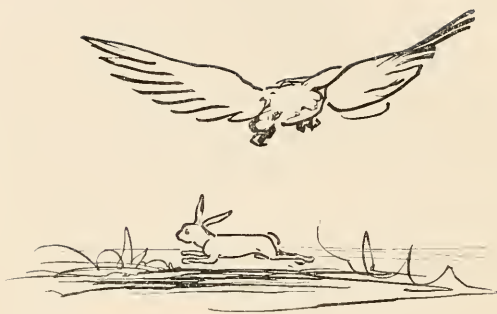


# APPENDIX.



THE VERTEBRATE  
FAUNA OF SUTHERLANDSHIRE.

By T. E. BUCKLEY, B.A., F.Z.S., Member of the British Ornithologists' Union ; and J. A. HARVIE-BROWN, F.R.S.E., F.Z.S., Member of the British Ornithologists' Union, President Royal Phyl. Soc., Edin., and Corresponding Member of the American Ornithologists' Union, etc. etc.

**Introductory ; and Physical Aspects.**

IN the joint preparation of this account we have considered that while Mr. T. E. Buckley takes in hand the eastern districts of the county, as having had greater experience of that portion, Mr. Harvie-Brown should undertake the western and northern portions for the same reason, and it became advisable to define more accurately the two districts thus separated. This was done with comparative ease, as the high road between Lairg and Tongue formed a very natural as well as convenient division ; Mr. Buckley knowing more of the fauna to the east of that line, and Mr. Harvie-Brown more of the fauna to the west of that line. An advantage is also found in that it fairly well represents a natural division between the high and rugged ranges of the western land, and the smoother, more gently undulating, moss and moorland of the eastern division ; which latter, though it claims amongst its most noticeable features several goodly mountains, such as Ben Clibrick and Ben Armine, and a wild stretch of deer-forest around Dunrobin, yet, is per-

haps better described as a vast waste of moorland with oases of woodland, and in the east and south a considerable portion of reclaimed land and forest-growth.

### Sources of Information.

Of published records of the Fauna of Sutherland, the authors have consulted the following, which are believed by them to represent all that has been published, or nearly so :—

*A Tour in Scotland.* J. Pennant. 1769.

*Tour in Scotland and Voyage to the Hebrides.* J. Pennant. 1774.

*The Old Statistical Account of Scotland*, consisting of 21 8vo volumes, each of from 500 to 600 pages, published between 1791 and 1797, and containing separate accounts of no less than 938 parishes, with many references to the Faunas of these parishes, some of which are valuable, and others of little use.

*A History of the Earldom of Sutherland*, to the year 1630, by Sir Robert Gordon, Bart. ; first published in 1813, giving a curious account, often before quoted, of the *Feræ Naturæ* which roamed through the great old forests of those days.

*Macgillivray's British Quadrupeds* (Naturalist's Library, vol. xvii.) 1833.

*On the Quadrupeds and Birds Inhabiting the County of Sutherland*, by P. L. Selby and Sir W. Jardine, Bart. *Edin. New Phil. Journal*, January and April. 1836.

*A Voyage round the Coasts of Scotland and the Isles*, by James Wilson. 1842.

*The New Statistical Account of Scotland*, vol. xv., relating to Sutherland, and published in 1845.

*Wild Sports of the Highlands*, by Chas. St. John. 1846.

*The Birds of Sutherland and Ross-shire*, by Milner. (*Zoologist*, 1848, p. 2014.)

*A Tour in Sutherland*, by Chas. St. John, in which a List of the Birds of Sutherland is given. 1849.

*A List of Fish that have been Found in the Moray Firth and in the Fresh Waters of the Province of Moray*, by the Rev. Geo. Gordon. *Zool.* 1852, pp. 3454 and 3480. 1852.

*Fish and Crustacea of the North-East Coast of Scotland*, by the late Lieutenant Dyce and George Sim.

This principally refers to "fish found in the vicinity of Aberdeen," but is useful for comparative purposes.

*Notes on the Ornithology of Caithness*, by Messrs. Shearer and Osborne (*Proc. Royal Phyl. Soc. of Edinburgh*, vol. ii. 1861). 1861.

In vol. iii. of the above, mention is made of various rare species recorded as obtained in Sutherland and Caithness.

*On the Distribution of Birds in Great Britain during the Nesting Season*, by A. G. More (*Ibis*, 1865). 1865.

A most valuable paper, Messrs. Shearer and Osborne being still the only authorities quoted for Caithness, and Mr. W. Dunbar (since deceased) the only authority for Sutherland.

*Sporting Days*, by Mr. John Colquhoun. 1866. Contains a chapter on the Wilds of Sutherland, and a List of the Birds of the district, pp. 235-255.

Two papers in the *Zoologist* on *Nesting Tours in Sutherland*, by J. A. Harvie-Brown. 1867 and 1868.

*Colquhoun: Lecture on the Feræ Naturæ of British Isles*. 1873.

*Bell's British Quadrapeds* (2d Edition). 1874.

*On Birds found Breeding in Sutherland*, by J. A. Harvie-Brown. Glasgow. 1875.

*On the Mammals and Reptiles of Sutherland*, by Edward R. Alston and J. A. Harvie-Brown. Glasgow. 1875.

*Supplementary Notes on the Birds found Breeding in Sutherland*, by J. A. Harvie-Brown, F.Z.S. *Proc. Glasgow Nat. Hist. Soc.*, Sept. 1877.

*Fauna of Scotland—Mammalia*, by Edward R. Alston, drawn up at the request of the Council of Nat. Hist. Soc. of Glasgow. 1880.

*Day's Fishes of Great Britain and Ireland* (parts 1-7). 1880.

*On the Birds of the East of Sutherland*, by T. E. Buckley, F.Z.S. (*Proc. Nat. Hist. Soc., Glasgow*, Ap. 26, 1881). 1881.

Manuscript List of the Fish of Caithness, with notes by C. Peach, Esq. Kindly placed at our disposal for purposes of the present Fauna. 1884.

*List of Fishes of Banffshire*, by T. Edward. Morris' *Naturalist*, vol. v. 1855.

This referring to a county bordering upon the Faunal or Catchment Basin of "Moray," we consider it desirable to include for comparison's sake, but this has been worked into Day's MS. List.

*Contributions to the Ichthyology of Banffshire*, by W. (i.e., Rev. Walter Gregor), *op. cit.* 1855.

In Arbuthnot's *Account of Peterhead* there is what he calls "A Nat. Hist. of the Fishes found on the coasts of Buchan," which is not of much importance, but may be mentioned. 1815.

The above, along with our own note-books, journals, and egg-books, the assistance of several kind friends resident

in the county, and our personal observations conducted therein, are the materials which are at our disposal for this fauna. If imperfect in the part relating to fish, it is simply because a great field for observation remains here almost as yet untouched, and though many species are known with almost absolute certainty to occur along the coasts, yet the actual results are scarcely sufficient to formulate anything like a correct estimate of the faunal value.

### Geographical Position of Sutherland.

The counties of Sutherland and Caithness, the most northerly of the mainland of Scotland, possess a very extensive coast-line, together being more than three parts surrounded by sea, and Sutherland itself having a seaboard of at least two-thirds of its total circumference. It is bounded on the west by the more northern portion of the Great Minch, the channel that lies between the mainland and the Outer Hebrides,—a rich and comparatively unworked area of the great Stornoway herring-fishery. On the north and north-west the broad Atlantic laves its great cliffs and headlands, a few solitary islets alone intervening, such as North Rona and Souliskeir. The eastern shores are washed by the waters of the North Sea from the Ord—the Caithness and Sutherland march—until the south-east corner is reached at Dornoch, and here the southern coast is bounded by the still waters of the Dornoch Firth.

The whole of this coast-line teems with fish, a vast mine of wealth almost untouched on the west side; but the want of good and sufficient harbour and pier accommodation, especially on the more frequented east coast, prevents the proper development of these fisheries.

The remaining portion of the east of Sutherland is bounded by the eastern watershed of the Halladale and Helmsdale rivers, the hills forming which, much higher near the east coast, divide the famous grouse-moors of Caithness and the Duke of Portland's deer-forest at Berriedale from the great eastern moors of Sutherland.

Following the boundaries at the head of the Dornoch Firth in the south, comes the Kyle of Sutherland, which latter stretches its tidal waters inland to a little beyond the mouth of the river Cassley. Proceeding westward, the river Oykel resumes the office of the Kyle, and for some ten miles, between Rosehall and Oykel Bridge, separates this county from Ross-shire on the south. All along this boundary line, and upon the northern bank of the Kyle and river, runs the high road between Bonar Bridge on the Dornoch Firth, and Oykel Bridge on the river of that name. Between Oykel Bridge and Altnagealgach the high road crosses over a peninsular portion of Ross-shire, which abuts upon the previous line of the county march, and here the boundary, following the Oykel river to Loch Ailsh, runs up to near Coinnebheal, turning southward along the top of Braebag and out at Altnagealgach, the high road again entering Sutherland at this point. At Altnagealgach the march commences on the south side of Loch Borrolan, and includes the whole of the watershed of that loch to the top of the Cromalt hills, the chain of lochs of which Veyattie and Fewn are the chief, and the river Kirkaig, the latter continuing down to the sea, and separating Sutherland from the county of Cromarty, which here approaches it on the south.

The total area of Sutherland, excluding water-areas, is put down by the Ordnance Survey at 1,297,848 acres. In addition to this are the areas of fresh water contained within its boundaries, amounting to 47,631 acres or thereby; foreshore occupies 12,812 acres, and tidal waters 1553 acres, or a total area of the whole districts under our consideration of 1,359,845 acres, or about 2124 square miles.

Of the land area 260,765 acres, or about 407 square miles are occupied by waste or non-arable land, composed of mountain or moorland, sheep-farm, and deer-forest, or "links" of sand, such as those between the Dornoch Firth and Dunrobin. Arable land occupies 31,787 acres, or about 60 square miles, including the improved lands at Lairg and in the parish of Kildonan, and the south-east

shore of Loch Shin, as well as the scattered plots of crofters' possessions here and there over the county, and others of the less important areas.

Of the fresh-water area, the largest body of water is Loch Shin, being 18 miles in length, and having an average width of one to one and a half miles. This great lake forms an almost continuous canal-way, along with Lochs Griam, Merkland, More, and Stack, between Lairg at the south-west end of Loch Shin, and Laxford Loch on the west coast, interrupted only by the watershed, of comparatively low altitude, between Loch Merkland and Loch More. Other large sheets of water, all holding salmon, or trout, or sea-trout and char, are Lochs Naver, Laoghal, and Hope, in the north, connecting with the Pentland Firth; Lochs Assynt, Cama, Veyattie, Fewn, and Urigill; and Lochs Stack and More before mentioned. In the east centre are the large lochs, Badenloch, Loch-na-Clar, and Rimisdale or Loch-na-Cuiein, out of which flows the Helmsdale river; and in the south-east is Loch Brora, through which flows the river of the same name, both it and the Helmsdale running into the German Ocean. Besides these larger reservoirs of water there are innumerable lochs, lochans, and tarns of smaller area, especially numerous in the western districts of the county.

Besides the above, we have a wooded area of natural birch-wood or planted ground, amounting in all, approximately, to 7296 acres, or about 11 square miles. By far the greatest part of this area is in the south-east, between Dunrobin and the Dornoch Firth, and, though somewhat reduced of late, the woods around Rosehall. Also those on the eastern bank of the river Oykel, and again at Tongue in the north and Loch Inver in the west; but of these we will have again to speak when describing the physical aspect of the county. Even this comparatively small area of wood has a great influence on the fauna and flora. The above figures refer in most part to the last ascertained areas in Mr. M'Donald's paper in *The Highland and Agricultural Society's Trans.* for 1880. It would appear that in 1853 the woodland acreage was 10,812,



and in 1872 it had decreased to 7296. Since 1872 it is probable that the wooded area has again increased to 10,000 acres to date of 1883.

The physical features of our Highland counties are often indicated in the appropriate Gaelic names, usually descriptive of mountains, lochs, rivers, headlands, vales, valleys, rocks, and islands. Scourie means the pointed rock ; Stoir, the high-peaked cliff ; Meallmeadhonach, the middle or central hill ; Ben Chaoran or Harran, a high ridge contiguous with Ben More, means the hill of the cloudberry ; Glasbhein, the gray (*i.e.* stony) hill. So also Loch Gorm means the blue loch ; Loch Griam, the hill of the sun ; Loch-an-Hard, the high-lying loch ; Loch Clashmore, the loch of the great hollow, and so on. It has often seemed to us desirable that some good Gaelic scholar would work out all these interesting Gaelic names and tabulate them in each county, with their correct meanings : and we believe that Mr. Mackay of Portnacon could largely contribute towards such a desideratum.

### Description of the Physical Features of the Eastern Division of Sutherland.

On the north coast, and east from the Kyle of Tongue, the shore gradually rises, and *ex adverso* of this part are small green islands, lying not far from the mainland, principal among which is the island of Roan, which is inhabited. At Naver Bay there is a considerable extent of flat sandy coast, the only bit of any size of the kind, until Sandside, on the Caithness side of the county boundary, is reached. From here the coast-line becomes bold and rocky, with vertical headlands of considerable height, such as Skerra and Strathy Points, and occasionally indented by small sandy bays of no great size, again getting lower, flatter, and of a more sandy character as the county of Caithness is approached.

The eastern coast-line of Sutherland consists mostly of sandhills, stretching from Port Gower in the north to the

Dornoch Firth in the south. The hills, which from the Ord to Helmsdale rise close to the sea, after passing the latter place begin to recede farther and farther inland, thus leaving an intervening flat, varying from one to two miles in breadth, which is mostly under cultivation ; in two places—Dunrobin and the Little Ferry—woods take the place of fields, which here come down to the sea. At several points along this line rocks crop up, which resist to a certain extent the ravages of the sea, though the latter is encroaching in some places very rapidly.

The whole of this eastern sea-board, which is rather more than twenty-five miles in extent, presents but little variety, the sandhills, which commence on the southern side of the Helmsdale river, continuing with little intermission to the Dornoch Firth. The beach affords a convenient nesting-place to such birds as the Arctic tern, oyster-catcher, and ringed plover, and sheldrakes breed in the rabbit-burrows in the sandhills. Wherever there are sandy cliffs high enough to afford a secure nesting-place, jackdaws build in numbers, and these do great havoc amongst the eggs of the terns and oyster-catchers.

Certain rocks which are bare at half tide are frequented by seals, mostly the Gray seal (*Halichærus gryphus*), the Firth seal (*Phoca vitulina*) being less common along the open shore, though very abundant both in the Dornoch Firth and at the Little Ferry. On one occasion the Harp seal (*Phoca Greenlandica*) has been shot by Mr. Houstoun of Kintradwell, but its value not being sufficiently known, only the skin was preserved, and this was afterwards cut up for various purposes.

The wave of migration seems almost entirely to leave the Sutherland coast untouched, and this may account for the very small numbers of migratory waders that are to be seen, even in such an apparently favourable locality as the Little Ferry : a few bar-tailed godwits appear now and then, but even dunlins are scarce ; the mussel-scalps attract great numbers of oyster-catchers ; and in hard weather a good many golden plovers, driven off the hills, come down to the shores. The only gray plover

known to have occurred on this part of the coast was shot near Kintradwell, amongst some rocks, and was quite alone ; these patches of rock, too, are a favourite resort of the purple sandpiper, mixed with redshanks and a few turnstones, though the latter often keep in small flocks by themselves.

Leaving the coast-line, we next come to the cultivated district which lies between the sandhills and the rising ground ; this presents but little interest, excepting that the quail has been found nesting on one or two occasions near Brora and also near Dornoch, as recorded by Sheriff Mackenzie. The wooded district which occupies a portion of the same area, and extends also higher up the rising ground, is of considerable importance.

It may be as well to mention that there are no pine-trees in Sutherland of any great antiquity, probably none one hundred years old. The oldest now standing are situated between the Cassley and Oykel rivers, the next in age being those at Kilcalmkill or Gordonbush, and Kintradwell, which were probably planted about the same time. The great extent of country now under trees has all been planted within the last sixty or seventy years. Such an extent of newly planted ground, for so long a time barren, must, and indeed now does, exercise a decided influence on the fauna of the county. On the densely wooded side of Ben Bhraggie the badger exists :—one of the few remaining places in the county still frequented by it, though formerly they were apparently common.—The siskin nests here, too, and doubtless the crossbill also, though the only place where the latter is known to do so with certainty is in the Balblair wood at the Little Ferry. In the Uppat woods a female honey buzzard was shot in July, which might well have been breeding, though no nest has, so far, actually been discovered.

The greatest extent of wooded country lies in the parishes of Dornoch, Creich, and Golspie, though almost every parish possesses some newly planted ground, and should this prove a success, no doubt still more land will be thus treated : every strath, too, possesses some natural

birch ; of little value, however, except to give shelter to game and sheep, but all having influence on the bird life of the district.

In mentioning the cultivated districts, no account has been taken of the large tract of country ploughed up and reclaimed by the Duke of Sutherland in the parish of Kildonan, but as yet this has had comparatively little effect upon the fauna of that district. We understand, however, that plantations have been laid out there, and there can be no manner of doubt that, should the trees thrive, a few years will see a marked change in many forms of life.

In the north and south-west of this district no hills of any importance occur, but in the central districts the country assumes a different character. Entering Sutherland from the Caithness side, we find high ground all along the south-eastern part of the march dividing the two counties, one of the highest points being Cnoc-naneranach or "the Irishman," as it is generally called, and we have on the same range an altitude of over 1300 feet close to the sea above Helmsdale. Most striking of all are the two Bens Griam, rising as they do in solid masses, straight from the wet flat moorland that characterises that part of the county, giving them an appearance of height even greater than that they actually possess, which in itself is considerable, being close on 2000 feet. At one time both this hill and the "Irishman," before mentioned, were inhabited by ptarmigan, but these have now been extinct there for some years, though as late as 1881 a single ptarmigan was shot on some flow ground near the first-mentioned hills, and a bird, probably the same, had been seen on one of these hills during the previous season.

South-west of the Bens Griam, and second highest of the Sutherland hills, comes Ben Clibrick, 3164 feet. From its rounded shape it does not convey the idea of grandeur and height possessed by many smaller hills, which have more rugged and rocky outlines. It is haunted by every bird and beast that is dear to the Highland sportsmen and naturalist, and was at one time one of the

best, if not the best, hill for ptarmigan in the county. Within a few feet of the top is a spring of the coldest water. Its eastern side is the most precipitous, and here the golden eagle builds in safety, its nest being so placed as to be inaccessible, though the eggs may be easily seen. At the foot of its eastern slope is Loch Choire, the head waters of the Mallert (Mheal aird<sup>1</sup>) river, one of the principal feeders of the Naver. Looking towards the east, from Loch Choire, the rounded group of hills that form Ben Armine rise, terminating in two high tops, Craigmore and Craigbeg, the former being 2306 feet in height. The ptarmigan is here fast dying out, very few being seen now. The eastern side is fairly precipitous, and is at times haunted by a pair of golden eagles, which are strictly preserved by the lessee of the shootings; the western side is well wooded on its lower slopes, especially about Coirna-fearn, a very favourite resort of deer. Stretching all round on the east and north are vast tracts of wet flow ground, intersected by burns which fall wholly into the Brora river, or rather that branch of it which is called the Blackwater.

The other hills of importance are, Ben Uarie, 1923 feet, and Ben a Veallich 1936 feet, in the parishes of Loth and Kildonan; Ben Smeorale 1667 feet, and Ben Horn 1712, both in the parish of Clyne; and Ben Bhraggie, in the parish of Golspie, 1282 feet. None of these hills present that rugged, wild, and rocky appearance that characterises those in the west; they are for the most part smooth and rounded, the higher ones in the centre of the county covered towards the top with a coarse grass, which shows a vivid green in the sunlight; the others, nearer the south and east, have heather growing up to their summits, which gets coarser and more stunted the higher it ascends. In some places, where the ground is sufficiently wet, what is called "deer's hair" grass appears, but this is more characteristic of the low, wet, flow grounds.

<sup>1</sup> In Ordnance Survey Map—inch scale—this is given "Abhainn a Mhail Aird," correctly Abhuin a Mhæal Aird or Mheal Aird.

Although we have here mentioned the principal hills, it must not be understood that the rest of the county is quite flat,—far from it: the whole of the south-eastern parts, extending along the Caithness march and from the sea to the centre of the county, consists of moderately high hilly ground, highest near the sea, and gradually lowering in height inland until it ends in those large lochs and flat wet flows out of which the principal rivers of the county rise. This ground contains the most productive grouse-moors of Sutherland, some of them rivalling the best that Perthshire or Inverness-shire can show, though of late years disease, from which they are still suffering, has made sad havoc amongst the birds.

We have mentioned the word “flow” several times. A flow is a wet tract of ground, generally flat, though such can exist on a gentle slope where there has been no artificial drainage; this is covered by a short kind of grass, which in autumn assumes nearly the colour of a red-deer, hence its trivial name “deer-hair grass.” Scattered through this tract are small ponds locally called “bru-lochans,” some deep, others shallow: in the former a pair of red-throated divers may often be seen, and their nest found close to the edge, nor are they particular as to the size of the lochans, as we have seen them in one only about 25 yards long by about 15 broad. In the shallow pools, great bunches of the pretty “cotton grass” grow, and this is also scattered all through the flow district. This grass, which is locally termed by the shepherds “mossing,” is of great importance to the sheep farmers, because, being the first grass that starts up in spring, it is of great service in helping the sheep to get into condition after the long winter. These flows are here and there intersected by deep, black, peaty water-courses, and these lead into the sluggish burns (whose edges are covered with good grass), which in turn meander lazily along, until, as they approach their outlets, they gain more rapidity and vigour. In the drier parts of the flow, heather grows, much intermixed with reindeer moss and different sorts of lichens. Grouse inhabit these drier places, and on

the bare hillocks the golden plovers have their nests. Gulls of different species breed here, though, owing to incessant persecution, are much rarer than formerly, *i.e.*,—those that are destructive to game or sheep, such as the herring gull and the great and lesser black-backed gulls.—If, in any of these larger “brulochans” we find a particularly boggy island, inaccessible almost, owing to deep mud and shallow water, there is often a colony of black-headed gulls nesting, and a pair or two of ducks, teal, widgeon, or, less commonly, coots. The wet flows themselves are the abode of the dunlin; and the wild-goose, though much rarer now than formerly, places her nest in a dry tuft of heather.

The greatest flow district is situated in the northern part of the parishes of Kildonan and Clyne, the central part of the parish of Farr, and the southern part of the parish of Reay, the ground getting drier by the drainage of the rivers of these districts as we approach the coast.

Having now given a general outline of the physical features of the land of our eastern division, we come next to speak of the rivers and lochs.

The rivers here included present in most cases a very different appearance to those of the west, being of a less wild and rapid character, and also less rocky, except in their middle reaches. The Shin, however, is an exception to this rule, being rocky throughout nearly the whole of its course. All the early spring salmon rivers lie in this district; the Naver, which issues from Loch Naver, drains the greater part of the parish of Farr, and falls into the sea on the north side of the county; the Helmsdale, which issues from the large lochs in the centre of the county, drains the parish of Kildonan, and falls into the sea on the east coast; as does also the Brora, which drains the greater part of the parishes of Clyne and Rogart; and the Shin, before mentioned, issuing from Loch Shin, which drains the parish of Lairg and falls into the Kyle of Sutherland in the east. These four all contain early spring salmon. The next of importance is the Halladale, which drains the parish of Reay, and runs into the Pentland Firth.



The parishes of Dornoch and Creich possess no rivers worthy of the name, the Evelix being the most important, and after that the Carnack, which runs into the Fleet, near its mouth.

There are two small rivers, one indeed no more than a large burn, which deserve a little notice. The first, the Lothbeg Burn, has a course of only some six miles, but it drains the wildest district in the whole of the east of Sutherland. Rising in the Meallanlia hills it runs through the ancient forest of Sletal, the hills rising on each side almost perpendicularly. The celebrated Sletal cairn is situated here, the scene of the death of the last Sutherland wolf, and possibly the last stronghold of the wild-cat in this part of the county, if such an animal exists here at all. This river enters the sea through an artificial cutting over which the railway now passes, but at one time it flowed into a marsh, which is now one of the best cultivated farms in the county; this drainage was effected by one of the present Duke's ancestors, who thus reclaimed a large extent of valuable land.

The other river is the Fleet, very sluggish in its lower reaches, and a great resort of sea-trout. At the mouth of this river and going through the marsh that lies to the south side of it, runs the high road to Dornoch, artificially raised above the sea level, hence its name, the "Mound." This mound was erected to keep the sea from the low lying grounds immediately inland, and sluices are placed at the mouth of the river to allow the surplus water to run off at low tide. This low lying ground is covered with alders and long grass, and is the best place in the county for wild-fowl, as they have the estuary of the Little Ferry, the only place of the kind entirely in the county, to resort to when disturbed inside, and *vice versâ*.

Lochs are not nearly so numerous in the east as in the west of the county, but still there are some magnificent sheets of water. Perhaps Loch Naver and Loch Brora bear off the palm for beauty, as their banks, and the slopes of the hills adjoining, are partially covered with trees; and, on the latter at least, bird life is abundant. At the head of



Loch Brora is a marsh where we have seen as many as thirty widgeon drakes together, and this in the breeding season.

The lochs in the centre of the district, desolate though they at first appear, have a wild beauty of their own. Badenloch, Loch-na-Clar, and Loch Rimisdale or Loch-na-Cuien, lie close together, the two first in fact running into one another, being only partly separated by a narrow spit of sand, which terminates in a heathery hillock. On this spit of sand, in former times, was situated a manufactory of flint arrows and spear-heads; and flakes of flint and chert are yet to be seen, together with the remains of ancient fires; in the long heather that fringes this hillock the reed-bunting places its nest for want of a better substitute, and round the gravelly and sandy shores of the loch the ringed plover lays her eggs.

This chain of lochs is the gathering ground for the remnant of wild-geese that remain to breed in the district, but these birds are decreasing yearly from some unknown cause, as they are now never shot, as used to be the case in former years, when as many as seventy, young and old, were sometimes killed in a single day.

Other lochs worthy of note are, Loch-an-Ruair and Liam-na-chlaven, in the northern part of Kildonan parish, Loch Choire, in the southern part of Farr parish, and Loch Migdale, in the parish of Creich, this latter remarkable as being the only loch possessing pike in the county.

## Western and Northern Portions.

### *Mountains.*

The great divide or backbone of Sutherland stretches northward from near the southern boundary, in the southwest of the county, to the limits in the north, of the Reay Forest, and then turns eastward by Ben Hope and the headwaters of the rivers running northwards to the Pentland Firth, terminating about the centre of the Caithness March.

The panorama of mountains opening up to view as the traveller approaches from the east by the mail road between Lairg and Assynt is not perhaps equalled in peculiarity of outline by any other in Scotland, although it may be excelled in grandeur by the almost Norwegian vastness of Coruisk in Skye, or the Romsdal-Horn similarity of the great mountains at the head of the narrow Loch Duich in Ross-shire.

Beginning in the south, we will mention the strange isolated mountains of W. Cromarty and Assynt, which meet the astonished gaze of the westward-bound traveller who for the first time penetrates among these further Highlands of Scotland. First, far to the southwards, from certain points of view is seen Ben Mohr Coigach (2438), with its peculiar hog's back or sierra-like ridge; Stack Polly (2009), with its splintered pinnacles of conglomerate; the rounded lumps and cones of Bens Coul Beg (2523) and Coul More (2786); the extraordinary terraced cliffs and sugar-loaf peaks of Sulbhein (2399); and the massive, far-receding slope and summit of Canisp (2779); with, lastly, the magnificent yet isolated range of Quinaig, whose numerous peaks reach elevations of from 2508 feet to 2653 feet.

Then, again, we find the attention attracted by the more continuous nature of the real backbone of hills; commencing in the south with Braebag (2044), rising rapidly upwards into the scarred and fretted face and summits of the huge Ben More, and its still bigger brother Coinneveal (Coinnemheall), 3273 and 3234 respectively, the highest peaks in Sutherland,—then follow, in a bold amphitheatric curve, Ben Chaoran (2500), Ben Uidh (2384), and Glashbhein (2541).

Away to the north and north-west extends a perfect multitude of mountains, chief amongst which are those of the Reay Forest, stretching from Ben Stack in the west (2364) and Ben Hee (2864) in the east, north-east to Ben Hope (3040), and including the isolated Ben Laoghal in the Tongue district (2504). To the north-west, and towards Cape Wrath, are Ben Arkle (2578), Foinnebhein

(2980), Graun Stackach (2630), Ben Spionnaidh (2537), and Fashven (Fashbhein) (1504). The stony tops of most of these great mountains are granitic or quartzose, and in the Reay Forest, of upper gneiss, covered with a soft carpeting of mosses and lichens on the summit-plateaux. Lower down the material is similar, but it is clothed in heather and grasses. The bases are in great measure of similar formation, except where the great outcroppings of the Durness and Assynt limestones appear, as at Durness, and in the great cliffs of Stronchrubie, Knockan, and Elphin, or where, as in Ben Stack, the Hebridean gneiss occurs, or interspersed with the Torridon conglomerates, as in the case of Quinaig, Canisp, and Suilbhein.

The vegetation of the limestones, as might be expected, is singularly rich and luxuriant, producing amongst the excellent general sheep-pasturage some rare Scottish wild-flowers, such as *Dryas octopetala* and others.<sup>1</sup>

The marvellous springs of clearest and coldest water which gush out of the Assynt limestone cliffs, the trans-

<sup>1</sup> Our thanks are due to Messrs. Lionel Hinxman and Ben. N. Peach, of the Geological Survey of Scotland, for the following List of Plants found by them on the limestone of Durness—principally on the islands of Eilean Hoan, and the Skerries, and Eilean Garbh—in July 1883 :—

*Ranunculus acris*, *Cochlearia officinalis*, *Viola canina*, *Polygala vulgaris*, *Silene maritima*, *Arenaria serpylliflora*, *Cerastium triviale*, *Sinum catharticum*, *Trifolium ripens*, *Anthyllis vulneraria*, *Lotus coeniculatus*, *Potentilla anserina*, *P. tormentilla*, *Dryas octopetala*, *Sedum rhodiola*, *Ligusticum scoticum*, *Heracleum sphondylium*, *Archillea milleflorum*, *Daucus carota*, *Gallium verum*, *G. aparine*, *Knautia arvensis*, *Artemesia absinthium*, *Leontodon taraxacum*, *Antennaria dioica*, *Bellis perennis*, *Onopozdium acanthium*, *Carduus arvensis*, *Heiracium* (spec. ?), *Calluna vulgaris*, *Erica cinerea*, *Gentiana campestris*, *Myosotis arvensis*, *Euphrasia officinalis*, *Thymus serpyllum*, *Prunella vulgaris*, *Armeria maritima*, *Chenopodium album*, *Rumex pulcher*, *R. acetosella*, *Utica dioica*, *Orchis maculata*, *Scilla verna*, *Lugula campestris*, *Juncus acutiflorus*, *Plantago coronopus*, *P. maritima*, *P. media*. Besides the above flowering plants, these gentlemen also found the following grasses ; and *Asplenium marinum* amongst the cryptogams :—

*Grasses*.—*Anthoxanthum odoratum*, *Phleum arenarium*, *Alopecurus pratensis*, *Agrostis vulgaris*, *Holeus lanatus*, *Poa annua*, *P. pratensis*, *P. maritima*, *Cynosurus cristatus*, *Dactylis glomerata*,

lucent, ultramarine blue of the lakes near Durness, as well as the thick coating of lime encrusted upon the iron kettles and domestic pots and pans, not to speak of the delicious white-fleshed, crustacea-fed trout of the burns, all speak to the great beds of calcareous formation which underlie the gneiss, and crop out at various points in the west and north, and which, near the farm and shooting-box of Ledbeg, and again near Loch Alsh, harden and whiten into a very pure and white marble, long known and worked as Assynt marble.

This limestone is a very marked feature in the landscape, and a not unimportant factor in the zoological conditions. Amongst these clear streams there is a rich crustacean fauna and other lower forms of animal life. We consider that the limestone of Durness has even left its impress upon the Salmonidæ of its streams and lakes.

The wild and rugged scenery of the west of Sutherland is not, however, due entirely to the vast masses of mountain, nor even to their peculiar shapes and isolated positions, though undoubtedly these are very important factors. Besides the greater majesty of the hills, there are many wild and sinuous valleys and picturesquely-grouped combinations of lesser elevations, which introduce a charm which one might look for in vain if the hills stood alone in all their nakedness. There are wooded lakes and birch-clad hollows, heathery knolls and gray lichen-covered boulders, sparkling rivers and cascades ; and there are the quaint, and quiet, and "bonny" peat-reek shealings, and closely-nestling crofts and cabins—abundant scope for the artist, who complains of the vastness of the subjects presented by the higher mountains and wider valleys.

Yet, again, we find bleak, water-sodden moors, with sedgy-margined lakes—the home of the dunlin and the golden plover, and haunted by the weird shriek of the rain-bird or red-throated diver (*Colymbus septentrionalis*)

*Festuca orata*, *Triticum actitum*, *Lolium perenne*. Of all these plants and grasses the following are found on Eilean Garbh :—*Cochlearia domica*, *Armeria maritima*, *Rumex* (spec. ?) *Alriplex hastata*, *Plantago maritima*, and a thin maritime grass.

—but these are mostly confined to the south-west of our western district, and to the bleak upland moors of Durness and Cape Wrath, in which latter district they roll along with vast wavy undulations, like a heather-clad prairie, reminding one of an Arctic tundra more than any other part of Scotland we can recall to memory.

The marvellously broken and sinuous nature of the whole western land, and markedly of Assynt and Edderachyllis, affords many natural basins and resting-places for sheets of water of varying depths and areas.

Of inland valleys perhaps the most remarkable and the finest in aspect is the long narrow Glen Canisp, studded throughout its lower reaches with lovely smiling lakes and rivulets, but receding in darker grandeur towards the hills. The Pass of Stronchrubie and the approach to Loch Assynt by the base of the gigantic limestone cliffs, where the holly-fern and the wall rue flourish, and where great stems of ivy and holly find clinging room and roothold in its buttresses,—is also well worthy of the admiration of the traveller. The great pass also by the lakes of the Reay Forest, between the head waters of Loch Shin and the mouth of the Laxford, is wild and grand in the extreme. Nor can we omit mention of the “Melancholy Strath of Dionard,” ten long dark-shadowed miles of valley between the shooting-lodge of Gualinn and the Kyle of Durness. As we first witnessed this dreary valley, with the snake-like course of its native stream—the Dionard or Grudie—we could not recall a weirder, wilder scene in Scotland, not even if we remember the great moor of Rannoch in Perthshire, or the interminable moors of the eastern division of the county.

#### *Inland Lochs and Rivers.*

The parish of Assynt alone is said to hold over 300 lochs of various sizes. Edderachyllis is not far behind, but Durness is not quite so honeycombed. These gems, set in the dark moorland or high on the shoulder of one of the monarchs of mountains, glisten and dance in the

joy of summer sunshine, or fade and gleam more darkly in the winter rain and snow-drift. The variety of lovely scenery which is presented by the ever-shifting panorama of light and shade on mountain, mere, and river, during a drive on a fine day through Assynt and Edderachyllis, can scarcely be excelled by anything in Scotland. Perhaps one of the very loveliest of the smaller lakes is Loch Beannoch, near Loch Inver, but there are many that rival it in beauty. With the scarred and torrent-torn sides and towering form of Quinaig throughout its whole western range for a background, with a middle distance of lesser heights and tarn-held hollows, and the foreground Loch Beannoch, with its birch-clad, heron-inhabited islets and shore, with a rich-tinted gleam of western sunlight purpling the heights and reddening the debris slopes, and casting into shade the nearer outlines, one can scarcely imagine a more fairy-like scene. Or, if we choose the wilder beauties of Loch Assynt,—surrounded by ramparts of hills, and backed by the vast forms of the Assynt mountains,—its edges but partially clad in birch-wood, and its immediate shores precipitous and rocky, let us view it both in its quieter loveliness, and, best, in the wild grandeur of a storm, when masses of dark cloud roll rapidly across the stern outlines of the hills, and the unearthly shriek of the red-throated diver sounds like the last call of a drowning child.

Some of these lochs are margined by granite slopes and fed by springs of purest water, such as those on the higher ramparts of Ben More, and the great corries of Glasbhein and Ben Uidhe. These teem with the lower forms of life. Others at lower elevations are fed by the limestone burns, and these are full of crustacea, and yet others are fed by peaty, soft-tasted water, growing the yellow water-lily in abundance, covered with vegetable life, and rich also in water-insects and zoological stores of wealth. By far the larger proportion of these lochs is inhabited by trout, some by salmon and sea-trout in season, and others by char, but a few are or have been originally destitute of piscine life. Had we space we could dilate upon some

of the extraordinary peculiarities of the inhabitants of certain others.

Many of these lovely sheets of water are studded over with birch-clad islets, under the branches of which flourish the giant fronds of the great royal fern (*Osmunda regalis*). Other islets are heather-clad, a few grassy, and all are sown or planted by nature's own hand only.

Nor is life absent here in the bright summer-time. The sweet plaintive song of the willow-warbler, the startling cry of the common sandpiper, the trill of the dunlin, the "Teoch-vingh" of the greenshank—from which this last species gets its Gaelic name—or the wail of the curlew, and the discontented chatter of the gulls, are ever constant to the ear. The heron builds her unshapely nest on birch-trees, only a few feet from the ground, and the hooded crow flies silently on predatory quest intent, whilst close to shore, off some green island in the centre, swims a black-throated diver, occasionally uttering his hoarse and guttural greeting to his mate, as she sits on her two dark olive eggs, only a few feet from the water's edge.

Principal amongst the lochs of Assynt and the west of Scotland for their beauty are Assynt; for its grandeur Beannoch, near Loch Inver; and Loch Awe, near Inch-nadamph, for quiet loveliness and loneliness; Loch Cama, near Aultnagealgach, for its grand background of hill and mountain, and its wood-clad islands; and Loch Urigill, also near Aultnagealgach, for the bleakness of its surroundings, and of the Cromalt Hills, and its own vividly-green contrasts and innumerable water-fowl. There are many others, too numerous to name, but we must not omit mention of Loch Shin, a desolate and dreary expanse, narrow and ditch-like, but rich in piscine treasure; and Loch More, Loch Stack, Loch Merkland, and Loch Griam, all lovely in their own peculiarities of outline, foreground, and distance. High amongst the hills around Goberneasgach, in the Duke of Westminster's deer-forest, are some curious nooks and corners, and peculiar lakes, holding some strange varieties of trout. At Durness there are others, such as



Loch Maedie, in the centre of a peat moor, giving birth to the Smoo Burn, which falls into the roof of the wondrous Smoo Cave, in the limestone of Durness ; Loch Crassapuill, close to the Manse of Durness, with its bright clear sand, and vivid green water, and silvery-sided trout most closely approaching *Salmo levenensis*. Also Loch Borrallaigh, with its char and subterranean outlet communicating with Loch Crassapuill below, and hundreds of others, scarcely one of which is not worth some passing notice, which, however, our space forbids us to attempt. Yet we cannot pass by the strange little pools which perch high on the shoulder of Ben Hope, holding in their clear depths innumerable char of goodly size, nor can we omit to mention the drearier beauties of Loch Laoghal, Loch Slam and Craggie near Durness, or of the many other lochlets which nestle near the base of Ben Laoghal.

Of the West Sutherland rivers our choice is the Inver. Wild and rugged, and headlong in its frantic efforts to reach the sea at Loch Inver, throughout its lower reaches, in its upper portions it is calm and smooth, and wide and deep, expanding into little lochs and great ranges of salmon-spawning beds. It is fringed with birch, spruce, and fir—a lovely, wooded ravine—in its lower reaches ; but in its upper, save at the spot where it leaves Loch Assynt, is almost treeless. Thus it offers the finest combination of scenery of any river in the county. Next in loveliness is Kirkaig, if not indeed in its own forte outvieing the Inver. Its magnificent waterfall, 68 feet in height, and the dark romantic pool below, its rugged, narrow, and tortuous course, and its uniformly-wooded sides, make it almost if not quite the equal in beauty of its sister stream. Then comes the Laxford, by its name suggestive of great and goodly store of salmon ; and then the melancholy Strath of Dionard, near Durness. Savagely wild is the Dionard or Grudie in its upper reaches and at shingly-shored Loch Dionard ; melancholy, dreary, and weird, throughout the last 10 miles of its course, before it falls into the Kyle of Durness.

Of many minor streams we could recount their beauties



and sing their praises, such as those of Trailigill and Loanan, and the marvellous cold-stream burn or Ault-naoul, in the limestone of Assynt, or the wild tumbling burns of Glens Dhu and Coul—two glens, perhaps without their equal in scenic effect.

*Sea-Lochs and Shore-lines, Headlands and Stacks.*

Scarcely less in importance are the innumerable and far-reaching sea-lochs, commencing in the south-west with Loch Kirkaig and Loch Inver, the long arms of Glen Dhu and Glen Coul, and including amongst their number, between those and Cape Wrath, Scourie Bay, Lochs Laxford and Inchard, and the sandy Loch Sandwood, all united by a wild and rugged coast-line, save at little isolated spots, where vegetation struggles hard to gain a foothold in the crofts of the inhabitants, or at others where bits of sandy soil intervene, forming smiling little coves and nooks, sunny warm spots in the midst of the gaunt precipices and rock-bound shores. The grandeur of the coast culminates in the Island of Handa, of which we will speak later, and in the grand cliffs and stacks and headlands between Cape Wrath and Durness. Nor must we forget to mention the peculiar stacks or isolated pillars of rock of the "Old Man of Stoir," and that of the Buachaille or Shepherd near the entrance to Loch Sandwood, besides others we will speak of at Handa, and on the north coast, whilst treating of the islands off the coast.

*Sea Islands.*

Intimately associated with these deep sea indentations and the rugged coast-line are the innumerable islands and groups of islands which stud the whole western seaboard, principal amongst which are the islands off Loch Inver, the Badcall Islands off Cairnbawn Loch (which at its head separates into the wild recesses of Lochs Dhu and Coul), and Handa, the stupendous cliffs of which, reaching 620 feet in altitude, give shelter to the countless sea-fowl which throng its step-and-stair-like ledges "at the height of the season," and which, also, for many years,

held the eyries of the white-tailed eagle and peregrine falcon. To the northward are more islands off Loch Inchard; and Bulgie Island, famous for the booming sound of the great Atlantic waves which dash wildly into the half-submerged cavern on its north-west side, and which is heard miles out at sea by sailors on board the passing ships. Along the north coast are several islands, of which, perhaps, the most remarkable is the Island of Garbh, or the rough island, so named from the extremely hard nature of its limestone rock, and the excrescences or nodules of still harder lime fossils of crustaceae, which, having resisted the action of air and water, jut out hard and unyielding from the almost equally impervious matrix. This island alone is well worth a visit, both by the botanist and the collector of fossil crustacea. Near Tongue, and off the entrance to the Kyle of Tongue, are Rhon Island and Rabbit Island, the former frequented by seals (*Phoca vitulina*), and the latter swarming with rabbits, and visited daily by eagles and other birds of prey which delight in rabbit flesh. Most of these islands are frequented by various sea-fowl, eider ducks on the north coast, in small numbers, and gulls and terns, puffins and rock-birds; but in this respect Handa near Scourie stands pre-eminent, and is deserving of a few remarks apart from the rest.

Handa can most easily be visited from Scourie Bay, or, if the wind is too strong or unfavourable, by walking three miles to Tarbert, and there hiring a boat across the narrow sound which separates Handa from the mainland. There are many good sailors at Scourie and Tarbert, but the two who, perhaps, most fully fulfil the wants of a stranger by combining seamanship, fisher-lore, and cliff-climbing, are the two brothers Donald and Peter Mathieson. Any one going to Handa should be amply provided with sea-fishing gear, because, round its cliff-base and along shore, some of the finest sea-fishing can be had. We have assisted at the taking of  $2\frac{1}{2}$  cwts. of lythe and coal-fish during a few hours, out from Scourie, at 5 P.M. and back at 8 or 9; and, in a single tide, a little farther to the

south, we have helped in taking over 600 lbs. of cod into one boat. When visiting Handa do not omit a judicious dram for the men, and if belonging to the army of the blue ribbon, some other substitute for oneself, as Handa is not famed for the quality of its water.

Handa is a mile, more or less, in diameter, and nearly circular; slopes gradually towards the east or shoreward side, and where it is laved by the wavelets of the sheltered sound is interrupted by upright veins of trap, which form lovely little sandy coves for landing-places. A gradual slope leads upwards and westwards to the cliff edges, covered for a considerable space with short grass growing on sand, and producing sweet sheep-grazing and mushrooms. The cliff face occupies fully three-fourths of the circumference, low at the south and north-east; and, rising boldly and rapidly towards the west, culminates in a magnificent precipice of 620 feet in height. The sandy coves and trap dikes occupy the other fourth part of its coast-line. A flock of sheep is kept on the island, the grazing of which belongs to Mr. M'Iver, the Duke of Sutherland's factor at Scourie, and he used not infrequently to lose some of them, which, falling over the cliffs, were dashed to pieces on the rocks below, or drowned in the sea.

On the north side of Handa is a remarkable stack of rock, inaccessible, with flattish or sloping top, populated by a colony of great black-backed gulls, razorbills, guillemots, etc. Opposite is a deep scar or *gyö* in the cliff face, down which a man can easily descend, populated by a large colony of puffins which nestle amidst the grass slopes and loose masses of stones and debris. To the west of this is a projecting peninsula of cliff, over which, in certain winds, streams of rock-birds hurry up to their nesting-places on the stack. Farther west the cliff rises rapidly in altitude, till, facing west, it reaches 620 feet in height. There the peregrine falcon breeds, and, till of late years, the white-tailed or sea eagle reared her young. This is one of the grandest cliffs in Britain; though hardly, perhaps, comparing in height with Foula in Shetland,

Mingalay in the Hebrides, or St. Kilda, it comes little short of these in grandeur.

A little to the south of the culminating point of Handa, where the cliff dips suddenly to about 450 feet of elevation, there is a vast *creux* or pit, about 40 × 50 feet in surface area, being nearly perfectly square, unfenced when we last saw it, and penetrating perpendicularly the solid rock down to the sea-level, where it is connected with a deep inlet of the Western Ocean by an equilateral-sided tunnel. This curious place is haunted by kittiwakes, especially in stormy weather, but, save in the tunnel-way where a few shags have their nests, is not used as a breeding station. We know of no *creux* to equal this in magnitude or grandeur, not comparing with it for one moment those of the Channel Islands, nor the Bullers of Buchan on the Aberdeenshire coast. Almost throughout the whole circumference of Handa—at least in its cliff faces—the wonderful regularity of its parallel ledges is remarkable; and its innumerable crevices are crammed with razorbills, guillemots, puffins, kittiwakes, and shags, whilst a few cormorants occupy the highest ledges just under the cliff-edge, and rock-doves are occasionally seen to dash out of the caves over the sea; rock-pipits and starlings are abundant in the crannies and sea-pink tufts of the cliffs. It is quite one of the most remarkable bird-nurseries of Great Britain.

The Badcall Islands are well worth a visit. Colonies of cormorants, sea-gulls, and black guillemots occupy the suitable positions. We have taken twenty to thirty eggs of the latter species during a short visit.

We have visited Handa and Badcall many times, Bulgie Island, and Garbh Island, and other islands off the coast, but none will compare in interest with Handa, and all visitors to Sutherland should make a point of including Handa in the programme of their tour.

#### *Plantations and Cultivated Areas.*

The cultivated areas are few and far between, and for the most part insignificant. After leaving the vicinity of

Rosehall and the Kyle of Sutherland, a few crofters' patches occur at the mouth of the Cassley river, but thereafter only a patch or two at Oykel and Aultnagealgach, at Inchnadamph, and at each of the more inland situations where the traveller can rest or tarry. Around the villages of Knockan and Elphin, in the south-west of the county, and along one shore of Cama loch, the crofters have some more land under cultivation, and here the common bunting breeds in small numbers, though rarer elsewhere in Assynt. Along the shore-line of Ardvar and Stoir, at Kirkaig Bay, and around Loch Inver, patches of potato land, in the usual "lazy-bed" form of cultivation, are numerous, dotted about amongst the rocky ground often close to the sea-shore, or in larger masses in the hollows more inland. A somewhat larger extent of cultivated land lies towards the Point and Lighthouse of Stoir. Around Scourie are some neatly tended croft-lands, growing good hay and potatoes, and at Durness and Tongue considerable extent of grass-lands and crops. All these, limited though they are in extent, have a decided influence upon the flora, and consequently on the insect and bird life, and it is interesting to note that for many years the few acres of cultivated land at Inchnadamph produced regularly a covey of partridges, until finally they disappeared after the severe winters of 1878-79 and 1880-1.

In the same way, trees are not abundant in the west of the county. After leaving the extensive pine-woods of Rosehall and the wooded valleys of the Shin and Cassley, the traveller skirts the river Oykel for some distance, passing through some old birch-wood on either side of the road, where bog-myrtle grows in large quantities beneath, or in the more open spaces. A few oaks occur also along this route. But all wood ceases as one leaves the valley of the Oykel beyond Oykel Bridge, whose banks are skirted by a line of stunted alder. Thereafter it is only in sheltered nooks of water-worn ravines or in the crevices of rocks that perhaps a few mountain-ash or straggling ivy find a foothold. The

lovely valley of the Ænag river, however, retains a well-wooded character for a considerable distance up the glen. A dreary, often misty drive, over the great moor which stretches over the watershed between Oykel Bridge and Aultnagealgach, and then descends rapidly towards Loch Assynt, brings us again to a few patches of wood at Inchnadamph, which have been planted round the farmhouse of Stronchrubie, the manse, and the hotel of Inchnadamph; whilst amongst the deep crevices of the noble limestone cliffs of Stronchrubie, some fine natural holly and thick-stemmed ivy give shelter to the ring-ouzel, whose notes come clear and distinct on the traveller's ear as he passes along the road below. Then come the more thickly wooded slopes and knolls, and heights and hollows of the birch-woods of Assynt, the lovely birch-clad shores of Loch Letteressee, and Assynt shooting-lodge, and the wooded valleys of Inver and Kirkaig, where spruce and pine have been added to the natural wood and to the beauties of glen and hillside.

Scattered amongst the sinuous hills of lower elevation throughout the Stoir peninsula are a few very lovely bits of scenery, influenced by perspectives of hill and hollow, lake and birch-wood, and specially amongst those we would take note of the Lochs of Beannoch—already spoken of—and those of Drumbeg in the north of Stoir, and the hollows and lakes close to the road, only a short mile or two, to the north of Loch Inver. North of Scourie scarcely a tree is to be seen, save on a few islands of the lochs, but between Loch Inver and Scourie there are many lovely lochs, covered with water-lilies, and their shores and islets clad with birch and royal fern. Inland, at Loch More shooting-lodge, there is a luxuriant shrubbery of rhododendron, and the steep side of Ben Stack is clothed in birch to a considerable height. At Durness scarcely a tree is to be seen, but at Tongue there are fine plantations of larch and fir around Tongue House, and here one of the finest old wych-elms in Scotland grows on the lawn. The very temperate nature of the climate of Tongue, snow rarely lying there for any length of time,

exercises its influence on plant and animal life alike. At Altnaharrow, on the road between Lairg and Tongue, is a small clump of spruce and larch, and it is wonderful how the bird-life is at once observed to be associated with this oasis, and the yellow hammer, chaffinch, and robin, the wren and the hedge-sparrow reappear at this isolated station. At Loch Hope Lodge, also, there is considerable amenity of woodland, and before long the strips of young wood lately planted on the improved land bordering Loch Shin will not only give shelter to the cropped lands but also to innumerable birds and insects. At Goberneasgach and in Glen Golly is a considerable slope clad in birch-wood, in the very centre of a vast stretch of barren deer-forest, also exerting its influence in a marked degree upon the fauna.

### The Faunal Position of Sutherland.

Scotland has been divided by Dr. Buchanan-White of Perth into ten defined floral and faunal areas. These are named, commencing in the south—Solway, Tweed, Clyde, Forth, Tay, Argyle, Dee, Moray, West Ross, and Sutherland. We exclude here the Orkney and Shetland Isles and the Outer Hebrides. These faunal areas are separated by the natural watersheds, and are perhaps more consistent in their peculiarities from a floral than from a faunal point of view. It is not our intention at present to insist upon the importance of these, or of the position occupied by the area under our consideration from the latter point of view, except in so far that we believe, with the majority of naturalists, that natural divisions cannot be quite so arbitrary as geographical or artificial ones; and we consider it desirable to indicate, as shortly as possible, with which of these ten areas Sutherland claims to have connection.

The great dividing range of mountains which forms the backbone of the county stretches northward from the southern boundary to the Reay Forest, and then turns eastward by Ben Hee, including all the head waters of



the rivers which run westward, as far as Ben Stack and Cape Wrath, and those of the rivers which run northward between Cape Wrath and the eastern confines of the county, and separating both of these from the head waters of the rivers which run into the Moray Firth. We now propose to follow this dividing line with somewhat more minuteness of detail.

The watershed between the head waters of the Kirkaig river and the Valley of the Oykel is situated between Loch Ellag and the county march at Aultnagealgach; proceeding northward it runs along the sky-line of Braebag and skirts the ridges and corries of Coinnebheal, being very boldly defined, especially at the pass between Braebag and Ben More, and again at the pass over the shoulder of Ben Chaoran. Thence along the sky-line to Meall-a-chuail, overlooking Loch Griam, and across the high road between Lochs Merkland and More, it mounts the shoulder of Ben Hee, turning abruptly from a hitherto northerly course to one almost south-east. Up to this turning point it had separated the water systems of Moray in the east from West Ross, but if we follow it now in its eastward progress we find that it separates the water-systems of Moray and Sutherland, or the rivers which run south to the Moray Firth, from those which run north to the Pentland Firth. Before following this line, however, we will notice the spur which separates the water systems of West Ross and Sutherland. From a point on the forest road which leads close past Ben Hee towards Goberneasgach shooting-lodge a sinuous sky-line passes among the great hills of the Reay Forest, skirting the summit range of Sabhal Bheag and Sabhal Mohr, and then keeping down the left of the Dionard Valley crosses the high-road near Guallin shooting-lodge, close to Lochan Tarbhach More, and thence pursues an almost direct and straight line to Cape Wrath, its elevation gradually lessening after passing the summit ridge of Craig Riabhach (1590 feet), until at Cape Wrath it passes out at the cliff edge at an elevation of only 370 feet.

The south-easterly course of the watershed separating the



“Moray” and “Sutherland” faunal areas continues in a somewhat irregular line towards the Crask Inn, on the high-road between Lairg and Altnaharrow. Thence it follows the sky-line or higher ridges of Ben Armine, turning northwards between Lochs-na-Choir and Badenloch, near the sources of the river Helmsdale. Then its course is again easterly by Ben Rossal and Ben Vadda to the Highland Railway at Forsinard and the Caithness March.

We have said that we do not intend at present to insist upon the faunal importance of these three areas of which the county of Sutherland claims a share; but as these watersheds do occur frequently at high elevations; and as climatic change, temperature and soil are in no small degree co-existent; and as geological considerations cannot be overlooked, especially in the west and north-west, as a glance at a geological map will at once show; and as we know that faunal characteristics in many other countries, as well as floral, are in a great measure dependent upon these, and upon one another, we desire to indicate the part which our subject county bears in its natural as well as its artificial divisions and boundaries. Many indications of the importance and influence of these natural divisions are already within our grasp, but none, perhaps, of sufficient importance to warrant our occupying more space than we have done in this place.

Sutherland is, therefore, composed of portions of three faunal areas:—1st, West Ross, which includes Skye and a part of Inverness, and which is marched on the south by Argyle, and on the east by the backbone of mountains which extends down the west side of Scotland; 2d, Sutherland, which, in its entirety includes Caithness, and whose rivers run northward to the Atlantic Ocean; and 3d, Moray, a vast faunal tract, whose basin is the Moray Firth and whose catchment includes one-third part of our subject county, and the larger portion of Inverness-shire and Nairn, Elgin and Banff, which is bounded on the south by the faunal areas of Argyle, Tay, and Dee, and on the east by Dee.

## MAMMALIA.

HAVING thus endeavoured to describe the geographical position and areas, and the physical aspects of the county, and having also ascribed to it its faunal position in relation to the other faunal areas of Scotland, we proceed to speak of the vertebrate fauna, and, as is customary, besides being in accordance with natural position, we commence this portion with the Mammalia.

The oft-quoted passage in Sir Robert Gordon's *Earldom of Sutherland* (1630), must, we fear, do duty again, as being about the earliest—and also almost the latest—record of two pre-existing species of Mammalia. Sir Robert Gordon's list contains "Reid Deer and Roes, Woulffs, Foxes, Wyld Catts, Brocks, Skuyrells, Whitretts, Weasels, Otters, Martrixes, Hares, and Fomarts."

According to tradition, wolves were at one time so abundant in Sutherland that the natives of the west coast buried all their dead on the Island of Handa, to avoid the disinterment by wolves (*Voyage round Scotland*, p. 347). Mr. Scrope instances accounts of four old wolves and several whelps which were all killed about the same time, but in different places, between the years 1690 and 1700. The localities named are Achumore, in Assynt, Halladale, and Glen Loth, the latter being the locality of the veritable "last wolf" of the county. "These," says Mr. Scrope, "were the last wolves killed in Sutherlandshire, and the den was between Craig Vhodieh and Craig Voakie, by the narrow glen of Loth."—(*Days of Deer-Stalking*, pp. 374-7.)

In 1621 we have record of the wolf in Sutherland. The following is from a MS. Account-Book of Sir Robert Gordon, Factor of Sutherland :—

*Item.*—Sex poundis threttein shillings four pennies given this yeer (1621) to Thomas Gordoun for the killing of one wolff, and that according to the Acts of the countrey.

And we find an earlier record still, as follows :—The Rev. Dr. J. M. Joass, to whom we are indebted for several curious items of information, says—"I find in a facsimile copy of a map of Great Britain from the Bodleian Library, and supposed to have been made by Edward II. when Prince of Wales,<sup>1</sup> that Sutherland has the figure of a wolf on the top of a mountain, with the legend—'Hic abundant lupi.'"

We have evidence of the occurrence, in prehistoric times, of the reindeer (*Cervus tarandus*) and the beaver (*Castor fiber*), remains of which have been found in different parts of Caithness and Sutherland. A number of bones, some showing the palmation by which the reindeer was identified, were found

<sup>1</sup> Circa A.D. 1280?—J. A. H.-B.

whilst Mr. Houstoun of Kintradwell and others were engaged in digging out the remains of the old tower there. Many of these were broken in fragments, showing the appreciation which the natives of the rude Stone Age had for the marrow.

Of other extinct animals we have traces of the wild boar (*Sus serofa*), in Gaelic traditions which still survive, and have given names to various localities in the county, such as Aultnator—“The Burn of the Boar”—near Ben Loyal, where Dermid was slain by the revenge of Fingal for seducing the latter's wife (*Songs of the Bards*). According to Boyd Dawkins, the wild boar was extinct in Britain “before the reign of Charles I.”—(*Cave Hunting*, p. 76.)

## EXISTENT MAMMALS.

Common Bat—*Vesperugo pipistrellus* (Geoffroy).

Not so rare as formerly supposed, and indeed has probably increased since the last account was written.—Alston, *Proc. Nat. Hist. Soc. Glasgow*.

Mole—*Talpa europæa* L.

Still on the increase in Sutherland. In 1843 it was rare in Durness, and, according to Alston, only found on the western slope of Ben Hope. Abundant in Assynt, less so in Edderachyllis, where the ground is rockier and there are fewer low-lying pastures. In some parts their existence for a number of years is evidenced by the old turf-covered mole-hills. In the east regular mole-trappers are employed to keep down these so-called pests.

Obs. The Hedgehog—*Erinaecus europæus* L.

Is still unknown in the west, and, so far as known to us, in all other parts of the county. Though pet specimens have been introduced, and have escaped, there is no evidence that they have established themselves in a wild state.

Common Shrew—*Sorex vulgaris* L.

Common.

Water Shrew—*Crossopus fodiens* (Pallas).

Is not rare, but its retiring habits render its numbers difficult to ascertain. Extends to Caithness. It frequents the limestone burns and rivers of Assynt, and we have seen one obtained on the Inver river in 1883. In Mr. Alston's paper on “The Mammals of Sutherland,” it is stated that the dark variety, formerly separated as *C. remifer*, does not appear to be found within the county, although common in many parts of Scotland. The one we saw in 1883 belonged to the dark variety, the dark colour passing entirely over the under side. Mr. Houstoun writes from Kintradwell “I have twice seen the Water Shrew in life—the first time both in the water and on land, and the second time on dry land—and have, on three separate occasions, got dead specimens, evidently dropped by a cat, but perfect and intact.”

Badger—*Meles taxus* (Schreber).

Still found, but in decreasing numbers and in more restricted areas. Previous to 1867 no vermin were killed in the Reay Forest, but after 1872

premiums were paid by Mr. M'Iver, the factor. The Badger's name is quite absent from lists of vermin killed in Assynt and Durness between 1870 and 1879, also from Reay Forest lists between 1866 and 1880, and from the Assynt lists. One only is included in the Dunrobin list between 1873 and 1880. We know of no part of Sutherland where it can be called abundant, but the absence of its name in all cases must not be held as invariably indicative of its absence in the flesh, as in some parts, very wisely, no premiums are paid for Badgers. At one time the "Brocair" or Badger-hunter, was a well-known man. Now he is never heard of, and is replaced in person and in name by the Fox-hunter. Supposed to be extinct, or nearly so, in the Tongue district, none having been heard of during the last seventeen years, and only two seen by Mr. Crawford during twenty-five years.

#### Otter—*Lutra vulgaris* (Erxleben).

Still not uncommon, though a persecuted species. In 1831 to 1834 premiums were paid for 263 killed on the Sutherland estates alone. In Assynt and Durness only three are included between 1870 and 1879. None between 1866 and 1880 on Glen Dhu Farm or Reay Forest; but in Assynt, on Mr. Whitbread's shootings, twelve were killed by one trapper between 1869 and 1880. We have no records of Otters amongst vermin lists from Dunrobin; but records of Otters killed do not perhaps distinctly point out their distribution or comparative abundance in different districts, for we know they yet frequent the Brora river and Lothbeg burn; near the latter place, indeed, one was caught by rabbit-trappers on the Crakaig farm at the beginning of this year, and we ourselves saw a fine one in Loch Brora on the 21st of February last.

#### Polecat or Fomart—*Mustela putorius* L.

The same causes which have decreased the numbers of the marten have operated in the case of the Polecat. Rabbit-trapping has proved fatal to it; for whilst the increase of rabbits has provided it with abundance of food, it has been the indirect means of causing its decrease (by the agency of steel traps). Inland localities, formerly occupied by Polecats, have been deserted by them, for they, drawing down towards the sandy barrens to prey upon the rabbits, themselves became an easy prey. Careful inquiries have elicited the fact that a few Polecats still remain at certain sea-shore localities, but only now, where rabbits do *not* abound and are *not* systematically trapped. An occasional one is still obtained in the Tongue district, but the species is decidedly rare there.

#### Stoat or Ermine—*Mustela erminea* L.

Very plentiful, and has even been seen on the summits of the highest mountains.<sup>1</sup>

Notwithstanding the war of extermination being constantly carried on, it is steadily on the increase, and this is very probably co-existent with the increase of rabbits. This, at least, was the case in 1880. Not abundant in the Tongue district.

#### Common Weasel—*Mustela vulgaris* L.

Not so abundant as the last, and not, so far as is known, ascending the hills to any great altitude, preferring the proximity of houses, farm-yards, etc.

#### Marten—*Martes abietum* (Fleming).

The Marten appears now to be of rarer occurrence throughout Scotland than the wild-cat, being extinct in many places still frequented by the

<sup>1</sup> Mr. Omond records the appearance of a Stoat in the depth of winter of 1883-84 on the summit of Ben Nevis.

latter species, but, curiously enough, has survived over a larger area up to a later date; that is to say that while the boundaries of the country at present inhabited by the wild-cat are easily defined, and are gradually contracting, the occurrences of the Marten are more sporadic, often turning up in localities far distant from one another, where no records had previously occurred for many years. The Marten being extremely unsuspecting of a baited trap, falls an easy prey to the professional vermin-killer. In Assynt it is now very rare, but in 1876, in the Reay Forest, one keeper had fifteen skins awaiting the annual arrival of the furrier's traveller. Two were got at Guallin in 1882, but they are very scarce there, though possibly less so than elsewhere in the county. In the east of the county they have not been known for many years, and are almost, if not quite, extinct in the Tongue district.

#### Wild-Cat—*Felis catus* L.

Becoming extremely rare in Assynt during the last decade, but it is still not uncommon in the Reay Forest, where it is preserved by the Duke of Westminster. One very large one was killed in Assynt in 1881. Between March 1831 and March 1834, as recorded by Selby, 901 Wild-Cats, martens, and founmarts were destroyed. According to a list of vermin killed on Dunrobin grounds, house cats and Wild-Cats are distinguished, and six is the number of the latter killed between 1873 and 1880. One keeper in Assynt killed no less than twenty-six Wild-Cats between 1869 and 1880, but of these only three during the last six years. Another keeper killed ten between 1870 and 1873, but no more until the winter of 1879-80, when he killed four, one of which is described as a monster. These notes very clearly indicate the process of extermination, and we have many other lists which show the same process of decline. In the east of the county, though not yet extinct, it is also very rare, though we hear of one being caught occasionally; and it is still found, though rarely, in the Tongue district.

#### Fox—*Vulpes vulgaris* (Fleming).

Very plentiful, a pretty regular crop appearing every year, and affording no mean addition—in the form of premiums—to the gamekeepers' salaries, besides employing regular Fox-hunters. £1 is given for an old dog, £2 for a vixen, and 10s. each for cubs. Between 1831 and 1834 premiums were paid for 239 Foxes on the Sutherland estates. In Assynt and Durness for 156 between 1870 and 1879. In the Reay Forest and Glen Dhu 145 between 1866 and 1880 by one return, and by another hand, in the Reay Forest between 1873 and 1879, 164; or, in all, from Reay Forest and Glen Dhu in that time, 309. In Assynt, on Mr. Whitbread's shooting, by one keeper alone, no less than 53 between 1869 and 1880. Between 1866 and 1869, 340 were killed. On Dunrobin 60 Foxes were killed between 1873 and 1880. In Assynt also, on another beat, another man got 11 Foxes between May 1879 and May 1880. Still very abundant in the East, and at normal numbers around Tongue, neither increase nor decrease being observable.

#### Common Seal—*Phoca Vitulina* L.

Not uncommon at some localities, especially in the firths of the north coast, and occurring all along the coasts in the west. Another resort on the east coast is a sandbank at the entrance of the Dornoch Firth, visible from the town of Tain. Here they used to lie in large numbers, though lately a good many have been killed with punt guns, one man killing three and wounding two with one shot; these latter were afterwards found. Another resort is the Little Ferry, where they come in and out with the tide.

#### Gray Seal—*Halicharus gryphus* (Fabricius).

Fairly common along the east coast, especially where there are any

rocks jutting into the sea suitable for them to lie on. One such place is Lothbeg Point, where Mr. Houston of Kintradwell has shot many, the small Firth Seal being the rarer here. They blockade the mouth of the Brora, levying black mail on the migrating salmonidæ.

They also occur in some numbers on Eilean-nan-Roan—off the Kyle of Tongue—where specimens have been seen over 8 feet long. They are most numerous on the outer island. At Souliskeir—to the north of Cape Wrath—they were once abundant, and parties of fishermen used to go from Orkney and from the north Sutherland coast to kill them in October. These raids have ceased in the last fifteen or twenty years, as we are informed by Mr. J. Crawford.

#### Harp Seal—*Phoca grælandica* (Fabricius).

Mr. Houston tells us he has killed a specimen of this Seal at Kintradwell; we saw portions of its skin after it had been preserved and cut up. This was probably previous to 1870. Mr. Houston is an experienced seal-shooter, but it is a pity that such a valuable and interesting addition to the British Marine Mammalia should not have been more carefully preserved. Personally, we feel certain that the Harp Seal has occurred several times in Scotland, and have ourselves shot one in the Hebrides, which was, however, lost to us, and we have evidence of others having occurred. Unfortunately, however, none have been preserved.

CETACEAE.—Our actual knowledge of the species which frequent or have occasionally visited the Sutherland coasts is still very defective, owing to the difficulties attendant on the pursuit of knowledge in this direction. We have little to add to the last published list of the Cetacean Mammalia, by Mr. E. R. Alston.

#### The Porpoise—*Phocæna communis* (F. Cuvier).

Visits the coasts.

#### The Pilot Whale—*Globicephalus melas* (Trail).

Also is found on the coasts, and there is one in the Dunrobin Museum.

One was stranded on the Melness side of the Kyle of Tongue about five years ago. It measured 15 feet in length. This was about midsummer.

#### The White Whale or Beluga—*Delphinapterus leucas* (Dall).

In 1880 a specimen of this species was repeatedly seen in the Kyle of Tongue in August, as reported to us by Mr. J. Crawford of Tongue House, and there are other records of its occurrence on the north coast of Caithness (cf. Bell, *British Quadrupeds*, 2d ed., pp. 381-474). A specimen was obtained at the Little Ferry on the 9th of June 1879, having got entangled in the gearing of the salmon stake-nets (*P. Z. S.*, 1879, pp. 667-9). It is now stuffed and in the Dunrobin Museum, and another has been captured on the Caithness coast since this Fauna went to press (June 1884).

#### The Sperm Whale—*Physeter macrocephalus* L.

Though not to our knowledge actually captured or authentically recorded on the coast of this county, has occurred on the Caithness coast (cf. Bell, *British Quadrupeds*, *op. cit.*, p. 418).

#### Squirrel—*Sciurus vulgaris* L.

Once present in Sutherland (cf. Sir R. Gordon's *Earldom of Sutherland to the year 1630*, where it is included in a list of animals found in the county), and became extinct. The latest record we have of the Squirrel occurring anywhere in the north of Scotland which could possibly have belonged to the aboriginal stock, dates 1792 (*Old Stat. Account of Scotland* (1792), vol. iii. p. 514), which record is repeated *word for word* in the *New Stat. Account*, dating 1842. It most probably became extinct after or during the severe winter of 1795, and the subsequent record was merely a statement not brought up to date. As regards its reappearance we quote directly from Harvie-Brown's



essay on "The Squirrel in Scotland," as in that essay the subject, we believe, is pretty well thrashed out.

"The Squirrel reappeared in the county of Sutherland in 1859 at Clashmore, on the authority of Mr. Thos. Mackenzie (*vide Proc. Nat. Hist. Soc. Glasg.*, vol. iii. p. 229; also *Scottish Naturalist*, vol. i. p. 82), and he believes that the first Squirrels entered the county across Bonar Bridge. It was not, however, until after the railway bridge was built at Invershin, in 1869, that Squirrels became plentiful in the east of Sutherland." Since then they have increased largely, and are now firmly established again in the east of the county. From Dunrobin we have the following returns of Squirrels killed between 1873 and 1880, which admirably shows the rapidity with which the species increases. In 1873, 2 were killed; in 1875, 75; in 1876, 47; in 1877, 12; in 1878, 284; in 1879, 332; in 1880, 190; total in seven years, 942.

#### Wood Mouse—*Mus sylvaticus* L.

We have only once observed this species in a birch-wood on the side of Loch Shin, but Selby mentions it as common as long ago as 1834, and it is common in the east of the county.

#### House Mouse—*Mus musculus* L.

Common.

#### Brown Rat—*Mus decumanus* (Pallas).

Abundant, but for the most part confined to the coast districts, though occasionally found at some inland localities; abundant on many islands off the coast, but quite absent from others. Handa is infested with them, and there is evidence also of their presence on the Badcall Islands. We found no trace of them on Bulgie Island, nor on Garbh Island.

#### Black Rat—*M. rattus* L.

The only occurrence we are able to record is of a single specimen shot two miles west of Golspie in 1879, about a mile from the nearest houses, which would therefore be the seaport of the Ferry. Unfortunately, it was too far gone for preservation for the Museum. We have innumerable records of varying value of the Black Rat from many parts of Scotland, the above being the only one from Sutherland. As the black water-vole is *very common*, it can hardly have been confounded in this case, as the reporter is a particularly intelligent man.

#### Water Vole—*Arvicola amphibius* L.

Abundant both on the rapid clear limestone rivers of Assynt and the more sluggish streams. The black variety is, in our opinion, more abundant than the brown in the west, and is at least equally common in the east, where it haunts every burn, except those that are too rocky. This interesting species appears to thrive well amongst the rocky limestone formation, finding ready shelter in the innumerable cracks and passages through the rock, but we have not met with it in the very rocky burns of other formations. Mr. Ben. N. Peach observed it commonly in Durness—the black variety, which is also found in Caithness. They are common also in Strath Shinary, through which the river Shinary flows into Loch Sandwood. The common Vole is easily tamed, and makes a cleanly and interesting pet.

#### Common Field Vole—*Arvicola agrestis* L.

Common. We have seen it often in the limestone district, and occasionally in the caverns of the limestone rock, where we once came across a large store of food, which must have lasted past the winter months. The owner scuttled out from its midst near the back of the largest cave, narrowly escaping capture. Also common in the east of

the county. *Obs.* The Red Field Vole—*A. glareolus* has not been to our knowledge discovered in the county.

#### Mountain Hare—*Lepus variabilis* (Pallas).

The White Hare has been gradually decreasing in numbers for some years back. There are no hills in Assynt at all famous for the numbers of these creatures, but there is no doubt that they were much more plentiful only some sixteen or twenty years ago, and within our own recollection, than they are now. Persistent shooting has in some cases had to answer for this scarcity. At one time the two Bens Griam were plentifully supplied with hares, but some thousands having been killed off these hills alone some years back, the stock never recovered, and even now, when there is no systematic persecution, they are so rare that not more than two or three can be seen in a day's walk. Since the larger shootings were broken up in 1873, each lessee has, in most cases, allowed his keeper to kill hares in the winter, and as hares generally come down from the higher grounds at that time, far more were killed than belonged by rights to the ground; and as this has now been going on for more than two years, and during that time we have had two very severe seasons, it is no wonder that White Hares are getting scarce.

#### Common Hare—*Lepus timidus* L.

The Brown Hare, as it is called in the Highlands, is pretty plentiful in the east of the county, frequenting indifferently the cultivated land and the heather that borders it. When living in the latter place, it is supposed to cross with *L. variabilis*, and certainly we have seen hares that had every appearance of being such hybrids.

Said to have been common in the lower lands and the limestone ranges of Assynt in Selby's time. It is now extremely rare, if not extinct there. We have only seen two examples during seventeen years' knowledge of Assynt, and these both on the same day.

#### Rabbit—*Lepus cuniculus* L.

Common in the east. Scarce in the west, or at least very local. Common on Handa, where they were introduced about eighteen to twenty years ago. Fairly common about the north shore of Loch Inver; abounding on Rabbit Island (or Eilean-nan-Ghael, the Island of Strangers), at the entrance of the Kyle of Tongue, but temporarily decreased there since the severe winters of late years. Old "Robby Ross," an old residenter at Tongue, told Mr. Crawford that Rabbits were introduced to Eilean-nan-Ghael by Major M'Kay, brother to Lord Reay, about seventy years ago. We find this island, however, called "Rabbit Island" as early as 1792 in the *Old Stat. Acct. of the County*, vol. iii. p. 521. 700 were killed in the Tongue woods in 1880-1881. A single Rabbit was known to frequent stony broken ground at Far-out Head, near Durness, in 1881-1882. How did it come there? Over 12,500 are stated to have been killed in the county of Sutherland in the year 1880, but this return does not probably apply really to the whole county. Rabbits wander far up the straths on the east coast, and at one time there was a large colony near Loch Aricline, at the head of the Helmsdale Strath, which were nearly all killed by one severe winter.

#### Red-Deer—*Cervus elephus* L.

It is stated that 284 stags and 32 hinds were killed in 1880 in the county. How far these figures are correct I am unable to say.

The principal forests are Dirrie-Chatt or Dunrobin in the east, and Dirrie-More or Reay Forest in the west, besides, of later years, other afforested ground in Assynt. There is evidence that formerly very large heads occurred in Sutherland (*Lays of the Deer Forest*, vol. ii. p. 145), and the Dunrobin Museum contains a very fine head, with both



horns deeply cupped, and of great spread and thickness of beam. The Duke of Westminster at the present time is striving to improve the heads in the Reay Forest, and with singular and rare sportsmanship forbids the killing of the finer adult stags. A decided difference has already made itself manifest in the improvement of both body and antlers. No doubt these grand heads were commoner in the days when Sutherland was covered with oak and pine timber, remains of which are still visible in the peat mosses. But when it is believed that there is not at present a tree in Sutherland which numbers 100 years in age, we must go a long way back to localise them in time.

What the Duke of Westminster is doing to improve the stags in the west, the Duke of Sutherland is doing in the east, and, except one or two killed by himself or Lord Stafford, no good heads are allowed to be shot in Dunrobin, under a fine of £1 to the stalker who allows such to be done. At the present time Deer are spread throughout the whole county, from the north-east corner of the parish of Reay to the woods of Dornoch. It is worthy of reference here, what has been related of the great emigration of Deer out of the Reay country after the first "head" of sheep had been there introduced (v. *Lays of the Deer Forest*, vol. ii. p. 146).

#### Roe-deer—*Capreolus caprea* (Gray).

Common in all suitable localities, and increasing in number since planting became more general. The late severe winters put a check, however, on the increase, but they seem again to have in great measure recovered. Even in the isolated birch-woods of the interior of the county Roe are found, but they rarely increase, even when not killed, in such situations.

#### Fallow-deer—*Cervus dama* L.

Sheriff Mackenzie informs us that this species has, "for many years back, frequented the woods about Dornoch in a semi-wild state." Fallow-deer were introduced at Rosehall in the winter of 1876 or spring of 1877. Buckley was there at the time, and saw them turned out at midnight.

## REPTILES AND AMPHIBIANS.

#### Common Lizard—*Zootica vivipara* (Jaequin).

"Not uncommon, especially on the moors between Aultnagealgach and Loch Urigill" (Alston and Harvie-Brown). Common almost everywhere in the east of the county.

#### Slow Worm—*Anguis fragilis* L.

Not uncommon in the west of the county, especially about Scourie and Edderachyllis. Often seen on the dry dusty roads in summer. Occurs frequently in Strath Brora.

#### Adder or Viper—*Pelias verus* (Linn.)

Abundant in most suitable localities; and more abundant, perhaps, than suspected, owing to its somewhat retiring habits. Common north to Cape Wrath, but rare in the limestone districts of Durness and Assynt. We certainly, in seventeen years' experience of Assynt, do not remember seeing more than two or three on the banks of the Inver and Kirkaig. Said to be abundant on Coul More and Coul Beg, and very abundant in a certain birch-wood on the banks of Loch Shin. Extremely abundant all through the east and centre of the county.

Frog—*Rana temporaria* (Linn.)

Very common, ascending to considerable elevations, and fond of clear stony streams coming off the granite or mica. Apparently rarer in the limestone districts.

Toad—*Bufo vulgaris* (Laurent).

Also common, and ascends clear mountain burns to a considerable altitude. The same remark as regards comparative rarity in the limestone districts applies as to the last species.

Rough Newt—*Triton cristatus* (Laurent).

Not uncommon. Wolley recorded it, and Messrs. Alston and Harvie-Brown have met with it on several occasions near Loch Assynt, and the latter gentleman once close to Loch Inver.

Smooth Newt—*Triton taimatus* (Schneider).

Not uncommon.

Palmated Newt—*Triton palmipes* (Latreille).

The only record of this species as yet obtained, is that by Mr. Wolley, who wrote in the *Zoologist* (1848, p. 2265)—“I have to report the existence of our recently ascertained Newt on the extreme north of the Island. On the 1st August I found several females and one male in a little freshwater peaty pool, a few hundred yards from the high-water mark, on the side of the hills which rise from Loch Erriboll, and on the west side of the loch. It is an inlet of the sea, about sixteen miles to the east of Cape Wrath, on the north coast of Sutherland.” Mr. Alston wrote commenting on this—“We are not aware of the species having been found in any other part of the North Highlands.”—(*Proc. Nat. Hist. Soc. Glasgow*, 1880, p. 149.)

## AVES.

## Family FALCONIDÆ.

The Golden Eagle—*Aquila Chrysaetos* (Linn.)

Resident: still abundant: generally distributed wherever suitable rest and quiet is afforded. Not now so much killed down as formerly, when, about 1834, in three years' time, no less than 171 full-grown eagles, besides 53 young birds and eggs were destroyed (Selby). In 1877 Mr. Crawford, Tongue, considered there had been a decrease of Eagles owing to extravagant prices offered by collectors. It is not our intention here to make public all the eyries of the county, though we believe almost every site is known to us. Most abundant in the west and north, rarer in the east and south; we are, however, glad to be able to add that one eyrie, for years deserted, and situated in the south-east, has again been tenanted for the last two or three years, and most of the other eyries are still used.

In one glen six of these birds have been seen at one time; some of these would probably be young birds reared by a pair of birds that breed regularly there.

White-tailed Eagle—*Haliaeetus albiella* (Linn.)

Resident: not so abundant as the Golden Eagle in this county: their eyries principally confined to the coast-line. Eyries can be counted on one's fingers. A position said to be perfectly inaccessible is at a point a little east of Whiten Head, on the north coast. Another, nearer Cape Wrath, is not inaccessible, though only reached by one man

known to us. Some years ago one of the birds of this nest was destroyed by a well-known writer on Highland sports; since then the remaining bird has not taken to itself another partner. In the east there is no eyrie known to us in Sutherland, though one existed many years ago on the Caithness side of the Ord. An albino variety of this bird was killed at Achinduich, in the parish of Lairg, in November 1859. The last specimen we handled from this locality was killed in spring, about the year 1872, at Kintradwell; another, killed in the spring of this year at Durness, came into Inverness for preservation.

#### Osprey—*Pandion haliaetus* (Linn.)

It is to be feared quite extinct as a breeding species. Old sites are Ardvrack Castle, on Loch Assynt, and a "stack" of rock in a loch near Guallin shooting-lodge. It was reported to have returned to this latter site in 1881, but this was not corroborated; the remains of this old nest near Guallin were still visible in 1881. The Osprey was never recorded as breeding anywhere in the east of the county, no doubt on account of the lack of suitable sites. In 1834 Sir W. Jardine's party saw four Ospreys on the wing at the same time, hovering over the mouth of the Laxford river; such a sight can never be witnessed there now. In the third week of June 1879, an Osprey haunted Loch Brora for a week, and in May 1881, and again, in the same month of 1883, we saw an Osprey flying up the higher reaches of the Helmsdale.

#### Iceland Falcon—*Falco islandus* (Gmel.)

A rare visitant; but has occurred on two occasions at least, once at Sciberscross in 1868. This bird is preserved in the Dunrobin Museum; it appears, from a single feather examined, to have been a bird in its second year's plumage, at all events an immature bird, of about that age. The other was taken at Altnaharra, in the centre of the county. There is a third in the collection of the late Mr. Dunbar of Brawl.

#### Peregrine Falcon—*Falco peregrinus* (Gmel.)

Resident; and still holds its ground, despite the incessant persecution it receives from keepers. This is the "Falcon" of the Highland keeper, who rarely calls it by any other name; being extremely difficult to trap, the birds are generally shot during the nesting season. Some eyries have been deserted in our recollection, while others again have been formed; the absence of suitable nesting-places make them rarer in the east than the west. In the deer-forests of Dunrobin and Ben Armine Peregrines are rather preserved than otherwise.

Still fairly abundant in the west, and we know of about eight eyries on the north and west coasts between Whiten Head and Loch Inver, and about eight inland eyries in Assynt within a radius of ten miles. Not much decreased of late years, though many are killed.

Our experience in regard to this and other species of birds is, that whenever the old ones are killed the old nesting-place is occupied the next season by others, very probably young birds which have escaped destruction in former years; but the re-occupation of favourite breeding haunts by many species, after temporary desertion, may possibly be explained under certain phenomena of migration, and certain fixed lines by which species travel.

#### Hobby—*Hypotriorchis subbuteo* (Linn.)

Very rare visitant. One example was shot by a brother of Mr. Macleay of Inverness, at Achany, many years ago, and sent to the late Mr. Dunbar of Brawl Castle.

#### Merlin—*Falco aesalon* Gmel.)

Resident: partially migrant to coast-line; common, but not so abundant as formerly; still, certain haunts known in 1870 were occupied in

1882 in Assynt. Considerably shot down in game-preserving interests. Rarer in the wooded districts of the south-east; common in the more central ones.

This species appears to have been less common in Mr. Wolley's time, as he "was not sure that he ever saw this bird in Sutherland;" this was in 1852 (cf. *Ootheca Wolleyana*, pt. I., p. 105).

Kestrel—*Falco tinnunculus* (Linn.)

Breeding visitant; rarely resident; very common in the east throughout the breeding season, laying its eggs in any convenient hole in the rocky burn-sides so numerous in the Highlands. The birds generally leave the higher ground about September, and migrate to the coast, where they remain a short time before going farther south. The earliest date on which we have seen this bird is February 17, 1884; but this may have remained through the winter, which was extremely mild.

Resident at Tongue, but scarcer in winter than in summer; indeed, probably the exceptions are residents.

Sparrow-hawk—*Accipiter nisus* (Linn.)

Resident: a partially migratory species, numbers of young birds appearing about the cultivated grounds in the autumn. This bird is increasing very much in the south-east, probably on account of the number of plantations of Scotch fir which are springing up, as in 1870 we only knew of one nest in the immediate vicinity of Brora, and now (1884) the keeper there was complaining to us of their numbers. Holding its own, in spite of persecutions at Tongue, though other hawks are becoming scarce. Not known as yet in the west. We have never seen the nest of this species in birch-woods in Sutherland, but Mr. Booth mentions the fact of their breeding in such places, as, for instance, in an old hooded crow's nest on a birch-tree at Loch Craggie.

Kite—*Milvus iclinus* (Savigny).

At one time a common bird, the Kite is now extinct, nor does a Sutherland specimen exist in the Dunrobin Museum, though there is one in the collection of the late Mr. Dunbar Brawl. Mr. Macleay, the well-known birdstuffer in Inverness, writes to us:—"When I was a boy the Kite was a very common bird in Sutherland, and I once got its nest. It was no uncommon thing to see half a dozen together, circling about in the air at Rosehall." Since then the cutting down of all the large trees and continued trapping have done their work, and the Kite exists there no longer. Some fifty years ago the Kite used to be seen in the Helmsdale Strath, but our informant could not say whether it nested there. It had become rare by St. John's time—A.D. 1849.

Common Buzzard—*Buteo vulgaris* (Leach).

By no means a common species in the east, though a season rarely passes without a few being seen. The only nest that came under our observation in this district was taken from a rock below which the Blackwater, the principal feeder of the Brora river, runs, in May 1874; although, we understand, neither bird was killed, the site does not appear to have been occupied again. There used to be a breeding-place near Loch Naver, but the birds were always trapped or shot before they brought out their young; this was previous to 1869. Much scarcer in the west by 1877 than previously, many old sites being deserted or tenantless. One season we took no less than eight sets of eggs within a radius of 10 miles. In 1877 the only nest in the district was 10 miles off. But in 1878 a previously occupied site was again used, and young brought out. Reported to us as exceedingly rare in Assynt in 1884.

Rough-legged Buzzard—*Archibuteo lagopus* (Gmel.)

Very rare autumn visitant. We have seen a specimen from Helmsdale

in Mr. Macleay's shop in Inverness, where it had been sent for preservation. Specimens have also been obtained from Berricdale in Caithness, close to Sutherland. Another Sutherland specimen passed through Mr. Macleay's hands; it was killed many years ago at Achany.

Honey-Buzzard—*Pernis apivorus* (Linn.)

A rare autumn visitant; several have, however, been procured, two of which are now in our possession. The first, a female, was killed in the large Uppat woods, near Dunrobin, in July 1879, and in September of the same year a young one, with the down still adhering to the tips of its feathers, was killed at Balnacoil, not far from the same place. Other specimens are in the Dunrobin Museum, one of which was shot at Kildonan up the Helmsdale Strath.

Hen-Harrier—*Circus eyaneus* (Linn.)

Resident, and still fairly common in the east, though killed down on every occasion that offers. Like others of the Raptores the Hen-Harrier resorts to the same place for nidification year after year, thus leading to its destruction. A pair of birds were shot at the nest in the Dunrobin Forest on May 14, 1881, the male of which had not then attained the adult plumage. Previous to 1877 common in the west, since then has almost disappeared. Three breeding sites previously known to us have been untenanted for several years. In 1878 not one was seen; and still very rare in 1879.

Family STRIGIDÆ.

Tawny Owl—*Syrnium aluco* (Gmel.)

Resident, but not very common; of most frequent occurrence in the wooded districts of the south-east. Breeds near Balnacoil, Dunrobin, and Rosehall, in which latter place it was unknown forty years ago, when Mr. Macleay of Inverness was a boy there. Mr. Crawford includes it as breeding at Tongue in the north.

Long-eared Owl—*Otus vulgaris* (Flem.)

Rare, but breeds in the Dunrobin district; will probably extend its range with the increasing number of plantations. Used to be very common at Rosehall before the large woods were cut down. Also occurs in the woods around Loch Migdale, near Bonar. It is reported as breeding also at Tongue; indeed Mr. Thomas Mackenzie received the young from there.

Short-eared Owl—*Otus brachyotus* L.

A decidedly rare species, but is recorded by Sheriff Mackenzie as having bred near Dornoch in 1873. On only one occasion have we seen this species in the east of the county. In the west we have only once obtained an egg from the Cromarty side of the march. Mr. A. G. More includes it as breeding regularly in the county. They were said to have bred on an island of Loch Awe, in Assynt, in 1876. We ourselves saw a bird which we felt sure was this species, pass our camping ground by the side of a loch in Stoir, on the night of 13-14th June 1877.

Snowy Owl—*Nyctea nivea* (L.)

A very rare visitant. An example, killed at Achintoul in the parish of Kildonan, passed through Mr. Macleay's hands, and another was in the collection of the late Mr. Dunbar of Brawl.

Barn Owl—*Strix flammea* L.

Very rare in the east; one was shot at Kildonan on the 12th of September 1883, and there are other specimens in the Dunrobin Museum. Rare

in the west of the county, but has been known to breed at a certain locality on the south shore of Loch Assynt. We have seen it in autumn (August) when cover-shooting; or, at other times, in the birch-woods at Loch Letteressee; at the west end of Loch Assynt, or nearer Loch Inver. It is known to some natives, but not to all. Breeds occasionally at Tongue (J. Crawford); and rarely, or occasionally, about Rosehall.

Tengmalm's Owl—*Nyctale tengmalmi* (Gm.).

St. John records a specimen of this owl killed at Spinningdale in May 1847, by Mr. Dunbar.

## PASSERES.

### Family LANIIDÆ.

Great Gray Shrike—*Lanius excubitor* (Linn.)

Irregular autumn visitant; more common perhaps than is supposed. Observed as long ago as 1845, a specimen in the Museum being dated that year. We have ourselves observed one or two specimens on the south-east coast, and there is in our collection at Dunipace a male bird shot near Tongue, and sent to us in the flesh by Mr. Crawford, on 7th December 1875.

### Family MUSCICAPIDÆ.

Pied Flycatcher—*Muscicapa atricapilla* (Linn.)

An irregular spring visitant. The first known to have occurred in the county was obtained by ourselves in a very wild burn, some eight or nine miles from Brora, on the 27th of May 1872. After that none were observed again until the year 1881, when a pair came into Mr. Houstoun's back garden at Kintradwell, and took up their quarters there for some days, feeding about the window that looks into the garden; they eventually disappeared, though never disturbed, as Mr. Houstoun had good hopes of their breeding there. About the same time—May 2—two of these birds were picked up dead at the Meikle Ferry, near Tain, in Rosshire, and on the 4th another was found dead, and brought, along with the preceding two, to Sheriff Mackenzie. The latter is in our collection at Dunipace.

Spotted Flycatcher—*Muscicapa grisola* (Linn.)

Summer visitant; commonest in the south-east; more rare in the north and centre, but has been found nesting all the way in suitable places between Dornoch and Tongue by Sheriff Mackenzie. In 1878 we met with it for the first time at Inchnadamph, where a pair took up their quarters. We also, in the same year, saw one bird on the Loch Inver Road, near Assynt shooting-lodge. It does not seem to progress where birch only grows, at least such has been our experience hitherto.

### Family CINCLIDÆ.

Dipper—*Cinclus aquaticus* (Bechst.)

Common, and resident in all the rivers and burns of the east. When driven out of these by ice, the birds hang about the mouths at the sea-coast, where the water does not freeze. At one time a reward was given for their heads, on the ground that they ate the salmon spawn,



but this having been happily disproved, these cheerful birds are left to breed in security and peace; and, partly by our own exertions, the premium has been withdrawn. Fluctuations in numbers occurred in the west of the county owing to these persecutions, but since the premium was withdrawn they have again increased. In one return of "vermin" killed, which we have received, the following were the numbers of water-ouzels killed:—In 1874, 64; in 1875, 88; in 1876, 33; in 1877, 41; in 1878, 75; in 1879, Jan. to June, 54: old and young. Happily *nous avons changé tout cela*, and if the premiums were placed on the hooded crows and bag-nets it would be more practical.

### Family TURDIDÆ.

#### Missel-Thrush—*Turdus viscivorus* (Linn.)

Common, and resident in the south-east, and has much increased in the last twenty years; much reduced, however, by the two severe winters of 1878-79 and 1880-81; now again regaining its numbers. Said to have bred at Loch Naver by Selby in 1834.

In the west and north rare, up to 1865, but at that time breeding and increasing as far north as Caithness. Increasing after date of 1865; now breeding commonly about Rosehall, and reaching as far as Tongue. Said to have bred at Cape Wrath, but this is doubtful. In 1877 we saw a bird at Rosehall, the first we had seen in the district, and in 1878 the remains of an old nest near Loch Inver. Seen commonly since that time, especially about Rosehall, but still not seen in the west. Reported as "quite disappeared" at Tongue in 1881, though before that date "abundant," the severe winters having rapidly influenced them. Can now be only looked upon as occasional at Tongue.

#### Song-Thrush—*Turdus musicus* (Linn.)

Resident and common, though one of the species that suffered most in the two before-mentioned severe winters; very common about the older whin bushes that border the south-east coast-line. Common in the west at Scourie, and especially at Badcall and Loch Inver; common at Tongue until the winter of 1878-79. Reported by Mr. Selby, on information received, to remain all winter at Tongue, on the shore and other low situations, and to resort, as we have been assured, to the higher tops of the mountains, even in mid-winter, to feed on the numerous berries. First observed at Inchnadamph in 1877. In 1881 reported to have been utterly exterminated at Tongue, as indeed was the case throughout a large part of Scotland, the west coast and the Hebrides, however, still holding the usual numbers, owing to the influence of the Gulf Stream upon the climate.

#### Redwing—*Turdus iliacus* (Linn.)

Perhaps best described as a common autumn visitant to the east, more rarely remaining the winter through; the flocks that arrive are not nearly so large as those of the fieldfare. On one occasion we were witnesses of a migration of this and the next species at Glenrossal in the autumn of 1875, large numbers of each arriving all one afternoon, settling for a short time in the trees that fringe the river Cassley, and then passing on; next day few or none were to be seen.

#### Fieldfare—*Turdus pilaris* (Linn.)

Like the last, more common in autumn than in winter in the south-east, especially of late years, the birds seeming to dread remaining so far north after suffering so terribly from the two late severe winters. We have at times seen very large flocks of Fieldfares after their arrival sitting on the hillsides, but these soon after either broke up or went



farther south, single birds at times remaining behind until severe weather drove them nearer the coast.

Blackbird—*Turdus merula* (Linn.)

Resident; partially migratory, many more appearing during autumn and early spring than during the breeding season. We know of one Blackbird—a cock—whose wing, though now quite strong, has been at some time injured at the pinion, and this bird has haunted one particular spot for about five years. Common about Loch Inver, and in sheltered and wooded western situations, but almost unknown in the interior, and not distinguished by name by the natives from the ring-ouzel. Common at Tongue.

Ring-Ouzel—*Turdus torquatus* (Linn.)

Summer visitant, and spread through the whole of the milder districts of the east, where there is a mixture of rocky hillsides or burus, amongst which this species delights to nestle. Early in April it gives notice of its arrival by its pleasant whistle (it can scarcely be called a song) being heard in all its accustomed haunts; in late summer it will occasionally enter the gardens with the blackbirds after fruit. Abundant in the west, especially amongst the limestone rocks of Assynt, and along the burns which rush headlong from Ben More. We have taken three “clutches” of eggs in one short afternoon.

Family SYLVIIDÆ.

Hedge-Sparrow—*Accentor modularis* (Linn.)

Resident; common; extending its range wherever plantations are springing up; it has now got up to Badenloch, in the centre of the county, where there are a few trees planted round the shooting-lodge. Occurs also far from wood, as for instance at the back of Ben More Assynt, by the heather-clad shores of the Gorm lochs, where a pair seen by us evidently had young. Common at Tongue.

Redbreast—*Erythacus rubecula* (Linn.)

Resident, and common in the east, though nowhere, strictly speaking, an abundant species. One day in December 1882 we observed a number of Robins in the Dunrobin grounds; there were at least ten in as many square yards. Has increased around Loch Inver in the west, since the plantations have got up, and is not uncommon there. Common at Tongue.

Redstart—*Ruticilla phoenicurus* (Linn.)

A summer visitant to the east, and extending its range, as it is now found a considerable distance up several of the straths in the district, where there is sufficient wood for shelter and food. In 1870 it was not such a common bird as it is now in the Dunrobin district. In the north of the county it is reported as rarer in 1877 than formerly, “and none for the last five years,” by Mr. J. Crawford, but we have found it increasing of late years in the west of the county, and spreading down the valleys towards the sea. Observed at Altnaharrow in 1881; as early as 1878 near Loch Inver, and bred and reared young at Inchquadamph for the first time in 1880. (MS. of E. R. A.) Proceeding westward, up to 1875 we only remember seeing it on two occasions in the county—once at Loch Awe in the west and once at Rosehall, but as early as 1834 Selby saw it at the latter locality and once at Oykel Bridge. In 1864 an unusual migration of this species occurred upon the Caithness coast on or about the dates of 8th, 9th, 10th October, with a furious south-east gale, as recorded by Mr. Osborne. (*Field*, Jan. 9, 1864.)

Stone-Chat—*Pratincola rubicola* (Linn.)

Resident; pairs are seen scattered throughout the country to the east in every month in the year, though they retire nearer the coast-line as winter approaches; they are unsociable birds, more than two being rarely seen together. In the west more abundant than the next species, but locally distributed. Observed at Altnaharrow in June 1881. Common, and breeding at Tongue. (*Auct. J. C.*)

Whin-Chat—*Pratincola rubetra* (Linn.)

A summer visitant; very common in some localities in the east, and going quite into the centre of the county to breed. Local in distribution in the west; plentiful between Lairg and Scourie (*E. Rawson in lit.*), and seen by us commonly here and there between Rhiconich and Durness. Reported common at Tongue.

Wheatear—*Saxicola oenanthe* (Linn.)

Summer visitant, and extremely abundant in the east. Before his departure for the winter the male changes his plumage into the more sombre hues of the female. Even in very exposed situations far up in the county, these birds constantly remain as late as October. In Assynt extremely abundant, also especially in the limestone districts, but not so abundant in 1877 as previous to that date. Common also at Durness. We have found them in pairs on the summit of Ben Chaoran (2500 feet above the sea). Least abundant in the broken ground of the Stoir peninsula and interior parts of Edderachyllis.

Sedge-Warbler—*Acrocephalus streperus* (Vieill.)

A summer visitant; not rare, but very locally distributed both in the east and west of the county. It has been traced to the very north of Sutherland by Mr. Selby in the year 1834.

Whitethroat—*Sylvia rufa* (Bodd.)'

Summer visitant; occurring in limited numbers through the whole of the east and south-east districts. Selby considered it rare in 1834, when it was observed once at Tongue and once at Bonar. In 1865 described by Mr. A. G. More as nesting "only occasionally in Ross, Sutherland, and Caithness" (*Ibis*, 1865, p. 25). But since then found to breed regularly near Tain, and seen by ourselves near Dornoch. Undoubtedly extending its northward distribution in Scotland. Reported common at Tongue.

Blackcap Warbler—*Sylvia atricapilla* (Linn.)

Very rare and casual visitant. A specimen obtained by Sheriff Mackenzie at Dornoch, on November 1, 1871, is in the Dunrobin Museum. The occurrence of this species during the period of autumn migration upon the coast of Caithness, on several occasions, has been taken notice of in the *Field* by the late Mr. Osborne, when it was observed to feed greedily upon berries of the mountain-ash or rowan-tree.

Wood-Wren—*Phylloscopus sibilatrix* (Bechstein).

Summer visitant; fairly common in the south-east district. This warbler was first observed by us in the summer of 1875 at Glenrossal, near Rosehall. The following year one was reported as having been heard at Kildonan in May 1876. (*Auct. Lord Clifton, Zoologist*, 1876, p. 5122). In 1877 we heard many in the Dunrobin grounds, and observed one at Kintradwell also, but this seemingly sudden increase is more likely due to the want of competent observers than to the absence of the birds themselves. Not known farther west than Lairg and Altnaharra. Of this we feel pretty certain up to date of going to press, but we will be surprised if it be not finally a summer visitant to the suitable

woods at Loch Inver. Indeed, we think we once saw it there, but only once in 1881.

Willow Wren—*Phylloscopus trochilus* (Linn.)

A summer visitant; extremely abundant wherever there is a little birch-wood. A single bush sometimes shelters a pair of Willow Wrens, but a bit of green, however tiny, seems necessary to their existence. A nest taken near Balnacoll, was placed in that of a robin from which the young had previously flown; it was lined with feathers and arched over.

Gold-crest—*Regulus cristatus* (Koch.)

Resident in the south-east, where it breeds in the fir-woods so suitable to it; large additions to its number arrive in the autumn, and these are scattered all through the district, as they do not then adhere so closely to the large woods, but haunt the smaller patches of birch and alder. A wonderful migration of this species occurred in the autumn of 1882, stretching in width of migration-wave from Farøe south to the English Channel, along our whole eastern seaboard, driven, helpless and exhausted, upon our shores, by strong continuous east and south-east winds. Much scarcer about Tongue since the winter of 1878-79.

Fire-crested Wren—*Regulus ignicapillus* (C. L. Brehm).

A specimen recorded by St. John in the collection of Mr. Bantock, late keeper at Dunrobin.

Family TROGLODYTIDÆ.

Common Wren—*Troglodytes parvulus* (Koch.)

Resident, and common everywhere in the east; frequenting the very wildest places on the hillside, especially the burn sides overhung with long heather, even in the severest winter. Perhaps not quite so abundant in the west, still common in almost every suitable locality; singing loud above the roar of the Kirkaig Falls, and sitting there almost within reach of the spray.

Family CERTHIIDÆ.

Tree Creeper—*Certhia familiaris* (Linn.)

Resident, and common in the east, where there is sufficient wood, and we have obtained its nest here. Generally solitary. Mr. Houstoun tells us that in the beginning of March 1882 he saw some dozens of these birds together, five of them on one tree. Unknown in the west; common at Rosehall, and present at Lairg and at Tongue.

Family PARIDÆ.

Great Titmouse—*Parus major*, Linn.

Very rare in the east; one specimen in the Dunrobin Museum. Sheriff Mackenzie writes us he has never seen this bird about Dornoch. This species has, however, certainly been observed by us on one occasion near Loch Inver, in the west. As yet absent around Tongue. There are eggs purporting to be of this species in the Dunrobin Museum, but unfortunately there are no notes available regarding them. If they were taken in a new locality it would have possibly helped our estimation of their distribution to have the date and place recorded.

Blue Tit—*Parus caeruleus*, Linn.

Resident ; occurring in all suitable localities along the south-east where there is wood ; more frequently observed in winter. Rare in the west and very local. Some years ago we described it as "common in the west but local," but we now believe this to have been an error ; otherwise, there has been a change of circumstances. Our subsequent notes do not bear out the previously published statement.

Cole Titmouse—*Parus ater*, Linn.

Abundant and resident in the east ; receiving apparently large additions in the winter. This Tit inhabits all the patches of old birch-wood in the district, and breeds there, in winter associating with such other birds as blue and long-tailed tits, and gold crests, besides those of its own species. Commoner in the west than either of the two last-named species. Common at Tongue (*Auct.* J. Crawford). Recorded as rare in Caithness (Osborne), only two specimens having been obtained there subsequent to 1840. In 1878, we found a nest of young Cole Tits, in a crack in a dry hill of peat, on a burn side near Overskaig on Loch Shin. The only trees, for quite a mile around, were a few birch-trees in a hollow on the burn side.

Long-tailed Titmouse—*Acredula rosca* (Blyth).

Resident and common, flocks being observed in winter in all the east coast straths we have visited at that season. Most frequently observed in winter and apparently more abundant then ; this, however, as in the case of the cole tit, may be, firstly, because the leaves being then off the trees the birds are more easily seen, and secondly, that these birds then go in flocks. Sheriff Mackenzie informs us this bird breeds regularly in the birch-woods about Lairg. Present also around Tongue in the north, but reported as having decreased of late years, especially since the winter of 1878-79 (J. Crawford, 1884). Not observed hitherto in the west.

## Family AMPELIDÆ.

Waxwing—*Ampelis garrulus*, Linn.

Very rare and casual visitant. The only specimen known to us came into the possession of the late Mr. Dunbar of Brawl ; it was shot in a garden near Balblair, Invershin, date unknown.

## Family MOTACILLIDÆ.

Pied Wagtail—*Motacilla lugubris*, Temm.

Summer visitant ; abundant everywhere in the county, rarely remaining the winter through ; arrives very early in spring.

Gray Wagtail—*Motacilla melanope*, Pall.

A summer visitant ; fairly numerous in the eastern district. Returns with great regularity to the same nesting-place year after year. After the severe winter of 1878-79 two nesting-places we knew of in the latter district were, however, unvisited. Occurs in winter occasionally about Bonar, we having received a specimen from there in the flesh in 1869. Local in the west, visiting regularly the same spots every year. Not very abundant.

*Obs.* Ray's Wagtail—*Motacilla rayii*, Bon.

This species is included in Mr. A. G. More's sub-province 35, but with a mark of interrogation. He says "This bird has been seen as far

north as Sutherland by Mr. St. John and Sir W. Jardine," etc., but we have never met with it nor heard of it during some eighteen years' experience of the county.

Tree Pipit—*Anthus trivialis* (Linn.)

Summer visitant; rare and local. First recorded as a breeding species in 1875, when two pairs were seen and a nest taken at Glenrossal near Rosehall. At the latter place a single specimen had been observed before. Casual visitant in the west; the only instance of its occurrence we can recall being that of a solitary example at Inchnadamph previous to 1875. Reported occasional at Tongue.

Meadow Pipit—*Anthus pratensis* (Linn.)

Resident; partially migratory; abundant everywhere in summer, much scarcer in winter. Rarely occurs above the heather line, at least in our experience, though Selby speaks of it as met with "on the summits of the highest hills." This species, along with the Rock Pipit, were extremely abundant around Durness, and on the peninsula of Far-out Head, where we observed them in 1882.

Rock Pipit—*Anthus obscurus* (Lath.)

Resident; abundant; breeding all along the coast, excepting that part from about Port Gower to the Dornoch Firth where the locality is not suitable, but it is found there in the winter. Perhaps most numerous along the north coast; in great numbers on the peninsula forming Far-out Head, near Durness. Omnipresent on the coast-lines of the west, and on the islands, where it often breeds on the flat ground, under the shelter of a rock or stone, or ledge of turf, like the meadow pipit, though usually choosing the safer positions amongst the seapinks of the precipices.

### Family ALAUDIDÆ.

Skylark—*Alauda arvensis*, Linn.

Resident, and abundant; breeding commonly along the coast-line and the low meadows in the valleys, more sparingly on the hills through the eastern and central districts, retiring from these latter places coastwards as winter approaches. Abundant on the inland moors above Oykel Bridge and around Loch Clashmore. Generally common around Altnagealgach, but farther west, in Assynt, more restricted to cultivated districts. Common at Drumbeg and Point of Stoir, also at Scourie and Altnaharra.

### Family EMBERIZIDÆ.

Snow-Bunting—*Plectrophanes nivalis* (Linn.)

Winter visitant; common; only appearing on the low grounds in severe weather.

Reed-Bunting—*Emberiza schœniclus*, Linn.

Resident; not common; generally distributed in the eastern districts; much rarer in winter, and the same remarks apply in the west.

Common Bunting—*Emberiza miliaria*, Linn.

Resident, and common, being found along the whole of the eastern coast-line wherever there is sufficient cultivation; more abundant, apparently, in the summer than the winter. Observed in the west at Knockan and Elphin, also at Scourie, and the first observed at Inchnadamph.

nadamph in 1882. In 1882 we also met with it sparingly at Durness. It is fairly common at Rosehall, and on the districts bordering the Oykel river below Langwell, and the Kyle of Sutherland.

Yellow-hammer—*Emberiza citrinella*, Linn.

Resident, and common in the east. These birds extend far into the interior of the county to breed, returning to the greater extent of cultivated ground near the coast in the winter. Common in suitable places in the western districts. Apparently increased in numbers at Inchnadamph by 1877, and by 1880 more abundant around Lairg and the improved lands near Loch Shin. Seen at Altnaharra in 1881 not uncommonly.

Family FRINGILLIDÆ.

Chaffinch—*Fringilla coelebs*, Linn.

Resident, and abundant, breeding through the eastern district wherever there is sufficient wood; in the autumn and winter these birds draw down to the more cultivated parts of the county, and their numbers appear to be increased by the addition of migrants. Has spread rapidly and increased in the west of the county. Formerly we only knew of one pair at Inchnadamph, which bred there for the first time about 1877. Now they are common, but a slight check was put on their increase by the severe winters. Also observed at Altnaharra and Tongue in 1881.

Brambling—*Fringilla montifringilla*, Linn.

Winter visitant of rare occurrence. One sent to Inverness for preservation by Mr. Macleay; of this bird I have received the following note:—“M'Intyre (the Balnacoil keeper) killed the Brambling two years ago in the autumn, at Aschoil (near Balnacoil). There were two of them, cock and hen, but the latter was destroyed by the shot. They were in company with a lot of chaffinches (?) M'Intyre said. He had never seen the same kind of bird before, nor has he since.” (G. R. Lawson, *in lit.*) There is a Brambling in the Dunrobin Museum labelled “Tawny Bunting, Clyne, Mar. 1846,” along with two tawny buntings (*vera*), and probably shot along with the latter; came originally from the old collection at the Dunrobin Kennels.<sup>1</sup>

Tree-Sparrow—*Passer montanus* (Linn.)

Local; probably resident. First described as a Sutherland bird by Sheriff Mackenzie from Dornoch, where he himself first observed the birds in 1872. On March 28, 1872, a flock of a dozen were observed in the neighbourhood of Dornoch, and between then and August several nests of eggs were obtained, one of which sets of eggs, thanks to Mr. Mackenzie, is now in our collection at Dunipace. The only place we have ever seen or heard of it in the west is at Clachtoll in Stoir, where we observed a single bird in 1883. First observed near Helmsdale in August 1880, again in September of the same year, and many subsequent times, such as in June 1881, January 1883, and December of the same year; again in March 1884. Their nest has not been found as yet at Helmsdale, but there is little doubt that they breed there.

House Sparrow—*Passer domesticus* (Linn.)

Resident, abundant along the east coast; local farther inland. At Gordonbush, Strath Brora, we never remember to have seen a

<sup>1</sup> It is curious to find how completely “out of the track of migration” of a large number of birds this county appears to be.



Sparrow; but at Balnacoll in 1879—and that year only—a pair bred there. Has once occurred at Badenloch. In the west appeared at Inchnadamph for the first time in 1882, when a pair arrived in spring after a gale of wind, and remained and bred, and they again are present in 1884. Common at Altnaharrow. Present, but not abundant, at Durness, also at Scourie, and again at Tongue and elsewhere.

Greenfinch—*Ligurinus chloris* (Linn.)

Resident; not numerous; probably confined to the south-east of the county. Rare or absent in the west, and rare about Tongue.

Goldfinch—*Carduelis elegans* (Stephens).

Must be extremely rare, as we ourselves have never seen this bird; Mr. Mackenzie informs us that it is known to breed at Dornoch, and that birds are occasionally seen in his neighbourhood. St. John remarks upon it as being very rare even when he was in the county, 1848, but it was common then in comparison with the present time. "A pair were seen in a birch-wood on the banks of Loch Laoghal by Mr. James Wilson"—one of Mr. Selby's party—in 1834. It has not been observed, up to date, at Tongue.

Siskin—*Carduelis spinus* (Linn.)

Resident; breeding about Dunrobin regularly, and probably does so through all the wooded districts of the south-east; the nest, however, is extremely difficult to find, being placed on a pine-tree, and generally at the end of a branch, concealed from beneath by the cup formed by the uprising of the terminal fronds. Our informant says that they breed at two different times of the year,—first in April and May, and again in June and July, he having taken the young in August; he also says the earlier breeders are smaller and more lively and cheerful than the later ones. Mr. T. Mackenzie reared a young one taken on the 21st May 1875, and it proved an interesting pet. Mr. E. R. Alston observed several birds at Rosehall when he was passing south in June 1877.

Lesser Redpoll—*Linota rufescens* (Vieill.)

Breeds rather commonly in some of the birch and alder woods on the east coast; fresh eggs may be taken from the middle of May to the middle of June. Breeds almost in a colony, near Lairg. Not hitherto observed in the west of the county, and unrecorded in the Tongue district, or elsewhere in the north.

Linnets—*Linota cannabina* (Linn.)

Resident, and common on the east coast, especially from Port Gower to the Mound, where there are great quantities of whin bushes suitable for breeding sites; their place in the straths is taken by the Lesser Redpoll. Not common in the west. During our experience we have shot some half-dozen specimens. Occurs, perhaps regularly, at Inchnadamph. Seen there, certainly, previous to 1877, and again in that year, but not observed since then. Reported common at Tongue.

Twite—*Linota flavirostris* (Linn.)

Not known in the south-east, at least as a breeding species; may possibly occur with the flocks of common linnets in the winter. Breeds regularly at Inchnadamph, and has done so as long as we remember the place, but only in limited numbers. In 1884 a flock of at least 40 seen in early part of May by Mr. J. Young. Comparatively common also at Drumbeg, on the north coast of Stoir, where we met with them first in 1883. Rare or absent, so far as known, on the north coast between Cape Wrath and Whiten Head, though the ground around



Far-out Head is admirably suited to their requirements. Decidedly increased in number at Inchnadamph by 1882. No absolute record from Tongue.

#### Bullfinch—*Pyrrhula europæa* (Vieill.)

Resident; not very common, most frequently seen in the winter; more abundant probably in the east than the west during the summer, in which latter district it was first seen by us in July 1883, in the plantations around Loch Inver, on which occasion we saw a good many. Mr. Crawford never saw any at Tongue except during one year, about ten years ago, say 1874.

#### Crossbill—*Loxia curvirostra* (Linn.)

Resident; breeding in the large fir-woods in the south-east of the county; in some years they are more abundant than in others; they were plentiful in the year 1881. As early as 1849 St. John speaks of the Crossbill as becoming numerous. At Rosehall they were only common for a short time about fifty years ago, after that they entirely disappeared, as we are informed by Mr. Macleay, who was a lad at the time, and saw them about that time.

### Family STURNIDÆ.

#### Starling—*Sturnus vulgaris*, Linn.

Resident and increasing; rare previous to the year 1870. This species is at present mostly confined to the coast-line; a pair, however, bred at Balnacoll, ten miles up the Brora Strath, in 1879. Abundant at Scourie, Handa, and the Badcall Islands, where they nest in holes in the peaty turf, and also in holes which we believe to be occupied later in the season by petrels (*Thalassidroma*). Common also at Durness and Tongue.

#### Raven—*Corvus corax*, Linn.

Resident, only a few pairs breeding in certain localities throughout the eastern district; most abundant in the late spring and autumn. Near Balnacoll there is a rock in which more than a hundred Ravens used to roost, as late as 1878; there was another rock where great numbers also roosted, but this has been deserted for years, so probably they took to the other locality mentioned above.<sup>1</sup> Common in the west, though much persecuted, but scarcely so abundant as some eight or ten years previous to 1877. Scarcer around Durness, though by no means approaching extinction in 1882.

A pretty regular crop of Ravens is found annually, as shown in the following notes:—

In Assynt in 1870 . . . . .	7	And in Durness in 1874 . . . . .	11
“ 1871 . . . . .	10	“ “ 1875 . . . . .	10
“ 1872 . . . . .	18	“ “ 1876 . . . . .	14
“ 1873 . . . . .	19	“ “ 1877 . . . . .	14
“ 1874 . . . . .	17	“ “ 1878 . . . . .	9
“ 1875 . . . . .	24	“ “ 1879 . . . . .	16
“ 1876 . . . . .	10		
“ 1877 . . . . .	7		
“ 1878 . . . . .	2		
“ 1879 . . . . .	1		
Total in Durness and Assynt in ten years . . . . .			189

<sup>1</sup> These congregations of Ravens are not common in Scotland; other localities known to us where they occur are at certain points of the Wigtonshire coast, and the hills of the Stewartry of Kirkcudbright.

In the Reay Forest in six years to 1880 . . . . .	112
And by another hand in same place in seven years—1873 to 1879	224
In Assynt, by one keeper, besides the above . . . . .	134
At Dunrobin, 1873-80 . . . . .	202
Assynt, by another hand . . . . .	31
Total killed in the county, so far as our returns show in a single decade, 662 Ravens, which, at a premium of 2s. 6d. each, represents money to the amount of £82 : 15s.	

### Carrion Crow—*Corvus corone*, Linn.

Very rare in the east. One bird paired with a hoodie in 1878, and both old and young were subsequently killed in a wood near Dunrobin. They are stated to breed in a wood near Melvich in considerable numbers. At Tongue a brood is reported to appear usually, after the young rooks have flown, amongst the rooks, and this has taken place annually since 1879 inclusive. Mr. Crawford also speaks of them as breeding in some numbers at Kirkton, near Melvich; and in a letter dated 17th of March 1884 he also says:—"Carrion Crows are, I regret to say, becoming very numerous and destructive to game of every description." Unknown in the west.

### Hooded Crow—*Corvus cornix*, Linn.

Resident, and too abundant; no great additions arriving in autumn, as is the case lower down on the east coast, the average numbers being pretty well sustained the year round. The total returns we have received from Assynt, Durness, Reay Forest, and Dunrobin, etc., in nine years, are 3392, which, at 1s. each of premium, represents £169 : 12s. Besides these there must be, probably, half as many more killed for which no premiums are paid. Appears to be well kept down in the Durness district.

### Rook—*Corvus frugilegus*, Linn.

Resident; abundant; rapidly increasing in the east. A few pairs of these birds used to breed in some very low trees near Balnacoll; these, however, have lately been cut down. A solitary pair of Rooks built in a birch-tree in a small wood near the same place. To the west the only rookery we are aware of is at Cama Loch, in low birch-trees. In corroboration of a surmise that they would spread to the wooded shores of Loch Beannoch, near Loch Inver, and there endeavour to displace the herons, in 1877 they did appear and began to build; but the keeper, who told us of the fact, shot them down promptly, and they have not since renewed the attempt. Flocks occasionally crowd the trees round the manse at Inchnadamph, but no attempts have yet been made at building there.

Rooks have established themselves at the following localities, and the notes appended are the results of an inquiry we engaged in in 1879, according to a circular sent out throughout Scotland:—

A very old-established rookery at Dunrobin, with a colony in 1879 of about 200 nests, built upon ash, elm, and Scotch fir. They have been kept in moderate numbers, and have not increased or decreased much. They have other roosting-places.

A rookery, a few years old only, established at Skibo with a colony in 1879 of under 100 nests, built on Scotch fir and ash, have since increased. Roost elsewhere.

At Kilmote, age of rookery unknown, about 100 nests in 1879, Scotch fir and ash; increasing.

At Tongue, established about 1855, colony in 1879 of about 500 nests in Scotch fir. Increasing, and usually roost at another wood, migrating daily to Far-out Head for food during hard winters.

At Kirkton, Rooks first appeared in 1860, the first pair breeding amongst rocks at Bighouse Bay, and afterwards taking to the old fir-woods at Kirkton; they originally came from Westfield, in Caithness;

in 1879 there were about 500 nests, and were still increasing; these birds generally roost at the same wood in which their nests are.

Jackdaw—*Corvus monedula*, Linn.

Resident, abundant, and everywhere increasing; keeping, however, near to the coast-line, and never venturing far inland. The Jackdaw is found sparingly at Tongue, but has not as yet appeared in the west of the county.

Obs. Chough—*Pyrrochorax graculus* (Linn.)

No trace of this species has been found that we are aware of since Dunbar and St. John, both referring to the results of the same trip, recorded the occurrence of it on the north coast. As St. John saw the birds himself there can be no doubt of the record, but their disappearance since is only the same process exemplified which is going on in other parts of Scotland as regards this species. A careful survey of part of the north shore and cliff may, it is possible, still discover a pair or two, but we consider this very unlikely.

Magpie—*Pica rustica* (Scopoli).

Resident; extremely scarce now in the eastern district, having of late years been killed down in the game-preserving interests; quite common in 1870. We find that, in 1873, 16 were killed in Dunrobin; in 1874, 26; none again till 1877, when 2 were killed; in 1878, 2; in 1879, 3; and in 1880, 5; or 56 in six years. Unknown in the west amongst the keepers, except by evil reputation. Unknown at Tongue.

### Family HIRUNDINIDÆ.

Swallow—*Hirundo rustica*, Linn.

Summer visitant, but local; breeds here and there along the south-east coast, but not seen far inland. Probably more common about Dornoch than any other part of the county. Not common anywhere in the west, and decreasing. Have always been very late of arrival in the west. They arrive at Tongue about 28th April, which would be very early in the west. They disappeared from Tongue in 1867 and 1868, but reappeared in 1869; but they only very rarely breed there. Apparently absent from Altnaharrow in June 1881.

House Martin—*Chelidon urbica* (Linn.)

A summer visitant; local and scarce; occurs mostly in the south-east. One colony used to nest in a quarry or sandpit near the railway bridge over the Golspie burn. We have seen a pair of these birds at Baluacoil, Strath Brora, flying about and resting on the house in July, but apparently the place was not suitable for breeding purposes, as after a day or two they departed. Local and rare in the west, and decreasing annually, for some years prior to 1877. Used to breed in the limestone rocks of Stronchrubie, where we have only, however, in all our experience, found old nests, so they must have almost disappeared since Selby's record in 1834. St John found them in caves close to Durness. We saw nothing of these in 1881. Common at Tongue for a short time annually; doubtful if they breed there.

Sand-Martin—*Cotile riparia* (Linn.)

A summer visitant; common and generally distributed in the east, where suitable breeding localities can be found. Does not always breed in large colonies; in some places there are not more than a couple of pairs. These remarks apply also to the west, but they are probably still scarcer there, a few pairs frequenting a few scattered localities. Observed in some numbers at Loch Siam and on the Borgia river, near Tongue. There is a small colony at Lairg.

## PICARIÆ.

## Family CYPSELIDÆ.

Swift—*Cypselus apus* (Linn.)

Summer visitant; breeding in suitable localities along the south-east coast, but not plentiful. Seen at Badenloch, in the centre of the county, but does not breed there. Never observed in the west, nor, indeed, have we seen them anywhere in the north. Though reported as common about the limestone cliffs of Durness, and breeding in the Great Smoo Cave and elsewhere, we saw nothing of them there in 1881. At Tongue Mr. Crawford has twice seen Swifts, but they did not remain to breed, but tarried only for two or three days. Mr. Booth observed a few, however, near Durness, and again between Castletown and Dunnet Head in Caithness.

## Family CAPRIMULGIDÆ.

Nightjar—*Caprimulgus europæus*, Linn.

A summer visitant; occurring pretty frequently in suitable localities in the east, and no doubt will increase its range with the growth of the young plantations. Up to 1875 apparently perfectly unknown in Assynt, their last outpost being Rosehall at that time. Was first observed at Casheldhu, near the head of Loch Erriboll in 1882, when a pair were frequently observed, and one unfortunately shot by the keeper—Mr. Murray—in whose hands it now is. The first we ourselves ever saw in the west was in July 1883 at Loch Inver, but they were reported to us as having occurred for some few years before that date. In July 1883 one constantly hawked for insects close round the Loch Inver Hotel in the evenings. Once observed at Tongue many years ago by Mr. Crawford.

## Family CUCULIDÆ.

Cuckoo—*Cuculus canorus*, Linn.

Summer visitant; abundant in every part of the eastern district of the county, even on the barest hillsides. Abundant also in the west, and, indeed, all over the county—in the glens and hillsides, but not ascending very high among the hills. Heard for the first time at Inchnadamph on 23d May in 1877; season cold and backward, and many migratory birds were that year later of arrival here than is usually the case.

## Family UPUPIDÆ.

Hoopoe—*Upupa epops*, Linn.

Casual and rare visitant. Mr. Houstoun writes from Kintradwell—"I am sorry I can't give you the dates of when the Hoopoes were got here, but I think it was in the month of September; they were got in the patch of big fir-wood." These examples occurred in different years. Others, said to have been taken at Golspie in June 1850, and again in 1858, are in the Dunrobin Museum.

## Family CORACIIDÆ.

Roller—*Coracias garrulus*, Linn.

Rare visitant. An example was shot by a nephew of Mr. Fraser, the fiscal of the county, near Dornoch, and was set up by Mr. Macleay of Inverness. There is a specimen in the Dunrobin Museum labelled Morvich, June 9, 1854. The Dornoch one was shot much later. (*Auct.* Dr. J. M. Joass.)

## Family ALCEDINIDÆ.

Kingfisher—*Alcedo ispida*, Linn.

Rare visitant. There is a specimen in the Dunrobin Museum. Another was killed at the Little Ferry by Eric Ross, one of the Duke of Sutherland's keepers, on February 1, 1878, and was seen in the flesh by Mr. Thomas Mackenzie.

## Family PICIDÆ.

Greater Spotted Woodpecker—*Picus major*, Linn.

Accidental winter visitant; in 1862 (?) very abundant, being shot in almost every part of the east of the county, even on Ben Clibrick, but several years may pass without one being seen.

*Obs.* Green Woodpecker—*Gecinus viridis* (Linn.)

One in the Dunrobin Museum is marked "Bonar, 1848," but this requires confirmation.

## COLUMBÆ.

## Family COLUMBIDÆ.

Ring-Dove—*Columba palumbus*, Linn.

Resident in the easteru district; very common in the wooded and cultivated parts of the south-east. A number of these birds spread up the straths and into any isolated patches of wood during the breeding season, retiring coastwards on the approach of winter. In Assynt, in 1869, one pair were observed at Inchnadamph, which remained for a few days, but did not tarry longer. In 1877 we find the note, "Not uncommon in the young plantations around Loch Inver." In 1883 they were seen commonly. Previous to 1869 they appear to have been unknown in the west. As early as 1834 Selby observed it at the base of Ben Loyal, near Tongue; but he adds—"a few pairs only were seen during our excursion." Seen at Altnaharrow in June 1881.

Rock-Dove—*Columba livia*, Bonnat.

"At this time (1884) the Rock-Dove is nearly, if not quite, extinct in the east of Sutherland; eight or nine years ago they could be seen from morning until evening going to and fro from their breeding-places in the rocks on the Caithness side of the Ord, in flocks of thirty and forty, all the year through; now it is a rare thing to see one. The last I remember seeing was a small flock of about half-a-dozen flying over Helmsdale about three months ago. They are by no means a hardy bird, and I attribute their scarcity entirely to the several severe winters we have had since 1876. They have been seen to fall dead in

the air when flying during protracted severe weather. I have often caught them in the Navidale stackyards unable to walk or fly, nothing but bones."—(J. Hill, Esq., *in lit.*) Generally distributed on the north coast, more local in the west, preferring the mainland caves, as a rule, to those on islands. Fairly common at Stoir Head, but nowhere to be called abundant. A pair of apparently perfectly pure wild Rock-Pigeons frequented the iun at Inchnadamph in May and June 1877, associating with the House Pigeons; they have not returned up to 1883.

Turtle-Dove—*Turtur communis*, Selby.

Very rare summer visitant. Two specimens in Dunrobin Museum are labelled "Kirkton, Jul. 1854;" "Crakaig, Sep. 1879." (*Auct. Rev. Dr. J. M. Joass.*) Mr. J. Crawford, writing us in 1879, says—"On inquiry I find that several Turtle-Doves have been shot in the Melvich district some three years ago. I do not remember having seen any here (Tongue) previous to the one I sent you." This bird was shot, but much lacerated, by a pea-rifle bullet, so much so that we could not preserve it.

## PTEROCLETES.

### Family PTEROCLIDÆ.

Pallas Sand Grouse—*Syrrhaptes paradoxus* (Pall.)

Extremely rare; accidental visitant. A specimen in the County Museum was taken at Dornoch on June 6, 1863.

## GALLINÆ.

### Family TETRAONIDÆ.

Black Grouse—*Tetrao tetrrix*, Linn.

Resident and numerous, being found scattered through the eastern districts, irrespective of wood or cover, but is more restricted in the west, and confined to birch coverts and the lake and river sides, being seldom seen on open ground.

Obs. Capercaillie—*Tetrao urogallus*, Linn.

Extinct in the county, though it was present in Sir Robert Gordon's time. Attempts at reintroduction have been made by Mr. Chirnside in 1870, at Skibo (*vide, The Capercaillie in Scotland.* D. Douglas, Edinburgh, p. 99), and at Ospisdale. One bird survived at Skibo for two years but finally disappeared. There being 1800 acres or more of suitable wood on the property, we cannot but believe that an attempt on a sufficiently larger scale would succeed, if it is considered a desirable addition to the game of the district.

Red Grouse—*Lagopus scoticus* (Lath.)

Resident; some years more abundant than others; most abundant in the season of 1880, since which time the county has never entirely been free from disease, though this scourge has not been equally destructive in all places. Grouse migrate much in this county; many birds were seen at the beginning of 1883 on the east coast, yet few remained to breed, and scarcely any were to be found in the shooting season, nor



was any sign of dead birds found ; in the west of the county, however, good sport has been had for several years back, in places where formerly scarcely a grouse was to be seen, and the conclusion is that the birds migrate there from the east.<sup>1</sup>

The fluctuations in numbers from year to year to which Grouse are now subject, opens up a large question for full treatment (which we have not room for here), owing to many causes which, we believe, are quite within the grasp of the naturalist to understand. Common in west Sutherland at certain localities, especially above the limestone, where in Assynt 700 and 600 brace were killed in two seasons respectively. Tape-worm in 1874, and late cold spring with frost and much cold rain, almost brought them to the verge of extinction in 1876 and 1877, and we did not see a single bird along all the 35 miles of road between Lairg and Inchnadamph, where they used to be fairly abundant. They partly recovered in 1878.

Rare in Stoir and Aardvaar, owing to the superabundance of old rank heather and irrepressible hoodie crows. Grouse do not "pack" in the west of Sutherland.

#### Ptarmigan—*Lagopus mutus*, Leach.

Resident ; much scarcer than formerly in the east. Has disappeared from all the hills it used to inhabit on the Caithness march ; also from the Bens Griam and Ben Uarie, within the last forty or fifty years, from the last-named place last of all ; getting much scarcer, too, on Ben Armine, and even on Ben Clibrick. During the severe winter of 1880-81 three Ptarmigan were seen not far from Ben Horn in the Dunrobin Forest.

Abundant in the west, and all the high mountains, but more so on the continuous ranges than on the isolated hills. The range of Glasbhein, Ben Uidhe, Ben Harran (Chaoran), Ben More, and Braebag, is perhaps the best Ptarmigan range in the county.

### Family PHASIANIDÆ.

#### Pheasant—*Phasianus colchicus*, Linn.

Resident ; only numerous where hand-reared and preserved. Pheasants were introduced as long ago as 1841 at Skibo (*New Stat. Acct.*), where they are numerous at present. Introductions have taken place also at Kildonan in the Helmsdale Strath, and a few are seen occasionally near Loch Brora. In Assynt Mr. Whitbread introduced them in 1869, and they promised well for some time. Since then, however, they have practically become extinct, an old bachelor cock living on till 1882. Pheasants have also been introduced at Tongue quite lately. It remains to be seen how they will succeed.

#### Partridge—*Perdix cinerica*, Lath.

Resident ; fairly abundant in the cultivated districts of the south-east, and occurs here and there farther inland, where the shepherds have a little more reclaimed land than is usually the case. A covey is occasionally seen at Badenloch, but they are not regular visitants there. The outlying coverts draw down to the coast in severe weather.

Common about Rosehall and Lairg. Seen at Tongue by Sir. W. Milner, and fairly common to the north of Loch Inver. A pair were seen in 1834, at Inchnadamph, by Mr. Selby's party ; at this place, where there are only some 10 or 15 acres under cultivation, two pairs

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<sup>1</sup> With reference to the above, it may be noted here that a pack of Grouse was seen flying south over the Moray Firth, and making for the Banff coast, in December 1879.—(J. A. H.-B.)



were seen in 1869, and, in the autumn of that year, Mr. Hardcastle killed 16 brace. About the year 1877 there was only one pair in the district, and even these were not seen every successive year. From Tongue Mr. Crawford writes us, under date March 17, 1884, "Partridges are extinct (at Tongue) since the severe winter of 1879; I have only seen one solitary bird since then."

Quail—*Coturnix communis* (Bonaterre).

Has occurred on the east coast on several occasions between Brora and Dornoch. A deserted nest was obtained by Sheriff Mackenzie in September 1873, and there are also specimens in the Dunrobin Museum. As early as 1830 the Quail is noted as occurring, being included in a list of birds given in *A Tour through Scotland*, p. 151, as seen there in the then keeper's house at Dunrobin. Several nests have been found about the same district.

## FULICARIÆ.

### Family RALLIDÆ.

Corn-Crake—*Crex pratensis*, Bechstein.

Summer visitant; very abundant in the east, being found in every locality where there is any extent of cultivation, and even occasionally out on the barren moor, but the latter rarely. Rare in the west, but a pair or two in most cultivated areas of sufficient size.

Water-Rail—*Rallus aquaticus*, Linn.

Winter visitant of not rare occurrence in suitable localities on the east coast.

Included as a breeding species by Mr. A. G. More in Sub-province 35, but we have no further corroborative notes.

Waterhen—*Gallinula chloropus* (Linn.)

Resident and local; mostly confined to the south-east, where in one place they are very abundant; we have received eggs from a locality in the north-east, and also seen a bird on a hill loch at a considerable distance from its more usual habitats.

Only one locality known to us in the west where one pair of birds bred regularly for a number of years. Common at Tongue.

Coot—*Fulica atra*, Linn.

Scarce; we have observed this species on Loch Bad-an-eontigh, in the parish of Rogart, and Mr. Crawford of Tongue informs us that he formerly (previous to 1877) observed this species on a small lochan in the parish of Farr, where it bred, but for some years back it had not reappeared there; we have observed it in one or two other lochs in the east of the county. Has been shot singly at Tongue; apparently came in from seaward on two occasions. Not hitherto recorded in the west.

## LIMICOLÆ.

### Family CHARADRIIDÆ.

Dotterel—*Eudromias morinellus* (Linn.)

There is nothing to add to what has been said by St. John about the Dotterel in his time. Ben Clibrick is the only place in the county

known to us as having been visited by this bird; it has, however, been observed there both by Mr. Crawford of the Lairg Hotel, and also by Donald Gillies, for a long time a keeper with Mr. Akroyd at Altnaharra. A specimen in the Dunrobin Museum was obtained on Ben Clibrick on 18th June 1846.

Ringed Plover—*Aegialitis hiaticula* (Linn.)

Resident and abundant all along the east coast, and also breeds inland in one or two situations, notably on the shores of the chain of lochs at Badenloch. Rarer in the west, but common on the stony waste of land to the south-east of Durness, where the crofters cut their peats, near Loch Maidagh or Maeddie, and on the bed of a drained-out loch.

Golden Plover—*Charadrius pluvialis*, Linn.

Resident and abundant, but rarer and much more local in winter. Breeds through all the moorland district, being commoner in the wetter and more desolate districts. Numbers of these birds are often to be seen in a flock on the green ground high up along the river sides in May and early in June, probably non-breeding birds. Common in the west, especially above the limestone cliffs, on the moor stretching back towards Loch Mulaeh Corry. Common between Durness and Cape Wrath.

Gray Plover—*Squatarola helvetica* (Linn.)

Rare visitant. Said by Sheriff Mackenzie to occur at intervals along the Dornoch Firth. The only specimen seen by ourselves, and the only one in the Dunrobin Museum, was shot at Kintradwell, among some stones on the shore, on January 20, 1871: a solitary bird.

It may be worthy to remark here that Mr. Macleay of Inverness in all his long bird-stuffing experience has never received but this one specimen to set up.<sup>1</sup>

Lapwing—*Vanellus vulgaris*, Bechst.

Resident, and abundant; though much scarcer in winter than at other times. These birds ascend all the straths where they can find suitable places to build, even going quite into the centre of the county; the great bulk depart farther south after the breeding season. More local in the west, but abundant in one or two localities, and occasionally ground not before frequented is taken up by a few pairs, as, for instance, on the flat meadows along the course of the river Loanan, near Inchnadamph.

Turnstone—*Streptilas interpres* (Linn.)

Common the whole year round the coast, excepting during the breeding season, from the middle of May to the middle or end of July, when it is much scarcer, although stray individuals occur even then.

Oyster-catcher—*Hamatopus ostralegus*, Linn.

Resident, and common; receiving large additions in the winter, at which season the mussel-scalps at the Little Ferry are at times covered with these birds. Occasionally seen inland on fresh-water lochs in the west. Common on all the shore line and islands of the salt-water lochs.

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<sup>1</sup> Our observations of migration tend to show that in spring Gray Plovers shoot off our coasts at Spurn Point in Yorkshire. In autumn they are regular visitors to the estuary of the Forth at Grangemouth, and also to that of the Tay.

## LIMICOLÆ.

## Family SCOLOPACIDÆ.

Gray Phalarope—*Phalaropus fulicarius*, Linn.

Very rare winter visitant. The only specimen known to us, and now in the County Museum, was shot at a pool of water on the Kintradwell links by Mr. Houstoun on December 3, 1869.

Rednecked Phalarope—*Phalaropus hyperboreus* (Linn.)

St. John's record is the only one we can find of this bird as a Sutherland species; a pair were seen by him at Altnaharra, at the head of Loch Naver, on June 10, 1848.

Woodcock—*Scolopax rusticola* (Linn.)

Resident, and common; as a breeding species has much increased of late years; rare in the central and north-east districts. Woodcocks seem to be least common about August and September; after the young can fly well, possibly they go south, thus accounting for "early arrivals" there. The numbers of those shot on the east coast varies with the season, as, unless driven in by frost, or, still more, deep snow, Woodcocks remain on the hills.

Common in the birch-woods of Assynt in summer, and flights occur in winter. Breeds regularly also around Tongue.

Common Snipe—*Gallinago cœlestis* (Frenzel.)

Resident, common, and generally distributed; more abundant in the lowlands in the winter, as the Snipes then leave the higher grounds. Much scarcer since the two late severe winters; and even before then these birds were getting much rarer in the central districts during the summer and autumn.

Common; but less so of late years in the west.

Jack Snipe—*Gallinago gallinula* (Linn.)

Autumn visitant, scarcer in winter. Much as has been said of the breeding of this species in Scotland there is no evidence of sufficient reliability, either in this county or elsewhere in Scotland.

Dunlin—*Tringa alpina*, Linn.

Resident; most numerous in the breeding season, rare in the winter. The Dunlin is sparsely scattered all through the moorland district in the breeding season, being most numerous in the wet flow lands of the centre, but nowhere very abundant. From its unobtrusive habits and extreme tameness it does not appear even as common as it is. The only place we have observed it in winter is on the large mud-flats on the north-east side of the Little Ferry, and Sheriff Mackenzie records it as common on the Dornoch Firth, near where it breeds in one locality. Annual breeder also at Lairg, and on the flows westward to Loch Shin, above Oykel Bridge, and at Loch Urigill, and again near Loch Inver at one locality. Very common near Cape Wrath and near Tongue.

Purple Sandpiper—*Tringa striata*, Linn.

Winter visitant, abundant along the coast wherever there are rocks and stones suitable for it; rarer on the sandy shores. We have noted this species as late as the 26th May 1868 on the Badcall Islands, and it is frequently seen late in spring and beginning of summer on the shores and islands of the west coast.

Knot—*Tringa canutus*, Linn.

Mr. Mackenzie reports this bird as common at the Dornoch Firth; we ourselves once saw a large flock of waders at the Little Ferry, which we thought referable to this species; none, however, were procured.

Sanderling—*Calidris arenaria* (Linn.)

Autumn visitant, and scarce. The only place in which we have observed them has been the sandy beach between Brora and Kintradwell.

*Obs.*—There are specimens of ruffs (*machetes pugnax*) in full breeding plumage in the Dunrobin Museum, but there is not sufficient evidence of their having been obtained in the county to include them in our list; they are not recorded by Sheriff Mackenzie from the Dornoch Firth. A ruff in Dunrobin Museum came there from the old collection at the kennels; but this is all the information regarding it.

Common Sandpiper—*Actitis hypoleucos* (Linn.)

Summer visitant, abundant all through the county, arriving about the end of April, and leaving directly the young are able to fly well. We have met with this species 2500 feet above the sea, in the old pass over Ben Chaorin. Breeds both inland and on the islands of the sea-lochs.

Green Sandpiper—*Totanus ochropus* (Linn.)

Very rare visitant. One shot at Helmsdale in the winter of 1879 (as far as we can remember); came to Inverness to be preserved, where we saw it in Mr. Macleay's shop.

Redshank—*Totanus calidris* (Linn.)

Resident, and abundant; generally distributed through the whole of the county in the breeding season, preferring those places, generally marshy, where there are tufts of grass in which to hide its nest; retires to the coast in winter. Rarer in the west, but common at one locality in Assynt. Less plentiful about Tongue than the greenshank.

Greenshank—*Totanus glottis* (Pall.)

A summer visitant, generally distributed through the whole of the county. One of the most interesting of the Sutherland birds. On their arrival about the end of April they go almost at once to their nesting-grounds, remaining a very short time on the low lands in the valleys; when the young are able to fly well they seem to go straight away to the south, not remaining long anywhere about the shores, at least in the east of the county. The nest is generally placed on a dry hillock, amongst stones and lichens, and the young are taken by their parents to the nearest marsh as soon as hatched.

Its local name in the west is "Teoch-vingh," in imitation of its cry.

Bar-tailed Godwit—*Limosa lapponica* (Linn.)

Autumn and winter visitant, occurring on the south-east coast most seasons, in small parties; has been seen and shot in the months of September, November, and December.

*Obs.*—Black-tailed Godwit—*Limosa melanura* (Linn.)

We would like to know what became of the specimen, said to be of this species, recorded, by "Nether Lochaber" (the Rev. Alex. Stewart of Ballachulish) as having been shot near Helmsdale (*Inverness Courier*, Dec. 26, 1881). Macleay of Inverness has only had one or two in his shop in all his experience, and it is an extremely rare species in Scotland.

Curlew—*Numenius arquata* (Linn.)

Resident in the east; most abundant in the breeding season. These birds breed all through the moorland districts, coming to the green places in the straths about the third week in March; shortly after this they pair and go to their nesting-grounds.

Common in the west, but local in the extreme west. Increased around Loch Awe by 1877.

Whimbrel—*Numenius phaeopus* (Linn.)

Spring and autumn visitant, not rare on the east coast.

We can obtain no definite or trustworthy account of their breeding in the county, notwithstanding Mr. Dunbar's statement (*Ibis*, 1865, p. 435). Occur during spring migration on the north coast, and were supposed to retire to the interior, but there is every reason to doubt this, and to believe they left on a more northerly track. We have before criticised all previous records (*Proc. N. H. Soc. Glasgow*, 1875, p. 111). An egg handed to us as having been taken on an island in Glen Coul, Assynt, as belonging to this species is—however like a Whimbrel's—not authenticated, and may quite well be a deformed common gull. The texture is not that of a Whimbrel's egg.

## HERODII.

## Family ARDEIDÆ.

Heron—*Ardea cinerea*, Linn.

Resident, apparently more numerous in winter. Only one herony is known to us in the east of the county, which, up to 1873, was situated on the south side of Loch Brora, but afterwards the birds removed to the Gordonbush woods on the north side. Herons frequent the inland burns as long as the weather is open, but when severe they come down to the coast.

Some of the principal heronries in the west are those at Loch Shin, on the island off the Fiag Burn, Loch Alsh (in the peninsular part of Ross-shire), Loch Cama (now extinct, rooks being in possession), Loch Beannoch, Stoir, Loch-na-Clash-fearn in Edderachyllis, etc. Scarcer at Loch Beannoch in 1877 than formerly.

## ANSERES.

## Family ANATIDÆ.

Gray-lag Goose—*Anser cinereus* (Meyer).

A summer visitant, not rare, but has become much scarcer in the last fifteen years, though not now so much shot at in the "flapper" stage as formerly. Less common in the south-east than in the central districts, the large lochs near Badenloch being a sort of collecting ground for the geese of that district. Arrives about the beginning of April, and leaves the middle of September.

Still not rare in the west, especially on a loch in West Cromarty. It is high time, however, that something were done to restrict the senseless slaughter of this interesting species. Many, apparently barren, or otherwise immature birds, flock together in summer in the west, while others are engaged in incubation.

Brent Goose—*Berniela brenta* (Pall.)

A winter visitant to the east coast, but not arriving until very late in the season.

Bernacle Goose—*Berniela leucopsis* (Bechst.)

Occurs at Scourie as a winter visitant.

Mute Swan—*Cygnus olor* (Gmel.)

A pair or two (tame) breed on Loch Brora, and there are also four or five about the Mound and Little Ferry.

Whooper—*Cygnus musicus*, Bechst.

An occasional winter visitant, a few being seen nearly every winter. Rarely seen in the west, more frequently in the north.

Bewick's Swan—*Cygnus bewickii*, Yarrell.

Winter visitant; one shot at Altnaharra in the winter of 1879; probably of more frequent occurrence than is supposed, not being distinguished from *C. musicus*.

Obs. American Swan—*Cygnus Americanus*, Sharpless.

Three, entered on the authority of Mr. Harvie-Brown, as shot at Tain, and which came to the Edinburgh market in 1880, it is to be feared are not satisfactorily identified. Mr. Harvie-Brown at that time based his opinion upon the anatomical peculiarities of the sternum and trachea, but it seems doubtful now if these are not merely distinctive of stages of age in the same species, and until we obtain a larger series for comparison, the faunal value of these birds must remain in this position for the present.

Sheldrake—*Tadorna cornuta* (S. S. Gmel.)

Most frequent during the breeding-season, nesting in the rabbit holes in the sandhills of the north and east coast; a few remain during winter at the Little Ferry. Very common on Rabbit Island or Eilean-nan-Ghael, Kyle of Tongue. Rare, or quite absent in the west, so far as we can learn, although several suitable places occur, such as the sandy slope of Handa, and the neighbourhood of Loch Sandwood.

Wild-Duck—*Anas boschas*, Linn.

Common and resident, the only one of the true ducks that is commonly to be met with inland during the winter. Common in the west, and general, often breeding far up the hillsides and away from water. Also at Tongue.

Shoveller—*Spatula clypeata* (Linn.)

As regards this duck Sheriff Mackenzie informs us—"Nor have we seen the Shoveller Duck in the Dornoch Firth, though we have both (referring to Mr. Jennins, who punts in that locality) shot young birds in the neighbourhood in the month of August. It was one of these latter that I got Macleay to preserve for me. This year I am to have a try for the eggs, for I know the loch where they breed." (*In lit.*, March 24, 1884.)

Teal—*Querquedula erecca* (Linn.)

Common, and resident; like the Wigeon, retires to the coast and estuaries almost entirely in the winter.

Tolerably abundant in the west, returning year after year to the same place to breed.

Pintail—*Dafla acuta* (Linn.)

Occurs in winter and spring; more frequent during the latter season; mostly confined to the south-east districts. Has occurred at Tongue, but rarely, and has not been seen much of late years.

Wigeon—*Marcea penelope* (Linn.)

Common, and resident in the east; most numerous at the Little Ferry and Dornoch Firth in the winter. Breeds abundantly in some parts of the eastern district of the county, notably about Loch Brora and Loch Naver, more sparingly in other places. Observed at the head of Loch Shin in summer of 1883, but it is open to doubt if it is found anywhere in the west, or between the mountains and the sea. It is found between Tongue and Loch Erriboll in the north, and thence eastwards.

Pochard—*Fuligula ferina* (Linn.)

Mr. Crawford tells us he is convinced this duck breeds at several localities in the Tongue district, and he instanced one loch where they are seen all summer. In the east it is a winter visitant only, not uncommon in the Dornoch Firth.

Scaup—*Fuligula marila* (Linn.)

Mr. Selby records a single female shot by Sir W. Jardine in 1834, which was attended by a young bird which escaped. Sir W. Jardine, in a subsequent communication to us, seemed to have some doubts if this was, however, a young Scaup, but we cannot think there is reasonable cause to suppose it was anything else. We have other strong presumptive evidence of its having bred. In June 1868 Harvie-Brown shot an adult male Scaup on a loch in the west, which, from the bird's unwillingness to leave, even when repeatedly fired at, led him to think the female was not far off; and there is other evidence elsewhere detailed (*Proc. Nat. H. Soc. Glasg.* 1875). In the south-east it is not an uncommon winter visitant about the Little Ferry and Dornoch Firth. Rare in the Tongue district.

Tufted Duck—*Fuligula cristata* (Leach).

Winter visitant; has been shot in the Dornoch Firth.

Golden-eye—*Clangula glaucion*.

Sir W. Jardine includes this species as observed on two occasions; one, a male, between Thurso and Tongue, May 17; and on another occasion, from a small loch near Loch Maddy (or Maedie?), the party flushed a female on the 21st of the same month. Mr. St. John also observed it on Loch Laoghal in summer. It has been recorded by Mr. Dunbar as breeding near Loch Assynt in the hollow of an old larch-tree. There are now no larch-trees, to our knowledge, on the shores of Loch Assynt, and we have never met with the species during eighteen years' experience of the west. The Golden-eye is a common visitant to the eastern districts, frequenting many of the inland lochs and still pools in the rivers; these are, as a rule, young birds and females, the older males keeping more to the sea; they remain until quite late in the spring.

Long-tailed Duck—*Harelda glacialis* (Linn.)

A winter visitant, and very abundant along the coast wherever suitable for them.

Eider Duck—*Somateria mollissima* (Linn.)

Said by St. John to breed on the islands off the Kyle of Tongue; there are specimens of this bird in the Dunrobin Museum. Breeds in small



numbers at Eilean Hoan, entrance of Loch Erriboll, and other scattered localities on the north coast. In 1882 Harvie-Brown found broken egg-shells of Eider Duck upon Eilean Chlainnraig, close to Eilean Hoan, apparently broken by gulls, and the site of a nest of the previous year was pointed out by the fisherman who accompanied him.

Velvet Scoter—*Edemia fusca* (Linn.)

Winter visitant, haunting the banks at the mouth of the Little Ferry, the Dornoch Firth, and also those towards Golspie. About 1870 they used to be met with opposite Kintradwell, but are rarely seen there now; perhaps the bank there may have shifted or got too deep for the birds to reach by diving.

Black Scoter—*Edemia nigra* (Linn.)

Winter resident, not rare on the south-east coast. Dr. Joass of Golspie informs us that this species bred in Sutherland in the year 1877, the eggs having been taken, and both old birds shot.

As this species undoubtedly breeds not very rarely in Caithness, just across the county march, it is fairly to be expected it will also be found in Sutherland if looked for; indeed, we ourselves on two occasions in June 1878 thought we recognised this duck on a loch not far from Balnacoll. Recorded as often seen at Tongue. Not hitherto recorded from the west.

Goosander—*Mergus merganser* (Linn.)

There are two specimens of this bird in the Dunrobin Museum; we ourselves have not observed it in the county, but Mr. Booth reported to us—*viva voce*—that it bred on the Shin; and it also occurs occasionally in the Dornoch Firth. Occurs commonly, as reported by Mr. Crawford, at Tongue in winter. Not hitherto recorded from the west.

Red-breasted Merganser—*Mergus serrator* (Linn.)

Resident, and common; breeding throughout the whole of the eastern district; only met with on the coast in winter. Abundant in the west, breeding both on fresh and sea water lochs. Generally distributed.

## PYGOPODES.

### Family COLYMBIDÆ.

Great Northern Diver—*Colymbus glacialis*, Linn.

Common along the east coast in winter and spring, but more abundant at the latter season. We have a fine specimen in our collection, obtained on one of the pools of the Brora river in May. Found in the Kyle of Tongue all the year round, but most abundantly from September to February. We have recorded the presence of a pair on a far inland fresh-water loch in mid-summer (see *Zool.*, 2d ser. p. 1309). We do not wish again to insist on the fact of their breeding, but we still adhere to the correctness of our statement as to their authentication on that occasion.

Black-throated Diver—*Colymbus arcticus*, Linn.

Summer visitant, breeding on many of the lochs in the eastern district; rarely seen on the coast, going straight to their breeding-grounds, and leaving at once for the south as soon as the young can fly. Few large lochs are without a pair of these birds. Very common in the west, where this species outnumbers the red-throated species; in the north-

east, however, the proportions appear to be reversed. Prefers large lochs with green islands for breeding purposes.

Red-throated Diver—*Colymbus septentrionalis*, Lath.

Summer visitant, but not nearly so abundant in the eastern districts as the last-named; getting more numerous towards the north-east and north, where their numbers are about three to one of the last-named species. We have received a good many eggs from the north-east, about Strathy and Farr. Prefers mossy tarns with green edges for nesting purposes; rarely found breeding on islands of the larger lochs. Is seen at times on the Dornoch Firth. Not very abundant in the west.

Family PODICIPITIDÆ.

Selavonian Grebe—*Podiceps auritus* (Linn.)

A casual winter visitant. A bird of this species was taken in a garden at Golspie in December 1882. The person who caught it kept it alive for a week on fish, but it at last died, and is now in the Dunrobin Museum. It occurs also in the Dornoch Firth.

Great-crested Grebe—*Podiceps cristatus* (Linn.)

This species has been killed by Mr. Jennings on the Dornoch Firth.

Little Grebe—*Podiceps minor* (Gmel.)

Resident, but not abundant on the east coast, being seen most frequently in the winter; they breed on Loch Brora. A favourite place in the winter is the stream that issues from the sluices at the Mound. Common about Dornoch, where three or four sittings of eggs can be obtained annually. Breeds near Balnakeil, Durness, and at Tongue, but rare or absent in the west. One was shot on Loch Mulach Corry, at the base of Ben More, Assynt, a year or two previous to 1877, the first seen in the district by any of the native keepers or shepherds.

Obs. Red-necked Grebe—*Podiceps griseigena* (Bodd).

No actual record of the occurrence of this species has reached us.

LARIDÆ.

Family STERNINÆ.

Arctic Tern—*Sterna macrura*, Naumann.

Summer visitant; common along all the eastern seaboard, breeding in scattered colonies. Common at various points on the west and north coasts, usually in colonies, and preferring insular positions.

Common Tern—*Sterna fluviatilis*, Naumann.

Summer visitant; more usually breeding near fresh water than the Arctic Tern. Breeds at Loch Migdale, near Bonar.

We consider the Arctic Tern the more abundant of the two species throughout the county, but we have ourselves taken eggs of the Common Tern on Loch Migdale. The statement that the Common Tern is found on a small island near Handa (*Proc. Glasg. Nat. Hist. Soc.*, 1875. J. A. H. B.) may or may not be correct; the note made many years ago still stands in our note-book, but we again repeat it here, as perhaps deserving of further inquiry. We believe the Common Tern to be much rarer on the west coast of Scotland than on the east.

Lesser Tern—*Sterna minuta*, Linn.

A rare summer visitant; a pair visited the shore between Brora and Kintradwell in 1871, and probably bred there; they were also seen in the same place in 1877. They have not been observed in the west to our knowledge.

## Family LARINÆ.

Ivory Gull—*Pagophila eburnea* (Phipps).

Mr. Crawford of Tongue has a specimen that was killed at Scourie in the winter of 1879-80.

Black-headed Gull—*Chroicocephalus ridibundus* (Lin.)

Common, and resident on the east coast; choosing some extremely swampy place to breed in, inaccessible, as a rule, owing to the depth of the surrounding mud.

Entirely absent in the west. Seen following the harrows at Durness; but no breeding-place known to us in the neighbourhood.

Little Gull—*Chroicocephalus minutus* (Pallas).

Very rare visitant. The only specimen known to us is a dried-up mummy that was picked up in a cart-rut near Balnacoil in the spring of 1874.

Common Gull—*Larus canus*, Linn.

Resident, and abundant the whole year round on the east coast; like the other gulls retiring to the hill lochs to breed. Usually they breed in colonies like the black-headed gull. Breeding numerous in the west, in colonies, on the islands of both sea and fresh water lochs. A very tame bird of this species was well known to anglers on Loch Awe, Assynt, in 1880, coming to be fed always at lunch-time.

Great Black-backed Gull—*Larus marinus*, Linn.

Resident, and common the whole year round on the east coast, but scarcer in winter; retiring to the hill lochs to breed; rarely more than a pair on a loch, if frequented by other gulls, and often choosing a solitary island which they keep to themselves. Near Dornoch, however, we understand there is a loch tenanted by a colony of these birds. Breeds in a colony of about fifteen pairs on the summit of the Stack of Handa. A far inland locality, where a single pair breeds, is at a loch-side near Oykel Bridge.

Lesser Black-backed Gull—*Larus fuscus*, Linn.

Very common in summer, much less numerous in the winter. Breeds in numbers about the hill lochs of the east coast, and often away from the lochs on the flow ground. Less numerous now than ten years ago; and the same may be said of the species just mentioned, and also the next in order, the herring gull, as the eggs are smashed and the young killed on all possible occasions by the shepherds and gamekeepers, on account of the damage they do. On some of the large flows in the centre of the county gulls are now almost extinct, where ten years ago they were abundant. Found generally mixing with herring gulls, where the latter breed inland on the west, but occupying independent colonies on the Badcall Islands, and on an island of Loch Scheanaskaig, in West Cromarty.

Herring Gull—*Larus argentatus*, Gmel.

Common all the year round on the coasts; retiring in the east inland, to breed, where it mixes with *L. fuscus*, the two species nesting side by side.

Iceland Gull—*Larus leucopterus*, Faber.

Winter visitant; not uncommon on the east coast.

Kittiwake—*Rissa tridactyla* (Linn.)

A visitant only to the east coast, generally in spring.

Breeds abundantly in the west, at Handa, and on Bulgie Island; also on the north coast cliffs near Cape Wrath, but not so abundantly. There are many roosting-places unoccupied by nests, such as one on Bulgie Island, and another on the east side of Eilean Garbh.

#### Family STERCORARIINÆ.

Pomatorhine Skua—*Stercorarius pomatorhinus* (Temm.)

Rare visitant; four were seen at Balnacoil on the 13th of October 1879, a year famous for the number of these birds obtained all through the country.

*Note.*—These birds appear to frequent the ocean and seas of the Outer Hebrides in some numbers, every summer of late years. We saw them not uncommonly west of Lewis in 1881.

Richardson's Skua—*Stercorarius crepidatus* (Banks.)

Autumn visitant; breeding in one place in the county only, as far as is known to us; a pair, and one pair only, coming to the same spot year after year.

Stray examples have occurred in the west, but there are no known breeding-sites. We have received the bird in the flesh from Handa, but assuredly it does not breed there.

#### Family PROCELLARIIDÆ.

Leach's Petrel—*Procellaria leucorrhœa*, Vieill.

A rare visitant. There is a specimen in the Dunrobin Museum that was taken at Forsinard on January 10, 1877.<sup>1</sup>

Stormy Petrel—*Procellaria pelagica*, Linn.

Apparently a rare visitant. A specimen in the Dunrobin Museum was taken at Seourie on the 30th of October 1845.

We have never found this species breeding in Sutherland, but can scarcely believe but that it is found on the Badcall Isles, and elsewhere, nesting (see under Starling, *antea*, p. 343). They breed on the Pentland Skerries, and occur in misty or hazy weather, not infrequently at the lighthouse lanterns of Dunnet Head and Cape Wrath.

### ALCÆ.

#### Family ALCIDÆ.

Razorbill—*Alca torda*, Linn.

Occasional in winter and spring; numbers thrown up dead after a storm on the east coast, on these occasions far outnumbering the guillemots in quantity, in about the proportion of six to one.

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<sup>1</sup> As this species breeds on North Rona, it may occasionally be expected to occur in Sutherland. (See Mr. J. Swinburne's Notes, *Proc. Ryl. Phyl. Soc.*, 1883-4.)

Abundant on Handa and elsewhere, such as Cearvig Bay and Cliffs of Clomore, etc., on the north coast. The annual reports of the Committee on Migration of Birds for the British Association show with what marvellous regularity they appear at their various breeding-stations, and then leave again in autumn, along with other rock-birds.

Common Guillemot—*Lomvia troile* (Linn.)

Occasional visitant on the east coast, especially in winter and spring, and often thrown up dead after a storm.

Rock-birds breed plentifully on the Caithness side of the Ord, but never on the Sutherland side.

When Guillemots or Razorbills are observed swimming near the shore in winter on the east coast, they are generally, if not always, weakly birds, and probably perish.

Exceedingly abundant on Handa; the summit of the Stack and the regular niched ledges of the cliffs literally swarming with life. The bridled or ringed variety (*U. lacrymans* or *U. ringvia*) is in proportion to the others as one or two in every ten or a dozen. The identity of those forms has been placed, by us, beyond doubt. The regularity of the migration from east to west in autumn at all the north coast lighthouses, and the dates of commencement and completion, are interesting (see *Migration Reports*, 1879-1883).

Black Guillemot—*Uria grylle* (Linn.)

A spring visitant to the east coast.

Breeds not uncommonly on the west coast, and in a colony on the Badcall Islands. Once plentiful on Handa, now rare, if indeed present at all, and the cause assigned for extinction by the cragsmen—the Brothers Mathieson—is that rats have managed to dislodge them. We have found that the males assist in incubation, having one or two hatching spots on the breast, and these have been taken off the eggs. They are abundant also along the north coast, west of Loch Erriboll.

Little Auk—*Mergulus alle* (Linn.)

Winter visitant, but not occurring every year.

Puffin—*Fratercula arctica* (Linn.)

Winter visitant to the east coast.

The principal colonies of these birds on the west and north are:—Handa, about three miles of cliff and slopes east of Cearvig Bay, occupied in many places from base to summits, which are 380 feet in height—a marvellously fine colony—at Clochbheag, near Durness, and scattered colonies at other points. They used to breed at Garbh Island numerously, but are now rare there; having been persecuted, they have taken to the higher cliffs of Clomore and Cearvig. Rats have also driven them off the tops at Handa into more secure crevices in the face and slopes.

## STEGANOPODES.

### Family PELECANIDÆ

Gannet—*Sula bassana* (Linn.)

An occasional visitant to the east coast; not rare; old birds most abundant. The regular streams of migration of the Gannets round our islands are worthy of attention; flying east and north along the north coast in spring, and flying west daily in autumn. Between 2150 and 3080 have been estimated to fly westward within view of Cape Wrath during fifteen days noted, between 14th July and 9th August. They pass between 7 A.M. and 10 P.M. each day, in all winds and weathers. (See *Migration Report*, 1879, p. 41.)

Cormorant—*Phalacrocorax carbo* (Linn.)

Common, and resident, though not breeding on the south-east coast; some go far inland to feed.

The principal colonies known to us are Badcall Islands, in the west—but decreasing here fast from persecution—and a very fine colony indeed close to Whiten Head, on “The Maiden’s Rocks,” and on the bold cone of the headland itself, at a height of about 350 feet. At that distance with binoculars the white thigh-spots were quite distinctly visible. A man scaled the face one day and brought down a shawlful of eggs. Rare on Handa, choosing the highest ledges, just under the summits of the perpendicular cliffs.

Shag—*Phalacrocorax graculus* (Linn.)

Common, and resident all round the coasts, not venturing far inland; does not breed on the east coast, but does so abundantly in the caves on the north, and in all suitable localities there. It is rarely found in large colonies, probably owing to the scarcity of ledges of the requisite nature, which, to suit these birds, should overhang deep water.

## FISHES OF SUTHERLAND AND THE MORAY FIRTH.

### I.

### PISCES.

#### PALÆICTHYES.

#### Order CHONDROPTERYGII.

##### Suborder PLAGIOSTOMATA.

##### Division SELACHOIDEI.

##### Family CARCHARIDÆ.

##### Blue Shark—*Carcharias glaucus* (Linn.)

Rare; cast ashore near Kintradwell after a storm. A specimen in the Dunrobin Museum is dated Kintradwell, November 1871.

##### Common Tope—*Galeus canis*, Bonap.

##### Smooth Hound—*Mustelus vulgaris*, Müll and Herde.

##### Family LAMNIDÆ.

##### Porbeagle—*Lamna cornubica* (Gmel.)

A specimen in the Dunrobin Museum is labelled Loch Inver, 1875; and our fishing party caught another on a long sea-line at Loch Inver in 1881, which weighed 56 lbs.

Thrasher Shark—*Alopias vulpes* (Gmel.)

A whale was brought ashore near Wick, said to have been killed by a Thrasher; the combat was observed from the cliffs by the fishermen, who secured the dead whale. Another specimen was taken at Fortrose, Ross-shire, in 1846 (Martin).

## Family SCYLLIDÆ.

Small Spotted Dogfish—*Scyllium canicula* (Linn.)Black-mouthed Dogfish—*Pristiurus melanostomus*, Bonap.

Recorded from Banff by Edward.

## Family SPINACIDÆ.

Picked Dogfish—*Acanthias vulgaris*, Risso.

An abundant species; often picked up dead along the shore, generally in autumn; very destructive to herrings in the net. Particularly abundant on the west coast in July 1882.

Greenland Shark—*Læmargus borealis* (Scoresby).

Reported by Mr. Peach as occurring occasionally. Recorded by Fleming from the Pentland Firth in 1803; and on May 22, 1859, one 10 feet long was found entangled on a fishing-line (*vide* Brown, *Zool.*, 1860).

Spinous Shark—*Echinorhinus spinosus* (Gmel.)

## Family RHINIDÆ.

Angel Fish—*Rhina squatina* (Linn.)

Mr. Peach says this species is often caught by the Buckie fishermen, but being valueless, is thrown overboard.

## Division BATOIDEI.

## Family TORPEDINIDÆ

Torpedo—*Torpedo hebetans*, Lowe.

Moray Firth, 1884.

## Family RAJIDÆ.

Thornback Ray—*Raja clavata*, Linn.Starry Ray—*Raja radiata*, Donovan.Sand Ray—*Raja circularis*, Couch.Skate—*Raja batis*, Linn.

Abundant all round the coasts.

Long-nosed Skate—*Raja vomer*, Fries.

Recorded by Edward from Banff.



## Family TRYGONIDÆ.

Sting-Ray—*Trygon pastinaca* (Linn.)

## Family MYLIOBATIDÆ.

Eagle-Ray—*Myliobatis aquila* (Linn.)

## Order GANOIDEI.

## Suborder CHONDROSTEI.

## Family ACIPENSERIDÆ.

Sturgeon—*Acipenser sturio*, Linn.

Mr. Crawford informs us that this species occurs off the north coast of the county, and there is a specimen in the Dunrobin Museum.

## Subclass TELEOSTEI.

## Order I. ACANTHOPTERYGII.

## Division ACANTHOPTERYGII PERCIFORMES.

## Family PERCIDÆ.

Perch—*Perca fluviatilis* (Rond.)

Mr. Honstoun of Kintradwell introduced a few of these fish into a small pond near his house, but they do not seem to have done well.

Basse—*Labrax lupus* (Lacep.)

Recorded by Dr. Joass from near Golspie, and by Mr. Peach from the Kyle of Tongue.

## Family MULLIDÆ (Swanson).

Surmullet—*Mullus barbatus*, Linn.

Taken in the Moray Firth (Gordon). Day's *Brit. Fishes*, vol. i. p. 24.

## Family SPARIDÆ (Cuv.)

Common Sea-bream—*Pagellus centrodontus*, De la Roche.

Common in the Moray Firth, and were increasing in 1852. Day's *Brit. Fishes*, vol. i. p. 37.

Very abundant in the sea-lochs of the west, and known by the local name of "Bulgarian Haddie." We have caught many of these fish at the head of Glen Coul, and also at Loch Inver. These sell in the London market at one shilling each, but are not reckoned marketable by the west coast fishermen, nor much esteemed as food.

Division ACANTHOPTERYGII COTTO-  
SCOMBRIFORMES.

Family CARANGIDÆ.

Horse-mackerel—*Caranx trachurus* (Linn.)

Boar-fish—*Capros aper* (Linn.)

A specimen taken in the Moray Firth in 1852, and recorded by Gordon in the *Zool.*, p. 3459.

Family CYTTIDÆ.

Doree—*Zcus faber* (Linn.)

Mr. Crawford mentions this fish as occurring about Tongue, and there is a specimen in the Dunrobin Museum, taken at Brora, March 6, 1883.

Family CORYPHANIDÆ.

Opah—*Lampris luna* (Gm.)

On the authority of Mr. Day, this fish has occurred in the Moray Firth.

Family SCOMBRIDÆ.

Mackerel—*Scomber scomber*, Linn.

Still frequents the east coast at intervals, but is much rarer than formerly; apparently never such a fish of commerce as in the south of England. Occurs also on the west and north coasts.

Tunny—*Orcynus thynnus* (Linn.)

Day, *Brit. Fishes*, vol. i. p. 97, says, "In 1850 tunnies were common in the Moray Firth; one captured was 9 ft. long; while another, killed near Inverness, was 5 ft." (Gordon, *Zool.*, 1852, p. 3459.)

"In 1883 Mr. Speedie's salmon-fishers caught a tunny in the stake-nets at Strathy Bay; it was about 8 ft. long, and in fine plump condition, but in place of having it preserved they cut it up." (Crawford, *in lit.*)

Plain Bonito—*Auxis rochei* (Risso).

Couch, in his *Brit. Fishes*, vol. ii. p. 105, speaking of this fish, says, "It comes more rarely towards the north, although, as I am informed by the Rev. Walter Gordon of Macduff, it has been met with in the Moray Firth."

Family TRACHINIDÆ (Risso).

Viper Weever—*Trachinus vipera*, C. & V.

Found along the sandy shores of the east coast; taken by the seine net at the Little Ferry.

Greater Weever—*Trachinus draco*, L.

Family PEDICULATI.

The Angler—*Lophius piscatorius*, Linn.

Often thrown up on the shores of the east coast after a storm.

## Family COTTIDÆ.

Short Spined Bullhead—*Cottus scorpius*, Linn.

A specimen in the Dunrobin Aquarium.

Father Lasher—*Cottus bubalis*, Euphrasen.

Common along the shores of the east coast.

River Bullhead—*Cottus gobio*, Linn.

Common.

Tub Fish — *Trigla hirundo*, Linn.

Red Gurnard—*Trigla euculus*, Linn.

Streaked Gurnard—*Trigla lineata*, Gmel.

Gurnard—*Trigla gurnardus*, L.

The Crooner, as it is generally termed in Scotland, is abundant along the east coast of Sutherland, and also in the west and north.

Piper—*Trigla lyra*, Linn.

Reported to us by Mr. Houstoun as common on the east coast of Sutherland.

## Family CATAPHRACTI (Muller.)

Pogge—*Agonus cataphractus* (Bl. Schn.)

Day, in his *Brit. Fishes*, vol. i. p. 69, says, "Gordon observed, in the Moray Firth, in January 1849, ten examples, from 2 to 5 inches long, that were found in the stomach of a cod" (*Zool.* p. 3458).

## Division ACANTHOPTERYGII GOBIIFORMES.

## Family DISCOBOLI.

Lumpfish—*Cyclopterus lumpus* (Linn.)

Common along the east coast of Sutherland, where they come close in to shore to spawn in April. The newly hatched young of this fish occurred very plentifully near the mouth of the Kyle of Durness last year; so we are informed by Mr. Peach.

Sea Snail—*Liparis vulgaris*, Flem.

Mr. Houstoun informs us this species is rare on the east coast of Sutherland.

## Family GOBIIDÆ.

Two-spotted Goby—*Gobius ruthensparri*, Euph.

Mr. Houstoun records a goby, probably referable to this species, as common about the rocks at Kintradwell.

Rock Goby—*Gobius niger*, Linn.

Dusky Sculpin—*Callionymus lyra*, Linn.

Recorded from the Moray Firth—Day, *Brit. Fishes*, vol. i. p. 177.

## Division ACANTHOPTERYGII BLENNIIFORMES.

## Family BLENNIIDÆ.

Wolf-fish—*Anarrhichas lupus*, Linn.

According to Gordon (*Zool.*, 1852, p. 3460) the fishermen in the Moray Firth say that it (Wolf-fish) is more plentiful in March than at any other season, and that some of them are as big as any cod, and are good for eating. On the east coast of Sutherland Mr. Houstoun says it is rare, generally being thrown up on the beach after a storm. The specimen in the Dunrobin Museum is labelled "Strathsteven Beach, February 1880."

Shanny—*Blennius pholis*, Linn.

Recorded from the Moray Firth by Day, *Brit. Fishes*, vol. i. p. 205; and also by Dr. Joass, Golspie. Mr. Peach found this fish on the north coast of the county.

Yarrell's Blenny—*Carelophus Ascanii* (Walbaum).

One example taken in the Moray Firth in 1839.—Day, *Brit. Fishes*, vol. i. p. 207.

Butter-fish—*Centronotus gunellus* (Linn.)

Gordon (*Zool.*, 1852, p. 3460) records the Butter-fish as very common in the Moray Firth in pools below high-water mark; it is also mentioned by Mr. Houstoun as occurring off the east coast of Sutherland, and by Mr. Peach as occurring off the north coast.

Viviparous Blenny—*Zoarces viviparus*, Linn.

Mr. Houstoun of Kintradwell records this as a species frequently met with in the sea-pools of the east coast, and Mr. Peach observed it on the north coast.

## Division ACANTHOPTERYGII MUGILIFORMES.

## Family MUGILIDÆ.

Lesser Gray Mullet—*Mugil chelo* (Cuv.)

Common along the shores of the east coast [of Sutherland in suitable places.

## Division ACANTHOPTERYGII GASTEROSTEIFORMES.

## Family GASTEROSTEIDÆ.

Three-spined Stickleback—*Gasterosteus aculeatus*, Linn.

Common, both on the east and north coasts.

Fifteen-spined Stickleback—*Gasterosteus spinachia*, Linn.

According to Day, only two instances have been recorded from the Moray Firth; but Dr. Joass of Golspie records a specimen now in the aquarium at Dunrobin.

## Division ACANTHOPTERYGII GOBIESOCIFORMES.

## Family GLOBIESOCIDÆ.

Doubly-spotted Sucker—*Lepadogaster bimaoulatus* (Penn.)Recorded from the Moray Firth by Day, *Brit. Fishes*, vol. i. p. 193.

## Division ACANTHOPTERYGII TÆNIIFORMES.

## Family TRACHYPTERIDÆ.

Deal-fish—*Trachypterus arcticus* (Brünn).Day, *Brit. Fishes*, vol. i. p. 219, says, under this heading:—"1847, one 3 feet long, at Burghead, Moray Firth (Martin); where Dr. Gordon (*Zool.*, p. 3460) alludes to the capture of two."Banks'-oar Fish—*Regalecus banksii* (C. & V.)In his *Brit. Fishes*, vol. ii. p. 260, Couch says of this fish:—"Since the capture of the example of which we have thus given an enlarged account, three or four others have been met with along the north shores of the kingdom, the largest of which was obtained at Kiess, a few miles north of Wick, and consequently not far from the extreme north of Scotland. I am indebted for the few particulars known of it to Mr. Peach, who informs me that it measured 15 feet in length, and, as being much injured about the head."

Also recorded by Mr. Day from the Moray Firth in his list of fishes of that place.

## Order 2. ACANTHOPTERYGII PHARYNGOGNATHI.

## Family LABRIDÆ.

Striped Wrasse—*Labrus mixtus*, Linn.

Recorded by Dr. Day from the Moray Firth, and there is a specimen in the Dunrobin Museum, caught off there in September 1870.

Gold-sinny—*Ctenolabrus rupestris* (Linn.)

A specimen taken at Dunrobin, 1876.

Baillon's Wrasse—*Crenilabrus melops* (Linn.)Day, *Brit. Fishes*, vol. i. p. 263, remarks that, according to Martin, this species is often met with in the Moray Firth, and it is recorded by Dr. Joass as occurring in the neighbourhood of Golspie.Ballan Wrasse—*Labrus maculatus*, Bl.

Mr. Houston informs us that this species is seen on the east coast of Sutherland.

## Order 3. ANACANTHINI.

## Division ANACANTHINI GADOIDEI.

## Family GADIDÆ. (Cuv.)

Cod—*Gadus morrhua*, Linn.

Abundant all round the coast.

Haddock—*Gadus aeglefinus*, Linn.

Very abundant. The Moray Firth haddocks have a great reputation for their good flavour; almost the staple fish on the east coast. Common in Loch Inver Bay, and of large size.

Power—*Gadus minutus*, Linn.

"Abundant in the Moray Firth." (G. Harris, *Zool.*, 1854, p. 4261.)

Whiting—*Gadus merlangus*, Linn.

Abundant, but not nearly so much so as the haddock.

Coal Fish—*Gadus virens*, Linn.

Abundant the year round; most commonly caught at that state of age when they are known as "cuddies." Common on the cod-banks off the west coast, in the adult stage, where we have caught them with the leaden "murderer."

Pollack—*Gadus pollachius*, Linn.

More abundant on the west than east coast; here it always goes under the name of "Lythe." It seemed to us that "Lythe" caught on the north coast were much more powerful fish than those of the west coast.

Hake—*Merluccius vulgaris* (Cuv.)

Recorded by Day, *Brit. Fishes*, vol. i. p. 302, as found in the Moray Firth during July and August, following the herrings, hence probably the common name "Herring Hake." Reported from the north coast by Mr. Crawford, and caught by us at Loch Inver on the long sea-lines.

Ling—*Molva vulgaris*, Flem.

Abundant off the coast, though not so numerous as the cod. Common at Loch Inver, and caught by us on the long sea-lines.

Five-bearded Rockling—*Motella mustela* (Linn.)

Three-bearded Rockling—*Motella cimbria* (Linn.)

Mr. Peach informs us that these two species are not uncommon in the rock-pools near low tide.

Torsk—*Brosmius brosme* (Müll.)

This is a deep sea fish, rarely coming close to land, but has been caught on the Minch by fishermen at Loch Inver. It is commoner outside the Outer Hebrides. Is reported rare on the east coast by Dr. Joass.

#### Family OPHIDIIDÆ.

Larger Launce—*Ammodytes lanceolatus*, Lesauvage.

One example of this fish is recorded from the Moray Firth, taken from the stomach of a cod—Day, *Brit. Fishes*, vol. i. p. 331.

Lesser Launce—*Ammodytes tobianus*, Linn.

Very common all along the east coast, especially at the sandbanks of the little Ferry. Common at all suitable places on the west coast, such as Clach toll Bay, at Loch Sandwood, and on the north at Balnakeil Bay.

Division ANACANTHINI PLEURONECTOIDEI.  
PLEURONECTIDÆ.

Holibut—*Hippoglossus vulgaris*, Flem.

Abundant, being more numerous and of a larger size on the north and west coasts. An enormous specimen was hooked by the "Murderer" bait off Stoir Head in July 1883, but escaped after having been half into the boat. It twisted one gaff almost straight, and carried off every hook on the lead. We reckoned it at about 3 feet in breadth, and  $5\frac{1}{2}$  to 6 feet long. Another, captured a little farther north in 1882, was sold in London for £4 sterling.

Turbot—*Rhombus maximus* (Linn.)

Apparently not abundant, but occurs off the east coast, and is reported by Mr. Crawford as being found also on the north and north-west coast.

Brill—*Rhombus lævis* (Linn.)

Sail-fluke—*Rhombus megastoma* (Don.)

Not uncommon occasionally, Mr. Peach informs us.

Plaice—*Pleuronectes platessa*, Linn.

Common all round the coasts. Not held in high estimation for the table

Muller's Topknot—*Rhombus pinnatus*, Bl.

Block's Topknot—*Rhombus unimaculatus* (Risso).

Both these two last species are recorded as rare by Mr. Peach.

Smear Dab—*Pleuronectes microcephalus*, Donov.

Recorded from the Moray Firth by Harrison.

Dab—*Pleuronectes limanda*, Linn.

Common all round the coast, in suitable localities.

Craig Fluke or Pole—*Pleuronectes cynoglossus*, Linn.

Flounder—*Pleuronectes flesus*, Linn.

Abundant; going some distance even up the rapid rivers of the east of the county, as the Helmsdale, but is not known to us to ascend the rivers of the west coast.

Sole—*Solea vulgaris*, Quensel.

Common in the Moray Firth, and is found also on the north coast; rare near the east coast of Sutherland.

Lemon Sole—*Solea aurantiaca*, Günth.

Mr. Peach informs us this species is not uncommon.

Order PHYSOSTOMI.

Family CYPRINIDÆ.

Minnow—*Leuciscus phoxinus* (Linn.)

Inserted on the authority of Dr. Joass.



## Family SCOMBROSCIDÆ.

Garfish—*Belone vulgaris*, Flem.

Not common on the east coast of the county, as reported to us by Mr. Houstoun; there is a specimen in the County Museum, taken at Brora in 1869.

## Family STERNOPTYCHIDÆ.

Argentine—*Maurolicus borealis* (Nils.)

Occurs in the Pentland Firth.

[In speaking of the fresh-water fish, on which for some years we have kept careful notes, and have made some interesting experiments in the county, we will confine our remarks in this place to the subject of distribution and variation, edible qualities, and sporting capabilities. There remains still much in this branch alone to be done in the county, and much more than we have space for here could already be written upon them.]

## Family ESOCIDÆ.

Pike—*Esox lucius*, Linn.

Occurs at Loch Migdale, the only loch in the county where it is found. Sheriff Mackenzie writes us he has never seen a specimen from this loch, so the species may have died out. They were introduced at least sixty years ago by the then Mr. Dempster of Skibo, and were caught in Loch Achilty, in the east of Ross-shire, by Peter M'Aulay, the keeper at Coul, for that purpose.

## Family SALMONIDÆ.

Salmon—*Salmo salar*, Linn.

Abundant, some years much more so than at others, the early run of spring fish depending on the mildness or severity of the winter; consequently the years 1882-3-4 are noted for the numbers of Salmou caught early in the season.

The rivers Naver, Brora, and Helmsdale are the three early rivers of the county, and clean Salmon can be got in them in every month of the year, unless November prove an exception, this being the principal spawning month.

In the western rivers they run later, and the first heavy flood which comes, usually about the 10th to 15th July, brings up great numbers. A few run in May, but very few are caught at that time. In 1883 (July) we rose a large salmou twice in the salt water at Loch Inver with a "silver doctor."

Sea-Trout—*Salmo trutta*, Flem.

Abundant; rarely ascending the rivers before the end of May, though an undoubtedly clean one is at times caught by the nets in February and March.

The east coast Sea-Trout are generally much more spotted, and not such finely shaped fish as those of the west coast. The Sea-Trout of the northern Kyles of Durness and Tongue are famed for their firmness and flavour, and readily take sand-eel as bait. In June and July 1883,

before the rains set in and the fish could ascend the rivers, many Sea-Trout were caught in the salt water with sand-eel or small imitation minnow at Loch Iuver, where they were scarcely ever known to have been caught before in the sea.

### Common Trout—*Salmo fario*, Linn.

So many interesting varieties come under this heading that it would occupy too much of our space to go into particulars of each. We give the names of these below, and from the list it will be seen that Sutherland possesses all, or nearly all, that are known.

Scarcely a river in the east of Sutherland produces a Trout possessing any edible qualities, probably from the generally stony nature of the streams, and consequent lack of food; but the lochs of the east almost all contain good red-fleshed and firm trout. In the west, amongst the limestone districts, the white-fleshed trout of the burus are most delicious eating, and so also are the trout of many of the lochs of Assynt, which are pink in flesh. The very dark red-fleshed trout of Gorm lochs are flabby and "out of season" in June and July, when ova is often found in them. We could say a great deal more in detail, but space forbids in this place.

Varieties of Trout (*Salmo fario*) are as follows:—

- a. Great Lake Trout, *Salmo ferox*, Jard. and Selby. General in the larger and deeper lochs, and even found in the shallow Loch Borrolan.
- b. Parr-marked Trout, *S. Cornubiensis*, Walb. Lochan Sgearach, Reay Forest: above a fall of some sixty feet. Specimens caught in June 1883 ran 3 to the pound and larger. Strong and active. Parr-marks fade after death.
- c. Tidal Trout, *S. estuarius*, Knox. "Fossak" of Loch Inver. Ascends rivers only a limited distance, varying in different streams. Runs 2 to 5 lbs. weight; white-fleshed; coarse, rich food, if in season. Appears in May. Disappears in August. Strong.
- d. Gillaroo Trout, *S. stomachicus*, Günth. Loch Mulach Corrie, on the top of the Assynt limestone and base of Ben More. Doubtful if this is separable from the Irish examples. Flesh pale pink; delicious eating; runs to 5 or 6 lbs. (rare) weight. Strong and active. Another trout, or the young of this, is also found here, averaging 3 inches in length, with somewhat peculiar coloration; not apparently abundant. May be young of the other, but have the appearance of adult fish.
- e. Crassapuil Trout. Closely allied to *S. levenensis*, first described by Dr. F. Day, from examples forwarded by us from Durness.

Other remarkable varieties occur, most of which we believe are known to us, as well as varieties of *Salmo salar*, many of which inhabit very inaccessible and rarely visited lochs. Upon this subject we will have more to say at some future time.

In the Dunrobin Museum is a series of stretched skins of Trout, collected by the late Mr. Young of Invershin, which are called crosses between Trout and Sahuon, etc.

This collection might have been extremely valuable from a scientific point of view had the information been fuller and more carefully kept. As it is, we fear the specimens are worthless, unless any of the late Mr. Young's manuscripts are available and could be searched.

### American Brook Trout—*Salmo fontinalis*, Agassiz (?).

Introduced some years ago by His Grace the Duke of Sutherland, most of which were placed in Loch Brora, and a few in the Kintradwell burn; we doubt if many, or indeed any, of these are now left.

### The Charr—*Salmo alpinus*, Linn.

Common in some of the lochs throughout the county, and probably

inhabits others where its presence is yet undetected, as the Charr rarely takes a fly in most of the lochs, though there are exceptions, as we have caught occasional ones in Lochs Merkland, Griam, and Shin, and Lochs Borrolan, Urigill, Camaloch, Veyattie, Fewn, Assynt, and Brora, with fly, and more rarely with artificial minnow.

Smelt—*Osmerus eperlanus* (Flem.)

Mr. Peach informs us he has caught the Smelt when fishing for sillocks.

### Family CLUPEIDÆ.

Herring—*Clupea harengus*, Linn.

Occurs along the east coast the whole year, but most abundant in the summer and early autumn; fish full of roe are taken in the early spring, but do not appear to have the fine flavour of the autumn Herring. Abundant on the west coast, but mostly fished from Stornoway. Ascends the sea-lochs of Glens Dhu and Coul, especially the latter, as well as other sea-lochs.

Sprat—*Clupea sprattus*, Linn.

An irregular visitant to the east coast, though very abundant every year lower down the coast at the Beaully Firth. In the beginning of 1884 vast numbers were caught off Golspie and Brora, quantities being thrown ashore dead. Not known by us to occur on the west coast.

Allis Shad—*Clupea alosa*, Linn.

Taken at Invershin, 1870.

### Family MURÆNIDÆ.

Eel—*Anguilla vulgaris*, Flem.

Abundant in all the rivers and lochs of the east coast. About the middle of April the young eels, or elvers, as they are there called, begin to ascend the Brora in millions, the sides of the river the whole way up being black with them; they even ascend the Blackwater Falls at Balnacoll, by taking advantage of any damp inequalities of the rock; every trout caught at that time is gorged with them. They do not appear in the rivers of the west so early in the season as they do in the east, but by June all the lochs connecting with the Inver are full of them.

Conger—*Conger vulgaris*, Cuv.

Common; much more sought after of late years, as they command a ready sale and fair price. Delicious eating if properly cooked. We were present at a *table d'hôte* where fourteen people all took a second helping, and pronounced them "delicious."

## Order V. LOPHBRANCHII.

### Family SYNGNATHIDÆ.

Greater Pipe Fish—*Syngnathus acus*, Linn.

Recorded by Day, *Brit. Fishes*, vol. ii. p. 260, as having twice been taken from the stomach of a cod in the Moray Firth (Gordon).

Straight-nosed Pipe Fish—*Nerophis ophidion* (Linn.)

*Obs.*—A Pipe Fish (*sp. inc.*) is recorded as not rare on the east coast of Sutherland, by Mr. Houstoun and Dr. Joass.

Worm Pipe Fish—*Nerophis lumbriciformis* (Linn.)

## Order VI. PLECTOGNATHI.

### Family GYMNOTODONTES.

Sunfish—*Orthogoriscus mola* (Linn.)

A specimen, now in the Dunrobin Museum, was caught off Golspie, 1880.

Oblong Sunfish—*Orthogoriscus trunceatus* (Retz).

Recorded by Edward from Banff, and in August 1846 and October 1850 examples were taken in the Moray Firth and at Elgin.

### Sub-class CYCLOSTOMATA.

#### Family PETROMYZONTIDÆ.

Lamprey—*Petromyzon marinus*, Linn.

Reported from the east coast of Sutherland, by Mr. Houstoun, as not rare.

Lampern—*Petromyzon fluviatilis*, Linn.

Recorded from the Spey and Lossie rivers by Edward, and as being common there.

Small Lamprey—*Petromyzon branchialis*, Linn.

Edward records this species from the Lossie river, and from Banffshire.

#### Family MYXINIDÆ.

Hog Fish—*Myxine glutinosa*, Linn.

Recorded from Banff by Edward.

