 per cent. of the population annually. It can be assumed that at least half as many more die from other causes—e.g. killed on roads, caught in wire fences, weather, disease etc.—or are shot illegally or die unknown from gunshot wounds, giving a total annual death rate of 30 per cent. As roe normally, at least in lowland districts, produce twins, this rate still allows the species to maintain its numbers.

These figures do not include the Forestry Commission plantations which are totally different in character, not only because of recent extensive plantings, but also because deer have only been killed systematically for the two years before 1963. Furthermore, we have

been asked to treat these figures as confidential. The population of deer in the larger forests varies, however, between one deer to a hundred acres and one deer to eighty acres (Northumberland) and is generally denser than in private woodlands. This supports the view that one of the main reasons for the spread of the roe over the two counties has been the extensive Forestry Commission plantings which since 1920 have provided ideal breeding grounds for these deer.

NATURAL HISTORY OF THE ROE DEER

A study of the roe deer of Northumberland and Durham, over a period of thirty years, rather suggests that the average run of these animals may well be a few pounds lighter in weight than, say, the roe deer of the southern English counties of Dorset, Hampshire and Wiltshire. There seems little doubt that the antlers of the males are less in weight, but of greater rugosity. Northumbrian roe heads are inclined towards narrowness and are apt to be weak at the points. An examination of twenty heads from Dorset and twenty from Northumberland, of approximately the same age, shows this antler difference in a marked manner. Scottish roe deer vary considerably in both their weights and the character of their antlers and this is particularly the case now that it is accepted that, under certain conditions, roe will take up a mountainous existence similar to that of the Scottish red deer *Cervus elaphus* L. These highland bucks almost invariably carry lighter horns than the lowland, woodland dwellers. This is, of course, as one might expect, for the feeding on high, rocky terrain is not to be compared with the more lush feeding obtainable at lower levels. The availability of food and the soil content does undoubtedly influence horn growth. The average buck from Northumberland or Durham does not appear to have the same access to the rich feeding available to the southern roe and some Scottish roe. Lime is known to be a powerful influence in horn growth, and there is not much natural lime in the soil of either of these counties.

The roe deer of these two northern English counties are now largely to be found in the regimented conifer planations which cover extensive tracts of ground in this district. Much of the available food is in the rides, and in newly planted areas where there is a coarse grass and old heather between the recently planted trees. A great percentage of the roe deer's grazing occurs in these two types of terrain. We have found that roe deer do not normally eat pine trees.

It has been stated, in the past, that these hill roe usually give birth to single kids. This may have been due to the fact that the normal view of a doe, a week of two after kidding, shows one infant in

attendance. Only a prolonged examination of foetuses can provide the correct answer as to whether twins or singletons are the norm. A doe with twin fawns to protect will find this difficult in terrain, such as Northumberland and Durham, where foxes (the roe deer's only natural enemy) are particularly numerous. It is quite possible that twin kids are the rule, but that often only one manages to survive the first few weeks of life. It can be said that both twins and singletons are sometimes observed with their dams after May when the first kids are dropped. It has been suggested that 90 per cent. of the does in Northumberland and Durham have twins. We have no reason to disagree with this figure.

The weights of adult roe deer vary considerably with the habitat as the following figures show (in all cases deer weighed without entrails, but with head, heart and liver) : twenty-two lowland Northumberland bucks averaged 47½ lbs. (largest 58 lbs.), nine " hill " Northumberland bucks averaged 43½ lbs. (largest 49 lbs.). For comparison, seven bucks from the Scottish Highlands (over 900 ft. ASL) weighed only 36 lbs. on average.

Roe bucks clean their horns in April (15 March is the earliest date we have seen in Northumberland, and 1 June the latest). The mating season or " rut " occurs at the end of July and the first week in August. The horns are dropped in November or December, and begin to grow again immediately.

Does drop their kids in early June, or late May, and wean them about the end of September. The gestation period is thus ten months, but the embryo is dormant from August to December and does not start developing until January.

Roe change from their winter coat to their red summer coat in May and to winter coat again in October.

CONTROL OF ROE DEER

Landowners vary considerably in their attitude to deer. Some wish to see them exterminated, others will not have them shot and some welcome them for the pleasure they can give—either sporting, gastronomic or merely aesthetic.

Woodland crops are only vulnerable to damage by roe deer in their early stages when below the height of five feet. Roe deer are both grazers and browsers. They are, in fact, very catholic in their feeding tastes. To attempt to list all the vegetation consumed, at times, by them would probably fill a book. Roe seem to thrive on such dangerous plants as yew and ivy, but they do not appear to be particularly partial to rhododendrons. They do not normally choose to eat coniferous

trees and when there is deep snow on the ground, with only the tops of the young firs showing, roe will usually disdain these tips and, instead, scratch in the snow for a living. They will, however, eat young spruce and larch buds in spring. There is no doubt that roe deer are frequently blamed for damage done to trees by other beasts and particularly, perhaps, by such animals as hares *Lupus europaeus* Pall., rabbits *Oryctolagus cuniculis* (L.) and the various breeds of hill sheep.

The roe deer has earned the foresters' enmity mainly because, at certain times of the year, roe bucks will mutilate young saplings by thrashing them with their horns. Roe are not known to strip bark in winter as do red and fallow deer *Dama dama* (L.). The main times of the roe bucks' thrashing are early in the year, in March, April and May, while the bucks are cleaning their horns of velvet, when they will rub the trunks of young trees in order to rid themselves of the flesh and fur that covers their hardening horns. Again, later in the year, and mainly in the month of July, when the rutting starts, bucks will thrash trees to advertise their presence to both does and other intruding males. Scent glands, located on the frontal area of the head in front of the horns, leave evidence of the bucks' presence on these thrashing posts. These are the two periods of the year when roe bucks normally rouse the ire of the tree-planter. The females are not in any way responsible for any damage done to trees at these times of the year. Female roe are protected by law from 1 March to 1 October.

The intensity of thrashing is very often aggravated by territorial conflicts between contending individuals. A buck will attempt to keep his own territory to himself and when so doing will vent his rage on trees and saplings. Bucks vary immensely in their damage potential. Some do very little harm, while others are capable of doing quite a lot. It is these rogue bucks that it is desirable to eliminate. Thrashing or rubbing is, unfortunately, usually conspicuously done on the edge of a ride or clearing. It can be considerably reduced by allowing stray saplings and stool-shoots to grow in these places. Too " tidy " a plantation leaves nothing else but valuable trees for the deer to attack. They go particularly for poplars and thin whippy ash or sycamore trees, but anything will do and large thistles are often destroyed.

Apart from damage to trees, which is usually negligible in a plantation of any size, roe are also unpopular because fox hounds sometimes run riot after them.

On the credit side, roe eat bramble shoots and, in summer, the tips of willow-herb. In fact, willow-herb shoots bitten off about two feet from the ground are as sure a sign of the presence of roe in a wood as are their footprints in mud or snow.

During the course of this enquiry we have received numerous requests as to how to control properly the population of these deer. This is a difficult question to answer. The Forestry Commission has control measures in hand and these consist mainly in arming their trappers and keepers with suitable rifles. Each man has his quota of bucks and does to kill, and a complete elimination policy is not the object in view. Tree-top hides are used, from which deer can be shot, but the more usual method is to " still " stalk the deer in the glades and rides in the forests, chiefly in the evenings and in the early mornings. By this method it would appear that effective control of numbers is being efficiently achieved. It is also interesting to note that similar control measures are, at present, in operation on a limited number of " private " forests.

In the past, most landowners had keepers who could be told to reduce the deer population when it became too great. Nowadays, there are not the keepers to do this job. The question, therefore, arises as to whether some sort of voluntary unit could not be devised, which would be prepared to stalk roe for the sport they can provide, and also, at the same time, to keep down the numbers of these deer, where they are considered to be too numerous. Such a unit would need to be selected carefully and only entirely reliable men, experienced in the use of firearms, would be permitted to engage on this work. Something along the lines of the Scottish Deer Commission's mobile squads of marksmen, might be the answer.

At the present time, there would seem to be little prospect of completely doing away with organised deer-drives, but now that there is a law in force to protect the English deer population, only the weapons specified as suitable in these regulations may be used. Such devices as snares are entirely ruled out. There is little doubt that the best way to control deer damage is to identify the buck responsible and then shoot him with a rifle. This is, in effect, the system of deer control now almost universally adopted on the continent and there is also no doubt that the system not only works, but can be entirely effective. From the point of view of safety, the use of high-powered rifles in a densely populated country has been questioned. It is needless to say that rifles should only be handled by experienced men and accurate marksmen. If shotguns are used on roe deer the minimum shot size now legal is SSG. Anyone who has seen a wounded roe will realise that the use of bird shot is very properly forbidden, as is a .22 rifle.

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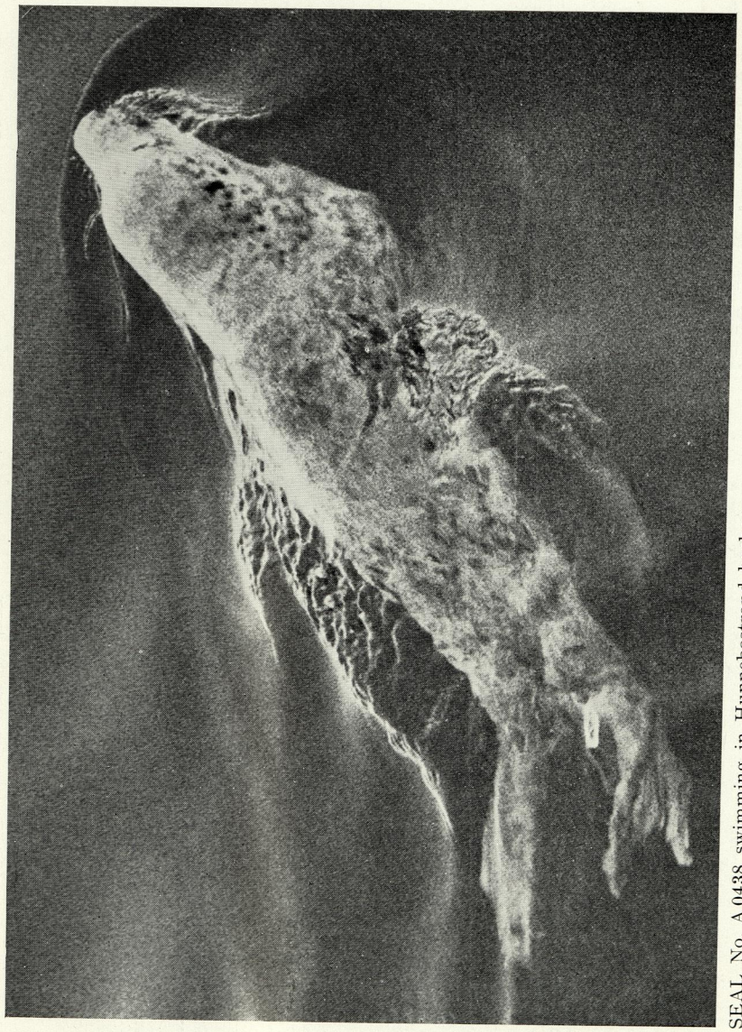
PLATE 5



SEAL No. A 0438 swimming in Hunnebostrand harbour (see page 135). The tag is clearly visible.

Photograph by Allan Karlsson, Uddevalla, Sweden

THE GREY SEALS OF THE FARNE ISLANDS

Report for the period 1 May 1963 to 31 March 1965

by

J. C. COULSON and GRACE HICKLING

CONTENTS

	PAGE
Introduction ...	121
Seasonal behaviour ...	122
Counts of seals from May 1963 to March 1965 ...	122
Blind bull ...	123
Killer whales ...	126
The breeding season ...	126
Spread of the breeding season—1963 and 1964 ...	126
Calves seen on islands other than the main nurseries ...	127
Calf population and mortality rate in 1963 and 1964 ...	128
Calf mortality ...	129
Dead adults ...	129
Weights of new-born calves ...	129
Mating ...	132
Adults holding their ground ...	132
Culling of seals ...	132
The 1963 and 1964 culls ...	132
Removal of seals to zoos ...	133
Effect of the cull ...	134
Marking calves ...	135
Tagging ...	135
Recoveries ...	135
References ...	139

INTRODUCTION

The Society again received grants from the Nature Conservancy, so enabling observations on the Farne Islands colony of grey seals *Halichoerus grypus* (Fabr.) to be continued. Forty-nine visits were made to the islands, thirteen of these during the 1963 and seventeen during the 1964 breeding seasons. The Council wishes to thank all those who took part in the field work : these included members of the Society (some of them new recruits) and students from the Zoology Department of Durham University. Special gratitude is expressed to the band of faithful and enthusiastic workers—C. M. Adamson, C. J. Almond, Miss S. Appleby, M. and T. H. Bell, Mrs. A. M. Clark, Mr. and Mrs. S. Dale and M. Dale, C. L. Davidson, M. T. Dods, W. J. Douglas, J. Gledson, A. Hingston,

Dr. P. Hurley, D. Mann, M. Marquiss, B. Mortimer, P. Ramsey and M. Riley—who, despite frequent disappointments because of rough seas or gales, still volunteer to help.

The autumn of 1963 was very stormy and, as a result, not only was it difficult to obtain accurate figures for the calf population, but also few calves could be tagged. The season started well with five visits in October. The last of these was on 28 October and over three weeks elapsed before another trip was possible. This was on 19 November when one of us (G.H.) spent from 0955 to 1115 on the Wamses where she was helped by W. Shiel. There was still a considerable swell—hence the limited time ashore. Another period of storms followed, when no boat could leave Seahouses harbour, but on 27 November G.H. had over four hours on Brownsman. Finally, on 30 November, after an interval of thirty-three days, a party landed on Staple Island and the live and dead calves were counted.

The difficulties experienced in 1963 were largely due to the fact that, except during the period of the cull when trips were made by helicopter, a boat was the only form of transport available. Conditions during the 1964 breeding season were much more favourable and, from 17 October to 7 December, ten days was the longest period that intervened between visits, all trips (except during the cull) being made by boat.

From the point of view of many members of the Society the most regrettable incidents of the period were the two culls which took place in December 1963 and December 1964. Naturalists throughout the country have expressed disquiet at the Minister of Agriculture's decision to kill seals on the Farne Islands and there is no doubt that these culls will have serious effects on the Society's field work.

SEASONAL BEHAVIOUR

Counts of seals from May 1963 to March 1965. Twenty counts were made although, because of stormy weather, there were no visits in March and April 1964. On the whole, the results (given in Table 1) show comparatively little change in numbers although there have been increases in the maximum counts for certain months. For example, the 1964 and 1965 January counts were respectively 1,852 and 1,952—both larger than the previous maximum of 1,315 (on 29 January 1958). Similarly the three February counts—1,814, 1,952 and 1,792—are all higher than the previous maximum of 1,649 (on 5 February 1960). On the other hand, no count reached the figure of 2,182 recorded on 7 September 1960.

Observations (see Table 1) suggest that the numbers of seals hauled out at low water are usually at their smallest during summer neap tides. In the months immediately following the breeding season the state of the

tide (i.e. whether it is neap or spring) apparently makes very little difference to the numbers. At this time, too, especially during neap tides, most of the seals are on land within two or three hours of high water and a count made then gives practically the same result as one made at low water. From their appearance, and the fact that they lie well above high water mark, it is obvious that many of them are spending considerable periods ashore and the presence of large quantities of shed hair shows that they are moulting. This moulting probably starts in mid-January and continues until early March—shed hair was found on South Wamses on 21 January 1964 and on Brownsman on 5 March 1961 (Coulson and Hickling, 1962). Practically all the animals in the large haul-out on the South Wamses shingle beach are males, but elsewhere the sexes and age groups are mixed.

Some ten years ago, G. W. Phillips, then head lightkeeper on the Longstone, reported that from mid-November to March a party of 50–60 seals could regularly be seen on the sheltered sandy beach of the Northern Hares. Since then seals have, on various occasions, been noted on the Northern Hares in winter—either on the sandy beach or on the rocks of the small bay, known as Abraham's Bosom, at the north end. No previous count has, however, equalled that of 7 February 1964 when about 480 were on the beach. Three weeks later, only two were on this beach although 200 were on Abraham's Bosom. Another unusually large haul-out was seen on 4 December 1964 when some 250–300 seals were present on the sandy beach.

The total numbers present on the breeding islands, and the adjacent Harcars, in January and February show little variation, but the positions of the seals change. On 29 February 1964, for example, 940 were lying on the east beach of Brownsman, round the North Cove and up to the north point; this contrasted with the situation a month earlier when Brownsman had been deserted and over 900 seals were on the Wamses. At this time of year Roddam and Green sometimes appears to be used as an extension of the South Wamses and 210 seals were counted here on 7 February 1964 with a further 580 on the shingle beach and adjacent east rocks of South Wamses. A similar distribution was noted on 10 February 1965 although the numbers differed—over 500 were on Roddam and Green and 460 on South Wamses.

Blind bull. On 8 January 1965 some 150–200 males were hauled out on the South Wamses shingle beach. As three visitors approached they made off into the sea staying, however, close inshore and watching proceedings. One mature animal (subsequently discovered to be blind) remained on land and was approached to within a few feet. He appeared

TABLE 1

COUNTS OF HAULED-OUT SEALS

(1 MAY 1963 — 31 MARCH 1965)

	Island	1963 May 14	June 17	July 10	Aug. 12	Aug. 27	Sept. 20	Oct. 7	Oct. 17	1964 Jan. 21
1	Megstone	62	60	199	46	220	6	176	23	21
	South Goldstone	—	40	31	22	—	70	—	—	—
2	Inner Farne	—	—	1	—	—	—	—	—	—
	Wideopens	—	—	4	3	5	—	14	—	—
	Scarcars	4	8	118	80	70	23	282	102	—
	The Bush		—		26	—	90	5	—	—
3	Staple Island	—	—	—	—	—	—	—	3	—
	Gun Rock	—	—	—	—	—	—	—	—	—
	Brownsman	—	—	—	—	—	—	—	—	1
	South Wamses	—	—	—	—	—	—	—	—	516
	North Wamses	—	—	—	1	—	—	34	58	415
	Nameless Rock, Sandbags and Roddam & Green	—	—	—	—	12	—	83	10	25
4	Big Harcar	—	—	—	3	—	—	56	296	560
	Little Harcar	2	—	—		—	—	—	76	
	Blue Caps	—	—	—	—	—	1	—	—	—
5	Northern Hares	—	—	2	13	12	13	6	2	37
	Longstone End	337	100	23	12	38	29	192	108	—
	Longstone (E. side)	291	190	114	50	162	86	19	40	2
6	Knivestone	200	550	625	159	60	350	163	20	—
7	Crumstone, Calf & Little Rock	515	325	134	46	300	294	367	220	275
	Callers	16	4	244	250	20	171	50	—	—
Total		1427	1277	1495	711	899	1133	1447	958	1852
Wind		W 4	S 3	Light & variable	NW 1–2	N light	ESE light	NW 1–2	W-SW 2–3	W 2
Swell		—	Slight	—	—	S (slight)	—	—	Slight	—
Tide		4 days before neap	3 days after neap	1 day after spring	Neap	Neap	2 days after spring	2 days after high spring	3 days before spring	Halfway between spring & neap
Time of low water		1300	1730	1130	1440	1445	1045	1215	0940	1305
Time of count		1325–1430	1700–1800	1000–1145	1430–1550	1425–1630	1040–1220	1130–1310	1040–1245	1130–1400

Feb. 7	Feb. 29	May 15	July 1	July 13	July 27	Aug. 11	Aug. 27	1965 Jan. 25	Feb. 10	Mar. 29
1	3	77	241	12	23	100	75	4	3	8
—	—	—	—	120	90	70	20	—	—	—
—	1	—	—	—	—	1	—	—	—	—
—	1	3	19	—	1	23	1	—	3	—
—	215	22	72	25	67	91	55	—	180	238
—	—	3	—	90		—		—	—	—
1	15	—	—	—	—	—	—	1	3	2
—	—	—	—	—	—	12	—	—	—	—
21	949	1	1	—	—	—	1	—	6	—
582	93	—	6	—	—	5	—	680	460	41
—	126	—		—	1		—	655	23	570
210	4	—	—	—	—	—	4	—	500	28
450	19	12	2	—	—	20	2	250	320	—
30		10	25	—	—	7	17	26	7	5
27	—	2	14	—	—	—	4	1	50	255
480	204	—	—	1	18	6	8	160	140	142
—	60	60	250	35	50	165	142	—	42	155
—	6	202	60	14	120	12	96	—	—	152
—	6	490	—	430	550	540	264	—	—	30
12	250	167	110	210	625	358	382	175	55	108
—	—	184	—	180	355	180	160	—	—	—
1814	1952	1233	800	1117	1900	1590	1231	1952	1792	1734
WNW 2	SE 2	WNW 2	N 1–2	S 1–2	WSW 3	N 2	SW 2	NW 2	NW 2	Light & variable
N (moderate)	—	N (slight)	N (slight)	—	—	—	—	N (slight)	N (slight)	—
Neap	Spring	2 days after high spring	Neap	2 days after spring	Spring	1 day after spring	Spring	Neap	Neap	2 days after neap
1545	1000	1200	1330	1215	1115	1145	1205	1450	1445	0721
1130–1200 and	1015–1200	1100–1230	1130–1330	1030–1325	1020–1155	1035–1255	1030–1250	1130–1330	1130–1430	1030–1200

well-fed and in good condition and lay there for some time, occasionally scratching himself, until disturbed by the sound of voices. A similar incident was recorded in the same place on 27 January 1962 (Coulson and Hickling, 1963).

Killer whales. On 22 August 1963 W. Shiel saw two small parties of killer whales *Orcinus orca* L., numbering in all eight or nine, near the islands. He noticed that the seals kept close to the rocks, among the seaweed, and away from open water. He did not, however, see the whales attack the seals. Another party was seen off the Knivestone on 18 June 1964.

THE BREEDING SEASON

Spread of the breeding season—1963 and 1964. In both years there was, as usual, little indication in mid-October of the imminent breeding season. The visit on 17 October 1963 followed a period of southerly gales and the only seals on, or near, Staple Island were three adults in the water off the South-east Hole. However, three groups of adults (fifty-seven in all) were hauled out on the east side of North Wamses, one of the cows being above high water mark. Two calves were found on this island. The first, a headless corpse, was on the south beach; it was impossible to establish its age, but it had obviously been in the sea for some time. The other, in the south-east corner, was at least five days old. Seven days later, after further south and south-east gales, no trace could be found of this calf, but there was another live animal, five to seven days old, as well as two more dead calves. There were still no calves on South Wamses or Brownsman, but sixteen live and one dead were on the Staple Island flat with two additional dead in the north-west gully. Seven more calves were born, all on Staple Island, between this date and 26 October. A further visit to Staple Island on 28 October disclosed six new births, but a subsequent spell of stormy weather meant that twenty-two days elapsed before another trip could be made and it is accordingly impossible to say when breeding started on Brownsman and South Wamses.

No calves were born on Staple Island after 2 December 1963. Breeding had ceased on Brownsman and North Wamses by about 23 December and the last birth of the season took place on South Wamses on 3 January 1964.

G. R. Potts, who visited the islands on 13 October 1964, reported a number of adults hauled out near the South-east Hole on Staple Island and above the tide line on the east side of North Wamses. There was, however, no sign of a calf. On 17 October, Brownsman was the only island on which landing was possible. There were no calves here, but

one (which appeared, through binoculars, to be not more than two days old) was on the Staple Island flat. None was visible on either of the Wamses. On 23 and 24 October there was a force 8–9 northerly gale and this caused a heavy northerly swell. By 26 October calves were on all the main breeding islands: that on South Wamses was probably stillborn and had been dead for two or three days, one (new-born) was on Brownsman and another (about five days old) on North Wamses. Fifty-one (including five dead) had been born on Staple Island, thirty-eight of them on the flat. There seemed little doubt that this high concentration was the result of the recent gales which had made access to the north-west gully difficult. With the exception of the calf seen on 17 October all appeared to be under seven days old. This calf was still in the first coat (although the hair was loose) and was judged to be aged twelve to thirteen days. Five days later, however, it was found to weigh 98 lbs. and to be in the complete second coat. At the Farnes, most calves do not complete the moult until they are about four weeks old and this is, therefore, an example of unusually rapid moulting.

As in 1963, no births were recorded on Staple Island after the cull and it is probable that the last calf was born not later than 2 December. On Brownsman, breeding ceased on or about 16 December; there were no births on South Wamses after 23 December or on North Wamses after 31 December.

Too few visits were made during 1963 to enable the date by which the first half of the calves were born to be determined accurately. However, it is clear from the visit to the Wamses on 19 November that births were, as usual, earlier on North Wamses than on South Wamses.

In 1964, the dates for the birth of the first 50 per cent. of the calves are given in Table 2. The times of breeding on Staple Island and North Wamses are again similar, but tend to be two to three days earlier than the averages given by Coulson and Hickling (1964). On the other hand, South Wamses was relatively late (three days), but Brownsman was nine days early as compared with the mean date for 1956–61.

TABLE 2

THE DATE BY WHICH THE FIRST 50% OF THE CALVES HAD BEEN BORN ON EACH OF THE BREEDING ISLANDS IN 1964

Staple Island	7 November
North Wamses	6 November
Brownsman	12 November
South Wamses	24 November

Calves seen on islands other than the main nurseries. Towards the end of the breeding season second coaters are occasionally found on what may

be called " non-breeding " islands—on 23 December 1964, for example, one was on Inner Farne. These animals are weaned and, accordingly, there is nothing to suggest that they have been born here. From time to time, however, white coated calves are found, and there is uncertainty about their actual place of birth—uncertainty which is increased by the fact that white coaters have been recovered on the mainland, many miles from the Farnes. Dye-marking has shown that quite young calves (sometimes accompanied by an adult) can move from one nursery island to another—they may even swim across the stretch of sea separating Brownsman from South Wamses—and it is therefore impossible to be certain that births have occurred on these " non-breeding " islands. This is particularly true of islands (except Big Harcar) adjacent to the four main nurseries. In the past, Big Harcar was an important breeding island (as late as 12 November 1949, for example, it was estimated that thirty of the 115 calves seen were on this island) and it is probably still a genuine, but irregular and very minor nursery. No calves were recorded here in 1963, but it is believed that at least two were born in 1964.

No unweaned calves were seen on the Crumstone in either 1963 or 1964, but a small white calf was on Roddam and Green on 26 October 1963. It was still there, in company with two others, on 19 November. Although this is the first time unweaned calves have been recorded on this island it must be remembered that it lies only a short distance from South Wamses and calves from this latter island could reach it without difficulty.

In 1952 W. J. Lewis reported six calves on the Northern Hares and nine on Longstone End (Telfer and Watt, 1953). No further reports were received and subsequent observations suggested that these animals had probably come from one of the main nurseries. However, on 4 December 1963, when the helicopter landed on the Northern Hares, a week-old calf was on the sand while another white coater was on the nearby rocks. Three adults were in the vicinity. A calf (which was lying near a cow and, from a distance, appeared to be only a week old) was on West Wideopens on 18 November 1964, but like the examples already mentioned, it is impossible to say where it had been born.

Calf population and mortality rate in 1963 and 1964. Counts of both live and dead animals were again made on the main breeding islands and these results have been used to complete Tables 3 (a) and (b). Births on these islands totalled 1,254 in 1963 and 1,436 in 1964. The annual shooting of over 300 calves meant that some animals were killed which would, in normal circumstances, have died here and thereby introduced a new, variable factor into the mortality rate and, accordingly, this can only be calculated accurately up to the date of the cull. Other calves

were subsequently found dead and final percentage mortality figures, which include these later deaths, have also been given.

Calf mortality. Five causes of calf mortality are given in Coulson and Hickling (1964), but it now seems probable that calves may occasionally die from other causes.

On 24 October 1963 two cows were in the north-west gully on Staple Island and when they moved away two newly-born, but dead calves were found. They were eight or nine yards apart and both appeared to have been stillborn, one being still in the amnion. Its nose was deformed and there seemed little doubt that it was premature. This incident, together with the finding, during the early part of the season, of other dead calves, suggests that some of these may be premature births which, naturally, have a reduced chance of survival.

Another calf, seen on Brownsman on 22 November 1964, appeared to have died from exomphalos, a condition which also occurs in human babies. The calf, which was well-nourished and at least five days old, was found dying, surrounded by a pool of blood and with the greater part of its intestines protruding from the umbilicus. Apparently in exomphalos only a thin membrane covers the umbilicus and it seems probable that for some reason this membrane had been broken, so leading to death. Five days later a calf, with a long trail of intestine, was seen floating in Pinnacles Haven and it, too, may have died from this condition.

During the 1964 cull at least nine ailing calves were seen and some, which had little, if any, chance of survival, were destroyed. One of these was suffering from pneumonia while another had a mass of mucous coming from its mouth, obviously pouring down through the sinuses.

Dead adults. There are only infrequent records of dead adults on or near the islands. On 14 August 1963 a bull and cow, both dead for some considerable time, were found on Big Harcar while three were seen during the 1964 breeding season. These were a cow on Brownsman on 22 November, a bull on Staple Island on 7 November—it seemed to have become jammed in a crevice near the South-east Hole—and another bull floating in the sea off the Wamses on 18 November.

Weights of new-born calves. In 1964, nine calves, known accurately to be less than one day old, were weighed. The five females ranged from 26 lbs. to 36 lbs. (average 32 lbs.) and the four males from 34 lbs. to 41 lbs. (average 38 lbs.). The average weight of females is similar to that given by Coulson and Hickling (1964), but that of males is 7 lbs. higher, although all are within the range previously recorded. The overall average weight was 34 lbs.

TABLE 3(a)

CALF POPULATION AND MORTALITY RATE, 1963

NUMBER OF CALVES (ALIVE AND DEAD) BORN BETWEEN VISITS

Date of visit	*Brownsman*	*Staple Island*	*North Wamses*	*South Wamses*
17.10.63	—	—	2	—
24.10.63	—	19	3	—
26.10.63	—	8	—	—
28.10.63	*	6	3*	*
19.11.63	117*	140*	191	20
27.11.63	244	*	*	14*
30.11.63	17	383	*	*
4.12.63	*	*	*	*
5.12.63	*	4†	*	*
6.12.63	*	*	41†	20†
7.12.63	14†	*	*	*
10.12.63	4	—	*	*
6.1.64	1	—	1	2
21.1.64	—	—	—	—
No. born	397 (297)	560 (529)	241 (235)	56 (55)
No. found dead on island up to date of cull	61 (—)	114 (—)	37 (—)	8 (—)
No. later found dead	3 (—)	3 (—)	— (—)	— (—)
Total dead	64 (47)	117 (83)	37 (30)	8 (9)
Percentage mortality up to date of cull	15.6% (—)	20.4% (—)	15.4% (—)	14.8% (—)
Final percentage mortality	**16.1**% (15.8%)	**20.9**% (15.7%)	**15.4**% (10.6%)	**14.3**% (16.3%)

Percentage mortality for four main breeding islands, 1963
(1) Up to date of cull = **17.7**% (—)
(2) At end of breeding season = **18.0**% (15.1%)

TABLE 3(b)

CALF POPULATION AND MORTALITY RATE, 1964

NUMBER OF CALVES (ALIVE AND DEAD) BORN BETWEEN VISITS

Date of visit	*Brownsman*	*Staple Island*	*North Wamses*	*South Wamses*
17.10.64	—	1*	—	—
26.10.64	1	50	1	1
31.10.64	2	153	20	—
1.11.64	1	8	*	*
7.11.64	9*	*	155	3
8.11.64	6*	*	8	1
18.11.64	302	*	*	*
21.11.64	44	369	*	*
22.11.64	5	40	98	26
27.11.64	15	*	*	*
4.12.64	*	15	*	*
5.12.64	34†	—†	*†	33†
6.12.64	—	—	21	1
7.12.64	*	*	—†	—
19.12.64	4	—	*	*
23.12.64	*	*	6	2
8.1.65	—	—	1	—
No. born	423 (397)	636 (560)	310 (241)	67 (56)
No. found dead on island up to date of cull	62 (61)	146 (114)	40 (37)	2 (8)
No. later found dead	12 (3)	4 (3)	5 (—)	2 (—)
Total dead	74 (64)	150 (117)	45 (37)	4 (8)
Percentage mortality up to date of cull	14.8% (15.5%)	23.0% (20.4%)	13.2% (15.4%)	3.0% (14.8%)
Final percentage mortality	**17.5**% (16.1%)	**23.6**% (20.9%)	**14.5**% (15.4%)	**6.0**% (14.6%)

Percentage mortality for four main breeding islands, 1964
(1) Up to date of cull = **17.6**% (17.7%)
(2) At end of breeding season = **19.0**% (18.0%)

NOTES (1) An * indicates that no landing was made on that day.
(2) † indicates that killing took place on that day.
(3) 1962 and 1963 figures, where applicable, are given, for comparison, in brackets.

Mating. On 18 November 1964 mating was not seen on Brownsman, but on 22 November at least two pairs were noticed on this island and also on North Wamses. Mating occurred on all the islands during the cull in early December, but by 23 December it was only observed on South Wamses.

Adults holding their ground. In recent years it has been apparent that an increasing number of adults, in particular cows, remain on the breeding grounds when visitors are present. A count made on 22 November 1964 showed that the numbers of cows which held their ground were as follows :—South Wamses, 2 ; North Wamses, 30 ; Brownsman, 25 ; Staple Island, 58. Sixteen bulls, which held their ground, were counted on this last island. A similar count on Brownsman on 27 November showed that nineteen cows and eleven bulls remained on the island.

CULLING OF SEALS

The 1963 and 1964 culls. The report of the Consultative Committee on Grey Seals and Fisheries appeared in March 1963 and among its recommendations was a five year programme of killing seals on the Farnes with the object of reducing the breeding potential of the colony by a quarter. The Committee considered that this could be achieved by an annual kill of eighty-five cows (with their calves) or an equivalent number (360) of female calves. In this connection, one pregnant cow was estimated as equal to four female calves and it was thought that, in practice, kills would include both cows and calves. After considering the report, and discussing the situation with the Consultative Committee, the Farne Islands Local Committee agreed, subject to certain conditions, to allow this proposed cull and the Executive Committee of the National Trust later gave their approval. The Executive Committee, however, limited their agreement to a period of three, not five years and the Farne Islands Committee subsequently made a similar limitation. The actual killing was to be carried out by officials of the Ministry of Agriculture, Fisheries and Food, the weapons used being a .303 rifle (for adults) and a Webley Scott .32 veterinary pistol (for calves).

Prior to the 1963 cull, certain zoologists and local naturalists expressed grave disquiet and the publicity given to the killing led to a nation-wide outcry. This was resumed in the autumn of 1964, but, despite a deputation (led by Sir Landsborough Thomson, President of the Council for Nature) which put the views of naturalists to senior officers of his Ministry, the Minister of Agriculture decided that the cull should be repeated in 1964.

In 1963 killing took place on Staple Island on 5 December (147 calves killed and three female and one male calf removed to a zoo), on

North and South Wamses on 6 December (100 calves shot on the north island and 23 calves and one cow on the south island) and on Brownsman (73 calves shot) on 7 December. It was planned to start the 1964 cull on 3 December and to adopt a similar procedure. However, a severe north-westerly gale made this impossible and practically all the killing was done on 5 December when three cows and 124 calves were shot on Staple Island, one bull and 88 calves on Brownsman, 29 calves on South Wamses and 56 on North Wamses. The total obtained was appreciably less than the target of 360 " calf units " set by the Ministry and, accordingly, killing was resumed on 7 December—the National Trust refused to allow any animals to be shot on a Sunday—when a further 33 calves were killed on North Wamses. This brought the total to 343 " units " compared with 351 " units " in 1963.

As the object of the cull was to remove females all calves were sexed, but, because of lack of experience, mistakes were undoubtedly made in 1963. Indeed, according to F. Christie, one of the partners in Orca Marine Enterprises (the firm that removed the bodies, skinned them and disposed of the carcasses) out of 341 calves handled by him 57 were males. In 1964, every effort was made to ensure greater accuracy in sexing and, after examination, all males were dyed green : this obviated a great deal of rehandling and consequent disturbance of the calves. With the exception of three males, all ailing, no tagged seals were killed. There were a few other instances where males were killed deliberately and one of us (G.H.), who acted as recorder for one of the killing parties, believed that out of the 176 she recorded, only five were males. It is not known how many males were included in the animals killed by the second party, but the officer responsible for sexing was a professional zoologist and errors should have been few.

For various reasons it was considered desirable to confine the cull to calves—if possible, weaned animals—and the five adults were killed for scientific purposes.

Removal of seals to zoos. In 1963, the Farne Islands Committee agreed that four calves could be removed with the object of ultimately displaying them at Marineland, Morecambe. A last minute request from Mr. R. Bloom of Flamingo Park Zoo, Yorkshire, was, however, turned down and Mr. Bloom was advised to apply to the committee if he wished to obtain calves in 1964. He duly sent in an application, but failed to receive the necessary permission. Accordingly, he decided to " raid " the islands on what he described as a " rescue operation " and at dawn on a day in late November (the date is uncertain, but it was probably 26 November) he and two associates landed in the North Cove of Brownsman and removed

six calves, all alleged to be females. Nothing definite is known about their ages, but one was certainly unweaned. Moreover, according to Mr. Bloom, at least one was tagged although it has not been possible to discover its number. Mr. Bloom subsequently released the story of the raid, with accompanying photographs, to the national press.

It was anticipated that all involved in the expedition, including the boatmen who took the party out to the islands, would be prosecuted under the 1932 Grey Seals Protection Act, but later investigation showed that the Grey Seals Protection (Farne Islands) (Suspension of Close Season) Order 1963, which suspended the close season for the Farne Islands in 1963–64, apparently meant that there were now no penalties (except those which could be exacted under the National Trust byelaws) for the taking or wounding of seals on the islands.

This discovery has caused grave concern, for a further Suspension Order made on 4 December 1964 means that a similar situation will prevail during the 1965 breeding season. It is feared that this may lead to further unauthorised raids and, accordingly, every effort is being made to rectify the legal position.

Effect of the cull. It is impossible to foresee the long-term effect of the cull on the Farne colony, but the immediate results (when killing was taking place) were practically negligible. Shooting did not seem to disturb either adults or calves and the latter appeared quite unaffected by nearby corpses or by the pools of blood into which they sometimes blundered. It is also impossible to assess the effect on the remaining calves, and on the behaviour of the adults, during the rest of the breeding season. The removal of over 300 calves would undoubtedly make a difference, but, in 1964 for example, only about 760 out of a total of 1,422 born up to that time still remained on the islands on 5 December. Furthermore, the greater part of the natural mortality had already occurred. Nevertheless, it is reasonable to suppose that some of the animals killed, especially first coaters, would probably have died, from natural causes, while still on the breeding grounds. This means that the mortality rates shown on pages 130 and 131 are not strictly comparable with those for previous years and tend to under-estimate the proportion which would have died if the cull had not taken place.

A minor secondary effect of the cull is the disturbance on the islands, especially when large numbers of people are present. This undoubtedly caused some calves to take to the water prematurely and, in a few cases, meant that they fell over cliffs, from a considerable height, and were injured.

MARKING CALVES

Tagging. An amended form of the nylon cattle ear tag, first tried out in 1961 (Coulson and Hickling, 1963) was used. The main features of the tag are unaltered, but the strips are now 1.8 ins. in length and, instead of being rectangular, taper from a width of 0.7 ins. at the pin to 0.3 ins. at the free ends. Unfortunately, in 1963 it was found that over 25 per cent. of the tags broke on application ; some of these breaks may have been due to faulty material, but others were caused by the special pliers used to put them on. In order to overcome this last difficulty C. E. Marshall devised an additional metal plate, which fits inside the pliers, and this has proved very effective. Initially, tags were again put in the caudal fold, but it became obvious that they were readily pulled out from this position and, accordingly, all tagging is now done on the tail. A competent tagger can work quickly and present evidence suggests that, if the tag is correctly applied, it should remain in place for a considerable time. A total of 106 calves was tagged in 1963 and 457 in 1964, 218 of the latter being marked on the tail.

Recoveries. Details of all recoveries, together with sight records of Farne-tagged seals, are given in Table 4. The recoveries include five animals—four marked on the tails with disc tags—which were over a year old when found. Most interesting was No. 6474 which probably spent about a year in the vicinity of Scarborough. Aged over two years (135 weeks), it is the oldest Farne-marked seal so far recorded and, had it not been shot, might well have yielded useful information about the durability of this form of tagging. There are four foreign recoveries, that of No. A 0438 being the first from Sweden. Details of this animal's stay at Hunnebostrand were received from Dr. Hans Höglund, of the Marine Biological Laboratory at Lysekil, and so interesting is this account that extracts are given below. He wrote :—

> " The first time when the seal with absolute certainty was observed in the harbour of Hunnebostrand was on 3 January in day-light. Some time between Christmas and New Year two fishermen noticed a ' strange ' animal among the piles of a landing bridge but as that was in the middle of a moon-lit night they could not tell for certain what kind of animal it was. . . . The seal spent exactly 3 weeks at H., and day by day it grew more and more tame and became a dear fondling of the whole little village. Of course it was richly fed with fresh fish. Grown-ups were allowed to pat it, but too much curiosity particularly from children was not tolerated. Not until the second week was the tag discovered.

In the middle of January the harbour got frozen over. On 24 January the seal was fed for the last time from the border of the ice and on Saturday 25 January it had disappeared.

In fact the little animal was somewhat of a sensation. It caused a kind of pilgrimage. Many people, above all newspaper-men and broadcasters, found their way to Hunnebostrand whose about 1,700 inhabitants to the main part are stone-cutters : only a few per cent. are fishermen."

Another interesting recovery is that of No. A 0709. Farne seals have frequently been seen on the Isle of May and there are also records (including one in this report) for the Bass Rock, but this is the first time that a Farne seal has been reported from the Bell (Inchcape) Rock.

TABLE 4

RECOVERIES OF FARNE MARKED SEALS

(a) ANIMALS WHOSE TAG NUMBERS WERE READ

No.	*Date marked*	*Recovery details*	*Date recovered*
6446	9.11.61	Probably off Seahouses, Northd. Caught in salmon drift net of *Providence* (approx. 122 weeks)	*ca.*Apr. 1964
6474	25.11.61	(1) Scarborough, Yorks. Tagged seal (probably this animal) seen frequently in harbour where it slept at night in a small rowing boat	Summer 1963
		(2) ditto. Seen in South Bay	26.5.64
		(3) ditto. Seen on slipway in harbour	27.5.64
		(4) ditto. Believed shot (approx. 135 weeks)	early July 1964
6475	10.11.61	Probably off Seahouses. Believed caught in drift net (—)	1962 (probable)
6712	25.11.62	N. Wamses. Tag only found (—)	16.5.64
6713	,,	Goswick Sands, Northd. Tag only found (—)	5.7.64
6780	,,	Altens, nr. Girdle Ness, Kincardineshire. Drowned in bag net (85 weeks)	22.6.64
6841	27.11.62	Mouth of R. Don, Aberdeenshire. Shot (22 weeks)	30.4.63
6877	4.12.62	Estuary of R. Tay. Shot (85 weeks)	22.6.64
9202	22.12.62	Spittal, Berwick upon Tweed. Destroyed (6 weeks)	1.1.63

TABLE 4—*continued*

No.	*Date marked*	*Recovery details*	*Date recovered*
A0203	23.12.64	Between Kinghorn and Pettycur, Fife. Seen (5 weeks)	5.1.65
A0278	1.11.64	Thornwick Bay, Flamborough Head, E. Yorks, (10 weeks)	3.1.65
A0295	,,	Sunderland, Co. Durham. Destroyed (4½ weeks)	30.11.64
A0434	10.12.63	Burnmouth, Berwickshire. Caught in salmon bag net (75 weeks)	23.4.65
A0438	,,	Hunnebostrand, Sweden (58°26′N, 11°17′E). Spent three weeks in harbour, becoming extremely tame (from 5½ to 8½ weeks)	3.1.64 to 25.1.64
A0479	,,	Muchalls, Kincardineshire. Tag found on sea-shore and young seal seen swimming in vicinity (20 weeks)	29.3.64
A0611	22.11.64	(1) Nr. Reculver, Herne Bay, Kent (7 weeks)	3.1.65
		(2) Herne Bay	4.1.65
A0622	,,	Sudstrand, Borkum, E. Frisian Islands, Germany (5–6 weeks)	12.12.64
A0625	,,	Boulmer, Northd. Found dead (4–5 weeks)	18.12.64
A0643	,,	Boddam, Aberdeenshire. Found dead (22 weeks)	12.4.65
A0690	,,	Sylt, N. Frisian Islands, Germany (*ca.*17 days and *ca.*28 days)	2.12.64 13.12.64
A0700	19.12.64	Seahouses. Found dead (4 weeks)	21.12.64
A0704	22.11.64	Between Seahouses and Beadnell. Found dead (7 weeks)	1.1.65
A0709	,,	Bell Rock lighthouse, 11 m. S.E. of Arbroath, Angus. Seen hauled out at low tide " for past few months " (up to 24 weeks)	28.4.65
A0734	,,	Bacton, nr. Mundesley, Norfolk (6 weeks)	29.12.64
A0750	,,	Humber Bank, nr. Grimsby, Lincs. Returned to sea at Cleethorpes (6 weeks)	29.12.64
A0752	23.12.64	Nr. Hiskjo, Bergen, Norway (59°45′N, 5°08′E). Caught in fishing net (5–6 weeks)	20.1.65
A1602	27.11.64	(1) Seahouses (7–8 weeks)	25.12.64
		(2) ditto. Killed in storm	28.12.64

NOTE : Approximate age at time of recovery is given in brackets. Unless otherwise stated all animals have been recovered alive and in a number of cases are known to have returned to the sea.

TABLE 4—*continued*

(b) SIGHT RECORDS OF TAGGED ANIMALS

Place	*Date seen*
(i) *On the Farnes**	
Knivestone 3	14.5.63
Knivestone 2, Longstone 1	17.6.63
Longstone End 2, Crumstone 1, Callers 1	10.7.63
Callers 1	12.8.63
Knivestone 1, Crumstone 1	20.9.63
Crumstone 1, Sandbags 1, Scarcars 1	7.10.63
Scarcars 1	26.10.63
Big Harcar 1	7.2.64
Brownsman 1	29.2.64
Callers 1 (1961)	15.5.64
Callers 2 (1 probably 1963)	13.7.64
Knivestone 1, Longstone End 1 (1961), Crumstone 2, Callers 2	27.7.64
Crumstone 1	7.8.64
Longstone End 1 (1964), Big Harcar 1 (1964)	10.2.65
Brownsman 1 (1964)	18.3.65
North Wamses 1 (1964)	29.3.65

*Unless otherwise stated all were 1962 calves

Place	*Date seen*
(ii) *Away from the Farnes*	
Scroby Sands, nr. Great Yarmouth. 2 " half-grown cows " seen in group of sleeping seals	*ca.* 12.6.63
Bass Rock, E. Lothian. 1 (probably 1964) seen near landing place	27.3.65

(c) COLOUR-MARKED ANIMALS

Recovery details		*Date recovered*
Fenham Flats, Northd.	First coater, red-dyed. Found dead	6.1.64
Ross Back Sands, Northd.	2 (1 first coater, 1 second coater) red-dyed. Found dead	12.1.64
Alnmouth, Northd.	First coater, red-dyed. Washed ashore and kept on land	19.11.64
Nr. North Shields, Northd.	Moulter, red-dyed. Destroyed	8.12.64
St. Mary's Island, Whitley Bay, Northd.	Second coater (♂), yellow-dyed. Found oiled	22.12.64

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OBSERVATIONS ON THE OCCURRENCE OF *CERCARIA PATELLAE* LEBOUR IN *PATELLA VULGATA* L. ON THE INNER FARNE

by

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SUMMARY

Many specimens of the common limpet *Patella vulgata* L. on the Inner Farne were found to be infested with *Cercaria patellae* Lebour, the larval stage of a trematode fluke.

It was found that the percentage of *P. vulgata* infested with *C. patellae* at any point on the shore was related to the slope and exposure at that point. The habits of certain birds, notably the waders, were also related to these factors. The percentage of limpets infested was at a maximum on sheltered gently sloping parts which are favoured resting sites of several species of birds.

On the Inner Farne males among *P. vulgata* 20-35 mm. in length appeared to be more susceptible to attack than females. Among larger limpets there was no clear evidence that either sex was more susceptible.

INTRODUCTION

During the examination of specimens of the common limpet *Patella vulgata* L. on the Inner Farne in September 1954, many were found to contain the larval stages of a trematode fluke. The parasite was subsequently identified as *Cercaria patellae* Lebour 1911.

C. patellae, according to the 1909 classification by Luke, given by Dawes (1946), is an Echinostome cercaria of the Echinata group. It may be found in the digestive gland of the three species of British limpet, *P. vulgata*, *P. depressa* Pennant and *P. athletica* Bean. *C. patellae* was first found in Loch Ryan by Lebour in 1907. It was later described and named by the same author (Lebour, 1911).

The anatomy of the larval stages of *C. patellae* in *P. vulgata* has been fully described by Rees (1934). The main identification features of the cercaria are a double row of spines on the collar and the large lateral excretory canals along the whole length of the body, with the

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excretory granules restricted almost entirely to the posterior portions. Rees showed that the parasite caused considerable mechanical and physiological damage to *P. vulgata* and described in detail the degeneration of the epithelium of the digestive tubules and the germinal epithelium of the gonads.

An account of the behaviour of the cercariae was given by Crewe (1951). He observed that prior to their escape from the limpet, the cercariae congregated in the afferent branchial blood vessels of the mantle edge from whence they bored their way to the exterior. Most of the cercariae were observed to escape just after the host became immersed. Crewe considered that under natural conditions there would be a rhythm of escape imposed by tidal fluctuations. He found that a greater percentage of limpets was infested in rock pools than in adjacent situations where the receding tide left no free surface water. Crewe found that more large limpets than small were infested with *C. patellae*, but he could find no clear evidence that the parasite caused gigantism. He was of the opinion that the greater number of large limpets infested should be attributed to their longer exposure to attack.

The life history of the species is unknown, but Lebour stated that Nicoll suggested it was the larval form of *Echinostephilla virgula* Lebour, from the turnstone *Arenaria interpres* (L). Birds are known to be the usual vertebrate hosts for this type of trematode fluke.

Crewe described two other trematode parasites from British limpets, namely, *Cercaria* " B " and *Cercaria* " C ". Neither of these species was found on the Inner Farne. *Cercaria* " B ", however, might be expected since it was present in 0.45 per cent. of the population of *P. vulgata* at St. Mary's Island in December 1954.

Since limpets can presumably only be infested with *C. patellae* in areas visited by the vertebrate host, it was considered that a detailed study of the ecology of the infestation should give information which could be correlated with the habits of the vertebrate host.

MATERIALS AND METHODS

A series of samples of *P. vulgata* was taken at 40 feet intervals around the island as near as possible to mid-tide level. Sampling stations were located using the transect lines, set out by the late Cdr. D. H. Fryer in his survey (Fryer, 1955), which were marked off on bedrock at 40 feet intervals. These 40 feet points were used to construct off-set lines perpendicular to the transect lines running down the shore. At mid-tide level, on all possible off-set lines, samples were taken. Samples were obtained at eighty-four of the total of ninety points.

Of the six points not included, two were on the sandy beach in St. Cuthbert's Cove where no limpets occur and the remaining four were on inaccessible vertical cliffs.

Each sample consisted of two lots of ten limpets, the first being 20-34 mm. and the second 35-60 mm. in length. Limpets were also examined from similar habitats at different tide levels and a sample of ten, 35-60 mm. long, was examined from the Codium Pools situated near the Churn Gut in the splash zone at the west corner of the island. The numbers of parasitized limpets, and the ratios of the sexes in the non-parasitized specimens, were recorded for each sample. The presence provided good evidence of infection, but these cercariae in the mantle veins of *P. vulgata* could be seen with the naked eye in only a few cases ; therefore, all specimens collected were dissected in order to look for rediae in the internal organs. On removal of the shell, a heavy infestation could be recognized by the white colour of the rediae in the normally brown digestive gland. Lighter infestations could be found by lifting the visceral mass to expose the gonad which was typically undeveloped and, in addition, a few rediae could always be seen on the lower surface of the digestive gland. In the uninfested or " clean " specimens, the sex was easily determined by the colour of the gonad which at that season was fully developed and was pink in the male, green to brown in the female.

Since time and equipment available were limited, it was not possible to examine smears of the digestive gland microscopically, thus early stages of the infestation may have been missed. However, Crewe, who was able to make observations on such material, stated that the development of the parasite in the limpet was so rapid that early stages were rarely found. It seems, therefore, that such results would not have altered the value of the estimate of infestation appreciably.

RESULTS

The ecology of the infestation. C. patellae was present in approximately 13.5 per cent. of the 1,750 specimens of *P. vulgata* examined on the Inner Farne. The following facts were noticed about the distribution of the parasite.

Samples of *P. vulgata* taken from similar habitats at a number of tide levels on the same off-set line showed that the main zone of infestation was mid-shore. At low water spring-tide level there was no infestation ; at the high neap-tide level, which is the upper extreme of the range of *P. vulgata*, there was very little.

The percentage of infestation at 40 feet intervals around the island could be related to the slope and shelter of the shore at each point.

At several points along the south-west and south-east cliffs, and in St. Cuthbert's Gut, sample points were situated on smooth vertical cliffs. In such situations the limpets examined were all free of the parasite. Where flat ledges did occur on these cliffs, infestation was as high as 30 per cent. of the limpet population. On the " step rocks " along the south-east shore, which provided a series of flat ledges, infestation fluctuated between 10 and 30 per cent. Steeply sloping shores with very little shelter occurred at several points along the north-west beach and all along the West Eider Rocks. Infestation in these places was generally less than 10 per cent. At many places, notably along the north-east side of the island and at Wideopen Rocks at the east corner, the slope of the intertidal zone was small. Infestation here was always high, ranging from 10 and 50 per cent. On Wideopen Rocks, infestation was at a maximum for the island ; 90 per cent. of *P. vulgata*, 35-60 mm. in length, contained the parasite. The only other type of habitat presented was the boulder beach on the south-west side between Quarry Hole and Churn Rock. Here the few *P. vulgata* that were present were in well drained situations and less than 10 per cent. of the limpet population was infested.

In rock pools, the percentage of limpets infested with *C. patellae* was much greater than in adjacent well-drained situations with one exception—in the Codium Pools, situated in the splash zone at the west corner of the island, only 20 per cent. of *P. vulgata* were infested.

Effects of infestation on limpets. The percentage of *P. vulgata* infested with *C. patellae* increased with the size of the limpets ; 6.7 per cent. of animals 20-34 mm. long were infested whereas in 35-60 mm. animals, the infestation rate was 20.3 per cent. Limpets larger than 60 mm. in length were not common, the few that were examined all harboured *C. patellae*.

The sex of parasitized limpets could not be determined with the equipment available ; however, the number of male and female " clean " limpets in each sample was recorded. Using samples of limpets from points at which the parasite did not occur, the sex ratio for a " clean " population was determined. In limpets 20-34 mm. in length the ratio, by percentage, was 51 per cent. male to 49 per cent. female. In the 35-60 mm. length group the percentage was 44 per cent. male to 56 per cent. female.

When some individuals of the population of small limpets contained *C. patellae* the sex ratio among the non-parasitized individuals

differed from that given above. It was found that while the percentage of females remained constant, the percentage of males fell, as the percentage infestation rose.

DISCUSSION

The fact that the highest percentage of infested *P. vulgata* was found at about the mid-tide level indicates that the final host of the parasite is probably not an aquatic vertebrate, since, if it were, maximum infestation would be expected lowest on the shore where exposure time would be longest. The falling off at high points on the shore can probably be explained by the fact that the miracidium stage of the parasite, which attacks the limpet, needs a film of water to travel to the limpet from the faeces of the vertebrate. High up the shore, sea water, as a body or film, is only present for a relatively short time each day. Since no terrestrial vertebrates occur in the intertidal zone, the final host is almost certainly a bird.

The percentage of infestation around the island was related to the slope and shelter of the shore at each point. The habits of certain birds were also related to these factors. For instance, at several places along the south-west and south-east cliffs, in the Gap and in St. Cuthbert's Gut where sample points were situated on smooth vertical cliffs, all the limpets examined were free of the parasite. Such situations do not, of course, harbour birds. Where flat ledges did occur on these cliffs and some shelter was afforded to birds, infestation was as high as 30 per cent. of the limpet population. The step rocks along the south-east shore provide a series of such flat ledges. These were used to some extent as a resting site of birds and there infestation fluctuated between 10 and 30 per cent. Steeply sloping shores with very little shelter occurred at several points along the north-west beach and all along the West Eider Rocks. Infestation in these places, not favoured by birds, was generally less than 10 per cent. At many places, notably along the north-east side of the island and at Wideopen Rocks at the east corner, the slope of the intertidal zone was small. Many shore-birds, especially the waders, were frequently seen in these places both feeding and resting. Infestation here was always high, ranging from 10 to 50 per cent. On Wideopen Rocks, infestation was at a maximum for the island ; 90 per cent. of *P. vulgata*, 35-60 mm., contained the parasite. The boulder beach on the south-west side between Quarry Hole and Churn Rock presented only well drained situations which were not frequented by many birds ; few limpets were infested.

Crewe (1951), working at Port St. Mary in the Isle of Man, showed that in rock pools the percentage of limpets infested with *C. patellae* was much greater than in adjacent well-drained situations. This was also true on the Inner Farne with one notable exception. In the Codium Pools situated in the splash zone at the west corner of the island, only 20 per cent. of *P. vulgata* were infested, whereas 90 per cent. or more was expected as the pools are fouled by many birds. A possible explanation is that the low salinity of these pools is lethal to the free-swimming miracidium stage of the parasite.

It seems from these results that the main factors controlling the distribution of the parasite, in the limpets on the island, are drainage, the slope of the shore and the shelter—the latter two acting through the bird population rather than directly on the parasite. These conditions are best satisfied in rock pools on the upper shore and at mid-tide level on sheltered, gently sloping shores.

The following birds are common, for at least part of the year, on the shores where the parasite is abundant : purple sandpiper, *Calidris maritima* (Brünn) ; knot, *Calidris canutus* (L.) ; redshank, *Tringa totanus* (L.) ; oystercatcher, *Haematopus ostralegus* L. ; ringed plover, *Charadrius hiaticula* L. ; turnstone, *Arenaria interpres* (L.) ; eider-duck *Somateria mollissima* (L.) and rock-pipit, *Anthus spinoletta* (L.). It appears at first sight that the distribution of the fluke follows what has been observed of the waders rather than any other group of birds. Other birds such as the shag, *Phalacrocorax aristotelis* (L.) ; kittiwake, *Rissa tridactyla* (L.) ; herring-gull, *Larus argentatus* Pont. and lesser black-backed gull, *Larus fuscus* L., were seen less frequently in the heavily infested areas, but must also be suspect.

It is considered that the greater percentage of infestation among larger limpets could be attributed to their longer exposure to infestation and not to increased susceptibility or gigantism caused by the parasite, an opinion also shared by Crewe (1951).

The sex ratios found for the two length groups of limpets not infested with *C. patellae* agree closely with figures given by Orton (1928) who showed that there was a sex change among part of the population from male to female with increasing size.

The fall in the percentage of parasite-free males as the percentage of parasitation rose in the population of small limpets appears to indicate a greater rate of parasitation of males than of females.

ACKNOWLEDGMENTS

The help and interest of the following is gratefully acknowledged: Professor A. D. Hobson, of the Department of Zoology, University of Newcastle upon Tyne; my wife, late of the Dove Marine Laboratory, Cullercoats, Northumberland, and Mr. G. Pallister, of Newcastle Royal Grammar School, Newcastle upon Tyne.

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EDITORIAL NOTE

Between 11 April 1953 and 22 June 1956 members of the King's College Natural History Society spent ten weeks in the Study Centre on the Inner Farne. During this time they began an ecological survey of the island and it was hoped, in due course, to publish their results in these *Transactions*. Unfortunately, up to date, only two papers have appeared: they are "Contributions to the study of the Farne Islands by King's College Natural History Society. (a) General introduction" by W. B. H. Sowerby and "Marine algae of the Inner Farne" by Betty Moss, both of which are included in Volume 13. Mr. Thomas' short paper is another contribution to this study and it should be read in conjunction with Dr. Moss' paper, for this not only includes a sketch map, but also a detailed description of the topography of the Inner Farne. Some of the names used by Mr. Thomas are not in general use and the following notes may help to identify the places to which they refer:—

Codium Pools—two rock pools near the western side of the Churn.

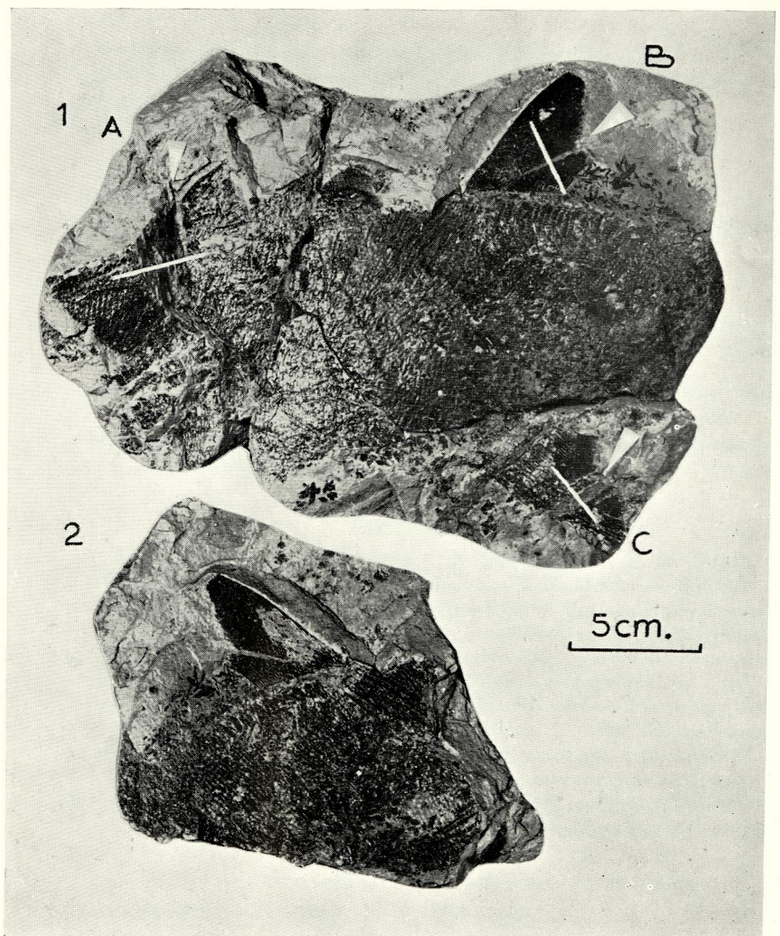
North-west beach—area known as Cuddy's Comb.

West Eider Rocks—the northern promontory, between St. Cuthbert's Gut and the Ladies Path.

Wideopen Rocks—rocks abutting onto Wideopen Gut and usually known as the Black Rocks.

Quarry Hole—area on the west side, immediately below the site of the low lighthouse.

PLATE 6



1. *Pygopterus humboldtii* Ag. Trunk of a specimen collected from the clay bed of the Marl Slate at Down Hill, showing the effect of the movement of the Marl Slate and the Lower Limestone. A, B & C indicate the three areas which have been affected. Specimen P.44382 British Museum (Nat. Hist.).

2. Natural cast of the posterior portion of the above. Specimen P.44383 British Museum (Nat. Hist.).

THE PERMIAN OUTCROP AT DOWN HILL, CO. DURHAM

by

J. FERGUSON*

Department of Palaeontology, British Museum (Natural History)

ABSTRACT

Recent workings in a small quarry on the west side of Down Hill have allowed a detailed examination to be made of the Marl Slate, Lower Magnesian Limestone and part of the Reef Limestone. The Marl Slate is thin, but has yielded a large number of well preserved fossil fish ; it is suggested that the lower clay member of this horizon acted as a lubricant during the movement of the beds overlying the Yellow Sands.

INTRODUCTION

The following classification of the Permian Rocks of Co. Durham is adapted from Trechmann (1945) :—

UPPER MAGNESIAN LIMESTONE	Hartlepool and Roker Dolomites
	Filograna Beds
	Cannon Ball Limestone
	Flexible Limestone
MIDDLE MAGNESIAN LIMESTONE	Reefs A–D
	Lower Limestone
	Marl Slate
	Yellow Sands

It is thought that the Marl Slate is the stratigraphical equivalent of the German Kupferschiefer, while the Lower Limestone above this to the top of the Upper Magnesian Limestone is equated with part of the Zechstein. Trechmann (1945, page 346) also points out similarities between the Durham fauna and that of the Depot Island Formation of East Greenland.

Down Hill (Nat. Grid. Ref. NZ350602) lies on the edge of the Permian escarpment of north-east Durham, some eight miles south-east of Newcastle upon Tyne. The escarpment here is 150 ft. above sea level rising to a height of 307 ft. at Down Hill. Two quarries are excavated into the west side of the hill ; the larger and more northerly shows the reef limestones, which are recorded as being part of Reef B (Trechmann 1925, page 139), lying on the Lower Limestone ; the smaller quarry, with which we are concerned here, lies approximately 150 yds. to the south, and has been worked in the past as a sand pit.

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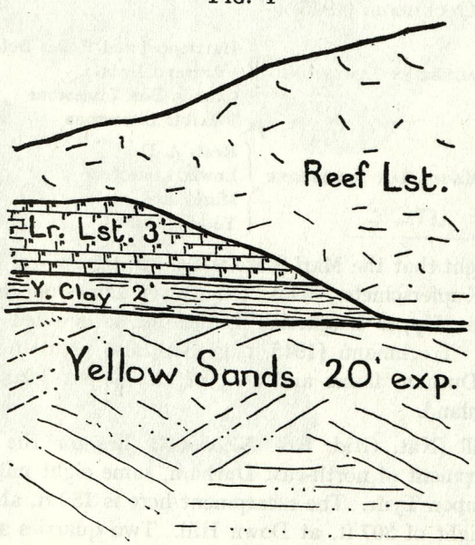
This sand pit was first described by Woolacott (1918), when a small section was exposed, showing a triangular shaped mass of Lower Limestone and Marl Slate overlying the Yellow Sands and capped by the Reef Limestone. Since then, the workings have been continued in a southerly direction, exposing more of the Reef and a considerable thickness of Lower Limestone in the extreme south of the exposure (text-fig. 2).

THE SUCCESSION

Yellow Sands. These are false bedded, wind-blown sands, poorly cemented and much iron stained, the rounded shape of the individual grains being characteristic of their wind-blown origin. The iron staining is particularly intense where the sands are almost directly overlain by the reef deposits (text-figs. 1 & 2). The Yellow Sands here reach a thickness of 40 ft. and are typically unfossiliferous. A 2 ins. bed of white sand separates them from the overlying Marl Slate.

FIG. 1

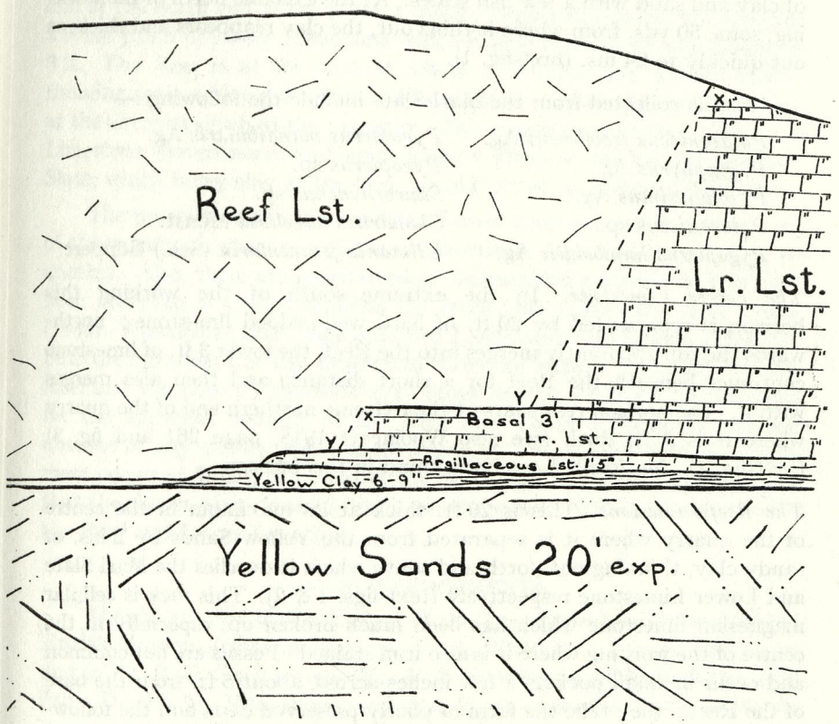


Northern end of quarry on Down Hill, showing the thinning of the Lower Limestone and the Yellow Clay member of the Marl Slate.
Lr. Lst.—Lower Limestone ; Y. Clay—Yellow Clay.

Marl Slate. In the extreme south of the quarry, the Marl Slate forms two beds ; the upper, very finely laminated blue-grey argillaceous limestone is 1 ft. 5 ins. thick, with abundant fish and plant remains ;

beneath this is a bed 6–7 ins. thick, of stiff yellow clay (text-fig. 2). This is similarly fossiliferous and has been somewhat disturbed ; this is thought to be due to local movement of the overlying beds, which have left the

FIG. 2



Southern end of quarry on Down Hill, showing apparent merging of the Reef Limestone and the Lower Limestone.
X–Y lines of apparent mergence.
Other abbreviations as Fig. 1.

Reef lying almost directly on the Yellow Sands in the middle of the quarry (text-fig. 2). The fish found in the clay stratum are usually well preserved, although they are commonly broken into two or more pieces ; thus they can be used as a guide to show the effects of the movement which took place. Plate 6 shows an example of the trunk of *Pygopterus humboldtii* Ag. ; the anterior portion of which has been depressed an inch below the level of the posterior, also the pelvic and dorsal fins have been affected to a lesser extent. Plant remains are not found in the clay.

Toward the middle of the face the upper bed of blue-grey argillaceous limestone is not present and the two beds are replaced by 12 ins. of clay, which is very fossiliferous in parts and similarly disturbed. This thins out rapidly northwards until it becomes a 2 ins. band formed of a mixture of clay and sand with a few fish scales. At the extreme north of the working, some 50 yds. from where it thins out, the clay reappears and thickens out quickly to 24 ins. (text-fig. 1).

Fossils collected from the Marl Slate include the following :—

Palaeoniscus freislebeni Ag.
P. glaphyrus Ag.
P. longissimus Ag.
Palaeoniscus sp.
Pygopterus humboldtii Ag.
Pygopterus mandibularis Ag.
Pygopterus sp.
Saurorhynchus sp.
Chondrites lamellosa Münst.
Ullmania frumentaria (Sch.) Göppert

The Lower Limestone. In the extreme south of the working this horizon is represented by 20 ft. of hard well-bedded limestone ; northwards the top apparently merges into the Reef, the lower 3 ft. of limestone continues beneath the Reef for a short distance and then also merges with it. The horizon reappears at the extreme northern end of the quarry where it is 3 ft. thick (see also Woolacott 1918, page 261 and fig. 3) (text-fig. 1). No fossils have been found in this horizon.

The Reef Limestone. This is 20 ft. thick at its maximum in the centre of the quarry where it is separated from the Yellow Sands by 2 ins. of sandy clay, thinning out north and south where it overlies the Marl Slate and Lower Limestone respectively (text-figs. 1 & 2). This rock is cellular magnesian limestone which has been much broken up, especially in the centre of the working where it is also iron stained. Fossils are not common and occur in small pockets a few inches across, about 5 ft. from the base of the Reef ; they take the form of poorly preserved casts and the following species have been identified :—

Fenestella retiformis Sch.
Dielasma elongatum (Sch.)
Stenoscisma multiplicata (King)
Strophalosia sp.
Bakeveillia antiqua (Münst.)
B. ceratophoga (Sch.)
Byssoarca striata (Sch.)
B. tumida J. Sowerby
Pseudomonotis speluncaria (Sch.)
Schizodus sp.
Pleurotomaria sp.

CONCLUSION

Trechmann (1954, page 199) comments on this locality : ". . . Yellow Sands about 40 ft. thick, overlain at the south end by Marl Slate and Lower Limestone. Northwards these have been thrust out and the middle reef a good deal broken up, comes to rest on the Yellow Sand. . . . ". The present investigation broadly confirms this statement.

The Reef is seen at the north end of Down Hill to overlie 40 ft. of bedded Lower Limestone ; it thins southwards in the disused working, and at the north end of the present quarry begins to thicken and overlies a small patch of Lower Limestone which is now reduced to a thickness of 3 ft. The Reef is at its thickest where it overlies the Yellow Sands, thinning again where it overlies and then abuts onto the Lower Limestone at the extreme south of the exposure. This would suggest that the Lower Limestone moved north and south along a plane at the base of the Marl Slate, which being clay at the base, would act as an excellent lubricant.

The junction of the Reef and the Lower Limestone at the south end of the working is obscure and the two horizons appear to merge into one another. Also, there are no grooved or slickensided surfaces such as have been observed at other localities by Woolacott (1918) and Trechmann (1954). Woolacott (1918, page 262) and Trechmann (1954, page 199) attribute the movement at this locality to thrusting along a plane between the Reef and the Lower Limestone as in other nearby localities. To account for the apparent merging of the Reef and Lower Limestone, and the absence of any definite signs of thrusting, it is suggested that the movement occurred during or just after the deposition of the reef material, and that the thrust plane is along the base of the Marl Slate and not between the Reef and Lower Limestone.

ACKNOWLEDGEMENTS

Thanks are due to the Keeper of the Department of Palaeontology, British Museum (Natural History), for facilities to carry out this work, and to Dr. B. G. Gardiner and Mr. A. A. Toombs who identified the fossil fish. Dr. H. M. Muir-Wood and Mr. H. A. Toombs kindly read the manuscript.

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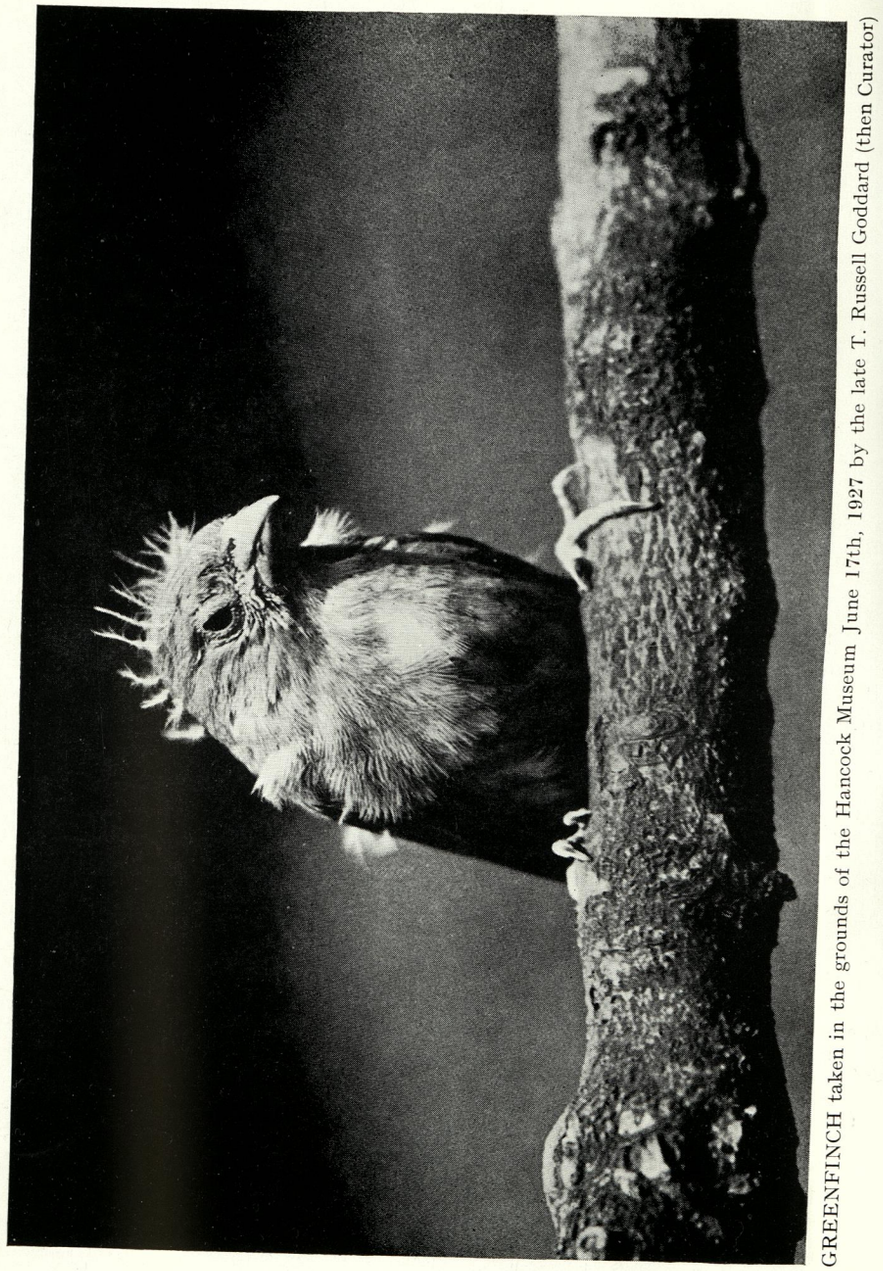
PLATE 7



GREENFINCH taken in the grounds of the Hancock Museum June 17th, 1927 by the late T. Russell Goddard (then Curator)

ORNITHOLOGICAL REPORT FOR NORTHUMBERLAND AND DURHAM FOR 1964

Compiled from the notes and records of members of the Natural History Society of Northumberland, Durham and Newcastle upon Tyne, the Teesmouth and Tyneside Bird Clubs, and other observers

by

D. G. BELL

INTRODUCTION

Of particular interest in 1964 has been the breeding strength and success of those resident species which suffered such severe losses in the 1962-63 winter, described in Bell (1964). Nature's powers of recovery from natural catastrophes are remarkable, and though some species are still depleted in numbers, others are recuperating well—at least in parts of their range. The information on the cards gives a far from complete picture, but it is possible to indicate the situation in the case of at least some of the species noticeably affected by the "Big Freeze."

Still generally below par appear to be: lapwing*, kingfisher, green and great spotted woodpecker, great*, blue*, coal* and long-tailed tit, tree-creeper, wren, mistle- and song-thrush, grey wagtail and chaffinch. Apparently recovered are: redshank, blackbird, robin, goldcrest, dunnock and pied wagtail. It should be remembered, however, that it is quite probable that factors other than the 1962-63 winter have influenced the breeding strength of these species, and that even without catastrophes of any kind, it is quite normal for breeding populations, clutch size and fledging success to fluctuate.

It might be added that oystercatcher, common sandpiper, lapwing and redshank all raised large first broods in the North Tyne valley, helped greatly by the fact that it did not flood until late June. Most summer migrants arrived early and had a good breeding season.

Thanks partly to intensive watching, 1964 was another year for "exciting" species, among which may be mentioned a spoonbill, two marsh-harriers, an invasion of quail, a Kentish plover, a long-billed dowitcher, a Wilson's phalarope, two long-tailed skuas, two Mediter-

* back to par in the North Tyne valley (BL)

ranean gulls in addition to the Hartlepool "regular," two gull-billed terns, three hoopoes and a woodlark. A Chilean flamingo, a North American ruddy duck and a red-crested pochard could be added to the list of interesting occurrences, but their very doubtfully wild origin does not inspire the same excitement.

So far as passerine migration was concerned, the autumn as a whole was not up to the standard of some recent years; there was no really spectacular "rush" of drift-migrants, either in number or variety. Instead, the autumn movement began early and produced a fairly steady flow of birds over a long period, during which bluethroat, barred warbler, yellow-browed warbler, red-breasted flycatcher, red-throated pipit and little bunting occurred. Movement of titmice (mainly blue and great) was again noticeable in September and October in coastal localities—particularly at Hauxley, where a peak of thirty-six occurred on 20-22 September; there was a corresponding increase in numbers and activity inland at the same time.

The autumn numbers of waders (particularly spotted redshanks) and of skuas were high, but shearwaters were comparatively few. The immigration of *Turdidae* took place on a large scale, especially in Northumberland, and at least six great grey shrikes arrived in October-November.

CLASSIFIED NOTES

1. Black-throated Diver *Gavia arctica*
None in Durham, but in Northumberland reports come from Bamburgh, Skate Road, Cresswell and St. Mary's Island in the first 4 and last 4 months of the year.

2. Great Northern Diver *Gavia immer*
Up to 4 together off Holy Island in Mar. (GB). Odd ones also seen in Jan.-Apr. and Nov.-Dec. at Bamburgh, Hauxley, Cresswell, Seahouses and St. Mary's Island. Only 3 Durham records—1 at Hartlepool on 11 Jan. and 16 Feb., and 1 in the Tees estuary on 28 Mar.

4. Red-throated Diver *Gavia stellata*
Noted in the usual numbers and localities in all months except June and July. Cresswell bay is particularly attractive to this species, the biggest count there being 170 on 28 Feb. (MM). Birds in flight were usually going north, as were 54 at Hartlepool on 5 Jan. and 74 at Hartlepool on 11 Jan.—the biggest Durham counts. No divers of any species were recorded inland.

5. Great Crested Grebe *Podiceps cristatus*
3 pairs with young seen in Durham and 1 pair with young in Northumberland. Adults occurred widely; maximum 9 off Skate Road on 8 Feb. (BRS).

6. Red-necked Grebe *Podiceps grisegena*
27 off Skate Road on 8 Feb. (BRS) was a remarkable concentration, although birds occurred on some 12 occasions in Northumberland in Feb.-Mar. and Sept.-Dec.

Only Durham records were single birds at South Shields on 26 Feb. (MLC) and at Souter Point on 17 Aug. (FGG).

7. Slavonian Grebe *Podiceps auritus*
Present Jan.-May and Oct.-Dec. Skate Road was again the favourite haunt, with up to *ca.*50 in Mar. Only Durham record: 2 in summer plumage on Hurworth Burn on 24 July (MK).

8. Black-necked Grebe *Podiceps nigricollis*
1 or 2 off Skate Road on 1 and 29 Feb., and 7 Mar. (MB, FGG, DB, EEJ). Only Durham record: 2 in the Tees estuary on 2 Aug. (WA, DME, DGB).

9. Little Grebe *Podiceps rufficollis*
A successful breeding season in both counties.

16a. Manx Shearwater *Procellaria puffinus puffinus*
Mainly northerly movement was regular from May onwards, but the only dates when the numbers involved exceeded 100 were 2 Aug. (118 at Hartlepool) and 30 Aug. (147 at Hartlepool). Fishermen reported "considerable numbers" 1½ to 3 miles off Cullernose Point in July, and parties of 20-30 off the Farnes in Aug. The last record was 2 at Hartlepool on 4 Oct. (ECG).

21. Sooty Shearwater *Procellaria grisea*
1 at Hartlepool on 1 Aug. (DD); 4 at Hartlepool on 2 Aug. (DD); 1 at Seaton Sluice on 17 Aug. (MH); 1 at Hartlepool and 2 at Souter Point on 30 Aug. (FGG); 2 at Hauxley on 12 Sept. (ER, TW); 1 at St. Mary's Island on 13 Sept. (SM); 3 at St. Mary's Island on 21 Sept. (ER, DB); 1 at St. Mary's Island on 24 Sept. (ER, DB). All records, except those for 1 and 2 Aug., concern birds flying north.

26. Fulmar *Fulmarus glacialis*
Heavy northerly movement, involving hundreds of birds, noted at Hartlepool and St. Mary's Island on 19 Apr., and also on several dates in May and Aug. to Sept. 130 on Holy Island cliffs in Mar. (GB). At a locality 8 miles inland in Northumberland 5 pairs had eggs on 21 June (IHA).

27. Gannet *Sula bassana*
Recorded all months. As usual, a few adults wintered in the Bamburgh-Farnes area, while on 21 Dec. 7 flew north off St. Mary's Island (MH) and 2 more on 30 Dec. (JDP).

28. Cormorant *Phalacrocorax carbo*
69 seen on Marsden Rock on 14 Mar. (BGo.) and, later, at least 14 occupied nests (MLC).

29. Shag *Phalacrocorax aristotelis*
2 pairs bred at Dunstanburgh (JA). Slight northerly movement at Hauxley throughout Sept.

30. Heron *Ardea cinerea*
2 pairs returned to nest at the Northumberland colony, and, despite disturbance, managed to rear one young each. At the usual Durham site only 6 nests were in use, and their success is not known. At least 2 pairs bred at a colony in Weardale,

and, according to local people, have done so for several years (BJC). Birds occurred widely at all times of the year.
Addition to (Bell, 1964), page 65 : 2 nests reported near Kirknewton (per PRE).

42. Spoonbill *Platalea leucorodia*
At noon on 2 Oct. an adult flew up and down the western shore of Budle Bay. It attempted to land at Waren Mill, but was harried by gulls, and finally flew off northwards (GWT, RAJ).

45. Mallard *Anas platyrhynchos*
1,400 in the Tees estuary on 12 Jan. had increased to 1,623 by 26 Jan. and to 1,750 on 28 Feb. (AV)—a new record peak. Thereafter numbers dwindled, but built up again to 1,121 by 21 Nov. These figures show the increasing importance of Seal Sands as a wildfowl refuge. Counts exceeding 500 were made in Nov. at Netherwitton, Capheaton, Whittledene and Blyth bay, and in Dec. at Colt Crag and Seaton Sluice.

46. Teal *Anas crecca*
246 in the Tees estuary on 8 Feb. had increased to 310 by 22 Feb. (PJS)—a record figure for recent years ; *ca.*200 at Hurworth Burn on 13 Dec. was also exceptional. In Northumberland, however, the biggest number (300 in Gosforth Park on 31 Oct.) was lower than last year. Regular counts at Capheaton show teal to have decreased there since 1956 (AM). Holywell Ponds showed a maximum of *ca.*250 on 1 Nov. (CED).

47. Garganey *Anas querquedula*
The first arrivals were a pair in the Tees estuary on 15 Mar. (PJS), followed by another pair at Fishburn on 18 Mar. (DGB). Washington was the only other Durham locality where garganey occurred, while in Northumberland records were confined to Cresswell, Gosforth Park and Swallow Ponds. None was seen after the end of Aug.

49. Gadwall *Anas strepera*
Remains scarce in Durham, though birds have been introduced by wildfowlers into Cowpen Marsh. A drake at Shotton Colliery ponds on 13 Feb. Occurred 8 times in Northumberland—in Mar., Apr., Aug., Sept. and Dec.—all inland.

50. Wigeon *Anas penelope*
Present all months. The Fenham Flats wintering population reached *ca.*4,000 in Dec. (ER, BG), but the Durham maximum was 228 in the Tees estuary in Feb.

52. Pintail *Anas acuta*
Widespread in small numbers, but no records between 2 May and 3 July. Biggest numbers occurred in Feb. : 30 near Holy Island and 28 at Teesmouth.

53. Shoveler *Spatula clypeata*
Present all months, and at least 7 pairs bred in Northumberland. Peak numbers occurred in the autumn, with up to 30 at Teesmouth, Cresswell and Gosforth Park ; 60 at this last place on 27 Sept. (MN) was twice the next largest concentration reported in either county.

55. Scaup *Aythya marila*
Recorded in every month except June, but the only sizeable flocks were 34 flying north at Hartlepool on 20 Dec. and 42 flying north off St. Mary's Island on 29 Dec. Inland, birds turned up on Whittledene, Colt Crag, Newton Pool and Dorman's Pool (Teesmouth), while 6 swam on Hurworth Burn on 29 Sept. (PJS).

56. Tufted Duck *Aythya fuligula*
The largest concentrations were again at Whittledene : 239 on 18 Jan. and 200 on 27 Dec. (JSB, IHA). 66 on Hurworth Burn on 29 Feb. was the largest Durham count. Coastal observations were again numerous, particularly off Hartlepool, where 21 flew north and 15 south on 25 Oct. and 34 flew north on 20 Dec. A party of 35 on the sea at North Gare on 25 Oct. (DD) is worthy of mention, as, although tufted duck are nowadays often seen in flight over the sea, it is still rare to find more than the odd bird swimming on salt water. These have usually been driven from their inland haunts by disturbance or cold weather, and are most often seen at Seaton Sluice or in the Tees estuary (where up to 6 remained in the early months of the year). Several pairs bred successfully in both counties.

57. Pochard *Aythya ferina*
In Feb. the Hurworth Burn population increased steadily, reaching a record peak of 194 by 15 Mar. (DD, TF). All except 3 had gone by early Apr. and the species remained scarce there for the rest of the year. A few occurred in the Tees estuary and on several inland waters in Durham. In Northumberland, Whittledene had its peak populations on 29 Feb. (145) and 7 Nov. (189) ; there were 190 at the new reserve " Big Waters," at Seaton Burn, on 8 Mar. and Capheaton had *ca.*200 on 22 Nov. No young were seen at the Durham locality, though 4 pairs were present, nor were any young reported from Northumberland.

60. Goldeneye *Bucephala clangula*
Apart from 1 on Coldmartin Lough on 9 June (PRE), none was recorded between 16 May and 30 July. In autumn, goldeneye arrived rather late, with only 1 record (3 flying north at Cresswell on 13 Sept.) before 3 Oct. As usual, birds were widely scattered inland, but nowhere more than 20 together. Biggest coastal count : 35 flying north at St. Mary's Island on 21 Dec. (JDP).

61. Long-tailed Duck *Clangula hyemalis*
Apart from 1 flying north off Tynemouth on 21 May (MH), none was noted between 11 Apr. and 8 Sept. Although the Bamburgh area was the main wintering ground, *ca.*60 (in Feb. and Dec.) was the maximum concentration there—rather lower than usual. In Durham, 15 in the Tees estuary on 4 Jan. (DME, WA) was the most noteworthy of many observations. 1 died at Holywell Ponds on 27 Mar. (per MM).

62. Velvet Scoter *Melanitta fusca*
Fewer than last year, but records concern all months except June. Up to 7 at Teesmouth in Jan., and at Skate Road in Apr., were the largest parties.

64. Common Scoter *Melanitta nigra*
Present all months. Marked northerly movement took place all along the coast from July until late autumn ; Seaton Carew again attracted a regular flock which reached *ca.*200 by early Apr. before dispersing, while over 1,000 frequented the Holy Island area at the beginning and end of the year. A pale coffee-coloured individual was seen in flight with other scoter at Hartlepool on 14 Nov. (ECG).

67. Eider-Duck *Somateria mollissima*
Over 1,000 counted in the Holy Island area in Feb. and Oct.—about the usual number. Some 500 frequently seen around Amble. Fewer than usual at Seaton Sluice, *ca.*75 there on 26 Mar. (LGM) being exceptional for 1964. The now regular wintering Teesmouth population reached 13 in Jan.; 8 were last seen there on 14 May, and the first birds returned on 4 Oct. At least 10 pairs nested on the Northumberland mainland.

69. Red-breasted Merganser *Mergus serrator*
Present all months. Over 100 in late autumn in the Bamburgh-Holy Island area was an unusually high number : as early as 22 Aug. 40-50 had assembled there in a compact flock. Crimdon Dene was not watched regularly this year, but up to 11 were recorded.

70. Goosander *Mergus merganser*
23 on Greenlee Lough on 3 Feb. had increased to 34 by 11 Feb. (BEY), by far the largest gathering. The Northumberland loughs and reservoirs attract nearly all the goosanders that winter in the 2 counties : Hurworth Burn and Crookfoot reservoirs in Durham had only odd birds in Mar. and Nov. Several pairs bred in north Northumberland.

71. Smew *Mergus albellus*
Only 2 records : a drake on Whittledene 11-26 Jan. (JSB, IHA *et al.*) and a " redhead " at Hartburn, Northumberland, from 20 Dec. until 14 Mar. 1965 (BH, TH).

73. Sheld-Duck *Tadorna tadorna*
Peak number in the Tees estuary, headquarters of this species in the north-east, was 2,700 on 9 Jan. (RTM)—a record total. Despite this, only 4 broods, totalling 27 ducklings, were seen there in summer. By 27 Dec. *ca.*1,500 birds had again assembled there (PJS). On 15 July *ca.*50 flew east at Hexham, while on 22 July *ca.*40 flew east down the Tyne valley (BL). These records probably concern the regular moult migration, but a northerly movement in Dec. was unusual—at St. Mary's Island 104 were seen on 20 Dec., 35 on 21 Dec., 37 on 22 Dec. and 23 on 29 Dec. (JDP). This movement was noted elsewhere, as 171 flew north at Hartlepool on 20 Dec. and there were widely scattered inland occurrences during the same period. At least 13 pairs bred in Northumberland.

75. Grey Lag-Goose *Anser anser*
2 late birds at Cresswell on 7 May and 1 on 16 May (MLC). 4 in flight near Goswick on 12 Aug. (MGR) were either very early or had summered in this country. Northumberland had too many records to detail, but in Durham, 1 on Cowpen Marsh on 10 May (BGo.), and at Hurworth Burn on 24 Oct. (PJS), were the only records.

76. Whitefronted Goose *Anser albifrons*
5 Russian birds (all adults) fed on stubble at Gosforth Park on 12 Jan. (BG) and 5 others—4 adults and 1 immature—frequented Hurworth Burn from 27 Feb. to 8 Mar. (ES, PJS).

78a. Bean-Goose *Anser arvensis arvensis*
15 at Grindon Lough on 25 Jan. remained in the area until 24 Mar. (JSB, IHA, BEY *et al.*). 10 dark " grey " geese seen here on 30 Dec. were almost certainly bean.

78b. Pink-footed Goose *Anser arvensis brachyrhynchus*
Scarce : among the few reported by far the largest skeins were 165 flying north at Hartlepool and 100 flying south at Seaton Sluice—both on 28 Nov.

80. Brent Goose *Branta bernicla*
Most of several hundred on Fenham Flats in Jan. soon departed elsewhere and by Mar. none was left. A lone bird returned on 1 Nov. and by 13 Dec. there were at least 400. In the Tees estuary up to 3 occurred in Jan. and 14 arrived on 31 Mar., staying until 4 Apr. Only other records : 1 on the river at Hexham on 29-30 Mar. (PAG), 1 on the sea at Boulmer on 11 Apr. (WSC) and a total of 27 flying north at St. Mary's Island on 20-21 Dec. (JDP).

81. Barnacle-Goose *Branta leucopsis*
Apart from a very tame, possibly escaped, bird feeding on grass-covered cliff-tops at South Shields on 23 Sept. (BGo, KY), all records were for Oct. : 12 flew north at Bamburgh on 10 Oct. when 20 were seen over Fenham Flats and 1 appeared at Cresswell ; next day a lone bird flew north at Bamburgh and another arrived on Whittledene (where it stayed until 25 Oct.) ; 1 was at Holborn Moss on 23 Oct.

82. Canada Goose *Branta canadensis*
Occurred at Colt Crag (12), Bellingham (12), Embleton (1), Longbenton (3 flying north), Brasside Ponds, Durham (1), Billingham (14) and Cowpen Marsh (2).

84. Mute Swan *Cygnus olor*
Budle Bay, where the species is regular in large numbers, had a maximum of 160 on 3 Jan. (DGB), but *ca.*230 were in Berwick harbour on 27 June (JMB, DH). The pool at Seaton Carew tip had 22 on 6 June (ECG)—the largest party recorded in Durham in 1964. A dead bird lay below the ribboned high tension wires at Dorman's Pool, Teesmouth, on 17 Oct., one of its wings still hanging from the wires (VFB).

85. Whooper Swan *Cygnus cygnus*
Widespread : good numbers in both winters, the last of the spring being seen on 8 May (1 on Fishburn Lake) and the first of the autumn on 1 Oct. (near Holy Island). 94 on Fenham Flats on 31 Oct. had increased to over 200 by 18 Dec. (BG, ER). Other large herds were 41 on Grindon Lough in Mar. (AJC), 33 on Bolam Lake in Dec. (LGM) and *ca.*40 on the beach (later on the sea) at Seaton Carew on 29 Dec. (DGS, PS). 1 at Witton-le-Wear in July (PMW). The female of a pair found at Thropton in Apr. had severed a wing ; the male was quite unharmed, but would not leave. Both were caught and put on Hartburn Lake, Northumberland, where they remained all summer (BL).

86. Bewick's Swan *Cygnus columbianus*
Up to 23 present in Feb.-Mar. on Grindon and Broomlee Loughs (AJC), while Holy Island lough had 17 on 9 Feb. Smaller parties and odd birds occurred at Ashington, Cresswell, Linton, Wingates and Teesmouth during the first 3 months, but thereafter the only records were of 1 at Wingates, Northumberland, on 15 Oct. (IH) and 5 at Cresswell on 28 Dec. (PW, SM).

91. Buzzard *Buteo buteo*
No breeding records, but 2 present in a Northumberland locality in June (DGB).

Single birds seen in Weardale in June, near Ashington in July, near Shotley in Aug., and over the Langleeford Valley and Holywell Dene in Sept. A bird came in off the sea at Hauxley on 3 Oct.

93. Sparrow-Hawk *Accipiter nisus*
At least 30 sightings reported, but the species remains scarce and breeding not proved in 1964.

99. Marsh-Harrier *Circus aeruginosus*
A young male (reported in the local press as a Montagu's) was found with a damaged wing near Hartlepool on 12 May, and died later (PJS). This was probably the bird which flew in off the sea from the north-east at Souter Point on 12 May, and, after resting, proceeded south (DDM). A female at Swallow Ponds on 21 May (FC).

100. Hen-Harrier *Circus cyaneus*
1 flew in off the sea at Cresswell on 9 May (BL, ER). A ring-tail harrier on Cowpen Marsh on 26 Aug. was probably this species (BGo.) and another flying south at Craster on 7 Sept. was definitely identified (PRE). A male and female flying together near Greenlee Lough on 25 Oct. (FGG, AH).

102. Montagu's Harrier *Circus pygargus*
A slender harrier, showing the unstreaked rufous breast of a young Montagu's, seen near the Reclamation Pond, Teesmouth, on 21 May (TB).

105. Peregrine *Falco peregrinus*
No reports of breeding. 1 hunted the Tees marshes Mar.-June ; 7 sightings in Northumberland between May and Dec.

107. Merlin *Falco columbarius*
At least 6 nests in Northumberland, but many eggs failed to hatch. Seen on the Durham moors in June, but no nests located. Fairly widespread outside the breeding season.

110. Kestrel *Falco tinnunculus*
Though rare in upper Weardale (BJC), kestrels had a good breeding year in Northumberland (BL) : 2 of the 11 nests found at Kielder fledged 6 young, and the species seemed generally less affected by toxic poisoning than was the merlin. A male found dying at Piercebridge, however, was in an advanced state of paralysis.

113. Black Grouse *Lyrurus tetrix*
A good breeding year in west Northumberland : numbers present at leks here and in south-west Durham were well up to normal (BL, DNB, CG).

117. Quail *Coturnix coturnix*
1964 was a quail "invasion" year, so all records are given : 1 found during a rain-storm at Greatham Creek, Teesmouth, on 6 June (ECG) ; 1 near Monk's House 12 June-23 July (PRE) ; 1 at Amble 14-26 June (JEJ) ; 1 on Inner Farne on 15 June (JHL) ; 2 heard calling near Blagdon in last week of June (R) ; 1 near Cresswell on 5 July (MM) ; 1 near Riding Mill on 2 Aug. (SH) ; family party of 6 at Haydon Bridge in mid-Sept. (AJC).

120. Water-Rail *Rallus aquaticus*
No records between 3 Mar. and 14 Sept., apart from a juvenile near Hurworth Burn on 4 Aug. (HM, BF). Noted at Holy Island, Bamburgh (up to 6), Hauxley, Cresswell, Gosforth Park and Teesmouth.

121. Spotted Crake *Porzana porzana*
1 identified in Gosforth Park on 7 Mar. (LGM). In recent years there have been several "probable" reports of this species in Gosforth Park, but this is only the fourth definite record. The others were in 1898, 1947 and 1949.

125. Corncrake *Crex crex*
1 on Farne Islands 28-29 Apr. and 20 May (GRP, FYB) ; 1 seen and heard near Alnwick on 3 May (JA) ; 1 heard near Corbridge in summer (AJC) ; 1 flushed near Scot's Gap on 15 July (DFM).

126. Moorhen *Gallinula chloropus*
Largest number reported was at Cresswell Ponds, where up to *ca.*80 occurred in Feb. (ER, MM). A pied bird was at Ellington on 31 Mar. (MH).

127. Coot *Fulica atra*
Numbers on Broomlee Lough built up steadily in the autumn with *ca.*300 in late Oct. (BEY). Holywell Ponds reached its peak in Sept. (*ca.* 150), Seaton Burn in Oct. (*ca.* 210), and Hartburn, Northumberland, in Nov. (*ca.* 120). Holy Island lough usually has coot on it, but 80 there on 2 Apr. (MM) was exceptional. The biggest Durham count was 153 on Hurworth Burn in Sept. Coastal occurrences remain rare : 6 in Amble harbour on 16 Feb. (ER).

131. Oystercatcher *Haematopus ostralegus*
Holy Island and Seaton Snook, Teesmouth, were the most favoured localities, with peaks of 700 and 540 respectively. Bred inland in river valleys in both counties. A flock of 6 flew into Gosforth Park on the evening of 25 May (AMT).

133. Lapwing *Vanellus vanellus*
Still scarce, or absent, in many areas where usually present, e.g. Alnwick, the Hepburn Moors, Wooler, Haydon Bridge and the Durham moors, but in others breeding was very successful. Flocks of up to 1,000 seen in many places outside the breeding season. On 19 Oct. (a day of steady northerly passage) *ca.*1,200 passed in 5½ hours at Marsden and 300 per hour flew north at Bamburgh ; on 20 Oct. 1,718 flew north in 4 hours at Cresswell (AH). A flock of 103 on rocks at St. Mary's Island on 26 Dec. (PB) was unusual.

134. Ringed Plover *Charadrius hiaticula*
450 passage birds at Teesmouth on 21 May (DGB). A first winter bird, ringed at Seahouses on 3 Jan. 1962, was found breeding in Sweden (see page 175).

136. Kentish Plover *Charadrius alexandrinus*
1 in the Reclamation Pond, Teesmouth, on 24 Aug. (PJC). The fifth Durham record and the first since 1961.

139. Grey Plover *Charadrius squatarola*
Spring passage increased the Teesmouth numbers to 97 on 8 Apr., but the species was present there in all months (including 31 in late June); maximum: 368 on 1 Nov. (ECG). Northumberland maximum: 34 on Ross Back Sands on 30 Mar. (BRS).

—. Long-billed Dowitcher *Limnodromus scolopaceus*
1† at Cresswell Pond 27 Oct.-28 Dec. (BH, TH, MM, PJS *et al.*). This is the second record for Northumberland, the first being at Killingworth in autumn 1959 (Grey, 1960). There are no Durham records.

145. Common Snipe *Capella gallinago*
About 200 in Gosforth Park on 5 Jan. (ER). Late summer increase again noted: *ca.*60 at Linton and 11 at Cresswell on 28 July; 34 at Tanfield Ponds on 23 Aug. had reached *ca.*75 by 29 Aug. (RMP). At Hauxley birds were noted coming in off the sea—3 on 2 Aug., 1 on 9 Aug., 4 on 25 Aug. and 4 on 30 Aug. On 17 Oct., day of a large *Turdidae* influx, 120 were flushed from Holy Island lough (KY, BGo.).

150. Curlew *Numenius arquata*
Large numbers in early spring: 200 at Grindon on 1 Mar. (MM, IH) and 250 near Greatham Creek on 28 Mar. (RTM). A party of 150 at Hurworth Burn on 16 Apr. was exceptional (ES). Successful breeding reported from the south-west Durham moors, and a nest with 5 eggs found near Wall.

151. Whimbrel *Numenius phaeopus*
A bird seen and heard at Hauxley on the unusual date of 8 Mar. (ER). Spring passage from 16 Apr. to 21 May; maximum *ca.*30 at Teesmouth on 19 May. Very few of these records were in Northumberland. Autumn passage from 1 July; maximum 35 at Teesmouth in Aug., which was also the peak in Northumberland. At Hartley Point 192 passed by on 21 Aug. (JDP). Late individuals were 1 at Craster on 8 Oct. (WSC) and 1 at Seaton Carew on 10 Oct. (BGo.).

154. Black-tailed Godwit *Limosa limosa*
Spring passage between 1 Apr. and 5 June; 7 at Cresswell Pond on 18 Apr. A small party heard flying up the Tyne valley at 2330 on 3 May (BL). Autumn movement began on 16 July, with 3 at Teesmouth. Most were seen in Northumberland. A party of 16 flew south at Hauxley on 16 Aug., and odd birds were recorded until 26 Sept.

155. Bar-tailed Godwit *Limosa lapponica*
Early autumn brought the peak, with *ca.*1,000 near Holy Island village on the rising tide on 2 Sept. (PRE). Only inland report: 1 at Holywell Ponds on 19 July (CED).

156. Green Sandpiper *Tringa ochropus*
No wintering records, apart from a bird at Witton-le-Wear 1963-64 and 1964-65 (JCC), and only 2 spring ones—1 at Saltholme Pool, Teesmouth, on 12 Apr. (DSS) and 2-3 at Swallow Ponds 21-29 May. Widespread on autumn passage from 7 July until 18 Oct., when last bird seen at Colt Crag (FGG). At Tanfield Ponds, estimated that at least 18 different individuals passed through between 26 July and 4 Sept. (RMP).

157. Wood-Sandpiper *Tringa glareola*
Spring passage at Teesmouth, Hauxley, Cresswell, Swallow Ponds and Gosforth Park from 10 May to late June, involving at least 6 individuals. Autumn passage was thin: only *ca.*15 birds between 5 July and 23 Sept., usually seen singly.

159. Common Sandpiper *Tringa hypoleucos*
Exceptional dates were 1 at Warkworth on 18 Jan. (ER) and 1 at Swallow Ponds on 27 Mar. (IH). Height of return passage in late July, with a late-lingering bird at Whittledene in the first week of Oct. (IHA, JSB).

161. Redshank *Tringa totanus*
Biggest flock was 300 at Teesmouth on 19 July (PJS).

162. Spotted Redshank *Tringa erythropus*
1 seen and heard on Greenabella Marsh, Teesmouth, on 9 Jan. (RTM) may have been the bird seen on Seal Sands on 2 Mar. (AV). Intermittent records from Apr. throughout the spring and summer. At Teesmouth, numbers increased to 11 on 18 Aug. and to 13 on 20 Aug. These 13 still present on 22 and 28 Aug.—on the latter date in a single flock on Cowpen Marsh (PJS, ECG). No such large parties have ever been recorded previously. Height of passage occurred in Northumberland during the same period, with 10-12 at Cresswell on 22 Aug. (EM).

165. Greenshank *Tringa nebularia*
The wintering Teesmouth bird was seen regularly until found dead below wires on 9 Feb. (DD, TF). Between 18 Apr. (1 at Swallow Ponds and 1 at Teesmouth) and 25 Oct. (1 at Hurworth Burn) greenshanks occurred widely, with 7 or 8 at a time at Teesmouth and Tanfield Ponds in July-Aug.

169. Knot *Calidris canutus*
In the early part of the year it was estimated that 12,000-15,000 were wintering in the Tees estuary (DGB, PJS), and *ca.*10,000 at Fenham Flats (FGG). A bird with pure white plumage (but with legs and beak the normal colour) accompanied *ca.* 100 others at North Gare on 19 Dec. (ICL).

170. Purple Sandpiper *Calidris maritima*
Away from the Farnes, no records between 11 Apr. (70 at Bamburgh and 31 at Hartlepool) and 19 July (5 at Holy Island). Maxima: over 100 at the Farnes on 31 Aug. (PRE) and between Seaton Sluice and St. Mary's Island on 7 Nov. (DGB).

171. Little Stint *Calidris minuta*
2 on Dorman's Pool, Teesmouth, on 14 May, and 1 on Cowpen Marsh on 16 May; 3 near Greatham Creek on 5 June and 2 on 26 June; 4 at Dorman's Pool on 11 July and 1 on Cowpen Marsh on 18 July. Odd birds were regular in both counties Aug.-Sept., the last being 1 at Whittledene on 4 Oct. (JSB, IHA) and 1 at Cresswell on 24 Oct. (BH, TH).

178. Dunlin *Calidris alpina*
A successful breeding season on the Durham moors, where *ca.*30 young seen. Flocks exceeding 2,000 noted at Teesmouth and Fenham Flats.

179. Curlew Sandpiper *Calidris testacea*
First record : 1 at Cresswell on 27 July (BG). This may have been the bird seen regularly there throughout Aug. 6 occurred there on 7 Sept. with odd birds until 27 Sept. Only other records were up to 3 at Teesmouth from 2 Aug., 2 at Whittledene, 2 at Boulmer, 2 at Holywell Ponds and 2 at Fenham Mill. 1 lingered by the Tees estuary until 17 Oct. (GST).

184. Ruff *Philomachus pugnax*
Spring birds occurred regularly on Cowpen Marsh from 12 Apr. (4) to 18 Apr. (8), with another on 31 May, while in Northumberland, Holywell Ponds had 1 on 9 Apr. The return movement began early, with birds in both counties from the third week of June, increasingly rapidly in Aug. (maximum on 25 Aug. : 49 on Cowpen Marsh and 35 at Cresswell). A second peak of 30 occurred at Cresswell on 11 Sept., although Teesmouth had no more than 10 in Sept. The last were 2 at Cresswell on 25 Oct. (IHA, JSB, IH).

187. Grey Phalarope *Phalaropus fulicarius*
An adult in winter plumage in Seahouses harbour on 1 Apr. (MM).

188. Red-necked Phalarope *Phalaropus lobatus*
An adult in summer plumage on Gosforth Park lake on 16 June (ER).

—. Wilson's Phalarope *Phalaropus tricolor*
An adult† in full winter plumage on Holy Island 12-17 Sept. The first record for Northumberland (FGG, PJB, KH, PRE, PJS *et al.*).

193. Arctic Skua *Stercorarius parasiticus*
No spring records, but at Hartlepool 1 passed on 20 June and 5 on 21 June, while at North Gare 1 occurred on 28 June (EM, KR). From late July through to late Sept. passage was heavy. 47 off St. Mary's Island on 28 Aug. was the biggest daily total in Northumberland, but at Teesmouth 188 flew south, and 26 north, on 19 Aug. Passage diminished noticeably in Oct. Late records : 1 at Bamburgh on 7 Nov. (BRS), 1 at St. Mary's Island on 21 Dec. (JDP) and 1 at Hartlepool on 27 Dec. (ECG).

194. Great Skua *Catharacta skua*
Spring records are rare, but this year single birds were seen at St. Mary's Island on 4 and 18 Apr. (MM, JDP). Between 4 Aug. and 16 Oct. a minimum total of 70 passed along the coast of the 2 counties.

195. Pomarine Skua *Stercorarius pomarinus*
Only 2 at Hartlepool this year : on 6 and 12 Sept. (DD, WA, DME). In Northumberland 1 seen in July, 2 in Aug., 10 in Sept. and 2 in Nov.

196. Long-tailed Skua *Stercorarius longicaudus*
An adult with full tail was watched feeding like a marsh tern from the water at Beadnell Point on 26 July (JSA). On 7 Aug. another adult flew up Greatham Creek, Teesmouth, and away over Cowpen Marsh in the company of 8 arctic skuas, later returning the same way (ECG).

199. Lesser Black-backed Gull *Larus fuscus*
Weekly visits to the Newcastle Quayside, between the Swing Bridge and the

mouth of Ouse Burn, showed the species to be present almost every week between 19 Feb. and 4 Nov., maximum 33 on 12 Aug. (AM). Most other reports are for Mar.-Apr. and July (including 37 at Long Newton Reservoir, Durham, on 4 July), but a few winter reports come from Budle Bay, Seahouses, Gosforth Park, South Shields and Marsden.

202. Glaucous Gull *Larus hyperboreus*
Some dozen immatures as follows : at Holy Island on 9 Feb. (BG), at North Gare on 7 Mar. (JHL), at Hauxley on 26 Mar. (BG), at Boulmer on 4 Apr. (FGG), at Hartlepool on 18 Apr. (DGS), at Jarrow Slake on 1 May (MLC), at Hartlepool on 10 Aug. (PWH), in the Team Valley on 10 Aug. (KB), at Amble on 24 Aug. and 21 Sept. (ER, TW), at Hartlepool on 20 Sept. (ECG), at Hauxley on 26 Sept., 10 Oct. and 29 Nov., and at Hartlepool on 13 and 20 Dec. (ECG).

203. Iceland Gull *Larus glaucoides*
Single immatures at Cresswell on 8 Mar. (MM) and at Hauxley on 15 Mar. (BL, BG), and an adult at Holywell Ponds on 9 and 18 Apr. (MH, PAG).

205. Mediterranean Gull *Larus melanocephalus*
The Hartlepool bird was seen once in Jan., twice in Feb. (by 23 Feb. it had its black hood), and twice in Mar. It returned for its ninth successive winter on 9 Aug., and was often seen until late Nov. In addition, a sub-adult was seen on Seaton Snook, Teesmouth, on 8, 15, 18, and 19 Aug., and was also observed at Hartlepool and Graythorp Pool (PJS, ECG). An adult with complete black hood flew north through the Farnes on 13 July (GRP).

207. Little Gull *Larus minutus*
An unprecedented influx occurred at Hurworth Burn on 24 Sept. when at about noon a scattered flock of at least 200 (mostly juveniles) drifted in from the west, 60 of them settling on the muddy margins of the reservoir and the rest circling overhead ; within 3 hours all had departed south-west (ES), though 1 or 2 flew in from the west at 1620 (DGB). The only other autumn record from Hurworth Burn was 14 on 3 Sept. (RTM, PS). Elsewhere, odd birds occurred at Teesmouth and Seaton Sluice in Apr. (2), Teesmouth in May-July (5), Teesmouth, Souter Point, Dunstanburgh and Cresswell in Aug. (7) and at Hartlepool and Boulmer in Sept. (4).

212. Black Tern *Chlidonias niger*
Spring passage : 1 at Holywell Ponds on 20 Apr. (JDP), 2 at Durham on 18 May and 1 on 28 May (JR, JHL) and 1 at Teesmouth on 22 May (DGB). Autumn passage began with 1 at the Farnes on 30 June and 1 at Gosforth Park on 6 July (IH) and there were 7 others in Northumberland in Aug., but again Teesmouth had the largest numbers, 27 on 23-28 Aug. being the peak. The last was 1 at Hurworth Burn 24-25 Sept. (ES, DGB).

215. Gull-billed Tern *Gelochelidon nilotica*
1† flew south at Hauxley on 15 July in the company of common and Sandwich terns (BG, ER). It, or another†, was seen there on 26 July, (BL, ER), while on 1 Aug. 2† were seen in the same locality (BL, ER).

217. Common Tern *Sterna hirundo*
Only 1 pair attempted to breed at the north-west Northumberland site, and were

probably robbed. The regular Teesmouth colony contained 10 pairs, and several young were fledged. Parties totalling several thousand flew steadily north at Hauxley between 3 and 5 Sept.

218. Arctic Tern *Sterna macrura*
2 small colonies (3 and 12 pairs) on the Northumberland mainland. An unusual continuous northerly movement of *ca.*10,000 birds took place at Hauxley between 3 and 5 Sept. Teesmouth maximum : 810 on Seaton Snook on 3 Aug. (PJS).

219. Roseate Tern *Sterna dougallii*
Away from the Farnes, occurred all months Apr.-Sept., usually singly or in pairs. Late birds were 2 at Bamburgh on 23 Sept. (PRE) and an adult feeding a juvenile at North Gare on 26 Sept. (BF, NW). This last pair lingered in the Tees estuary (Yorkshire side) until 4 Oct. (DGB)—the latest occurrence ever recorded here.

222. Little Tern *Sterna albifrons*
Nested at 2 places in Northumberland (1 pair and 6 pairs). Scarce everywhere, maximum number seen together being 4 (at Teesmouth). A very late bird at South Shields on 9 Oct. (MLC) and 11 Oct. (BGo.).

223. Sandwich Tern *Sterna sandvicensis*
First : 1 at St. Mary's Island on 25 Mar. (JDP) and 1 at Hartlepool on 1 Apr. (DGS). Away from the Farnes, biggest concentration was 490 on Seaton Snook, Teesmouth, on 8 Aug.—including a bird with a green wing-tag which had been ringed on the Sands of Forvie, Aberdeenshire, in June 1964 (PJS). Last : 2 at Hartlepool on 17 Oct. (ECG).

226. Little Auk *Plautus alle*
At St. Mary's Island 13 flew north in 1¾ hours on 21 Dec. (MH) and 2 on 22 Dec. (JDP). Another found dead at Bamburgh on 30 Dec. (MM) had probably been connected with the same movement.

230. Puffin *Fratercula arctica*
Of 114 auks which flew south at Hartlepool on 3 Oct., all those identified (45), were puffins (ECG, PJS). Such numbers are rare away from the vicinity of the Farnes ; in fact, puffins seldom come near enough inshore to be identified positively.

235. Turtle-Dove *Streptopelia turtur*
From 3 May (1 at Bywell) birds occurred at Hauxley, the Farnes (1 on 25 and 28 May), Embleton, Gosforth Park, Shotton, Teesmouth and elsewhere.

—. Collared Dove *Streptopelia decaocto*
Breeding reported at Newcastle, Alnwick (2), Gosforth and West Hartlepool and suspected at Craster and Chester-le-Street. Up to 30 were in the Gosforth district in Jan. (ER), while at Cleadon Hills 32 fed in a stubble field on 28 Dec. (MLC). [More details are published in (Hudson, 1965)]

241. Barn-Owl *Tyto alba*
In Newcastle, a pair reared young in the same tree and at the same time as a pair of tawny owls (FC). No other nests reported, but birds occurred sporadically in various parts of the 2 counties.

247. Tawny Owl *Strix aluco*
7 nests reported, and though this must be only a fraction of the total population, the species does appear to be less abundant than formerly ; 12 in Gosforth Park in the evening of 13 Oct. (ER) is certainly an unusual concentration.

248. Long-eared Owl *Asio otus*
Roosts reported at Ponteland (6) in Feb. and at Usworth (8) and Gosforth Park (4) in Dec. A pair at Ponteland reared 2 young (EM).

249. Short-eared Owl *Asio flammeus*
Occurred all months and bred in both counties. Most seen in second half of the year.

252. Nightjar *Caprimulgus europaeus*
Pairs at 4 Northumberland and 1 Durham locality, but only 1 nest found.

255. Swift *Apus apus*
Seen daily from 26 Apr. (1 at Wingates : IH). 195 came off the sea at Seaton Snook, Teesmouth, on 14 June, and about 250 were over the Reclamation Pond on 19 June (DD). Heavy southerly movement in July, particularly on 25 July, when several thousand passed at Cresswell in flocks of 40-80 (ER). A very late bird at Newburn on 6 Nov. (BG).

258. Kingfisher *Alcedo atthis*
Only 1 report : 1 at Riding Mill on 3 May (JHD).

261. Hoopoe *Upupa epops*
1 near North Gare 19-20 Apr. (RTM, WA, JKS), 1 in Hulne Park, Alnwick, on 6 June (AE) and 1 in an old quarry near the shore at Amble, on 6 Oct. (EB). This last was probably the bird seen at Hauxley 8-9 Oct. (*per* HRS).

264. Lesser Spotted Woodpecker *Dendrocopos minor*
Only reports : 1 at Stocksfield on 2 May (TW) and 1 in Gosforth Park on 4 Oct. (LGM).

265. Wryneck *Jynx torquilla*
1 at Cullernose Point on 6 Sept. (PB).

271. Woodlark *Lullula arborea*
1 in a turnip field at Cleadon Hills on 1 Jan. (MLC). Fifth record for Durham and the first since 22 Apr. 1958.

274. Swallow *Hirundo rustica*
First : 1 at Teesmouth on 11 Apr. ; others at several places on 14 Apr. A gathering of 1,400-1,600 on wires at Stanley, Durham, on 19 Aug., was the largest ever seen by R. M. Palmer. Last : 2 juveniles flying north at Cresswell on 7 Nov. (DGB).

276. House-Martin *Delichon urbica*
An early arrival at Lesbury on 6 Apr. (AE) was followed by another at Alnwick on 14 Apr. (EM). A cliff colony at Howick held 40 nests on 7 May (JA). As usual, some lingered until the end of Oct., with the last hawking about Seahouses harbour on 8 Nov. (VFB).

277. Sand-Martin *Riparia riparia*
First noted on 9 Apr. : 1 at Felton Bridge (RI). Seen daily from 11 Apr. 1 flying north along Fenham Flats on 1 Nov. was very late (HHC).

279. Raven *Corvus corax*
4 pairs reared young in Northumberland, and another nest failed. An adult found dead near Rothbury on 10 June, and another (tame) bird seen in Gosforth Park in June and July (ER, MM).

280. Carrion-Crow *Corvus corone corone*
A strong, recently-fledged juvenile examined near Otterburn on 21 June was completely white, with pale bluish-horn beak, yellowish legs and feet, pale blue irides and a pink orbital ring. Its parents, both completely normal in appearance, were in anxious attendance (DGB, MGR).

281. Hooded Crow *Corvus corone cornix*
2 or 3 passage birds appeared at Teesmouth in late Mar. and early Apr.—the first there since 1962—but, apart from a very late bird at Seaton Carew tips on 26 May (DGB), no others were seen here in 1964. Elsewhere, they were not so scarce, although only 5 were reported in the second part of the year. The biggest gathering was near Ponteland, where up to 28 were seen in Jan.-Feb. (HHC, ER). On 27 June 1 was on the beach at Craster (AEH) and it is interesting to note that 1 was seen in Hexhamshire in the same month (DNB, CG).

282. Rook *Corvus frugilegus*
The Haymarket (Newcastle) colony contained 8 occupied nests in spring (RMP). An all-brown rook accompanied normal birds at Hamsterley Hall, in the Derwent valley, on 14 Aug. (GAC).

286. Jay *Garrulus glandarius*
A flock of 8, with 2 others nearby, at Holburn on 3 Jan. (DGB, MGR).

293. Willow-Tit *Parus montanus*
Regular in Castle Eden Dene (BU, DWS), and seen at Wingate and Shotton. A brood at Hurworth Burn on 25 July (PJS). Reported in Northumberland from Hauxley, Craster, Hexham, Wallington, Allen Banks, Prestwick Carr, Stocksfield, Brenkley and Gosforth Park.

294. Long-tailed Tit *Aegithalos caudatus*
Numbers still appear below normal after the 1962-63 winter, but it is encouraging to report 23 in Crimdon Dene on 1 Nov. (DWS), 20 at Rock on 30 Sept. (PH) and 18 in Gosforth Park on 5 Dec. (RN, MH). Comments on other tit sp. will be found on page 153.

296. Nuthatch *Sitta europaea*
Birds were still present in Durham City, though no information on nesting is available. However, a pair was watched going to their nest-hole in a tree near Plawsworth, Durham —a new locality—on 16 Apr. (ALC) and birds were also seen near Darlington, Barnard Castle, Whitworth, Crookfoot Reservoir and Castle Eden Dene. Along the Tyne, pairs were seen at Bywell (breeding), Stocksfield and Hamsterley Mill.

298. Tree-Creeper *Certhia familiaris*
Scarce in many areas, but not in south-west Durham, where a brood was reared in a nest-box at Hamsterley. In Aug., 2 juveniles, presumably locally bred, were ringed at Craster (PRE). A bird seen at Hauxley on 8-9 Sept., and another trapped there on 3 Oct., were considered to belong to the northern race *familiaris*.

300. Dipper *Cinclus cinclus*
A nest in Coquetdale on 21 June was in drifted vegetation on the tip of an alder branch, sticking out over the river at a height of 4 feet (DGB).

302. Fieldfare *Turdus pilaris*
Decidedly scarce in Durham before late Feb., when some southerly movement took place. Apart from 1 at South Shields on the very early date of 19 Aug. (MLC), the first noted in autumn was on 15 Oct., after which they were seen regularly (though in smaller numbers than usual). In Northumberland, flocks involving several hundreds occurred in the first 4 and last 3 months of the year.

304. Redwing *Turdus iliacus*
Absent between 6 May (2 at Marsden : MLC) and 13 Sept. (4 at Hauxley). No real influx occurred before 3 Oct., when parties came in off the sea along the whole coastline. Steady southerly movement took place on 26 Dec., and from 27 Dec. 400 roosted in Northumberland Park, Tynemouth (MH).

307. Ring-Ouzel *Turdus torquatus*
Spring arrival was early : 1 at Tynemouth on 31 Mar. (AB) and others on nesting-grounds in Northumberland from 3 Apr. In general, breeding was good : many pairs reared 6 young (BL). 7 birds arrived along the coast from Holy Island to West Hartlepool between 2 and 16 Oct.

308. Blackbird *Turdus merula*
Small falls in late Sept. and early Oct. heralded the later very heavy influxes : on 17 Oct., on Holy Island, " Blackbirds were everywhere, their numbers running to many hundreds and they continued to come off the sea for hours" (BGo.). This immigration was also seen at Hauxley, where it continued next day : 1,200 arrived in the morning alone. On 19 Oct. *ca.*800 passed through Hauxley between 1400 and 1700, while on 29 Oct. *ca.*3,000 arrived in flocks of up to 200. A large roost of up to 1,000 was formed in Whitley Bay in Nov. (MH).

311. Wheatear *Oenanthe oenanthe*
Seen daily in both counties from 21 Mar. (1 near Hexham : SE). None reported later than 3 Oct.

317. Stonechat *Saxicola torquata*
Only 1 breeding record (a pair reared 5 young at Hauxley), but birds seen elsewhere in Northumberland in July may have been breeding. Records for the first 4 and last 4 months of the year were mostly coastal, extending from Holy Island to Teesmouth, and involving *ca.*15 birds.

318. Whinchat *Saxicola rubetra*
First noted on 13 Apr. at Tanfield Ponds (RMP), followed by others from 18 Apr. At Hauxley, *ca.*10 seen almost daily in Aug. and Sept., with peaks of *ca.*40 on 9 Aug. and 25 on 3 Sept. Last on 4 Oct. : 2 at Hauxley and 1 at Teesmouth.

320. Redstart *Phoenicurus phoenicurus*
Seen daily from 16 Apr. : a male at Cleadon Hills (MLC). Breeding strength appeared normal. Never more than 4 a day in autumn at Teesmouth, or more than 20 a day (on 24 Sept.) at Hauxley. Last recorded on 16 Oct. at Hartlepool (PS) and 18 Oct. at Tynemouth (SM).

321. Black Redstart *Phoenicurus ochruros*
On 26 Mar. a slight fall occurred along the coast at St. Mary's Island, North Shields and Hartlepool, and in the next few days others arrived at Holy Island, Bondicar and Craster ; 12 birds were involved, and some lingered into Apr. (1 of the Hartlepool birds until 17 Apr.). On the Farnes : 1 on 17-19 Apr., a pair on 22 Apr. and 1 on 1 May. The only other record for the year concerned 2 at Hartlepool on 16 Oct. (PS, ECG).

324. Bluethroat *Cyanosylvia svecica*
1 skulked in bushes at Graythorp, Teesmouth, on 4 Sept. (EB, PS, RTM).

325. Robin *Erithacus rubecula*
Slight coastal falls noted on 28-29 Mar., 19 and 26-27 Sept. and 3 Oct. On 13 Oct. *ca.*40 were present in a small area of willow scrub in Gosforth Park (ER) and 2 days later 10 were in Whitley Bay cemetery (RN).

327. Grasshopper-Warbler *Locustella naevia*
First records : 1 at Bywell on 18 Apr. (PAG) and 2 at St. Mary's Island and 1 at North Shields on 20 Apr. (MH, SM). A singing bird noted in summer in a new locality at Billingham Bottoms (ALC).

333. Reed-Warbler *Acrocephalus scirpaceus*
1 trapped at Hauxley on 9 May ; an *Acrocephalus* there on 16 Aug. showed the field characteristics of this species. First noted elsewhere on 30 May.

337. Sedge-Warbler *Acrocephalus schoenobaenus*
Arrived at Hartlepool on 19 Apr. (RTM) and at Holywell Ponds on 20 Apr. (JDP).

340. Icterine Warbler *Hippolais icterina*
1 in Blyth cemetery on 4 Sept. (JDP). A warbler there on 16 Aug. (MM, MH) was either icterine or melodious.

343. Blackcap *Sylvia atricapilla*
A male at North Gare on 10 Apr. (RTM, WA). A male in Gosforth Park on 16 Apr. was joined by a female on 18 Apr. (LGM). Thereafter, widespread. Frequent, but not numerous, on autumn passage, which extended into early Nov. at Bamburgh, Hauxley, Tynemouth and Gosforth Park (last record on 8 Nov.).

344. Barred Warbler *Sylvia nisoria*
Some 9 juveniles and 1 adult, as follows : 1 at Blyth cemetery on 16 Aug. (MM, IH) ; 1 at Hauxley on 27 Aug. ; 1 (trapped) at Craster (PRE) and 1 at Teesmouth on 3 Sept. (TB, HM, DGB) ; 1 on Holy Island on 16 Sept. (FG, BG, ER) ; 1 on Inner Farne on 2 Oct. (PRE) ; 1 adult on Holy Island on 3 Oct. (MGR) ; 1 trapped at Hauxley on 27 Sept.—it remained until 11 Oct. (BL) ; 1 at Hauxley on 19 Oct. ; 1 at Tynemouth 18-21 Oct. (MH, SM).

346. Garden-Warbler *Sylvia borin*
First records : 1 at Bellasis, Northumberland, on 19 Apr. (IH) and 1 at South Shields on 22 Apr. (DDM). Though numerous in Gosforth Park in late July, passage birds were scarce along the coast in Aug.-Sept. ; maximum 11 at Cresswell on 3 Sept. (JDP). Last record : 1 at Hauxley on 31 Oct.

347. Whitethroat *Sylvia communis*
2 or 3 arrived at various places on 18-19 Apr., and spring passage continued at Hauxley until at least 23 May. Rather scarce in the autumn, though regular at Hauxley (maximum 12 on 3 Sept.). At Hartlepool, 15 on 4 Sept. and 12 next day.

348. Lesser Whitethroat *Sylvia curruca*
Arrival : 1 at Hartlepool on 17 Apr. and 2 on 19 Apr. (RTM, MAL). Noted in May at Beal, Hauxley, Craster, Arcot Hall and Alnwick, and on 6 June at Bywell. These dates do not exclude birds merely passing through, and there are no breeding records. From late Aug. odd migrant birds appeared along the coast. In Oct., a fresh influx took place : on 3 Oct. 1 appeared on Holy Island, 1 at Tynemouth and 2 at Hauxley ; next day there were 2 at Hartlepool. Very late records were at Bamburgh on 17 Oct. and 1 at Tynemouth on 18-21 Oct. The 2 Hauxley birds showed characteristics of the Siberian race *blythi*, and may indicate the origin of others seen in Oct.

354. Willow-Warbler *Phylloscopus trochilus*
Arrived on 16 Apr. : Wynyard Park (6), Gosforth Park, Hartley and elsewhere. Appeared rather less plentiful than usual in the breeding-season. 30 on 1 Aug. at Hauxley, where *ca.*10 a day passed through all month. Individuals of the northern race *acredula* trapped there on 9 May and 6 Sept. A late bird was seen and heard at Prior's Park, Tynemouth, on 1 Nov. (MLC).

356. Chiffchaff *Phylloscopus collybita*
The 2 wintering birds at Bamburgh (Bell, 1964) were seen again on 3 Jan. (PRE) and remained until Mar. (BRS). A bird sang at Hurworth on 3 Apr. (RT), and another at Howick on 8 Apr. (MLC). A moulting adult was trapped at Craster on 11 Aug. and was still present and singing on 23 Sept. ; it was seen again on 25 Sept.—not all late birds are on passage ! At Hauxley, 2 of 3 birds present on 3 Oct. were apparently *abietinus*, while 3 on 4 Oct. were all *collybita* and 1 on 30 Oct. was *tristis*.

357. Wood-Warbler *Phylloscopus sibilatrix*
1 singing at Stocksfield on 30 Apr. (TW). Bred in the North Tyne valley, Kielder, Hamsterley and elsewhere.

360. Yellow-browed Warbler *Phylloscopus inornatus*
1 at Tynemouth 30 Sept.-3 Oct. (MH, MB *et al.*) ; 1 (ringed) at Marsden Hall 12-13 Oct. (FGG) ; 1 (trapped) at Bamburgh 16-17 Oct. (BRS).
Correction to (Bell, 1964), page 84 : the dates of the Hartlepool bird were 7-8 Nov.

364. Goldcrest *Regulus regulus*
In both counties, reported to have recovered from the 1962-63 winter. Biggest autumn influxes on 3-5 Oct. : 100 at Hauxley, 30 on Holy Island and 20 at Hartlepool.

365. Firecrest *Regulus ignicapillus*
1 at Hauxley on 30 Oct. (ER).

366. Spotted Flycatcher *Muscicapa striata*
First on 19 Apr. (1 at Blyth : MH) and last on 19 Oct. (1 at Hauxley).

368. Pied Flycatcher *Muscicapa hypoleuca*
Both males and females had arrived in Hamsterley State Forest by 26 Apr. and 73 young were later ringed in 16 nest boxes (DNB, CG). (In 1963, 63 young were ringed from 14 nest boxes). Nesting also reported in the North Tyne valley, at Alnwick and Barnard Castle. Up to 12 on passage at Hauxley in Aug., but the peak was 30 at Cresswell on 4 Sept. (JSB). In Oct., seen daily until 4 Oct. (1 at Hartlepool and 10 at Bamburgh).

370. Red-breasted Flycatcher *Muscicapa parva*
A juvenile was seen daily on Holy Island 4-7 Oct. (WM, RS, JB, PJB, MGR), and an adult male, in full plumage, was in the same hedgerow on 5 Oct. (WM). A juvenile was trapped at Hauxley on 11 Oct. (ER, BL, BM).

371. Dunnock *Prunella modularis*
Evidence of autumn influx : over 50 on St. Mary's Island on 2 Oct. (MN), and *ca.*100 at Hauxley on 10 Oct., most of which had moved on by noon.

373. Meadow-Pipit *Anthus pratensis*
Southerly coasting movement noted in autumn : at Monk's House and Craster on 7 Aug. (PRE); and at Hauxley on every day throughout Sept. Here on 7 Sept. many thousands flew south, while 300 thronged surrounding gardens and fields; on 11 Sept. more flew south at over 1,000 an hour; on 12 Sept. 500 were in the area; on 13 Sept. *ca.*400 flew south. This movement was not reported on such a scale from anywhere else, though on 6 Sept. at Dorman's Pool, Teesmouth, 150 flew south-south-east in 5 minutes (PJS), and on 26 Sept. at Killingworth (5 miles inland), meadow-pipits were flying south in parties of up to 20 (BG).

378. Red-throated Pipit *Anthus cervinus*
2† seen at Hauxley on 9 May (ER, BL) and 2† on 9-11 Sept. (BL, BM, ER). The second and third records for Northumberland.

379b. Water-Pipit *Anthus spinoletta spinoletta*
2 at Holywell Ponds on 2 Apr., including an adult in very bright summer plumage (JDP).

382a. Yellow Wagtail *Motacilla flava flavissima*
First noted on 13 Apr. : 1 at Teesmouth (WA, DME).

382b. Blue-headed Wagtail *Motacilla flava flava*
1 at Bamburgh 18-19 Apr. (JPD, MM) ; 1 at Holywell Ponds on 3 May (CED) ; 1 at Swallow Ponds on 20 June and 24 and 30 July (MN, LGM) ; 1 (carrying food) at Cresswell on 20 June (IH) ; 3 at Greatham Creek on 25 Aug. (PJC).

383. Waxwing *Bombycilla garrulus*
Widespread in small parties, with the following monthly maxima : Jan.—15 in Darlington (VFB) ; Feb.—12 in Darlington (VFB) ; Mar.—7 in Newcastle (MB) ; Apr.—2 in Darlington, of which 1 (the last bird seen) stayed until 4 Apr. The only records for the end of the year were 6 in Stockton-on-Tees on 28 Nov. (WH) and 2 in South Shields on 2 Dec. (FGG).

384. Great Grey Shrike *Lanius excubitor*
1 (found dead) in Holywell Dene on 12 Jan. (*per* PJS) ; 1 near Craster on 12 Mar. (JMC) ; 1 in Holywell Dene on 23 Mar. (JDP) ; 1 at Budle Bay on 31 Mar. (BRS) ; single birds at Holy Island, Craster and Tynemouth, and 2 at Hauxley and Teesmouth 2-17 Oct. ; 1 at Newsham on 3 Nov. (TWL, JKL).

391. Hawfinch *Coccothraustes coccothraustes*
Except for a pair at Chester-le-Street in Apr. (JCC), all records are for Northumberland (Feb.-June). 2 at Haltwhistle in Mar. : " It is more than 30 years since I last saw hawfinches in the Haltwhistle district " (RC). Other reports from Humford Woods (near Blyth), Allen Banks, Belsay, Barrasford, Stocksfield, Seaton Burn, Bywell and Hexham (a bird feeding young in June).

392. Greenfinch *Chloris chloris*
2 seen again at a string of nuts suspended for titmice in Sanderson Road, Newcastle, during Dec. (MGR). [See (Bell, 1964, page 86)' In Gosforth, during May and June, another bird fed on shelled peanuts in a suspended nut basket, aggressively driving off sparrows (TCS) ; this habit has also been observed at Stockton-on-Tees. Some large flocks were 700 at Hauxley and 500 in Gosforth Park (roosting) in Nov., and 800 in Holywell Dene in Dec. (MH).

394. Siskin *Carduelis spinus*
Some 4 pairs bred in Northumberland. Apart from 15 at Teesmouth on 13 Apr. (JV), all records are from Sept. to the end of the year, but no large flocks were seen.

395. Linnet *Carduelis cannabina*
About 500 roosted in Gosforth Park in Sept. (ER).

396. Twite *Carduelis flavirostris*
1 at Graythorp on 5 Sept. (PWH) and 1 on Holy Island on 5 Oct. (WM).

397. Redpoll *Carduelis flammea*
The numerous reports include *ca.*100 at Roughtinglinn on 26 Aug., still there on 5 Sept. (PRE), and over 200 at Howick on 6 Sept. (PRE).

404. Crossbill *Loxia curvirostra*
Over 20 reports Jan.-July, 45 at Kielder on 23 May being the largest flock seen (FC). Outside this period the only reports were 1 at West Hartlepool on 16 Dec. and 7 at Simonside on 28 Dec. Bred successfully in Northumberland.

408. Brambling *Fringilla montifringilla*
Absent between 11 Apr. and 1 Oct., except for 2 males in Gosforth Park on 21 May (ER). The biggest of many flocks were *ca.*200 at Prestwick Carr on 1 Jan. (ER) and *ca.*100 near Alnwick on 12 Dec. (MGR, DGB).

410. Corn-bunting *Emberiza calandra*
A male was again singing at Haydon Bridge in July (AJC). [See (Bell, 1964, page 87)] A roost of over 100 built up at Hauxley at dusk on 26 Jan. At Bamburgh *ca.*60 roosted in Mar. and up to 80 in Dec.

420. Little Bunting *Emberiza pusilla*
2† on Holy Island 4-5 Oct. (WM) and another† on Ross Links on 9 Oct. (PJB).

421. Reed-Bunting *Emberiza schoeniclus*
About 700 roosted in Gosforth Park on 23 Sept. (ER).

422. Lapland Bunting *Calcarius lapponicus*
2 on Holy Island on 31 Oct. (DGB); *ca.*10 at Beal on 1 Nov. and at least 2 still there on 9 Nov. (DGB, MGR). No other reports.

423. Snow-Bunting *Plectrophenax nivalis*
Absent between 16 Apr. (a male on Cleadon Hills: MLC) and 9 Oct. (2 at Ross Links: PJB). 300-400 spent the 1963-64 winter along the coastal strip between South Shields and Whitburn (FGG). A party of 50 on Newcastle Town Moor in Feb. and Dec. (BG, LGM)—perhaps the birds seen at Swallow Ponds in Feb. (RN). Unusually scarce both winters at Teesmouth (maximum only 94). 1 on Muggleswick Common (near Edmundbyers) on 1 Mar. (PA) was a long way inland.

425. Tree-Sparrow *Passer montanus*
Near Beal, 2 pairs nested successfully in domed nests in thick hawthorn hedges at the edge of a pasture, one at the height of 4 feet and the other at 5½ feet (MGR).

RINGING

The majority of authorised ringers in the two counties have been asked to furnish details of interesting recoveries and the following have contributed information:—Bamburgh Ringing Group, A. Barnard, A. Belshaw and F. Colley, T. A. Bowbeer, A. J. Clissold, P. R. Evans (Monks' House Bird Observatory), C. J. Gent, Natural History Society of Northumberland, Durham and Newcastle upon Tyne, Northumbria Ringing Group, P. Reid, J. Richardson, D. Summers-Smith, Tyne Tweed Ringing Group and P. Yeoman. Non-ringers who have reported recoveries for list (b) are included among the contributors.

Once again there are several "controlled" recoveries of sand-martins at colonies and roosts. Local colonies are at Prudhoe, Mickley, Corbridge and Shincliffe while roosts are at Fairburn and Brotherton, both near Castleford (Yorks.), at Chichester (Sussex), Ashford (Middlesex) and at Wiggenhall (Norfolk)—all outside the area.

It is obviously impossible to comment on the various recoveries, but mention must be made of the Russian-ringed tern found on the beach at Tynemouth in November. When discovered, the bird was unidentifiable and there were high hopes that it might prove an interesting recovery. Alas, it turned out to have been ringed as "tern sp."—an object lesson to British ringers on the need for definite identification.

RECOVERIES OF RINGED BIRDS

(a) Ringed in Northumberland and Durham

Date and place ringed	*Place recovered*	*Date recovered*
MUTE SWAN		
2.9.60 Beadnell, Northd.	Lesbury, nr. Alnwick, Northd.	19.5.64
4.4.63(w) Newcastle upon Tyne, Northd.	S. Shields, Co. Durham	15.11.64
LAPWING		
13.5.61 Wallsend, Northd.	Lista, Vest Agder, Norway	15.6.64
RINGED PLOVER		
3.1.62(w) Seahouses, Northd.	Trönninge, Halland, Sweden	2.5.64
COMMON SNIPE		
15.7.64 *Wallsend	Carrick-on-Shannon, Co. Leitrim, Eire	29.10.64
CURLEW		
22.8.64(w) Cresswell, Northd.	Fenham Flats, Northd.	4.12.64
DUNLIN		
9.9.61(juv.) Boulmer, Northd.	Insel Sylt, N. Frisian Islands, Germany	16.8.64
28.8.62(juv.) Boulmer	Yyteri, Pori, Finland	16.7.64
26.6.64 *Saltholme Pool, Teesmouth, Co. Durham	Foz do Arelho, Estramadura, Portugal	23.8.64
18.7.64 *Wallsend	New Sutton Bridge, Lincs.	9.8.64
7.8.64(juv.) Seahouses	Bassin d'Arcachon, Gironde, France	14.8.64
LITTLE OWL		
7.6.64 Brasside, nr. Durham City	Newcastle upon Tyne	22.7.64
SWALLOW		
13.6.64 Nr. Embleton, Northd.	Gosforth, Northd.	25.8.64
31.7.64 Pity Me, nr. Durham City	Fairburn, Castleford, Yorks.	6.9.64
SAND-MARTIN		
20.8.62(juv.) Mickley, Northd.	Chichester, Sussex	9.9.64
6.7.63(juv.) Shincliffe, Co. Durham	Wiggenhall, King's Lynn, Norfolk	29.8.64
13.7.63 *Prudhoe, Northd.	Reeth, Yorks.	6.5.64
30.7.63(juv.) Prudhoe	Amrum, N. Frisian Islands, Germany	July 1964

Date and place ringed		*Place recovered*	*Date recovered*
SAND MARTIN—*continued*			
27.5.64	*Corbridge, Northd.	Fairburn	21.8.64
27.6.64(juv.)	Bamburgh, Northd.	Chichester	20.8.64
18.7.64(juv.)	Prudhoe	Chichester	14.8.64
CARRION-CROW			
14.5.64	Netherwitton, Northd.	Ponteland, Northd.	29.9.64
MISTLE-THRUSH			
21.4.60	Pity Me	Poullaouën, Finistère, France	29.1.63
BLACKBIRD			
23.11.58	*Haydon Bridge, Northd.	Dunfermline, Fife	5.12.64
5.9.62(juv.)	Craster, Northd.	Arbroath, Angus	1.6.64
14.10.62 (w)	Holywell, Northd.	(1) Ashfield, Dromore, Co. Down, N. Ireland	23.1.63
		(2) Sokndal, Rogaland, Norway	22.10.64
30.12.62	*S. Shields	Åbybro, Jutland, Denmark	13.1.64
2.11.63	*Hauxley, Northd.	Ondres, Landes, France	13.2.64
,, (w)	Hauxley	Tröllhattan, Alvsborg, Sweden	11.4.64
3.11.63 (w)	Hauxley	Viitasaari, Keski-Suorni, Finland	15.5.64
21.12.63	*Tynemouth	Nr. Aalborg, Jutland, Denmark	17.4.64
6.1.64	*Hartley, Northd.	Ekolsund, Stockholm, Sweden	19.4.64
18.1.64 (w)	Wallsend	Tröllhattan	8.5.64
28.3.64	*Hauxley	Nr. Alesund, Romsdal, Norway	24.5.64
2.4.64 (w)	Hartley	Baerum, Akershus, Norway	29.7.64
19.4.64	*Hauxley	Moncontour, Vienne, France	25.11.64
REDSTART			
12.6.64	Kielder S.F., Northd.	Guernsey, Channel Islands	13.9.64
ROBIN			
2.9.64	*Holywell	Hetton-le-Hole, Co. Durham	25.10.64
WHITETHROAT			
27.6.64	Arcot Hall, nr. Seaton Burn, Northd.	Lugo, Spain	19.9.64
PIED FLYCATCHER			
19.6.64	Hamsterley S.F., Co. Durham	Cabo Espichel, Estramadura, Portugal	30.8.64

Date and place ringed		*Place recovered*	*Date recovered*
PIED FLYCATCHER—*continued*			
17.8.64(juv.)	Seahouses	Braganca, Tras os Montes, Portugal	25.10.64
PIED WAGTAIL			
24.3.62 (s)	Bamburgh	Ancenis, Loire Atlantique, France	Feb.1963
STARLING			
19.9.57(juv.)	Seahouses	Nr. Scarborough, Yorks.	Mar.1964
24.5.57	*N. Shields, Northd.	N. Shields	*ca.*25.6.64
13.12.58	*Stagshaw, nr. Corbridge	Whitley Bay, Northd.	31.5.64
18.2.60	*Pity Me	Nr. Chudovo, Novgorod, U.S.S.R.	23.5.64
10.11.60	*Pity Me	Somercotes, Alfreton, Derbyshire	1.7.63
26.12.61	*Pity Me	Nr. Pskov, U.S.S.R.	14.8.64
GREENFINCH			
5.2.64	*Gosforth	Whitby, Yorks.	18.6.64
LINNET			
25.5.61	Holywell	Gorliz, Vizcaya, Spain	29.1.64
5.8.63	Holywell	Carcans, Gironde, France	26.10.64
10.8.64 (w)	Hauxley	Sare, Basses-Pyrénees, France	19.10.64
10.9.64	*Hauxley	Tarifa, Cadiz, Spain	25.10.64
13.9.64	*Hauxley	Coto Donana, Huelva, Spain	25.11.64
3.10.64	*Graythorp, nr. W. Hartlepool, Co. Durham	Agen, Garonne, France	27.10.64
LESSER REDPOLL			
3.8.63(juv.)	Arcot Hall	Leverkusen, Westfalen, Germany	8.11.64
28.8.63(juv.)	Craster, Northd.	Antheit, Liége, Belgium	11.11.64
27.7.64(juv.)	Gosforth	Rausort, Hainant, Belgium	24.10.64
28.7.64(juv.)	Gosforth	Hollebeki, W. Flanders, Belgium	8.10.64
30.8.64 (w)	Craster	Brussels, Belgium	18.11.64
12.9.64	*Gosforth	Wintersett Reservoir, Wakefield, Yorks.	27.9.64
,,	*Gosforth	Bouffiorilx, Hainant, Belgium	3.10.64
CHAFFINCH			
8.1.64	*Gosforth	Oost Vlieland, Frisian Islands, Netherlands	29.3.64

Date and place ringed		*Place recovered*	*Date recovered*
Brambling			
1.1.64 (w)	Nr. Ponteland	Jupille, Liége, Belgium	19.10.64
House-Sparrow			
10.5.58	*Stockton-on-Tees, Co. Durham	Stockton-on-Tees	3.7.64
15.5.60	*Billingham, Co. Durham	Billingham	31.5.64

(b) Interesting local recoveries of birds ringed outside the two counties (including foreign-ringed birds)

Date and place ringed		*Place recovered*	*Date recovered*
Teal			
Feb.1962	*N. Witham, Lincs.	Blagdon, Northd.	Jan.1964
Pink-footed Goose			
23.11.53	*Dumfriesshire	Sunniside, nr. Gateshead, Co. Durham	26.4.64
Common Snipe			
25.7.64 (juv.)	Yyteri	Bamburgh	5.12.64
Great Skua			
21.7.60	Foula, Shetland	Off Sunderland, Co. Durham	12.8.64
Common Gull			
7.7.63	Krokane, Kinn, Sogn og Fjordane, Norway	W. Hartlepool	3.8.64
Black-headed Gull			
4.7.64	Loch Urr, Dumfriesshire	Sunderland	Sept.1964
Tern sp. (probably arctic or common)			
11.6.64	Matsalu, Estonian S.S.R.	Tynemouth, Northd.	7.11.64
Stock-Dove			
9.8.64 (juv.)	Guisborough, Yorks.	N. Shields	16.8.64
Collared Dove			
26.12.63	*Herford, Nordrhein-Westfalen, Germany	Sunderland	*ca.*20.11.64
Long-eared Owl			
1.6.62	Pirkkala, Teivio, Finland	Ryhope, Co. Durham	12.1.64
Swallow			
3.9.61	*Fairburn	Ponteland	19.6.64

Date and place ringed		*Place recovered*	*Date recovered*
Sand-Martin			
16.8.62	*Brotherton, Castleford, Yorks.	Mickley	4.6.64
7.8.63 (juv.)	Fairburn	Corbridge	27.5.64
19.8.63 (juv.)	Ashford, Middlesex	Corbridge	23.6.64
Sedge-Warbler			
15.8.63	*Chichester	Gosforth	16.7.64
Starling			
13.10.60	*Rybatschi, Kalingrad, U.S.S.R.	Alnwick, Northd.	26.4.64
9.7.61	*Rybatschi	Newcastle upon Tyne	30.12.64

Notes: 1. * Indicates bird ringed as adult or full grown
2. (w) Indicates bird ringed as 1st winter
3. (s) Indicates bird ringed as 1st summer
4. (juv.) Indicates bird ringed as juvenile
5. All other birds have been ringed as pullus

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† signifies a record accepted by the *British Birds Rarities Committee*

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ORNITHOLOGICAL REPORT FOR THE FARNE ISLANDS FOR 1964

Compiled by

Grace Hickling

INTRODUCTION

Principal contributors to this report are F. Y. Bodger, J. C. Coulson, N. P. E. Langham, J. H. Lawton, I. K. Marshall, G. R. Potts, W. Shiel, B. P. Springett and the compiler. Others who have helped with the ringing, or have provided records, include P. R. Evans, J. Richardson, visitors to the Study Centre, students from the University of Durham and members of the Natural History Society, including C. M. Adamson, C. Almond, Mrs. H. E. Almond, Miss S. Appleby, M. and T. H. Bell, Mrs. A. M. Clark, Mr. and Mrs. S. Dale and M. Dale, C. L. Davidson, W. J. Douglas, J. A. Gledson, R. Graham, A. E. Hingston, P. Hurley, J. R. Johnstone, M. Marquiss, B. Mortimer, J. H. Neesham, D. A. Quine, J. Ratcliffe, M. Riley, I. M. Telfer and J. D. Tully. Most of the birds dealt with are easily recognised and, accordingly, the initials of the observer are given only when a species is either difficult to identify or occurs infrequently.

In this report, as in the county ornithological report, the classified notes, and ringing recoveries, are arranged in the order given in the *Check-list of the birds of Great Britain and Ireland* (1952), published by the British Ornithologists' Union.

GENERAL

On 6 January many shags were on the nesting sites and by 7 February several nests had been started. The next two or three weeks were stormy and many tentative nests were destroyed, with the result that on 29 February, nesting was less well advanced than at the beginning of the month. Other signs of spring were, however, apparent : cormorants had started a colony on North Wamses, several pairs of kittiwakes were on the cliffs and a few guillemots, razorbills and puffins were near the islands. No visits were made during March, but students who stayed on Inner Farne from 5-9 April recorded, in addition to the usual residents, small numbers of passerines. These included several skylarks and meadow-pipits, a wren, a mistle-thrush, two fieldfares, a song-thrush, two redwings, some eighteen blackbirds, three or four wheatears, a robin, two goldcrests and a dunnock.

G. R. Potts was on Brownsman from 7 April to 2 May; he spent a considerable time on Staple Island and also visited adjacent islands. He recorded the first swallow on 15 April and during the next three days small numbers of migrants (including twenty wheatears, a black redstart, a sedge-warbler and three blackcaps) arrived. On 19 April, following a force 4 easterly wind, and with overcast skies, there was a big influx, one hundred and forty passage birds being seen on Brownsman (where the majority occurred) and Staple Island. This total was made up of a northern golden plover, two woodcock, a wood-pigeon, seventy-five fieldfares, thirty redwings, four blackbirds, a whinchat, a common and a black redstart, a grasshopper-warbler, five blackcaps, a lesser whitethroat, four willow-warblers, two chiffchaffs, two goldcrests, a white wagtail and eight bramblings. In addition, the usual resident passerines—three pairs of blackbirds, a wren, three or four dunnocks, three hooded crows and about the same number of carrion-crows—were present. Next day, most of the passage birds had left and, although there were occasional new arrivals, no further large movement was observed. G. R. Potts also saw some dozen oiled birds on 19 April: among them were four kittiwakes, a guillemot and an eider, all severely oiled and obviously dying.

Conditions during the breeding season were favourable; food was abundant and G. R. Potts reported that he knew of no instance where a bird had died from starvation. Fewer arctic terns than usual nested near the Brownsman cottage, and upper garden, and many of the birds on the flat below the cottage lost their eggs during the high spring tide of 12 June. Despite this, all species of terns had good fledging success—the heavy rainstorm of 18 July had, fortunately, little adverse effect—and the mortality rate was considerably smaller than usual. Most of the terns found dead on Brownsman were late-hatched birds.

On 11 August, the light north to north-east wind brought a small fall of warblers, but the birds soon moved on. No students were in residence after 21 August and there is, accordingly, very little information about autumn passage movements.

There were again reports of damage to nesting birds. One of the cormorant colonies was raided by fishermen and several kittiwake nests in the upper, and more accessible part of Kittiwake Gully, were empty, probably because the eggs had been stolen. Eggs were taken, too, on Inner Farne—on 6 June, for example, an eider-duck, whose breeding habits were being studied, lost her clutch, and during the early part of the season at least eight shag eggs were taken by visitors. The watchers keep a keen lookout, but one of the volunteer watchers

remarked that " if they took their eyes off for a minute the eggs disappeared ! " He added that it was very difficult to know, if they found someone climbing back up the cliffs, if he had been taking eggs or merely photographing. A further difficulty is that it is impossible, at certain states of the tide, to land visitors at the jetties. Instead, they are put ashore on the rocks, close to the tern colony, and can then, if they wish, take the occasional tern clutch or ringed plover's or oystercatcher's egg.

On 14 July 1964 the Home Secretary made an Order, " The Wild Birds (Farne Islands Egg Sanctuary) Order 1964 ": this came into force on 16 August 1964 and it is hoped that it will do much to reduce the unauthorised taking of eggs and also to prevent visitors entering certain specified " prohibited " areas.

There is growing concern about the lack of vegetation, and consequent disappearance of the soil, on certain of the islands. For several years, the ground surrounding the puffin burrows on the Wideopens has carried only scattered clumps of plants such as sea-campion or scurvy grass and this condition has steadily worsened. Moreover, it is now affecting the south end of Brownsman where even a moderate wind can blow away clouds of soil. In an effort to arrest this erosion, the Farne Islands Local Committee has sought the advice of Mr. Oliver Gilbert of the Botany Department of the University of Newcastle upon Tyne. Mr. Gilbert considers that campion is a plant that is very susceptible to treading by birds and that there is a delicate balance between its growth and disappearance. On certain parts of the Farnes, this balance has, unfortunately, been upset and Mr. Gilbert is now trying to find some means of restoring it.

During the year two additions, the quail and the Mediterranean gull, were made to the systematic list of birds recorded for the islands.

CLASSIFIED NOTES

2. Great Northern Diver *Gavia immer*

1 flew over the Fairway on 21 Nov. (CMA).

4. Red-throated Diver *Gavia stellata*

Single birds flying over the Fairway on 7 and 21 Nov.

26. Fulmar Petrel *Fulmarus glacialis*

20-25 pairs nested on Inner Farne, 4 on Brownsman, 6 on Staple Island, 1 on South Wamses and 1 on East Wideopens, but only 6 young known to have been reared (5 on Inner Farne and 1 on Staple Island). An egg was laid in the old garden on Staple Island (a new site), but failed to hatch. A dark phase bird made several flights past Inner Farne, at close range, on 8 Aug. (JHL).

28. Cormorant *Phalacrocorax carbo*

Some 193 pairs attempted to nest. 84 nests counted on Megstone on 27 May, but 11 were washed away 2-3 June. Colonies started on east and north-west of North Wamses where first egg was laid about 3 Apr. The north-west colony contained a maximum of 39 nests (on 18 May); it was raided by the crew of a Seahouses fishing boat in late Apr., or early May, and, as a result, the birds were very wild and there was increased predation by gulls. The area was completely deserted by 28 May, although some of the birds probably moved to the main, east colony.

29. Shag *Phalacrocorax aristotelis*

The following report has been received from G. R. Potts:—

Monthly counts of shags were made throughout the year, the minimum number present being 1,000 on 17 July and the maximum 5,000 on 13 Oct. Most of the birds seen in Oct. were of Scottish origin while 3 adults, ringed as young in Scotland, (see page 195) attempted to nest. It has been apparent for some time that the increase of shags on the Farnes is supported by immigration from Scotland, but this is the first definite proof. On the other hand, at least 2 Farne-ringed shags bred in south-east Scotland.

Nesting began in Jan., and was in full swing by mid-Feb. although laying started a fortnight later than in 1963—i.e. on 17 Apr. Occupied nests reached a maximum at the end of May and the steady increase of approximately 15 per cent. per annum since 1945 has been maintained. Numbers of occupied nests on 30 May were as follows: Inner Farne, 35; Brownsman, 74; Staple Island, 209; Megstone, 2; East Wideopens, 2. Unlike 1963, eggs were laid on Wideopens. The number of young reared per pair was 1.5 compared with 1.2 in 1963, the improved performance being due to the warmer and drier conditions, and to less frequent egg desertion. In 1964, but not in 1963, the brood size of the young pairs was as high as that of the old birds.

The last young fledged at the end of Oct., only a month before the adults began to occupy their nesting sites after the autumn moult. However, an exceptional youngster was still on its nest, and being fed by its parents, when 10 months old. Normally, chicks desert their parents at the age of 70-90 days.

The higher number of young reared in 1964 was heartening in view of the fact that the shag is now known to be contaminated by relatively high levels of insecticide. Eggs from the Farnes analysed by the Nature Conservancy and Shell Ltd., contained similar amounts of insecticide (particularly Dieldrin) to those found in the peregrine, sparrow-hawk and golden eagle—species in which there is strong evidence that breeding success has been disastrously reduced by these chemicals.

It is vital to monitor the accumulation of persistent organo-chlorine insecticides in the North Sea. The shag is concentrating there at a remarkable rate, faster than any other sea-bird, and, consequently, a study of toxic chemicals in it, and in fish, has been started on the Farnes. Egg breaking is regarded as the first sign of a fall in breeding success in at least some of the raptors. Egg breaking occurs in the shag, but so far there is no reason to think that the birds are affected. Since Farne shags are individually colour-marked, and of known age, they are providing an unequalled subject for studies of this problem.

45. Mallard *Anas platyrhynchos*

A duck with 7-8 ducklings seen on Inner Farne on 1 May and a nest (1 egg) found on East Wideopens on 15 May. A pair made a tentative attempt to breed on Brownsman in 1962 (Hickling, 1963), but this is the first definite record since 1939.

55. Scaup *Aythya marila*

A male off Inner Farne 5-6 Apr. Only 2 previous records and last seen in 1953.

56. Tufted Dick *Aythya fuligula*

Again seen near Knoxes Reef in July: 2 males on 5 July and 3 males on 15 July.

60. Goldeneye *Bucephala clangula*

A male off Inner Farne on 7 Nov. Infrequently recorded, only previous occurrences being in 1884 (2), 1953 (1-3 seen occasionally 26 Feb.-22 Apr.) and 1961 (3 on 13 Jan. and 15 May).

67. Eider-Duck *Somateria mollissima*

Nesting started later than in 1963, the first nest (with 1 egg) being found on Inner Farne on 27 Apr. Build-up of numbers on this island was also less rapid—*ca.*25 nests on 9 May had increased to 210 on 15 May and on 1 June (when the first ducklings hatched) there were *ca.*570 nesting ducks. A duck was still sitting on 5 Aug. The duck ringed as a juvenile in Budle Bay in 1955 (Hickling, 1964, page 98) was again seen while another nesting bird had been ringed here as an adult in 1953: it had previously been retrapped in 1961. Some 200 nests were found on Brownsman and birds also attempted to nest on Staple Island and Knoxes Reef.

69. Red-breasted Merganser *Mergus serrator*

A further record: 1 off Inner Farne on 13 July.

73. Sheld-Duck *Tadorna tadorna*

Up to 7 pairs seen on Outer Group in early summer, but no nest found. 2 pairs nested on Inner Farne and 1 pair on Knoxes Reef.

75. Grey Lag-Goose *Anser anser*

Party of 6 seen on Outer Group 16 July-5 Aug.

82. Canada Goose *Branta canadensis*

A further record: 20 in flight over the Fairway on 12 June (WS).

84-86. Swan sp.

On 29 Feb. G. R. Potts saw a flock of 18 flying overhead near Brownsman. He thought they were whooper swans *Cygnus cygnus*, but unfortunately their call note could not be heard above the noise of the engine and no one else noticed them. Swans are very rarely seen at the Farnes and there are only 2 records of whoopers and 1 of a Bewick's swan *Cygnus columbianus*

84. Mute Swan *Cygnus olor*

Inner Farne: 1 on 8 June. Third record for the Farnes.

93. Sparrow-Hawk *Accipiter nisus*

A female or immature male flying over Inner Farne on 26 July (BPS) is the first seen since 1955. Eighth record for the Farnes.

105. Peregrine *Falco peregrinus*

On 7 Apr. a peregrine stooped at, and killed, a puffin (a ringed bird) just outside the Brownsman cottage (GRP).

107. Merlin *Falco columbarius*
A female killed a skylark on South Wamses on 10 Apr. (GRP).

110. Kestrel *Falco tinnunculus*
2 made frequent visits to both groups 22 July-14 Aug. They attacked young terns, killing at least 25 on Inner Farne and 10 (in 3 days) on Brownsman.

117. Quail *Coturnix coturnix*
Inner Farne : 1 on 15 June (JHL). First record for the Farnes.

125. Corncrake *Crex crex*
Brownsman : 1 on 28-29 Apr. (GRP) and another (perhaps the same bird) on 20 May (FYB). Last recorded in 1960.

127. Coot *Fulica atra*
1 off Inner Farne on 27 July. Fourth record for the Farnes.

131. Oystercatcher *Haematopus ostralegus*
Minimum of 27 nesting pairs : 4 on Inner Farne, 4 on East Wideopens, 1 (probably more) on Knoxes Reef, 4 on Staple Island and 14 on Brownsman.

134. Ringed Plover *Charadrius hiaticula*
Some 12 pairs nested.

143. Turnstone *Arenaria interpres*
Numbers on Inner Group reached maximum of over 500 on 9 and 12 Aug.

150. Curlew *Numenius arquata*
Large numbers (*ca.*300 counted on 7 Feb.) frequented Longstone and Knivestone in Jan. and Feb.

155. Bar-tailed Godwit *Limosa lapponica*
Knoxes Reef : 8 on 5 Aug. (JHL, IKM). Last recorded in 1955.

159. Common Sandpiper *Tringa hypoleucos*
Single birds on Inner Farne on 26 Apr. and 9-10 Aug., and on West Wideopens on 13 Aug. Last recorded in 1960.

165. Greenshank *Tringa nebularia*
Inner Farne : 1 on 13 Sept.

184. Ruff *Philomachus pugnax*
Inner Farne : juvenile on 29 July (JHL). Fourth record for the Farnes and last seen in 1959.

195. Pomarine Skua *Stercorarius pomarinus*
Inner Farne : adult flying south on 30 July (BPS). Sixth record for the Farnes.

198. Greater Black-backed Gull *Larus marinus*
Small numbers on, or near, Inner Farne from end of Apr. to early July. On 11 July *ca.*20 adults, and several juveniles, were present and were seen to attack puffins. During July, definite increase in numbers, and count made on 17 July (which did not include Harcar, where there was a large mixed flock of gulls, South Wamses or Knoxes Reef) gave a total of 308+ made up as follows : Megstone, 15 ; Wideopens, 4 ; Scarcars, 6 ; Crumstone, 85 ; Knivestone, 44 ; Longstone, 24 ; North Wamses, 70+ ; Brownsman, 60+. Many of the birds were sub-adults (JHL).

199 and 200. Lesser Black-backed Gull *Larus fuscus* and **Herring-Gull** *Larus argentatus*
Nested as usual. On 10 Aug., a mole *Talpa europaea* L. was found, regurgitated, beside a nest on West Wideopens. Moles do not occur on the Farnes and this animal must have been taken on the mainland.

205. Mediterranean Gull *Larus melanocephalus*
Inner Farne : 1 seen flying north on 13 July (GRP) and south on 14 July (IKM). First record for the Farnes.

208. Black-headed Gull *Larus ridibundus*
No nest found, but in mid-July 3 adults, a juvenile and 3 young seen for several days on flat below Brownsman cottage (FYB).

211. Kittiwake *Rissa tridactyla*
Increasing numbers of shags have meant that kittiwakes have lost some old-established nesting sites. Despite this, they appear to be increasing and also colonising new areas. No count was made on Inner Farne, but there was a slight extension of the colony on the south-east cliffs. Numbers of other nests as follows : West Wideopens, 7 ; East Wideopens, 40 ; Megstone, 2 ; Brownsman, 609 ; Staple Island, 988. This is the first time kittiwakes have nested on Megstone. In addition, abortive nesting attempts were made at 2 new sites on Staple Island—at the north end (where 5 partially constructed nests were seen on 13 Apr.) and on the flat (where, in July, 2 pairs tried to nest on the side of the " gut "). The first egg was again laid on 7 May.
Birds remained near the islands until late in autumn and on 31 Oct. an adult was carrying nesting material and there was much " kittiwaking." A few were seen throughout Nov. and on 19 Dec. several were still frequenting the nesting sites.
As in 1963, the oldest kittiwake retrapped had been ringed as young in 1952 while a 13 year-old bird was found dead on the islands.

212. Black Tern *Chlidonias niger*
An adult in the Kettle on 30 June.

218. Arctic Tern *Sterna macrura*
First birds landed on Brownsman on 27 Apr. ; eggs laid here on 20 May and hatching started on 10 June. Little apparent change of numbers on Inner Farne, but on Brownsman, although no count was made, observations suggested a continuation of the decrease noted in 1962 (Hickling, 1963, page 216). 18 pairs nested on Staple Island flat and 11 young were reared : this compares with 6 pairs and 2 young in 1963. On 22 July 8 pairs were seen on Northern Hares and 1 young and 2 clutches (each with a single egg) were found. No young were reared on Wideopens or Knoxes Reef.

219. Roseate Tern *Sterna dougallii*
Between 39 and 51 pairs nested on Brownsman. 24-27 nests were in the main colony above the lower garden and 14 nests near the old windlass. F. Y. Bodger

thought that 10 pairs were near the upper garden, but only 1 nest was discovered. About 10 nests were found on Inner Farne, but B. P. Springett estimated that *ca.*30 pairs nested : 13 young were ringed here and 47 on Brownsman. On the Farnes, roseate terns are usually later than arctic and common terns in starting to nest and on Brownsman hatching commenced on 29 June (Inner Farne was *ca.*7 days earlier) and a youngster was still being fed by its parent on 27 Aug.
A bird found dead on Brownsman had been ringed here, as an adult, 2 years earlier.

223. Sandwich Tern *Sterna sandvicensis*
First recorded on 10 Apr. As in 1963, the whole colony (again estimated to be about 1,500 pairs) was above the North Cove of Brownsman. Following an unsuccessful nesting attempt on 12 May, the first group settled, and laid eggs, 4 days later. Hatching started on 8 June, but, as usual, birds continued to arrive and some of these later eggs did not begin to hatch until 27 July. A tiny chick and some unhatched eggs were seen on 5 Aug.
With the object of carrying out a detailed study of this species, N. P. E. Langham, who is working under J. C. Coulson, colour-ringed 400 young. This had unexpectedly rapid results for several yellow-ringed birds were reported at the end of Aug., being seen at places as far apart as Aberdeen, Golspie (Sutherland), Dawlish Warren (Devon) and Cley (Norfolk).
Ringing recoveries again provided evidence of the way in which Sandwich terns change their colonies when, for the first time, Farne-bred birds were found nesting in Ireland—at Carlingford Lough (see page 194).

224. Razorbill *Alca torda*
7 pairs summered on Outer Group and a further 2 pairs frequented East Wideopens, but only 8 laid eggs—all on Inner Farne. 3 young were reared.

227. Guillemot *Uria aalge*
Several seen on 21 Jan. First eggs laid (on Pinnacles) on 18 Apr. No complete count made of nesting birds, but 11 eggs were on Inner Farne on 1 June (BPS) and 51 young on Megstone on 17 July (GRP, JHL). Guillemots returned to Pinnacles on 28 Oct., making further visits on 7 and 8 Nov. and 23 Dec. A nesting bird had been ringed as an adult in 1957.

230. Puffin *Fratercula arctica*
Outer Group : first eggs laid 22 Apr. The oldest Farne-ringed puffin yet recovered was found dead near Aberdeen : it had been marked as an adult 10 years earlier (see page 195). 3 nesting birds had been ringed as adults in 1955.

232. Stock-Dove *Columba oenas*
Inner Farne : 1 on 7 and 9 Apr. Last recorded in 1955.

235. Turtle Dove *Streptopelia turtur*
A further record—1 on Staple Island on 25 May.

——. Collared Dove *Streptopelia decaocto*
Outer Group : 1 on 1 Oct. (GRP). Second record for the Farnes.

237. Cuckoo *Cuculus canorus*
Inner Farne : a female on 9 May. A very infrequent visitor; last seen in 1953.

280. Carrion-Crow and **Hooded Crow** *Corvus corone*
Up to 7 carrion-crows *C. corone corone* and 3 hooded crows *C. corone cornix* present on Outer Group 7 Apr.-2 May and carrion-crows also occurred on Inner Farne during this period. 1-2 carrion-crows seen from time to time on both groups in May, July and Aug. : they destroyed eggs and killed young terns.

282. Rook *Corvus frugilegus*
Inner Farne : 8 on 17 Oct. Flock later flew off towards Bamburgh. Rooks were last recorded on the Farnes in 1959

301. Mistle-Thrush *Turdus viscivorus*
2 further records, both for Inner Farne—single birds on 7 Apr. and 17 Oct.

308. Blackbird *Turdus merula*
3 pairs resident on Outer Group in Apr.—1 seen (on Brownsman) carrying nesting material and complete nest found inside beacon lighthouse on Staple Island. No eggs known to have been laid. On Inner Farne, nest with 4 eggs (cold) seen on 10 May and on 16 May another nest, also with 4 eggs, found near the 'Fishe-House'. A juvenile, with an adult, frequented the nesting area 18 July-14 Aug.
This is, so far as is known, only the second attempt at nesting since 1914 [see (Hickling, 1963, page 218)].

321. Black Redstart *Phoenicurus ochruros*
Brownsman : 1 on 18-19 Apr. ; a pair on 22 Apr. Staple Island : a female on 17 Apr. Inner Farne : a male on 1 May.

327. Grasshopper-Warbler *Locustella naevia*
Brownsman : 1 on 19 Apr. Staple Island : 1 (which may have been the same bird) on 20-21 Apr. (GRP). Fourth (and possible fifth) record for the Farnes—last recorded in 1958.

337. Sedge-Warbler *Acrocephalus schoenobaenus*
Inner Farne : 1 on 12 May ; 3 on 11 Aug. Brownsman : 1 on 17-18 Apr.

343. Blackcap *Sylvia atricapilla*
1-3 seen on Brownsman and Staple Island 17-22 Apr.

344. Barred Warbler *Sylvia nisoria*
Inner Farne : 1 on 2 Oct. (PRE). Last recorded in 1960.

346. Garden-Warbler *Sylvia borin*
Single birds on Inner Farne on 14 July and 11 Aug. and on Staple Island on 5 Aug.

348. Lesser Whitethroat *Sylvia curruca*
Brownsman : 1 on 19 Apr. Earliest date recorded on the Farnes.

380. Pied Wagtail and **White Wagtail** *Motacilla alba*
Single pied wagtails on Inner Farne on 15 May and 11 June and a white wagtail on Brownsman on 19 Apr. No attempt at nesting.

389. Starling *Sturnus vulgaris*
A few pairs nested on Inner Farne and Brownsman. On both islands starlings were seen breaking open and eating terns' eggs and on 1 June B. P. Springett estimated

that 5 per cent. of available eggs were being taken. Considerable numbers were present during the second half of Oct., with over 100 on Inner Farne on 26 Oct.

392. Greenfinch *Chloris chloris*
Inner Farne : 1 on 18 Nov. Last recorded in 1960.

409. Yellow Hammer *Emberiza citrinella*
Staple Island : 1 on 22 Apr. Fifth recorded occurrence on the Farnes.

OTHER SPECIES

The following species, although not dealt with in detail, were recorded : Manx shearwater, gannet, heron, teal, wigeon, common scoter, lapwing, golden plover, common snipe, woodcock, whimbrel, redshank, knot, purple sandpiper, dunlin, arctic skua, great skua, common gull, common tern (breeding), black guillemot, wood-pigeon, swift, skylark, swallow, house-martin, sand-martin, jackdaw, wren, fieldfare, song-thrush, redwing, ring-ouzel, wheatear, whinchat, redstart, robin, whitethroat, willow-warbler, chiffchaff, goldcrest, spotted flycatcher, pied flycatcher, dunnock, meadow-pipit, tree-pipit, rock-pipit (breeding), linnet, chaffinch, brambling, snow-bunting.

RINGING

During the year 6,890 young and 618 adults were ringed : this is 942 more than in 1963. The numbers of individual species were as follows, the 1963 figures being given, for comparison, in brackets :— fulmar 1 (1) ; cormorant 218 (159) ; shag 382 (374) ; eider-duck 70 (95) ; ringed plover 5 (6) ; lesser black-backed gull 630 (596) ; herring-gull 88 (71) ; kittiwake 1,109 (631) ; common tern 348 (150) ; arctic tern 2,406 (2,115) ; roseate tern 60 (63) ; Sandwich tern 1,550 (1,324) ; guillemot 101 (43) ; puffin 528 (417) ; swallow 1 (–) ; robin 2 (3) ; blackcap 1 (–) ; garden-warbler 1 (1) ; rock-pipit 7 (6). In addition, 47 adults (52 in 1963) were re-ringed.

There was a record number—820—of recoveries of birds marked on the Farnes. This is an increase of 351 on the figure for 1963 and is largely due to the fact that 498 shags (most of them alive) were recovered on the islands. Reference has already been made to G. R. Potts' work on shags : practically all accessible nesting birds are now colour-ringed and this year Mr. Potts has furnished full details of these birds.

Cormorant recoveries include another bird of the year killed in France, this time in September, only about ten weeks after ringing. The eider-duck found dead at St. Andrews (65 miles north-west) equals the previous most distant recovery of a Farne-ringed eider at Granton, near Edinburgh (65 miles west-north-west) in 1960. Seven kittiwakes have been recovered in, or near, Greenland (including one in 1962 and four in 1963) and three in Newfoundland. Another interesting kittiwake

recovery is a bird, ringed as adult in 1962 and found nesting in the colony at Smith's Dock, North Shields, in June. Arctic tern recoveries include a belated report of a four-year old bird found dead (inland) in Germany in June 1962 and the eighth Farne-ringed arctic to be found in South Africa. The arctic tern killed in Liberia six weeks after marking, at a time when many of its contemporaries were still in the British Isles, shows that birds of the year may make unexpectedly rapid journeys to the south.

RECOVERIES OF RINGED BIRDS

(a) Ringed on the Farne Islands

Date ringed	*Place recovered*	*Date recovered*
CORMORANT		
	(Total : 21 ; Farne Is. : 4 ; local : 2)	
1.9.54	Lake Derwentwater, Cumberland	9.2.64
31.7.61	Loddon, nr. Norwich, Norfolk (shot)	*ca.*1.1.64
29.7.62	Montrose Basin, Angus (shot)	17.1.64
28.5.63	Hartlepool, Co. Durham	27.5.64
14.6.63	R. Deben, nr. Waldringfield, Suffolk (ring only found)	18.5.64
16.6.63	Nr. Montrose (shot)	6.4.64
21.6.63	Aberdeen	22.3.64
,,	Southwick, Sunderland, Co. Durham	10.12.64
15.7.63	Portobello, Edinburgh, Midlothian	9.7.64
12.8.63	R. Earn, nr. Abernethy, Perthshire (found wounded and destroyed)	4.1.64
11.6.64	Cresswell, Northd.	2.9.64
13.7.64	N. Wootton, nr. King's Lynn, Norfolk	19.12.64
16.7.64	Ste. Marie, Ile de Ré, Charente Maritime, France (killed)	30.9.64
17.7.64	Berwick upon Tweed, Northd. (shot)	8.11.64
25.7.64	Greatham Creek, Teesmouth, Co. Durham (shot)	5.12.64
SHAG		
	(Total : 530 ; Farne Is. : 498 ; local : 10)	
3.6.60	*Druridge Bay, Northd.	31.3.64
29.6.61	Kings Lynn	17/18.3.62
,,	Elie, Fife	(7.5.64)
14.5.62	*Nr. Fast Castle, Berwickshire (breeding)	9.8.64
28.5.62	*Between Dirleton and N. Berwick, E. Lothian	5.6.64
16.6.62	*Eyebroughty, Firth of Forth	20.8.64
23.6.62	Dundonnie, Boddam, Aberdeen	*ca.*16.3.64
,,	Nr. Pittenweem, Fife	31.3.64
6.6.63	Eyemouth, Berwickshire	29.3.64
20.6.63	Bridlington, Yorks.	(15.1.64)

Date ringed	*Place recovered*	*Date recovered*
SHAG—*continued*		
30.6.63	Burnmouth, Berwickshire	30.3.64
,,	Nr. Pittenweem	31.3.64
,,	Brown Bank, N. Sea, 45 m. N.W. of Ijmuiden, Holland (caught on fishing boat — released)	9.4.64
,,	Runswick Bay, nr. Whitby, Yorks.	*ca.*28.4.64
,,	Inchkeith, Firth of Forth	7.6.64
30.7.63	Aberlady Bay, E. Lothian	29.2.64
20.6.64	S. Shields, Co. Durham (leg only found)	21.8.64
30.6.64	Nr. Pittenweem	15.11.64
25.7.64	*St. Abbs Head, Berwickshire (seen)	29.9.64
5.8.64	Cresswell	11.10.64
27.8.64	Arbroath, Angus	(8.12.64)
1964	Nr. Flamborough, Yorks. (seen)	27.9.64
EIDER-DUCK		
	(Total : 59 ; Farne Is. : 51 ; local : 4)	
3.6.60	*St. Andrews, Fife	(19.3.64)
3.6.62	Cambois, Blyth, Northd. (wing only found)	June 1963
12.5.63	*Boulmer, Northd.	(25.1.64)
8.6.63	*Dirleton	18.10.64
LESSER BLACK-BACKED GULL		
	(Total : 28 ; Farne Is. : 1 ; local : 2)	
2.9.59	Pleurtuit, Ille-et-Vilaine, France (probably recovered long before date of report)	(27.11.64)
14.8.61	Shareshill, nr. Cannock, Staffs.	8.2.64
,,	Cedeira, Coruña, Spain (caught)	16.10.64
22.8.61	Frodsham, Cheshire	(13.1.64)
,,	Nouakchott, Mauritania	21.3.64
13.8.62	Nr. Chester-le-Street, Co. Durham	14.6.64
,,	Seaton Sluice, Northd.	(14.9.64)
8.8.63	Nr. Bouznika, Morocco (killed)	20.12.63
9.8.63	Sidi Ifni, Spanish W. Africa (caught and released)	29.1.64
,,	Mohammedia (ex Fédala), Morocco (found with broken leg)	5.3.64
,,	Las Cabezas de San Juan, Sevilla, Spain (/?/)	10.7.64
12.8.63	Safi, Morocco	(20.3.64)
14.8.63	Kingsley, Frodsham (killed against wires)	8.5.64
,,	Axmouth, Seaton, Devon	(14.6.64)
,,	Staverton, Cheltenham, Glos.	1.7.64
,,	Shoreham-by-Sea, Sussex	22.8.64
,,	La Guardia, Pontevedra, Spain (caught)	22.11.64
5.8.64	Portimão, Algarve, Portugal	(21.10.64)
11.8.64	Sezimbra, Estremadura, Portugal (caught on boat)	(2.10.64)
,,	El Ciego, nr. Leza, Alva, Spain (caught — **inland recovery**)	12.10.64

Date ringed	*Place recovered*	*Date recovered*
LESSER BLACK-BACKED GULL—*continued*		
11.8.64	Leca da Palmeira, Douro Litoral, Portugal (found on beach)	(14.10.64)
,,	Nr. Talavera La Real, Badajoz, Spain (/?/—**inland recovery**)	27.10.64
,,	La Linea de la Concepcion, Cadiz, Spain (/?/)	(6.11.64)
27.8.64	Bermeo, Vizcaya, Spain (killed)	25.10.64
,,	Off Essaouira, Morocco (caught on boat)	13.11.64
HERRING-GULL		
	(Total : 3 ; Farne Is. : – ; local : –)	
6.8.62	Cambois (found injured)	*ca.*1.4.64
18.7.63	Jarrow Slake, Co. Durham	7.3.64
27.8.64	Bristol, Glos. (found injured)	13.11.64
KITTIWAKE		
	(Total : 89 ; Farne Is. : 61 ; local : 2)	
1.6.56	*Redcar, Yorks.	(28.5.64)
,,	*Radipole Lake, Weymouth, Dorset	17.2.64
10.7.58	*Seaton Sluice	26.5.64
11.7.58	*Nr. Blyth	22.2.64
,,	*Mains of Usan, Montrose	14.3.64
22.7.59	Amble, Northd.	(8.6.64)
14.7.60	Heligoland, Germany	early 1964
,,	E. Rudham, nr. Fakenham, Norfolk (killed against wires — **inland recovery**)	(23.6.64)
29.6.61	Godthåb, S.W. Greenland (/?/)	1.10.63
1.7.61	Bridlington, Yorks.	6.4.64
3.7.61	Godthåb (/?/)	1.10.63
7.7.61	Walney Island, Lancs.	5.2.64
8.7.61	Nanortalik, Julianehåb, Greenland (shot)	10.8.62
16.6.62	*N. Shields, Northd. (breeding)	19.6.64
7.7.62	Niaqornat, Umanak, Greenland (shot)	mid 1963
,,	Holsteinborg, W. Greenland (shot)	19.7.63
,,	White Bay, Newfoundland (killed)	(23.10.64)
5.7.63	Hornsea, Yorks.	(30.6.64)
11.7.63	Southport, Trinity Bay, Newfoundland (shot)	15.1.64
,,	Frederiksdal, Julianehåb (presumed shot)	25.8.64
13.7.63	Ballyhalbert, Co. Down	26.7.64
20.7.63	Terheijde, nr. Monster, Zuid Holland, Netherlands	25.6.64
29.6.64	Green Bay, Newfoundland (killed)	autumn 1964
,,	At sea, S.W. of Les Sables d'Olonne, Vendée, France (caught on boat)	14.11.64
4.7.64	Lille Storø, off Frederikshåb, Greenland	3.10.64
16.7.64	Tynemouth, Northd.	15.8.64

Date ringed	*Place recovered*	*Date recovered*
COMMON TERN		
	(Total : 1 ; Farne Is. : – ; local : –)	
21.7.64	Blyth	(8.10.64)
ARCTIC TERN		
	(Total : 21 ; Farne Is. : 9 ; local : 2)	
18.7.58	20 km. E. of Minden, Nordrhein-Westfalen, Germany (**inland recovery**)	26.6.62
9.7.60	Vaulen, nr. Stavanger, Rogaland, Norway (found injured ; died later)	June 1964
10.7.62	Kilchattan Bay, Isle of Bute	*ca.*25.6.64
23.7.62	(1) Bantry Bay, Cape Town, S. Africa (found exhausted and blind in one eye — released later)	22.10.64
	(2) Three Anchor Bay, nr. Bantry Bay	27.10.64
4.7.64	S. Shields	13.8.64
,,	Monrovia, Liberia (killed by car)	15.8.64
,,	Guéthary, Basses-Pyrénées, France	26.8.64
21.7.64	Skegness, Lincs.	20.8.64
,,	Seaton Carew, Co. Durham	26.8.64
22.7.64	Newbiggin-by-the-Sea, Northd.	25.8.64
SANDWICH TERN		
	(Total : 26 ; Farne Is. : 1 ; local : –)	
27.6.59	Green Island, Carlingford Lough, Co. Down (controlled)	13.6.64
4.7.59	Green Island (controlled)	13.6.64
25.6.60	Green Island (controlled)	13.6.64
,,	Fidra, Firth of Forth	13.6.64
4.7.60	La Palissade, nr. Port St. Louis, Bouches du Rhône, France (trapped in fishing net)	21.6.64
22.6.61	Croix-de-Vie, Vendée, France (found exhausted— released)	*ca.*13.9.64
1.7.61	Hendorf, Brasov, Rumania (shot on fish ponds — **inland recovery**)	21.6.64
23.6.62	Costa Nova, nr. Aveiro, Beira Litoral, Portugal (/?/)	(22.8.64)
,,	Benguela, Angola (found unable to fly — destroyed)	26.12.64
25.6.62	Bonneville-sur-Touques, Calvados, France	11.8.64
22.6.63	Nr. Beyin, Ghana (caught alive, but exhausted — died later)	2.4.64
10.7.63	Nr. Hagunia, Spanish W. Africa (killed — **inland recovery**)	28.3.64
10.7.63	Grand-Lahou, Ivory Coast (caught)	17.6.64
13.7.63	Port Bouet, Ivory Coast (found unable to fly — died later)	22.3.64
23.6.64	Donna Nook, nr. Cleethorpes, Lincs.	13.8.64

Date ringed	*Place recovered*	*Date recovered*
SANDWICH TERN—*continued*		
29.6.64	Findhorn, Moray	5.8.64
,,	Blyth	9.8.64
1.7.64	N. Sea (55° 11′ N, 0° 22′ E) (caught on trawler — released)	3.8.64
,,	Binic, Côtes du Nord, France	13.9.64
,,	Luanda, Angola (found dying, apparently shot)	29.10.64
4.7.64	Aberlady Bay	22.8.64
,,	Esposende, Minho, Portugal (killed)	1.9.64
,,	Nr. Dakar, Sénégal	(2.11.64)
13.7.64	N. Berwick	20.8.64
5.8.64	Nr. Pta. das Salinas, Angola (/?/)	(10.12.64)
GUILLEMOT		
	(Total : 16 ; Farne Is. : 12 ; local : –)	
24.6.61	Seaham, Co. Durham	3.9.64
23.6.62	Blyth	15.1.64
29.6.64	Sunderland (found oiled)	6.9.64
17.7.64	Oslofjord, 10 m. S. of the Faerder Fyr, Norway (shot)	3.10.64
PUFFIN		
	(Total : 26 ; Farne Is. : 22 ; local : –)	
19.4.54	*Blackdog, nr. Aberdeen	(14.9.64)
1.5.59	*Nr. Bridlington	1.3.64
5.8.64	Blackhall, nr. Hartlepool	13.8.64
,,	Roker, nr. Sunderland	(13.9.64)

(b) Recovered on the Farne Islands, but ringed elsewhere

Date and place ringed		*Date and method of recovery*
SHAG		
1.7.62	Bass Rock, E. Lothian	23.4.64 (controlled)
14.7.62	Isle of May, Fife	early May 1964
6.7.63	Isle of May — 2 birds	early May 1964 ; 10.7.64 (controlled)
7.7.63	Isle of May — 2 birds	10.7.64 ; 17.9.64 (controlled)
EIDER-DUCK		
10.7.55(juv.)	Budle Bay, Northd.	23.5.64 (controlled) (previously recorded 26.4.63)

NOTES : 1. * Indicates bird ringed as adult.
2. (juv.) Indicates bird ringed as juvenile.
3. Unless otherwise stated all birds have been found either dying or dead, or are presumed dead.
4. Where the date of recovery is unknown, the date of the reporting letter is given in brackets.
5. " Local " recoveries include all birds (other than than those on the Farnes) recovered within 15 miles of the islands.
6. " Controlled " indicates that a bird ringed by one ringer has been trapped (and released) by another ringer.
7. /?/ Indicates that the manner of recovery is unknown.

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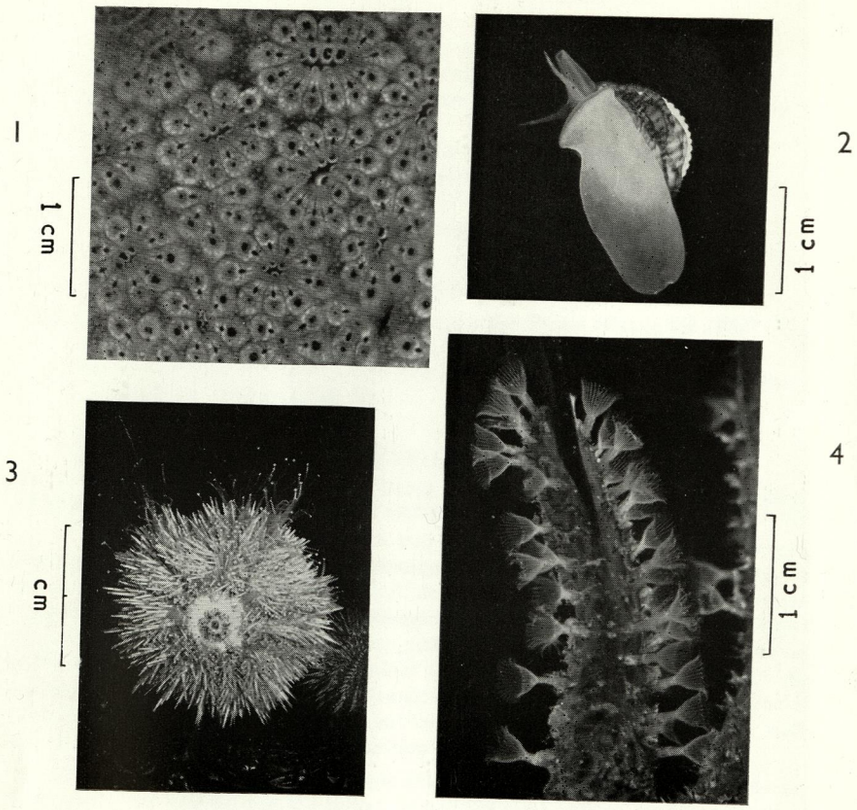
REVIEW

ENJOYING ORNITHOLOGY By David Lack. Illustrated by Robert Gillmor. Methuen, London, 1965. 264 pages; 3 plates, 21 figures and 51 line-drawings. 30s.

With the exception of the preface and acknowledgements, this book (by one of the most distinguished of British professional ornithologists) contains nothing that has not previously been either published, or delivered verbally. Sources of written contributions range from purely ornithological journals such as *Ibis* (3), *British Birds* (3) and *Bird Notes* (5) through the more catholic *New Scientist* (1) to three American publications, all comparatively unfamiliar to the majority of British readers. Also included are three broadcasts, the transcripts of addresses given to two learned societies, two book reviews and, last, but by no means least in entertainment value, an unorthodox ornithological examination paper.

All this adds up to a very enjoyable miscellany, part of its charm being the fact that the author admits that the talks and articles were written for enjoyment, and for the amateur naturalist, rather than for the ornithological specialist.

The articles vary in content, and in depth, and despite the fact that many of them are available in reference libraries, their collection in one volume adds greatly to their interest. Perhaps the most valuable part of the book is the section on migration, but there is a fascinating interlude on swifts (the genuine article) followed, later, by a lighthearted tribute to "Hardy's swift", an undiscovered (and, indeed, purely imaginary) species. One or two of the shorter contributions - as, for example, the obituary of B. W. Tucker and the review "Bird Artists" - hardly fit in with the general pattern, but these are minor criticisms and *Enjoying Ornithology* will certainly give pleasure to the reader and, at the same time, suggest how he can himself obtain enjoyment from the study of birds.



Some common Inner Farne marine animals. All were photographed in water by electronic flash.

Fig. 1. Colonial sea-squirt *Botryllus schlosseri*, showing the grouping of individuals around common exhalent apertures.

Fig. 2. Active cowry *Trivia arctica*, an attractive creature which is able, however, to secrete strongly acid fluids to discourage an attacker.

Fig. 3. Edible sea urchin *Echinus esculentus*.

Fig. 4. Colonial polyzoan *Flustrella hispida*, showing the feeding nets of many of the individual polyps extended.

CONTRIBUTIONS TO THE BIOLOGY OF THE INNER FARNE

by

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SUMMARY

The shores of the Inner Farne are described. Detailed descriptions of two shores of similar, but not identical, slope, are given, and the levels occupied by all identifiable animals and plants are accurately delineated, relative to a specified benchmark. Shifts in zoning for the inhabitants of these shores are tabulated, showing that the effects of wave-exposure are most marked at the highest and the lowest levels of the shore. The abundance of the animals and plants was measured using objective criteria.

A striking feature of the Inner Farne is the Churn. The effects of this waterspout on the salinity, and hence the fauna and flora of adjacent pools, were investigated and the physical and biological features of other island pools are described for comparative purposes.

Comparison of the Inner Farne with mainland shores shows that many common Northumberland littoral animals are absent or rare on the island.

Accurate measurements of elevation were made, reliant not upon tidal predictions, but upon levelling relative to local sea-levels. A benchmark was nominated and is defined. Tidal curves were constructed and are illustrated.

Fauna and flora lists are given. These add more than sixty species of algae and lichens to previous compilations, and over one hundred species of animals.

INTRODUCTION

(T. E. T. AND S. T. S.)

The Inner Farne, innermost of a small group of islands off the north coast of Northumberland, is well known to naturalists through the publications of Tate (1857), Watt (1951) and Hickling (1962). The geology of the island is described by Sowerby (1958), who also gives

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some data concerning the climate of the area. To the biologist, the most significant feature of the quartz dolerite of which the Inner Farne is composed is the marked fissuring and jointing which has attended its weathering. Such weathering leads to abundant niches in both the literal and the ecological senses. In the more exposed parts of the island it is necessary to flake away the weathered rock to a depth of two inches or more before the unaffected bedrock is revealed. On the more sheltered shores, which, on the Inner Farne, are also the shores of most gentle slope, many of the cracks are deep and contain salt water if situated between tide marks. Above the shore the rocks have abundant lichen cover, with a clearly visible gradation of dominance from one species or group of species to another with increase in elevation. (It was interesting to note that the vertical fissures above high water are often very deep and that the lichens on the vertical sides of these fissures are usually different from those on the horizontal surfaces.) Another important feature is that the boulder clay with its overlying soil descends lower on the sheltered shores of the island, i.e., the lichen zone is much broader on the exposed sides of the island.

A field party of three biologists lived and worked on the Inner Farne from 23 to 30 March 1963 ; several days were then lost through bad weather and four days at the Dove Marine Laboratory had to suffice for the preliminary task of sorting and cataloguing the plants and animals, which had been collected, indexed and preserved in the field. The bulk of the work was carried out on return to the laboratories at Cardiff.

A detailed list of the proposed aims of our survey had been submitted to and approved by the Farne Islands Study Centre Management Committee in December 1962, and it was decided that our aims should be four :—

1. The development of fauna and flora lists for the island. The avian fauna is already well known and considerable work (as yet unpublished) has been carried out on the terrestrial flora. Accordingly, we decided to concentrate effort upon the littoral, where little is on record, with the exception of the works of Tate (1857), who recorded a number of crustaceans and molluscs from the Farne group, and Moss (1959), who carried out a careful and most useful study of the marine algae of the Inner Farne.
2. The study of belt transects over one or more of the Inner Farne shores, so that the vertical distribution of the animals and plants might be studied quantitatively ; Moss's (1959) surveys dealt with the commoner plants.

3. The investigation of some of the pools which an advance visit in August 1962 had suggested might be fruitful. Pools exist at a variety of elevations in scattered areas of the island where the ecological effects of wind-borne spray, and of varying cliff-topography, may be studied.
4. The preservation for expert examination of collections of lichens, algae, and copepod crustaceans. The lichen samples were transported dry ; the algae were killed and fixed with 10 per cent. S.W. formalin. The copepods were collected with a hand-net (130 nylon meshes to the inch) or by the use of a bulb pipette and a hand electric torch. They were preserved in 10 per cent. S.W. formalin and dissected and mounted in polyvinyl lactophenol with lignin pink staining.

A handicap in many of these tasks was the absence of any Ordnance Survey benchmarks on the Inner Farne. An unpublished map executed by Fryer and Fripp in 1955 used O.D. (Newlyn) as the datum for heights ; this they established by reciprocal angles from a benchmark near Monk's House, on the adjoining mainland. Equipment to repeat this was not available to us and so we had to calculate a local "O.D. Farne" from observations on the tidal rise and fall *in situ*. Except in the case of text-fig. 1, which embodies Fryer and Fripp's data, heights given in these pages may be taken to mean elevation in feet in relation to O.D. Farne. Wherever we have been able to compare our figures with Fryer and Fripp's, we have noted an agreeably close correspondence. Further details of these and other methods will be given in context.

It is a pleasure to record our indebtedness to the Department of Scientific and Industrial Research and to University College, Cardiff, for financial support, and to the Natural History Society of Northumberland, Durham, and Newcastle upon Tyne, who suggested our visit. Mrs. Grace Hickling gave much appreciated help in the planning of the work and in many other ways. Dr. H. O. Bull kindly allowed the field party to work at the Dove Marine Laboratory in April. For help with the identification of some of the more difficult animals we are grateful to Dr. G. Fryer (ostracods), Dr. D. Eggleston (many polyzoa), and Dr. S. Prudhoe (*Oerstedia*). Mr. C. F. Trigg rendered invaluable assistance in advising us on surveying methods, and Cmdr. D. H. Fryer kindly supplied us with information about his 1955 map of the Inner Farne. Dr. J. R. Lewis contributed advice which helped in the planning of the surveys. A grant towards the cost of publishing the illustrations has been made by the Colston Research Fund of the University of Bristol.

THE SEA SHORE

(T. E. T., M. J. AND S. T. S.)

DESCRIPTION OF THE COLLECTING AREAS (TEXT-FIG. 1)

The east shores of the Inner Farne, bordering the Kettle, Farne Haven and Wideopen Gut, are gently sloping, whereas the south-west and south-east shores form vertical cliffs of considerable height. Intergradations of slope occur on the other shores of the island. There is an approximate correlation between shore-steepness on the island and the degree of exposure to wave-force. The east shores are sheltered by the proximity of Knoxes Reef, the Bridges, and the Wideopens, although only the last of these provides appreciable protection at all phases of every tide. The Bridges is submerged at approximately mean tide level on each flood tide, after which, in some seas, the severity of wave action against the Inner Farne may be abruptly increased. Similarly, on the ebb, the pounding received by the animals and plants living on the lower shore may cause less damage than is suffered by organisms on the upper shore.

Over the remaining shores of the island the effects of wave action may be expected to be exerted with rather uniform severity against all levels of the intertidal zone, if the abrasive or other effects of tidal streams are ruled out. These tidal streams are spectacular, and even on an otherwise calm day may give rise to considerable turbulence and dangerously disturbed water off the south-west and west cliffs (plate 10, fig. 3).

In the descriptions that follow, no attempt has been made to list all the organisms found; such lists are given in later sections of this paper.

Area A. This area includes the sheltered sandy bay (St. Cuthbert's Cove) to the south of the landing quays, together with, further south, extensive rocky areas densely cloaked with algae. Towards low water mark this gives way to loose boulders lying on gravel and mud, but still with a thick algal cover, including *Laminaria saccharina*, *L. digitata* and *Alaria esculenta*. The boulders are, in the main, quartz dolerite, but scattered limestone boulders (some with conspicuous fossil corals) occur here and there. Large rock pools are few. The shore slopes gently. The area near L.W.S.T. was rich in barnacles (notably *Balanus balanus*), in the variety and abundance of nudibranchs, in scaleworms, in porcellain and other crabs, in encrusting polyzoa and in echinoderms.

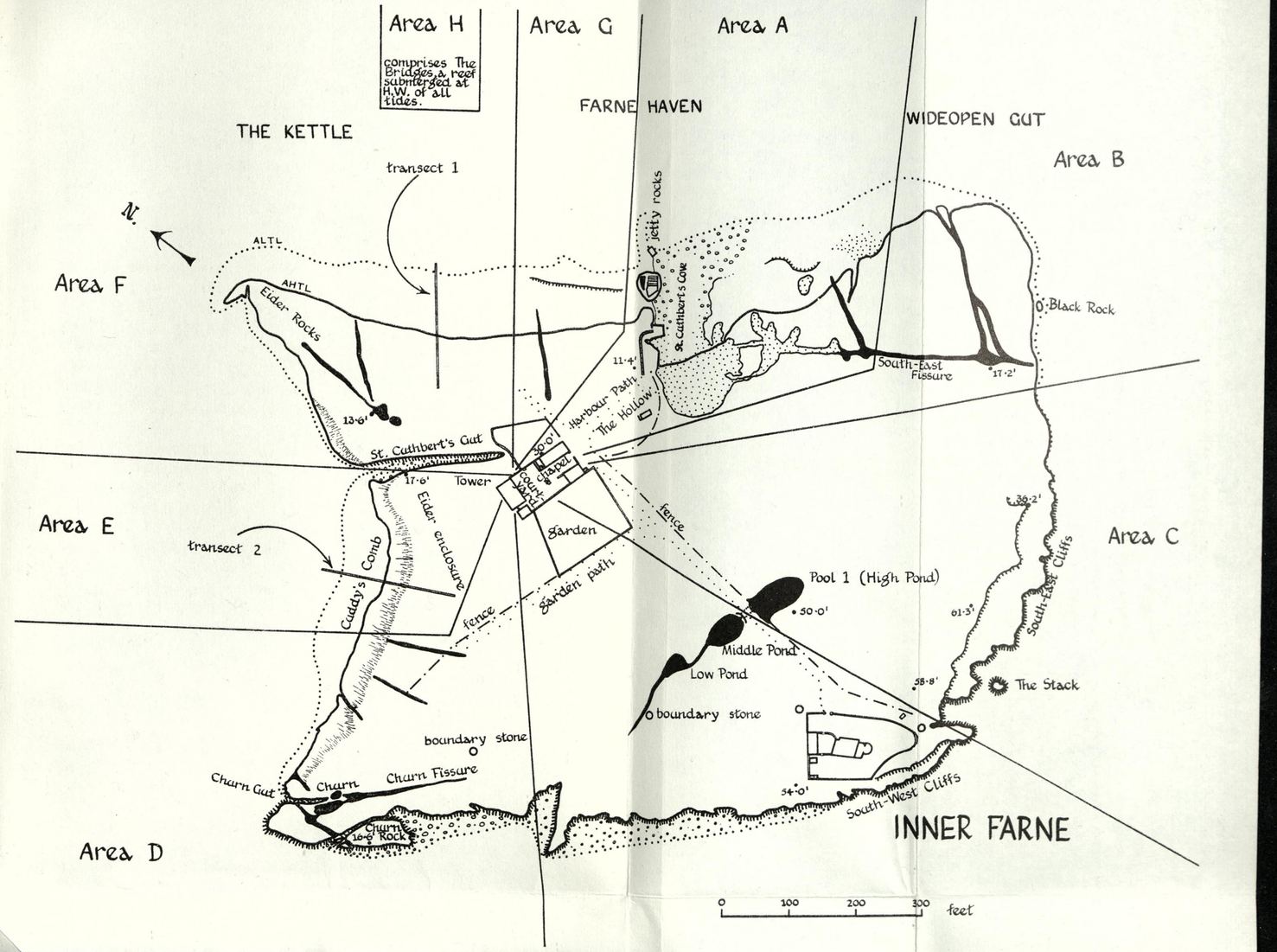


Fig. 1. Map of the Inner Farne, modified after that of Fryer and Fripp dated 1955, showing the collecting areas and the positions of the two belt transects. Larger fissures and some pools are shown in black. Some spot heights are given, relative to O.D. (Newlyn); these are taken from Fryer and Fripp's survey.

Area B. This is the eastern flank of Wideopen Gut and is exposed to considerable action of waves and tidal currents, somewhat ameliorated by the moderate shore-slope and by the proximity of the West Wideopens. Tidal rock pools are common ; some are several feet in depth. The substratum is mainly much-weathered bedrock with very few boulders. The rock is bare except in occasional sheltered crevices and pools, or around L.W.S.T., where *Laminaria digitata* and *Alaria esculenta* were abundant. Buttons of *Himanthalia elongata* were common over the lower shore. Among the animals, the presence of *Patella aspera* and of abundant mussels, *Mytilus edulis*, may be specially noted.

Area C. The precipitous south-east cliffs make up this area. Wave action here is severe and results in a notable scarcity of algae above L.W.S.T., only diatoms and *Porphyra umbilicalis* being at all common, and these are restricted to the occasional horizontal rock surfaces ; the vertical rock faces are bare of larger plants. There are a very few crevices and small pools; in these *Mytilus edulis, Halichondria panicea, Nucella lapillus* and *Actinia equina* were common, together with the rock pool algae *Lithothamnion* sp., *Corallina officinalis* and *Cladophora* sp. Numerous huge bare boulders lie at the foot of the near-vertical cliffs.

The most common animal on the cliff faces was the barnacle *Balanus balanoides*, which, especially towards its upper limit, was of the elongated form typically associated with crowded conditions. The upper shore gastropod *Littorina neritoides*, characteristic of wave-battered shores and cliffs, was abundant in empty barnacle-cases and in crevices, accompanied by *L. saxatilis*. The limpets *Patella vulgata* and *P. aspera* were both common, the former extending vertically up the cliffs even higher than the upper limit of the barnacles.

At, and below L.W.S.T., the larger algae were abundant, including *Alaria esculenta, Laminaria digitata* and *Rhodymenia palmata* (epiphytic on the stipes of *Alaria*).

Finally, the abundance of kittiwake nesting places must be mentioned ; faecal material dropping down the cliffs probably has some effect on the marine organisms living below, but little is known of this.

Area D. This is an area of steep cliffs very similar to those of area C, but of lesser height. Above the cliffs there is, however, little resemblance, for the rocky plateau of area D is for considerable areas bare of boulder clay and is composed of quartz dolerite weathered in places to

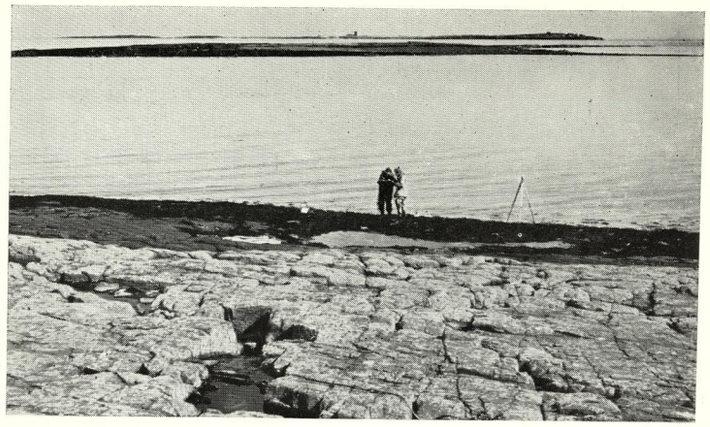
expose layers up to one quarter inch in thickness of haematite. This rocky plateau is rich in pools of varying size and salinity : drier areas were richly carpeted with lichens. Drainage from the central area of the island onto the rocks of area D could be observed here and there. Investigations of the pools, and of the activities of the Churn, will be dealt with later. Wave and current action on the cliffs are severe, with the results already noted under area C.

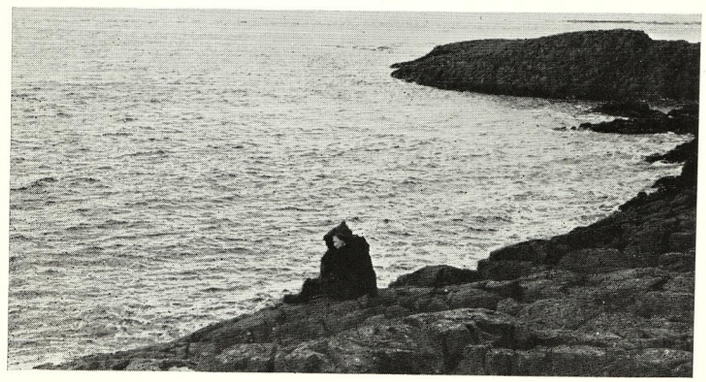
Area E. Facing north-west, this is an area of moderately steeply sloping bedrock, bounded on the north by St. Cuthbert's Gut, which separates it from area F. It comprises the main part of the strip of shore known as Cuddy's Comb. A detailed description of part of this area will be given in the context of belt transect 2. Area E is subject to considerable pounding from wind, waves and tidal currents. Even on a relatively calm day, waves break against the shore with considerable force on this side of the island. Weathering of the rock was pronounced, many of the crevices being deep and orientated down-shore. The flora of such crevices often differed markedly from that of the surrounding rock faces ; the lichen *Ramalina siliquosa* was, for instance, restricted on the upper shore to the vertical sides of such crevices. Lower down the shore, algal cover was thick in places, notable inhabitants being *Porphyra umbilicalis, Himanthalia elongata, Alaria esculenta* and *Fucus vesiculosus evesiculosus,* while among the animals were *Littorina neritoides, Patella aspera* and abundant *Mytilus edulis.*

Area F. The north-west shore of this area is similar to area E in topography and flora. The north-east shore of area F has, however, a very different character, being sheltered from wave action to a high degree by the neighbouring islands Solan Rock and Knoxes Reef. The shore has a relatively gentle slope and large shallow rock pools are common, often lying in crevices orientated down-shore. The algal cover in the inter-tidal zone was very dense and included *Laminaria hyperborea, L. digitata, Chondrus crispus, Rhodymenia palmata, Fucus serratus, F. vesiculosus, F. spiralis, Ascophyllum nodosum* (with the epiphytic *Polysiphonia lanosa*), *Corallina officinalis* and *Cladophora rupestris.* The sea-urchin *Echinus esculentus, Mytilus edulis* and abundant *Verruca stroemia* were noteworthy among the animals. A detailed description of part of this area will be given in the context of belt transect 1.

Area G. In slope and degree of exposure to wave-action this area

PLATE 9





2



3

EXPLANATION OF PLATES

PLATE 9

Fig. 1. The shore of transect 1, area F. In the near background is Knoxes Reef with, further away, the lighthouse-bearing islands Brownsman and Longstone. The photograph is taken facing north-east into the Kettle.

Fig. 2. The shore of transect 2, area E; observations being made on flood tidal elevation over marked stations. The photograph is taken facing north-east and includes the Eider rocks of area F and Knoxes Reef.

Fig 3. The quartz dolerite rock of the Inner Farne shores, showing the effects of weathering.

PLATE 10

Fig. 1. Pool 3, area D, showing proximity to the cliff-top.

Fig. 2. Pool 6, area D, showing the relatively smooth rock of the pool-bottom, and the proximity to the cliff-top.

Fig. 3. Tidal stream producing dangerously disturbed water off the west tip of the Inner Farne in area D. The photograph is taken facing north-west and the Megstone is visible near the horizon.

PLATE 10





2



3

closely resembles area F. It differs from area F, however, in its possession of a remarkable ridge approximately 3.5 ft. in height, covered at about half-tide level, and providing, on its landward side, shelter for a number of fragile animals living under boulders. Nemerteans, for instance, were more common in this position than elsewhere on the island. In other respects the fauna and flora resembled closely those described for area F.

Area H. The animals and plants of the limestone and quartz dolerite boulders on the Bridges opposite areas G and F were examined. This was a very rich collecting area and resembled in many ways the boulder beach of area A with its abundance of nudibranchs, barnacles (including *Balanus balanus*), porcellain and other crabs, echinoderms and encrusting polyzoans. *Grantia compressa* and *Eulalia viridis* were also present. The algal cover was dense over the whole intertidal zone ; it was conspicuous that the fronds of *Laminaria digitata*, common at or near E.L.W.S., were scarcely fragmented in this sheltered area. It must be emphasized that only the boulders of the lee side of the Bridges were examined; the west shore would almost certainly be very different.

SURVEYING METHODS

As already explained, it was necessary to establish our own locally calculated ordnance datum, using a simple builders' level. To do this we nominated an arbitrary, accessible, primary benchmark (P.B.M.), to which all our subsequent levelling was related. This was a large, flat-topped boulder, projecting from the surrounding ground level by some inches, and lying close to the west jamb of the door leading from the Tower courtyard to St. Cuthbert's Gut. This, and such other benchmarks as we were later obliged to make, was marked using I.C.I. Belco 300 paint (which can be applied durably even to wet rock). The P.B.M. level was then transferred to three Inner Farne shores and its relation to L.W. and H.W. on separate tides noted. The three figures calculated for M.T.L. by this procedure were then averaged and the resultant figure taken as Ordnance Datum (Farne). In summary, the data relating to the three sets of observations were as follows :

1. (area F), mid-day flood of 26 March 1963 (predicted range at Holy Island 16.66 ft.): tidal range 16.38 ft.; difference between M.T.L. and P.B.M. 31.16 ft.
2. (area E), mid-day flood of 27 March 1963 (predicted range at Holy Island 17.00 ft.): tidal range 17.08 ft.; difference between M.T.L. and P.B.M. 31.50 ft.

3. (area A), afternoon ebb of 24 March 1963 (predicted range at Holy Island 15.30 ft.): tidal range 14.45 ft.; difference between M.T.L. and P.B.M. 32.57 ft.

Averaging these data from the three series of observations allows the conclusion that the P.B.M. is 31.74 ft. above M.T.L.

The passage of the tide over accurately levelled marked stations, in line, six feet apart, spanning the inter-tidal zone, was timed on three occasions (Plate 9, fig. 2). The time of uncovering or of immersion of these stations was carefully recorded and the results expressed graphically (text-figs. 2 and 3), plotting elevation against time of immersion (or time of uncovering). This would have been an impossible task had not the sea been exceptionally calm during the period, so that it was possible to determine the time of uncovering or immersion of a point accurately. Text-figs. 2 and 3 show curves of the semi-diurnal tidal movements.

BELT TRANSECTS

Methods. The majority of our field work on the Inner Farne was devoted to the collection of accurate data concerning the distribution and abundance of animals and plants over a strip of shore on each of two island areas. It is information of this kind which it was felt would best enable objective comparisons to be made with other coastal areas. The techniques employed were the same on both strips, and were as follows. A line of stations, six feet apart, was laid down in sequence from well above E.H.W.S. straight down the shore to L.W.S. The stations were marked using I.C.I. Belco 300 paint. They were then levelled with reference to the P.B.M. and to O.D. Farne. Profiles are shown in text-figs. 4b and 5b.

Estimations of animals and plants were then made along a belt, three feet in width, passing down the line of stations. The criteria employed in recording the organisms are stated in text-figs. 4 and 5 or in the captions to these illustrations. In this compilation we endeavoured to include **all** the animals and plants which were visible to the eye in the field.

The positions of the two transects are shown in text-fig. 1. Transect 1 was on the sheltered north-east shore of area F, while transect 2 was on the more exposed area E. The former had a slightly more gentle slope (and in consequence more large rockpools) than the latter (compare figures 4b and 5b) General descriptions of areas E and F are given on page 202.

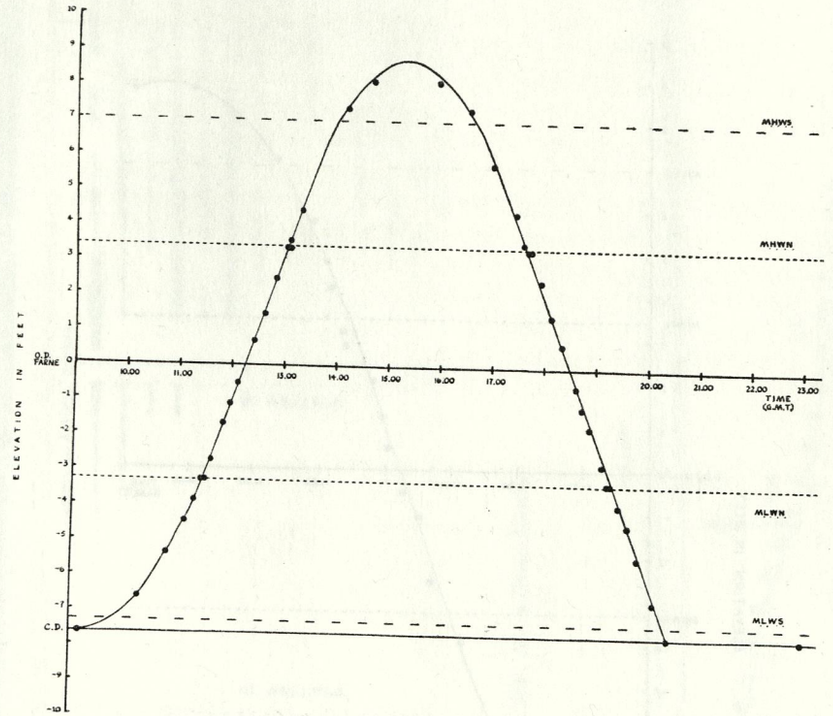


Fig. 2. Tidal flow over the stations of transect 1 on the morning flood and afternoon ebb tides of 26 March 1963. O.D. Farne is the average of three recordings of M.T.L. (see the text for further explanation). C.D. is a level derived from O.D. Farne by applying a correction which is given in Admiralty Tables for the calculation of C.D. Holy Island from O.D. (Newlyn). M.H.W.S., M.H.W.N., M.L.W.S. and M.L.W.N. are levels derived from O.D. Farne by applying the corrections given in Admiralty Tables for the calculation of these levels from M.L. at the R. Tyne entrance.

The sea-level at L.W. of the afternoon ebb could not be determined because it was then dark, but the time of re-immersion of the lowest levelled station was ascertained and appears on the figure, at 2300 G.M.T.

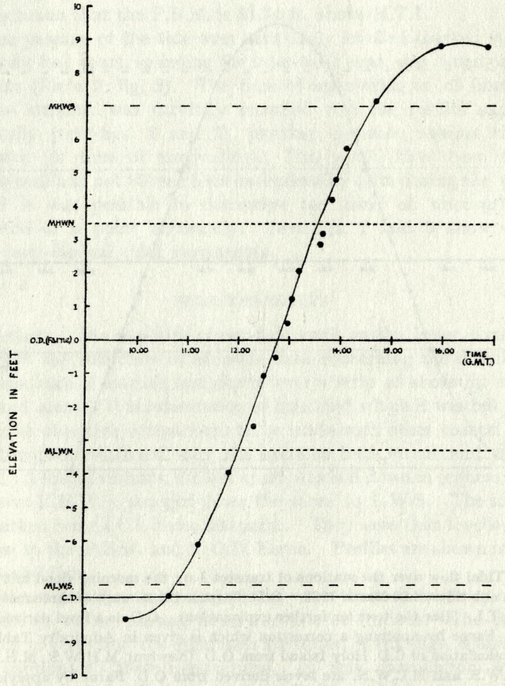


Fig. 3. Tidal flow over the stations of transect 2 on the mid-day flood tide of 27 March 1963. See the caption to fig. 2 for explanations of the abbreviations employed.

Fig. 3. Tidal flow over the stations of transect 2 on the mid-day flood tide of 27 March 1963. See the caption to fig. 2 for explanations of the abbreviations employed.

a
b
c
d
e
STATIONS
O.D. Farne
C.D.
KEY TO D
KEY TO E
Terrestrial angiosperms
Xanthoria parietina
Lecanora spp.
Prasiola stipitata
Rivularia canaliculata
Enteromorpha sp.
Chondrus crispus
Fucus vesiculosus
Ascophyllum nodosum
Cladophora spp.
Lithothamnion spp.
Ceramium spp.
Corallina officinalis
Rhodymenia pseudopalmata
Halosaccion
Polysiphonia lanosa
Rhodymenia palmata
Monodroma grevillei
Fucus serratus
Plumaria elegans
Polysiphonia nigra
Laminaria digitata
Membranoptera alata
Laurencia pinnatifida
Gracilaria verrucosa
Chondrocladia concrescens
Cladophora rupestris
Ceramium tenuissimum
Phycodrys rubens
Odonthalia dentata
Alaria esculenta
Balanus balanoides
Patella vulgata
Mytilus edulis
Littorina neritoides
Littorina littorea
Littorina saxatilis
Actinia equina
Nucella lapillus
Halichondria panicea
Cirratulus cirratus
Dynamena pumila
Fucus spp.
Spirorbis borealis
Gibbula cineraria
Amphithoë rubricata
Lacuna vincta
Carcinus maenas
Membranipora membranacea
Electra pilosa
Idotea granulosa
Idotea viridis
Acrochordonium sp.
Verruca stroemia
Modiolus modiolus
Balanus crenatus
Pomatoceros triqueter
Nereis pelagica
Cancer pagurus
Tealia felina
Actinia equina
Actinia mesembryanthemum
Metridium dianthus
Asterias rubens
Echinus esculentus
Ophiothrix fragilis
Ophiocomina nigra
Henricia oculata
Cucumaria elongata
Psolus phantapus
Ascidia mentula
Ascidia virginea
Ascidiella aspersa
Molgula manhattensis
Botryllus schlosseri
Botrylloides violaceus
Clavelina lepadiformis
Dendrodoa grossularia
Aplidium punctum
Amphipholis squamata
Ophiothrix fragilis
Ophiocomina nigra
Asterias rubens
Echinus esculentus
Henricia oculata
Cucumaria elongata
Psolus phantapus
Ascidia mentula
Ascidia virginea
Ascidiella aspersa
Molgula manhattensis
Botryllus schlosseri
Botrylloides violaceus
Clavelina lepadiformis
Dendrodoa grossularia
Aplidium punctum
Cancer pagurus
Carcinus maenas
Galathea spp.
Pisidia longicornis
Pagurus bernhardus
Pagurus prideaux
Eupagurus cuanensis
Eupagurus sarsi
Eupagurus bernhardus
Eupagurus prideaux
Anapagurus laevis
Anapagurus hyndmanni
Porcellana platycheles
Pisidia longicornis
Galathea spp.
Carcinus maenas
Cancer pagurus

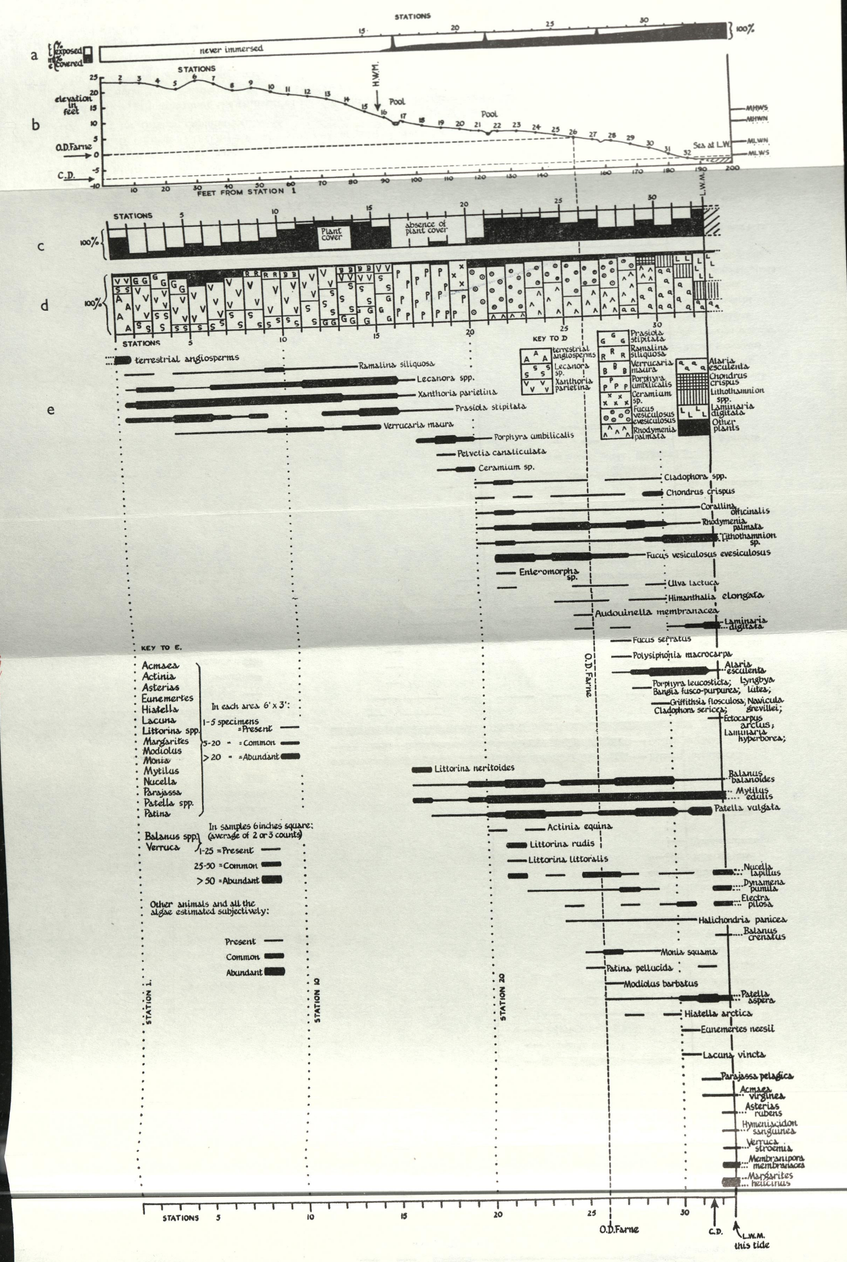


Fig. 5. Fauna and flora over belt transect 2, in area E.

a, percentage exposure to the air at various levels on the shore, calculated from observations on the spring tides of 27 March 1963.

b, profile of the transect, with the positions of the stations illustrated. Low water and high water on the morning flood spring tide of 27 March are indicated. Only the largest pools are shown. C.D., M.H.W.S., M.H.W.N., M.L.W.S., and M.L.W.N. are levels derived from O.D. Farne by applying the corrections given for adjacent coastal areas by Admiralty Tables (see the caption to fig. 2 for further explanation).

c,d,e. are as described in the caption to fig. 4.

Results. The fauna and flora of the two transects are shown in text-figs. 4 and 5. Both shores were heavily cloaked with seaweeds (see text-figs. 4c and 5c), but it is interesting that in both transects a relatively naked area is sharply visible from four feet to nine feet above O.D., although differences in its extent occur between the two transects, the bare area being much wider on transect 2.

Certain organisms were present or common on transect 2, but rare or absent on transect 1; these were *Ramalina siliquosa*, *Verrucaria maura*, *Porphyra umbilicalis*, *Fucus vesiculosus evesiculosus*, *Himanthalia elongata*, *Alaria esculenta*, *Littorina neritoides* and *Patella aspera*. On the other hand, some creatures were present or common on transect 1, which were rare or absent on transect 2; these were notably *Ascophyllum nodosum*, *Fucus serratus*, *F. vesiculosus* (typical form with bladders), *Polysiphonia lanosa*, *Lomentaria articulata*, *Flustrella hispida*, *Spirorbis borealis*, *Pomatoceros triqueter*, *Nereis pelagica*, *Acanthodoris pilosa*, *Gibbula cineraria*, *Idotea granulosa* and *Amphipholis squamata*. In addition to these qualitative differences between the two areas, quantitative differences also occur. The vertical bands occupied by various organisms are in some cases wider, in other cases narrower, in some cases higher, and in other cases lower, in transect 1 than in transect 2.

In order to make sense of this it is necessary to tabulate the data in relation to vertical height on the shore and in relation to the percentage exposure to air experienced by organisms living at various levels. The figures for percentage exposure given in table 1 are derived for the area of each transect from the study of a single flood tide over our marked stations in extremely calm weather. These figures are adequate for our present purpose, which is to compare the distribution of organisms on adjacent shores. The percentage of exposure to air at various transect stations is shown graphically in text-figs. 4a and 5a, while the raw data together with the actual vertical levels determined are combined in tables I and 2. Data relating to species present on only one of the two transects are given in table 3.

The last two columns in tables 1 and 2 express the vertical differences in the distribution-limits of some of the organisms encountered on the two transects. In some cases the vertical levels occupied are many feet higher on transect 2 than on transect 1. For instance, the lichens which the two areas had in common, and *Prasiola*, extended more than ten feet higher on transect 2. Towards the lower part of the shore, the shift is again clear-cut, and in the cases of *Himanthalia*, *Laminaria digitata* and *Alaria*, it may be seen that a shift occurs of six feet or more. The table indicates that mid-shore organisms show shifts of far less significant magnitudes.

For the animals the data are not so consistent. An upward shift of the upper limit of distribution on transect 2 is evident in *Balanus balanoides*, *Mytilus edulis* and *Patella vulgata*. Two other species, *Electra pilosa* and *Monia squama*, also extend appreciably further up the shore on transect 2 than they do on transect 1. Other animals are either similar in their distribution on the two transects, or on transect 2 gain a foothold only on the very lowest parts of the shore, although on transect 1 these same species extended vertically much higher.

An environmental factor is clearly at work on transect 2 which is of lesser magnitude on transect 1; the experience of other workers, including Moss (1959) on the Inner Farne, shows that this factor is to be sought among the effects upon a shore of exposure to the severity of wave and current action. The subject is reviewed by Doty (1957), Southward (1958) and Lewis (1964).

Discussion. The shores of the Inner Farne display a number of notable peculiarities, compared with the coast of the mainland of Northumberland. Although it is unwise to lean too heavily on the results of only one week's field work, we draw attention to the following:

(1) *Porcellana platycheles*, common on the mainland, was searched for, but not found on the island.

(2) Hermit and shore crabs, abundant on mainland shores, were very uncommon on the island, although small edible crabs *Cancer pagurus* were frequently taken.

(3) *Henricia sanguinolenta*, the more conspicuous of the two common mainland starfishes, was absent from the Inner Farne.

(4) No decapod shrimps were taken in our handnets (of various shapes and meshes); instead the euphausiacean *Meganyctiphanes norvegica* occurred occasionally in the shore pools.

(5) On the Inner Farne shores there was a remarkable paucity of prosobranch molluscs of the familiar trochid and littorinid types. The only species which attained any abundance was *Margarites helicinus* which, on sheltered shores especially, was abundant near L.W.S.T. and in pools and wet crevices on the middle and lower shore. The larger species of *Littorina* and *Gibbula* were rather rare and those which did occur were never in the open, but invariably in secure shelter of some kind (from empty barnacle-cases in the instances of *Littorina neritoides*, *L. saxatilis* and *L. littoralis*, to the under sides of stones near L.W.S.T. in our records of *Gibbula cineraria*, *Calliostoma zizyphinum* and *Littorina littorea*). Such specimens as were found were usually small; no full-sized specimens of *Littorina saxatilis*, *L. littoralis*, *L. littorea* or *Calliostoma zizyphinum* were encountered. It has seemed to us that on the Inner Farne some massive adverse selection factor is in operation against these shore prosobranchs and all our observations support this view. The factor, whatever it is, is certainly not in operation to the same extent on adjacent mainland coasts; this was established by direct observation in 1962 and in 1963 (T.E.T.). As to the nature of the factor, we discount the possibility that exposure to wave action is important in the present context, because we found the paucity of prosobranchs to be similar over all the shores of the island. We suggest instead that the feeding behaviour of juvenile or other birds of the island may hold the key to this problem; the kittiwake seems (according to J. C. Coulson) the most likely culprit.

Our detailed comparison of a rather sheltered shore with a more wave-battered one nearby confirms many features of the ecological effect of this physical environmental factor. Certain animals and plants are unable to exist on the one shore which are common on the other. Animals found on the two shores may be markedly more common on one than the other. Increasing exposure to wave action leads to the elevation of the upper distributional limit of some species, particularly (but mysteriously) those species living near the top or near the bottom of the shore. On the other hand, some species of animals have apparently so little resistance to wave-exposure that they are restricted to a narrow area of the shore just above L.W.S.T. on the less sheltered shore. The hazards of wave-exposure are probably increased by increase in steepness of shore-slope, as is indicated in some of Moss's (1959) results; it must be emphasized again that the shore of transect 2 was somewhat steeper than that of transect 1. The importance of the abrasive effect of tidal streams is not usually stressed, but on the Inner Farne may form a contributory hazard in the lives of the animals and plants living on the more exposed shores of the island. The effect of these various kinds of exposure is presumably a direct physical one, the organisms suffering sufficient mechanical damage at the settling or other stages to prevent their survival. It is interesting that in some cases the organism may change its habit to cope with wilder conditions; *Rhodymenia palmata*, for instance, was common in the wave-battered area C, not attached to the rock in its usual way, but with the holdfasts firmly anchored to the stipes of *Alaria esculenta*. In addition, it is well known that the shell-shape of *Patella vulgata* is

measurably different in samples of specimens from different types of shore.

BIOLOGY OF THE POOLS

(T. E. T. AND J. E. D.)

A large number of pools was investigated, samples taken and examined, and the results incorporated in the fauna and flora lists. In addition ten pools, all above M.H.W.S., were selected for more detailed study. These are shown in text-figs. 1 and 6; the latter displays also our physical and chemical data. The salinity of water-samples from these pools was estimated in Cardiff by argentimetric titration. The heights of the pools were levelled accurately in relation to O. D. Farne. The water-level in some of the pools almost certainly varies greatly through the year, and it is not our intention to imply that we are necessarily describing stable systems.

All the Inner Farne pools were saline to some degree; plainly this is brought about by wind-borne sea-spray. There was no clear correllation between the altitude of the pools and the salinity of their water. Pool 9 at altitude 18.85 ft. was the least saline open pool on the island at 3‰, while pool 3, situated at a greater altitude, had water of 21‰. The explanations for these and other similar apparent anomalies are clear enough to the observer in the field. In the instance just quoted, drainage from the island's central area seeps down into pool 9, this pool being more than a hundred feet from the water's edge at A.H.T.L. This situation may be contrasted with that of pool 3, less than ten feet from the nearest cliff edge, over which sea-spray was thrown even at half-flood on a moderately breezy day.

An even more striking example of the disruption of an expected correlation between salinity and elevation was afforded by comparison of pools 2 and 8. The elevation of these two pools is similar and they are very close together on the shore in area D (see text-fig. 6). The explanation for the substantial difference in their salinities lies in the regular behaviour of an adjacent water-spout, the Churn. The proportion of Churn water which is carried to neighbouring pools varies with the characteristics of the sea-swell, the phase of the tide, and the strength and direction of the wind. A glance at text-fig. 6 will illustrate that, assuming random wind-directions and speeds, on average more Churn water should fall into pool 8 than into pool 2 ; our observations in the field confirm this. The Churn operates only at certain tidal phases, close to mid-tide level.

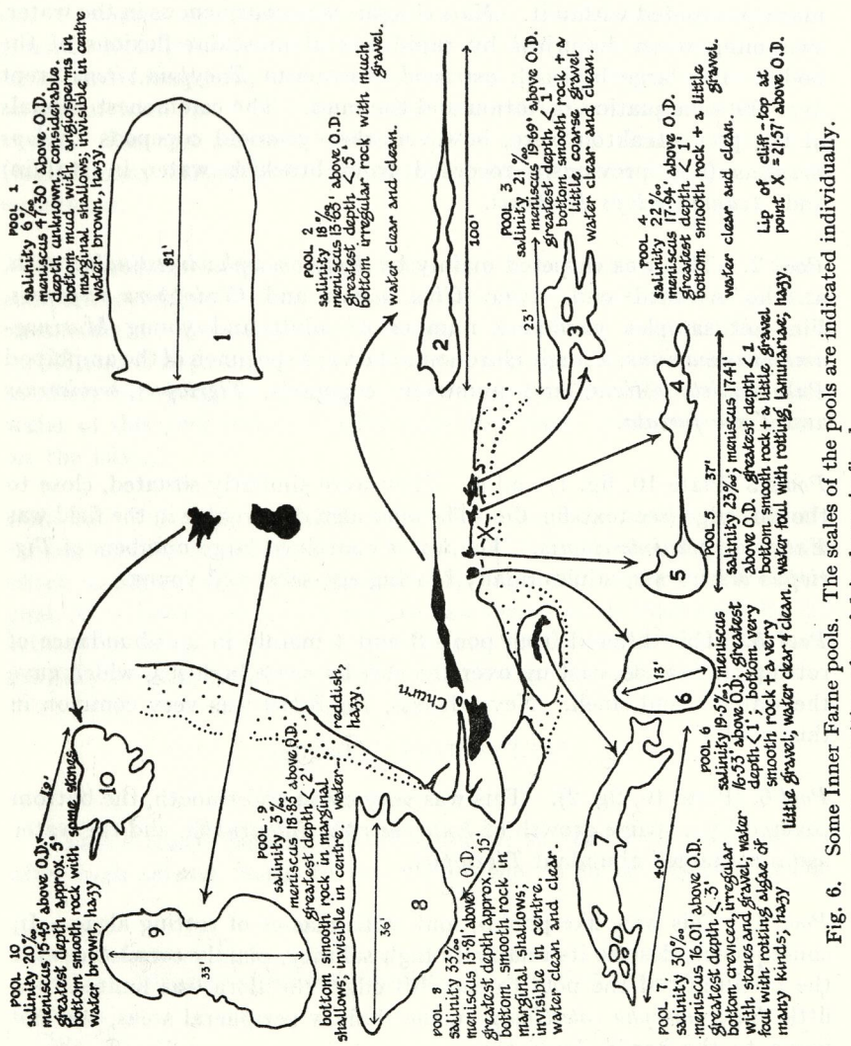


Fig. 6. Some Inner Farne pools. The scales of the pools are indicated individually.
The true position of pool 1 is shown in fig. 1.

Pool 1. This was surveyed by Fryer and Fripp during the autumn months when the dimensions were rather less than we found them. Terrestrial angiosperms fringe the steeply sloping sides of the pool and many are rooted within it. *Nais elinguis* was conspicuous in the water, swimming when disturbed by rapid lateral muscular flexions of the body. The large brackish ostracod crustacean *Eucypris virens* crept over the subaquatic vegetation and the mud. The commonest animals of the pool plankton were, however, the cyclopoid copepods *Cyclops strenuus* (not previously recorded from brackish water in Britain) and *Acanthocyclops bisetosus*.

Pool 2. This was carpeted mainly by *Enteromorpha intestinalis*, with, at the seaward end, some *Ulva lactuca* and *Cladophora rupestris*. Fine-net samples yielded a number of adult and young *Marinogammarus marinus*, a single chironomid larva, a specimen of the amphipod *Parathemisto oblivia*, and numerous copepods, *Tigriopus brevicornis* and *Tisbe furcata*.

Pools 3 (Plate 10, fig. 1) and 4. They were similarly situated, close to the cliff edge (see text-fig. 6). The only alga discernable in the field was *Enteromorpha intestinalis*. The water contained large numbers of *Tigriopus brevicornis*, adults (many bearing egg-sacs) and young.

Pool 5. This differed from pools 3 and 4 mainly in an abundance of rotting laminariae, cast up over the cliff by some high sea, which gave the water a foul smell. Nevertheless, *Tigriopus* was very common in this pool.

Pool 6. (Plate 10, fig. 2). This was very clean and smooth, the bottom covered by a sparse growth of *Enteromorpha intestinalis*, and the water again contained abundant *Tigriopus*.

Pool 7. This was, like pool 5, foul, with masses of rotting algae. In consequence, despite its relatively high salinity, plainly correlated with the proximity of the pool to the cliff edge, the flora was limited to a little *Enteromorpha intestinalis* in the shallow peripheral areas, and the fauna to the hardy *Tigriopus*.

Pool 8. In appearance this was a good example of a coralline intertidal rockpool; yet it was in fact nearly 14 ft. above O.D., or 7 ft. above M.H.W.S. The explanation for this, as has been mentioned, is that water from the nearby Churn waterspout is cast into this pool at certain

phases of the tide. In consequence, the salinity was, at 33‰, up to that of full sea-water, and the flora was varied and beautiful, including *Cladophora rupestris*, *Ulva lactuca*, *Corallina officinalis*, *Lithothamnion* sp., *Ceramium* sp., *Enteromorpha* sp. and others [a longer list is given by Moss (1959)]. Of the animals, the rockpool sea-slugs *Acteonia cocksi* and *Limapontia capitata* were found, especially the former, to be common on the *Cladophora*, while the pool plankton was rich and varied. Fine-net samples, aided by the use of a simple light-trap, yielded many harpacticoid copepods, *Laophonte setosa* and *Ectinosoma melaniceps*.

Pool 9. As far as macro-organisms were concerned, this was almost completely sterile. The only sign of life was a little stunted *Enteromorpha intestinalis* at the shallowest verges. The water was reddish and turbid and it is possible that freshwater seepage from the land, known to affect this pool, has brought with it some poisonous matter. The water of this pool was less saline than any other open body of water on the island.

Pool 10. This was probably affected by seepage from the island's central area (as suggested above for pool 9), but it is clear that here the effect is less severe. This is probably connected with the fact that pool 10 is better placed to receive sea-spray, as is evidenced by its salinity of 20‰. Even so, scarcely any *Enteromorpha* survives, and the only animals found were numerous *Gammarus duebeni*.

AQUATIC FAUNA LIST

(T. E. T., M. J. AND S. T. S.)

Tate's (1857) records are not included in this list. Code letters after each species relate to the regions shown in text-figs. 1 and 6.

PROTOZOA
Class Sarcodina
Allogromia oviformis (Dujard.) : B, several in mid-shore pool.

PORIFERA
Class Calcarea
Leucosolenia sp. : B, on mussel shell in mid-shore pool.
Grantia compressa (Fab.) : H, common lower shore, under stones.

Class Demospongiaria
Hymeniacidon perleve (Mont.) : E, near L.W.S.T.
Halichondria panicea (Pall.) : A,B,C,E,F,G,H, common under stones, in wet crevices and in pools, middle and lower shore.

COELENTERATA

Class Hydrozoa

Dynamena pumila (L.) : A,B,E,F,H, on algae, in pools and damp crevices, under stones, lower shore.

Sertularia filicula Ell. & Sol. : B, on algae, lower shore.

Class Anthozoa

Actinia equina L. : A,B,C,E,F,H, common, in wet crevices and pools.

Sagartia elegans (Dal.) : C, two in small pool on cliff-face.

Sagartia troglodytes (Price) : A, two in crevice, lower shore.

Tealia felina (L.) : B,F,G,H, uncommon in damp places, lower shore.

PLATYHELMINTHES

Class Turbellaria

Monocelis lineata (Müll.) : F, common in coralline rockpools.

Procerodes ulvae (Oerst.) : F, common in upper-shore pools.

NEMERTINI

Class Enopla

Emplectonema neesi (Oerst.) : A, two lower shore; E, one in holdfast of *Alaria*.

Oerstedia dorsalis (Abild.) : B, one on *Fucus serratus*.

ANNELIDA

Class Archiannelida

Protodrilus sp. : A, one from fine gravel near L.W.S.T.

Gastrilobodrilus sp. : A, one from fine gravel near L.W.S.T.

Class Polychaeta

Lepidonotus clava (Mont.) : A, three under stones, lower shore.

Harmothoe imbricata (L.) : A, one under stone, lower shore.

Harmothoe impar (Johnst.) : A, one under stone, lower shore.

Harmothoe spinifera (Ehl.) : A, one under stone, lower shore.

Eunoe nodosa (Sars.) : A, two under stones, lower shore.

Sthenelais boa (Johnst.) : A, one in gravel under stone, lower shore.

Eulalia viridis (Müll.) : C, one beneath *Lithothamnion* in pool on cliff-face ; H, one under stone, L.W.S.T.

Nereis pelagica (L.) : A,B,F,H, in *Laminaria* holdfasts, pools, and under stones, lower shore.

Perinereis cultrifera (Grube) : A,B, in *Laminaria* holdfasts.

Cirratulus cirratus (Müll.) : A,F, common in sand and muddy sand, in crevices and under stones, lower shore ; once in a *Laminaria* holdfast.

Fabricia sabella (Ehrenb.) : D, common in coralline rockpools.

Arenicola ecaudata (Johnst.) : H, one in *Laminaria* holdfast.

Hydroides norvegica (Gunn.) : B, one on *Mytilus*, mid-shore pool.

Pomatoceros triqueter (L.) : A,B,H, common on stones, lower shore.

Spirorbis borealis Daudin : A,B,F,G,H, common on algae, shells and stones, lower shore.

Spirorbis tridentatus Lev. : A,B,H, common on stones and shells, lower shore.

Class Oligochaeta

Nais elinguis (Müll.) C, common in nettings from pool 1.

ARTHROPODA

Sub-phylum CRUSTACEA

Class Ostracoda

Eucypris virens (Jur.) : C, common in nettings from pool 1.

Class Copepoda

Tigriopus brevicornis Müll. : D, common in pools 2-7.

Tisbe furcata Baird : D, common in pool 2 ; A, common in washings of gravel and sand.

Laophonte setosa Boeck : D, common in pools 3,7 and 8 ; H, common in pool at station 15 on transect 1.

Ectinosoma melaniceps Boeck : D, several in pools 7 and 8.

Rhizothrix gracilis T. Scott : A, one male from washings of gravel and sand.

Dactylopusia tisboides Claus : H, one male from pool at station 15 on transect 1.

Dactylopusia vulgaris Sars : H, one male from night plankton over transect 1.

Parathalestris clausi Norm. : H, one female, one male, from night plankton over transect 1.

Cyclops strenuus s. str. Fisch. : C, common in nettings from pool 1.

Acanthocyclops bisetosus Rehb. : C, common in nettings from pool 1.

Class Cirripedia

Verruca stroemia (Müll.) : A,E,F,H, common on rock, lower shore.

Balanus crenatus Brug. : A,F, several near L.W.S.T.

Balanus balanoides (L.) : A,B,C,D,E,F,G,H, abundant middle and upper shore ; many with ripe nauplii.

Balanus balanus L. : A,E,H, common under stones, L.W.S.T.

Class Malacostraca

Idotea granulosa Rath. : B,F, common in nettings from pools near L.W.S.T., and under nearby stones.

Idotea chelipes (Pall.) : A,B,F,G, common under stones, mid and lower shore ; one in *Laminaria* holdfast.

Idotea pelagica Leach : B,F, several under stones and in coralline rockpool nettings.

Jaera albifrons Leach : F, common in coralline rockpools nettings.

Gammarellus homari (Fab.) : B, several juveniles in nettings from pool near L.W.S.T.

Gammarus locusta (L.) : A, common lower shore, some berried.

Gammarus duebeni Lillj. : E, in nettings from pool 10.

Marinogammarus marinus (Leach) : A, several under stone near L.W.S.T., two berried ; D, juveniles in nettings from pool 2.

Hyale pontica Rath. : B, one in *Laminaria* holdfast.

Amphithoe rubricata (Mont.) : A,F, several under stones lower shore.

Parajassa pelagica (Leach) : A,B,E, common on pools and under stones, mid and lower shore.

Parathemisto oblivia (Kroy.) : D, one in netting from pool 12.

Meganyctiphanes norvegica (Sars) : A,B, specimens in nettings from pools near L.W.S.T.

Porcellana longicornis (L.) : A,H, several under stones, lower shore.
Eupagurus bernhardus (L.) : H, one in *Nucella* shell, lower shore.
Cancer pagurus L. : A,F,G,H, common on lower shore ; claws and carapaces common on central area of Inner Farne.
Portunus puber (L.) : central area of Inner Farne, dried claw.
Carcinus maenas (L.) : A,F,G, rare on lower shore.

MOLLUSCA

Class Polyplacophora

Lepidochitona cinerea (L.) : A, one under stone, L.W.S.T.
Acanthochitona crinita (Penn.) : A,B, several, lower shore.

Class Gastropoda

Patella vulgata L. : A,B,C,D,E,F,G,H, common all over shores.
Patella aspera Lam. : B,C,E, common, lower shore.
Patina pellucida (L.) : A,B,E,F,G, common on algae (*Fucus serratus, Fucus spiralis, Laminaria digitata, Alaria esculenta*) and on stones.
Acmaea virginea (Müll.) : B,E,F, common on lower shore.
Gibbula cineraria (L.) : A,B,F,H, common at and below E.L.W.S.; rare above.
Calliostoma zizyphinum (L.) : A, one near L.W.S.T.
Margarites helicinus (Fab.) : A,B,E,F,G,H, very common, lower shore.
Lacuna vincta (Mont.) : A,B,E,F, common, with egg masses, lower shore.
Littorina littoralis (L.) : A,B,E,F, rare, upper, mid and lower shore ; egg masses on lower shore.
Littorina littorea (L.) : B,F, rare, lower shore.
Littorina saxatilis (Olivi) (*rudis*) : B,C,E,F,G, uncommon on mid and lower shores ; sometimes common among empty barnacle cases on upper shore.
Littorina neritoides (L.) : C,E, common on upper shore in crevices and empty barnacle cases.
Cingula vitrea (Mont.) : B, one in pool, mid shore.
Skeneopsis planorbis (Fab.) : F,G, common in coralline rockpools.
Trivia arctica (Mont.) : A, one under stone, lower shore.
Nucella lapillus (L.) : A,B,C,E,F,G,H, common, mid and lower shore, in crevices and pools.
Buccinum undatum L. : A, empty shells common L.W.S.T.
Nassarius reticulatus (L.) : A,H, common in crevices, under stones and in *Laminaria* holdfasts, lower shore.
Acteonia senestra Quatr. : D,F, abundant in coralline rockpools.
Limapontia capitata (Müll.) : F, uncommon in coralline rockpools.
Archidoris pseudoargus (Rapp) : A, two, under stones, L.W.S.T.
Limacia clavigera (Müll.) : A, common on polyzoans, L.W.S.T.
Ancula cristata (Alder) : A, uncommon on polyzoans, L.W.S.T.
Onchidoris muricata (Müll.) : A,H, common on polyzoans, L.W.S.T.
Goniodoris nodosa (Mont.) : A,H, common under stones near L.W.S.T., commonly copulating and spawning.
Acanthodoris pilosa (Müll.) : A,F,G,H, common under stones near L.W.S.T., commonly copulating and spawning.
Coryphella verrucosa (Sars) : A,H, common under stones near L.W.S.T.

Class Lamellibranchia

Modiolus barbatus (L.) : B,E, uncommon, middle and lower shore.
Mytilus edulis L. : A,B,C,D,E,F,G,H, abundant in crevices and pools all over the shore.
Anomia ephippium L. : A,B,E,F, common on stones, shells and in *Laminaria* holdfasts, lower shore.
Monia squama (Gmel.) : B, one on *Mytilus*, lower-shore pool, common in E,F on the transects.
Kellia suborbicularis (Mont.) : A,C,F, damp places on lower shore.
Venerupis rhomboides (Penn.) : A, several in fine gravel near L.W.S.T.
Hiatella arctica (L.) : A,B,E,F, in *Laminaria* holdfasts, crevices and pools, lower shore.

KAMPTOZOA

(Polyzoa Entoprocta)

Pedicellina cernua (Pall.) : B, on *Mytilus* from mid-shore pool, and on *Laminaria* holdfasts.

POLYZOA

Valkeria uva (L.) : B, common on *Mytilus* from mid-shore pool.
Membranipora membranacea (L.) : A,B,E,F,G,H, common on *Laminaria*, rarely on *Fucus serratus*.
Electra pilosa (L.) : A,B,C,E,F,G,H, common on *Fucus serratus, Chondrus crispus, Rhodymenia palmata, Laminaria digitata* (stalks and holdfasts only), and on rock ; typical and hirsute varieties.
Flustra foliacea (L.) : A, unattached colonies common, lower shore.
Celleporella hyalina (L.) : B, common on *Laminaria* holdfasts and on *Mytilus* in mid-shore pool.
Schizoporella unicornis (Johnst.) : A, common under stones near L.W.S.T.
Escharoides coccineus (Abild.) : A, common under stones near L.W.S.T.
Flustrella hispida (Fab.) : B,F,H, common on *Fucus serratus*, on *Chondrus*, and on *Mytilus* in mid-shore pool.
Cellepora pumicosa L. : A, common under stones near L.W.S.T.
Umbonula littoralis Hast. : A, common under stones near L.W.S.T.
Cribrilina punctata (Hass.) : B, common under stones near L.W.S.T., and on *Mytilus* in mid-shore pool.
Alcyonidium polyoum (Hass.) : B, common under stones near L.W.S.T.
Alcyonidium hirsutum (Flem.) : A,F, common under stones and on *Chondrus*, lower shore.

ECHINODERMATA

Class Asteroidea

Asterias rubens L. : A,E,H, common under stones, lower shore.

Class Ophiuroidea

Ophiothrix fragilis (Abild.) : A,B,H, common under stones, lower shore.
Amphipholis squamata (Chiaje) : F, common in *Laminaria* holdfasts.

Class Echinoidea

Psammechinus miliaris (Gmel.) : A, common under stones, lower shore.
Echinus esculentus L. : F, single specimen at L.W.S.T.; also one found on lower shore on S. Wamses.

CHORDATA

Class Ascidiacea

Aplidium proliferum (M.-Edw.) : A,B,C, under stones, on hold fasts, in pools, common.
Ascidiella scabra (Müll.) : A, uncommon under stones, lower shore.
Botryllus schlosseri (Pall.) : A, common under stones, lower shore.
Molgula citrina A. & H. : H, uncommon under stones, lower shore.

Class Pisces

Blennius pholis L. : B, single specimen in mid-shore pool.
Pholis gunnellus (L.) : A,B, common in pools, lower shore.
Cottus bubalis Euph. : B, single specimen in lower-shore pool.
Cyclopterus lumpus L : central area of Inner Farne, single dried head found in Aug. 1962.

ALGAE

(K.B.-E., D.F. AND G.M.)

Lists of algal species for the north-east coast of England published by Brady (1860) and Batters (1887-89) made no reference to the Farne Islands. Not until 1953 (April), and 1954 (September) was a survey of the marine algae carried out, by Dr. B. Moss (1959).

The present lists are based on material brought back to Cardiff by the field party ; the classification and nomenclature follow those of Hendy (1954) and Parke & Dixon (1964).

Code-letters after each species relate to the regions shown in text-figs. 1 and 6.

BACILLARIOPHCEAE

Melosira moniliformis (Müll.) Agardh. : A,C,E.
Biddulphia aurita var. *obtusa* (Kütz). Hust. : C,E.
Biddulphia pulchella Gray : C,E.
Fragilaria contruens var. *pusilla* Grun. : C,E.
Grammatophora marina (Lyng.) Kütz. : A,C,D,E.
Grammatophora serpentina Ehrenb. : A,C,E.
Licmorpha dalmatica (Kütz.) Grun. : C,E.
Synedra pulchella Kütz. : A,C,E.
Synedra ulna (Nitzch) Ehrenb. : A,C,E.
Achnanthes subsessilis Kütz. : A,C,E.
Cocconeis placentula Ehrenb. : A,C,E.
Cocconeis scutellum var. *scutellum* Ehrenb. : B,C,E.
Rhoicosphenia curvata (Kütz.) Grun. : C,E.
Rhoicosphenia marina (W. Sm.) Schm. : C,E.
Amphiprora didyma W. Sm. : C,E.
Cocconeis placentula Ehrenb. : A,C,E.
Caloneis liber var. *liber* (W. Sm.) Cleve : B,C,E.
Navicula elegans W. Sm. : A,B,C,E.
Navicula grevillei (Agardh.) Cleve : B,C,E,F.
Pleurosigma spencerii W. Sm. : A.

Gomphonema exiguum Kütz. : C,E.
Campylodiscus hodgsonii W. Sm. : A,E.

CYANOPHYCEAE

Chroococcus turgidus (Kütz.) Näg. : A,B,C,D.
Gleocapsa crepidinum Thur. ex. Born. et Thur. : A,C.
?Chamaesiphon ?marinus Wille et Rosenv. : B,F.
Oscillatoria nigroviridis (Thwaites in Harv.) Gom. : C.
Lyngbya lutea ((C. Agg.) Gom.) Gom. : E.
Phormidium autumnale (C. Ag.) Gom. : A,B.
Plectonema battersii Gom. : A.

RHODOPHYCEAE

Acrochaetium secundatum (Lyngb.) Näg. : C.
Audouinella membranacea (Magn.) Papenf. : E.
Gracilaria verrucosa (Huds.) Papenf. : E.
Gymnogongrus griffithsiae (Turn.) Mart. : A.
Chondrus crispus Stackh. : B.
Gigartina stellata (Stackh.) Batt. : B,F.
Hildenbrandia prototypus Nardo. : A.
Corallina officinalis L. : B,F.
Lithothamnion calcareum (Pall.) Aresch. in J. Ag. : B.
Lithothamnion laevigatum Fosl. : A.
Lithothamnion lenormandii (Aresch. in J. Ag.) Fosl. : A.
Dumontia incrassata (Müll.) Lamour. : B.
Polyides rotundus ((Huds.) Grev.) A.
Lomentaria articulata (Huds.) Lyngb. : B,F.
Rhodymenia palmata (L.) Grev. : A,B,E,F.
Rhodymenia pseudopalmata (Lamour.) Silva : A,B,F.
Ceramium arborescens J. Ag. : C,F.
Ceramium shuttleworthianum (Kütz.) Silva : C.
Ceramium echionotum J. Ag. var. *echionotum* : D.
Ceramium rubrum (Huds.) J. Ag. : F.
Ceramium tenuissimum (Roth.) J. Ag. : F.
Griffithsia flosculosa (Ellis) Batt. : C,E.
Plumaria elegans (Bonnem.) Schm. : C,F.
Membranoptera alata (Huds.) Stackh. : F.
Phycodrys rubens (L.) Batt. : A,B,F.
Laurencia pinnatifida (Huds.) Lamour. : F.
Polysiphonia lanosa (L.) Tandy : B,F,G.
Polysiphonia macrocarpa Harv. in MacKay : B,C,E.
Polysiphonia nigra (Huds.) Batt. : F.
Erythrotrichia carnea (Dillw.) J. Ag. : B,E.
Bangia fuscopurpurea (Dillw.) Lyngb. : B,E.
Porphyra leucosticta Thur. : B,E.
Porphyra umbilicalis (L.) Kütz. : E.

XANTHOPHYCEAE

Vaucheria thuretii Woron. : B,D.

PHAEOPHYCEAE

Ectocarpus arctus Kütz. : B.
Pylaiella littoralis (L.) Kjellm. : F.
Streblonema parasiticum (Sauv.) Levr. : F.
Elachista fucicola (Vell.) Aresch. : B.
Chordaria flagelliformis (Müll.) C. Ag. : F.
Asperococcus fistulosus (Huds.) Hook. : B,E.
Asperococcus turneri (Sm.) Hook. : B.
Punctaria tenuissima ((C. Ag.) Grev.) : C.
Scytosiphon lomentarius (Lyngb.) Link : B.
Desmarestia aculeata (L.) Lamour. : A.
Chorda filum (L.) Stackh. : E,F.
Laminaria digitata (Huds.) Lamour. : A,B,C,E,F,G,H.
Laminaria hyperborea (Gunn.) Fosl. : A,B,D,E,F,H.
Laminaria saccharina (L.) Lamour. : A,G.
Saccorhiza polyschides (Lightf.) Batt. : E.
Alaria esculenta (L.) Grev. : A,B,C,D,E.
Ascophyllum nodosum (L.) Le Jol. : A,B,F,G,H.
Fucus serratus L. : A,B,E,F,G,H.
Fucus spiralis L. : C,E,F.
Fucus vesiculosus L. : B,C,E,D.
Pelvetia canaliculata (L.) Dcne et Thur. : A,B,E F,G.
Himanthalia elongata (L.) S. F. Gray : B,E.
Halidrys siliquosa (L.) Lyngb. : A.

CHLOROPHYCEAE

Chlorococcum submarinum Alvik : A,B,C,D.
Prasiola stipitata Shur in Jessen : B,C,D.
Ulothrix flacca (Dillw.) Thur in Le Jol. : A,B,C,D.
Monostroma grevillei (Thur.) Wittr. : F.
Blidingia minima (Näg. et Kütz.) Kylin : A,F.
Enteromorpha intestinalis (L.) Link : A,E.
Percursaria percursa (C. Ag.) Rosenv. : C.
Ulva lactuca L. : E,F.
Ulva rigida (C. Ag.) Thur. : F.
Pseudendoclonium marinum (Reinke) Aleem et Schulz : A,E.
Urospora bangioides (Harv.) Batt. : E.
Chaetomorpha melagonium (Web. et Mohr) Kütz. : B.
Cladophora? glaucescens (Griff. ex Harv.) Harv. : D.
Cladophora rupestris (L.) Kütz. : A,B,C,E,F.
Cladophora? sericea (Huds.) Kütz. : C,E,F.
Rhizoclonium implexum (Dillw.) Kütz. : A.

LICHENS

(A. E. W.)

Area C : *Caloplaca granulosa* (Muell. Arg.) Jatta
Lecanora gangaleoides Nyl.
Lecanora helicopsis (Wahlenb.) Ach.
Ramalina siliquosa forma *cornuta* (Ach.) Wade
Xanthoria parietina (L.) Th. Fr.

Area D : *Caloplaca granulosa*
Calopalaca marina Wedd.
Lecanora albescens (Hoffm.) Floerke
Lecanora gangaleoides
Lecanora helicopsis
Ramalina siliquosa forma *cornuta*
Verrucaria maura Wahlenb.
Xanthoria parietina

Area E : *Anaptychia fusca* (Huds.) Vain.
Caloplaca granulosa
Caloplaca heppiana var. *thallincola* (Wedd.)
Caloplaca marina
Lecanora gangaleoides
Lecanora helicopsis
Ramalina siliquosa forma *cornuta*
Verrucaria maura
Xanthoria parietina

Area F : *Verrucaria maura*

Caloplaca granulosa and *C. heppiana* var. *thallincola* are new records for vice-county 68. The apparent frequency of *Caloplaca granulosa* and the seeming rarity of *C. heppiana* (usually an abundant lichen on the coast) are noteworthy.

KEY TO THE LICHENS LISTED :

Thallus erect, fruticose	*Ramalina siliquosa*
Thallus foliose, yellow or orange	*Xanthoria parietina*
Thallus closely appressed with marginal laciniae or lobes	
YELLOW OR ORANGE	
With isidia	*Caloplaca granulosa*
Without isidia	
Marginal laciniae well developed ...	*Caloplaca heppiana*
Marginal laciniae poorly developed or almost absent	*Caloplaca marina*
CHESTNUT OR GREENISH BROWN	*Anaptychia fusca*
Thallus crustose, without marginal lobes	
GREY OR WHITISH, FRUIT AN APOTHECIUM	
Apothecia pale, brown or reddish ...	*Lecanora albescens*
Apothecia black	*Lecanora gangaleoides*
Apothecia dark brown	*Lecanora helicopsis*
BLACK, THIN, FRUIT A PERITHECIUM ...	*Verrucaria maura*

GLOSSARY :

Apothecium - an open disc-shaped fructification.
Crustose - thallus forming a thin, closely adherent crust.
Foliose - thallus flat with free lobes.
Fruticose - thallus attached by a single basal point, tufted or bushy.
Isidia - minute peg-like or coral-like outgrowths from the thallus.
Perithecium - a closed, more or less spherical, fructification.

TABLE 1.

Comparison of shore distribution of plants present on both transects 1 and 2. In calculating % exposure, the influence of all but the largest pools had to be ignored, but it is important to remember that many of the animals and plants listed in these tables live in or seek out damp refuges when the tide is out.

	Transect 1. exposure to air %	Transect 1. vertical spread (ft. above or below O.D.)	Transect 2. exposure to air %	Transect 2. vertical spread (ft. above or below O.D.)	Upper limit on transect 2 as compared with transect 1 (ft.)	Lower limit on transect 2 as compared with transect 1 (ft.)
Terrestrial angiosperms	100	12.81 & above	100	23.3 & above		+10.49
Lecanora sp.	100–90	12.81 to 8.13	100–74	23.3 to 7.14	+10.49	–0.99
Xanthoria parietina	100–90	12.81 to 8.13	100–74	22.3 to 7.14	+10.49	–0.99
Prasiola stipitata	100–73	12.81 to 5.78	100–62	23.3 to 4.78	+10.49	–1.00
Pelvetia canaliculata	73–64	5.78 to 3.55	65–62	5.74 to 4.78	–0.04	+1.23
Chondrus crispus	73–10	5.78 to –7.61	61–31	4.20 to –3.97	–1.58	+3.64
Fucus vesiculosus	67–35	4.41 to –3.86	60–38	3.44 to –2.59	–0.97	+1.27
Corallina officinalis	63–25	2.90 to –6.62	61–13	4.20 to –7.62	+1.30	–1.00
Lithothamnion sp.	64–0	3.55 to –7.61 (& below)	61–0	4.20 to –8.30 (& below)	+0.65	(sublittoral)
Rhodymenia palmata	63–32	3.33 to –4.45	61–13	4.20 to –7.62	+0.87	–3.17
Fucus serratus	53–21	0.69 to –6.62	44–41	–0.54 to –1.09	–1.23	+5.53
Himanthalia elongata	37–25	–3.28 to –5.36	51–31	2.05 to –3.97	+5.33	+1.39
Laminaria digitata	32–0	–4.45 to –7.61	50–0	1.21 to –8.30	+5.66	(sublittoral)
Alaria esculenta	21–10	–6.62 to –7.61	44–0	–0.54 to –8.30 (& below)	+6.08	(sublittoral on transect 2)

TABLE 2.

Comparison of shore distribution of animals present on both transects 1 and 2.

	Transect 1 exposure to air %	Transect 1 vertical spread (ft. above or below O.D.)	Transect 2 exposure to air %	Transect 2 vertical spread (ft. above or below O.D.)	Upper limit on transect 2 as compared with transect 1 (ft.)	Lower limit on transect 2 as compared with transect 1 (ft.)
Balanus balanoides	73–25	5.78 to –5.36	93–0	8.78 to –8.30 (& below)	+3.0	–2.94
Mytilus edulis	73–0	5.78 to –7.61 (& below)	93–0	8.78 to –8.30 (& below)	+3.0	(sublittoral on tr. 1)
Patella vulgata	73–25	5.78 to –5.36	74–13	7.14 to –7.62	+1.36	–2.26
Littorina rudis	64–0	3.55 to –7.61 (& below)	60–58	3.44 to 3.17	–0.11	(sublittoral on tr. 1.)
Littorina littoralis	64–0	3.55 to –7.61 (& below)	60–58	3.44 to 3.17	–0.11	(sublittoral on tr. 1)
Nucella lapillus	63–0	3.33 to –7.61 (& below)	60–0	3.44 to –8.30 (& below)	+0.11	(sublittoral)
Halichondria panicea	63–0	3.33 to –6.62 (& below)	51–0	2.05 to –6.10	–1.28	+0.52
Margarites helicinus	56–0	1.46 to –7.61 (& below)	0	–8.30 (& below)	–9.76	(sublittoral)
Lacuna vincta	40–0	–2.71 to –7.61 (& below)	31–22	–3.97 to –6.10	–1.26	(sublittoral on tr. 1)
Membranipora membranacea	0	–2.71 to –7.61 (& below)	0	–8.30 (& below)	–5.59	(sublittoral)
Electra pilosa	25–0	–2.71 to –7.61 (& below)	51–0	2.05 to –8.30 (& below)	+4.76	(sublittoral)
Verruca stroemia	25–0	–5.36 to –7.61 (& below)	0	–8.30 (& below)	–2.94	(sublittoral)
Monia squama	25–0	–5.36 to –7.61 (& below)	50–41	1.21 to –1.09	+6.57	(sublittoral on tr. 1)
Balanus crenatus	25–0	–5.36 to –7.61 (& below)	0	–8.30 (& below)	–2.94	(sublittoral)
Acmaea virginea	21–0	–6.62 to –7.61 (& below)	22–13	–6.10 to –7.62	+0.52	(sublittoral on tr. 1)

TABLE 3.

Shore distribution of organisms present on only one of the two transects.

	Transect 1. exposure to air %	Transect 1. vertical spread (ft. above or below O.D.)	Transect 2. exposure to air %	Transect 2. vertical spread (ft. above or below O.D.)
Ramalina siliquosa			100	23.3 to 13.32
Verrucaria maura			100	21.63 to 10.85
Porphyra umbilicalis			74–60	7.14 to 3.44
Littorina neritoides			93–74	8.78 to 7.14
Patella aspera			48–0	0.48 to –8.30 (& below)
Ascophyllum nodosum	64–53	3.55 to 0.69		
Polysiphonia lanosa	63–53	3.33 to 0.69		
Lomentaria articulata	44–25	–1.67 to –5.36		
Flustrella hispida	46–25	–1.12 to –5.36		
Spirorbis borealis	46–21	–1.12 to –6.62		
Gibbula cineraria	44–25	–1.67 to –5.36 (& below)		
Amphipholis squamata	40–0	–2.71 to –7.61		
Idotea granulosa	37–0	–2.71 to –7.61 (& below)		
Acanthodoris pilosa	25–21	–5.36 to –6.62		
Pomatoceros triqueter	25–0	–5.36 to –7.61		
Nereis pelagica	21–0	–6.62 to –7.61		

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RECORDS OF THE PHRYGANEIDAE (TRICHOPTERA) IN NORTHERN ENGLAND 1961-1964, WITH A SUMMARY OF THE DISTRIBUTION OF BRITISH SPECIES.

by

R. P. Bray

Department of Zoology, University of Newcastle upon Tyne.*

SUMMARY

Five of the ten British species of the family Phryganeidae have been collected in Northumberland and the Lake District. These records are discussed in relation to the national distribution records which have been summarised in new maps. Notes on habitats are given. In spite of inadequate collecting in many areas of Britain several species can be considered rare, while more common species show interesting patterns of distribution.

INTRODUCTION

These records were compiled during a field and taxonomic study of the larvae and pupae of the British Phryganeidae (Bray, 1964). Between October 1961 and July 1964 more than one hundred and twenty lakes and ponds were visited in northern England, chiefly in Northumberland and the Lake District.

The published records of Trichoptera in this region, mainly due to Philipson (1957) and Kimmins (1943, 1944), give little information on the phryganeids. As might be expected, a detailed search for a particular family revealed a more widespread distribution than indicated in these general surveys.

In addition to adult captures (Ad.), the occurrence of larvae (L.) or pupae (P.) can constitute a record for any locality as it is now possible to identify accurately the immature stages (Bray, 1964, and in preparation). The pupation and flight periods are given for localities visited regularly.

Brief notes on habitats are included and some tentative conclusions can be drawn on the distribution of the northern species. Such conclusions, however, should be discussed in conjunction with records from the whole of Britain. As no distribution maps of the Trichoptera are available, it was necessary to gather the information

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from published records. The majority were extracted from *The Entomologist's Monthly Magazine* and *The Entomologist*. Most records for Ireland are summarised by counties from King and Halbert (1910). These findings were augmented by some unpublished records and collections made by the present author at scattered localities throughout England, Scotland and Wales.

The national records are illustrated in maps. Although some parts of Britain are almost devoid of Trichoptera collections these maps must form the basis of a discussion on distribution.

The nomenclature follows Kloet and Hincks (1945) with revisions by Kimmins (1952). The Ordnance Survey map reference is given for the localities not named on the one-inch maps. The localities in each county are listed from north to south.

LIST OF RECORDS FROM NORTHERN ENGLAND

Agrypnia pagetana Curt.

Northumberland : Gosforth Park Lake, L. 7.11.61.

N. Lancashire : Blelham Tarn, L. 19.11.61, 28.10.62. Esthwaite Water, L. 21.6.61, 28.10.62.

Oligotricha ruficrus (Scop.)

Northumberland : Blackburn Crater (091018), P. late May to early June, Ad. early June to early August.

Westmorland : Moor House, Ad. 7.7.62.

N. Lancashire : Barngates pool (353013), L. 22.11.61. Arnside pool (337004), L. 22.11.61.

Phryganea obsoleta Hagen

Northumberland: Coldmartin Loughs, L. 13.8.63. Harehope upper (093217), L. 2.2.64. Black Lough, P. late June and July, Ad. mid-July to early September. Darden Lough, L. 8.10.61. Lough Hill, L. 30.4.64. Blaxter Lough, L. 6.5.62. Scald Law, L. 6.5.62.

Co. Durham : Bollihope Common Reservoir, L. 21.1.62. Hawkwood Head Reservoir, L. 1.3.64.

Westmorland : Green Hole, Moor House, L. P. and Ad. 7.7.62.

Cumberland : Black Band (730400), L. 3.6.62. Long Man (720360), L. 3.6.62.

Phryganea striata L.

Northumberland: Swinhoe Lakes, L. 13.8.63. Coldmartin Loughs, L. 10.9.63. Black Lough, L. 6.10.61., Ad. 27.5.63. Seaton Burn Lakes (230735), L. 2.10.61. Gosforth Crater (259717), P. May to June, Ad, early June to mid-July. Broomlee Lough, Ad. 11.6.63. Halleypike Loughs, L. 10.9.63. Leazes Park (243649), L. 15.11.61, 8.11.62.

Co. Durham : Monkton (314625), L. January 1962.

Phryganea varia F.

Northumberland : Kiln pond, Cat Inn, L. 11.2.62. Red House (005379), L. 10.1.62. Harehope lower (096206), L. 7.2.64. Linshiels, L. 13.5.64. Nelly's

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P227
Phryganeidae
1961-64

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Northumberland: Kiln pond, Cat Inn, L. 11.2.62. Red House (005379), L. 10.1.62. Harehope lower (096206), L. 7.2.64. Linshiels, L. 13.5.64. Nelly's

Moss, L. 20.2.62. Blackburn Lake, L. 17.12.61., Ad. 11.7.62, 18.7.62. Blackburn Crater, P. June to July, Ad. late June to mid-August. Rothley west, L. 17.10.62, 27.5.63. Greenhaugh (800867), Ad. 1.7.62. Linnhead Lake, L. 6.5.62. Arcot Hall (248753), L. 18.5.62. Seaton Burn Lakes, L. 2.10.61. Gosforth Crater, Ad. mid-July to mid-August. Leazes Park, L. 24.10.61, L. and P. 13.8.62.

N. Lancashire : Brathay Quarry (357017), L. 22.11.61. Lake Windermere Fisherty Howe, L. 19.11.61. Barngates pool, L. 22.11.61. Arnside pool, L. 22.11.61. Blelham Tarn, L. 28.10.62. Wharton (331988), L. 22.11.61. Nor Moss (378990), L. 19.11.61. Fishponds (367982), L. 21.11.61. Lily pond, L. 21.11.61. Three Dubs Tarn, L. 27.10.62. Moss Eccles, L. 20.11.61. Esthwaite Water, L. 28.10.62. Out Dubs Tarn, L. 21.11.61. Green Hows pool (363894), L. 23.11.61. Green Hows, L. 23.11.61. High Dam (362888), L. 23.11.61. Knittleton north, L. 21.4.63.

DISCUSSION ON DISTRIBUTION

Agrypnia pagetana. From the northern records this species appears to be typical of large lakes with well-developed emergent vegetation. It has been found in an over-grown canal (Hanna, 1957), and it is well known from the Fens. Map 1 indicates a widespread distribution from southern England to lowland Scotland.

Oligotricha ruficrus. The population at the Blackburn Crater provided the first record for Northumberland. This habitat is a flooded bomb-crater only twenty years old, and there is no indication of the origin of the colonising stock. Three lakes within one mile of the crater do not have this species. In fact, all records suggest that *O. ruficrus* is confined to small pools or ditches. Map 4 suggests that it occurs at all altitudes—it has been found at 1800 metres in Yugoslavia.

Phryganea striata. This species occurs widely in Northumberland from upland dystrophic loughs to large lakes and small ponds near sea level. The national records cover most of Britain (Map 6). It is one of the commonest species.

Phryganea obsoleta. The twelve records from north-east England are confined to the hills, ranging from 500—2000 ft. above sea level, the majority being over 1000 ft. In the Lake District it has been taken at Scandale Tarn (1820 ft.), Lingmoor Tarn (1300 ft.), Grizedale Tarn (1768 ft.) and on Skiddaw (? exact location). In spite of intensive collecting at lower levels it has not been found there. Scottish records are also concentrated in the Highland zone, and in England it only extends southwards along the Pennines (Map 7). It appears more widespread in Ireland. The one record for Wales is from Llynhillan

(1243 ft.). On the continent it has a northern and mountainous distribution (King & Halbert, 1910 ; Henriksen, 1937).

Phryganea varia. This is the commonest phryganeid in Northumberland and the Lake District. However, throughout northern England this species gives way to *P. obsoleta* at higher altitudes. Map 6 shows its range from Shetland to southern England and over most of Ireland. It is common at many lakes, ponds and small pools.

The last two species warrant further comment. Early captures in Northumberland suggested that *P. obsoleta* was restricted to peat pools and loughs while *P. varia* inhabited low-lying waters, only penetrating the foot-hills in more productive lakes in less peaty regions. But when *P. obsoleta* was found at the highly alkaline Malham Tarn, and *P. varia* was collected in the peatland of Whixall Moss, Shropshire, it was apparent that their distribution was not so readily explained.

At Harehope, in Northumberland, these two species occur at habitats only 1000 yds. apart with a difference in altitude of 300 ft. It would appear that *P. obsoleta* could disperse into the valley. This situation provides an opportunity to investigate the factors that maintain the distinct populations and so offer an explanation of their distribution on a wider scale. It should be noted that *P. obsoleta* has been successfully introduced into a lowland pond in cages of "Tygan" screencloth. Also, in common with other species, it has been reared through two generations in tap water under laboratory conditions so it is unlikely that a gross chemical or temperature factor is limiting *P. obsoleta* to upland regions.

All known records indicate that the following five species are absent from Northumberland and the Lake District. Their distribution in Britain is now summarised to complete the records of the family :—

Agrypnetes crassicornis McLachlan. Malham Tarn, Yorkshire, is the only known locality in Britain (Kimmins, 1952). This species is flightless, which not only restricts its natural dispersal from the Tarn, but poses the problem of how it got there. It was discovered at Malham only thirteen years ago, but it is not known whether it has always inhabited the Tarn, or whether it has recently arrived. If the former is the case, then the fact that it was overlooked for so long is probably due to its nocturnal activity and its flightless condition—two factors that would minimise its chances of being taken by the early Yorkshire collectors.

Experience suggests that in many trout lakes there is always a high probability that animals might be introduced either by accident when restocking, or intentionally as potential trout food. At present the possible source of what might be either a man-aided introduction, or a natural colonisation of the Tarn, is not known. Until more intensive collecting establishes that this is the only British locality, speculation on a theory that this is a "relict" population (Holmes, 1962) is not justified.

Agrypnia picta Kol. There are only two records of this species in Britain. The first came from a gas-lamp in Highgate and the other from Unst, Shetland (King, 1896). Unfortunately, it has not been possible to check these records as the London specimen was destroyed by fire and that from Unst is missing from the King collection at Glasgow.

A. picta has not been taken this century. Assuming that the two original specimens were correctly named, it is suggested that this species now has a very restricted range in Britain or it may be extinct.

Oligotricha clathrata (Kol.). With the exception of *Agrypnetes crassicornis*, this species is probably the rarest phryganeid in Britain. The first capture was made at Bishop's Wood, Staffordshire, and the majority of subsequent records have come from a limited area of Staffordshire and Shropshire (Map 3). The population at the Tottenham Marshes is almost certain to have died out ; those from from Wigtownshire were taken in 1904.

Phryganea grandis L. In the present survey *P. grandis* was not found in northern England, and it was not possible to confirm the early record for Whitfield Lough [see (Philipson, 1957)]. Sandison's work (reported in the Freshwater Biological Association's Annual Report for 1952), suggested that it was absent from the Lake District, and it is reasonable to suppose that Moon (1936) and Humphries (1936) confused the larva with that of *P. striata* in Lake Windermere.

Map 5 indicates a widespread distribution in Ireland and in England as far north as southern Lancashire and Yorkshire. It reappears in Scotland, but it is probably confined to lowland areas. Its range extends over Europe, but it does not penetrate as far north as *P. striata*.

Trichostegia minor (Curt.). No records from Ireland, Wales or Scotland have been traced. With the exception of the three localities in

Yorkshire, most captures have been confined to southern England (Map 2). On Brownsea Island, Dorset, *T. minor* has been found in a pool which dries up in summer ; an atypical feature of the Phryganeidae also noted by Morton (1897) in the New Forest.

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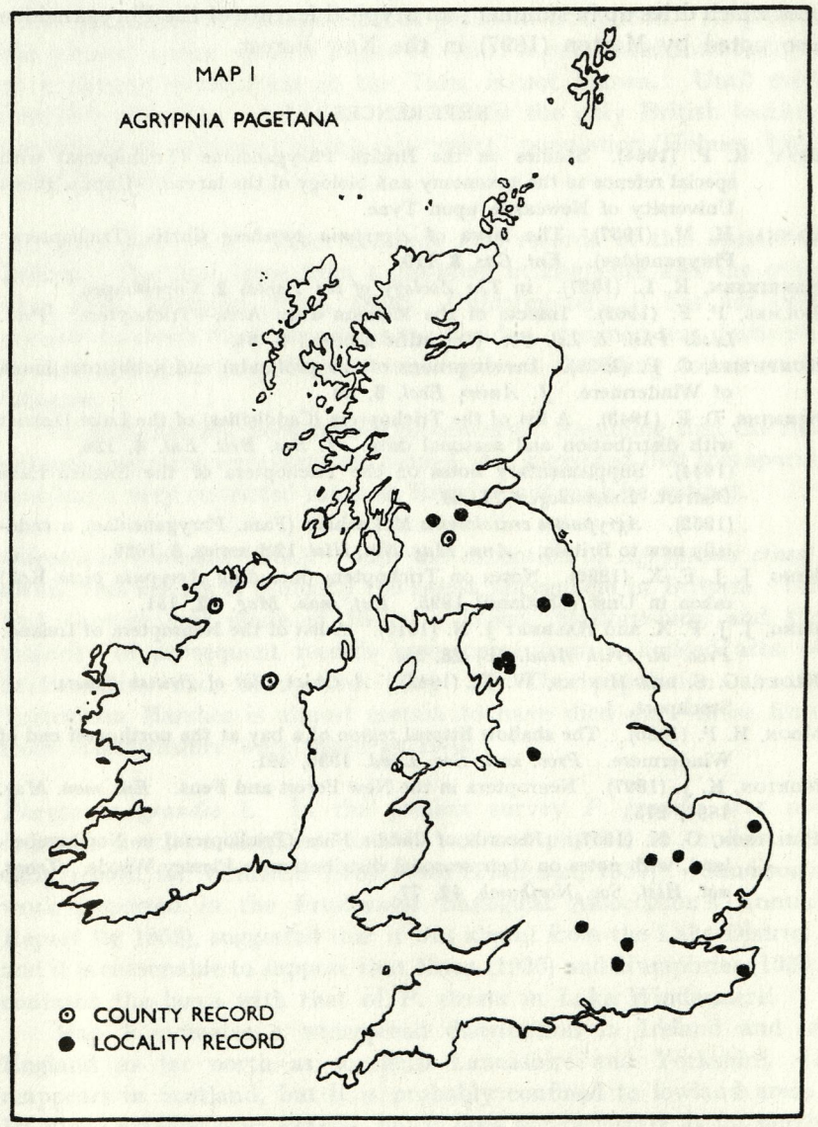
MAP 1

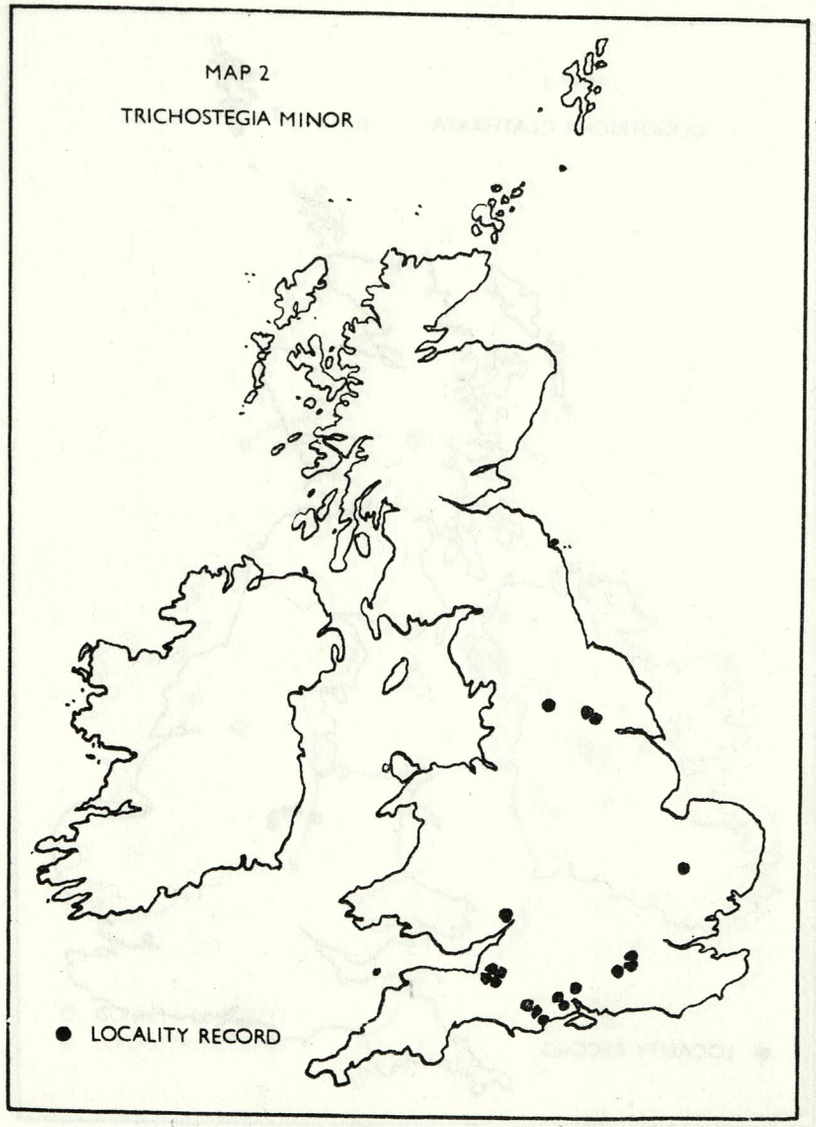
AGRYPNIA PAGETANA



⊙ COUNTY RECORD
● LOCALITY RECORD

MAP 2

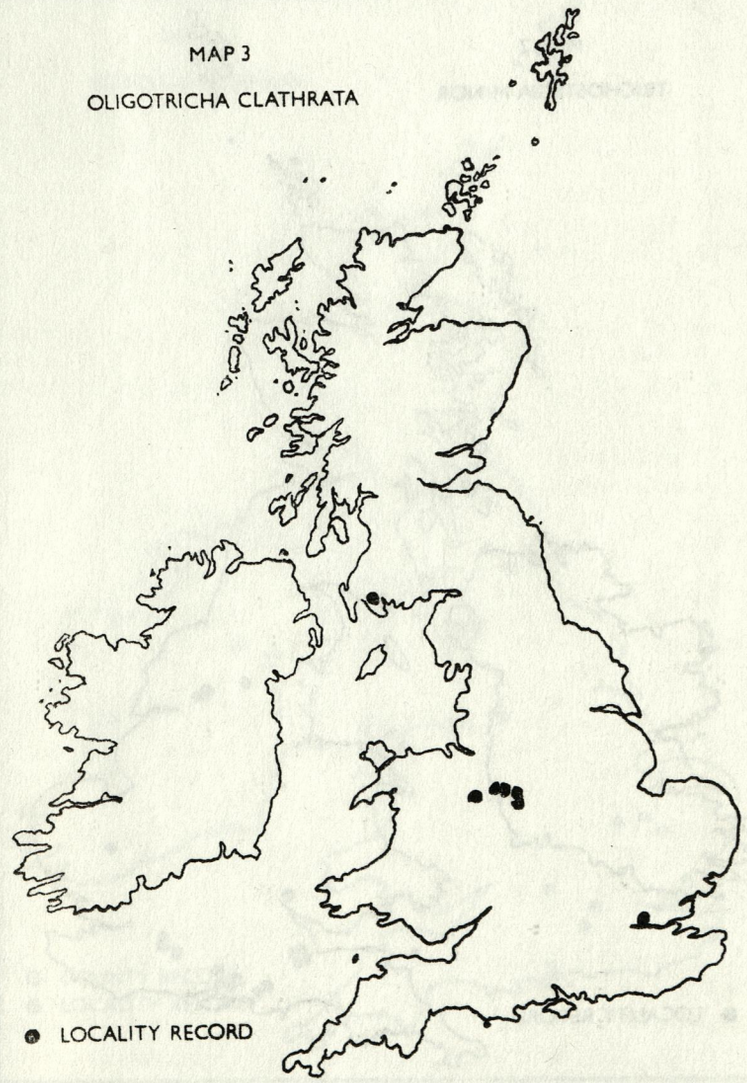
TRICHOSTEGIA MINOR



● LOCALITY RECORD

MAP 3

OLIGOTRICHA CLATHRATA



● LOCALITY RECORD

MAP 4

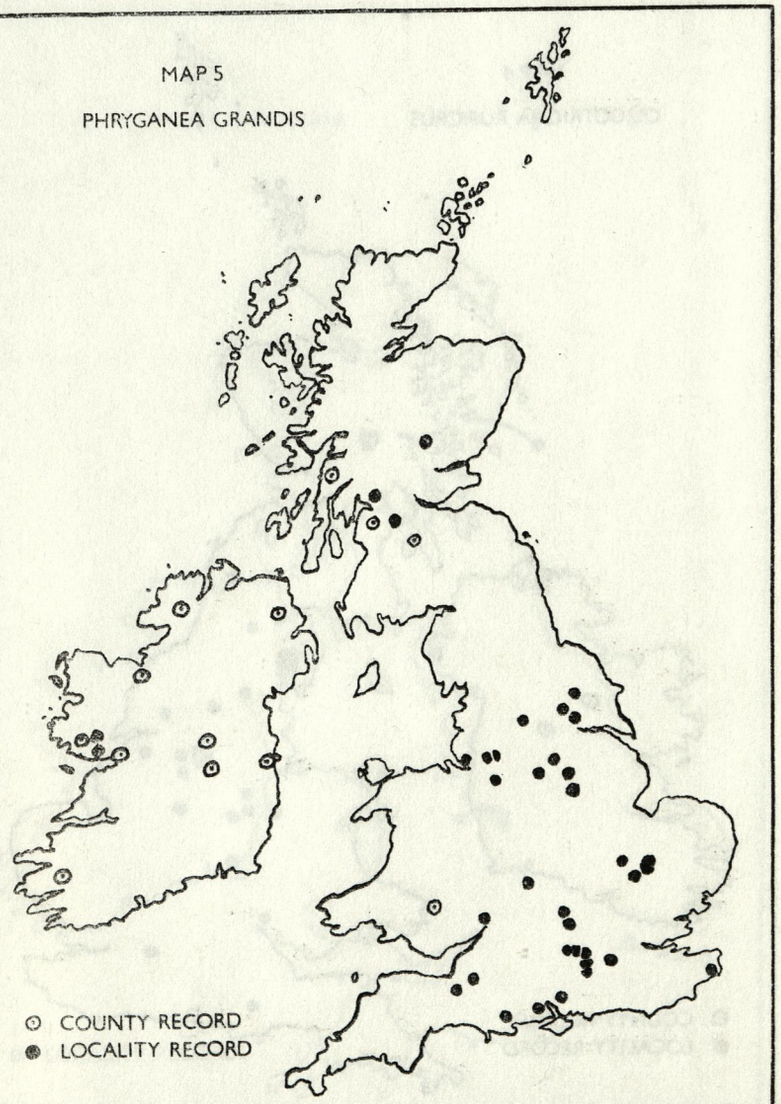
OLIGOTRICHA RUFICRUS



⊙ COUNTY RECORD
● LOCALITY RECORD

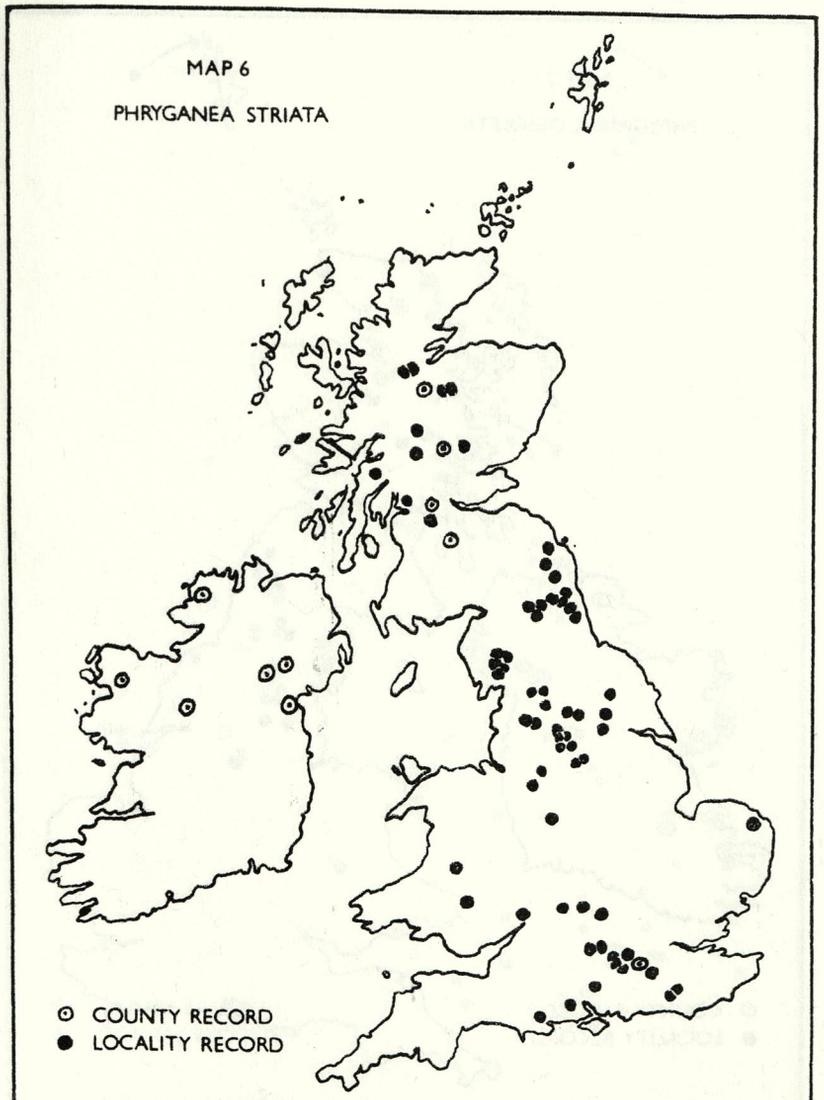
MAP 5

PHRYGANEA GRANDIS



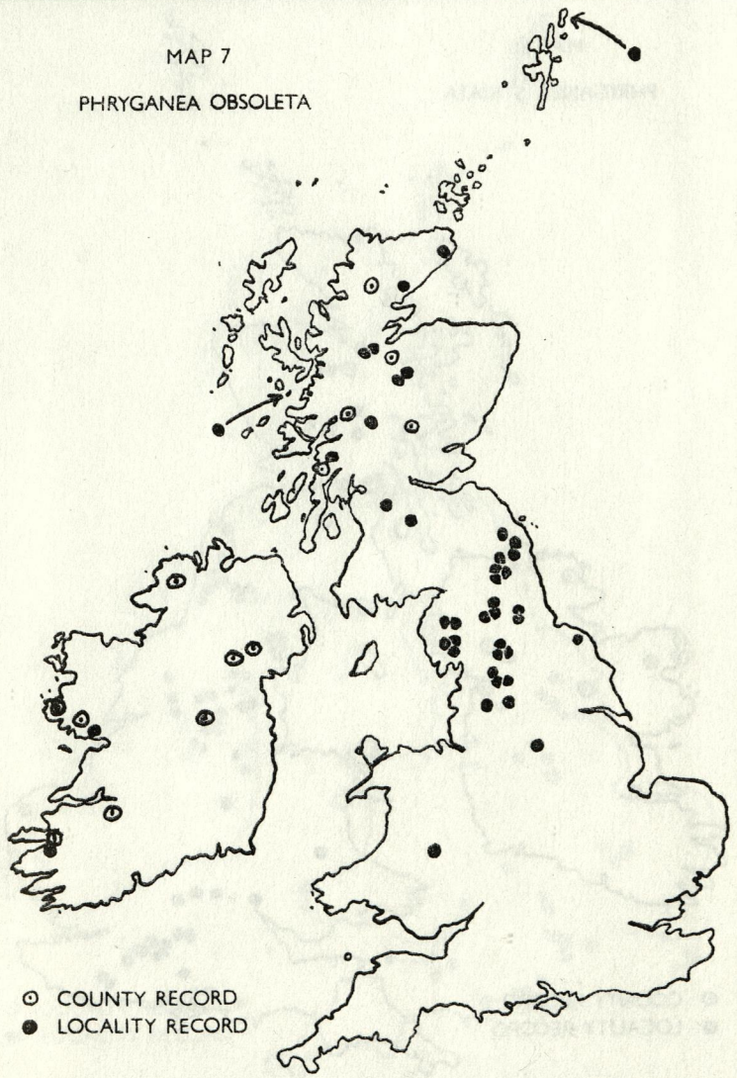
MAP 6

PHRYGANEA STRIATA



MAP 7

PHRYGANEA OBSOLETA



MAP 8

PHRYGANEA VARIA

