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"The Annals of Scottish Natural History"

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PETERHEAD SEALERS AND WHALERS: A CONTRIBUTION TO THE HISTORY OF THE WHALING INDUSTRY.

By Dr ROBERT W. GRAY.

(*Continued from* 1932, p. 162.)

IN 1822 the season was open and the ice, and presumably the food banks, were drifting south-west. The northern fishing seems to have been a failure, but when it was over many of the ships, instead of returning home, re-entered the ice in lat. 75° and prosecuted the "Southern" or "West Land Fishing," at which they appear to have met with considerable success. In connection with this fishing, Scoresby says: "Before the year 1818 for at least a quarter of a century, the fishery generally was pursued between the parallels of 76° and 80°; and the 79th degree, at the distance of 30 or 40 leagues from the coast of Spitsbergen, afforded to the most persevering fishers an abundant harvest for years together. After the season of 1814, however, the northern fishery became extremely precarious; the whales then becoming uncommonly scarce, the fishers began to explore the seas farther to the southward without proceeding into the depths of the ice, or remaining amongst it beyond the middle or end of July; an idea prevailing that it was not only useless but dangerous to be entangled in the ice after this period. At the close of the season 1817 I penetrated the ice in lat. 74° about 100 miles towards the west, but without finding whales; and the year following two ships approached

the east coast of Greenland and met with encouraging success. In 1820 I obtained a full cargo principally upon this station, in lat. 74° down to lat. 71°; and several other ships made successful fisheries amid the same ice, within sight of the *West Land*." *

In 1822 the *Baffin* (Scoresby junior) captured nine whales, viz.: One (9′ 6″ bone yielding 13 tons of oil) on 6th May in lat. 79° 30′, long. 4° east; one on 1st June in lat. 74° 39′, long. ? 4° west; one on 3rd June (10′ 3″ bone yielding 14 or 15 tons) in lat. 74° 26′, long. ? 8° west; one on 25th June (11′ 3″ bone yielding 20 tons of oil and a ton of bone) in lat. 71° 40′, long. 18° west; one on 2nd July in lat. 71° 15′, long. 18° west; one (2′ 8″ bone yielding 6 tons of oil) on 5th July in lat. 71° 50′, long. 17° 20′ west; and three (all large males yielding 60 tons of oil and 3 tons of bone) on 15th August in lat. 72°, long. 21° west. The same season the *Fame* (Scoresby senior) captured six, viz., one of 3′ 8″ on 17th May in lat. 79°; one of 8′ on 2nd June in lat. 79°; one of 11′ 2″ on 3rd June in lat. 79°; one of 10′ 4″ bone on 11th June in lat. 75° 32′; one (found dead) of 10′ 4″ on 19th June in lat. 72°, and one of 9′ 8″ (a male) on 17th August in lat. 72°. The Peterhead ships, nine in number, returned in September with thirty-six whales yielding 459 tons of oil, captured probably in much the same places.

I now come to a number of seasons concerning only a few of which I am able to make a few remarks.

Commencing with 1825, the Peterhead ships for a number of years went mostly to Davis Straits; and the whales of the Greenland Sea enjoyed, to some extent, a much needed respite. In 1828 only one went to the Greenland Sea; in 1829, and again in 1830, none went; in 1831 only three went, and again in 1836 only one went. But in 1837, following a number of disastrous years at the "Straits," they began to return in increasing numbers to their old fishing ground "Greenland." At the same time they

* In June the *Baffin*—Scoresby's ship—"drifted with the ice nearly 100 miles to the southward, besides a distance probably nearly as great to the westward in an interval of only twelve days."

commenced leaving earlier in the spring and going regularly instead of only occasionally, to the young seal fishing before going farther north to look for whales.

In 1827 Parry, when trying to reach the North Pole, spoke two of the Peterhead ships. He thus refers to the incident: "(9th May lat. 77°, long. 7° east.) At half-past nine saw two whale ships which joined us in the course of the day. They proved to be the *Active* and *Alpheus* of Peterhead . . . on the following day several other whalers were in sight . . . none of the ships had yet taken a single whale which indeed (at this season) they never expected to do to the southward of about lat. 78°." Again (11th May lat. 77° 58′, long. 7° east) "the whalers, twelve in number and two of them Dutch, hove-to being now in about their fishing latitude;" and again "on the 12th (lat. 78° 13′, long. 7° 55′ east) saw a black whale, and one of the ships sent her boats in pursuit of it; this was only the third we had seen."

The season 1838 appears to have been an unusually favourable one, the six Peterhead ships at the fishing securing fifty-eight whales, the highest number since 1823. It was probably a close season: a very favourable state of the ice for the capture of whales at the northern or spring fishing. The *Eclipse*,* the most successful ship, caught twenty-two which, however, only yielded about 105 tons and which consequently must have been mostly small. Her crew are stated to have killed fifteen small whales "at a fall," *i.e.*, at a single lowering of the boats. Whales of this description, sometimes called "nursery whales," had whalebone, including the part embedded in the gum, from 2 to 6 feet in length. The smallest of them were not more than 30 feet in length and probably not long weaned. As Scoresby says, "they were found most frequently about fields and floes"; and as my father says, "they bury themselves in the polar ice north of lat. 80° after the end of June." Their capture, as already stated, appears to have commenced about 1790 and to have been achieved by using "fortified"

* The *Eclipse*, generally called the *Old Eclipse*, to distinguish her from a later vessel of the same name, for many years my grandfather's ship. Lost at Davis Strait in 1856.

ships and by sailing into a high latitude early in the season. Once a ship got amongst them their capture was usually easy: firstly, because whales are easily seen and caught among floes; secondly, because they are less wary and more easily approached than the old ones; thirdly, because they do not descend so far and take out as much line as the old ones; fourthly and lastly, their heads, after removal of the lower jaw with the lips and tongue, are small enough to be cut off and hoisted on board.

A statement in pencil, dated 1846, by Mr George Arbuthnot, throws light on the financial side of the whaling trade. Oil was at £25 per ton and "bone" £200. Mr Arbuthnot had an interest in nine of the fleet. On 27th August seven ships had returned from "Greenland" and two (the *Traveller* and the *Joseph Green*) were still at the "Straits." Of the former, three (the *Hannibal*, *Union* and *Hamilton Ross*) were expected to make a loss; two (the *Jane* and *Commerce*) to pay expenses; and two (the *Eclipse* and the *North of Scotland*) to make a profit. The *Traveller's* expenses were estimated at: wages, £200 per month; insurance, £200; rent of store, £50; rope-work account, £120; harbour dues, £100; sundries, £180. The *Eclipse's* wages and provisions were £175 per month; insurance, £125; store, £50; rope work, £100; sundries, £100. In addition to the foregoing there were the cost of catching the cargo, *i.e.*, oil money at the rate of £5 per ton and the cost of preparing the oil for the market (boiling, cooperage, etc.), £1 per ton.

The season of 1847 was a "close" one, the ten Peterhead ships at the fishing securing thirty-one whales—the largest number since 1838. The *Eclipse* (my grandfather's ship, and the most successful) returned in August with nine whales which yielded about 130 tons.*

In 1849, for the first time for many years for a Peterhead ship, the barque *North of Scotland*† (279 tons) remained out

* Owing to the fact that in the statistics whale oil is not shown separately from seal oil it is not always possible to give the exact amount.

† My father's first ship, and his first year in command.

longer than usual and caught a number of whales at the southern fishing. She made her capture in about 73° N. and about 15° west, either in July or August. The winds prevailed from the south-west and drifted the ice out on to the best feeding banks. She was back at Peterhead on 10th September.

In 1854, known as the "coarse year," the weather was very boisterous; the fishing was an absolute failure and only eight whales were caught while many of the ships, except for seals, returned "clean."

The season of 1856 was unusually favourable; there was a "south-east pack" or "close season"—the first since 1847. The fourteen Peterhead ships at the fishing secured fifty-nine whales—the largest number since 1838. The *Active** caught nine, which yielded about 120 tons. She was back at Peterhead on 13th July.

In 1863 the *Active* was successful at the southern fishing, capturing eight large whales which yielded about 130 tons of oil. According to a brief account of her voyage published in the *Peterhead Sentinel* of 4th September, over 100 whales were seen amongst the ice. According to a chart in my possession she made her captures in July and August in lat. 72° and 73° about 100 miles off the land. One of her whales had an old harpoon in its blubber marked "Pow & Fawcus, Newcastle, 1839." The same year the *Intrepid* (Captain Martin) caught a whale at the southern fishing which yielded, if the statistics in my possession are correct and no seal oil included, 30 tons of oil.

In 1866 the Peterhead ships caught thirty-five whales, the largest number since 1856, and the Germans, the only other nationality still in the trade, sixteen. Speaking of the season 1866, my father, in a brief account of his voyage in the *Buchan Observer* of 20th July, says, "this has been the most favourable season since 1856." There was a "south-east pack," the edge of the ice running east and west in lat. 74½°. Numbers of sea-horse fishing vessels from Hammerfest were seen trying to get north. The *Active* was

* My father's second ship, built at Peterhead in 1853. Transferred to Dundee in 1873. Lost during the war.

through the "south-east pack" and into the "north water" on 20th May. The first whales were seen on 24th May coming from the south-west; the last on 18th June. The *Active's* catch consisted of fourteen whales which yielded about 135 tons. She was back at Peterhead on 18th July. The same year the *Kate* (Captain Martin) killed a small whale in lat. 80°, in the blubber of which was found the head of an Eskimo harpoon 7 or 8 inches in length. It was probably struck into the little whale by the Eskimo when in the vicinity of north-east Greenland.*

In 1867 the *Eclipse*,† my father's third ship, caught three whales at the northern fishing and, as often happened, none at the southern. According to an account of her voyage published in the *Buchan Observer* she sailed about amongst the ice for weeks, often in narrow intricate channels between large unbroken floes, without seeing a single whale. "Not a bear, not a narwhal was to be seen, nor did the water ever change colour (from azure blue to green) or show the vestige of a feeding bank, with the exception of one small spot, like an oasis in the desert, situated in lat. 75°, long. 5° west; and this, too, although we sailed over 'ground' where on two previous occasions whales had been found and where their food was abundant. It is therefore clearly evident that the feeding banks must shift from time to time according to the nature of the ice, and also that when immense fields of ice cover the sea it is very unfavourable for the animalcules and medusæ that constitute the food of the whale."

The season of 1868 was a very open one; the edge of the ice lay far west with much open water between it and the land, and according to my father "there was only food for the whales in ice-free waters (outside the ice)." Very few whales were seen and only three caught; all small

* See my paper on the "Colour of the Greenland Sea and the Migrations of the Greenland Whale and Narwhal," *Geographical Journal*, September 1931.

† The *Eclipse* was built at Aberdeen by A. Hall & Co.; completed in 1867; length 149 feet, breadth 29 feet; depth of hold 16 feet; 436 tons gross, 295 tons net; engines 69 nominal horse power. Transferred to Dundee in 1892. She carried eight boats and a crew of fifty-five men.

and all at the northern fishing. The *Eclipse* returned in September with only 25 tons, the produce of three whales and a few seals. Her balance sheet, which shows a loss of £1217, shows payments amounting to £2146 (viz., wages, £871; provisions, £629; coals, £220; general charges, £424) and receipts amounting to £928 (viz., oil sold, less oil money to crew at £7 per ton and boil-yard expenses at £1 per ton, £556; whale-bone, less bone-money, £316; sealskins, less skin money, £55). In the balance sheet the vessel is valued at £12,347.

In 1869 the *Eclipse* killed three large whales at the southern fishing in August in about lat. 73°, long. about 15° west. She got beset and drifted 250 south-west with the ice, but getting free and returning to a higher latitude she re-entered the ice and met with the success stated.*

We now come to a number of seasons concerning which I possess in the form of log-books a considerable amount of reliable information.

1872.

This was a "close season," but the barrier or "south-east pack" was light and soon disappeared. In May the winds were mostly from the west, in June and in July mostly from the south. The westerly winds doubtless drifted the floes out on to the "food banks," while the southerly winds probably delayed the departure of the whales by checking the drift of the ice. Six ships were at the northern fishing, all out of Peterhead. In the end of May an easterly gale accompanied by a swell interrupted the fishing by breaking and compacting the ice and obliging the ships to come outside. The *Mazinthien* got two whales on 22nd May amongst floes in lat. 78° 40′ long, 2° east, and the *Eclipse* three, and lost one, about the same date and place.

The *Eclipse* was the only ship to try her luck at the southern fishing; she was rewarded by catching twelve whales, all of large size, which, together with the three

* See Petermann's *Mittheilungen*, 1869.

got at the northern fishing, yielded 235 tons of oil and about 11 tons of bone. As in 1849 the winds drifted the unbroken floes out on to the "ground," making it attractive to the whales, and at the same time difficult to reach. The *Eclipse* was unable to reach the "ground" from the N.E.—the usual route—but after coming out east and turning a point succeeded in reaching it from the S.E. She made most of her captures about the end of July in about lat. 72° 50′, long. 14° or 15° west, near a very large and very thick unbroken floe. Harpoons were found in three of the whales she caught: two were old and not capable of being identified, but one belonged to the *Alibi* (another Peterhead ship) and had been fired into the animal only the year before. On the voyage home James Webster, the oldest man on board, died: he was 75 years of age, and ever since 1815 had made an annual voyage either to "Greenland" or the "Straits."

1874.

An open season very much like 1803. Northerly winds prevailed in April, May and June; there was a strong south-westerly drift and the edge of the ice lay far west. According to the *Eclipse's* log-book the ice was drifting south at the rate of 20 or 30 miles a day, and at the end of the voyage my father estimated that more than 300,000 square miles of ice drifted south out of the Arctic Ocean in three months. Owing to the westerly position of the ice there was food for the whales only amongst the pack or broken ice or in the open sea. Very few whales were seen and only one caught. Where the whales went to is not hard to understand: the southward drifting ice must have left open water in its place, and in this open water a great growth of plankton must have taken place. Narwhals were seen migrating north and the whales doubtless retreated in the same direction. At the southern fishing the *Eclipse* and the *Hope* both got beset, and both drifted south with the ice, but after a few days got free. In August, in lat. 80°, there was an unusual appearance of open water farther north.

From Log of *Eclipse* (1874).

April 22.—77° 37′ N., 0° 15′ W.: "worked north through streams of ice; a school of grampusses (Killer whales) seen."
„ 25.—78° 38′ N., 3° 21′ E.: "some Razor-Back whales seen."
„ 26.—79° 43′ N., 5° 53′ E.: "came to a close pack; saw some narwhals."

May 2.—78° 42′ N., 2° W.: "close beset; pack ice in rapid motion to S.W."
„ 5.—78° 13′ N., 2° 34′ W.: "numbers of narwhals going north."
„ 13.—78° 20′ N., 2° 35′ E.: "a Finner and several narwhals seen."
„ 15.—79° 35′ N., 2° E.: "ship at a floe; saw two whales, caught one."
„ 18.—79° 40′ N., 3° 25′ E.: "saw a whale."
„ 19.—79° 38′ N., 3° 25′ E.: "saw a whale."
„ 20.—79° 30′ N., 3° 30′ E.: "nothing but narwhals."
„ 24.—78° 48′, 1° 50′ W.: "numbers of narwhals and four whales seen."
„ 25.—78° 6′ N., 2° W.: "amongst floes; saw a whale. Drift of ice in last twenty-four hours 27 miles S. by W. true."

June 5.—74° 32′ N., 13° 59′ W.: "ship in a hole of water; saw a whale."
„ 10.—73° 11′ N., 16° W.: "saw a whale."
„ 29.—73° 28′ N., 14° 53′ W.: "close beset; drift in last twenty-four hours 24 miles S.W. true."

July 1.—73° 3′ N., 15° 58′ W.: "close beset; people employed in cutting a dock; many narwhals seen."

Aug. 20.—70° 28′ N., 13° W.: "left the ice and bore up for home."

From Log of *Hope* (1874).

May 16.—78° 40′ N., 1° E.: "working to the north along the edge of the ice."
„ 18.—79° N., 3′ E.: "plying to the N.E. along the ice; many Finners * and three Bottlenose whales seen."
„ 20.—79° 40′ N., 3° E.: "ship amongst loose pack ice and on the 'dark' water; no whales to be seen."
„ 23.—79° 10′ N., 2° E.: "at 1 P.M. steamed to the N.N.W. through loose pack ice and at 8 P.M. came to floes."
„ 24.—78° 50′ N., 1° W.: "ship lying at a floe; quantities of narwhals. At 1 P.M. saw a whale; at 6 P.M. saw another."
„ 25.—78° 30′ N., 2° W.: "ship lying-to at a floe; three whales seen during the day. Numerous narwhals."
„ 29.—77° 30′, 1° W.: "came to the outside of the ice; made sail and plyed south (along its edge)."
„ 31.—77° 15′ N., 2° W.: "strong ground swell from S.S.E. which will [break the ice] and wreck the whale fishing for some time to come."

June 4.—74° 38′ N.; 13° 30′ W.: "ship lying-to in Bight of the Ice."
„ 5.—74° 30′ N., 14° W.: "at noon ran to the south (between two packs) in Bight of Ice.† At 4 P.M. hauled in to westward in lane of water and hove-to. Shannon Island in sight bearing N.W. distant 55 miles."
„ 7.—73° 50′ N., 15° W.: "nothing seen during the day although on good fishing ground."

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* Finners, i.e., *Balænoptera Sibbaldii*.

† The Bight of the Ice: the deep indentation which separates the South or Sealing from the North or Whaling Ice.

June 24.—74° 33′ N., 10° 30′ W.: "at noon steamed to the N.W. through loose pack ice and at 4 P.M. came to a large floe. Quantities of whales' food (i.e., *Calanus finmarchicus*) in the water."

„ 25.—73° 28′ N., 15° 30′ W.: "ice closing; called all hands and sawed a dock in the floe."

July 1.—73° 5′ N., 15° 54′ W.: "ship lying in dock, no water to be seen from mast-head."

„ 6.—72° 31′ N., 16° 33′ W.: "a trink of water having formed, got up steam and steamed to the eastward along the floes."

„ 18.—75° 25′ N.; 10° 25′ W.: "amongst loose pack ice; one whale seen in the morning."

„ 27.—76° 30′ N., 4° 45′ W.: "at 4 P.M. reached the outside of the ice."

Aug. 20.—70° 26′ N., 13° W.: "abandoned the fishing as hopeless."

Notes on Starlings.—(1) During the spring of 1932, a Starling with a malformed bill frequented the back garden. As feeding was evidently a difficulty, the bird became regardless of its own safety, and was injured in one wing by a cat. When brought into the house I found the upper mandible was over two inches long and had overgrown the under mandible by fully three quarters of an inch. This made pecking in the usual manner impossible, and the bird had to feed from the side. After keeping it for a few days I decided to operate, so cut the upper mandible equal with the lower, and filed a point on it. After this it fed more easily, but its damaged wing never mended, though the bird lived for a few months. When it died I found the upper mandible had again overgrown. It seemed to be a very old bird.

(2) When walking along the railway early one morning between Cobbinshaw and Harburn, the chirping of young birds attracted our attention as we were passing a disused signal. On climbing to the top of the signal we found a nest of young Starlings in the lamp, the old birds entering by the ventilating hole on the top. This seemed to be the only nesting site near, the surrounding ground being moorland. If nesting sites were available the Starling would colonise any type of ground.

(3) A Starling with a white collar was seen at Joppa, and another entirely white frequented a garden at Musselburgh for nearly two months. Abnormal colouring in the Starling seems rare.

(4) Several articles have appeared in the SCOTTISH NATURALIST regarding the increase of the Starling, also on the mass roosting habit. It is interesting to learn that the same conditions prevail in other parts of the world. In New Zealand where the Starling was an introduced species, a well-known authority gives an account of these facts, which describe exactly what we see in this country.—DAVID HAMILTON, Edinburgh.

NOTES ON THE MALFORMATION OF THE SHELLS OF BIVALVE MOLLUSCA.

By D. K. Kevan.

Malformation of the shell in Bivalve Mollusca can be conveniently grouped under the following headings:—

(1) That due to damage arising externally;
(2) That due to the entrance of some foreign substance or organism into the interior of the shell;
(3) That due to damage to the mantle itself;
(4) That due to environment.

1. Damage arising externally.—This is the simplest and most frequent cause of shell-malformation and can be accounted for by—

(*a*) Tidal action, whereby the Bivalve is thrown against rocks and its shell broken or cracked;
(*b*) Rock-falls due to (*a*) achieving the same result; and
(*c*) Partial crushing by fish, crustacea, etc., when in search of food.

So long as the damage thus inflicted does not destroy the functioning powers of the internal and vital organs of the mollusc, the animal survives, and the mantle repairs the injuries received to the shell; but these repairs are obvious and usually result in permanent malformation. Malformed shells of this kind are mostly associated with rocky shores.

2. Foreign Entry.—Malformation from this cause is rarely visible externally, and is more or less confined to the posterior end of the shell, excepting in (*a*) as mentioned below. The entry is effected by—

(*a*) Parasites, and
(*b*) Small particles of inorganic (or even organic) matter, which, setting up internal irritation, are covered by the continued calcareous and nacreous deposits of the mantle, and ultimately develop into definite malformations of the interior of the shell in the form of "pearls" and nodules of pearly matter;

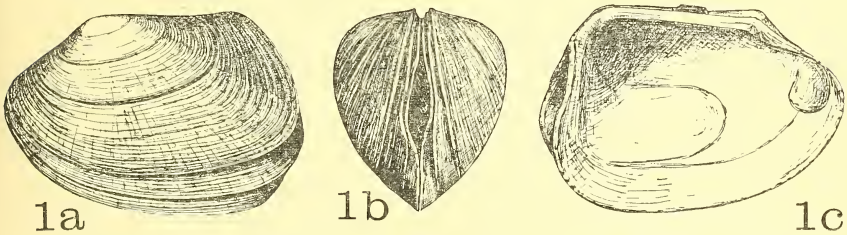
(*c*) Larger fragments of organic or inorganic matter resulting in the formation of irregular and strong callosities; or

(*d*) Thin fragments of organic or inorganic matter, resulting in the formation of "blisters." These "blisters" may be entirely internal, or extend to the posterior end of the shell and form thin raised detached plates. To account for the "blister" form I tend to the opinion that the entrant is organic (*e.g.* algoid) rather than inorganic (*e.g.* a fragment of shell or some other substance) as its subsequent decay and dissolution would leave the "hollow" which characterises this type of malformation. It is difficult to conceive such a tender organ as the mantle building a bridge without any foundation. An examination of the *débris* inside the blisters might reveal the nature of the intrusion, but not necessarily, of course, if the shell is an old one and the blister is broken. As a possible explanation of the open foliaceous plates at the posterior end, the "algoid" theory also seems feasible. It is possible to imagine a piece of *alga* becoming fixed in the hinge and lying partially in the shell. This remains there sufficiently long to enable the mantle to form a ridge or secrete some layers of shell in foliaceous form, and once this foundation is laid, the mantle is able to continue its formation quite distinct from the original shell and whether the *alga* remains *in situ* or not. [Where this type of malformation, however, is apparent and more or less similar in *both* valves, it might be susceptible to another explanation, *i.e.* some form of circumstantial change in the direction of growth.]

All Bivalves are liable to malformation due to the entry of some foreign substance, but malformation occurs more noticeably in the following *genera* :—

Under (*a*), (*b*), and (*c*)	OSTREA, MYTILUS (marine)
	MARGARITANA, UNIO, ANODONTA (freshwater)
Under (*d*)	MYA (marine)

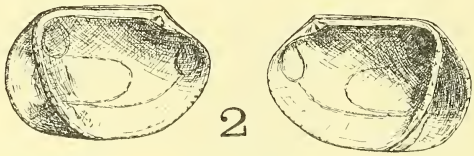
3. Damage to the Mantle.—*Tapes pullastra* (Mont.) is very abundant in the rocks at Tyninghame (near Dunbar), and among specimens to be found there, a small percentage show a malformation which I have not, so far, encountered elsewhere (Fig. 1). After a period of regular growth, the shell becomes truncate and ceases to lengthen posteriorly (Fig. 1 *a*), but, at the posterior end, breaks away into distinct detached laminations (Fig. 1 *b*) of increasing convexity. An examination of the interior (Fig. 1 *c*) shows that the last lamination begins at the edge of the adductor muscle and runs more or less vertically down to the lower margin. The previous one follows a similar although more curved path, while its predecessor is normal in every respect. Now, if



Tapes pullastra, from Tyninghame near Dunbar. 20 mm. high × 30 mm. long.
(*a*) Left valve, exterior. (*b*) Posterior view. (*c*) Left valve, interior.

the malformation were confined to *one* separate lamination and to one valve, one would be inclined to account for this under heading 2 (the entry of some foreign substance); but the fact of the malformation being present in both valves, and complementary in both valves, and at the same time repeated in succeeding years, points to some other explanation. It would seem as though some organism, parasitical (such as certain Nemertines which are known to inhabit the mantle cavity of Bivalves) or possibly bacterial, has attacked the mantle. This attack has taken place at the end of each period of annual growth, and, during the temporary cessation of shell-formation, the mantle has been eaten away, or become diseased, or has otherwise been caused to recede back as far as the edge of the adductor muscle. The attack embraces the whole of the posterior margin of the mantle. The animal in question has been

attacked successively, and it would appear that, when the deposit of shell recommences, the attack is overcome, but that the attacker lies dormant, or is only able to renew the attack successfully when shell-formation again ceases for the year, when the process is repeated. In Fig. 2 is portrayed a pair of valves that have been attacked for the first time, and the animal evidently died just at the beginning of the new year's growth and in the process of repairing the ravages of the winter attack. The functions of the mantle do not seem to be impaired and the normal three layers of shell—chitinous, calcareous and nacreous—are deposited. It is, however, interesting to account for the change in form that takes place. The mantle has been driven back, and



Tapes pullastra, from Tyninghame, near Dunbar. 13 mm. high × 20 mm. long.

the extent of its power to form new shell only brings this shell as far as that of the previous year. During this time, however, the body of the animal is growing, and the only way in which it can be contained in a shell of practically similar length is for that shell to increase in convexity. This is what occurs, and to provide sufficient convexity the laminations separate at the posterior end only (where the attack took place) from the shell of the previous year. Even so, the last attack (particularly) has been so severe that the shell gapes unnaturally as though the body-growth has prevented complete withdrawal of the siphons. I can account for this particular malformation in no other way than by definite injury to the mantle itself. It is not confined to *Tapes pullastra* as I have a pair of *Saxicava rugosa* (L.) (taken *under* rocks at Tyninghame) showing an exactly similar malformation, while *Saxicava rugosa* from the same place, but taken from holes *in* the rocks, show no abnormality.

4. Environment.—In malformation due to environ-

ment I do not include distortions in general form as in *Saxicava rugosa* (L.) or *Pecten pusio* (L.), nor even in *Tapes pullastra* var. *perforans* (now called *Tapes saxatilis*), which distortions are specific characters and involve no actual malformation. By environmental malformation I mean a malformation occasioned by circumstances resulting in an abnormal "change of direction" in growth. At Runswick Bay, Yorks, I have taken *Saxicava rugosa* from holes in the rocks at low-water showing strong signs of this type of malformation (Fig. 3). These show a slow recession of the mantle at the posterior end resulting in an annual laminate thickening of the shell, but quite distinct from the laminations due to injury to the mantle already referred to. In some

3

Saxicava rugosa, from Runswick Bay, Yorks. 10 mm. high × 20 mm. long.

shells there is a very definite thickening of the shell throughout but the laminations only occur posteriorly. A similar increase in convexity occurs as the shell thickens and succeeding "plates" are formed. It might be well to mention a few facts regarding the general habitat of the species. Although it is common amid the roots of *Laminaria* and in *Coralline*, etc., it is primarily a rock-borer, and perforates limestone (preferably) and sandstone rocks. The holes formed are frequently occupied by succeeding generations, and are usually open to the sea, necessitating that, for protection, the animal shall be able to withdraw completely into its shell. In such situations the shell develops normally and, as far as my experience goes, I have seen no malformation such as is figured. At Runswick Bay, however, the rocks occupied by *Saxicava* are covered with a blanket of *Halichondria* (Sponge), and this may explain in part the change that has taken place in the growth of the shell.

It would seem that the shell develops normally for a considerable period, possibly varying with the size of the hole occupied. The animal, however, is one of succeeding

generations that have dwelt in the same hole, and has found no necessity to exert itself in boring. It lacks the inclination, and possibly as generation follows generation, may be losing the power.

The hole is covered by a blanket of Sponge, leaving just sufficient room for protrusion of the siphons. There is adequate protection, and consequently no necessity for complete withdrawal into the shell. The body continues to grow, but is accompanied by no normal shell development. The siphons increase in size and cause the shell to gape, and the increasing gape results in a gradual recession of the mantle, the consequent formation of the posterior laminations figured, and the general thickening of the shell throughout. It is not uncommon in Bivalves to note how, after reaching a certain stage of growth, effort appears to be directed towards thickening the shell rather than enlarging it; but I have never, so far, seen other specimens showing the distinct and regular laminations that seem to be a feature of those from Runswick Bay.

If this suggested explanation of this type of malformation can be confirmed by further investigation, we have here not only a definite example of environmental variation and the development of a distinct variety, but possibly an example of an early stage in the ultimate evolution of a distinct species.

Bean Goose and Kingfisher in Bute.—It may be of interest to record the fact that on 1st October I shot a Bean Goose at the Greenan Loch, Bute. It is the first recorded for this island. The same day I also saw a Kingfisher at Loch Fad. This bird has only once before been recorded in Bute, and that in 1895, when one was killed at Ardmaleish.—David Crichton-Stuart, Kames Castle, Rothesay.

NOTES ON THE SKULL OF AN ANCIENT OX FROM ROUSAY, ORKNEY.

By Margery I. Platt, M.Sc.

Introductory.

The broch of Midhowe, Rousay, Orkney, is being excavated by the proprietor, Mr Walter G. Grant, F.S.A. Scot., of Trumland. The implements and ornaments found reveal a culture of Scottish Iron Age, thus dating back to the beginning of the Christian era. Many animal bones are associated with this Iron Age culture. These include ox, sheep and pig remains, the lower jaws of a dog and a seal, and several bird bones. The ox skull is the find of most interest and is the only bovine skull discovered on this site so far. Though not a complete skull, it is practically whole from the occipital aspect, while the horn-cores and their insertion are undamaged. As will be seen from the accompanying illustrations, the skull has undergone median vertical cleavage. Incomplete though the skull is, it shows features of a very distinct type unlike those of either of the two recognised prehistoric types, *Bos primigenius*, Boj, or *Bos longifrons* Owen.

The Midhowe skull has, however, the strength of the Urus skull although much smaller, the bones being extremely thick; whereas in size it is like *Bos longifrons*, thus combining features of each of these prototypes, but unlike either in other respects. Reference might be made at this point to other types of oxen skulls found in the excavation of these northern islands. At Jarlshof, Shetland, few bovine skull remains have been found, and these are variations of the usual *Bos longifrons* type. Two excavations on the mainland of Orkney are of interest, in that one at Aikerness broch, north-east of the mainland, revealed oxen skulls similar to *Bos longifrons*; the other excavation at Scara Brae, not ten miles distant on the west coast, has yielded skulls of a different type, associated with a Neolithic culture. These are described by Prof. D. M. S. Watson in Prof.

Childe's book on Scara Brae.* It is not surprising that two types of oxen skull on the mainland should be different, since they are associated with cultures of a different age. The Midhowe skull, however, is more interesting in that it is associated with a culture similar to that at Aikerness only five miles distant across the narrow strait of water, and yet is itself so distinct.

Frontal Aspect of Midhowe Skull.

As seen in Fig. 1 the frontal bones are convex, rising towards the vertex, where in the median plane, in spite of the damage done by cleavage, a mesial prominence is

Fig. 1.

indicated. From the latter the frontals slope downwards and away on each side to the base of the horn-cores. These project horizontally outwards from short necks formed by the frontals and curve at first slightly backwards, then outwards, and finally suggest a forward curvature. The cores are short and stout; very pitted and rough in texture but not grooved. They are oval in section, being flattened from above downwards. They do not arise imperceptibly from the frontals, but, at their place of origin, form a roughened collar around the short necks projecting from the frontals. Distally they taper rapidly. The circumference of the horn-cores at their base is 21 cm., and at a distance of 5 cm. from their base is 14 cm. The length of a core taken in a straight line from base to tip on the

* *Scara Brae.* A Pictish Village in Orkney. By V. Gordon Childe (1931).

anterior surface is 11 cm.; while on the outside curvature it is 15 cm. The breadth of the forehead between the bases of the horn-cores is 13 cm. Whether or not the interparietal takes part in the formation of the mesial prominence cannot be ascertained, since no sutures are present.

The Occipital Aspect of the Skull.

As seen in Fig. 2, the general outline of this region is square. The occipital crest is not well defined, but may be distinguished near the middle of the occiput as a uniform

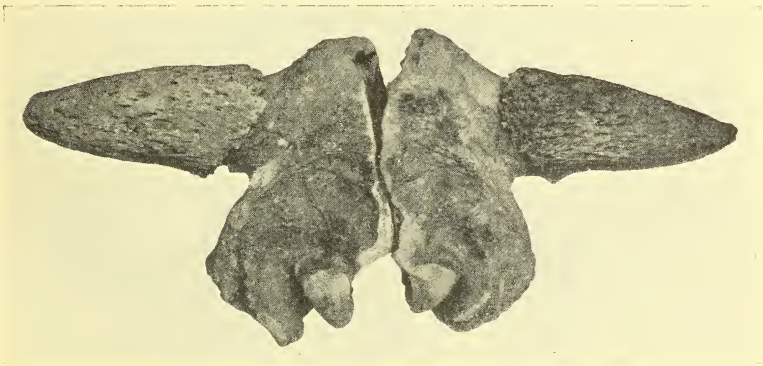


Fig. 2.

curve. When traced downwards to the sides, it appears at its fullest extent almost semicircular in outline. A horizontal line carried through its highest and median point lies well below the centre of the horn-cores. Except for the stout pedicles of bone which give them adequate horizontal support, the horn-cores are seen from this angle to be unsupported from beneath. This is due to the distinct temporal notches which indent the sides of the supracristal part of the occiput; in consequence a depth of bone supporting the horn-cores underneath, such as characterises Urus skulls with heavy horn-cores, is absent in this skull. An area beneath the occipital crest may be distinguished as the place for the insertion of the ligamentum nuchæ though this, partly owing to the damage done by vertical cleavage,

is not so well defined as in some skulls. The supracristal area occupies a larger proportion of the whole occiput than it does in either *Bos longifrons* or *Bos primigenius*, the actual measurements being:

Distance from vertex to occipital crest	6·5 cm.
Distance from occipital crest to lower border of foramen magnum	9 cm.

The supracristal area is flattish, only very slightly concave, and is but faintly marked off from the occiput proper, because the ridge of the occipital crest is not strongly developed.

Vertical Section.

Fig. 3 shows the median vertical section of the skull where cleavage has taken place. This photograph was taken primarily to show the extreme thickness of the bone. For a skull of this size the feature is distinctive. When the skull is handled, and particularly when compared in this way with a skull of similar size and proportion, its comparative weightiness and solidarity are more fully realised. Yet another important general feature is seen in this particular view of the skull, *i.e.*, what may be termed the degree of the fronto-occipital angle. This is the angle made by the median line of the frontals projected posteriorly and meeting a more or less vertical line taken from the upper border of the foramen magnum and passing through the most backwardly projecting point of the occiput above it.

This angle in the Midhowe skull is 69° and is quite distinct when compared with the same angle in other skulls. For example, the fronto-occipital angles of the type skull of *Bos longifrons* and the skull of an Aberdeen Angus of the present day are almost identical and nearly a right angle, being 83° and 85° respectively. The result of measuring three Urus skulls, respectively 39°, 48°, and 51°, give an average fronto-occipital angle for the Urus of 46°. It is doubtful whether it is wise to draw definite conclusions from so few measurements, but so far as the evidence goes at the moment, in this respect the Midhowe skull is halfway

between the two well-defined types *Bos primigenius*, Boj, and *Bos longifrons* Owen.

Of these two types the skull from Rousay might be thought to more nearly resemble *Bos longifrons* in view of their similarity in size, and also from their resemblance

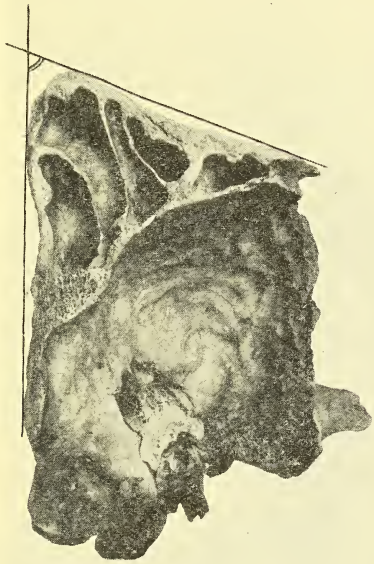


Fig. 3.

superficially from an occipital aspect. In fact up to the present it seems to have been the custom to ascribe any prehistoric skull, which was not obviously a Urus skull, to the species *Bos longifrons*. In consequence this type includes many varieties. For example, among the Newstead cattle alone, at least four varieties occur. Individuals belonging to the same variety possess horn-cores of a similar shape and trend, a vertex indented to the same extent, and also resemble one another from the occipital

aspect. Because of the extreme variability indicated by the term "*Bos longifrons*," it is deemed only fitting to compare in more detail the Midhowe skull with some accessible reliable standard skull. Such is provided by the type specimen of *Bos longifrons* Owen, drawings and measurements of which have been kindly sent me by Mr R. H. Burne from the Royal College of Surgeons, London, where the specimen has been housed since 1830.

Comparison between the Midhowe and *Bos longifrons* Skulls.

(*a*) Frontal Aspect.

The first difference between the Midhowe skull and that of *Bos longifrons* from a frontal view lies in the horn-cores and is chiefly one of size. Those of the former arise from the frontals with definite collars and are of much sturdier build. The circumference of the horn-cores at the base measure respectively :—

(1) in the Midhowe skull	21 cm.
(2) in the *longifrons* skull	10 cm.

The trend of the horn-cores is distinctive: those of the Midhowe skull bending slightly backwards, outwards and forwards in the same horizontal plane; in the *longifrons* skull the trend is outwards, forwards and then upwards. The Midhowe horn-cores are one and a half times longer than those of *Bos longifrons* (measured along the outer curvature), being 15 cm. and 10 cm. respectively—the complete span being 39 cm. and 30 cm. respectively. Though carrying horns of such dissimilar size and weight the breadth of the forehead is in each the same. The forehead of the Midhowe specimen is convex; that of *Bos longifrons* is flattened and slightly concave, rising along the frontal seam towards a mesial prominence at the vertex, which though rounded is indented posteriorly. This indenture contributes to the shallow concavity on the supracristal part of the occiput, which characterises all skulls of the *longifrons* type.

(*b*) Occipital Aspect.

Comparing the *Bos longifrons* skull with the Midhowe skull from an occipital aspect (a description of which has already been given), the first difference is seen in the relative positions of the occipital crest. This lies in the *Bos longifrons* skull less than one-third the distance from the vertex to the base, while in the Midhowe skull it is much lower, making the supracristal part of the occiput of the former relatively narrow as compared with that of the latter. The actual measurements are :—

	Midhowe skull.	*Longifrons* skull.
Depth of the supracristal part of the occiput	6·5 cm.	4·5 cm.
Depth of the infracristal part of the occiput	9 cm.	10 cm.

The occipital crest is neither so well pronounced in the Midhowe skull, nor is the surface for the attachment of the ligamentum nuchæ so distinct as in the *Bos longifrons* skull. In the latter too there is not the discontinuity of outline at the base of the horn cores since they possess no collars such as are seen in the case of the horn-cores of the Midhowe skull. The remaining difference is seen in the features of the supracristal part of the occiput. In the *longifrons* skull three areas may be distinguished; a flattened area at each side leading to the base of the horn-core, while between them is a distinct semicircular shallow concavity. In the Midhowe skull the whole of the supracristal area is undivided and flattened. The width of the occiput between the temporal notches is slightly less in the *longifrons* skull, being 12·7 cm. as compared with 13·7 cm. in the Midhowe skull.

Conclusions.

Regarded as a whole, the Midhowe skull gives the impression of belonging to a small-sized Ox of extremely sturdy build. Considering the skull from every aspect, although agreeing in certain points with both *Bos primigenius* on the one hand and *Bos frontosus* on the other, it is distinct from either.

The shape of the skull is more nearly reminiscent of the skull of *Bos frontosus*, a fossil Ox recently extinct and existent in prehistoric times on the continent in Scandinavia.

As described by Nilsson,* *Bos frontosus* was a large Ox, and though its skull is not so large as that of the Urus, it is certainly larger than the Midhowe skull. Judging from a cast of *Bos frontosus* at the British Museum (South Kensington), characteristics such as the shape of the forehead and the set, texture and trend of the horn-cores are very similar. Nilsson suggests in his paper that the lesser races of cattle with short horns, to be found in the mountains of Norway at the present day, may be the tamed descendants of this original wild race. Furthermore, there seems to be no reason why a tamed variety of *Bos frontosus* should not have been introduced into the island of Rousay at a very early date from Scandinavia. It may upon introduction have already been reduced in size due to previous domesticity, or it may have diminished after introduction as all island races tend to do owing to the rigorous conditions of the environment to which they are subjected. Either of these conjectures would give some explanation of the appearance of an oxen skull in Rousay, which appears to resemble that of *Bos frontosus* rather than the skull of any other ox of recognised prehistoric type hitherto found in Britain.

* *Ann. Nat. Hist.*, iv (1849), pp. 256 and 349.

Greenshank in Kinross.—I notice that the Misses Baxter and Rintoul in their book on *The Geographical Distribution and Status of Birds in Scotland*, give no record for the Greenshank in Kinross. One would suppose that it would be a regular visitor on passage to the shores of Loch Leven. At any rate I can record that there were two separate individuals feeding on the north shore of the loch on 23rd August 1930, of which Mr F. Brady and I had excellent views.—W. B. Alexander, Oxford.

NOTES

Little Bunting in North Uist.—On 9th October of this year during a visit to Vallay, North Uist, I had the good fortune to see three specimens of the Little Bunting (*Emberiza pusilla*), a bird which apparently is not frequently observed in this country, although I fancy that Witherby mentions it as most often seen in the Outer Hebrides. I should state that, following a violent gale, the weather was brilliant and calm, with the faintest of south-west breezes, and several autumn visitors were observed for the first time in numbers. The first Little Bunting was a male and he was in company with a flock of Twites, which were always to be found near the house in the early morning. From this point my walk led me to the steading about a quarter of a mile away, and there on a fence near some rough herbage, was a group composed of a pair of Little Buntings, two Redpolls (also new arrivals), a Wren and a Rock Pipit. The Buntings were in fine plumage and I afterwards had an opportunity of admiring the excellency of the coloured plate depicting the bird in Coward's book.—P. J. C. M'Gregor.

[Two examples of this species are recorded by Witherby from St Kilda (September 1911). Apart from these we know of no records for the Outer Hebrides.—Eds.]

Waxwing in Dumfriesshire.—In case you may receive similar reports from elsewhere, it may be of interest to record that a Waxwing—caught by a cat in a garden at Glencaple, Dumfries, on 14th November 1932—was sent to me for identification.—Hugh S. Gladstone, Penpont, Dumfries.

Snow Buntings eating Bread.—On 10th March last, while at Lochend Public Park, Edinburgh, I was struck by the tameness of the Snow Buntings. Here is an extract from my notes. "I acquired some bread from a child who was feeding the ducks on the pond, and throwing the crumbs on to the path, succeeded in attracting a couple of the Buntings to within ten yards of my feet. They ate the bread willingly, shaking their heads vigorously in order to break the larger pieces. They never flew away with any in their bills, but always ate it on the ground. A cock Sparrow came along and relieved a Bunting of its crumb. The Bunting gave chase and got its own back. The Buntings perched without hesitation on roofs, railways and trees and their movements, both on the ground and in flight, reminded me of Budgerigars."—A. G. S. Bryson, Edinburgh.

Eider Duck in the Forth.—With regard to the Eider Duck being seen far up the Firth of Forth, the following observations have been made by us: On 7th April 1931, a Drake Eider was seen off Seafield; on 25th and 26th March 1932, two or three pairs were seen off Granton Harbour; and on 19th April 1932, one pair was seen west of Aberdour.—H. F. D. ELDER and M. K. HAMILTON, Edinburgh.

Pintail at Granton.—On the 25th and 26th March 1932, we were greatly interested to see a female Pintail feeding inside Granton Harbour.—H. F. D. ELDER and M. K. HAMILTON, Edinburgh.

Shore Lark in East Lothian. — At Aberlady, on 6th November, I saw a Shore-lark (*Eremophila alpestris*) feeding on the rough ground near the shore. It was quite tame and the small tufts on the head, yellow chin and black breast band could easily be made out.—THERESA CLAY, Edinburgh.

Waxwing on Isle of May.—On 1st December 1932, we received a Waxwing, which was picked up dead on the Isle of May a few days before and kindly sent us by Mr Carmichael. This species has not before been recorded for the island.—LEONORA JEFFREY RINTOUL and EVELYN V. BAXTER, Largo.

Quail on Isle of May.—We do not get many records of the migration of Quail in Scotland. It is therefore worth recording one, killed at the lantern on the Isle of May, on 11th October 1932, and kindly sent us by Mr Spence. This is the first record for the island. —EVELYN V. BAXTER and LEONORA JEFFREY RINTOUL, Largo.

Long-finned Tunny (*Thynnus germo*) in Scotland.—So far as can be gathered there is only one recorded instance of this fish in Scottish waters, when a specimen was taken in herring nets off the Orkneys in 1900 (SCOTTISH NATURALIST, 1900, p. 248). Another specimen now falls to be recorded, this time from Lochgoilhead in the Firth of Clyde. This example, taken about the 4th November, was secured by Messrs Sawers, Ltd., of Glasgow, and presented to the Royal Scottish Museum, where a cast is being prepared. The fish, which was a male, measured 3 feet $6\frac{1}{2}$ inches in length, and weighed $55\frac{1}{2}$ lbs. The long pectoral fin measured $15\frac{3}{4}$ inches. This fin is sometimes stated to have 37 rays, but in the present specimen there were only 33. The stomach was practically empty, containing only the remains of a much-digested sand-eel (*Ammodytes* sp.).

This Tunny is common in the Mediterranean and Bay of Biscay, but seldom crosses the Channel, since only some three or four stragglers have been reported even from the southern shores of England.—A. C. STEPHEN, Royal Scottish Museum.

CURRENT LITERATURE

Pomatorhine Skuas and Iceland Gull in Hebrides.—A. MacRae, in *British Birds* for July 1932 (p. 56), states that although he has sailed from the Clyde to the Outer and Inner Hebrides almost daily during the last four years, only three Pomatorhine Skuas and one Iceland Gull have been seen by him during this period. Details of these occurrences are given in the note.

Breeding of the Redwing in Scotland.—*British Birds* for September 1932 (pp. 132-134) records the breeding of a pair of Redwings in the Moray Faunal Area. This case, the first undoubted one for Britain, has been thoroughly investigated, and the Editor of the Magazine is perfectly satisfied as to its authenticity.

Young Pintail in Caithness.—W. Norman May, in *British Birds* for October (p. 165), states that he saw a Pintail of the year which had been shot with another in Caithness in the first week of August 1931.

Shark new to the British Fauna.—In the *Proceedings of the Zoological Society of London* for 1932 (pp. 77-79) J. R. Norman describes *Oxynotus paradoxus* Frade from examples received at the British Museum during 1931. They were taken off the coasts of south-west and north-west Ireland respectively, and are regarded by the author as a perfectly good species and a new record for the British Isles. A fine plate is given of the smaller of the two specimens, which measured 475 mm. (roughly 1½ feet) in length. A key is given for the identification of the three British species of the genus.

Segmentation of the Antennæ in Gall-Midges (*Cecidomyidæ*). Dr H. F. Barnes of the Entomology Department, Rothamsted Experimental Station, has published an interesting paper on this subject in the *Proceedings of the Zoological Society of London*, 1932, pp. 323-334, with a plate illustrating the correlation of different numbers of segments with size of the adults. Over fourteen thousand individuals, belonging to fourteen different species, were bred and examined, and the main conclusions reached were that (1) in certain species and genera the number of antennal

segments is variable, while in others it is constant; (2) the number of segments in one antenna of an individual is sometimes greater than in the other; (3) imperfect differentiation of the segments is quite usual; (4) a formula can be constructed for the antennæ of variable species, and in certain genera the males appear to have more segments than the females, and in other genera *vice versa*; and (5) in some species and genera food affects only the size of the adults, in others the number of antennal segments is affected in addition.

***Agriotypus armatus* and its Hosts.**—An interesting paper on the relations of this Hymenopterous insect with its hosts is published in the *Proceedings of the Zoological Society of London*, 1932, pp. 451-461. It is by Katherine Fisher, and is illustrated by several text-figures. Since this insect was first found in Scotland (on the Clyde) and no doubt still occurs with us, this paper should interest our northern entomologists. *Agriotypus* is a parasite of three or four species of Caddis-fly, attacking the worms in their cases. Consequently the parasite must lay its eggs, and indeed pass the greater part of its time, under water, and for this purpose it is surrounded, when submerged, with an air-film which enables respiration to be carried on while the victims are being searched for. This is an exceptional habit for a winged adult insect, and the paper is correspondingly of much interest.

British Marine Mollusca.—Attention may be drawn to a new "List of the Marine Mollusca of the British Isles" published in the *Journal of Conchology*, Vol. 19, No. 7 (June 1932), pp. 217-252. The author is R. Winckworth, M.A., who delivered his Presidential Address to the Conchological Society in October 1931, concluding it with the list in question. In the various classes the numbers of recognised species are as follows: Solenogastres, 5; Loricata, 12; Gastropoda, 376; Lamellibranchia, 181; Cephalopoda, 19.

Gall-causing Cynipidæ in Britain.—By M. Niblett and H. J. Burkill, M.A., F.R.G.S., *The Entomologist*, September to December 1932, pp. 193-197, 232-235, 254-258, 274-275. A useful paper, inasmuch as each Gall is briefly described, the insect named and the host-plant indicated. Few Scottish records of these Galls exist, and the list might be easily extended.

Insects from St Kilda.—An interesting paper entitled "Some Records of Insects from St Kilda," by Commander J. J. Walker, M.A., R.N., F.L.S., is printed in the *Ent. Mo. Mag.* for July 1932, pp. 146-150. This paper is a "summary of the observations of the few entomologists who in former years have been enabled to visit

this remote and storm-beaten group of islands, and whose articles on the subject of its insect fauna are embodied in periodicals that are not in all cases readily accessible." It is interesting to learn that the earliest visit noticed is that of John Macgillivray, dated so long ago as 1840, the account of which was published in the *Edinburgh New Philosophical Journal.* The entomological notes in this paper are quoted in full, followed by a valuable commentary. Subsequent visits or papers by C. W. Dale, Dr Sharp, Dr James Waterston, C. Gordon Hewitt, Professor (now Sir) T. Hudson Beare, and P. H. Grimshaw are referred to in some detail.

British Psocidæ.—The tiny insects which form the Order Corrodentia, and which include *Atropos divinatoria*, the Lesser Death-Watch, though often seen, are seldom studied. A paper entitled "Notes on the genus *Psocus*, with special reference to the British Species," by J. V. Pearman, F.E.S., will prove useful to anyone who cares to take up the study of these interesting, though neglected, creatures. It is published in the *Ent. Mo. Mag.*, September 1932, pp. 193-204, and is illustrated by a useful series of 37 figures. The British species are arranged under eight genera, two of which are new, comprising the old genus *Psocus* as created by Latreille.

Collecting Notes from Mid-Perthshire.—By K. G. Blair, F.E.S., *Ent. Mo. Mag.*, September 1932, pp. 209-213. In this paper a general account, in readable style, is given of insects of all Orders collected by the author and friends at Killin, Loch Tay, in June 1932. The more interesting captures are mentioned by name.

***Strategus titanus*, Fab., in Edinburgh.**—Professor Sir T. Hudson Beare records (*Ent. Mo. Mag.*, September 1932, p. 213) the capture of a ♂ specimen of this large Dynastid Beetle, in a bunch of bananas at Leith Docks, in June 1931.

A Holiday at Braemar.—By E. A. Cockayne, D.M., F.R.C.P., *Ent. Record*, July-August 1932, pp. 99-102. This holiday was spent in searching for the larvæ of Lepidoptera, more especially *Zygæna exulans*. Many species were found, and are recorded in this paper.

The Natural History of the Scottish Red Deer.—A comprehensive and carefully prepared series of papers on this subject forms part 2 of vol. xxii. of the *Proceedings of the Royal Physical Society* (pp. 75-101), published in May 1932. I. W. Parnell contributes a general paper on the Natural History of the Deer; Dr A. E. Cameron deals with the Arthropod Parasites, internal and external; Dr T. W. M. Cameron writes on the Parasitic Worms; and Wm. C. Miller has a preliminary note upon the Sex Ratio of the Deer.

BOOK NOTICES

A History of the Birds of Suffolk. By CLAUD B. TICEHURST, M.A., B.Ch., M.R.C.S., M.B.O.U. London: Gurney and Jackson, 1932, 8vo, 516 pages, with 28 photographic illustrations (8 full-page) and text-figures. Price 24s. net. Almost every English county possesses a work on its Avifauna, but some of them are now out of date. We learn that it is forty-five years since Dr Churchill Babington's *Catalogue of the Birds of Suffolk* was published, so that the present volume will serve a useful purpose in bringing our knowledge of Suffolk's bird-life up to present requirements. Much labour has evidently been expended in the production of this handsome volume—in fact the task of collecting information was begun twenty-two years ago. In the Introduction of some 26 pages we find a general topographical survey of the County, an account of the changes which have taken place in the Avifauna, a history of Migration within the area concerned, an allusion to the public and private collections of Suffolk birds, a short account of the County's ornithologists, and a brief reference to the scope of the present volume. The birds are then treated systematically, and the sequence and nomenclature followed are those of the B.O.U. list published in 1915. The text is exceptionally interesting and well-written, and we are pleased to notice that the local names of the birds are given in every case. Although, from a purely scientific point of view, it might be, and has been argued that the value of such County faunal works is limited, yet we feel assured that there will always be a steady local demand for such volumes, especially when, as in the present instance, the text is so well written, the records so carefully examined and verified, and the book so beautifully printed and illustrated. We congratulate the author and publishers alike on the production of a work which does credit to all concerned.

Water-Fowl and Game Birds in Captivity: Some Notes on Habits and Management. By ARTHUR F. MOODY. London: H. F. and G. Witherby, 8vo, 240 pages, with 14 photographic plates. Price 10s. 6d. net. For the happy possessor of an aviary this is a most useful book of reference. The information, gleaned entirely from personal observation, is given in the form of headed paragraphs, arranged systematically under each species of bird. Hints on any particular point can therefore be found at once, and immediate advantage taken of the author's long experience. The habits, food, breeding, housing, and other requirements are all fully dealt with, so that any one possessing a particular bird in his aviary can readily compare his own treatment with that given in the volume before us, and, if necessary, correct any mistake. The contents include all species likely to be found in a British aviary. The illustrations are excellent, especially that facing page 72, which portrays ten species of Duck and a Gull swimming together, each bearing a number for identification.

The Trail that is Always New. By WILLOUGHBY P. LOWE, M.B.O.U., F.Z.S. Illustrated by H. G. Grönvold and J. W. P. Lowe. London: Gurney and Jackson, 1932, 8vo, 271 pp. With 22 full-page plates and other illustrations in the text. Price 16s. net. The author of this entertaining volume is an Official Collector for the British Museum (Natural History), and hence, as one would expect, its pages are not only full of fascinating adventure, but teem with notes on the habits and characteristics of the various animals of which he sought specimens. The chapters are founded upon diaries written on the spot, and consequently have a freshness which could not otherwise have been obtained. Many parts of the tropics were visited—East and West Tropical Africa, Madagascar, Siam and Palawan all furnishing incidents of travel and interesting zoological notes. The style is very readable, and in places full of humour. On pages 76 and 77 a most amusing sermon preached by a West African coloured pastor, in "pidgin" English, is quoted as nearly as possible in the words in which it was delivered. It is so funny that we have read it aloud to friends on many occasions.

The Journal of Animal Ecology. Edited for the British Ecological Society by CHARLES ELTON and A. D. MIDDLETON, vol. i., No. 2. November 1932. The present part concludes the first volume of this important publication, which runs to 214 pages and contains 10 plates as well as numerous text-figures. From a cursory glance at the Table of Contents we should say at once that this new venture is likely to fill a worthy place in our current zoological literature. The articles are fully up to the standard of those in Part I. and perhaps even more varied in scope. It is far from our desire to make any invidious distinction between the papers—they will attract a varied company of students—so that we would merely point out such as will probably appeal more strongly to our own readers. "The Food of the Brown Trout," by F. T. K. Pentelow; "An Ecological Reconnaissance in West Greenland," by T. G. Longstaff; "The Grey Squirrel (*Sciurus carolinensis*) in the British Isles, 1930-32," by A. D. Middleton; and "The Rookeries of the Isle of Wight," by J. F. Wynne, are all articles of much excellence and may be particularly recommended to the notice of Scottish naturalists.

British Fresh-Water Copepoda. By Dr ROBERT GURNEY, vol. ii. (Ray Society, vol. cxix. for the year 1932.) Pp. ix+336. London: Dulan & Co., Ltd. Price 25s. This, the second volume of Dr Gurney's splendid work on the British fresh-water Copepods, deals entirely with the Harpacticoida, the most difficult group of the Copepods. As in the first volume full descriptions of the various species are given, also keys for identification and notes on distribution. A most useful and interesting section is that on "bionomics," given for each species.

In this group of the Copepoda there is still much work waiting to be carried out, both with regard to systematic work, which is still very unsettled, and with regard to the study of their life-histories, which in many cases are still very incompletely known. Problems of distribution

also offer a fruitful field for study, and here also there is room for investigation. Workers on both marine and fresh-water Copepods will find this a most useful work, and a clear and interesting account which should stimulate interest in the group.

Whales and Modern Whaling. By J. T. JENKINS, D.Sc. London: H. F. and G. Witherby. Price 12s. 6d. In this volume the author has set out to give an account of the Whales or Cetacea, and of the probable effect of man's persistent hunting on the future of the stock. The more important commercial species are treated at considerable length, and facts of their life-histories, strandings and records of capture by commercial ventures are given. The changes in the methods of hunting, with the probable detrimental effect on certain species of the present intensive captures, especially since the advent of the "floating factory," are emphasised. Numerous excellent illustrations are included. Altogether it is a clear and interesting account, which should be read by naturalists and by all who wish to be informed on the vexed question of modern unrestricted whaling.

The figures given by the author have not been checked with the originals, but it is to be hoped that more care has been exercised in extracting them than has apparently been used in compiling the index. For example, on pages 30 and 36 the Lesser Rorqual is called *B. rostrata;* yet this name does not appear in the index, but *B. acutorostrata* does. On page 27 a tapeworm is named *Diplogonophorus balænopteræ*, yet this name does not occur in the index! There is, however, in the index a reference to *Bolbosoma capitatum*, which name incidentally does not occur on p. 27. Furthermore, both the popular names and scientific names of the whales are given, yet the page references do not always correspond in the index, although both names appear on the same page. The reference to the White Whale on p. 122 is omitted. Other instances of careless proof-reading occur.

CONTENTS

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(*Authors are responsible for nomenclature used.*)

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PETERHEAD SEALERS AND WHALERS: A CONTRIBUTION TO THE HISTORY OF THE WHALING INDUSTRY.

By Dr Robert W. Gray.

(*Continued from p.* 10.)

1875.

Was an open season. At the northern fishing, owing to easterly winds and swell the ice was often in an impenetrable condition. For the same reason the ice probably drifted west off the "food banks" until there was food for the whales only amongst the pack or broken ice or in the open sea outside. Very few whales were seen and only two caught. The *Eclipse* got a large one amongst the pack ice on 27th May in lat. 77° and the *Hope* got another a few days later a little farther north. At the southern fishing apart from frequent fog the conditions were more favourable and the *Eclipse* was able to reach the floes or unbroken ice. A great many narwhals were seen and an occasional Fin whale but no Greenland whales. In July there was an unusual width of open water between the ice and the Greenland Coast and this open space or "land water" was seen to extend at least as far north as lat. 77°.

From Log of *Hope* (1875).

May 23.—78° 4′ N., 2° 40′ W.: "running to N.E. along the ice edge which is much broken up and closely packed."

,, 24.—78° 30′ N., 1° 30′ W.: "ship reaching off and on the pack edge. Weather bad for our business—strong swell, fog, and snow."

May 28.—77° 22′ N., 2° 51′ N.: "running to S.W. along the pack edge; numerous narwhals, sea brown in colour." *

June 4.—77° 34′ N., 2° W.: "amongst loose pack ice; two whales seen, got one."

" 7.—78° 30′ N., 2° W.: "amongst loose pack ice; many narwhals."

" 10.—77° 26′ N., 2° 20′ W.: "steamed to the N.W. through loose pack ice and came to large floes: nothing to be seen."

" 11.—77° 28′ N.; 2° W.: "no whales having been seen ran to S.E." (and came to the outside).

From Log of *Eclipse* (1875).

May 19.—78° 51′ N., 2° 48′ E.: "amongst pack ice; numbers of narwhals about."

" 23.—77° 44′ N., 1° 28′ W: "amongst floes and pack ice; saw a bear and some brent geese."

" 26.—77° 5′ N., 0° 50′ E.: "amongst pack ice; heard a whale blowing in the afternoon, saw one at night."

" 27.—76° 58′ N., 1° 30′ W.: "saw two whales; caught a large one 12½ feet bone."

June 4.—77° 44′ N., 3° 45′ W.: "amongst pack ice; saw a whale."

" 18.—74° 1′ N., 12° 56′ W.: "amongst pack ice; great numbers of narwhals."

" 28.—72° 56′ N., 15° 30′ W.: "amongst floes and loose pack ice; numbers of narwhals and some Finners seen."

July 5.—72° 29′ N., 15° 30′ W.: "ship made fast to a floe; caught a narwhal 15 feet 4 inches in length and 10 feet in girth. Length of tusk 7 feet 8 inches."

" 12.—74° 14′ N., 12° 24′ W.—"amongst floes and loose pack ice; some Finners and narwhals."

" 24.—72° 51′ N., 16° W.: "nine bears seen on a floe. A swell came in and broke the floes."

" 27.—71° 28′ N. 18° W.: "great numbers of Rotches."

" 28.—71° 4′ N., 17° 26′ W.: "left the ice."

1876.

A favourable season. Easterly winds and swells were infrequent and the ice was generally in a navigable condition. At the same time the ice seems to have been more stationary than usual, making it easier for the ships to remain on the "food banks" or dark water frequented by the whales. Many of the latter were seen at the northern fishing and thirteen caught, twelve by the *Eclipse* and one by the *Hope*. None was seen at the southern fishing. In July, after the snow melted, much mineral matter, consisting of sand and shells, was seen on the surface of the floes. On 9th July, according to the *Hope's* log-book, there was an unusual appearance of open water in the direction of Cape Bismark.

* The whalers ascertained the colour of the sea by looking down the trunk or well in which the rudder of their ship worked.

From Log of *Hope* (1876).

June 1.—78° 45′ N., 4° E.: "at 10 A.M. took the ice and reached northward; at 5 P.M. saw a whale; at 7 P.M. saw another."

" 5.—79° 31′ N., 5° E.: "ship working amongst loose (pack) ice; at noon saw two whales; [one of the boats] fired at one but missed."

" 6.—79° 39′ N., 5° 20′ E.: "ran to N.W. into a bight; saw a whale, got fast and killed it. Length of bone 11 feet 3 inches."

" 7.—79° 39′ N., 5° E.: "amongst loose pack ice; saw a whale but being calm did not send the boats away."

" 9.—79° 39′ N., 5° E.: "amongst loose pack ice; scared a whale with the engines to-day."

" 13.—79° 35′ N., 3° 45′ E.: "no whales seen; ran to the southward."

" 16.—79° 54′ N., 3° E.: "amongst streams *; the whales seem to have left this ground."

" 18.—78° 50′ N., 0° 3′ W.: "numerous narwhals."

" 24.—78° 53′ N., 2° W.: "near a floe; six whales seen during the day; two seen in the evening but had no success."

" 26.—78° 35′ N., 2° 30′ W.: "amongst loose pack ice; six whales seen to-day."

" 30.—78° 20′ N., 1° 30′ W.—amongst loose pack ice; heard a whale blowing—(fish) evidently passing to the eastward."

July 1.—78° 30′ N., 1° 30′ W.: "amongst loose pack ice; 7 P.M. saw a very large whale amongst the loose ice but too distant to send the boats. It was going west."

" 7.—78° 40′ N., 1° 30′ W.: "saw a whale and sent the boats out but owing to fog was obliged to recall them; whale was making strong way to N.W."

" 9.—77° 26′ N., 7° W.: "water olive green."

Aug. 1.—68° 53′ N., 19° 57′ W.: "having searched the ice from lat. 78° 30′ N., long. 2° W. to lat. 68° 50′ N., long. 20° W., and having seen no whales concluded the fishing for a season at an end."

From Log of *Eclipse* (1876).

May 15.—77° 36′ N., 3° W.: "some narwhals seen."

" 18.—78° 46′ N., 2° 45′ E.: "saw a whale; colour of sea green."

" 22.—79° 50′ N., 1° 35′ E.: "steamed north from noon until 5 P.M.; came up to many whales."

" 23.—80° 4′ N., 3° 27′ E.: "hard northerly gale with thick snow; numbers of whales about."

" 26.—79° 50′ N., 3° 46′ E.: "a few whales seen; many narwhals and birds."

" 30.—79° 50′ N., 3° 45′ E.: "saw a whale; many birds; water dark green."

June 6.—79° 45′ N., 4° 30′ E.: "ship made fast to a large piece of ice; at 5.30 A.M. struck a large whale which after taking out 900 fms. of line died on the first harpoon in rather less than an hour . . . the lines (*i.e.*, the whale line) were perfectly perpendicular the whale having taken right down." †

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* "Streams," *i.e.*, a very open condition of the ice.

† Some additional particulars of this incident will be found in Buckland's *Notes and Jottings from Animal Life*, p. 327.

June 15.—80° 10′ N., 4° E.: "many narwhals and white whales about the ship."
„ 25.—78° 41′ N., 2° 45′ W.: "several whales seen."
„ 30.—78° 16′ N., 2° 50′ W.: "fog; heard a whale blowing."

July 7.—78° 27′ N., 1° 30′ W.: "one whale and many narwhals seen."
„ 9.—77° 10′ N., 9° W.: "water very dark green."
„ 15.—74° 37′ N., 15° 33′ W.: "water thick with what we call 'rice food' (i.e., *Calanus finmarchicus*) which is (I believe) the staple food of the Greenland Whale."
„ 17.—74° 5′ N., 17° 30′ W.: "nine bears seen on a floe."
„ 25.—72° 11′ N., 20° 43′ W.: "got a bearded seal (*Phoca barbata*).
„ 26.—70° 50′ N., 21° W.: "saw a walrus."

Aug. 1.—"left the ice."

1877

This was another open season; the winds were mostly northerly and the ice was drifting south-west at the usual rate. A northerly gale that commenced on 29th April lasted five days. Few whales were seen and only two killed—both by the *Eclipse*. Much driftwood was seen amongst the ice by both ships. In 1877 whale-oil was at £33 per ton and whale-bone at £1200 per ton. The same year 95 Greenland whales were killed at Davis Strait by the Dundee ships.

From Logs of *Eclipse* and *Hope*.

May 10.—77° 39′ N., 1° 50′ E.: "ship running north along the ice which is in 'streams,' *i.e.*, is very open. Vast numbers of saddle seals in the water going E.N.E. Coiled the whale lines into the boats." *
„ 12.—79° 8′ N., 2° 51′ E.: "in the afternoon came to floes; many narwhals and birds. Colour of sea olive green."
„ 18.—79° 55′ N., 6° E.: "ship under canvas lying-to at a floe. Water dark brown but no whales' food in it."
„ 22.—78° 59′ N., 2° E.: "amongst loose (pack) ice. Vast numbers of narwhals. Sea olive green and abounding in animalcules."
„ 23.—79° 2′ N., 0° 53′ E.: "ship made fast to an iceberg."
„ 25.—79° 20′ N., 2° W.: "came to a very large floe; it was on blue water (not on green as hoped). Many narwhals going N.N.W."
„ 27.—78° 30′ N., 1° 40′ W.: "amongst loose (pack) ice; struck a large whale but lost it with five 'lines' (*i.e.*, 600 fathoms of line). Sea olive green."
„ 28.—78° 13′ N., 2° 44′ W.: "six whales seen all going north; drift of the ice in last 24 hours 17 miles south-west."
„ 29.—78° 22′ N., 2° 11′ W.: "came to a large field of ice; saw nine whales at it; took one and missed another. Colour of sea dark olive green."

---

* The Scotch and English whalers coiled their whale lines directly into compartments in their boats, not into tubs like the American whalers.

May 30.—78° 25′ N., 3° 20′ W.: "ship near the same field; five whales seen; struck one but we lost it owing to the line running foul and catching and breaking on the ice. Sea olive green."

June 2.—78° 3′ N., 3° 15′ W.: "lay at the (same) floe all night. Many narwhals about and one whale seen going north. Sea olive green."

" 3.—78° 16′ N., 2° 39′ W.: "reached S.E.; came to green water at 4 A.M. and lay-to."

" 4.—78° 27′ N., 2° W.: "plying to N.E. through loose (pack) ice which is drifting quickly south-west. Numerous narwhals and sea full of whales' food."

" 18.—78° N., 2° 50′ W.: "amongst loose (pack) ice; numerous narwhals, sea olive green. Caught a whale in the evening."

" 21.—77° 55′ N., 1° 39′ W.: "got steam and bored out into slack ice."

" 22.—76° 49′ N., 0° 39′ W.: "outside the ice running S.W."

" 24.—74° 20′ N., 6° 30′ W.: "took the ice at 8 P.M. and sailed N.W."

" 28.—74° 28′ N., 12° 10′ W.: "lay amongst loose pack ice and floes; a few narwhals seen."

July 1.—73° 30′ N., 14° 30′ W.: "picked up four trunks of pine trees off a floe; saw other nine some of them standing up straight."

" 2.—73° 44′ N., 14° 16′ W.: "got fast to a large whale in the morning but the harpoon drew after running 7 'lines' (840 fathoms of line). Several more seen."

" 3.—73° 39′ N., 14° 13′ W.: "caught a narwhal 15 feet 1 inch in length; 9 feet 5 inches in girth; tusk 7 feet 6 inches in length."

" 18.—"left the ice."

1878

In 1878 the ice seems to have extended farther east than usual and there seems to have been, at any rate for a time, little or no south-westerly drift. For this state of affairs —a good one for the whalers and a bad one for the whales —the want of the usual strong northerly winds may have been to blame. On her way north the *Hope* seems to have passed through a barrier or pack and entered a "North Water" as in a "close season." At the northern fishing the *Eclipse* got 11 whales and the *Hope* 9—all caught in a high latitude and in an easterly longitude and probably mostly of small size. No whales were seen at the southern fishing. As mentioned in the extracts the *Eclipse* got a small albatross in lat. 80° 11′. It is preserved in the Peterhead museum. Numbers of small icebergs were seen by the *Eclipse* on 25th May in lat. 79° 20′ long. 4° 30′ E. They probably came from the since discovered Nicholas or Lenin Land lying north of Siberia. Some of those seen in 1878 had pieces of sea ice on top of them so that in the course of their circuitous

drift north of Franz Joseph Land and Spitsbergen towards the Greenland Sea they must have been in open water and exposed to heavy waves. One of these small flat-topped icebergs capsized when the *Eclipse* was anchored to it, and when some of her crew were removing fresh-water ice from it; fortunately the ship escaped without injury and no lives were lost.

From the Log-Books of the *Eclipse* and *Hope*.

April 30.—75° 7′ N., 5° 10′ W.: "sighted the (north or whaling) ice."

May 2.—76° 43′ N., 0° 9′ E.: "made sail and reached east along the edge of the ice; great numbers of saddle seals going in the same direction."

" 7.—78° 53′ N, 4° 31′ W.: "saw some grampus (*i.e.*, Killer whales) eating saddle seals."

" 22.—79° 48′ N., 6° E.: "ship near a large floe; great numbers of Guillemots about."

" 24.—79° 20′ N., 5° 30′ E.: "ship at the pack-edge; at 4 P.M. saw a whale."

" 25.—"ship amongst streams of ice; seven or eight whales seen during the morning."

" 26.—79° 20′ N., 5° E.: "amongst streams of ice; five whales seen during the day."

" 28.—79° 29′ N., 6° E.: "got a whale."

" 31.—79° 30′ N., 6° E.: "got a whale that measured 41 feet in length and in breadth of tail 17½ feet."

June 2.—79° 30′ N., 5° 50′ E.: "colour of water dark green; birds numerous, mostly Guillemots."

" 4.—79° 40′ N., 5° E.: "ship plying to the N.E. along the pack-edge. One whale seen during the day—it was running north."

" 11.—80° N., 5′ E.: "amongst floes and loose (pack) ice; several whales seen during the day."

" 13.—80° 9′ N., 3° 30′ E.: "ship made fast to a floe; several whales seen during the day."

" 15.—80° 11′ N., 4° E.: "shot an albatross—the only one I suppose ever seen here. Spread of wings 6 feet 10 inches, length 2 feet, weight 8 lbs."

" 16.—79° 45′ N., 4° E.: "amongst loose (pack) ice; several whales seen."

" 23.—80° 7′ N., 6° 8′ E.: "ship near a floe; water very dark green."

" 25.—79° 52′ N., 7° 50′ E.: "Amsterdam Island in sight, bearing E.S.E. distant 30 miles; numerous Finner whales sporting about."

July 15.—"left the ice."

(*To be continued.*)

THE PROBLEM OF VARIATION IN THE COLOUR OF THE MOLE.

By A. M. Stewart, F.E.S.

Lately the writer had the privilege of inspecting a collection of Moles' skins showing a very wide range in colour variation. Most writers on this subject refer to this extraordinary variation, by remarking only that such a range has been recorded, but give no other data. Bell says such variations have been found, and "It has been supposed that some of these differences of colour are connected with soil or climate, but there appears to be little ground for such an opinion"; and with that he dismisses the subject.

He does not even say that he has seen these varieties, so perhaps if he and some of the other writers had been fortunate enough to handle such a large number of these variations, they might have devoted more time and attention to a possible solution of the problem they arouse.

This collection we have now under review has been gathered together by two professional trappers during the past forty years from the Midlands of Scotland. Of all this number of skins only two are pure snow white, genuine albinos. Whether they had the usual pink eyes of albinos cannot now be verified, but the probability is that they had.

The other thirty-one skins show a remarkably wide range, both in colour and arrangement of the markings. No two are exactly alike, although some show a very striking family relationship. On several occasions two or more were caught in the same district, showing such similar characters that they might be proclaimed almost certainly of the same parents. But as a rule there does not appear to be any dominating influence or tendency in any particular line of advance, or in a direction likely to prove useful to the Mole. These variations only affect the colour of the fur—structurally these animals did not differ from their fellows.

The Mole being a subterranean animal practically its whole term of life is spent in the darkness of its tunnels.

Under these conditions one would conclude that colour would rank as of little importance. In the dark all colours are dark. When we reflect that the Mole's range of vision is very limited, obviously these variations in colour can in no way be termed selective, or due to any protective influence; even its most inveterate enemy the Weasel, pursuing it in the darkness of its runways, would be following its quarry more by scent and hearing than by sight.*

There remains then one more possible explanation of these strange mutations. May they not represent a "reversion," a "throw-back" to a remote ancestral type whose life was spent in the open air under the broad light of day?

Occasionally Moles have been observed hunting on the surface amid long grass, where they can capture insects, worms, and even small frogs. I have seen instances of this in daylight where the grass was damp. That this often occurs at twilight is evidenced by the fact that their fur and bones are frequently found in owl casts. These Moles must have been captured by owls hunting in the dusk.

Under such circumstances a Mole might then have some chance of escaping observation if its colour blended with its surroundings.

Thus these light and variable colours we see now only rarely as freaks, may point to a long forgotten ancestry when the Mole lived its life and dodged its enemies above ground.

Protective coloration would then play a not unimportant part in the struggle for existence, just as it does in many animals at the present day.

But the Mole, instead of developing protective coloration, chose the line of least resistance, possibly finding greater safety from its enemies by retreating underground and finding its food there.

The utility and necessity of protective coloration would then disappear, while the general tones of brown, grey and white would tend to merge into one universal neutral tint—Mole grey!

* The writer saw a photograph of *three* Weasels dangling dead from one Mole trap. The whole three must have entered the trap together.

The eyes being no longer of first importance would from continued disuse in darkness gradually atrophy and will no doubt finally disappear.

The fore-feet have developed as burrowing tools and we ultimately have the Mole as we find it to-day.

It is a difficult task to convey in writing some idea of the wonderful variety of delicate shades and colours and the various combinations which these "reversions" assume.

Many of the tints and blends in fawn, cream, grey, brown —with even spots and patches of black—would tax the vocabulary of a colourist.

Nevertheless I have numbered each skin and will make some attempt to describe them briefly.

No. 1. Back: underfur white tipped with dark grey; underside: breast grey shading into golden underfur, tips of fur dark grey. Fur very thick and deep. No date or locality.

No. 2. Back: cream white which gradually shades into a light golden bar along the underside which broadens out between the feet and at the rump. Dunmore, Killearn, 1888.

No. 3. Back: light warm grey; head and underside light orange-fawn, rump dark grey. Callander, 1919.

No. 4. Back: light warm grey; underside with sectional patches of light-orange and fawn. Carbeth estate, Killearn, 1912.

No. 5. Upper and underside cream white, the whole fur being tipped with warm grey—a very pleasing "chinchilla" effect. Red Brae Farm, Falkirk, 1901.

Nos. 6, 7, 8. Backs: all very light steel grey, nearly white sprinkled all over with black spots; undersides and rumps dark grey. These are evidently all of one family. Seafield Farm, Falkirk, 1901.

No. 9. All over dark warm grey with lighter patches. Perthshire, no date.

No. 10. Similar to No. 9, but a much warmer shade inclining to dark fawn. Perthshire, no date.

Nos. 11, 12. Back: underfur white, lightly tipped with fawn; underside: orange-fawn, rumps showing more white. Gartmore estate, Perthshire, 1910. Evidently both from one stock.

No. 13. Back: dark blue grey; underside: same colour, but with a longitudinal patch of cream colour with sharply defined

edges from the chin to the tail, broadening out between the limbs. Polmaise estate, Stirling, no date.

No. 14. Back: cream tipped with mouse grey, the whole inset with patches of dark grey, almost black, a real piebald. No date or locality given.

No. 15. All over uniform warm stone-grey. No date or locality.

No. 16. Similar to 15, but shading to orange-fawn on the underside. No date or locality.

No. 17. Back: warm dark fawn shading to reddish-orange on the underside. There is a strong family resemblance between the last three. No date or locality.

Nos. 18, 19. Somewhat resembles No. 14, but they are distinctive in this that No. 18 has the head, breast and shoulders very dark grey, while No. 19 has the head only dark grey, and two large black patches on the underside near the rear-quarters. These two would pass for brothers. Dunheath Castle estate, 1926.

No. 20. Back: light cream and white in separate patches; underside: running to a golden-orange stripe from the chin to the vent. Mugdock Castle, Strathblane, 1929.

No. 21. Similar to No. 20, but lacks the golden streak along the underside. Auchenden estate, Blanefield, 1922.

Nos. 22, 23. These are piebalds in white and light fawn, the white patches being tipped with mouse-grey. The underside is more golden and uniform, with a golden streak along the centre and on the rump. Ballindalloch estate, Balfron, 1931. These two are probably from the same nest.

No. 24. Variations of Nos. 22, 23, but no date or locality given.

No. 25. Uniform silver-grey. No date or locality given.

No. 26. Uniform light golden-fawn all over. Dumsynie Farm, Lochgoilhead, 1890.

No. 27. Back: uniform white, tipped with light grey; underside similar, but tinged with fawn. No date or locality given.

No. 28. Uniform brown-grey. No date or locality.

No. 29. Uniform umber brown. No date or locality.

No. 30. Back: dark grey inclining to brown down the centre; underside similar, but paler. No date or locality.

No. 31. Dark silver-grey all over, with a very brilliant gloss. No date or locality.

The problem we thus see presented to us by these variations is so far unique in that we know of no other animal showing similar peculiarities.

The idea here given expression to is that the explanation may be found in a "reversion" to some former colour or colours, and that these variations will become less and less frequent with the passage of time. In any case the hint may be found useful in drawing the attention of other observers to this interesting line of study.

The collection of Moles' skins in the Royal Scottish Museum contains a number of varieties. The commonest is buff all over, one or two are mouse-grey all over, but in many others there is only a localised patch of golden fur. This is always on the belly, and is sometimes small and at other times large, covering much of the under surface. In some cases this colour extends for a variable distance up the sides in narrow pointed patches.

[The points raised by Mr Stewart in this article are of much interest. We must say, however, that the explanations given are mere speculation without any solid foundation. Differences in colour are due to differential deposition of the same colouring matter, "melanin"; and instead of arguing that the final colours are reversions to a former type it would be equally legitimate (and perhaps nearer the truth) to argue that the underground life is influencing the Mole in the way in which it has influenced most creatures that live in the dark, that is towards a saving of pigment and therefore towards paler and paler colours, till the final result is white. White or whitish forms would be preserved if the colour did not cause them to run greater risks, and the fact that the Mole is seldom seen on the surface largely removes it from these risks. That is one way of looking at it; but we think it is perhaps truer to look upon colour deposition as a reaction to light intensities; so that the underground animals would tend to become paler in colour, apart from natural selection. But these things would have to be tested experimentally, otherwise we are doing little more than guessing. Mr Stewart says that he knows of no

other animal showing similar peculiarities. In a series of skins of the Cape Hunting Dog, *Lycaon pictus*, in the Royal Scottish Museum, there is an almost infinite variety, not only of colouring but of colour markings. One would have to know from what total number the varieties were selected—the numbers of Moles yielding these varieties must have run into thousands and thousands. If one examined the same numbers of some other variable Mammals we have no doubt there would be as much variation in them also.—EDS.]

BOOK NOTICE

A Book of King Penguins. By T. H. GILLESPIE, Director of the Zoological Park, Edinburgh. London: Herbert Jenkins, Ltd., 8vo, 166 pages and 60 illustrations from photographs by M. E. Gillespie. Price 8s. 6d. net. It is evident that the author of this book, now well-known to "listeners-in," especially during the "Children's Hour," has made an intensive study of the habits of Penguins in captivity. Whatever be the behaviour of these quaint creatures in their natural surroundings on the ice of the Antarctic, little remains to be learned of their ways within the enclosure of a zoological garden, thanks to the careful observations of Mr Gillespie. One of the most curious of the unsolved problems, however, is the determination of the sex of any particular individual. There appears to be absolutely no external character by which one can distinguish the male from the female. The uncertainty confronting the Director and his staff when it became necessary to bestow names upon the individual birds led them eventually to christen them in such a way that their names could easily be changed. The secret only came out when the eggs were laid—Caroline became Charles, Bertha was dubbed Bertrand, while Eric "gave convincing proof" that "his" name should be Erica. This book is not only amusing, however, but very instructive, written in the author's usual happy style, elegantly printed, illustrated and bound, and published at an exceedingly moderate price.

INCREASE OF THE GOLDCREST IN MIDLOTHIAN.

By David Hamilton.

Since the severe winter of 1916-17 which almost decimated the Goldcrest, this species has gradually been filling up its depleted ranks and at present seems to be well up to the normal, and in some localities to have actually increased.

This seems to be the case in Midlothian, as during 1932 we found it very prevalent in every suitable wood.

They were abundant in all the woods near the Pentland Hills, in one of which we found five nests in a very small area, and there would certainly be others which were passed.

Most of these woods are very narrow, but extend for long distances, and while searching through them, the song of the Goldcrest could be heard as we worked along the entire length.

Owing to the fact that my friend Mr W. Watson was unable to hear this song, we made a point of seeing the birds on rather an unnecessary number of occasions until he was convinced that I really did hear them.

May seemed to be the best nesting time, as we found them in all stages during that month.

On the 1st of the month they were seen building; some had eggs on the 7th, others were observed pairing on the 17th, and on the 29th we found others just laying.

On 3rd September we saw newly-fledged young being fed.

All the nests found were in Spruce-firs, and the building material used resembled the colour of the trees so well that they were fairly difficult to see, and when viewed from below were usually further obscured by the lower branches.

Most of the nests were from 12 to 18 feet from the ground, and usually in positions that made it impossible for them to be photographed.

Of one nest, however, which we found at the edge of

a wood, and quite low down, an exposure was possible by tying back the other branches.

The picture shown does not convey any idea of the nest *in situ*, but shows the position on the branch and the construction of the nest.

CHANGES IN THE DISTRIBUTION OF BRITISH GEESE.

The Solway Firth (Cumbrian Side).

By Ritson Graham.

Prompted by Mr Smalley's excellent article on this very interesting subject in the Scottish Naturalist (May-June 1932), I venture to summarise briefly some of the principal changes which have taken place in the distribution of Grey Geese on the Cumbrian side of the Solway Firth since the publication of Macpherson's *Vertebrate Fauna of Lakeland* (1892).

The Carlisle Natural History Society has continued to publish from time to time in its *Transactions* (vols. i. to iv.) valuable material on this and kindred matters concerning the Solway geese and other wildfowl, and these, especially vols. ii., iii. and iv., as well as the *Fauna* and *Birds of Cumberland* (Macpherson and Duckworth, 1886), ought to be consulted by those desirous of obtaining information on these remarkable fluctuations and redistributions.

In addition to information from the sources above mentioned, I include such of my own observations as refer to this particular aspect of the subject.

Grey Lag Goose, *Anser anser*.—In *The Birds of Cumberland* the authors treat the Grey Lag as a scarce bird on the Solway, and in *The Fauna of Lakeland* (1892) Macpherson continues to remark upon its scarcity, but records its occurrence from both the upper reaches, *i.e.*, Rockcliffe and Newton Marshes, and the open coast, near Gosforth, as well as from Morecambe Bay.

Mr L. E. Hope (1908) in his paper "The Ducks and Geese of the Solway," in the *Carlisle Nat. Hist. Soc. Trans.*, 1912, vol. ii., p. 184, states "that the Grey Lag has become more numerous during the last eight or nine years, and that quite 30 per cent. of the Grey Geese noticed in the Carlisle gameshops are of this species."

In "Lakeland Ornithology, 1892-1913," by the late

E. B. Dunlop (1913), contributed to the *Carlisle Nat. Hist. Soc. Trans.*, 1923, vol. iii., p. 16, we read that: "One of the most remarkable features of bird life in this part of the country in recent years is the extraordinary increase in the numbers of the Grey Lag Goose."

After quoting Macpherson as to the former rarity of the species, he concludes: "At the present time it is present in hundreds and probably equals all other Grey Geese on the Solway in numbers."

In an Appendix to the foregoing paper by Mr L. E. Hope (1923) in the same volume of *Transactions*, p. 32, I quote from under "Grey Geese" as follows: "Two species of Grey visit the Solway marshes in great numbers, the Pink-footed and Grey Lag Geese, whilst two other British species are now very much in the minority, the Bean and White-fronted."

In a paper on "Local Wildfowl" contributed by the present writer (1926) to the *Carlisle Nat. Hist. Soc. Trans.*, 1928, vol. iv., p. 80, I therein have occasion to say of the Grey Lag: "With regard to the predominance of species of Grey Geese on the Solway, it will be interesting to refer to the late Eric B. Dunlop's notes under Grey Lag Goose in his paper 'Lakeland Ornithology,' in vol. iii. of the *Carlisle Nat. Hist. Soc. Trans.*, where it will be observed, he says, that at that time the Grey Lag was in a fair way towards becoming the most numerous goose of the district."

Now, twelve years later, though many Grey Lags still visit the Solway, they are seldom at any period to be observed in as great numbers as their congeners, the Pink-footed Geese. This applies to the English side of the Firth only, for I am informed by Mr E. Blezard and others that thousands of Grey Lags arrive in October on the Blackshaw and Ruthwell marshes on the Scotch side."

And again after remarking upon the continued migration of *Pink-footed* from the Solway in October I write: "The Grey Lags, on the other hand, do not leave the English side of the Solway to the same extent as the Pink-footed, and though skeins of the former are occasionally observed passing down the Firth, their flight is probably not continued far beyond our own shores. Therefore, whilst the Pink-footed

are becoming fewer as winter advances the Grey Lags are becoming more numerous, or at least their numbers are being maintained.

An estimate of the numbers of the above two species throughout the season can only be approximate, and to estimate it by the number and species of birds shot may be misleading, for it will be readily understood that between the arrival of the Pink-footed in October, and their gradual departure which immediately follows, is not conducive to a great number being obtained by the fowlers; whereas the Grey Lags, which in October are not present in numbers comparable to those of the Pink-footed species, and, as indicated above, do not leave our side of the Firth to any great extent, are therefore subject to the attacks of gunners, ashore and afloat, throughout the whole season."

And, finally, when treating of the species (Grey Lag) p. 82, I write: "Apart from the general distribution of this goose on the Solway, a small flock is habitually found to be frequenting the marsh at Long Newton," and again: "Other notes refer to observations of Grey Lag on various marshes and estuaries, but seldom on the Cumbrian side exceeding thirty birds in one flock; this contrasts with the Grey Lag, particularly in October on the Blackshaw and Ruthwell marshes, where they often appear in thousands."

To-day I could not add to, or otherwise seriously modify the statements of 1926, except perhaps to incline to the opinion held in some quarters, that the Grey Lag may be again gradually increasing to the determent of the Pink-footed.

Bean Goose, *Anser fabalis fabalis*.—In 1886 (*Birds of Cumberland*) the Bean Goose was described as the common Grey Goose of the Solway, but "becoming much scarcer in winter of late years, though large flocks occur in spring and autumn."

A Rockcliffe correspondent states that the Bean Goose is certainly the common Grey Goose of Rockcliffe Marsh, and Messrs Mann say the same of the lower portion of the Solway.

By 1892 (*Fauna of Lakeland*) the Bean Goose was still

a numerous winter visitor, and had been known as such by Dr Heysham (1753-1834).

"Hitherto," continues the author, "it has been the common Grey Goose of our faunal area"; and after treating at length on the food and habits of the species whilst on the Solway, states that: "The comparative abundance of the species on the Solway is probably to be accounted for by the fact that this district lies in the line of their migration."

Mr L. E. Hope (1908) in *Carlisle Nat. Hist. Soc. Trans.*, 1912, vol. ii., p. 192, writes of the Bean Goose as becoming less numerous during recent years, stating that "at least I have seen fewer obtained during the last eight or ten years than of either the Grey Lag or Pink-footed Goose."

In "Lakeland Ornithology, 1892-1913," by the late E. D. Dunlop (1913), *Carlisle Nat. Hist. Soc. Trans.*, 1923, vol. iii., p.16, we read: "Up to the date of publication of the *Fauna*, the Bean Goose was the common Grey Goose of the faunal area, then the Pink-footed went ahead and became more plentiful than the other species, and now the Grey Lag has taken a commanding position in point of numbers. These changes are most interesting and difficult to account for."

So much has the Bean Goose fallen off in numbers that over the period (1923-4 and 5) covered by my "Local Wildfowl" paper, *Carlisle Nat. Hist. Soc. Trans.*, 1928, vol. iv., p. 83, I had then personally no local record of its occurrence worthy of insertion.

At the present time the position with regard to the Bean Goose on the English side of the Solway remains as in 1926, an occasional visitant from the Scottish side where a few presumably winter.

WHITÈ-FRONTED GOOSE, *Anser albifrons.*—In *The Birds of Cumberland* (1886) the author records this species as a casual visitant of infrequent occurrence on the Solway. In *The Fauna of Lakeland*, it is stated that the White-fronted Goose has been recognised as a visitor to Lakeland for upwards of 100 years, whence the author continues to say: "It is, however, a very uncommon bird even in the neighbourhood of the English Solway, nor has it ever been known to

make its appearance in numbers at all comparable to those of either the Bean or Pink-footed."

In vol. ii. of the *Transactions*, p. 193, Mr L. E. Hope (1908), states that "it [the White-fronted] is the most uncommon of our four species of wild grey geese, only gaggles making their appearance irregularly."

In his "Lakeland Ornithology," the late E. B. Dunlop (1913) says the White-fronted "never has been common, though on one occasion Nichol (of Skinburness) saw a very large flock."

And in the Appendix to the above by Mr L. E. Hope, the only reference to this species will be found under Grey Lag as above quoted.

During the period (1923-5) referred to in "Local Wildfowl" (vol. iv. of the *Transactions*), I had no local record of this species on our side of the Solway.

PINK-FOOTED GOOSE, *Anser brachyrhynchus.* — This species was, at the date of publication of *The Birds of Cumberland* (1886), an occasional visitant of infrequent occurrence to the Solway.

Of the occurrence and distribution of the Pink-footed Goose as outlined in *The Fauna* (1892), we learn that it was "probably not uncommon in (T. C.) Heysham's time" (1791-1857); thence are recorded instances of specimens being obtained at varying intervals from 1871 to 1891, from which we can only assume that the species was at that time but sparingly present in winter, though it is but meet to remark that few Grey Geese were actually obtained on the Solway at that time, and identification was restricted to such chance birds as came into the hands of the best informed fowlers, or Macpherson himself.

In "Duck and Geese of the Solway," vol. ii. of the *Carlisle Nat. Hist. Soc. Trans.*, Mr L. E. Hope (1908), writes: "The Pink-footed Goose is the predominating species, but the combined numbers of Bean and Grey Lag, at the present period run it very closely." (See also under BEAN GOOSE.)

In *Carlisle Nat. Hist. Soc. Trans.*, vol. iv., "Local Wildfowl," p. 84, after briefly treating of the continued migration of this species from the Solway in October, there follows this

remark: "Local residents affirm that the quantity of geese (Pink-footed) present during the latter half of September and the beginning of October this year (1925) exceeded anything within living memory, but in consequence of the brief stay of the bulk of them, few were obtained." (See also under GREY LAG.)

There is no appreciable change in the number of Pink-footed Geese which continue to visit Rockcliffe Marsh on Upper Solway.

The Pink-footed generally arrive during the second week in September, and thence gradually increase until mid-October. Immediately after their arrival many prolong their journey farther south, the birds travelling through mid-Cumberland in a south-east direction. This movement continues throughout October, with the result that but a few hundred are left in occupation of Rockcliffe Marsh. The number of geese varies considerably both when they first arrive and in those which stay; also occasionally many of those which had left for the south-east in October, soon after return to spend the major part of the winter with their brethren on the Solway. The return movement of the departed Pink-footed takes place in March and April, but not all of these returning birds make the Solway their destination on this occasion, many pass further north. In spite of, or in consequence of, these fluctuations, a company of several hundred Pink-footed may confidently be expected on the Upper Solway from October to April, in a normal season. Our best wild goose period, irrespective of species, is from mid-September to the end of October, when the numbers of Pink-footed to be observed together may frequently be from 4000 to 5000 birds.

The Pink-footed Goose is, at the moment, the Grey Goose of the *Upper* Solway, and though more or less confined to this portion of the Firth will, in point of numbers, exceed that of all other species of Grey Geese of the *whole area.*

A final analysis of the somewhat intricate increases and decreases which have occurred in the three principal species of grey geese of the Solway during the last fifty years could be conveniently tabulated thus:—

GREY LAG GOOSE—

1886 . .	Scarce.
1892 . .	Still scarce.
1908 . .	Becoming more numerous.
1913 . .	Extraordinary increase.
1923 . .	On a par with Pink-footed.
1926 . .	Not so numerous as Pink-footed.
1932 . .	Tends to increase.

BEAN GOOSE—

1886 . .	Common Grey Goose of Solway.
1892 . .	Still a numerous winter visitor.
1908 . .	Becoming less numerous.
1913 . .	Surpassed first by Pink-footed, then by Grey Lag.
1926 . .	Scarce.
1932 . .	Scarce.

PINK-FOOTED GOOSE—

1886 . .	Occasional visitor.
1892 . .	Sparingly present.
1908 . .	Predominating species.
1923 . .	Visits in great numbers.
1926 . .	Predominating on Upper Solway.
1932 . .	Predominating on Upper Solway, and during peak-period (September to end of October) predominates over whole area.

BOOK NOTICE

The Great Crested Grebe Enquiry, 1931. By T. H. HARRISSON and P. A. D. HOLLOM. London: H. F. and G. Witherby. Price 2s. 6d. Reprinted from *British Birds*, vol. xxvi., pp. 62-92, 102-131, 142-155 and 174-195 (August to November 1932). We have already noticed a section of this important piece of research (SCOT. NAT., 1932, p. 153), but have pleasure here in recording the completion of the work, the full Report being now issued separately at a low price. The Report is virtually a Monograph on an exceedingly interesting bird, and we can heartily recommend those of our readers who do not subscribe to *British Birds* to procure the separate issue and study it carefully.

From an examination of the results tabulated it appears that Scotland has not yet been studied to the same extent as England and Wales. The numbers of pairs of birds in each county of Scotland is merely estimated, the total for the country being given as eighty pairs. But apart from census-work, which is only a small section of the work, there is a vast amount of information as to the past history of the bird, its feeding and nesting habits, its relations with other species, its parasites, and so on. Hence the Report should be in the hands of every ornithologist.

NOTES

Grebes, etc., at Granton, Firth of Forth.—On the 19th January, I saw in Granton Harbour a Great Crested Grebe, which remained inside the harbour until the 24th. It afterwards went to the east of the breakwater. This bird spent most of the day with its head sunk between its shoulders. Probably it did most of its fishing early, since I only saw it dive once. A Lesser Grebe was also seen. Golden Eye, Tufted Duck and Redbreasted Mergansers were seen daily between Granton and Newhaven.—JOHN BAIN, Bass Rock Lighthouse.

Butterflies as Prey of Birds—*Information wanted.*—I am making an investigation into the extent to which butterflies in the perfect or imaginal state are preyed upon in the British Isles by birds, and should be grateful for any first-hand observations, giving, where possible, the species of both butterfly and bird, the date and locality, whether taken at rest or on the wing, how gripped (by wings or body), whether killed by being rubbed against an object, whether consumed by adult or young, whether the wings were swallowed, whether unsuccessful attempts at catching were noticed, and other details of interest. Wings detached by the bird are of value, both as evidence of identity, and also by reason of the imprint of the bird's beak which is sometimes shown.

Published records up to and including the year 1908 have been summarised in the admirable paper by Sir Guy Marshall, C.M.G., F.R.S., "Birds as a Factor in the Production of Mimetic Resemblances among Butterflies" (*Trans. Ent. Soc.*, Lond., 1909, pp. 329-383). I am making a search in both entomological and ornithological literature for British records published since this date, but as such are frequently not indexed and are easily missed, I should also be most grateful for any references which may be known to your readers, especially in the less well-known publications.

Communications can be sent to me c/o the Entomological Department, British Museum (Natural History), South Kensington, London, S.W. 7.—C. L. COLLENETTE.

Skull of Ancient Ox, Erratum: on page 23, line 2 from bottom, for *Bos frontosus* read *Bos longifrons.*

ENTOMOLOGICAL NOTES FROM ULLAPOOL (ROSS-SHIRE).

By W. B. R. Laidlaw, D.Sc., Department of Forestry, Aberdeen University.

During a month spent at Ullapool in July 1932, a number of observations on insects were made which are incorporated in the notes which follow. The records make no pretence at being complete, but simply represent the more conspicuous and interesting species taken during random collecting in the district.

Ullapool, situated near the mouth of Loch Broom, is almost completely enclosed by high hills. Towards the mouth of the Ullapool river is flat meadow-land, and a narrow strip along the loch-side which is cultivated wherever practicable, while in addition some of the lower smoother slopes of the hills are enclosed either as grazing or for small patches of crops. Woodland is not scarce, and the cliffs fringing the loch abound in wild growth of scrub, consisting chiefly of stunted Oak, Hazel, Birch, Aspen, Rowan and Sallow, extending up the narrow clefts cut by the descending hill burns. The remainder is moorland; hill "bent" below, giving way almost at once to bracken, heath and heather, where juniper and sallow abound. Higher up the ground becomes flatter approaching the hill-tops, the heath and heather vegetation giving way again to grass, and where the water is held, reeds, sphagnum and other mosses abound.

Of the insects mentioned, the *Bombi* and *Vespidæ* alone have some claim to being complete, as collecting in these two sections was made more exhaustive.

Among *Lepidoptera*, the Large White and the Green-veined White were noted: the latter was common, and newly emerged adults were found throughout the month, being confined to low-lying marshy parts. The Small White, I believe occurred, though not commonly, and none was taken. Odd specimens of the Small Tortoiseshell were seen at low elevations, and one specimen of the Dark Green

Fritillary on the moors eluded capture. The Meadow Brown was common and with the Small Heath and Common Blue, made up the three common moorland species, the last-named preferring the lower slopes where *Lotus corniculatus* occurred. The large Heath occurred at higher elevations but not in any number. The Northern Brown, if present, was not seen. Few Moths were noted. *Abraxas grossulariata* was common high on the moors; also the Yellow Shell (*Camptogramma bilineata*), a dark variety being more frequent than the type. One specimen of the Antler Moth (*Cerapteryx graminis*) was taken, several of *Noctua baja*, and one of the White Wave (*Cabera pusaria*). Larvæ of the Small Chocolate Tip (*Pygæra pigra*) were common on dwarf Sallow (*Salix cinerea*), and one larva of *Lasiocampa callunæ* taken on heather succumbed to a small *Tachinid* parasite.

Of *Hymenoptera*, *Bombus* was much in evidence.

(1) *Bombus hortorum* was common at low elevations; (2) *B. agrorum*, F., pale type, was common in meadow-land and lower hill-slopes; (3) *B. muscorum*, F., was common to abundant on moors in heather, heath and *Sphagnum* localities —queens were numerous, only a few workers were out; (4) *B. ruderarius*, Muell. (*derhamellus*, K.)—workers were seen and taken in low meadow-land amongst bramble, sparingly—one queen was seen; (5) *B. soroensis*, F., occurred on hill-sides in abundance with *B. muscorum* and *B. jonellus* on Erica and some lower down on Marsh Thistle—only queens were out; (6) *B. lucorum*, L., was general in distribution, but by no means common; few workers were in evidence, queens were large sized and as usual with this species on moors extremely resentful of interference; (7) *B. lapidarius*, L.—one worker was taken by the shores of Loch Broom. As this species appears to be absent on most of the West Highland coast, this capture was particularly interesting. From existing records it extends up the east coast continuously to the Orkneys: whether it has extended round the north coast, or through by Inverness to the west, it is not possible to say, as I have seen no recorded evidence. It is common in Aberdeen, on the east; on the west I know of no records

for it north of Bute and Dumbarton. I shall be interested to hear of any northern records, as it appears to be increasing its range at present; (8) *B. pratorum*, L., appeared to be rare—a queen and workers were taken on low hill-slopes among *Erica* at one spot only; (9) *B. jonellus*, K., was common on hill-slopes, wherever *Erica* abounded. Only queens were present. The tail was creamy to yellowish white, and specimens with black tibial hairs were not uncommon—it shows thus a slight approach towards the variety *nivalis* of the Isles. *Vaccinium myrtillus* being rare here, *B. lapponicus* was entirely wanting.

Psithyrus sylvestris, Lep. (*quadricolor*), was the only "cuckoo" species taken or seen. *Ps. bohemicus* and *Ps. barbutellus* are likely to occur.

The only male *Bombus* seen was one of *B. hortorum* at the end of the month. Workers were not common. We might mention here, what we have often noted before, especially in moorland country, that capturing *Bombi* at close quarters is quite impossible unless one stalks them against the wind.

Of the *Andrenidæ*, *A. analis*, Panz., occurred in a peat dyke low down on a hill-side; *A. tibialis*, Kirb., was found on low ground near the loch; and *Halictus leucopus*, Kirb., occurred on low ground.

Of the *Eumenidæ*, *Odynerus pictus*, Curt., the common northern species was taken. Of the *Vespidæ*, only workers were seen, which was unexpected in view of the prevalence of queens of *Bombus*. *Vespa sylvestris*, Scop., was found along with *V. norvegica*, Fab., at low elevation, chiefly about bramble; one of the first species showed a minute second pair of thoracic spots (on metanotum). *V. rufa*, Linn., was the commonest species, abounding among sallow scrub and bramble; most of them showed a second pair of thoracic spots. *V. vulgaris*, Linn., was represented by the capture of a single worker, near the end of the month. This species appears to be approaching the northern extremity of its range here.

Of the solitary species of Hymenoptera *Crabro dimidiatus*, Fab., was common early in the month, in burrows at the

side of a pathway. Several *Chrysis ignita* appeared on 25th, which was a very hot day, and were never seen again. It is probably a parasite of *Odynerus pictus*.

The only *Formicidæ* taken were *Myrmica rubra*, Linn., and *Formica fusca*, Latr. Of the Sawflies, *Allantus arcuatus* was generally abundant, *Tenthredo rufiventris*, Panz., and *T. livida*, L., were taken.

Two *Ichneumons*, *Pimpla turionellæ*, Linn., and *Tryphon elongator*, Fab., were taken.

Of *Diptera*, the most notable capture was that of *Echinomyia grossa*, taken on a hill-top. Several were seen. Where the species was taken, an interesting incident occurred. My brother-in-law and myself, having reached the hill-top, stopped to rest and look around. Standing there, we became gradually aware of faint music, as from tiny trumpets blown in harmony to give indefinite but beautiful melody. "The horns of Elfland faintly blowing," occurred instinctively to us both. But being brought up in this modern age we turned around for a more practical solution. We noted several large Hover flies flying around, but these flew silently; until one happened to alight at our feet, and we saw it settle down, and commence vibrating its wings to give out this wonderful "fairy" music. As many more of the orchestra were all around, piping in different keys, the complete harmonic effect was wonderful. The music is most probably a courtship song; the species is known to science as *Sericomyia borealis*, Fln., a large handsome black and yellow banded fly.

The large "cleg," *Therioplectes montanus*, Mg., and the smaller *Hæmatopota pluvialis*, were all too common.

Of *Coleoptera*, few were looked for, but the following were taken. *Cicindela campestris*, L., was found on low ground. *Pterostichus niger*, Scholl., was common under stones at high altitudes. *Anchomenus ruficornis*, Goez. (*albipes*, F.), was taken among stones almost in water at the Ullapool river. It might be mentioned that the name *albipes* of Fabricius is the more appropriate, as when alive the legs and feet are a most distinctive pure white—when dead they become pale brown. *Trechus quadristriatus*, Schr.

(*minutus*, F.), occurred in soil. *Calathus fuscipes*, Goez. (*C. cisteloides*, Panz.), was common on hillsides under stones; *Olisthopus rotundatus*, Pk., occurred with the last, and *Pterostichus nigrita*, F., at lower levels. *Ophonus brevicollis*, Dej., was taken in salt marsh on *Plantago maritima*. One *Serica brunnea*, L., was washed ashore at Loch Broom, and *Ernobius mollis*, L., occurred twice indoors. *Longitarsus jacobææ*, Wat., was generally abundant at low levels among grass, and one specimen of *Rhynchites mannerheimi*, Hum. (*Deporaus megacephalus*, Germ.), was taken on Birch, in Oak, Birch and Hazel scrub.

Of the lesser Orders, the beautiful Caddis-fly, *Leptocerus niger*, the "Silver horns" of fishermen, was common, and the Bristle-tail, *Petrobius maritimus*, was common in dry rock crevices above high tide. The small Grasshopper, *Chorthippus parallelus*, Zett., was generally common.

I wish to thank Mr P. H. Grimshaw for his kindness in identifying *Sericomyia borealis* and *Therioplectes montanus*; and Sir Thomas Hudson-Beare, for the identity of *Longitarsus jacobææ*, *Deporaus megacephalus*, *Calathus cisteloides* and *Pterostichus nigrita*.

CURRENT LITERATURE

"Proceedings of the South London Entomological and Natural History Society."—We have been favoured with a copy of these *Proceedings* for the session 1931-32, and find therein a number of interesting papers which amply testify to the activity of the Society and its members. As might be expected, most of the papers are of an entomological nature, and noteworthy among these are (1) "Ova of British Lepidoptera: II. Noctuidæ," by A. E. Tonge, and (2) "The Basis of the Classification of the British Plume Moths (Pterophorina)," by H. J. Turner.

A NOTE ON HELMINTH PARASITES OF POULTRY.

By Angus Foggie, B.Sc. (Department of Zoology, University of Edinburgh).

The material examined for the purposes of this investigation was obtained from an Edinburgh poulterer; the birds may therefore be taken as normal and not pathological. Helminthic infection would therefore be expected to be slight. Short lengths of gut were cut open and shaken up in saline and the worms were then isolated under the binocular for study. Nematodes were fixed in hot 70 per cent. alcohol; flukes and cestodes in corrosive-acetic or formol-saline.

FOWLS.

Twenty-two fowls, which came from farms round Edinburgh, were examined.

Nematodes.

Heterakis gallinæ, Gmelin, 1790.

This is the most common parasite of the fowl, and it was found in the cæca of 17 of the specimens examined, sometimes in numbers of 100 or more. Larvæ were occasionally found in the rectum. It appears to do no damage.

Capillaria dujardini, Travassos, 1914.

Synonym: *C. columbæ* of various authors.

This is a fairly common parasite in the duodenum, small intestine, and occasionally in the rectum. It was occasionally present in numbers of about twenty-five, but usually only three or four specimens were found in one bird.

Capillaria retusa (Railliet, 1893).

This species, which is not so common as the preceding, and is present in smaller numbers, occurs in the cæca.

Trichostrongylus tenuis, Mehlis, 1846.

A single male of this species was found in the glandular stomach of one fowl.

CESTODES.

Two cestodes were recovered from one fowl. Unfortunately the material was not as fresh as could be desired, so that identification was difficult.

One species is referred tentatively to *Anoplocephala minima*, Mello, 1912, on the following characters:—the segments were short and broad with unilateral genital pores; the female glands were on the pore side of the segment and the testes on the other side.

The other species was unidentifiable.

SUMMARY OF FOWL-PARASITES.

FOWLS.	PARASITES.
No. 1	contained *Heterakis gallinæ*.
,, 2	,, *H. gallinæ*.
,, 3	—no helminths found.
,, 4	contained *H. gallinæ* and *Capillaria dujardini*.
,, 5	,, *H. gallinæ* and *Capillaria retusa*.
,, 6	,, *H. gallinæ* and *C. dujardini*.
,, 7	—no helminths found.
,, 8	contained *H. gallinæ*.
,, 9	,, *C. dujardini*, *C. retusa* and *Trichostrongylus tenuis*.
,, 10	,, *H. gallinæ* and *C. dujardini*.
,, 11	,, *H. gallinæ*, *Anoplocephala minima* and *Cestode sp.*
,, 12	,, *H. gallinæ*.
,, 13	,, *H. gallinæ* and *C. retusa*.
,, 14	—no helminths found.
,, 15	contained *H. gallinæ* and *C. dujardini*.
,, 16	,, *C. dujardini*.
,, 17	,, *H. gallinæ*.
,, 18	,, *H. gallinæ* and *C. dujardini*.
,, 19	,, *H. gallinæ*.
,, 20	,, *H. gallinæ* and *C. retusa*.
,, 21	,, *H. gallinæ*.
,, 22	,, *H. gallinæ*, *C. dujardini* and *C. retusa*.

DUCKS.

Nine ducks were examined. These came through a wholesale dealer from London and were probably from the south of England.

Nematodes.

Capillaria anatis (Schrank, 1890).

Six or seven specimens of this species were found in the cæca of one duck.

Tropisurus fissispinus, Diesing, 1861.

A number of males of this species were found in the glandular stomach. The female, which lives buried in the mucosa of the gastric glands, was not observed.

Trematodes.

Notocotylus attenuatus (Rudolphi, 1809).

This fluke is normally a parasite of the cæca, though one or two specimens were obtained from the small intestine. Forty examples were recovered from one duck.

Strigea tarda (Steenstrup, 1842).

Two specimens were recovered from the intestine. Diagnosis was made on the division of the body into two portions and on the comparatively large size of the ventral sucker.

Typhlocœlum flavum (Mehlis, 1831).

This Monostome, recovered from the glandular stomach, is characterised by the internal diverticula of the gut.

Psilochasmus oxyurus (Creplin, 1825).

Three specimens resembling this species in outline and size were obtained from the cæca and small intestine.

Echinostoma sp.

Two minute echinostomes were found in the rectum, but were in poor condition and could not be identified.

Cestodes.

Weinlandia megalops (Nitzsch, 1829).

This cestode was recovered from the small intestine.

Summary of Duck Parasites.

Ducks.	Parasites.
No. 1—no helminths found.	
,, 2 contained 40 specimens of	*Notocotylus attenuatus.*
,, 2 ,, 1 ,,	*Echinostoma* sp.
,, 3 ,, 1 ,,	*Weinlandia megalops.*
,, 4—no helminths found.	
,, 5—no helminths found.	
,, 6 contained 7 specimens of	*Capillaria anatis.*
,, 7—no helminths found.	
,, 8 / ,, 9 contained 2 specimens of	*Notocotylus attenuatus.*
,, 3 ,,	*Typhlocœlum flavum.*
,, 3 ,,	*Psilochasmus oxyurus.*
,, 2 ,,	*Strigea tarda.*
,, 1 ,,	*Echinostoma* sp.
,, 4 ,,	*Tropisurus fissispinus.*

Nos. 8 and 9 were examined together. The identification of the contained flukes was difficult owing to the poor state of preservation of this material.

PIGEONS.

The guts of thirty-three pigeons, obtained from class dissection material, were cut open and washed in bulk, so that the number of birds infected by the parasites is not known. These pigeons came from Edinburgh.

Nematodes.

Capillaria dujardini, Travassos, 1914.

A considerable number of this species was found.

Trematodes.

Harmostomum commutatum, Diesing, 1858.

Four specimens of this fluke were recovered.

Cestodes.

Raillietina (*Skrjabinia*) *columbæ* (Fuhrmann, 1909); Fuhrmann, 1920.

There was a fairly heavy infection by this cestode.

This work was carried out in the Department of Zoology, University of Edinburgh. I wish to express my acknowledgments to Professor J. H. Ashworth and to Dr T. W. M. Cameron for encouragement and advice.

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Tits at the Bass Rock.—On the 7th October last, a Blue Tit visited the Bass Rock, and on the 23rd a Great Tit was seen. Both of these were of the British race; the wind on each of these dates was S.E., light.

A month later, 7th November, one Long-tailed Tit was on the rock and four next day. Tits generally stay but a short time on the rock, these only halted for six minutes.—JOHN BAIN, Bass Rock Lighthouse.

Pheasant in Edinburgh Garden.—During my spell ashore, from 14th to 27th January, I saw from our windows overlooking a garden in Stanley Road, Leith, a hen Pheasant in possession, and it appeared to be quite at home. It also visited the gardens round about, but always came back to this particular garden in the evenings; possibly the shrubbery at the foot of it was the attraction.

It took cover instantly whenever the gardener or the maids came in sight.—JOHN BAIN, Bass Rock Lighthouse.

CONTENTS

PUBLISHERS' NOTE.

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CHANGES IN THE DISTRIBUTION OF BRITISH GREY GEESE.

By R. A. H. Coombes, M.B.O.U.

[This paper was written in December 1932, but owing to pressure on our space, previous publication has been impossible.—Eds.]

I have read with great interest the papers on this fascinating subject which have appeared in recent numbers of the Scottish Naturalist. Mr F. W. Smalley tells me that his chief object is to obtain a census of the grey geese wintering in Great Britain, and whether this is possible or not, I shall be very glad to assist him in any way I can. At the end of the season I will send him my notes for the goose haunts of the west coast from the Ribble in Lancashire, Morecambe Bay, the Duddon, and both sides of the Solway Firth west to Loch Ryan, over which I have shot this season.

I suggest that late November would be a good time to attempt to take a census, as by then the grey geese should have arrived in their selected winter quarters, and the subsequent redistribution which takes place in many districts may not have commenced; but there are difficulties—one is that for the figures to be of value they would have to be taken with great accuracy, which would not be easy, and the census repeated over a series of years, which would require an enormous amount of organisation; and another is, that the men who know most about the geese will hesitate to publish information which might draw more gunners to their own or their friends' wildfowling quarters. The latter consideration prevents me from mentioning by name several goose haunts that I visit.

Mr Smalley has asked me to correct a mistake which he

discovered after his article had gone to press. He gives as an example of his food-supply theory, the grey geese at Veere in Holland mentioned in a letter from Mr H. Leyborne Popham, which he quotes; but Mr Leyborne Popham wrote "sand banks at the mouth of the estuary," which must mean the roosting grounds and not the feeding grounds of grey geese, nor does grass of any kind grow on such banks.

I shall also have to mention several other statements of Mr Smalley's, and if my views differ from his I hope he will not mind my stating them, but will criticise mine in return.

Everyone agrees that changes have taken place in the distribution and numbers of our average winter stock of grey geese, and though I doubt whether this process of change is at all a new thing in this country, certainly some of its recent aspects are very striking and their significance extremely interesting.

Mr Smalley's theory of the cause of these changes is that they are "probably entirely due to the altering local conditions" of the feeding grounds, and to "altered conditions of the food supply," and Mr H. W. Robinson seems to share the same opinion; but in my view they have stressed food supply to the exclusion of equally important factors when attributing this cause to the minor local movements of geese; while I venture to suggest that food supply has had little or no effect whatever in causing the major changes in distribution.

By a major change I refer to a large increase or decrease in the average total numbers or the colonising of an entirely new area by any particular species. By a minor change I refer to a shift of feeding ground, either immediately or gradually from one marsh or inland pasture to another, in the same area or the passage of geese between different areas.

These minor movements are taking place at all times and to some extent in all, except the most well-preserved goose haunts, and I regard them as having little ornithological importance though doubtless of great concern to the local gunners.

These minor changes are brought about sometimes by alteration in the nature of the food supply as Mr Smalley points out, sometimes by topographical changes in the district, sometimes by a lessening of the all-important factor

of safety on the roosting ground—as at Veere—but more often than any of these, by persecution by man.

In extensive privately owned haunts, like Rocliffe Marsh or Wexford Slob, the geese will use their chosen feeding ground every day throughout the winter, because they can do so with perfect safety; but in all other areas they will have a number of alternate feeding grounds, one or more of which they will use according to how much they are shot or otherwise disturbed on their favourite grounds.

Their alternate feeding grounds may be close together or miles apart, and the extent of country occupied by all of them, together with the roosting grounds used by any one community of geese, is what I refer to as a goose "area."

Thus on the west coast between Southport and Stranraer there are twenty-five tidal marshes—generally visited at some time or other during the season by grey geese—and heaven knows how many inland feeding grounds beside; all these I divide into ten distinct goose areas.

A small river estuary is a simple case, but on Solway the areas are much bigger; for instance, the same flocks of Barnacles use feeding grounds in three counties. This was proved — if proof were needed—when the albino Barnacle, the only one on record, was about for two seasons and was frequently seen in Cumberland, Dumfriesshire, and Kirkcudbrightshire.

In the same area the Grey Lags also use feeding grounds on both sides of the Solway, their distribution varying almost from week to week, according to how heavily they are shot at each point.

It is therefore essential when considering the increase or decrease of a species on any particular marsh or inland feeding ground, to also consider the changes taking place on the other feeding grounds within the area.

If disturbed much on their roosting grounds at night, or so pestered by day that they can no longer find a safe place to feed in, they will quit the whole area for a week or two at least; this frequently happens on parts of the Lancashire coast and on Duddon, where sometimes there are more guns than geese!

This redistribution accounts for the passage of skeins of geese across country during winter, and takes place to my knowledge between Humber and Ribble, between Ribble and the Lune area, Silverdale-Kent area, and Leven and Duddon, and between the latter areas and Solway.

Mr Smalley gives alterations to the salt marshes on part of the west coast as the reason for changes in distribution of grey geese there; but in my experience on this coast the grey geese do the bulk of their feeding inland and not on the marshes, excepting only the Pink-feet at Rocliffe. In some parts of Scotland the Grey Lags remain inland for weeks together, roosting at night on lochs or flooded ground; and on one part of the coast of Galloway, that annually supports a stock of 300 to 400 Grey Lags, there is no marsh at all.

Nor can it be said that change in food supply has caused the spread of the Grey Lag; they did not colonise the Wexford Slob for over forty years after it was reclaimed from the sea; there has been no change whatever, either in quantity or nature of the food supply in the Lune area, colonised about 1924, and the same applies to the Leven estuary definitely colonised about the same time, and also to an area in Wigtownshire colonised in 1921.

Mr Robinson thinks that change of grass will banish Grey Lags and attract Pink-feet; it may do so elsewhere, but here at any rate in the Lune area for several years we have had both these species and the Whitefronted as well, all feeding on the same fields. For instance, a few days ago at morning flight, three lots of Grey Lags came in and settled, or attempted to settle in the field where I was, then two lots of Pink-feet came in high and circled down to the same field. The flocks came from two different directions and no other geese moved in the district that morning; this pasture field does not differ in size or any visible way from scores of others surrounding it for miles, all of which offer the geese the same degree of safety. Apparently, food of some kind was the attraction and was appreciated by both Grey Lags and Pink-feet.

I have seen Grey Lags feeding on every type of grass,

from the new merse, beloved of Wigeon, to the wiry bent grass on the fells, and I suggest that safety at night, peace by day and fresh water if possible, are more important factors in deciding their habitat than type of grass.

With Barnacle and Brent it is food that restricts their winter haunts within certain definite areas and dominates their lives; but with grey geese, which are chiefly inland grazers, the supply of suitable food is so abundant everywhere and greatly in excess of their needs, that food becomes the least important of the factors mentioned which control their habits and distribution.

If these minor changes are difficult to keep track of and their causes varied, the major changes are much more simple. By far the greatest change in our winter stock of grey geese in recent times is the great increase of the Grey Lag and their colonising of new areas in England, Scotland and Ireland, and also the increase and spread of the Pinkfoot in England.

It has been said that these great changes have been brought about by the coming into existence of new tracts of suitable food supply in the various districts; and if this is so, I suggest that it must have operated in one of two ways:—

(*a*) By reducing a winter death rate, or
(*b*) By attracting more geese from abroad.

Now (*a*) is untenable as all who have followed the geese faithfully through the seasons will know that there is practically no death rate from natural causes among geese while they are here, except for an odd bird taken at night by fox or otter.

And (*b*) is improbable, to say the least of it. In the case of Grey Lag, I do not know of a winter stronghold from which the thousands could have come nearer to our Islands than the marismas of Spain or Mediterranean coast-lines.

It is unthinkable to me that such sedate birds as Grey Lags should so far forget the hereditary instincts of their race, as to forsake the comparative peace and plenty of their ancestral winter homes, hundreds of miles away, for a precarious existence on hard shot British coasts.

The case of the Pink-feet is even stronger; from where could they have been attracted? Great Britain provides the winter range for nearly the whole world stock of the species, only a few thousands passing on to the Continent.

Moreover, the power of hereditary instinct is very strong in this species, as shown by its extremely local habitat; thus Ireland has only received four Pink-feet in the knowledge of man, yet they pass within full sight of her north-east shores on migration. They come down the west coast of Scotland, turn east over Galloway and fly a hundred miles farther, right up to the head of the Solway Firth, instead of passing straight on into Ireland; and who will suggest that there are not thousands of acres of food supply in Ireland entirely suited to the needs of this species?

Mr Smalley mentions Leighton Moss at Silverdale as an example of new food supply attracting the Grey Lag to Morecambe Bay; but he has been misinformed, for Leighton Moss is only the roosting ground of the geese that do their feeding in the Kent estuary, Silverdale Marsh and the fields of Silverdale Moss. Personally I believe that Grey Lags would have colonised the bay in 1920 whether Leighton Moss had been flooded or not, only they would have roosted out on the sands as they do elsewhere, instead of inland on fresh water.

Now all this has been critical of my friends' opinions as to the cause of the change, so I will now state my views for them to criticise.

Briefly, I suggest that the new areas have been colonised by a surplus of geese from certain of the old haunts and that this surplus, and the increase, is the result of a lessening of the annual death rate among that section of the species concerned, and that the cause of this is due to factors which operate entirely outside the British Isles and the whole winter range.

It is obvious that when the numbers of a species remain constant from one year to another, that the death rate has been exactly equal to the birth rate; and that when numbers show an increase, there has been a modification in the factors of destruction. Now grey geese live singularly

favoured lives, for apart from a paltry 10, 15, or say at the outside 20 per cent., that are killed by man in their winter range, they are immune from practically the whole of the dangers that beset the vast majority of birds during autumn, winter and spring.

No exhausted geese fall into the sea on migration; no bird or beast of prey attacks them, in Britain at any rate; the wildest gales and the hardest frosts have little effect on them, and their food supply never really fails, as it does sometimes with Brent and Barnacle.

Thus at least 80 per cent. of their annual death rate must take place during summer; or in other words, the factors which govern the increase or decrease of grey geese operate almost entirely in their arctic and sub-arctic breeding grounds.

Arctic Foxes kill the geese on the nests and every one so killed means a brood as well destroyed; eggs are sucked by Ravens (particularly in Iceland) and eaten by Arctic Foxes; nests and broods are destroyed by flood, frost and blizzard, and more factors beside assist in the massacre.

In the few weeks which constitute this hectic, arctic summer, numbers of eggs, goslings and adult geese, equal to four-fifths of the entire number of eggs laid, must be destroyed; the figures would run into countless millions.

Obviously a very slight modification of one or other of these drastic factors of destruction would have the result of slightly increasing the percentage of survival, which would mean a few hundred or a few thousand more geese to come south for the following winter. And this, I believe, is what does happen; it seems certain that these natural checks must, by their very nature, vary in intensity from time to time, and in consequence the numbers of geese coming south will fluctuate—which we observe they do. In my view the increase and spread of the Grey Lag and Pink-foot, and some other changes too, are due to the operation of this process which I have briefly outlined.

I am tempted here to fire a charge of goose-shot across the bows of those well-meaning "protectionists," whose enthusiasm so often outruns their knowledge—of wildfowl

especially! Speaking of wild geese in Europe, and in view of all that I have written above, it seems to me quite obvious that no possible increase or decrease in the rate of destruction by man in their winter ranges, and no protective or attractive measures that he can devise, will have any useful or far-reaching effect upon the numbers of their various species. Until the day comes when man has so far "developed" the arctic lands that he controls their faunas, as to-day he controls say the fauna of Scotland, the wild geese will continue to work out their own status against the forces of nature, utterly regardless of anything that man can do.

I see that Mr J. Berry mentions in his very interesting paper that the ringing of geese on a large scale is to be undertaken in Iceland; this is good news to ornithologists, and it will add yet another interesting possibility to wild-fowling.

Mr Berry mentions *Anser carneirostris* and *Anser neglectus*. As the specific distinction of two such comparatively well known forms as *A. segetum* and *A. arvensis* still remains unsettled, the claims of the supposed *A. carneirostris* and *A. rubrirostris* need hardly be considered. Not so with *A. neglectus*, however; I quite expect that before many years are over Sushkin's Bean Goose *Anser neglectus* will have been added to the British list. Already I know of two occurrences of Bean Geese in recent years, the descriptions of which, given to me by the men who shot them, tally exactly with this species, but unfortunately neither specimen was recognised or preserved.

I know of no reason for supposing that *A. neglectus* is extending its range to this country. I think it is far more likely that odd birds of the species have always occurred from time to time, but the few that have been shot have been taken for Bean Geese and put into the pot! As nowadays wildfowlers and shooting men generally seem to be taking a more scientific interest in the birds they shoot, perhaps some day a specimen of *A. neglectus* will be recognised and its occurrence recorded.

NOTES ON THE STATUS OF BIRDS IN SCOTLAND IN 1932.

By Evelyn V. Baxter and Leonora Jeffrey Rintoul.

There are, again, some interesting changes and additions in status of birds to record in 1932. Three birds have been added to the Scottish list, and there are a good many alterations to be made under the various divisions. The increasing and interesting returns of ringed birds are resulting in further knowledge regarding their subsidiary status. New problems are also being introduced by these returns of which the final solution is not yet in sight. For example, what status in Kinross can be assigned to a Teal ringed, as a young bird, in that county on 20th June 1931 and recovered in Sweden on 3rd June 1932?

Three new species have to be added to *The Geographical Distribution and Status of Birds in Scotland.* The first of these is the Needle-tailed Swift, which occurred in Fair Isle on 6th August 1931. A new page should therefore be headed "Needle-tailed Swift, *Chætura caudacuta caudacuta* (Lath). A very rare visitor" and "O xii.1932.38" added to Fair Isle. The next which occurred on Fair Isle on 8th May 1931 is the Pallid Harrier. A page should be headed "Pallid Harrier, *Circus macrourus* (Gm). A very rare visitor" and "O xii.1932.1" added to Fair Isle. The third is the White-winged Black Tern seen in Forfarshire in July. A page should be headed "White-winged Black Tern, *Chlidonias leucopterus* (Temm). A very rare visitor" and "O xii.1932.171" added to Forfar.

There are also a good many additions and alterations to be made under the various divisions.

Skylark, *add* "W" to N. Perth.
British Goldcrest, *delete* "Has bred" and *insert* "R" to Outer Hebrides.
Waxwing, *add* "O" to Fair Isle.
Willow-Warbler, *delete* "Has bred" and *insert* "S" to Outer Hebrides.
Icterine Warbler, *add* "O" to Isle of May.
Barred Warbler, *add* "O" to East Lothian.
British Song Thrush, *add* "Has bred" to Isle of May.
British Song Thrush, *add* "W" to Forfar.

Redwing, *add* "Has bred" to Moray Area.
Rock Thrush, *add* "O" to Fair Isle.
Green Woodpecker, *add* "O" to East Inverness.
British Great Spotted Woodpecker, *delete* "O" for Renfrew and *substitute* "R."
Eagle Owl, *add* "O" to Outer Hebrides, also to S. Kincardine.
Grey-lag Goose, *add* "R" to Caithness.
Barnacle Goose, *delete* "O" and insert "W" to W. Sutherland.
Teal, *add* "W" to N. Argyll.
Wigeon, *add* "S" to Kinross.
Ferruginous Duck, *add* "O" to Aberdeen.
Goldeneye, *add* "O S" to Midlothian.
Cormorant, add "W" to Dumbarton.
Shag, *add* "W" to Orkney and Ayr.
Gannet, *add* "O" to Clackmannan.
Black-necked Grebe, *add* "S" to Midlothian and "OS" to E. Inverness.
Lapland Dunlin, *add* "O" to Ayr.
Spotted Redshank, *add* "O" to N. Sutherland.
Arctic Tern, *add* "S" to Bute.
British Lesser Black-backed Gull, *add* "P" to E. Inverness.
Kittiwake, *delete* "Not Breeding" in Midlothian.
Northern Guillemot, *add* "S" to Aberdeen, W. Sutherland, and N. Argyll.

To bring the nomenclature of *The Geographical Distribution and Status of Birds in Scotland* up to date, the following changes, which have been approved by the B.O.U., should be posted under the various species.

Chough, *Pyrrhocorax pyrrhocorax pyrrhocorax* (L).
Mealy Redpoll, *Carduelis flammea flammea* (L).
Holböll's Redpoll, *Carduelis flammea holbœllii* (Brehm).
Greenland Redpoll, *Carduelis flammea rostrata* (Coues).
Lesser Redpoll, *Carduelis flammea cabaret* (P. L. S. Müller).
Cirl Bunting, *Emberiza cirlus cirlus* (L).
Snow Bunting, *Plectrophenax nivalis nivalis* (L).
Red-throated Pipit, *Anthus rufogularis* (Brehm).
Snowy Owl, *Nyctea scandiaca* (L).
White-tailed Eagle, *Haliæetus albicilla albicilla* (L).
British Lesser Black-backed Gull, *Larus fuscus grœllsii* (Brehm).
Iceland Gull, *Larus leucopterus* (Vieill).
Little Auk, *Alle alle alle* (L).
Crane, *Grus grus grus* (L).

The British Oystercatcher has recently been given subspecific rank under the name of *Hæmatopus ostralegus occidentalis* Neumann. British Oystercatchers have thicker and usually less finely pointed bills than birds from Sweden. The typical form has, so far, not been proved to occur in Britain.

SOME OBSERVATIONS ON THE NESTING HABITS OF THE BLACKBIRD.

By Vernon D. van Someren.

The site of the following observations on Blackbirds was a small wood, a few acres in extent, adjacent to Mortonhall Estate, Midlothian; at one end of the wood there lies a farmyard, while through the wood a small dirty stream winds its way. The wood is of the typical open kind much beloved by the members of the Thrush family. The timber is mixed, with *Tilia europæa* (Lime) predominating, the trees of this species bearing round their bases those thick clusters of young shoots which form such ideal nesting places. *Fagus sylvatica* (Beech), *Ulmus sativa*, Mill. (Elm), and a few *Quercus robur* (Oak), and *Pinus sylvestris* (Scots Pine) occur, but there is no undergrowth, save for a few stunted *Ilex aquifolium* (Holly).

I determined this year to keep an accurate record of all nesting species within the wood throughout the year (1932), of which these observations are extracts; as will be seen, they are unfortunately rather incomplete, but nevertheless some of the facts stated here are either new, or corrections of older observations; this article is in no way intended to be an exhaustive survey of the nesting habits of Blackbirds, but is rather indicative of the enormous amount of knowledge which is still lacking concerning our most common birds.

For purposes of convenience, and to save constant repetition, a list of the dates of observation with the prevalent weather conditions is given first, and each nest is referred to by a number.

DATES OF OBSERVATIONS WITH PREVALENT WEATHER CONDITIONS.

25th March.	No weather record.
31st ,,	Morning—dull, cold S.W. wind.
3rd April.	Morning—dull, cold, drizzling rain. No wind.
6th ,,	Morning—sunny, occasional rain, strong cold W. wind.

12*th April.*	A hurried visit.	Morning—dull.
14*th* ,,	Morning—hot, sunny.	
16*th* ,,	Afternoon—hot, sunny, mild N.E. wind.	
18*th* ,,	Afternoon—hot, sunny, no wind.	
23*rd* ,,	Morning—sunny, slight W. wind.	Rain later.
24*th* ,,	Afternoon—sunny, mild, N.E. wind.	

After this records became rather too scattered to be of any practical use, and had to be abandoned. These dates, however, cover the all-important period of nest-building, about which so little is really known. The following, then, is the record of each individual nest, as far as I was able to follow it out.

Nest No. 1.

25*th March.*—Found completed in a small holly bush, about 4 feet off the ground.

31*st March.*—Nest still empty.

3*rd April.*—Nest still empty.

6*th April.*—Nest contained three eggs, quite obviously laid during the last three days. This bird had evidently been caught napping by the onset of rain at the beginning of April, laying being delayed for three days in order to allow the nest to dry, since no bird will lay in a wet nest. It is within the bounds of possibility that, since the bird would be unable of its own accord to delay egg-laying, the other two eggs of the normal clutch of five may have been laid elsewhere, on the ground, etc., as the Starling (*Sturnus vulgaris*) often does. At any rate no further eggs were laid in this nest; but it may be possible that three was the normal clutch of this particular bird, in which case the delay would be explained by too previous nest building, which in my opinion, and from my own experience, is an unlikely occurrence.

18*th April.*—Eggs hatched, and young 1½ to 2 days old in nest. Bird not sitting. This gives an incubation period of 13 to 14 days, a period which I have found to be the normal one for Blackbirds.

Nest No. 2.

25*th March.*—Found in the cluster of young shoots at the foot of an Elm tree close by No. 1 nest. Only just completed, the inner lining of mud still being wet, and the lining of fine straw and grass just laid down. This nest was built above last year's nest in the same place, which was robbed.

31*st March.*—Bird was sitting fairly close on two eggs. Assuming

one egg to be laid per day, a fact which I later ascertained, laying was commenced in the early hours of the 30th, eggs usually being laid in the early morning by Blackbirds; thus, then, the bird had allowed four days for the nest to set hard, the weather not being very favourable for drying purposes.

3rd April.—Observations cut short by the nest being robbed.

Nest No. 3.

6th April.—Nest awaiting mud lining in young shoots at the base of a Sycamore (*Acer pseudo-platanus*). I had noticed a collection of dead grass here a week ago, but had made no note of it. The bird had evidently collected all the material first and then shaped the nest.

12th April.—Nest still with the first coating of mud. This bird took six days to lay down the mud lining.

14th April.—Lining of straw and dead grass half laid. The fine weather prevailing evidently accelerated the building.

16th April.—Lining still half laid. Bird evidently not working very hard.

18th April.—Nest fully completed, thus making eighteen days (approx.) for building, which is extremely slow. This nest was subsequently deserted, and I am inclined to think it must have been the work of an unmated ♀, because shortly after, another nest, obviously the work of the same bird, was built in a neighbouring tree in an exactly similar manner and also deserted.

Nest No. 4.

16th April.—Nest just completed, also in the young shoots at the base of a Lime tree. Nest was large and flat.

No further record.

Nest No. 5.

18th April.—A newly completed nest close by No. 4, which was barely 3 inches in diameter, very small indeed for a Blackbird.

23rd April.—Now with three large green eggs. Bird evidently allowed two to two and a half days for the nest to dry.

Nest No. 6.

18th April.—A nest low down in a hole in the wall by the burnside with three eggs. Extremely large and deep. A peculiarity I have often noted about Blackbirds and Song Thrushes (*Turdus philomelus*) is that they seem to take a rest from incubating from about 3 to 5 P.M. This bird was just returning at 5 P.M.

23rd April.—Nest partly torn down and all the eggs sucked. Probably the work of a weasel, as the nest was only 18 inches off the ground. The tragedy was quite recent, as the egg-white was still freshly smeared over the nest; the parent birds were nearby and calling distractedly.

NEST NO. 7.

18th April.—Nest with three eggs, built in a Holly bush overhanging the stream. Almost 6 inches in diameter. Bird not sitting.

No further record.

NEST NO. 8.

23rd April.—A few wisps of straw laid in a hole in the wall, forming the rudiments of a nest.

No further record.

NEST NO. 9.

23rd April.—A few wisps of dead grass laid down in the shoots at the foot of a Lime tree, near nest No. 4.

24th April.—Nest shaped and with the lining of mud laid down. This bird built very fast, probably due to the fine weather prevailing. Shortly afterwards this nest was pulled to pieces by some small boys, or otherwise it would have furnished an interesting set of observations.

Comparing, then, these records, and noting also one or two other odd facts which I had noted down in previous years, some interesting facts emerge, and a fairly complete account of the building of a Blackbird's nest can be constructed.

The ♀ alone apparently carries through the nest-building operations,* while the ♂ spends his time in defence of the territory, and has very occasional song bursts; both birds appear, however, to take part in the selection of a suitable nesting site within the territory already selected by the ♂. The ♀ now gathers together all the suitable nesting material, which she lays in a heap in the required spot. The time to gather this material varies according to the suitability and accessibility of material, and also to a certain extent on climatic conditions, but not to such an extent as are the later phases.

Now she begins to shape the nest, curiously enough, not as might be expected from the bottom upwards, but from the top downwards. She makes the top ring first and builds the walls under it, weaving the material together with her bill.

* *Cf.* Coward, *Birds of the British Isles*, Series I., p. 206.

This thin outer shell is constructed in two to three days, the time varying, and now mud-laying commences. Blackbirds are not nearly so partial to cow or horse droppings as are Song Thrushes, much preferring ordinary mud from the streamside or roadside.

A thick layer of mud is laid down and allowed to become sticky, this being entirely dependent on the weather. She then lays the inner lining of soft dead grass and fine rootlets, and the nest is usually completed in five to six days, this period again varying with individual birds. Now as a rule, the nest is left for three to four days to become thoroughly dry and then egg-laying commences, one egg being laid per day, the eggs usually, but not always, being laid in the early hours of the morning.

The whole nest-building operations are apparently almost entirely dependent on the prevailing weather conditions, fine weather accelerating the building and wet or dull conditions retarding it a good deal.

Incubation lasts approximately a fortnight, but of the further behaviour of the parent birds, feeding young, etc., this record does not pretend to deal, since it varies so widely with individual birds that generalisation is impossible, and is indeed a serious mistake.

Now, in support of certain suppositions which were made in the above record of the nest-building and egg-laying operations, we had the good fortune to be favoured by the presence of a charming pair of Blackbirds who took a great fancy to a thick rose screen growing against our garage wall, whose behaviour, carefully noted day by day, corroborated more exactly certain of my theories. The following is a record of their activities:—

30*th April.*—Sunny periods, low lying mist. Mild.

The ♂ and ♀ were prospecting round the garden this morning, examining likely spots, and by midday there was a thin layer of dry straw on top of an old nesting box in the rose screen, reinforced by a bit of brown paper about 4 inches square, which was evidently considered by the bird as making a good watertight flooring! * The ♀ alone built the nest, though the ♂ was in the garden once or

* Viz., also R. Kearton, *The Pocket Book of British Birds*, p. 122.

twice, and she must have worked at an astonishing rate, because by 6 P.M. the shape was woven and mud-laying had begun. At first she fetched straw from a garden down the road from us, but later we put some straw on the lawn and she used this, picking and choosing each piece carefully, lifting a bit up, shaking it and throwing it down again as if not satisfied, as I have often seen them doing. When the walls were about 3 inches high and still very thin (again here the top of the nest was constructed first) she commenced the lining of mud. For this, she at first paid visits to the flower-beds and took earth from there, but later she discovered that the earth from the lawn was more suitable, being more clayey, and she visited it about every five minutes. She poked her bill deep into the earth, loosened it with a few shakes of her head much as we might do with a garden fork, managed to get a large lump adhering to the outside of her bill, flew up to the nest with it and with a sideways jerk of her head threw it to the bottom of the nest. She then sank forward on her breast into the nest and worked the earth round and round. For this she seemed to use her feet as well as her breast, and occasionally poked under her with her bill. Once when I was standing about 8 feet away behind a holly bush, I watched her moulding the lining. Her tail was well elevated and I could hear her patting with her feet, while once or twice she flapped her wings as if in exasperation.

Once she flew into the next door garden, picked up a piece of toffee paper and placed it in the nest.

Operations ceased at about 7 P.M. with a thin lining of mud and the walls of the nest about $3\frac{1}{2}$ inches high.

1st May.—Morning and afternoon. Dull, thick white mist in morning; clear but dull in afternoon. Mild.

The ♀ started work at 5.30 A.M. continuing the mud lining. She finished it at last at 10 A.M., and then left the nest till 2 P.M. At this time the mud was sticky and she commenced putting in the inner lining of fine straw and rootlets, which she worked into the mud with a round and side to side movement, leaning on the side of the nest to make it firm. The lining was completed at 5 P.M. and the nest now stood empty drying.

The finished product was $4\frac{3}{4}$ inches across the top, and $2\frac{1}{4}$ inches deep, and built entirely in a day and a half.

The outside appearance was rather patchy, due to the piece of brown paper sticking out and the brown grass blades used for the outer framework.

3rd May.—Sunny, mild N. wind.

The ♀ was inspecting the nest from 6 to 7 A.M. this morning,

putting some finishing touches, and tucking in a few wayward straws. The ♂ was in the garden most of the day, but the ♀ stayed away all day.

4*th May*.—Sunny, cold E. wind.

The ♀ commenced sitting at 11 A.M., thus allowing the usual time for the nest to become dry. The first egg was laid between 2 to 3 P.M., the ♀ leaving the nest immediately after.

5*th May*.—Sunny, cold, intermittent rain and hailstorms.

The ♀ commenced sitting again at 11 A.M. and laid the second egg at 2 P.M. She then left the nest and only returned to cover the eggs during the brief rain and hailstorms. She was not yet sitting at 9 P.M.

6*th May*.—Cold, occasional rain and snow. Sunny periods.

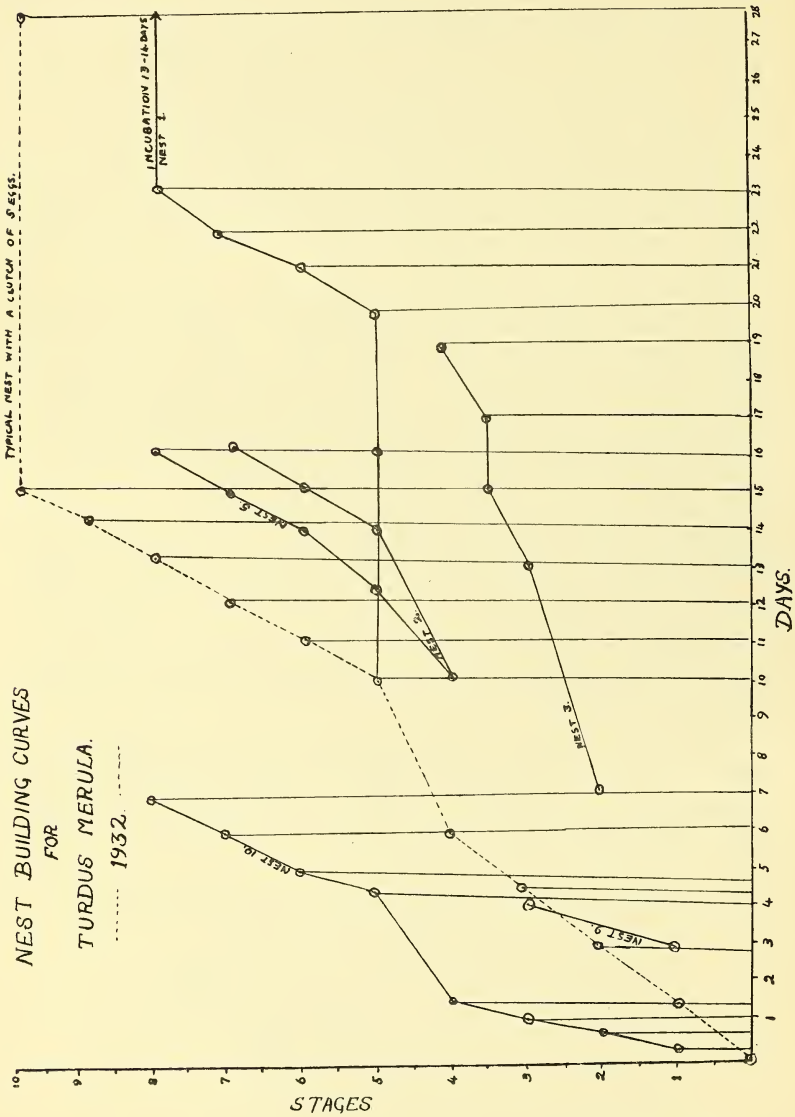
The ♀ was sitting all morning, probably because it was so cold. The third egg was laid at the usual time, very red-streaked and slightly smaller than the others. She did not sit in the late afternoon, but returned to sit at 9 P.M. when it was mild and still. This was the last we saw of these birds, because a cat cut short our observations early next day, and left us a nest without an owner.

From these records, then, it will be seen that the construction of a bird's nest is by no means the simple affair many people imagine it to be but is, on the contrary, an exceedingly complex business, dependent to a very great extent on the individuality and environment of the particular bird in question.

The graph which I have appended shows, perhaps more clearly than anything else can do, this individual and environmental variation. The stages of nest construction, taken as ordinates, are as follows:—

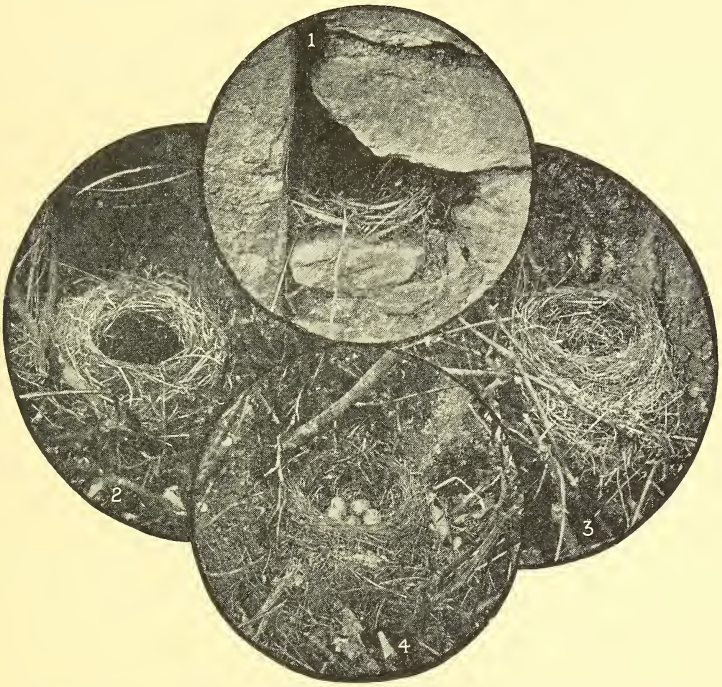
1. Up to the end of gathering nesting material.
2. Up to the end of shaping the nest.
3. Up to the end of laying the mud lining.
4. Up to the end of laying the inner lining.
5. Up to the end of the nest drying.
6. Up to the laying of the first egg.
7. Up to the laying of the second egg.
8. Up to the laying of the third egg.
9. Up to the laying of the fourth egg.
10. Up to the laying of the fifth egg.

The number of days required for each operation are taken as abscissæ. The dotted line represents the nest-building



curve of a typical Blackbird with a clutch of five eggs, who took the average time for each operation. It will be observed that there is a greater lapse of time during the

drying of the nest than at any other time. The curves of the nests actually observed are plotted against that of the typical Blackbird, and the variations are at once seen; acceleration of the processes are seen in nests 5, 9, and 10, due in the cases of 5 and 9 to the climatic conditions, but in 10 undoubtedly due to the individuality of the bird. Nest 3 is exceptional, 2 is exactly typical, while 1 is retarded considerably, due again to adverse climatic conditions.



A fact that will be seen from this graph is that no variation more than a few hours either way occurs during the time of egg laying, one egg per day being the rule, the greatest variation occurring between stages 3 to 5.

I am aware of the fact that I am laying myself open to criticism by apparently deducing so many facts from so few records, but such is not the case; previous notes and records have been gone over very thoroughly and been fully compared, and my statement of the building of a Blackbird's nest is the result of a long series of observations.

The four photographs reproduced represent visually some of the stages already mentioned.

1. Between stages 1 and 2. Note that the top ring of the nest is fully made, and, though not visible in the picture, the bottom of the nest is not yet laid down.
2. Between stages 3 and 4. A few fine grasses of the inner lining are pressed into the lining of mud.
3. Between stages 4 and 5. The inner lining is completed, and the nest is standing empty, drying.
4. Stage 10. The full complement of five eggs is laid and the eggs are being incubated.

Food of the Pheasant.—Landlord and tenant-farmer, viewing game-preservation from different standpoints, incline to differ in opinion about the amount of damage done to field crops by winged game. In places where there is a good stock of Pheasants, no doubt they help themselves to a good deal of grain during the weeks of harvest; but during the rest of the year they atone for that by devouring insects and plants which are injurious to agriculture.

The crop of a cock Pheasant shot here in December contained about 200 bulbous roots of *Ranunculus bulbosus*, a common species of buttercup that spreads very quickly through grass pasture under rotation; that Pheasant was one out of 107 shot on that day. Had it been possible to examine the crops of the rest in that day's bag, some impression might have been received of the excellent service these birds had been rendering to the farmer.—HERBERT MAXWELL, Monreith.

[The samples of roots sent in by our correspondent were submitted, at his suggestion, to the authorities at the Royal Botanic Garden, who have very kindly confirmed Sir Herbert's identification. The specimens are being preserved in the Royal Scottish Museum, where also some have been planted in earth and grown sufficiently to place the question of identification beyond doubt.—EDS.]

A RARE SHARK (*OXYNOTUS PARADOXUS*) NEW TO SCOTTISH WATERS.

By A. C. Stephen, B.Sc.

Attention has recently been directed to the invasion of British waters during the past few months by animals which are not normally inhabitants.[1] Similar conditions have occurred elsewhere, for Dakin[2] has recorded parallel happenings in the waters off New South Wales.

A long-finned Tunny, *Thynnus germo*, the second record of the species in Scottish waters, was recently found in Loch Gilp.[3] More recently there has been an invasion of Saury Pike, *Scombresox saurus*. This fish appeared in shoals in the Firth of Forth, and specimens also appeared in the Isle of Man for the first time.[4] One was washed up as far south as Scarborough in Yorkshire.[5] Rare squids have recently been stranded in the Moray Firth at Buckie[6] and at Scarborough.[7] Whales and Dolphins, as recorded in recent numbers of the Scottish Naturalist, have been stranded in unusual numbers during the past and present years. These strandings have included a White Whale, *Delphinapterus leucas*, a rare Arctic species which has been recorded on only a few occasions.[8]

Another interesting visitor has recently been captured; this time a rare Shark (*Oxynotus paradoxus*) which is an inhabitant of more southern waters, described as new by Frade from Morocco in 1929. In 1931 the species was recorded from two stations off the west coast of Ireland and figured by Norman.[9]

The Scottish specimen was taken in the middle of March 1933 in a trawl at Scourie Bank, 5 miles south of the Isle of Handa in the Minch, by the trawler *George Hastie*, and landed at Aberdeen. The fish was a female and measured 34 inches in length. This species is distinguished from the more familiar Humantin *Oxynotus centrina* by the round spiracle, by the dorsal fins which are drawn out into long points, and by the spiny scales which are larger

and fewer, giving the skin a much rougher appearance than that of the Humantin.

We are much indebted to Messrs Sawers, of Glasgow, for the record of this occurrence, also for the specimen which they have very kindly presented to the Royal Scottish Museum, and which has been mounted and will shortly be placed on exhibition.

[1] *Nature*, 130.664, 29th Oct. 1932 ; 130.889, 10th Dec. 1932 ; 131.240, 18th Feb. 1933.
[2] *Nature*, 131.239, Feb. 1933.
[3] *Scot. Nat.*, 1933, p. 26.
[4] *Scot. Nat.*, 1933, pp. 95-96.
[5] *Ill. London News*, 4th Feb. 1933, p. 148.
[6] *Scot. Nat.*, 1933, p. 96.
[7] *Ill. London News*, 21st Jan. 1933, p. 69.
[8] *Scot. Nat.*, 1932, p. 166.
[9] *P.Z.S.*, Pt. 1, 1932, p. 77.

Cetacea recently stranded in Scotland. (1) Common Porpoise, *Phocæna phocæna*.—A female, 3 feet 6 inches in length, was shot in the Forth at Alloa on the 14th January 1933. This species is not uncommonly seen in rivers, so that its presence so far up the Forth estuary as Alloa is understandable.

(2) White-Sided Dolphin, *Lagenorhynchus acutus*.—A male of this species was found choked in the mud in Catfirth, Nesting, Shetland, on the 9th February 1933, and the skull and skeleton were secured for the Museum by Mr Robert Hunter. The animal was 8 feet 7 inches in length. The White-Sided Dolphin is common to the north of the British Isles and in Norway. It has been recorded on several occasions in recent years from the Orkneys and Shetlands.

(3) White-beaked Dolphin, *Lagenorhynchus albirostris*.—A male, 6 feet 2 inches in length, was stranded on the 5th of March 1933 near Whiting Ness in Angus. There are usually 27 teeth in each of the lower jaws, the 3 front ones being concealed beneath the gum, but in this animal there were only 26 in all. The White-beaked Dolphin is most commonly stranded on the shores of the North Sea, and may occur in any month of the year, but least commonly in winter. It is frequently found stranded in Scotland.—A. C. Stephen, Royal Scottish Museum.

SOME PERTHSHIRE DIPTERA.

By F. W. Edwards, M.A., Sc.D.

In a previous issue of this magazine I gave an account of a collection of Diptera made in the Scottish Highlands in 1931. The results obtained on that occasion were so interesting that it was decided to make another collecting trip in the summer of 1932, and accordingly Messrs R. B. Benson, K. G. Blair, W. H. T. Tams and myself spent the greater part of the month of June in collecting insects, chiefly Hymenoptera and Diptera, in Perthshire. On this occasion we made Killin our headquarters and concentrated on collecting at the higher altitudes, chiefly above 2500 feet. The weather was most favourable, and in twenty days' stay we were able to climb above 3000 feet on eleven occasions, on each occasion a different hill being selected; consequently we were able to obtain a very fair sample of the insect fauna of the hill-tops.

As the following notes will show, our hopes of finding further examples of Scandinavian and other northern or alpine species hitherto unrecorded for Britain proved fully justified, for among the Diptera alone over a score of species new to the British fauna were discovered. Our investigations showed that in the Perthshire mountains many species are confined to the zone above 2500 feet, and some evidence was obtained that certain others may be more or less restricted to an intermediate zone between about 1500 and 2500 feet, although of course many common flies may be found at any altitude. The very much richer insect fauna of the valleys, to which we gave but little attention, also includes some interesting northern forms, but for the most part the flies collected below about 1000 feet belonged to widely distributed and well-known species.

Mycetophilidæ.

Macrocera zetterstedti, Lundst. A male on Ben Chalum and a female on Stuchd an Lochain. An interesting addition to the British list, hitherto only found in northern Scandinavia. It is a

small, dark hairy-winged species very distinct from others found in Britain by its shorter antennæ and absence of vein *R*4.

Mycomyia clavigera, Lundst. Four males in Glen Lochay woods. After carefully comparing several mounts of hypopygia (including a cotype from Lundström's collection) I am satisfied that this is the same species as that described by Dziedzicki as *M. fasciata;* the differences between the figures given by Dziedzicki and Lundström are solely due to the same structures being seen in different positions. Some confusion has arisen as to the use of the name *fasciata*, and it may be as well to use Lundström's name for the species until Zetterstedt's type can be re-examined, as it is by no means certain that Dziedzicki had correctly determined the species. Although the name *fasciata*, Zett., appeared in early British lists, including those of Verrall, it is probable that the records referred to other species; the present specimens are the first British examples of *M. clavigera* which I have seen.

Boletina grœnlandica, Staeg. Common on several hills above 2500 feet.

Exechia pallida, Stan. A female in Glen Lochay woods.

Exechia frigida, Holmgr. A male on Ben Lawers.

Trichonta stereana, Edw. A male in Glen Lochay.

Several species of *Sciara* new to the British Museum collection were obtained; these will be dealt with elsewhere.

Chironomidæ.

Podonomus peregrinus, Edw. This interesting species was found in fair numbers around boggy springs, usually above 2800 feet; notably on Ben More and Beinn nan Eachan, from which most of the material was collected, though it was also seen on other hills. Only one specimen was found as low as 750 feet, this on the slopes of Creag na Caillach. The female, which has vein *R*1 markedly swollen at the tip, had not been taken in Britain before, though as previously noted I found it in the southern Andes in 1926. True to its habits in South America, *P. peregrinus* in Perthshire always rested with its wings superposed over its back, a position adopted by most Ceratopogonidæ but by no Chironomidæ other than the members of this genus.

Syndiamesa pilosa, Kieff. In boggy springs at about 2800 to 3000 feet on Ben More, Beinn nan Eachan and Beinn Heasgarnich; fairly common.

Diamesa pastoris, sp.n. A species of Group C, with conspicuously milk-white wings in both sexes; closely related to *D. gaedii* Mg. (*inscendens* Walk.) with which it agrees in having

antennæ of ♂ with white plume, A.R. about 1·5; no trace of beard on front tarsi of ♂; no anal point on ♂ hypopygium; halteres yellow in both sexes. Differs from *D. gaedii* chiefly as follows:—Antennæ of ♀ dark brown with only the basal segment yellowish. Thorax slightly pruinose and almost entirely black in both sexes, only faintly brownish about shoulders in ♀. Abdomen in ♀ as well as in ♂ entirely black. Legs mainly black, including femora and all coxæ in both sexes (in *D. gaedii*, as well as in the related *D. lacteipennis*, Zett., as determined by me, the front coxæ are yellow and bases of front femora narrowly so); tibiæ less distinctly pale in middle. All veins in ♂ wings white by reflected light (in *D. gaedii* the costa, $R1$ and $R4+5$ are rather dark brownish).

Glen Lyon. Ten pairs and one or two other specimens taken on tent roof, chiefly in early morning, at foot of Ben Chalum; also one other pair near Cashlie.

It is possible that this is merely a dark variety of *D. gaedii* Walk., but the difference in the female at least is so striking that it is provisionally treated as a distinct species. No examples of typical *D. gaedii* were found in Glen Lyon nor in the Killin district.

In my revision of the British Chironomidæ (1929) I described two new species of this group, *D. montium* and *D. campestris*, but omitted to state that in both these the front tarsus of the ♂ has a distinct beard on at least the second and third segments, a feature which readily distinguishes them from *D. gaedii*, *D. lacteipennis* and the new species. On the other hand it should be noted that the hypopygium is practically identical in *D. campestris* and the new species.

Metriocnemus ursinus, Holmgr. Three males near top of Beinn Heasgarnich, together with *M. fuscipes* Mg. and *M. longitarsus* Goet. This is a most interesting addition to the British list, previously recorded only from Bear Island and Spitsbergen, from both of which places I have examined material. It is readily distinguishable from other British species of Group A (*Metriocnemus s. str.*) by the wings being hairy at the tip only, and the A.R. almost 2. The palpi are normal, not reduced as in *M. tristellus* Edw., which also has the male wing hairy at the tip only.

Spaniotoma (*Orthocladius*) *grampiana*, sp.n. ♂. A rather small species (wing-length 2·8 mm.), somewhat intermediate between Groups C and D, but most resembling the former; wholly blackish except for the yellow halteres. Antennæ with tip not swollen, with rather numerous short hairs; A.R. 1·3. Thorax very slightly shining,

without grey dusting; scutellum with only a narrow shining strip at base; dorsocentral hairs uniserial, dark. Hypopygium (fig. 1, c) with the usual hairy anal point; style with strong terminal spine but without subapical projection; lobe of coxite very slightly developed, quite different in shape from any other British species. No tarsal beard; empodia about half as long as claws. Wings with only faint purplish-brown tinge by transmitted light (less pronounced than in most other species of Groups C and D); squamal fringe complete; lobe right-angled; costa slightly produced; *f Cu* slightly beyond base of *r-m*; *An* reaching far beyond *f Cu*. ♀. Differs in the usual respects. Antennæ as in other members of Group C, with last (sixth) segment pubescent and about as long as the three preceding together. Scutum with ground-colour dull brownish, stripes separate.

6 ♂ 1 ♀. Ben More, 2800 feet, 4.vi.32; also 1 ♂ Ben Alder, vi.1931.

The species is apparently not described in Goetghebuer's recent revision in the "Faune de France."

Tanytarsus (*Micropsectra*) *chionophilus*, sp.n. Closely related to *T.* (*M.*) *monticola*, Edw., which it resembles in having A.R. only about 0·6 and *f Cu* slightly beyond base of *Rs* (the latter point not noted in the description of *T. monticola*); hypopygium also closely similar. Differs from *T. monticola* as follows:—Size smaller (wing-length 1·5-1·7 mm.). Colour darker; ground-colour dark olive-green; scutal stripes black in both sexes, fused in ♂. Legs dark (blackish in ♂); L.R. in ♂ only 1·25, in ♀ barely 1·1. Pulvilli scarcely distinguishable. Wings narrower (anal area very little developed) and much less hairy (no hairs in cell *Cu*1 or in anal cell in ♂, except for an irregular row close to the margin; very few hairs in these areas in ♀).

1 ♂ 2 ♀. Beinn Heasgarnich, 3000 feet, 11.vi.32; on wet stony and mossy slope below snow patches.

Owing to its small size and narrow, almost cuneiform wings the species was taken in the field to be a *Stempellina*, but the tibial combs are fused and without spurs and extend half-way round the tibia; the scutellum has about six marginal hairs. These features are sufficient to locate it in the sub-genus *Micropsectra*.

Ceratopogonidæ.

Ceratopogon communis, Mg. Ben Lawers, 1 ♂; Beinn nan Eachan, 1 ♂. The wing of the ♂ in this species is much narrower than in others of the genus, with less developed anal area.

Ceratopogon crassinervis, Goet. Glen Lochay, 1 ♀. The length

of the last antennal segment in the ♀ in this species is variable, and does not afford a clear means of distinguishing it from its allies.

Ceratopogon nitidula, Edw. Abundant. At Cashlie the females were preying on *Spaniotoma rubicunda*, Mg., a much larger insect than the predator (six examples preserved).

Culicoides heliophilus, Edw. Abundant in Glen Lochay; as usual most active during the middle of the day, but on 17th June (a very warm day) it was biting before 10 A.M. and also at 9 P.M. (summer time), though not later. Other species of *Culicoides* were troublesome at dusk, but less so than anticipated.

Dasyhelea bensoni, sp.n. A rather large species, almost equalling *D. dufouri* in size (wing-length 2-2·2 mm.). Structural characters almost as in *D. dufouri* and related species, with slight differences

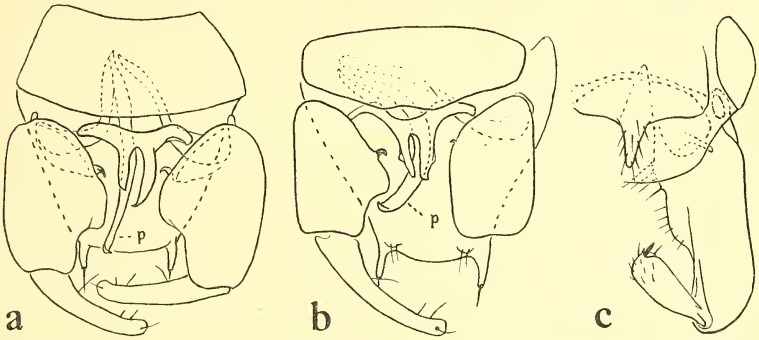


FIG. 1.—Hypopygia of *Dasyhelea bensoni*, sp.n. (a), *D. saxicola*, Edw. (b) and *Spaniotoma grampiana* sp.n. (c).

in basal parts of hypopygium (fig. 1, a). Colour almost uniformly blackish; scutellum wholly blackish in both sexes; only tiny brownish-yellow spots present on shoulders and on posterior corners of abdominal tergites in ♀. *Thorax* with the grey reflections much less pronounced than in related species, and darker, without any bluish tinge; mottling quite inconspicuous, even on shoulders, where it is most noticeable; no obvious dark dots at bases of hairs; the usual stripes present but indistinct, altering in appearance according to incidence of light. Vestiture all black. *Legs* blackish, no paler rings on femora or tibiæ in either sex; tarsi lighter. *Wings* with dense light greyish hair (black on costa and radial cells); *f Cu* in ♂ considerably, in ♀ very much before level of end of costa. Halteres with black stem and brownish-yellow knob, darker on one side.

Six pairs on roof of tent in Glen Lochay, 8th June.

In many respects, notably in the general blackish colour, this

is similar to *D. saxicola*, Edw.,* which, however, differs in its much more mottled thorax, with dark dots at the bases of the hairs behind the shoulders, as well as in the stouter paramere or harpe (*p* in fig. 1, b) and other small details of structure of the male hypopygium, as shown in the accompanying figures. Many species described by Kieffer belong to this group (including the genotype, *D. halophila*, which is certainly very closely allied); but I have been unable to identify the present species with any of Kieffer's, and therefore describe it as new, naming it after my friend and colleague Mr R. B. Benson.

* *D. saxicola* was described in 1929 as *Tetraphora saxicola*, but Dr Macfie has since shown that my identification of Philippi's genus *Tetraphora* with *Dasyhelea* was incorrect. In both *D. saxicola* and *D. bensoni* the œdeagus is more or less asymmetrical and the right coxite has a rather larger internal enlargement than the left; the small blackened hook near the base of the coxite on the inner side is more pronounced than in *D. versicolor* (Winn.) Goet. or *D. dufouri*, Lab.

(*To be continued.*)

American Bittern in Outer Hebrides.—It may be of interest to record that an American Bittern (*Botaurus lentiginosus*) was shot on the Island of Benbecula, Outer Hebrides, on 27th December 1932. The weather previous to this had been extremely rough with gales from a southerly direction. On dissection the bird was found to be very fat and a vole, not identifiable, was found in the crop. The bird was an adult male.—C. G. Bird, Cambridge.

[This species of Bittern is an extremely rare visitor to Scotland, and has not previously been recorded from the Outer Hebrides.—Eds.]

Notes on Birds in the Forth Area.—The following notes may be of interest: A Great Crested Grebe seen on Thriepmuir reservoir 10th and 24th April 1932; a Redstart near West Linton in August; a Goldfinch with one young one; and a Bullfinch near Dolphinton on 18th August. I have not seen either of these finches in our area before. Another point which occurs to me is how common the Snow Bunting is becoming. It can be seen any time in the winter months on Arthur Seat or the Braid Hills, or vicinity, and anywhere along the beach from Seafield to Aberlady, to my certain knowledge.—Ian Hay, Edinburgh.

NOTES

Apricot-coloured Moles.—Your correspondent on pages 41 and 42 gives many interesting colour varieties of Moles but does not mention any with apricot-coloured pelts. I have seen many of these at a certain taxidermist's, who will not give away the locality, except to say that they all come from one place, which I have every reason to believe is either in Dumfriesshire or Kirkcudbright, or possibly Ayrshire. All have apricot-coloured backs with more or less buff under parts; others are rather paler, and some have absolutely black markings on the apricot colour on the back and sides.—H. W. Robinson, Lancaster.

Colour Variation in Mammals.—*Re* "Problem of Variation in the Colour of the Mole," Scot. Nat., pp. 39-44, Editorial Note:—

I have, in my collection, one or more adult Common Shrews showing variation from the normal coloration, one of them being an exceptionally fine example of Silver-grey Roan colouring, and I have no doubt that if it were possible to kill and examine as many Shrews as Moles each year we should find quite a number of the former showing variation.

We get variation in Wild Rabbits; years ago (over 40) on ground now taken up by the Cattle Yards at Heysham Harbour, near Morecambe, we used to get many pure yellow and pure black rabbits, but in this case, of course, the explanation is purely mendelian; the normal or Agouti coloration being a mendelian combination of black and yellow; therefore these Rabbits were hardly comparable with the variations noted in the Moles and Shrews. Many young wild rabbits of normal Agouti coloration show a frontal spot of white on their foreheads; and, of course, there are cases of wild rabbits being partly white and Agouti, and also partly white and black, but whether this is a natural variation or has its origin in some "tame rabbit" having "gone native" it is impossible to say. I simply cite these cases in support of the Editorial Note that "Mr Stewart's explanations are pure speculation without any solid foundation," and prefer to agree with the Editors that "differences in colour are due to differential deposition of the same colouring matter, 'melanin.'"—F. W. Smalley, F.Z.S., M.B.O.U., Parkstone, Dorset.

Greater Spotted Woodpecker in Renfrewshire.—It may be of interest to record that on Sunday, 12th March 1933,

while birdwatching in the Crookston Estate, Renfrewshire, I saw a female Greater Spotted Woodpecker there, feeding on a large oak tree.—FREDERIC CUNNINGHAM, Glasgow.

Albino Mallard at Linlithgow Loch.—During the past winter an Albino Mallard frequented Linlithgow Loch. As it was not one of the local birds, it must have arrived with some of the flock that annually winter on the Loch. It was first seen in October 1932 and again on 1st January 1933. Having the curled tail feathers and being usually accompanied by a duck, the Albino was certainly a male, and when seen casually from a distance it resembled a large gull. The bill was yellow but the bird never came near enough to allow the colour of the eye to be noted. Visiting the loch at the latter end of January, we found it frozen over and most of the ducks gone, and with them the Albino.—DAVID HAMILTON, Edinburgh.

Purple Sandpiper and Long-tailed Duck at Leith.—On 4th February 1933, at Leith, Mr William Watson and I observed a flock of sixteen Purple Sandpipers. They were feeding among seaweed exposed at low tide by the side of the pier. For some months back smaller groups were also seen at Granton. The confiding nature of this bird allowed a near approach each time we met with them.

On 5th February four beautiful adult male Long-tailed Duck were seen and, contrary to their usual habit, they were fairly close to the shore. As they flew about the Forth, their conspicuous black and white plumage at once proclaimed them strangers among the vast flocks of Scaup and Goldeneye. When they alighted on the water a fine view was obtained; and their slender black tails, held jauntily at an angle, were seen without difficulty. Swimming and diving they soon made out to sea, and we watched them until they got beyond the field-glasses. These ducks are mostly seen in the Forth as immature birds and in rather disappointing plumage.

Returning again on 11th February, while we were walking along the east pier a single male Long-tailed Duck flew near, and alighting on the water was unfortunately immediately shot at and wounded by some of the local shore shooters. As it floated about helpless we could see the orange band on the bill and the buff marks on the head and other details of its plumage. It is rather regrettable that this cruelty and useless slaughter should go on. Protesting with the parties concerned has no effect.—DAVID HAMILTON, Edinburgh.

Saury Pike or Skipper (*Scombresox saurus*) in the Firth of Forth.—In connection with a series of natural history talks to schools, I received on 14th December from some of my young listeners in Geddes Public School, Culross, a rare fish, the presence of which in Scottish waters is worth recording. It is the Skipper or Saury Pike, sometimes known in Scotland, it is said, as the Gowdnook or Egyptian Herring. The fish was found washed ashore off the Firth of Forth, near Culross; but the most interesting point in the letter which accompanied it, was the information that the fish was not solitary but was a member of a great shoal which could be seen in the shallow shore water, and the individuals of which could easily be caught by hand.

Although Parnell in his work on the fishes of the Firth of Forth (1838) states that not a single specimen had been seen in the Firth of late years, and although very few occurrences have been recorded since that time, the Saury Pike has almost always appeared in large numbers. In 1768 great numbers were cast ashore at Leith after a November storm; in October and November 1855 vast numbers ascended even to Alloa, and between that town and Kincardine "millions" are said to have been captured; while in the latter months of 1884 the fish was again common in the Firth.

It seems likely that the presence of this Atlantic fish upon our east coast indicates unusual oceanic conditions, and naturalists who are interested should keep a look-out upon the materials cast ashore during winter gales, for this or other strange visitors from other waters.—James Ritchie, Aberdeen University.

A number of Saury Pike were also received at the Royal Scottish Museum. On the 11th December several fish were found on the shore at Cramond. On the 13th a specimen was sent in for identification from Clackmannan. On the 14th two specimens were brought in for identification from South Queensferry, where the finder stated that these fish were being found in hundreds along the shore, and shoals were crowding in the shallow water. The Zoology Department of the University also secured sixty specimens.

The species was also recorded as being taken in the boom nets at Dunmore and Kincardine. In the Press, shoals were reported at Newmills and Culross.

All the specimens received in the Royal Scottish Museum were definitely Saury Pike (*Scombresox saurus*), as also were the sixty specimens received at the University. In the Press a note appeared suggesting that both the Saury Pike and the Garfish (*Belone vulgaris*) were present, and that the shoals at Bo'ness and along the south

coast generally were Garfish. This was certainly not generally true, since the Cramond and South Queensferry fish were, without exception, Saury Pike. It is still doubtful if many Garfish were actually present, since at least one finder has altered his opinion on being shown the distinction between the two species.

The Saury Pike is an Atlantic species which only invades our eastern shores on rare occasions. This year's invasion is part of an influx of other rare creatures, probably caused by abnormal hydrographic conditions. These effects have extended beyond Scotland, since I am informed by Mr Moore of the Marine Station at Port Erin, Isle of Man, that the Saury Pike appeared also in Manx waters, and that this is the first record of such an occurrence.—A. C. Stephen, Edinburgh.

Rare Cuttlefish (*Stenoteuthis caroli*) washed ashore at Buckie.—A large specimen of this rare Cuttlefish was washed ashore at Buckie in the Moray Firth on the 12th December 1932, and was secured and forwarded to the Royal Scottish Museum by Mr Mair. The animal measured 6 feet 2 inches from the end of the body to the tip of the long arm. Until 1925 only four specimens were known, but since that date several more have been found on the east coast of Scotland and in Yorkshire. Little is known of its habits or distribution, but it is probably a North Atlantic species.—A. C. Stephen, Edinburgh.

Little Auk in Dumfriesshire.—It may be of interest to record that I was yesterday sent the body of a Little Auk (very much decomposed) which had been found near Craigs, Dumfries.—Hugh Gladstone, Penpont, Dumfries.

[In *The Field* for 18th March 1933 (p. 545) it is recorded that a Little Auk was caught by an angler's hook at the Fort Augustus end of Loch Ness. The bird had a sprat in its mouth and was impaled by one of the large treble hooks which held the sprat. It had previously been seen diving near the sprats which were being used as lures.—Eds.]

CONTENTS

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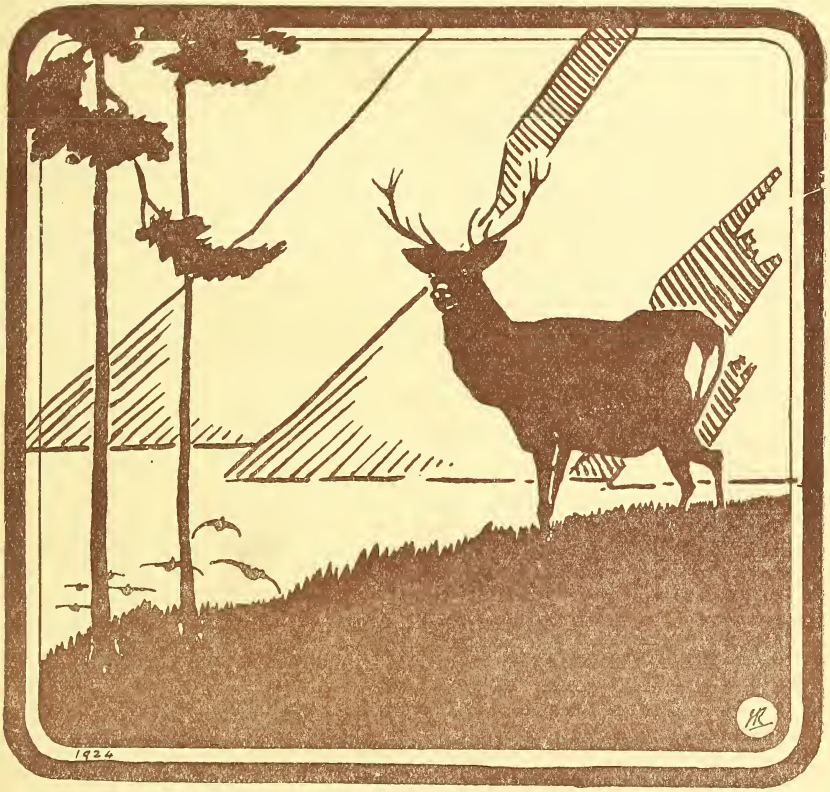

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PETERHEAD SEALERS AND WHALERS: A CONTRIBUTION TO THE HISTORY OF THE WHALING INDUSTRY.

By Dr Robert W. Gray.

(*Continued from p.* 38.)

1879.

1879 was another very open season with a strong south-westerly drift, with the edge of the ice lying far west, and with food for the whales only amongst the pack or broken ice or in the open sea outside. Northerly winds prevailed and in May there was often an easterly swell. A northerly gale which commenced on 6th May lasted six days and blew with a force of 10 on three successive days. Very few whales were seen and only six caught, all at the northern fishing, four by the *Eclipse*, and one each by the *Hope* and *Windward*. At the southern fishing many Finner whales were seen, but with the exception of one seen by the *Windward* no Greenland Whales. Narwhals also seem to have deserted that part of the Greenland Sea. On 6th July in lat. 78° long. 3° W. the *Eclipse* killed a walrus that had just killed a narwhal (for further particulars, see Buckland's *Notes and Jottings from Animal Life*, p. 353). On 15th July in lat. 78° 4′ long. 1° 30′ W. the *Hope* came to a floe on which was a remarkable mound of earth. It consisted of sand and shells and there were some birds' eggs.

From Log of *Hope*.

May 14.—75° 36′ N., 8° 20′ W.: "ship hove-to under lee of point of ice; narwhals and saddle seals seen going N.E."

" 17.—78° 10′ N., 2° W.: "reached N.W. into a bight; a few narwhals, some looms and many mallemauks moving about."

" 19.—79° N., 3′ W.: "ship in a bight; at 3 A.M. saw a whale and had the boats out. At 1 P.M. saw another but it was scared by 'overpulling' (*i.e.*, by too hot pursuit on the part of one of the boats); numerous narwhals; water greasy; a number of birds."

" 20.—78° 51′ N., 3° W.: "no whales seen during the day. All life seems to have left the bight."

" 21.—79° 30′ N., 0° 0′: "colour of water from 78° 30′ to 80° is a dark brown and apparently abounding in whales' food."

" 25.—79° N., 2° W.: "one 'fish' seen during the morning, but owing to the roughness of the sea could not send the boats out. At 10 P.M. saw the 'blast' of another to N.E. but did not see it again."

" 27.—78° 45′ N., 0° 0′: "at 7 A.M. a 'fish' seen but too far off to send the boats."

June 7.—79° 3′ N., 2° W.: "ship lying-to at the pack-edge. At 10 A.M. saw a 'fish' but did not get up to it. 1 P.M. saw another and sent away two boats; 'fish' was scared."

" 9.—78° 44′ N., 1° 30′ W.: "took the ice and got into the floes. 4 P.M. saw a whale and sent away boats but did not catch it; 'fish' was making fast for the W.S.W."

" 15.—78° 30′ N., 1° 0′ W.: "amongst floes; at 3 A.M. sent boats to a 'fish' and got it; another was blundered."

" 16.—77° 59′ N., 2° W.: "ship lying-to at a floe; at 3 A.M. sent two boats to a whale but did not see it again. Saw another but far off and running to N.E. Ice here in great motion to S.W. . . . steaming to N.E. having lost 32 miles in two days."

" 19.—78° 14′ N., 2° W.: "at 4 P.M. reached to the westward and at 8 P.M. changed the colour of the water from green to blue. Ran east."

" 22.—78° 5′ N., 4° W.: "came to the head of a bight. Ice consists of floes; colour of water blue."

" 28.—73° 51′ N., 12° 32′ W.: "at midnight came to a bight of floes (*i.e.*, a bight in the margin of the unbroken ice) and hove-to. We are now in lat. 73° 20′ long. 15° W. and on very good whaling ground."

" 29.—73° 20′ N., 14° W.: "water contains 'rice food' (i.e., *Colanus finmarchicus*); at 2 P.M. swell came in from the S.W. and broke the floes; to avoid getting beset got up steam and steamed south-east till 9 P.M."

July 15.—78° 4′ N., 1° 30′ W.: "came to a piece of ice on which was a large mound of earth. It consisted of sand and shells and there were some birds' eggs."

" 24.—75° 18′ N., 7° 23′ W.: "amongst loose (pack) ice; numerous Finner whales * sporting about."

" 26.—74° N., 12′ W.: "amongst loose (pack) ice; numerous Finner whales sporting about."

---

* Finner whales, *i.e.*, the Blue Whale, *Balænoptera sibbaldii*, often seen amongst the ice off the east coast of Greenland in the summer months.

Aug. 3.—72° 41′ N., 14° 36′ W.: "4 P.M. Liverpool coast in sight, distant 60 miles . . . sea abounding in Finner whales."

" 5.—71° 53′ N., 17° 53′ W.: "8 P.M. Liverpool coast in sight, distant 3 miles; little ice but many Finner whales."

" 10.—"left the ice."

From Log of *Windward*.

May 25.—78° 47′ N., 1° 40′ W.: "ship amongst loose (pack) ice; swell from E.S.E. At 6 A.M. saw a whale and sent four boats in chase. The whale was fired at and missed. At 11 P.M. saw another and lowered boats. The whale was scared by one of the boats."

" 26.—78° 40′, 1° 50′ W.: "amongst loose (pack) ice; swell from E.S.E. At 11 P.M. struck a whale and killed it. Length of bone 11 feet 10 inches."

July 17.—78° 13′ N., 2° 30′ W.: "amongst loose (pack) ice; at 3 P.M. saw a whale."

" 30.—72° 50′ N., 13° 30′ W.: "swell from E.N.E.; about 7 A.M. saw a whale but only once."

1880.

The season 1880 was very different from its predecessor 1879; there was very little south-westerly drift, the ice edge lay far east and large unbroken floes lay on the "whaling banks." In May, to quote the *Hope's* log-book, "the weather was bad for whale fishing; (easterly winds and swell) shutting up the bights in the margin of the ice where whales might be looked for." In June in about 78½° N., 0° 0′, the sea was often green in colour and presumably rich in whales' food. Only five whales were captured: three by the *Eclipse* and two by the *Hope*, the only other ship. The *Hope* got one on 20th June in 78° 5′ N., 0° 40′ E.; and another on 8th July in 77° 39′ N., 1° W. The first is described in her log-book as a "small fish covered with large lice" and the second as "a good sized fish." On 7th July the sea was green in colour and oily in appearance with lots of "blowings" (*i.e.*, quantities of mucus discharged from the blow-holes of whales) floating in it; on the 14th in 76° 45′ N., 3° 36′ W., the sea "had a very fine green colour," and on the 24th in 73° 50′ N, 7° W., it was "very rich and full of whales' food." No whales were seen on the southern ground and on 30th July the *Eclipse* left the ice for home. On 4th August in 69° 18′ N., 0° 8′ E., on the way home, the *Hope*, according to her log-book, came across "an extraordinary number of

hunchback whales; hundreds of them were blowing and feeding all round the ship and under the very bowsprit."

From Log of *Hope*.*

(Colour of Sea from Log of *Eclipse*.)

May 24.—78° 23′ N., 3° E.: "got our gear ready for whaling to-day; guns mounted, lines coiled, etc., weather bad (for whale-fishing—easterly winds) shutting up the bights (in the margin of the ice) where whales might be looked for."

" 25.—78° 36′ N., 3° E.: "ice very tight and water clear and blue, indicating the absence of whales' food."

" 30.—79° 12′ N., 4° E.: "ship in a bight; colour of water blue; a few narwhals seen going north."

June 3.—78° 34′ N., 1° 50′ E.: "ship amongst loose (pack) ice; colour of water blue; some narwhals visible and a little 'food' in the water."

" 4.—78° 34′ N., 1° 50′ E.: "amongst loose (pack) ice; colour of sea blue. Four whales seen during the day."

" 9.—78° 24′ N., 1° E.: "amongst loose (pack) ice; ship lying-to under canvas. No progress can be made to the westward (until the ice opens). Colour of sea green."

" 11.—78° 44′ N., 0° 40′ E.: "amongst loose (pack) ice; colour of water green. Steamed N.W. a few miles; saw a small whale."

" 16.—78° 8′ N., 0° 24′ W.: "ship lying-to amongst small floes and loose (pack) ice; water rich in whales' food. Three whales seen to the westward in a hole of water."

" 17.—78° N., 1° W: "amongst floes; colour of sea green. Three whales seen."

" 20.—78° 7′ N., 3° W.: "amongst floes; colour of sea blue. Four whales seen during the day."

" 22.—77° 55′ N., 2° 50′ W.: "ship locked in a hole of water between large floes. Colour of water blue. Winds from W.S.W. and favourable for opening the ice but it remains unmoved."

" 23.—77° 45′ N., 3° 45′ W.: "ice opening; proceeded under steam through lanes of water between immense floes coming S.E. 40 miles. Colour of sea blue; 5 P.M. made sail and ran N.E. Saw a whale in the evening."

" 24.—78° N., 0° 0′: "amongst floes; colour of sea green. Two whales seen."

" 26.—78° 5′ N., 0° 40′ E.: "amongst floes and loose (pack) ice; colour of sea green. Got a small whale: it was covered with large lice."

" 28.—78° 14′ N., 1° 33′ W.: "amongst floes and loose (pack) ice; colour of sea green. Two whales seen."

July 5.—77° 53′ N., 1° W.: "ship made fast to a floe; water green in places. Two Finner whales seen; an unprofitable and uncatchable variety."

" 7.—77° 50′ N., 0° 30′ W.: "amongst floes; colour of sea green. 12 noon steamed south . . . 7 P.M. stopped steaming and made sail, seeing indications of the vicinity of 'fish.'"

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* The *Hope's* log-book is in the neat hand-writing and perhaps in the language of the late Sir Arthur Conan Doyle, at that time a medical student and the *Hope's* surgeon.

July 8.—77° 39′ N., 1° W.: "amongst floes; water green in places with lots of 'whales' blowings' floating on its surface. 3 P.M. saw a whale; sent away two boats and captured it. A good sized fish."

" 14.—76° 45′ N., 3° 36′ W.: "amongst loose floes and loose (pack) ice; sea a very fine green colour (but no whales)."

Aug. 4.—69° 18′ N., 5° 40′ W.: "fell in with an extraordinary number of hunch-back whales. Some hundreds of them were feeding and blowing round the ship and even under the very bowsprit. Useless for commerce."

1881.

In 1881 the ice again extended far east and was again stationary or drifting slowly south-west, but, in addition to these advantages, to the satisfaction of the whalers there was a "south-east pack," the greatest for very many years. This unusual formation of the ice was possibly due to a failure of the oceanic circulation and the non-arrival of the usual warm water from the south. More whales than usual were seen and 23 (many probably small) caught—14 by the *Eclipse* and 9 by the *Hope*. The latter was through the "south-east pack" and into the "north water" on 27th May "with 250 miles of ice between her and the open sea." On 4th June she was in 79° 24′ and as far north as it was possible to go.* As was usual in seasons of this sort, the heavy or whaling ice, owing to the absence of swell, was all in the form of unbroken floes. In June in about 78½° the water was green in colour and presumably abounding in whales' food. The *Hope* made her first capture on 8th June in 78° 10′ N., 0° 0′; on the 15th (78° 20′, 1° E.) she lost one, but four days later found it floating dead; on the 16th in 78° 14′ N., 2° E. she saw a very large whale, "the half of which was white," but it escaped. The last one was seen on 8th July in 78° 25′ N., 1° W. On the 15th she came out of the ice and on the 28th sailed for home. No whales were caught at the southern fishing; the *Resolute* of Dundee tried to reach the ground but was stopped by large floes of heavy ice. What the ice was like farther north can only be supposed, but in the absence of the usual drift the open spaces were probably few and far between.

* As regards the state of the ice in 1880 and 1881, see my father's paper in the *Geographical Journal* for 1881, p. 740.

From Log of *Hope*.

(Colour of Sea from Log-Book of *Eclipse*.)

May 20.—74° N., 9° 30′ E.: "came to a close barrier of ice and lay-to. No farther progress to the north can be made until there is a break up of the ice. Several icebergs of considerable size in sight."

" 23.—74° 27′ N., 6° E.: "slight swell from S.W. (which is breaking the ice and allowing us to proceed)."

" 27.—77° 35′ N., 7° 9′ E.: "out into the North Water and clear of the south-east pack. There are now 240 miles of ice between us and the Atlantic Ocean."

" 31.—78° 33′ N., 3° 47′ E.: "ship hove-to amongst floes; no whales have yet been seen."

June 5.—78° 14′ N., 5° E.: "at 10 P.M. came to the head of a bight of floes (*i.e.*, a bight in the margin of the unbroken ice)."

" 6.—78° 30′ N., 2° E.: "11 P.M. two whales seen. Sent away the boats but had no success."

" 8.—78° 10′, 0° 0′: "amongst floes; got fast to a whale and had it killed at 4 A.M.

" 9.—78° 22′ N., 0° 0′: "amongst floes; saw two whales but did not get up to them."

" 11.—78° 10′ N., 0° 0′: "kept moving about amongst the floes all day in search of whales but none were seen."

" 14.—78° 29′ N., 0° 30′ E.: "amongst floes; 4 P.M. one whale seen, sent away the boats and caught it. Made fast to the floe and flensed."

" 15.—78° 20′ N., 1° E.: "amongst floes; water green. Got fast to a whale; after taking out five 'lines' (600 fms.) she got loose."

" 16.—78° 14′ N., 2° E.: "amongst floes; water brown. One whale seen, the half of which was white—seemed a very large whale."

" 17.— 78° 19′ N., 0° 0′: "amongst floes; sea green in colour. Four whales seen during the day but had no success."

" 19.—78° 19′ N., 1° E.: "amongst floes; colour of water blue; at 5 P.M. came up to a dead whale . . . found it was the one we got fast to four days ago."

" 22.—78° 20′ N., 1° W.: "amongst floes, water green; at 5 A.M. sent the boats away after a whale and caught it."

" 23.—78° 19′ N., 1° 0′ E.: "amongst floes, water green. Caught a whale. Several others seen but too far away to send the boats."

" 24.—78° 20′ N., 1° W.: "amongst floes; water green in places. Sent the boats after several whales: got fast in three but lost one."

" 25.—78° 25′ N., 0° 30′ W.: "amongst floes; several whales seen in the morning but it being calm had no chance of getting them. Saw several whales in the afternoon and caught two."

July 4.—78° 26′ N., 1° 20′ W.: "amongst floes; water green in places. Saw two whales during the day but did not send the boats after them."

" 8.—78° 25′ N., 1° 20′ W.: "amongst floes; water green. Saw a whale; sent away two boats but did not see it again."

" 28.—68° 11′ N., 14° 20′ W.: "left the ice."

1884.

The season 1884 was an ordinary one, with the edge of the ice in its usual place and with the usual amount of south-westerly drift. During the greater part of May, owing to easterly winds and swell, the ice was closely packed and the ships had to remain outside, but during the rest of the season the winds were from more favourable directions and the ice generally navigable. Whales were met with amongst the ice in lat. 77½° in the end of May and beginning of June and again in about lat. 73° in the end of July. Eleven were caught—seven in the former situation and four in the latter—which yielded 157 tons of oil and 7 tons 12 cwts. of bone. Four ships took part in the fishing, all out of Peterhead.

1884 was my second voyage in the *Eclipse*; unfortunately I have now only got a meteorological log-book with a few scanty remarks to remind me of it. We got four whales in the end of May in lat. 77½° long. 5° W. which yielded 52 tons; and three in the end of July in lat. 73° long. 16½° W. which yielded 51 tons.

The first one we got, and another which was with it, rose near the ship when she was lying under sail in a "water" or open space about 50 miles inwards from the open sea. They were the first I ever saw and I was greatly impressed: they were swimming side by side and taking no notice of the ship. Although their progress was deliberate, next time they rose to breathe they would have been amongst the ice and perhaps out of sight. Unfortunately for them they were being followed by two of our boats, and before they left the surface one was overtaken and a harpoon fired into its back. It proved a fine whale of about 10 feet bone.

For a few days in July the weather was exceedingly fine and at the same time there was a great deal of refraction which gave distant objects—the pieces of ice, one or two accompanying ships, and the distant land—a distorted and weird appearance. At 2 P.M. on the 26th the dry bulb thermometer stood at 55° in the shade and at 71° in the sun and next day, to quote the log-book, "the ice was falling down and breaking up all round (about the ship) with a noise like distant and continuous artillery."

The first one we got in lat. 73° was struck by myself. It happened to rise ahead of my boat and it was an easy matter to give a few strokes and fire the harpoon into its back. Although we got the whale it was a near affair more than once: firstly, the line ran foul and for a time, at the risk of capsizing the boat, had to be allowed to run over the side; secondly, the boat came into violent contact with a piece of ice; and lastly, before another boat came to our assistance, the line had nearly all run out. It proved a fine whale of 10½ feet bone, the first we had seen for six weeks and the first caught at the southern fishing since 1872. Naturally I was very proud when with the aid of the other boats we towed it tail first alongside. I believe its jaw bones still grace a garden somewhere near Peterhead. I think it must have been feeding when it was captured and too intent on its purpose to notice the boat; a turbidity of the water and a light breeze which ruffled its surface at the right moment facilitated its capture.

Another we got at the southern fishing had already been struck by one of the *Erik's* boats, but it broke loose and might have escaped. Unfortunately for itself, after passing under an unbroken floe, a mile or two wide, it rose near our ship and was struck a second time by one of our boats. When the harpooner fired, the boat and whale were meeting one another, and both going very fast. It was a smart piece of work, and a feather in the harpooner's cap. It proved a fine whale of 11 feet bone.

A few days later the *Erik* got a small whale of 4½ feet bone—an unusual size for the southern fishing. When its capture was being attempted it became alarmed and rose in a small hole in a wasted but unbroken floe where it perhaps thought itself safe, but the harpooner carried a harpoon—a hand one changed for the purpose—over the ice and plunged the instrument into its back.

(*To be continued.*)

NOTES ON BIRDS SEEN IN THE RIVER NESS AREA, MAY-JUNE 1932.

By John Berry.

While working on the salmon smolts of the Ness and Beauly Rivers, I spent the greater part of May and June 1932 at Dochgarroch Lock on the Caledonian Canal, and although it was too late in the season for there to be much migration across Scotland by that route, a short summary of my notes on the birds seen may be of some interest in spite of the familiarity of the majority of species.

My regular stay at Dochgarroch, which is about half a mile from where the river and canal leave the loch, began on 10th May, the fourth consecutive day of almost cloudless sunshine. There is such a dense jungle of broom and whins covering the banks near the loch that small birds were never easy to see, but Oystercatchers, Lapwings, Gulls and Common Sandpipers were then, as throughout the time I was there, in considerable evidence, and the numbers of the latter were really remarkable. Swallows and House-Martins were plentiful, and in addition there seemed to be a considerable migration northwards down the river amongst which were several parties of Swifts, the first I had seen that season.

On the following day I motored up to a small loch near Abriachan, where I saw Mallard, Tufted Duck, and a single Scoter drake; but except for the arrival of an enormous number of Sand-Martins *via* Loch Ness on the afternoon of the 13th, the rest of the week provided little to record.

The evening of Monday 16th, which was fine after a day and two nights of torrential rain, provided a great ornithological thrill. At 19.15 (7.15 P.M.), just before the last haul of our smolt net, an amazing bird flew across the canal on to the narrow strip of land which separates it from the river. In the distance it looked like some species of tailless magpie owing to its very pale wings with a dark posterior margin. For nearly half an hour I stalked it through the whin bushes but could never see it after it had

settled; finally, however, I spotted it and crawled to within a couple of yards. It was standing in an attitude of devotion with its great beak raised to heaven, and remained motionless for several minutes, finally flying right away over the hill to the north. I must confess that it was not until I had had a detailed description of the bird identified that I realised that I had been face to face with a Little Bittern, a species of which I had had no previous experience.

The following day was cloudless, and the hottest so far recorded, being 76° F. in the shade. I found a Pheasant's nest and a Partridge's nest in danger of being washed away by the rising river, in spite of which both birds were still sitting; but numbers of Oystercatchers had evidently lost their eggs, and a pair of Greenshank which were calling incessantly at the end of the loch had possibly suffered a similar misfortune.

The weather for the next week was very much colder, with frequent heavy falls of rain but bright intervals. No birds worthy of record were seen, but the Greenshank seemed to have made a new nest on a large whin-covered shingle bank in the river—the chief breeding ground of the Oystercatchers and Sandpipers. Woodcock were to be heard and seen any evening about this time, and Cuckoos were incessant up in the shelter of the oak woods.

On the 27th the first brood of Pheasants appeared, and in the evening the first brood of Mergansers came down from the loch. Odd birds of this species had been seen almost every evening flying up and down the river at a great height, as an unceasing war is waged against them by the water-keepers; but in spite of this relentless persecution a number of broods are hatched on the lochside, and many of these are taken straight down the river to the comparative safety of the coast by the parents as soon as they are hatched.

Although the Mergansers were certainly most inimical to the parr, smolts, and young trout, by far their worst enemies were the Black-headed Gulls which, to my surprise, unquestionably accounted for very large numbers of fry, in search of which they were constantly swimming about in the shallow water or hovering over the pools, and the

stomach of one of those I dissected contained a smolt over four inches long. The gulls were now joined by numbers of terns which were the most destructive of all, taking a smolt or young trout from the weir pool about once every two minutes until one thought they would burst. I subsequently found their breeding ground farther inland, and the members of that colony seemed to rely upon Loch Ness and the river for practically the whole of their food supply.

On the 30th the river was sufficiently low to make it possible to wade out to the shingle bank already referred to; although I spent over an hour there, however, I only found a very few nests, including an Oystercatcher's with two eggs, and a Sandpiper's with four; but I was handicapped by the large number of stunted whin-bushes as I had stupidly left my shoes behind. There were several pairs of Pied and Grey Wagtails, and a single pair of Yellow, of which, however, I could not find the nest; nor could I discover that of the Greenshank, although judging from the behaviour of the parents I must have been close to it.

Another week elapsed without any birds of interest being seen, but on 2nd June I had an amusing encounter with Weasels. In the morning I had met an adult carrying a mouse, and at almost exactly the same place some hours later I was confronted by a young Weasel which stood up on the path and spat at me! I took it home in my pocket to show to some children, and was taking it back to where I found it when I again met the adult, this time dragging a large rat which it left on seeing me. I have never before handled a live Weasel, and I was rather surprised that this one did not exude the stench usually associated with them.

On 5th June I saw the first brood of Capercailzie, and spent some time trying in vain to get photographs of Great Spotted Woodpeckers which, although fairly plentiful in that district are, like the Crossbills, not always easy to see in the dense pine woods.

The weather throughout the rest of the week was dry and very warm, and on the river, which had fallen to summer level, Mallard, Teal, and an occasional Wigeon were to be

seen almost any evening, the drakes now well into eclipse plumage, although the Mergansers seemed scarcely to have begun to moult. The majority of the Oystercatchers and Sandpipers appeared to have hatched, and on the summit of a neighbouring hill I saw young Golden Plovers already well feathered. On the 12th I watched a Merganser with a well-grown brood of fourteen—a striking contrast to Caithness, in which county I photographed a newly hatched brood on the 22nd of July the same season.

For the remainder of my stay the weather was almost cloudless, and the shade temperature which had reached 78° F. by the 14th, rose to 86° F. on the 16th, and to 88° F. the following day, this being almost a record for the season. Few birds were to be seen in the valley, but on the 18th, on an expedition to the hill lochs round Loch Dun-Seilcheig, I saw numbers of duck with broods, but almost exclusively Mallard, Teal, Tufted Duck, and Mergansers.

We saw no sign of Great Crested Grebes which are said to have been seen in that district, but on Ashie Moor found Black-headed and Common Gulls and Common Terns nesting in considerable numbers between 700 and 800 feet, nests with eggs, but no young being seen.

Spring Migration at Sule Skerry, Orkney.—During the spring migration this year large flocks of Snow Buntings were seen, also two Blackcaps, one Redstart, six Grey Wagtails, one Corncrake, one Water Hen, two Barn Owls, several Woodcocks and an unidentified speckled bird about the size of a Blackbird, with a long tail.—H. W. Robinson, Lancaster.

Fulmar Petrels on Sule Skerry, Orkney.—In the Scottish Naturalist, 1929, p. 14, I mentioned the fact that during the summer of 1928 six pairs of Fulmar Petrels nested on the island of Sule Skerry, Orkney, where they arrived a few years before and increased by about a pair each year. Last summer (1932) only five pairs nested there, but this year there has been a large increase, no less than twenty-seven birds being counted.—H. W. Robinson, Lancaster.

ON THE CHANGES IN THE DISTRIBUTION OF WILD DUCKS IN NORTH UIST (BOTH THE SURFACE FEEDING AND NON-SURFACE FEEDING DUCKS).

By George Beveridge.

Some changes in the distribution of British Wild Geese have been noted recently in the Scottish Naturalist. A survey of British Wild Ducks would be interesting at the same time as Wild Geese are under consideration. Many changes have taken place in the bird-life of North Uist during the past twenty years, and especially is this to be noted with the Duck family. At Griminish, in the north-west corner of the Island, there lies a loch named Olivat some thirty-five acres in extent. This loch is somewhat deeper than those in the neighbourhood and contains sulphur springs. Fish will not live in it. In the days before the War, during the winter months I have seen the following species feeding on the loch at the same time—Mallard, Teal, Wigeon, Gadwall, Tufted Duck, Golden Eye, Pochard and Mergansers. Wigeon were numerous then and Mallard were to be found in fair numbers. Teal have always been extremely local. The Gadwall was found in flocks of 20 to 30, and Pochard were seen regularly but in smaller numbers. It is some years since I saw a Pochard here, and the Gadwall had not been seen by the writer for several years until October 1932, when three were observed on Loch Olivat. On a loch some two miles west of Griminish, Golden Eye were at one time plentiful. They are now seldom met with. A few days after the three Gadwall were seen, seven Golden Eye flew over my head as I was walking along the main road not far from Griminish. Tufted Duck were never common, only a pair or two seen at one time. On the other hand the Red-breasted Merganser was common and has not diminished in numbers. During the autumn and winter of 1932 Mallard and Wigeon were to be found on Loch Olivat in larger numbers than for several years

past, but with the exception of the Gadwall no other varieties of Duck have been observed. Indeed, one day recently as many as 150 Wigeon were seen flying off this loch. The question is, What has become of the other rarer ducks?

It is very difficult to approach ducks on this water so as to stalk them. It is equally difficult to drive them successfully. Three guns are required for the latter course, and even then the chance of anyone getting a shot is problematical. When driven off, the birds circle round the head of the loch till they reach a considerable height and then fly off to sea, usually out of range. It is obvious then that little harm can come to them from the hand of Man. There is a large "skerry" at the mouth of the Sound which divides Vallay from the mainland of North Uist, and here among sheltered pools in the rocks safety and comfort are provided alike. Duck are not so much in evidence along the shores in bays and creeks as they were at one time, nor are they to be found on the "fords" or large strands which are intersected by streams and pools at low water to the same extent as in former years. The Wigeon grass (*Zostera marina*) is not nearly so abundant, and in some places where it used to be found growing luxuriantly it has disappeared entirely. There is no doubt that Wigeon depend on this seaweed to a great extent for their food supply. Both Mallard and Wigeon have changed their habits at "flight" time. The potato ground and corn stubble appear to attract them less, and after dark the birds seem to be always on the water, not on lochs or small pools but on the sea or on the channel between Vallay and the main Island. There is a pool, a mere puddle indeed, close to the house where duck and geese were in the habit of resorting of an evening. Now, it is seldom that either a duck or a goose is found there either at "flight" time or during the day. For some time past I have cut up potatoes and spread them round this pool during the winter. There has been little or no result. The potatoes are eaten by something in a short time after they have been put down, but obviously not by Duck, as no trace of feathers or droppings is to be found there. While on the subject of "flighting" for Duck, it may be of interest

to note that during the last two years three Shovellers have been obtained here. The first was shot on the pool already mentioned on 3rd August 1931; it was an immature drake and was one of a pair. The second occurrence was on 24th November 1932 when two pairs came into Vallay Loch at evening "flight" time and a beautiful drake and a duck were bagged. This duck in my experience is rare in North Uist, and these are the only specimens procured on this property during the last thirty years.

The Eider has increased considerably during the last few years. It nests freely here now and seems quite fearless as to its nesting site. Some years ago the nest was always made in some well-hidden place and was elaborate in its construction, being lined thickly with down; and when the mother left the eggs for a time in search of food, she always covered them with down. Last year I found some thirty nests: some had no down at all in their structure, some very little, but not one of them so complete as they were some years ago. In one case only was a nest and eggs covered with down during the absence of the old bird. Again, the sites of the nests were not chosen for concealment. They were nearly always on high ground, generally bare ground near some landmark—a rock or something—perhaps chosen by the mother as a guide to her home.

It is questionable if this confidence of the parent is justifiable, as there are many rats all round the shores which are bound to be a considerable menace to the young birds. During July and August, it is true, large numbers of Eider and their families are to be found in the sheltered bays, but the mother seldom appears to have more than two or three young ones with her. She generally lays four eggs, and not infrequently five are laid to my certain knowledge. The Sheldrake maintains its numbers and nests in the rabbit holes which now abound in this Island. The Long-tailed Duck arrives in the late autumn as usual and remains well into April, and is unchanged as regards numbers. But the question still remains, What has happened to the sporting ducks, such as the Mallard, Teal, Gadwall and Pochard? The Wigeon are still in fair numbers though their habits

have changed. Can it be that there is too much disturbance in these days in every part of the world? I do not refer to these Islands, and indeed here in the Outer Hebrides there is, I am convinced, less shooting and disturbance than there was twenty years ago. Iceland occurs to me as a country which has some significance. Some years ago it was opened up as a sportsman's hunting ground, but I have no idea as to how much it has been shot over and disturbed in the breeding season; but the fact that Bernacle Geese which at one time were plentiful in these Islands and which presumably came from Iceland have decreased to an alarming extent, and this may apply to Duck also.

Arrival of Puffins on Sule Skerry, Orkney.—In older issues of the SCOTTISH NATURALIST the late Mr James Tomison has recorded how the Puffins arrive at Sule Skerry every year; how they appear off the island some time before they land, coming close inshore during the day and drifting out to sea at night; how they land at last and stay only a few hours, to depart again for two or three days before landing for good. I give below the dates for the years 1896-1902 as given me by Mr Tomison, also those for 1907, 1931, 1932 and 1933:—

	First Seen.	*Landed.*		*First Seen.*	*Landed.*
1896 . .	April 15	April 20	1902 . .	April 9	April 18
1897 . .	„ 14	„ 22	...		
1898 . .	„ 8	„ 22	1907 . .	„ 9	„ 16
1899 . .	„ 7	„ 16	...		
1900 . .	„ 12	„ 18	1931 . .	„ 9	„ 16 to 18
1901 . .	„ 10	„ 18	1932 . .	„ 8	„ 16 to 18
			1933 . .	„ 8	„ 16

This year, between 8th and 9th April, there was a heavy gale from the N.E. It will be seen that the dates thirty-seven years ago are not very different from those of the present year. Of these Puffins, 1119 have been marked with rings.—H. W. ROBINSON, Lancaster.

SOME PERTHSHIRE DIPTERA.

By F. W. Edwards, M.A., Sc.D.

(*Continued from p.* 92.)

Tipulidæ.

Tipula macrocera, Zett. This was found often very abundantly, on all the hills climbed from about 2300 feet upwards, but few or no specimens were seen below this level. Females were observed ovipositing in large numbers, usually in wet or damp moss of various kinds, but also in bare damp earth away from springs or streams. On one occasion a ♀ of this species (apparently rather old and worn) was observed pairing with a ♂ *T. subnodicornis*, Zett. By 17th June *T. macrocera* had entirely disappeared.

Tipula subnodicornis, Zett. As usual this was extremely abundant wherever cotton grass grew, though above 2500 feet it was usually more or less completely replaced by *T. macrocera*.

Tipula cheethami, Edw. Very common on several hills (*e.g.* Creag na Caillach, Beinn Heasgarnich), usually about springs and small waterfalls, 1500 to 2500 feet. Numerous pupal skins were found sticking out of wet moss on rocks. The sternopleural hairs of this species were found to afford a ready means of distinction from *T. alpium* under a hand lens.

Tipula alpium, Bergr. Not seen until the middle of June, when it became abundant.

Tipula varipennis, Mg. Rather surprisingly this was common above 2000 feet in the middle of June, although it had not been seen previously in the valleys.

Tipula excisa, Schum. Search was made for this species in likely situations, but it was not discovered until 17th to 19th June, when males (but no females) were found in fair numbers on Meall Ghaordie and Ben Vorlich. A few days later Messrs Tams and Benson obtained both sexes commonly on Ben Lawers and Kings Seat (Lawers range), the females being normally winged. This disposes of the suggestion previously made that in Britain *T. excisa* might have a subapterous female; the fact that only males had been found on previous occasions is evidently merely due to the species being protandrous (as are some other species of *Tipula*—perhaps most).

Dicranomyia caledonica, Edw. Abundant among rushes on a small area of damp hill-side at about 1500 feet on Beinn a' Chreachain. No other species of the *morio* group was seen at this spot.

Dicranomyia occidua, Edw. Abundant on Meall Ghaordie at about 1000 feet, again among rushes on a boggy slope; in company with a few *D. caledonica* and many *Orimarga alpina* and *Limnophila filata*.

Dicranomyia stylifera, Lack. One male in a bog on the pass above Lochan na Lairige. An interesting addition to the British list, recently described by Lackschewitz from Austria, and the only European member of the *morio* group not hitherto found in Britain.

Orimarga alpina, Zett. The series from Meall Ghaordie shows some variation in wing-venation, *r-m* being sometimes just before instead of just beyond the first fork of *M*.

Rhabdomastix schistacea, Schum. On stones and rocks in bed of River Lyon; also in stream at foot of Ben Chalum.

Molophilus gladius, de Meij. Glen Lyon, near Cashlie. Only two other British records (Austwick, *Cheetham* and Oxton Bogs, Notts., *Carr*).

Pedicia rivosa, L. Last year I reported that the only form found in the highlands was the one in which the broad dark streak along *Cu* is continued to the wing-margin (whereas in the ordinary lowland form this streak is faint on the distal part of *Cu* beyond *m-cu*). This year both forms were found, together with intermediate specimens, on various high mountains bogs (*e.g.* on Ben Lawers and Beinn a' Chreachain). All the females taken, however, have the wings noticeably short and narrow.

Dicranota guerini, Zett. Common in springs and boggy places above 2500 feet. Ben Lawers, Ben Heasgarnich, Beinn nan Eachan, Ben More.

D. (*Rhaphidolabis*) *exclusa*, Walk. Common by rills on Beinn a' Chreachain, 1500 feet. One specimen shows an interesting venational anomaly, M_3 curving upwards at tip and ending well before the margin in M_2.

Tricyphona unicolor, Schum. Common on Beinn a' Chreachain in company with *D. exclusa*. None of the six specimens preserved has the discal cell closed on either wing.

Tricyphona immaculata, Mg. In contrast with last year's experience, no noteworthy venational anomaly was observed in this common species.

Tricyphona claripennis, Verr. Common by mossy springs on Meall Ghaordie above 2500 feet, also on Creag na Caillach above 1500 feet. Almost every one of the twenty-nine specimens preserved shows some venational anomaly, and the variation is very remarkable. The veins most affected are R_4 and R_5, which tend to be more or less fused from the base, and often also at the tip; sometimes the

veins merely touch at their tips, but often the fusion is extensive, leaving a longer or shorter oval cell, which may be divided by one or more cross-veins; in one extreme case R_4 and R_5 are completely fused, the resulting single vein being merely somewhat sinuous. The discal cell is as often open as closed, the manner of closure being very varied. Cell M_1 is variable in length and in one or two cases is absent; in another case where the cell is present M_1 has a short secondary fork. A few of the more striking variations are figured (fig. 2).

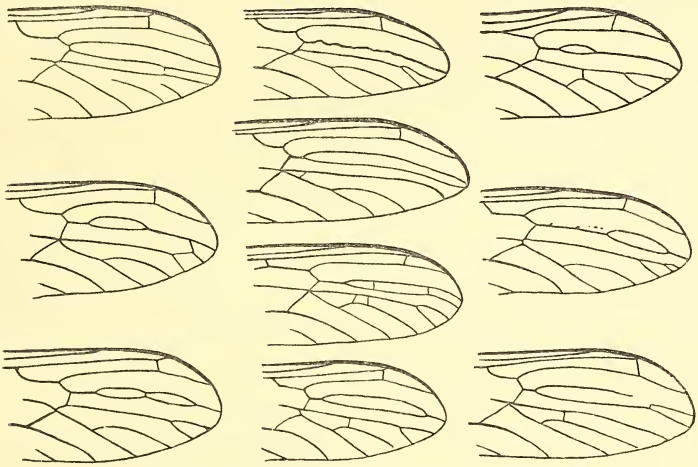

FIG. 2.—Venational variation in *Tricyphona claripennis*, Verr.

EMPIDIDÆ.

Empis borealis, Linn. Abundant in several localities near Killin usually at about 1500 to 2000 feet, seldom seen above or below this altitude. On 31st May many males were found flying with prey, which included 15 stone-flies (several species, undetermined), 1 sawfly (a large species, somewhat resembling the stone-flies) and 1 *Tipula subnodicornis*, Zett.; the method of capture of the prey was not observed, but they were presumably picked off the ground as no stone-flies were seen on the wing. On 3rd June females of *E. borealis* were seen flying together in a small swarm, and feeding in numbers on sallow catkins; no males observed. On 18th June none could be found at the spot where they were abundant on 3rd June, although Mr K. G. Blair took a pair on Ben Lawers.

Empis lucida, Zett. Occurs chiefly above 2000 feet, usually in small numbers. Males taken with prey were mostly carrying *Empis*

verralli, Collin, this last being very abundant on all the hill-tops. One was taken with a stone-fly, above the spot where *E. borealis* was also capturing stone-flies.

Rhamphomyia fumipennis, Zett. Four males on Meall Ghaordie, hovering with prey (in each case *Empis verralli*) close to the ground over a small piece of fresh dung; also a pair on Beinn Heasgarnich.

Clinocera barbatula, var. *securigera*, Engel. This apparently uncommon species (previously unrepresented in the British Museum collection) was found about small waterfalls at 1500 to 2000 feet on Creag na Caillach.

Hydrodromia nivalis, Zett. This species (first recorded as British from three specimens taken on Ben Nevis in 1931) was found again on several hill-tops (Beinn nan Eachan, Ben Lawers, Ben More, Beinn Heasgarnich, Beinn a' Chreachain). Most of the specimens were found on wet stony and mossy slopes, especially below melting patches of snow, always above 2800 feet. Two of the thirty specimens collected lack the radial cross-vein on one wing.

Hydrodromia wesmaeli, Macq. Common about springs and small falls above 2000 feet (sometimes below this); also on patches of wet ground in company with *H. nivalis*. The allied *H. fontinalis*, Hal., did not occur at the higher altitudes, but was found once or twice in the valleys.

Dolichopodidæ.

Dolichopus maculipennis, Zett. Verrall in his synopsis of British Dolichopodidæ (1904) suggested that this species "ought to occur in Scotland," but it has not hitherto been found to occur with us. We found it in fair numbers on wet, black mud of partly-dried pools in peat at about 2000 feet on Stuchd an Lochain, 15th June; specimens were also taken on Creag na Caillach, Meall Ghaordie and Ben Chalum. The species is very distinct in the male sex by the dark shade across the wing well before the tip; in the female this marking, though present, is less obvious. At lower altitudes *D. maculipennis* was represented by the common *D. atratus*, Mg.

Hydrophorus rufibarbis, Gerst. Apparently the only previous British record of this species is that of a male taken by Verrall at Braemar in 1873. We obtained a pair on the upper part of Meall Ghaordie, 17th June. Only lack of time and the difficulty of catching the insects as they skimmed over the water of the pools prevented us from obtaining a good series.

Phoridæ.

Although members of this family were abundant on all the hills, little attention was paid to them because of the time and care

needed for their collection. However, about thirty specimens were taken as a small sample of the fauna. Among these ten species were represented, no fewer than five of which (kindly determined by Father Schmitz) are new to the British list: *Phora præpandens*, Schmitz (1 ♂, Beinn a' Chreachain; 1 ♂ 1 ♀, Ben Vorlich); *Megaselia eccoptomera*, Schmitz (2 ♂ 1 ♂, Meall a' Churain); *M. atrosericea*, Schmitz (4 ♂, Meall nan Tarmachan); *M. fuscipalpis*, Lundbeck (1 ♂ 2 ♀, Ben Lawers; 2 ♀, Beinn a' Chreachain; 2 ♀, Meall a' Churain; 1 ♀, Beinn nan Eachan); *M. sepulcralis*, Lundbeck (1 ♂ 1 ♀, Beinn Heasgarnich; 1 ♂ 1 ♀, Beinn a' Chreachain; 1 ♀, Ben Lawers). Of these five species, Father Schmitz states that the first two have previously been found only in Finland, the third in Finland and North Tyrol.

Syrphidæ.

Melanostoma mellinum, L. The small melanoid form which was recorded by Verrall as *M. dubium*, but which in Mr Collin's opinion is merely a form of *M. mellinum*, was common among cloudberry on Meall Ghaordie and several other hills at an altitude of about 2000 to 2500 feet. Females of this form are more or less completely blackish, and seem proportionately broader than the usual form; males have the yellow markings smaller and less distinct, the pair of spots on the second segment being absent or very small. Very few specimens of the typical form were found at the higher altitudes and none of the dark form in the valleys. On Stuchd an Lochain a small swarm of males of the dark form flew persistently round my head—peculiar behaviour for a Syrphid.

A Drowned Otter.—Probably no vertebrate is less exposed to risk of death by drowning than the Otter. Early on a summer morning my gardener saw an Otter pass down to the White Loch of Myrtoun dragging a rabbit-trap on its leg. It swam out towards an island in the loch, and I sent a gamekeeper to put the poor beast out of pain. He did not have the chance of doing so. The Otter had dived under some submerged branches among which the trap got hitched, and the Otter was drowned. We recovered the corpse, and I was glad to find that the trap was not one of ours.—Herbert Maxwell, Monreith.

NOTES

Gannets in Shetland.—I think one or two points about the Shetland Gannets which I learnt when there in 1932 are worth recording. (1) The R.S.P.B. Watcher on Noss, James Jamieson, assures me that the colony of Gannets on the Noup of Noss, which is now a large one, began with one pair in 1914, not with four pairs in 1915 as recorded; (2) There are now at least four colonies of Gannets in Unst, viz. (*a*) Vesta Skerry (not the Stack known as "The Rumblings" as recorded, but close to it), (*b*) Humla Houls (not Humla Stack as recorded), (*c*) Burra Stack, and (*d*) Neapna Stack.

Charles Smith, the R.S.P.B. Watcher on Hermaness, informs me that Gannets also were constantly to be seen during the summer of 1932 on The Greing, but he cannot be sure if they nested there. The Rumblings and Humla Stack, he tells me, are not, and to the best of his belief have never been, occupied for nesting.

There were many Gannets in June on the Saxavord cliffs on the east side of Burra Voe, but it was not possible to say if it was another breeding colony. I expect it will be soon, if the birds increase at their present rate.

On 12th June last, Dr S. H. Long of Norwich and I saw a Song Thrush sitting on her nest in a wall at Buness House, Balta Sound.

We were in the district of Walls too early for the nesting of the Common Scoter, but we saw a good many of them. Some of them on Loch of Grunnavoe and Loch of Flatpunds (where I saw young birds in 1931) were in pairs; others on Browland Voe were constantly engaged in courtship displays.—A. Holte Macpherson, Kensington, London, W. 8.

Hawfinch in Midlothian.—A male Hawfinch flew into a window pane at Southfield Sanatorium Colony, was apparently stunned, and died soon afterwards (11th May 1933). It was found by the Medical Superintendent, Dr John C. Simpson, by whose instructions it was offered to the Royal Scottish Museum.—C. Clayson, Southfield, Liberton.

[This bird has been preserved in the collection of the Royal Scottish Museum. A few days later we noted a letter in the *Scotsman* stating that the body of a male Hawfinch was picked up in a garden in the Liberton district. We are not aware whether this refers to the same bird or not.—Eds.]

NOTES ON PERTHSHIRE ANTHOMYIIDÆ, ETC.

By J. E. Collin, F.E.S.

Some notes are given herewith on the more interesting of the Anthomyiidæ collected by Dr F. W. Edwards in Perthshire in June 1932. The first five species discussed are all new to the British list, as is also the Cordylurid mentioned at the end of this paper.

Phaonia subfuscinervis, Zett. (Insecta Lapp. p. 673).

A species closely allied to *P. consobrina*, Zett., and until recently considered by my friend Mr O. Ringdahl (whose knowledge of these boreal Anthomyiidæ is unrivalled) to be a synonym of that species, though he is now of the opinion that it may be distinct. It is a rather greyer insect with the eyes in male less approximated than in *consobrina*, the frons at narrowest part being quite as wide as third antennal joint; arista with rather shorter hairs; abdomen with shorter and weaker bristles, especially on fifth tergite; posteroventral bristles on middle femora shorter. In the one hind leg present on Dr Edwards' specimen there is a posterodorsal bristle at about middle of hind tibia in addition to the usual (more dorsal) bristle, typical of *Phaonia*, nearer tip.

The *consobrina* ♀ recorded by Lundbeck from Greenland (*v.* my note in *Ann. Mag. Nat. Hist.*, 1931, p. 79) may be the female of *subfuscinervis*.

This species was originally described from northern Scandinavia, and Dr Edwards caught one male on Beinn Heasgarnich between 2900 and 3500 feet elevation on 11th June 1932.

Prosalpia atronitens, Strobl (Verh. z.-b. Ges. Wien, 1893, p. 254).

A very distinct shining black species with wide cheeks, short antennæ, very large, convex, *not* notched, lobes to fifth abdominal sternite in male, and peculiar end to abdomen in female. There are usually a few small bristles (variable in number and size) behind the hind tibiæ, and the female front tarsi are not stouter than in male. In both sexes the posteroventral bristles on hind femora are longer than femur is thick. The female has a shining black patch on frontal orbits opposite base of antennæ, fifth (last visible) abdominal segment more polished black than others (except on side-margins), its sternite particularly broad at base, flat, and triangular, with slightly rounded corners.

Strobl described this species as a *Chortophila* from a pair taken at 5000 feet on the Gr. Bosenstein in the North Styrian Alps.

Colonel Yerbury caught two females on the summit of Grey Fell (Rannoch) in June 1898, which in the absence of the male remained unrecognised in my collection. Dr Edwards found it to be a common species above 2500 feet elevation on the mountains in the Killin District (Perthshire),* while Mr Ringdahl informs me that it occurs on the higher mountains in northern Sweden, and he agrees with me that its correct position is in the genus *Prosalpia.*

Chirosia montana, Pokorny (Verh. z.-b. Ges. Wien, 1893, p. 17).

Resembling *crassiseta* in having small lobes to fifth abdominal sternite in male, but in shape and colour more like *parvicornis.* Antennæ shorter and broader than *crassiseta.* Whole insect blacker, less dusted, especially on abdomen; genitalia lying well beneath fifth tergite; lobes to fifth sternite small but distinctive, being curved, blunt-ended projections, convex on lower side, entirely devoid of long hairs or bristles. Legs with only short bristles; front tibiæ without bristles except the very short apical ones; middle tibiæ with 1 anterodorsal, and 1 to 2 posterodorsal; hind tibiæ 1 to 2 very small anteroventral, 3 to 4 anterodorsal, and 2 posterodorsal bristles. Wings rather short and broad, somewhat brownish on costal half. Halteres yellow. Length about 3 mm.

Pokorny described this species from one male taken on the Stilfser Joch. Kowarz recorded it in the same year from Hardegg in Lower Austria, and made it the type of a new genus *Rhadina* which has not been accepted as distinct from *Chirosia*, Rdi. Dr Edwards' two males were taken at Glen Lochay (Perthshire) in June.

Delia latifasciata, Ringdahl (Ent. Tidskr., 1926, p. 117).

A species of the *brassicæ* group, without the dense anteroventral pubescence about the base of hind femora (so conspicuous in *brassicæ*), and with a distinct anterodorsal bristle on middle tibiæ, usually absent in this group. Hind femora with an anteroventral row of long distinct bristles much as in *floralis*, but the lobes of fifth abdominal segment of male are without the very long bristles of that species, or the long pendant bristly hairs of *pilipyga*, in addition neither *floralis* nor *pilipyga* possess the anterodorsal bristle to middle tibiæ of *latifasciata.*

There is a male of this species in the Cambridge University Museum taken by Mr Francis Jenkinson at Flowerburn, Fortrose

* Though common early in June on all the mountain-tops, *P. atronitens* was becoming scarcer and was represented chiefly by worn females by about 18th June. Many specimens were taken at flowers of *Saxifraga oppositifolia.* The silvery white face is very conspicuous in life.—F. W. E.

(Ross-shire), in 1918. Dr Edwards captured another male at Glen Lochay (Perthshire) on 8th June 1932.

Delia fasciventris, Ringdahl MS.

A true *Delia* allied to *carduiformis* Schnbl., not yet described by Mr Ringdahl. Three males and a possible female were taken by Dr Edwards at 2000 to 3000 feet elevation in different localities in the Killin District (Perthshire).

Limnophora uniseta, Stein. A pair on lower slopes of Ben Chalum. Only one previously known British specimen.

Limnophora triangulifera, Zett. Females were fairly numerous by a patch of melting snow near summit of Beinn a' Chreachain, and were also found on Meall Ghaordie. A male (one of several) was taken flying on the summit of Ben Vorlich.

Fannia atra, Stein. *Syn. F. carteri*, Malloch (*femorata* Mall. *nec* Lw.). One male in Glen Lochay.

Stein had only two specimens before him when he described this species, neither of them, according to his own statement, in such condition as to enable him to give a full description of the chætotaxy of the legs; Malloch's remarks, therefore, when describing *femorata*, that *atra* Stein differed "in many particulars . . . in the arrangement of the bristles . . . and in the absence of the thickening of the femora," is not so important as it appears to be.

I have studied Malloch's type and find that the weak bristle close to each of the usual single antero- and postero-dorsal bristle on the middle tibia, might very easily be overlooked; the only other bristles not mentioned by Stein are the "about six long hair-like bristles" on the basal two-fifths, posteroventrally, on hind femora, probably not easily seen in Stein's specimens. There is a short bare space between these bristles and those further along the posteroventral surface, on the thickened part of the femur. Stein also does not mention this thickening, but it is not very marked in Malloch's type specimen. It therefore appears very probable that the synonymy given above is correct.

Pegohylemyia humerella (Zett.), Stein.

This name is in our list on the authority of Meade, but it is by no means certain from the descriptions that Meade's specimens (or even Zetterstedt's) were the same species as that described by

Stein, because of their statement that the mouthedge (or epistoma) is prominent. However, Stein had seen Zetterstedt's specimens, and one must presume that he found examples of the species to which he restricted the name *humerella*. It is a species variable in size, usually small, and not unlike a small *Egle* but with the epistoma by no means prominent. The male is easily recognised by the curved spur-like end of upper lamellæ (or mesolobe) of the genitalia, and the broad square-ended side-lamellæ. The female is equally distinct in having a laterally compressed chitinised ovipositor similar to that of species of *Phorbia* (Dsv.) Karl, from any species of which it may be primarily distinguished by the absence of the anteroventral bristle to middle tibiæ.

It is apparently not uncommon in Scotland. Mr Verrall found it at Aberdeen and Tongue so long ago as 1884, and Colonel Yerbury at Aviemore in 1904 and 1913, while Dr Edwards brought home numerous specimens from the Killin district, mostly taken above 2000 feet altitude. It also occurs in Wales for I possess a specimen taken by Mr Verrall at "Bettws" (probably Bettws-y-Coed) in June 1887. Schnabl and Dziedzicki, who figured the male genitalia, placed this species in the genus *Pegomyia;* but I cannot agree with this because *humerella* has the costa bare beneath, and the male possesses tiny bristles *on* the frontal stripe (or interfrontalia). It is certainly not a very typical *Pegohylemyia*, but its internal genital organs favour its retention in that genus.

Gonatherus planiceps, Fln.

A pair on Ben Lawers, two females on Stuchd an Lochain, and a female on Meall Ghaordie ; all about 3000 feet altitude.

This Cordylurid genus of the sub-family Cordylurinæ is not easily identified by Becker's Table of Genera in *Berl. Ent. Zeits.*, 1894, p. 85. In the first place the palpi are distinctly dilated, while Becker includes it under "Taster . . . fadenförmig"; there is further difficulty under his couplet "6," because the male apparently may have a fine anterior sternopleural bristle in addition to two posterior bristles, and as Becker makes the presence of two or three sternopleurals a primary distinction, it is by no means clear how *Gonarcticus* another boreal genus differs from *Gonatherus*, except that it always has three sternopleurals and apparently two intrahumerals (in addition to a presutural), while *Gonatherus* has only one. Finally Becker gives *Gonatherus* "3" sternopleurals in the generic description when he obviously should have given only "2."

G. planiceps is very much like a dull grey *Amaurosoma*, but the arista is geniculate in both sexes with a much lengthened second

joint; the wings are somewhat clouded along the costa and on cross-veins, while the apparent fifth segment of female abdomen is tawny in colour and shining, in strong contrast to the dull grey other segments, and the shining black sixth segment is produced below to a sharp point.

The species is found in Central Europe as well as in Scandinavia.

NOTES

Cormorants at Duddingston Loch.—Several times during February last, Cormorants were observed at Duddingston Loch. This Loch, though situated quite near the Forth, is comparatively seldom visited by this species. During the month mentioned single birds were seen on several occasions. On the 25th, when the loch was partly frozen over, two birds were seen. Both were light-breasted varieties and they were fishing in one of the open spaces in company with two Goosanders and numerous Pochards. On the same date another bird was observed perched on a stone at the side of the loch, just below the road, with wings extended to dry in the breeze. Previous to this the only other records I have were in November 1926. On the first of that month, when passing the loch in the morning I noticed a single bird circling round. As there was a thin sheet of ice on the water it did not alight, but after flying round a few times it rose high into the air and made in a direct line for the Forth. On the 10th of the same month when cycling past the loch, a proceeding which takes about half a minute, I observed a Cormorant arrive at the loch, alight on the water, dive, and appear on the surface again with a fish and swallow it—all before I passed out of view.—David Hamilton, Edinburgh.

Late Stay of Waxwing at Inverness.—During the week 31st March to 5th April, Waxwings were seen on several occasions in the vicinity of the Central School, Inverness. On each occasion they were feeding on the berries of *Cotoneaster*; once a pair, and on at least four other occasions, a single bird.—W. J. Shaw, Inverness.

White-beaked Dolphin taken at Alloa.—A female White-beaked Dolphin—*Lagenorhynchus albirostris*—was shot in the Forth at Alloa on the 13th April 1933. It measured 8 feet 3 inches in length.—A. C. Stephen, Edinburgh.

Little Gull and Black Tern in Midlothian.—In the course of the past year's observations in the Granton area, in which my brother and I have been able to keep a very close watch on the beach, two birds of outstanding interest have occurred, and I feel that their presence should be made known. The two observations to which I refer are as follows:—

1. Little Gull.—First observed late in afternoon on 19th February by Mr A. D. Watson, the weather being mild. Did not appear again until 3rd March, when I obtained my first view of it, again late in the afternoon, and in mild conditions. The third appearance of the bird was on 13th March, when it was watched for nearly an hour in the morning. After this it never appeared again.

On the last occasion especially the bird gave an unlimited opportunity to observe its plumage and behaviour, as it fluttered ceaselessly over the water about ten yards away. The following points were noted:—

(1) Very small size; appeared only $\frac{2}{3}$ of the size of Black-headed Gulls with which it flew and swam.
(2) The head was white with the exception of a dark patch just behind the eye, and a dusky nape.
(3) The wings were dark with one prominent light bar, giving a very barred appearance in flight.
(4) The tail was white with dark tips to the feathers forming a black terminal fringe.
(5) The bill was black. The colour of the legs appeared dark but the bird did not alight on land, and so no opportunity was given to observe this point.

The conclusion arrived at from these data was that the bird was almost certainly immature.

2. Black Tern.—Two Black Terns appeared on the morning of 9th September, where they were observed and carefully watched on a notice board in Granton harbour. The night before their arrival had been very foggy and the number of Terns of the commoner species was exceptionally large on this occasion. The two Black Terns were very exhausted, and were impossible to disturb at a distance of a dozen yards. The plumage was examined in detail and revealed the following points:—

(1) The size was distinctive, being about the same as that of Lesser Tern.
(2) Bill and legs were both black.

(3) The forehead and nape were white, but the crown and ear-coverts were black.
(4) The back and wings were dark, and mottled brown and grey.
(5) The underparts were white with the exception of a half-band of light grey-brown extending partly across the breast.
(6) On the dark shoulder was a small white patch. These observations were made by Mr A. D. Watson and myself.—E. VERNON WATSON, Edinburgh.

Killer Whale (*Orcinus orca*) at Fair Isle.—A female Killer Whale, 15 feet in length, was found ashore at Fair Isle, between the Orkneys and Shetlands, on the 14th December 1932. The lower jaws were forwarded to the Royal Scottish Museum where they will be exhibited in due course.

The Killer is not uncommon in British waters, but is not very often stranded in Scotland. Harmer, in his summary of the Whales stranded in Britain during the years 1913-1926, gives only one Scottish record. Another specimen, however, was recently taken at Alloa.

Only one of Harmer's records was for the month of November; all the others occurred during the months March to July. The date for this present specimen is therefore somewhat unusual.—A. C. STEPHEN, Edinburgh.

Marsh Harrier in Wigtownshire.—I think that it may be of interest to the readers of the SCOTTISH NATURALIST to learn that a Marsh Harrier was killed in a rabbit trap on my estate last autumn. It was killed on Carseriggan Moor, about eight miles from Newton Stewart. On 22nd August 1932 no other Marsh Harrier was seen, nor had this one been seen previously. I think this is the first bird of the species to be recorded for Wigtownshire. —(Mrs) E. McNEILL, Kirkcowan, Wigtownshire.

Bird Notes from North Uist.—To-day (13th May) I found two nests of the Black-headed Gull, one with three eggs and the other with two. The Arctic, Common and Lesser Terns are here now. I have also seen several Common Sandpipers to-day. The Corncrake arrived on the 17th inst.—GEORGE BEVERIDGE, Vallay, Lochmaddy.

Observations on the Food of the Waxwing. — On 15th January 1933 Mr W. Watson and I had the pleasure of watching a Waxwing at very close quarters in the vicinity of Currie, Midlothian. We had it under observation for almost an hour, and on one occasion it flew down to drink at a pool only three or four yards from where we lay. While the bird fed on the Hips of a wild rose bush, we observed that these were swallowed whole. We were rather surprised to note how frequently the bird voided and that the excrement was distinctly pink coloured. Watching carefully we went to where it perched, and at the foot of the tree obtained a quantity of the droppings and found they were composed of the seeds and skins of the Hips in a pulpy state with remarkably little change. There was no difficulty in saying what the bird had been feeding on, and we wondered if the fine hairs in the seeds of the Hips had been acting as an irritant on the digestive organs of the bird, causing it to do as mentioned. After making a further examination of the excrement we were led to the conclusions which follow. While under observation the bird was seen to void probably every four minutes. The excrement which was found at the foot of the tree contained seeds, skin and some pulp of the dry Hip, and among the scanty true fæcal material were found also the stones of Hawthorn berries.

The question which demands an explanation is this: Was the extraordinary voidance due to a mechanical factor or to the irritating effect of the seeds on the digestive tract? At first we were inclined to believe that the cause was irritation. On further reflection, however, we would suggest, since the bird has to swallow, whole, enormous numbers of the berries to extract sufficient nourishment, a large amount of indigestible residue is thus unavoidable, and that for this reason the true explanation is a mechanical phenomenon and not due to irritation.

Further inquiries show that the Waxwing as a cage bird is considered a very voracious and dirty bird.—DAVID HAMILTON, Edinburgh.

Two Rabbits in One Trap.—The rabbit trapper who is engaged here at present in catching Rabbits found two in the same trap a few days ago. The trap was set inside rather a narrow hole and the one Rabbit must have been entering as the other was leaving it, and both were caught simultaneously each by one foot. — GEORGE BEVERIDGE, Vallay, Lochmaddy.

BOOK NOTICES

1. **The Senses of Insects.** By H. ELTRINGHAM, M.A., D.Sc., F.R.S. 126 pages and 25 illustrations. 2. **Cytological Technique.** By JOHN R. BAKER, M.A., D.Phil. 131 pages and 3 illustrations. Fcap 8vo. Price 3s. 6d. each. London: Methuen & Co., Ltd. (Methuen's Monographs on Biological Subjects). The publishers are to be warmly congratulated on the issue of those excellent little volumes which form the series called "Monographs on Biological Subjects." They are of a handy size for the pocket, and beautifully printed, while the names of the authors are sufficient guarantee for the high quality of the text. In the volume on the *Senses of Insects*, after a short chapter on the general nervous equipment of insects, the subjects of the eye and vision, colour perception, the tactile sense, the auditory, olfactory and gustatory senses, and sense-organs of uncertain function are discussed briefly but clearly, while a useful bibliography follows. The subject of *Cytological Technique* is treated in an equally masterly fashion, and the book is eminently practical. It does not pretend to be a text-book of histology, but a guide to the preparation of permanent slides. The subjects of fixing, embedding, staining and mounting are all thoroughly treated, and the book can be highly recommended to the student as a valuable aid to his work in the laboratory.

The Scottish Ramblers' Year-Book, 1933. Edited by TOM S. HALL. Scottish Rambler Publications, Falkirk. For the very modest sum of 6d., pedestrians in Glasgow and Edinburgh will find in this little guide an astonishing amount of useful information. A very complete Directory of Clubs and Associations connected with walking; a list of hotels, inns, boarding-houses and restaurants in the principal towns and villages of Scotland; an Index of firms who supply equipment; railway and bus details; and a list of itineraries, with hints as to distance, starting-points, etc., are the principal features in this useful little volume.

Plant and Animal Ecology. By J. W. STORK, M.A., and L. P. W. RENOUF, B.A., Dip. Agric. London: John Murray, 1933. 197 pages, 94 figures and frontispiece. Price 5s. This excellent little volume, published at a very moderate price, can be read with advantage, not only by the senior students in schools for whom it is primarily intended, but also by anyone interested in natural history, trained or otherwise. In its seven chapters the various associations of plants and animals —on the seashore, in streams, ponds and marshes, on heaths and moorlands, in pastures and meadows, and in woods, hedgerows and gardens—are adequately described, while an elementary account of parasitism, commensalism and symbiosis is also included. There are

four useful appendices which give: (1) a general classification of the plant and animal kingdoms; (2) hints on collecting and preservation; (3) a bibliography of some seventy-five titles; and (4) a glossary of derivations. A full and carefully compiled Index concludes the work, which is beautifully printed and lavishly illustrated. In the legend to Fig. 44 (p. 61) the size should be "×2" instead of "×½"; the Grey Squirrel is not an importation from Russia, as stated on p. 106, but from North America; in the legend to Fig. 78 (p. 109) *difasciatum* should be *bifasciatum*.

Birds of the Falkland Islands: a Record of Observation with the Camera. By ARTHUR F. COBB, B.A., F.R.G.S. London: H. F. and G. Witherby, 1933, 8vo, 88 pages, with 46 photographs. Price 7s. 6d. net. This beautifully printed book contains a series of sketches, written in a plain straightforward style, of some 31 species of birds, made up entirely from personal observation in these bleak islands of the far south. The photographs which adorn the volume give one an excellent idea of the conditions of bird-life in a region seldom visited by ornithologists. All the species will be strange to the Scottish bird-lover, save in the enclosure of some zoo, but there is, in some cases, a certain amount of kinship with our northern birds which renders an account of their southern relatives of considerable interest. For example, there are two oyster-catchers, two shags, a skua, a grebe, and three gulls, all of whose habits appear to be similar to those of our familiar northern species. No particular sequence is followed in the book.

Northward Ho!—for Birds. By RALPH CHISLETT, M.B.O.U., F.R.P.S. London: Country Life Ltd., 1933, 4to, 188 pages, illustrated with 87 photographs depicting 51 species. Price 15s. net. This is a delightful book, written in a pleasant and picturesque style, and profusely illustrated with photographs of unusual excellence. The sketches of bird-life as seen at close quarters from the "hide" of a photographer take the reader into the wilds of Derbyshire (3 chapters), thence into Galloway and the Scottish Highlands (3 chapters), farther north to Shetland (4 chapters), and across to the island of Öland at the southern end of Sweden (3 chapters), and finally to the birch forests, marshes and mountains of Lapland (4 chapters). Then follows a useful chapter of hints for those who are desirous of following in the author's footsteps and who will gain much valuable information from these later pages of the book. An index of the species mentioned concludes this charming book, which should be in the library of every bird-lover, not only because of the pleasure to be gained from a perusal of the text, but also because of the beauty of the photographs, which cannot be surpassed, and of the general attractiveness inseparable from such an attractively printed and tastefully bound volume.

CONTENTS

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The Scottish Naturalist

No. 203] 1933 [SEPTEMBER-OCTOBER

PETERHEAD SEALERS AND WHALERS: A CONTRIBUTION TO THE HISTORY OF THE WHALING INDUSTRY.

By Dr ROBERT W. GRAY.

(*Continued from* p. 104.)

FROM LOG OF *Windward*.

June 2.—76° 27′ N., 5° 50′ W.: "running to N.E. through loose ice and along pack edge. At 11 P.M. four whales rose up alongside: lowered away two boats and struck one, but the harpoon came out. Hoisted the boats up and steered to the N.E."

" 3.—77° 32′ N., 3° 20′ W.: "breeze from S. b. W.: steered for a point of ice and hove the ship a dodge under lee of it. *Eclipse* and *Erik* in sight. At 4 P.M. struck a whale, but it took the pack and we lost it with about half a whale-line." *

" 4.—77° 33′ N., 3° 38′ W.: "breeze from N.W.; ship plying to the N.W. towards the head of a bight. *Eclipse*, *Hope*, and *Erik* in sight. At 11.30 A.M. sent the boats in pursuit of a whale but got no chance of a shot."

1885.

In 1885 the winds were mostly from the north, the weather usually good and the ice generally navigable. Three ships—the *Eclipse*, *Hope* and *Erik*—were at the fishing and twelve whales were caught, six at the northern fishing and the rest at the southern.

At the northern fishing in the *Eclipse* we only got one medium-sized whale (8 feet 4 inches bone), which yielded about ten tons of oil and half a ton of bone. We captured

* This same whale was captured a day or two later by the *Erik* not far from the same place.

it in the end of May in lat. 78° 40′. About the middle of June, the northern fishing considered over, we came out of the ice and followed its edge south-west; picking up a few Hooded or Bladder-nose Seals on the way, sailing into a deep bight and re-entering the ice a few days later in lat. 75°.

On 28th June, 74° N′ 14° W., according to the log-book, mammalian life was unusually abundant, although I cannot say I remember the occasion. The entry reads as follows: "Many bears prowling about (on the ice); floe seals (or floe rats) innumerable, also some narwhals." One of the latter killed by the *Erik* had two tusks.

We got our first whale at the southern fishing on 30th June in lat. 73° 53′ N. long. 14° 33′ W. It was asleep when it was struck. I myself sighted it with the aid of a telescope from the mast-head. It was on the far side of an unbroken floe and a few miles away. As the wind was light and the use of the engines out of the question, it took us two or three hours to reach it. All this time it remained perfectly motionless and gave no signs of life. About 3 P.M. (we sighted it a little before noon) we came to it with the ship, with two boats towing astern. As we sailed past it the boats were cast adrift and one of them pulled towards it and harpooned it. It proved a fine whale of about 10 feet bone. Seeing a whale asleep was an unusual event; this and another in 1889 were the only two I saw in the course of my voyages. Another instance is not mentioned in any log-books in my possession. I made the sleep of whales the subject of a letter that appeared in *Nature* a few years ago.*

We got five more whales within the next few days —almost every one we saw—all large and all, with one exception, males. The six together, including the one caught at the northern fishing, yielded about 100 tons of oil and 5 tons of bone.

In the end of July in about lat. 73° long. 16° W.—I am unfortunately unable to give the exact date and place—we saw a whale and calf. We sent boats in pursuit but

* *Nature*, 30th April 1927.

fortunately, perhaps, the animals escaped. Seeing a whale and a calf was another very unusual event; this was the only one I saw in the course of my voyages and the first my father had seen for twenty years. After reading Scoresby's log-books I am of opinion that we might have seen one more frequently if we had gone north as far as lat. 80° sooner instead of delaying at the seal fishing.

In the beginning of August, after attempting to enter Scoresby Sound, we gave up the fishing and came out of the ice. As usual, when off the Liverpool Coast we saw enormous numbers of Rotches or Little Auks.

1886.

The season 1886 was a bad one for whaling. Whales, and those mostly small, were only seen for a few days in the end of May and beginning of June in about 79½° N., 2° E. At other times the ice was closely packed and there was often an easterly swell. Northerly winds prevailed and the ice was doubtless drifting quickly south-west. According to her log-book the *Hope* only reached the "floes," or unbroken ice, on 25th May, and on 4th, 5th, 6th, 7th, 8th and 9th June; at other times she was amongst the pack or broken ice or in the open sea outside. She saw numbers of narwhals but only one whale, viz., on 3rd June in 79° N., 2° E. The other ships were more fortunate: the *Eclipse* (on which I sailed) and the *Erik* got seven each and the *Polar Star* one—the latter the first whale killed in the Greenland Sea by a Dundee ship for a great many years. The fourteen killed by the *Eclipse* and *Erik* only yielded about 80 tons. The smallest one caught by the *Eclipse*, according to my notes, was only about 30 feet in length. In August and September, according to Norwegian accounts, the sea north of Spitsbergen was unusually free of ice. For a fuller account of the *Eclipse's* voyage see my "Notes on a Voyage to the Greenland Sea in 1886," *Zoologist*, 1887, p. 28 *et seq.*

1887.

The season 1887 was very similar to 1874: the ice was drifting unusually quickly south-west and its edge lay far

west. This state of affairs and the opposite condition seem to occur every few years. These fluctuations seem to be connected with the activity of the oceanic circulation: when this is unusually active more warm water flows into and more cold water out of the Arctic Ocean than usual and vice versa when it is less active than usual. These fluctuations seem to be communicated to the whales through the distribution of their food supply and the state of the ice. In 1887 very few whales were seen and only three caught: two at the northern fishing, both small, and one at the southern, an unusually large animal.*

From Log of *Eclipse*.

May 2.—76° 24′ N., 2° 32′ E.; air 29°; sea 30°: "at 2 A.M. came up to streams of ice."

,, 3.—76° 36′ N., 3° 39′ W.: air 26°; sea 29·6°: "spoke the *Erik;* she gave us a wretched account of the seal fishing."

,, 7.—78° 23′ N., 0° 10′ E.; air 23°; sea 30·4°: "at 4 A.M. saw a whale going N.W.; called all hands and coiled the whale lines into the boats; † water blue in colour."

,, 16.—80° 10′ N., 3° E.; air 30°; sea 29°: "wrought north through loose ice all day; close pack to S.W. and N.E.: at 12 P.M. came to floes. Some narwhals seen; colour of water green."

,, 20.—79° 49′ N.; 4° 50′ E.; air 21°; sea 30·2°: "reached N.W. through loose ice; saw a whale and many narwhals."

,, 26.—79° 58′ N., 4° E.; air 15°; sea 29°: "at 3 P.M. got into a 'floe water' and made sail; some narwhals and many floe seals seen."

,, 27.—80° 1′ N., 3° E.; air 8°; sea 28·9°: "many narwhals passed us during the night—all going N.E.‡ Cruised about all day. No whales can be found North or South."

June 2.—79° 7′ N., 2° 55′ E.; air 32°; sea 29°: "many small ice-bergs in sight, seventeen being counted from the mast head, they are equally numerous north as far as we have been." §

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* See "Notes on the Seal and Whale Fishery of 1887," T. Southwell, *Zoologist*, 1888, p. 122.

† Coiling the whale lines occupied the best part of a day and required the co-operation of all hands.

‡ We did not know it at the time but these narwhals were heading in the direction of the waters north of Franz Joseph Land, in which situation Dr Nansen saw them in 1895 (see my letter in *Nature*, "Mammalian Life in High Latitudes," 10th Aug. 1929).

§ Again we did not know at the time but these small flat-topped ice-bergs probably come from the since discovered Nicholas II or Lenin Land north of Siberia. Like the ice they seem to drift N.W. north of Franz Joseph Land, thence S.W. towards the Greenland Sea (see my letter, "Ice-bergs in High Latitudes," *Nature*, 1929, p. 479).

June 4.—78° 51′ N., 3° W.; air 25°; sea 32°: "the floes are drifting south fast; saw a whale and (next day) many narwhals."

" 7.—78° 40′ N., 0° 30′ W.; air 21°; sea 29·6°: "one whale seen and numerous narwhals."

" 8.—78° 35′ N., 2° 35′ W.; air 20°; sea 31°: "got fast to a whale but lost it." *

" 14.—77° 35′ N., 4° W.; air 28°; sea 31·8°: "saw four whales and numbers of narwhals; sent all the boats away without getting a shot."

" 15.—77° 10′ N., 3° W.; air 31°; sea 30·8°: "the floes appear to be drifting south at a great rate. All life has disappeared and nothing left but cold blue water."

" 16.—77° 4′ N., 4° W.; air 31°; sea 31·7°: "at noon stowed sails and steamed S.E.; at 9 P.M. came to the sea; made sail and ran S.W. along the ice."

19.—74° 34′ N., 12° 43′ W.; air 35°; sea 34·5°: "sighted Shannon Island and the Pendulums. Two Finners and a few narwhals seen. Took the ice and got into a large water at midnight."

" 21.—73° 40′ N., 16° W.; air 26°; sea 32°: "caught a whale, a female, 57 feet long, 12 feet 1½ inches bone yielding 27 tons of oil the largest I have ever caught."†

" 22.—73° 28′ N., 16° 8′ W., air 32·5°; sea 33·9°: "shot a walrus that had just killed a seal. In the evening chased a whale without getting a shot."‡

" 24.—73° 16′ N., 16° W.; air 32°; sea 32·8°: "shot a bear; ice drifting south very fast."

July 3.—73° 58′ N., 15° 24′ W.; air 29°; sea 34°: "ship made fast to a floe. Water green in colour and thick with whales' food of all kinds, saw some narwhals and two Finners.§ Shot four bears."

" 7.—74° 24′ N., 15° 11′ W.; air 29°; sea 33°: "ship made fast to a large piece of ice. Saw and chased a whale."

" 15.—74° 16′ N., 14° 52′ W.; air 40°; sea 35°: "chased a whale."

" 16.—74° 10′ N., 15° W.; air 35°; sea 33°: "chased two whales."

" 17.—74° N., 14° 51′ W.; air 28°; sea 31·8°: "chased a whale in the evening —no luck."

" 21.—74° 5′ N., 15° 20′ W.; air 28°; sea 33°: "at 1 A.M. a whale came; sent two boats in chase but they scared it."

Aug. 13.—71° 59′ N., 17° 46′ W.; air 33°; sea 32°: "gave up the fishing and took the whaling gear out of the boats."

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* The *Erik* got a small whale on or about this date; it only yielded 1 cwt. of whale bone.

† The longest or sample plate of whale-bone weighed, when cleaned and dried, 9 lbs. 5 oz.; the pectoral fins externally measured 8 feet 2 inches in length and 5 feet 2 inches in width; its jaw bones, which are in the South Kensington Museum, following the curve measure about 22 feet.

‡ Chased a whale is perhaps a misleading term; the Greenland whale is very timid and can only be approached unawares.

§ Finners = *Balaenoptera sibbaldii*, often seen amongst the ice in the summer months.

1888.

This was a close season; but the barrier or "south-east pack" was light and soon disappeared. Only four whales were killed—three at the northern and one at the southern fishing—which together yielded 52 tons of oil and 44 cwts. of bone. Two were got by the *Eclipse* and two by the *Hope*.

From Log of *Hope*.

May 11.—77° N., 2° E.; air 27°; sea 30°: "ice running to S.E.: this indicates that the Spitzbergen 'Water' is full of ice and when in this condition it is called a 'S.E. Pack' and is good for whale-fishing."

" 12.—77° N., 7° E.; air 25°; sea 30°: "spoke a walrus hunter who reports the ice to run east and south of Bear Island. Took the ice and steamed to the N.E."

" 16.—80° N., 5° 50′ E.; air 28°; sea 31°: "got into the North Water, made sail and reached N.W. and came up to a large floe having a south face 20 miles in length. There was no life in the neighbourhood of it; kept about the edge of it all day."

" 19.—79° 45′ N., 4° E.; air 34°; sea 31°: "no navigation to the S.W., ice all lying unbroken, no water amongst it. Numerous narwhals made their appearance to-day."

" 22.—79° 33′ N., 4° E.; air 17°; sea 29°: "came to floes; no whales have yet been seen."

" 25.—78° 30′ N., 1° E.; air 20°; sea 30°: "6 P.M. saw a whale; had two boats out but they did not get near it. Midnight saw another."

" 26.—78° 11′ N., 1° E.; air 16°; sea 29·5°: "4 P.M. sent the boats to a whale which we caught; length of bone 9½ feet. Several other whales seen while engaged with this one."

" 27.—78° N., 1° W.; air 22°; sea 30°: "several whales seen during the morning going north; made sail and plyed north through the ice." *

" 28.—78° N., 1° W.; air 21°; sea 30°: "10 P.M. got into a 'floe water'; saw several whales, but owing to bad weather could not send the boats away."

" 29.—78° 6′ N., 2° W.; air 24°; sea 30°: "saw that our 'water' was getting less and that we were also off the 'dark water': went (east) into more room and plyed north. At 8 P.M. J—— W—— got fast to a whale; sent all the boats to the hunt."

" 30.—77° 44′ N., 2° W.; air 27°; sea 30°: "2 A.M. had the whale killed and alongside and commenced to flench; 8 A.M. done flenching, made sail, and plyed N.E."

June 2.—77° 57′ N., 0° 0′; air 24°; sea 30°: "the ice has driven us off the whaling ground, and it will take considerable west winds to allow us on to our position again."

" 4.—77° 40′ N., 1° W.; air 30°; sea 31°: "have great difficulty in getting north through the pack, which is lying very close and running far to the east which is unsuitable for our business."

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* "Through the ice" may be misleading; in the case of heavy polar ice, the ship when under weight had to avoid contact with the ice and keep in the channels between the pieces.

June 7.—78° 30′ N., 0° 0′; air 27·5°; sea 30·5°: "got into a large 'floe water'—too large for fishing purposes.* The floes here are of immense size and range from N.E. to S.W.

" 9.—77° 47′ N., 0° W.; air 31°; sea 30°: "ship lying-to near a floe. Spoke the *Eclipse* has seen no whales for two weeks. A number of narwhals seen."

" 12.—77° N., 0° 0′; air 34°; sea 30°: "weather bad, and considerable swell running which will break and compact the ice and put whale fishing here at an end for eighteen hundred and eighty eight."

From log of *Eclipse*.

May 10.—76° 48′ N., 3° E.; air 26°; sea 29: "passed a large flat berg, it looked as if it were half a mile square." †

" 11.—77° 38′ N., 3° E.; air 21°; sea 29°: "took the ice and steamed N.N.E. through 'streams': many birds about all day, principally Looms and Rotjes."

" 12.—78° 18′ N., 6° E.; air 25°; sea 29°: "The whole surface of the sea is covered with young ice, hardly a drop of water to be seen."

" 13.—79° 20′ N., 4° E.; air 24°; sea 28°: "8 P.M. reached the North Water; ran north until we came to the floes."

" 14.—80° N., 5° E.; air 23°; sea 28°: "made sail in the forenoon and wrought S.W. along the floes; no life of any kind in sight."

" 19.—79° 41′ N., 4° E.; air 34°; sea 31°: "only a few narwhals seen going N.E."

" 21.—79° 16′ N., 4° 46′ E.; air 27°; sea 30°: "ship in a hole of water; at 1 A.M. saw a small whale going north; sent boats in chase but never saw it again."

" 24.—78° 54′ N., 1° W.; air 14°; sea 29°: "in the morning ran south-west through loose ice, a swell having broken the floes during the night. In the evening a large whale rose near the ship, we only saw it once."

" 25.—78° 21′ N., 2° W.; air 19°; sea 29°: "saw two whales during the night; fired at one—wind much too strong for whaling."

" 26.—78° 13′ N., 3° W.; air 19°; sea 29°: "a whale seen at 1 A.M.; sent two boats in chase, but they scared it. Another came at 4 A.M. which we killed.‡ Chased several during the afternoon and evening."

" 27.—77° 49′ N., 4° W.; air 22°; sea 29°: "a large whale rose too near the ship and was badly scared."

" 28.—77° 58′ N., 2° W.; air 21°; sea 29°: "ship in a hole of water. At 4 A.M. a whale passed near the ship; sent two boats in chase; when it was going to rise it was overtaken by one of the boats and badly scared." §

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* Greenland whales seem to avoid large open spaces; they seem to prefer crowded ice.

† An unusual sight in the Greenland Sea.

‡ For measurements, see my "Notes on a Voyage to the Greenland Sea in 1888," *Zoologist*, 1889, pp. 42 and 47.

§ Many whales were scared in this way; the whale should have been allowed to rise to the surface before overtaking it with the boat.

June 6.—78° 14′ N., 1° 39′ W.; air 33°; sea 32°: "light airs and calms the whole of this day. Some narwhals and a finner or two seen. At night came to a large floe, near which narwhals were in great numbers."

„ 8.—77° 38′ N., 0° 7′ E.; air 27°; sea 30°; "numbers of floe seals, narwhals, and birds, everything in fact that used to indicate the immediate presence of whales."

„ 7.—78° N., 2° 30′ W.; air 26°; sea 30°: "in the evening reached south, through small floes and loose pack ice. Not a living thing to be seen."

„ 10.—78° 11′ N., 2° W; air 32°; sea 30°: "cruised about all day amongst the floes. Saw no whales, but plenty of narwhals. Shot three bears. Water green in colour."

„ 13.—77° 34′ N., 1° W.; air 32°; sea 30°: "swell from S.S.E., floes breaking up all round."

„ 14.—77° 30′ N., 1° W.; air 31°; sea 31°: "stowed sails at noon and steamed out into the sea then went W.S.W. along the ice."

„ 17.—75° 32′ N., 10° W.; air 31; sea 30°: "at noon saw a whale go tail up on the far side of a floe to N.W.; went there with the ship and caught it."

„ 18.—75° 17′ N., 11° 27′ W.; air 31°; sea 30°: "chased a whale in the afternoon; saw another at night, both were going N.E."

„ 19.—74° 26′ N., 13° 34′ W.; air 32°; sea 31°: "lay near a floe; some narwhals and a Finner seen."

„ 28.—75° 14′ N., 9° W.; air 38°; sea 29°: "two Finners seen blowing amongst the ice; whale food very abundant at 11 P.M."

„ 29.—75° 5′ N., 11° W.; air 35°; sea 34°: "at 7 P.M. a whale came; sent boats away and chased it for 5 hours when it reached close ice."

July 1.—74° 57′ N., air 35°; sea 33°: "reaching along a floe edge; saw a whale sent four boats away, and chased it but without success."

„ 2.—74° 32′ N., 12° 26′ W.; air 31°; sea 31°: "lay near a floe; a whale seen in a hole of water. Shot two bears."

„ 4.—74° 50′ N., 12° W.; air 33°; sea 32°: "saw three whales; got fast in one but after running three lines (360 fms.) the harpoon drew."

„ 9.—74° 49′ N., 11° 40′ W.; air 41°; sea 35°; "numbers of narwhals at the floe-edges."

„ 24.—74° 42′ N., 13° 30′ W.; air 30°; sea 32°: "ship made fast to a floe. Many bears and narwhals; shot five bears and a narwhal."

Aug. 12.—73° 41′ N., 15° W.; air 37°; sea 36°: "large numbers of narwhals in the morning watch; caught one with a tusk 7 feet in length." *

„ 19.—72° 3′ N., 19° W; air 34°; sea 35°: "saw a whale at the pack-edge and sent two boats away. The whale, however, was too far away for the boats to reach it in time."

„ 21.—71° 26′ N., 14° 15′ N.; air 34°; sea 34·5°: "the water hereabouts (which is green in colour) is covered with what I take to be Finners' blowings."

„ 23.—70° 49′ N., 16° W.; air 34°; sea 36°: "at noon stowed sails and steamed S.E. In the evening got clear of the ice and took the whaling gear out of the boats."

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* This narwhal was shot asleep, see *Zoologist*, loc. cit., p. 100.

1889.

This was a very good whaling season. Southerly winds prevailed which checked the normal drift of the ice and probably hindered the formation of open spaces in very high latitudes. For this reason there was an accumulation of ice in the Greenland Sea and the whales were either tempted to remain or were unable to migrate farther north. In July in lat. 74° the ice formed an immense easterly projecting point, the extremity of which was situated in long. 7° E. More whales than usual were seen and 14 caught: 12 at the northern fishing and two at the southern. Six ships were at the fishing, 3 from Peterhead and 3 from Dundee. Large unbroken floes lay on the whaling banks and outside them the usual zone of "pack" or broken ice.

The *Eclipse* on which I sailed was the only vessel to try her luck at the southern fishing. Unfortunately her log-book has not been preserved and I am obliged to rely on my memory. As in 1872, weeks were spent in trying to reach the "ground" from the N.E., the usual route, and as in 1872 we eventually reached it from the south-east after turning in our track and coming out round the point of the ice. We saw a number of whales, all of large size, but only succeeded in catching two. As in 1872 the whales were mostly seen near a very thick and very large floe. Ice of this kind seems to attract the Greenland whales: perhaps the creatures on which they feed like the darkness under it? One of the whales we got was asleep and I myself happened to be the harpooner. It was seen from the crow's nest or "mast-head," was near the edge of the afore-mentioned floe and was a mile or two away. Leaving the ship which was made fast to the floe and pulling along its edge we soon came in sight of the sleeping animal. Like the one seen asleep in 1885, only its "crown" and part of its back were showing above the surface and, like it, it gave no signs of life.

We approached it from behind as quietly as possible; finally allowing the boat to run slowly towards it under the impetus already given to it by the oars. Before firing I waited until the boat was over its tail and its bow almost touching its back; and before it left the surface I had the

satisfaction of seeing the harpoon deeply buried in its back. It proved a fine whale of over 10 feet bone, the last one I killed. We chased a number of others without success and a few days later owing to the increasing darkness of the nights we were obliged, to my great regret, to give up the fishing and come out of the ice.

From Log of the *Hope*.

May 17.—78° 34′ N., 0° 20′ E.; air 19°; sea 30°: "ship hove-to in a bight of the floes (*i.e.* in a bight in the margin of the unbroken ice). Several whales seen in the holes of water amongst the ice. 6 P.M. four large whales in sight; sent the boats out and at midnight got fast to one."

" 18.—78° 34′ N., 0° 20′ E.; air 29°; sea 30°: "Boats fast to a whale. Had it killed and flenched at 1 P.M. Length of bone 10 feet 6 inches. Colour of the water dark green."

" 20.—78° 30′ N.; 0° 30′ E.; air 17°; sea 30°: "amongst loose ice. 10 P.M. a whale in sight; sent the boats out and got fast. Fish took into the pack ice, running out 8 lines (960 fms.) which got cut on a tongue of ice, thus losing the whale and the lines."

" 22.—78° 20′, 0° 20′ E.; air 21°; sea 30°: "ship lying-to at a floe; 8 P.M. one fish seen, sent the boats to it and killed it, length of bone 3 feet 9 inches."

" 24.—78° 25′ N.; 0° 20′ E.; air 27°; sea 30°: "at noon a whale in sight; sent the boats away but had no success. Colour of the sea dark green."

" 25.—78° 34′ N.; 2° E.; air 24°; sea 32°: "6 P.M. sent the boats to a whale; got fast and had it killed and alongside by 11 P.M. Colour of the water dark green."

" 26.—78° 35′ N.; 2° E.; air 27°; sea 31°: "ship made fast to a floe which is travelling W.S.W., about 2 miles per hour. Hove off and made sail. Three whales seen during the day but did not get near them. The colour of the sea is now blue."

" 31.—78° 17′ N.; 2° 55′ E.; air 31°; sea 36·5°: "ship under canvas, only dodging about in a bight of the ice; some narwhals about."

June 1.—78° 20′ N., 3° E.; air 30°; sea 36°: "one whale seen during the morning going to the eastward. At 10 P.M. a strong swell coming in from S.E. and breaking the floes."

" 11.—78° 30′ N., 1° E.; "10 A.M. weather clear; made all sail and proceeded to the S.E. through the ice. 8 P.M. came to opener ice and hove-to; have come 50 miles S.E. through the ice. No whales seen."

" 14.—76° 24′ N., 5° E.: "northern fishing over; ship outside the ice and running S.W. along its edge."

(*To be continued*)

SOME OBSERVATIONS ON THE ECOLOGY OF SCOTTISH HERBIVORES AND CARNIVORES.

By I. W. Parnell, B.A., Ph.D., and T. W. M. Cameron, M.A., D.Sc., Ph.D., M.R.C.V.S.

Introduction.

Although the wild mammalian fauna in Scotland has attracted the attention of numerous naturalists in past years, the economic circumstances of the past two decades have created many changes, some of minor, some of far-reaching importance.

Our own observations are necessarily incomplete: it is doubtful if any one paper could give an accurate picture of present-day Scottish conditions, but we feel that the time has come when zoologists must pay more attention to the living animal in its own environment and less to the dead specimen in the laboratory. These observations are accordingly presented in the hope that they may be amplified and extended by other workers. They are based on a series of tours in Scotland made for the purpose of surveying the parasites of wild mammals in the country. As no parasitologist can afford to be ignorant of the distribution and habits of the host animals, notes were made on these points during the excursions, and the more important of these, in relation to distribution, are presented herewith.

The principal recent economic factor which has affected the wider or narrower distribution of mammals in Scotland was, of course, the War, and its subsequent economic convulsions. The needs of the army considerably lowered the number of keepers available and consequently increased the number of carnivores: the high price of meat caused a reduction in the numbers of edible rodents which were shot and trapped even more rigorously than under normal conditions, while war-time regulations permitted the farming tenants to shoot deer. After the war, the high rents obtained for shootings and deer forests created a different set of conditions. The number of keepers increased and

red deer on non-forest shootings became of considerable financial value. This period was followed by the present long-drawn-out depression; money became less plentiful; shootings, especially deer forests, have become a drug on the market, and venison has often not paid the costs of marketing for, although the supply is plentiful, no general taste for it has been cultivated. Local afforestation has also been of some importance, as those areas are kept as free as possible, by artificial agencies, of deer and rodents: the carnivores, however, are encouraged rather than otherwise in order to keep down rodents.

Herbivores.

The Red deer (*Cervus elaphus*) is the largest indigenous mammal still extant in Scotland. Originally a true forest animal, necessity has driven it to the hills. Post-war economic conditions have greatly increased its numbers and consequently the species is spreading. This spread has been more marked in the southern half of its range where there is more scope for increase, and a few years ago a young stag and three females were reported to have crossed the strath to the Ochils. The absence of cold, wet winters in recent years has accelerated its spread, while the small amount of hind shooting, the high sex ratio, and the fact that the Red deer is polygamous have tended to cancel the influence of shooting a high proportion of the stags. The number of Red deer in Scotland to-day is far in excess of the normal population which the hills can support and this is the main cause of the continual decrease in size of the animals.

The present range of this species includes all the hill districts north of the Forth (with the exception of the Ochil and Sidlaw hills on the mainland). In the west, it is found not only in the more mountainous islands of the north but in Jura, Islay and Arran and even south of 56° in Argyllshire.

Roe deer (*Capreolus capreolus*) are also indigenous to the British Islands, but unlike the Red deer, they have remained woodland animals. They are found, under suitable

conditions, in all parts of Scotland. Although the birth-rate is high and they are seldom shot, they do not appear to increase rapidly in numbers even in apparently suitable situations. In some woods, where there is no shooting, they have actually decreased in numbers. They are more constantly and more heavily infected with parasitic worms than are the Red deer, and this may assist in maintaining a relatively high death-rate.

Fallow deer (*Dama dama*) are believed to have been indigenous but to have disappeared and been re-introduced in historic times to Scotland. They may have been re-introduced by the Romans, but local tradition in the west maintains that their introduction there was by the early Christian missionaries when they occupied the southern islands.

This deer appears to be less hardy than the Red or the Japanese deer and, like the Roe, is still a woodland dweller. Its present range in Scotland is somewhat limited, possibly due to the influence of man as well as food and climate, and it is restricted in its wild state to the west coast of Argyllshire, both on the mainland and the island Islay, to north-eastern Inverness-shire and up Strath Bran, and in northern Perthshire.

Japanese deer (*Sika nippon*) are a much more recent importation, but they have now become firmly established in the woods of Strath Bran, where they extend as far west as Loch Rosque, and north as far as the valley of the Oykell. They are also found at Tomatin in Inverness-shire. It has been stated that they interbreed with the Red deer, but their mating season appears to be more nearly that of the Roe, to which much antagonism is shown by the male Japanese deer. Stalkers and keepers in these areas are quite definitely of the opinion that they do not breed with any of the native species, and we could obtain no evidence which would conflict with this belief.

Until recently, the only serious study of the parasites of deer in Scotland was that by Evans in 1891. (A copy of his privately printed pamphlet is in the Natural History Museum.) The present survey has shown that all species

of deer carry many species of parasitic worms, some of which are of importance to the deer themselves, while others are identical with those found in sheep and cattle. Deer can suffer quite extensively from fluke, for example, and lung worms are common. The lungworm of Scottish deer is the same species as occurs in cattle: most of the other species are sheep forms, however, and were probably acquired from the sheep in the forests and on the low ground. As would be expected from the habitat of the hosts, Red deer are less extensively affected than are the others living in woods and more sheltered spots.

The detailed results of this survey form a separate report to be published elsewhere. Our colleague, Dr A. E. Cameron, found that the warble, which is extremely common in Red deer, is always *Hypoderma diana*, never one of the species found in cattle. While this fly is extremely important to the deer and the forest-owner, it is quite harmless so far as cattle are concerned, and can have no effect on the warble situation in these animals. Other interesting forms found included the nasal bot-fly (*Cephenomyia auribarbis*), the red fly (*Lipoptena cervi*), and the louse (*Trichodectes cervi*), (all of which are confined to deer), and the common tick (*Ixodes ricinus*), which is found on a great variety of hosts.

Whether or not any of these parasites have any importance from the point of view of ecology is not yet clear. Lung-worms and fluke are reported to cause a serious mortality in the west, and tapeworms, with their large calcium requirements, may have an effect on antler growth. Stomach worms, owing to over-crowded conditions among the Red deer, may ultimately cause a reduction in numbers as well as a still further decrease in size. Reduction in numbers of hinds should, however, receive the immediate attention of forest owners.

Wild Goats (*Capra hirca*) are still found in many localised districts in the country but, as Smith has often pointed out, they were probably originally domesticated animals which have reverted to their original state. Whether or not this is the real explanation of their presence in Scotland seems to be a purely academic point of little importance;

they have certainly been roaming the hills for many years, in some cases at least, and are, for all practical purposes, wild animals. Smith has dealt with their present distribution; to his localities we have to add the area west of Loch Broom in Ross-shire. As would be expected, the wild goat harbours most of the species of worms found in Scottish sheep.

Carnivores.

The Badger (*Meles meles*) certainly has a much wider distribution than either popular belief or published works would indicate. Their nocturnal customs and generally harmless, although omnivorous, feeding habits have tended, in spite of their being the largest British carnivore, to make them pass unnoticed. It is probable that they are thinly although widely spread over most of the lowlands, while east of Edinburgh they are quite numerous. In the Highlands they are holding their own, with one or two earths in most of the larger glens. Within recent years they have been introduced to the north of Sutherland, and are now breeding in that area.

The Fox (*Vulpes vulpes*) is still universal in its distribution, but the so-called "Greyhound" fox of the hills and the "Bulldog" fox of south Scotland are both becoming rarer. In very recent years an epidemic of "mange" has apparently decimated the foxes on the mainland from the border of Caithness to the west coast and to Aberdeenshire. The diagnosis has not been scientifically confirmed, however, and the disease, whatever it is, does not appear to be readily transmissible to dogs. Several keepers reported cases where freshly-killed foxes had been in close association with terriers without the disease developing in the dog in any case. The disease may be a true "mange," of course, as the mites tend to become physiologically adapted to a particular species of host; frequently, however, they are capable of living for a time and causing a mild disease in other animals, including man. In the absence of a scientific diagnosis, however, there still remains the possibility that the mange of the fox in Scotland is some

other condition—possibly one in which the skin lesion is not the most important one. We found that practically all foxes were parasitised by intestinal worms. In all cases these were species found also in dogs—including the dog Ascarid worms and the dog hookworms. Although several tapeworms were recovered, it is interesting to note that the Hydatid producing tapeworm (*Echinococcus granulosus*) was never found, although the cysts are very common in sheep and other animals and by no means uncommon in man in the north. Owing to the dearth of foxes in Caithness and Sutherland, only a very few were seen from those areas and, accordingly, the fox cannot wholly be ruled out as a vector. It is interesting to note also that the hookworms of dogs and foxes were absent from those counties also, suggesting that their northern range is in Mid-Scotland.

The Wild Cat (*Felis catus*) is apparently becoming not only much more common in the districts in which they were established twenty years ago, but is now spreading to districts from which they had been exterminated. Probably the same economic conditions as are responsible for other variations are responsible here.

The Wild Cat has an almost identical parasitic fauna to the domesticated cat, but stomach and lungworms, common in cats round Edinburgh, were never found.

The Pole-Cat (*Mustela putorius putorius*) has recently been discussed by Mr R. I. Pocock in the pages of this Journal. It appears to be almost extinct in Scotland, if we except the "pole-cat ferrets" found in Mull in recent years.

The Pine Marten (*Martes martes*), on the other hand, although also regarded as a very rare animal in Scotland, is firmly established on the north coast of Sutherland and along the west coast, and for some distance inland, as far south as Ross-shire; there is some evidence, not too well authenticated, however, that it exists in Perthshire. Owing to its swiftness and habits, it is seldom seen unless trapped, and it may accordingly live quite near to human habitations and escape the observation of all except the more observant countryman. In its natural habitat, hilly wooded or rocky country, it is more than likely to go unseen.

The Stoat and Weasel (*Mustela erminea* and *M. nivalis*) are everywhere abundant. We had the opportunity of examining quite a number of these animals and found a certain amount of evidence that two distinct size strains of weasels exist. While our data are far from conclusive they tend to support the existence of the so-called "mouser" weasels. The skulls of all our animals were examined as a matter of routine and in no case did we find any trace of lesions caused by a parasite of the cranium.

A variety of parasites was found in these animals, the commonest being a species of *Taenia*. None, however, appears to have any ecological significance.

We would take this opportunity of acknowledging the willing assistance of owners, factors, tenants and keepers of forests and shootings in all parts of Scotland, who have supplied us with material and with information, sometimes at the cost of considerable trouble and personal inconvenience.

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NOTES

Guillemots and Razorbills nesting in Kittiwakes' Nests.—On 3rd June 1933, whilst on the Bass Rock, I was surprised and interested to see at least five Guillemots sitting in nests belonging to Kittiwakes. They appeared to be definitely nesting in them, as one was seen sitting on its egg. These nests are on the north face of the cliffs. A Razorbill was also observed by Mr V. D. Van Someren, sitting in a Kittiwake's nest, down the gully on the west side. We were not able to see, however, whether it had an egg or not. I communicated the matter to Mr John Bain (now at Noss Head Lighthouse), and he writes that he had noticed that Guillemots und Razorbills were increasing on the Bass, "as every year I was there, new nesting sites were being taken up; but I never saw them using Killiwakes' nests; it is certainly a new departure for them to oust another bird off its nest." It would be interesting to know whether these birds actually evict the Kittiwakes. Mr McInnes, lightkeeper on the May Island, told me that one year the Peregrine utilised the old nest of a Kittiwake, but the nest collapsed soon after her young were hatched, and they were all dashed to pieces on the rocks below.—George Waterston, Midlothian Orn. Club.

Late Spring Passage of Turnstones in "Forth."—Six to eight Turnstones were observed on the mud beside the river, at Aberlady on 4th June, by myself and Mr Maxwell Hamilton. A small party of ten birds were seen by me on the 6th June at Eyebroughty near Muirfield, on which date 20 Common Scoter were also observed at the same locality.—George Waterston, Midlothian Orn. Club.

Red-Backed Shrike in Ross-shire in July 1933.—On 13th July, while passing Ardhelsaig, a small crofting village on the south shore of Outer Loch Torridon, I noticed a male Red-Backed Shrike perched on the single telegraph wire. Although the bird was wary at first, I eventually got some splendid views at a distance of about 20 yards of it, making short downward flights to the bracken from the wire, and also from prominent positions on a fence and thorn bush. The grey head with its black eye stripe, the chestnut shoulders, and white outer tail feathers were very prominent. I never saw it with food in its beak, and could find no trace of a "larder," but the scrubby brushes and trees which grow thickly at Ardhelsaig would probably provide a rich food supply. I believe this is the first record of this species for the north-west Highlands.—J. H. B. Munro, Midlothian Orn. Club.

SOME NOTES ON BIRDS SEEN IN SHETLAND.

By R. Stuart Bruce.

I have been going over some notes made by the late Mr Grierson of Quendale, Shetland; and Dr Ticehurst, the editor of *The Ibis*, suggests that these may be of interest. I therefore append them, together with a few jottings by Mr D. J. Williamson, Whalsay, Shetland.

I may say that Mr Grierson was a keen and very observant naturalist, an excellent shot, and was capable of taking a good basket out of a loch when no one else seemed able to get a trout.

A few jottings on more recent happenings in Shetlandic bird life are added by myself.

Notes by Mr Grierson, with a few by Mr Williamson.

Song Thrush: nested in the garden at Helendale, Lerwick, May 1906.

Fieldfare: seen at Helendale as late as 15th May 1910.

Whitethroat: seen at Helendale, 15th May 1910.

Lesser Whitethroat: seen at Helendale, 31st May 1908. Saxby says that he saw this bird on three occasions, but Buckley and Evans think Saxby was in error. Mr Grierson observed this bird for some time, and was certain of his identification.

Blackcap: one in Helendale garden, 24th April 1902.

Garden Warbler: one found dead at Helendale, 12th June 1907. Sent to Harvie Brown who verified it. Buckley and Evans put this species in a bracket, as they seem to doubt the one identification by Saxby on 27th June 1869.

Chiffchaff: one seen at Helendale, 15th May 1916. Buckley and Evans doubt Saxby's identification, as he did not procure the bird he saw in 1865.

Willow Wren: one seen at Helendale by Mr Grierson, 15th May 1910, and one at Symbister, Whalsay, by Mr D. J. Williamson, 5th May 1929.

Hedge Sparrow: seen at Helendale, 13th October 1909.

PIED FLYCATCHER: one in Helendale garden, 1st May 1898. [*Note.*—This species recorded from Shetland for the first time, 30th April 1898, when one sent to Mr Eagle Clarke from Dunrossness: Buckley and Evans, *Fauna of the Shetland Islands*, p. 84.] One at Helendale, 16th April 1914. One at Helendale, 21st May 1914. D. J. Williamson reports one at Symbister, Whalsay, 27th April 1924.

HOUSE-MARTIN: one at Helendale, 25th May 1908, and another there on 30th May 1909 and also 15th May 1910. D. J. Williamson saw one all day on 27th April 1924, at Symbister, Whalsay.

HAWFINCH: on 16th July 1927 D. J. Williamson observed a fine bird at Symbister, Whalsay. [Buckley and Evans do not mention it, and Saxby, *Birds of Shetland*, p. 103, says that Thomas Edmondston inserted it in his published list on hearsay evidence only.]

CHAFFINCH: one seen at Helendale, 14th October 1909.

BRAMBLING: one at Helendale, 14th October 1909, and one there on 15th May 1916.

NORTHERN BULLFINCH: a very large specimen in Helendale garden, 14th April 1907; it remained for a week. Another fine bird in October 1911, also at Helendale.

CROSSBILL: one at Helendale, 25th June 1909. The Crossbill is fairly common in Shetland as a visitor.

SNOW BUNTING: nest seen in Island of Noss (now a bird sanctuary), June 1907. Verified by Messrs Jessop and Stirling, who were with Mr Grierson. I have little doubt that the Snow Bunting nests in Shetland far more frequently than is supposed.

SWIFT: a pair seen at Sodom (Sudheim), Whalsay, 7th July 1922, by D. J. Williamson. They are not very uncommon.

HOOPOE: Mr D. J. Williamson saw one at Haraldsdale, Whalsay, on 26th August 1930. This bird does not seem to be so uncommon as in Saxby's time.

CUCKOO: Mr Grierson saw one at Twagios, Lerwick, on 18th May 1901; one at Dale near Lerwick, and another at Tingwall, both on 29th May 1910. Mr D. J. Williamson saw one at Whalsay, 26th May 1922.

SCOPS OWL: one found dead in the garden of Mr Anderton of Vaila by Mr Eustace Bankart. Sent to be stuffed, April 1900, but unfortunately lost in the wreck of s.s. *St Rognvald* on her passage to Aberdeen. This is the first occurrence of the Scops Owl in Shetland. It was seen by Mr Grierson, and there seems to be no doubt as to its identity.

WHITE-FRONTED GOOSE: one at Spiggie, February 1902. Another at Spiggie, September 1905. Not uncommon.

PINTAIL: Saxby, p. 134, says that he could never hear of an occurrence in autumn or winter, but Mr Grierson shot one on 8th December 1902. Mr Grierson found a Pintail's nest with eggs at Hardbrake, Quendale, Dunrossness, in May 1906. This bird is now (1932) becoming more common.

POCHARD: Mr Grierson shot two at Dunrossness, 8th December 1902.

TUFTED DUCK: two seen by Mr Grierson on the Loch of Clickhemin on 24th May 1914. Mr Grierson's house—Helendale—is quite near this loch.

GOOSANDER: one shot at North Roe, November 1910, by Mr Haldane of Lochend. Seen by Mr Grierson. This bird is becoming rather more common than in Buckley and Evans' time.

VELVET SCOTER: one seen by Mr Grierson in Rønis Voe, 18th February 1915. This bird is common in Orkney, but still rare in Shetland.

SMEW: Mr Grierson saw one at Dunrossness, 2nd February 1901, and another in the same parish on 16th February 1901, which he shot—perhaps the bird he saw on the 2nd February. He saw another at Rønis Voe on 18th February 1915. Rather rare.

RING DOVE: one in Helendale garden, 24th May 1908, and another on 24th May 1914. Both remained "for some time."

TURTLE DOVE: one shot by Mr Grierson at Spiggie, June 1902. One seen at Hayfield by Mr Grierson, 4th December 1905. This Dove is very often seen in Shetland now.

GREAT SNIPE: one shot by Mr Grierson at Dale,

20th September 1901 (8½ oz.). Verified by Mr Harvie Brown. The skin is in my brother's possession here, in Whalsay.

GREY PHALAROPE: one seen at Symbister, Whalsay, on 15th February 1930, by Mr D. J. Williamson. These birds are not commonly seen in Shetland.

Here the jottings of Messrs Grierson and Mr Williamson end. Fortunately Mr Williamson is still with us, and continues his observations of birds.

I do not know if the first occurrence of the BEE-EATER in Shetland was properly reported at the time, but it will do no harm if I repeat the facts, as noted in the Shetland newspapers of 10th June 1899:—"For some days last week a strange bird was seen flying about at Symbister [Whalsay], and on Monday morning Mr Arthur Adie found the bird dead on the top of a wall there. It was sent to Lerwick, where it was identified as the Bee-eater (*Merops apiaster*). . . ." (Then follows an account of the range, etc., of the Bee-eater.) ". . . The bird is from ten to eleven inches long, and the plumage is exceedingly pretty. The Bee-eater was sent down [to Lerwick] to Mr John Irvine, who is having it stuffed."

The GREEN WOODPECKER has not yet been recorded in Shetland, so it is most annoying that Mr D. J. Williamson and others saw one in the late autumn of 1929, and one in the winter (December) of 1930, but that these occurrences cannot be confirmed. Both birds were seen on the wing as well as resting but, unfortunately, both were shot by ignorant persons and no remains could be obtained.

The BLACK-HEADED GULL is mentioned by Buckley and Evans, p. 179, in the following words:—"Only three breeding places are at present (1898-99) known, nor is it likely that many others have been overlooked. . . ." Since (say) 1900 this gull has steadily increased until it now breeds in many parts of Shetland.

In a small holm in a loch in Whalsay, HERRING GULLS bred for certainly over a hundred years, and the holm itself was always known as the "Maa Holm."

So far as I can make out, the Arctic Tern drove the

Herring Gulls out of this holm about 1870, and now (in 1931) Mr D. J. Williamson landed on this islet several times and counted four Herring Gulls' nests with eggs. In 1932 fourteen nests with eggs were counted by him, and we anticipate that this number will be increased this season. So it seems not unlikely that the Terns will, in time, be forced to seek other lodgings, and the islet will become the "Maa Holm" again!

The efforts of the Black-headed Gull pale, however, before the manner in which the FULMAR PETREL has established itself in Whalsay, and the adjacent uninhabited islands. When I was a child, some fifty years ago, the Fulmar was only seen by our fishermen, thirty to forty miles off the land. There were lots of Fulmars at that distance; but they were never seen near the shores of Whalsay and did not breed with us.

About 1920 I heard that one of the men had found a bird on her egg in one of the nearby isles, and he took the egg home and put it on his mantle-piece, without attempting to blow it. In the morning his wife and he noticed that the egg was moving, and before long the chick chipped the shell. They attempted to help the chick by breaking a piece of the shell, but of course the chick died. Since then, the Fulmar has increased so greatly that it has driven the Herring Gulls quite away from one of our cliffs, and it is now one of our common birds. A charming friendly bird it is too.

The GREAT SKUA has been increasing considerably in recent years—thanks to the protection of certain landlords who have spared neither pains nor money to protect this fine bird. Within the last few weeks, I am sorry to say, the County Council of Zetland have removed protection from all the breeding places of the bird, except at Hermaness, Unst, which will be watched as usual.

This is most regrettable, and has apparently arisen from the complaints of some crofters that the Skuas have killed sheep and lambs. I am quite certain that no one has seen a Skua kill either a sheep or a lamb.

On 6th November 1932 parts of the mainland of Shetland

and the island of Yell were visited by large numbers of GREAT TITS, BLUE TITS and WAXWINGS going south. Here, in Whalsay, a good many Great Tits were seen on 6th November and for a few days afterwards, when all went to the southward, having a favourable northerly wind, with the exception of a pair which remained near my brother's house. We at once put out bones and suet on strings, got cocoanuts sawn in half, some with the nut left in, and others filled with melted fat, and I am delighted to say that the birds are still here, having come through the winter splendidly. I have put out a nesting box for them, and hope they may use it.

Should they nest here, I think that it will be the first record for Shetland. They do not seem to understand that monkey nuts are to be eaten—so far they have not touched them, even although I have tried the experiment of breaking the shells, and filling a small hanging tin with the nuts.

Dr Ticehurst suggests that these Tits are Scandinavian birds, so that they have not seen these nuts before; but it is curious that they do not try them out of curiosity.

On Sunday, 5th March 1933, Mr D. J. Williamson saw a duck swimming very close to the shore in Symbister Voe, Whalsay, which, from the peculiar markings on head, neck and breast, he could only conclude, was a male HARLEQUIN DUCK. As may be imagined, Mr Williamson was not a little excited, as this bird has not been reported from Shetland previously. The water was calm, and the drake swam about and was well seen. Mr Williamson went into his house, which is on the shore, turned up Howard Saunders, and determined that the bird was a Harlequin. He went out again and examined the bird as closely as he could, once more, and it then disappeared. I think it right to report this, although unverified by the shooting of the bird, so I merely say that a bird like a Harlequin was seen. They are resident in Iceland, which is not very far from here.

THE ORIGIN OF THE FERRET.

By GERRIT S. MILLER, Jr., Curator of Mammals, United States National Museum, Washington.

[I AM indebted to Mr Gerrit Miller for permission to send to THE SCOTTISH NATURALIST the following criticism, kindly prepared at my request, of my paper upon the origin of the Ferret based upon specimens captured in Mull which I regarded as the descendants of escaped Ferrets. Mr Miller, as will be seen, thinks they were more probably polecats. If so, my conclusion falls to the ground. Since, however, I still think my identification was correct, although I had only a single skull and two skins for examination; I should be most grateful to any reader of THE SCOTTISH NATURALIST who may be sufficiently interested in the subject to send me additional specimens from Mull so that the question at issue may be cleared up:—R. I. Pocock, F. R. S., Natural History Museum, Cromwell Road, South Kensington, London, S.W. 7.]

"I have been studying your paper (THE SCOTTISH NATURALIST, July-August, 1932, pp. 97-108.) on polecats and ferrets, and I must confess that the arguments you bring forward do not convince me that I was wrong in saying that the relationships of the ferret are with *Mustela eversmanni* and not with *M. putorius*.

"The skull material in the U.S. National Museum consists of 22 specimens, 8 *putorius* (5 ♂, 3 ♀), 5 *eversmanni* (2 ♂, 3 ♀), and 9 ferrets (mostly not sexed, but apparently 6 ♂, 3 ♀). When they are laid out together the *putorius* skulls appear conspicuously different from all the others, (each individual skull of *putorius* when placed among *eversmanni* or ferrets of its own sex is immediately recognisable as different), while the *eversmanni* and ferrets look alike until they are closely examined, when the distinguishing feature that you call attention to in the postorbital constriction can be seen as an average peculiarity of the two lots, though two of the *eversmanni* cannot be distinguished by this character from two of the ferrets (all four are adult).

"This series appears to show that we have two species, *putorius* and *eversmanni*, sharply distinguishable from each other, and inside of *eversmanni* two forms, wild *eversmanni* and tame *furo*, separable by a slight average difference. This difference might have come about as the result of domestication or it might indicate that the race domesticated was not the one (or ones) represented by our specimens of *eversmanni* from Sarepta and the Southern Altai region. This latter suggestion is in line with Cabrera's belief (*Bol. Real. Soc. Españ. Hist. Nat.*, vol xxx., 1930, pp. 477-480.), that the ferret comes from the race now occurring wild in the Atlas Mountains.

"Your wild 'ferret' from Mull, with a polecat skull (as your figure and measurements show), is much more likely, it seems to me, to be a polecat with some albinism that produces a superficial likeness to a ferret, than a ferret with a skull such as no ferret has yet been seen to possess.

"Your Roumanian specimens were, I think, correctly labelled in the first place. Éhik (*Ann. Mus. Nat. Hungarici*, vol. xxv., 1928, pp. 15, 37) in describing *Mustela eversmanni hungaricus*, shows that both species occur in Hungary, and Călinescu (*Mamiferele Romaniei*, 1931, pp. 24-25) has given their ranges in Roumania. To have them both in Roumania would be far less extraordinary than to have a race in which the male had one type of skull and the female the other—a condition not yet known to occur in any member of the group. Quite probably there is in Roumania a distinguishable race of *putorius* for which your name will hold, as you took the broad-waisted male for the type, and Éhik named the narrow-waisted animal."

NOTES

Butterflies in East Lothian.—During the warm weather at the beginning of June a number of Painted Lady Butterflies (*Pyrameis cardui*) were observed here. Between the 3rd and the 10th of the month I noted several at various points on the coast within half a mile of this place, one being seen on different occasions in our little garden. On the 7th I saw a Red Admiral (*Pyrameis atalanta*) flying over the rocks, and a Humming-bird Hawk Moth (*Macroglossa stellatarum*) was observed in the garden. Both have appeared again this week, and for the last five days I have had the pleasure of watching the Hawk Moth hovering round the tall spikes of red and white valerian, busily extracting the nectar from the flowers.—C. Ethel Evans, Canty Bay, North Berwick, 24*th June* 1933.

Dunlin Breeding in West Ross.—Though the Dunlin has been recorded as breeding in West Sutherland and West Inverness, there has hitherto been no record of it in West Ross. This year I learned that a few pairs breed at Shielday near Gairloch.—Evelyn V. Baxter, Largo.

Early Movements of Waders.—On 1st August 1933 we visited the East Neuk of Fife and were surprised to find so many waders. The most interesting was a Dotterel, a species we had never previously seen at the East Neuk. A Knot in full summer plumage and 30-40 Turnstones, some in almost full breeding dress, showed immigration from overseas. Golden Plover were there in numbers, one flock comprised about 200 birds and there were others about; all those we saw in breeding plumage were our own birds. Considerable numbers of Dunlin and Curlew and a few Redshanks were also probably our own breeding birds. On 5th August a flock of about 60 Golden Plover were in a field near Largo. This early return of birds to the shore is probably the result of the exceptionally fine summer we have experienced.—Evelyn V. Baxter and Leonora Jeffrey Rintoul, Largo.

Painted-Lady Butterflies in Berwickshire and Fife.—Painted-Lady Butterflies (*Vanessa cardui*) seem to us to occur more plentifully in Scotland than they did 25 to 30 years ago. Then we rarely saw them, now we expect to see several every year. This summer we observed a very worn specimen on the sea banks above Fast Castle, Berwickshire, on 27th May and one near Elie on 8th July. On 4th August a most beautiful specimen was at the flowers

of *Buddleia variabilis* in Largo, along with several Red Admirals, Small Tortoiseshells and Large Cabbage Whites.—LEONORA JEFFREY RINTOUL and EVELYN V. BAXTER, Largo.

Butterfly Migration Records.—As Recorder for Scotland under the S. E. Union of Scientific Societies' Immigration Scheme it is my duty to report the following occurrences:—

Pyrameis cardui: (1) several noted at various points on the coast of East Lothian between 3rd and 10th June 1933 (Miss C. Ethel Evans, *vide* note on p. 155); (2) one seen at Loch Bà, on road to Glencoe, 20th June (Miss V. M. Peel); (3) one worn female at Kinloch Rannoch, Perthshire, on 23rd June (G. V. Bull); (4) a fresh female seen on Gordon Moss, Berwickshire, 13th August (A. C. Butler); and those seen by Misses Rintoul and Baxter (*vide* p. 155).

Pyrameis atalanta: (1) one seen flitting over the shore at Oban, Argyllshire, on 21st June 1933 (Miss V. M. Peel); (2) one seen flying over rocks at North Berwick on 7th June 1933 (Miss C. Ethel Evans, *vide* note on p. 155).—PERCY H. GRIMSHAW, Edinburgh.

Great Crested Grebe in West Ross.—On 6th May 1933 there was a Great Crested Grebe (*Podiceps c. cristatus*) on Loch Raa near Achiltibuie, Ross-shire. I had an excellent view of the bird, and watched it for some time through field-glasses, as it swam and dived close to the shore. Although this loch and an adjacent one were carefully searched on 7th May and again on the 9th and 10th, nothing more was seen of the Grebe. This is apparently the first record of the occurrence of the Great Crested Grebe in West Ross.—JAMES W. CAMPBELL, Kelvedon, Essex.

[An interesting note. This Grebe appears to be prospecting north of the Grampians, and we may hope to hear of further extensions of its breeding range. It has been recorded from West Sutherland, but not hitherto from West Ross. Of course in these parts there are few lochs suited to its breeding habits.—EDS.]

Bird Notes from the Glasgow District.—The following outstanding records may be of interest. The named places are within a comparative short distance from Glasgow and can be reached in an afternoon's or evening's outing.

On 22nd August 1932 one Turnstone was observed at Balgray dam. It was feeding in company with numerous Dunlins and Ringed Plovers—of the latter species I counted 43 birds. This is the greatest number I have seen in inland waters. On 31st August

at the same dam I saw one pair of Sanderlings. This, so far as I can ascertain, is the first record for Balgray. On the same day a Black-Tailed Godwit was observed at the same dam. I have only one previous record of this bird at inland waters, namely, one pair in breeding plumage at Summerston Marsh on 24th April 1932. Back again at Balgray on 5th September I made out 5 Knots, 2 Ruffs and 3 Curlew Sandpipers along with various others. This brought a very interesting time to a close, as on my next visit a week later the water on the dam had risen considerably, with the result that most of the waders had departed.

Nothing of great interest was noted till 19th March 1933, when I saw a male Smew in adult plumage on Balgray dam. The late John Robertson in his *Birds of East Renfrewshire*, does not mention the Smew. At an evening's outing to Rouken Glen on 26th April, I saw a Spotted Redshank in its dusky summer plumage. Though this species has been observed frequently in autumn I know of no record of it in the area during spring.

At Summerston marsh on 30th April I had a male and female Gadwall under observation for some time. They seemed very nervous and endeavoured to seek any scant cover till my near approach when they took to wing. In flight their long pointed wings and white patch were very noticeable. In a recent paper by Mr Jamieson on the "Birds of the Kelvin," mention is made of the Gadwall having appeared on two previous occasions. Finally, while visiting Waukmillglen dam on 21st June, I was surprised to see a young male and female Golden-Eye. They were there the following week, but on 17th July I saw the male only. This is a regular winter visitor, but I know of no previous record of it in the height of summer here.—NICOL HOPKINS, Oatlands, Glasgow.

CURRENT LITERATURE

[We regret that, owing to pressure upon our space, the notes under this heading have had to be held over. Several paragraphs, therefore, printed below, may appear somewhat out of date, but are inserted on account of their possible interest to our readers.—EDS.]

Vertigo lilljeborgi in Great Britain.—A paper of considerable interest to conchologists appears in the *Journal of Conchology* for February 1933 (pp. 296-313). It is by D. K. Kevan and A. R. Waterston (both valued contributors to the SCOTTISH NATURALIST) and deals very fully with the distribution in Great Britain and Ireland of a snail, *Vertigo lilljeborgi*, formerly regarded as a rare and local

species confined to lake margins in the west of Ireland. By careful and assiduous search on the part of the authors of this paper this little snail has been found in no fewer than 22 localities in Scotland, 7 in England (Westmorland and Cumberland) and 3 in Ireland, in addition to the previously known Irish records. Interesting details are given regarding the habitat, habits, and variation of the species.

New Scottish Records of Mollusca.—Many new Scottish records of Land and Fresh-water Mollusca are given in the Recorder's Report published in the *Journal of Conchology* for June 1933 (pp. 344 and 345).

Notes on Arran Lepidoptera.—By Garth D. Haggart, *Entomologist*, February 1933, pp. 28-30. Several species of Heterocera recorded as seen during the first half of August 1932.

Notes on Braconidæ: XIV.—Alysiides.—By Claude Morley, *Entomologist*, July 1933, pp. 158-161, and August 1933, pp. 183-185. In these instalments of this useful paper the following Scottish records are given: *Alysia sophia* Hal., Edinburgh; *Aphæreta major* Marsh, Gretna; *Phænocarpa tabida* Nees, Birnam (Perthshire); *P. ruficeps* Nees, Taynuilt; *P. pratellæ* Curt., Banchory.

The Diving Powers of Whales.—Those of our readers who are interested in the lengthy paper we are now publishing on "Peterhead Sealers and Whalers," by Dr Robert W. Gray, should also read an article by the same author, which appeared in *The Naturalist* in December 1932 (pp. 363-365), in which the moot question of the depth to which whales can descend is discussed.

Biology of Pieris rapæ.—A paper of much interest to students of British Lepidoptera is published in the *Entomologist's Record* for December 1932 (pp. 168-176), and May 1933 (pp. 65-70). The author is Orazio Querci, who writes from Philadelphia, where his experiments were carried out. About 7000 specimens of this butterfly, which we call the "Small White," were captured living, many being confined in cages, and both the butterflies and their eggs, larvæ, and pupæ subjected to different temperatures, the results being noted. Many observations were also made by breeding from the eggs, and full notes taken of the season of 1932 in Philadelphia.

The Great Crested Grebe Enquiry (1931), Scotland.—Detailed information regarding the distribution of the breeding sites of this bird in Scotland are given by T. H. Harrisson and

P. A. D. Hollom in *British Birds*, March 1933, pp. 286-291. The total pairs recorded are given as *c.* 75-100, and the occupied sites 40; the total sites, including those where breeding was not proved, number 107.

Black Redstart in Inverness-shire.—T. G. Longstaff, in *British Birds* for March 1933 (p. 306), records the occurrence of a single male of this species at Samalaman, Glenuig, on the south-west coast of Inverness-shire, on 29th April 1921.

American Bittern in Outer Hebrides.—In *British Birds* for March 1933 (p. 313) it is stated that a male of this species was shot on the island of Benbecula on 27th December 1932 after a series of southerly gales. This is apparently a new record for the Outer Hebrides.

White Barnacle-Goose in Kirkcudbrightshire.—One seen flying in the middle of a flock at Southwick Marsh, by H. Carr, *British Birds*, March 1933, p. 314.

British Trichoptera, Ephemeroptera and Plecoptera in 1932.—By D. E. Kimmins, *Ent. Mo. Mag.*, July 1933, pp. 156-160. Many Scottish records are included in this paper.

Colour Sense in Birds.—The Nuthatch, the Great Tit and the Blue Tit were the subjects of many experiments undertaken by George Marples, A.R.E., A.R.C.A., to test the colour sense of Birds. The results are given in an interesting paper in *British Birds* for January 1933 (pp. 238-245). The general conclusion reached was that the Nuthatch was influenced more by the *tone* of the colour than by the colour itself, and that preference was given for warm rather than cold hues. The Tits appeared to be indifferent to colours.

Some Nesting Habits of the Kingfisher.—A paper on this subject, well worth reading, is given by B. B. Rivière, F.R.C.S., M.B.O.U., in the February number of *British Birds* (pp. 262-270). Two photographs of Kingfishers carrying fish illustrate the paper.

Ichneumon Parasites of Lophyrus pini.—Two parasites of the well-known Sawfly *Lophyrus pini* are described by Dr W.B.R. Laidlaw in the *Ent. Mo. Mag.* for June 1933 (pp. 124-132) and illustrated by two excellent plates. The material for this paper was obtained at the Forestry Commission area at Tentsmuir, Fife. The parasites in question are *Lamachus pini* Bridgman, of which a variety *caledonicus* is described (and which is presumably new, though not so indicated), and *Holocremnus macellator* Thunb. var. *cothurnata* Holmgr.

Coleoptera in Dumfriesshire.—A note by Jas. Murray in the *Ent. Mo. Mag.* for June 1933 (pp. 140 and 141) gives a long list of beetles obtained in the county of Dumfries during the year 1932.

A New British Bug.—*Sigara castanea*, a bug belonging to the family Corixidæ, has been added to the British list by W. E. China. In a paper in the July number of the *Ent. Mo. Mag.* (pp. 154-156) the author points out that this species has been hitherto confused with *S. moesta*, but may be distinguished by characters which are given in the paper. There are specimens in the British Museum collection from various localities, including the island of Iona.

Arctic Ichneumonoidea in the Perthshire Highlands.—The collecting trip undertaken by Messrs Edwards, Blair, and other entomologists, to the Perthshire Highlands proved eminently successful. The Diptera, which included several species new to science or to the British fauna, have been recorded by Dr Edwards in our pages, and now we note that the Hymenopterous insects of the group Ichneumonoidea were recorded by Dr Blair in the *Ent. Mo. Mag.* for April 1933 (pp. 79-81). Twenty-six species are listed, exactly half of which are new to the British fauna. These were all obtained on the mountain slopes at an altitude of over 2000 feet. Most of them were gathered from the catkins of the Dwarf Willow (*Salix herbacea*).

New Species of Hemipteron from Perthshire.—In the *Ent. Mo. Mag.* for May 1933 (pp. 106-108), a new species of *Euscelis*, to which the name *bensoni* has been given, is described and figured by W. E. China of the British Museum. Two male specimens were obtained by Dr K. G. Blair at an altitude of 2000 feet on Ben Lawers, in June 1932.

Second Nesting of the Redwing in Scotland.—A. H. Daukes reports in *British Birds* for July 1933 (p. 51) that a pair of Redwings nested again this year in the same locality as last year. The nest, with the two eggs which were laid, has been presented to the British Museum.

Life-History of the Small Eggar Moth.—This subject has been very fully and carefully treated by F. Balfour-Browne, M.A., in the *Proceedings of the Zoological Society of London*, 1933, Part I., pp. 161-180, and is illustrated by five beautiful photographic plates. It is impossible for us to give a summary of this important memoir owing to lack of space; we can only say that the paper is a very thoughtful and suggestive one, and should be read by all students of Lepidoptera.

CONTENTS

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The Scottish Naturalist

No. 204] 1933 [November-December

PETERHEAD SEALERS AND WHALERS: A CONTRIBUTION TO THE HISTORY OF THE WHALING INDUSTRY.

By Dr Robert W. Gray.

(*Concluded from p.* 138).

1890.

In 1890 the ice lay well east and there was little south-westerly drift, but the fishing was rendered a failure by the formation of "bay floes" or extensive sheets of recently formed ice on the surface of the sea. The weather was unusually fine and in the absence of strong winds the bay floes remained unmelted and unbroken far into the season. Not only did the bay ice prevent the ships from reaching and moving about amongst the heavy ice, but it also seems to have prevented the usual growth of plankton, and parts of the sea, usually green in colour, remained clear and blue. Only six whales were seen—all at the northern fishing—and none was caught. Seven ships were at the fishing—four from Peterhead and three from Dundee.

From Log of *Hope*.

May 18.—78° 16′ N., 1° E.; air 25°; sea 29°: "10 A.M. proceeding N.W. through the ice; 8 P.M. came to bay floes which stopped our progress."

" 22.—78° 12′ N., 1° E.; air 26°; sea 29°: "amongst bay floes; cannot get either north or south; 10 P.M. saw a whale but only once going 'to the N.W.' Colour of the water blue."

May 26.—78° 14′ N., 1° W.; air 28°; sea 29°: "steamed to the N.W. through pack ice and got into a 'floe water'; made sail and plyed south along the floes. One Finner whale seen."

,, 27.—78° 12′ N., 3° W.; air 27°; sea 29°: "ship plying west along a floe; some narwhals seen during the day. Colour of the water blue and no 'food.'"

,, 29.—78° 20′ N., 1° E.; air 22°; sea 29°: "amongst floes; nothing seen and the water all blue."

June 3.—79° 32′ N., 6° E.; air 22°; sea 29°: "amongst floes; nothing to be seen here; water all blue, no food."

,, 7.—76° 54′ N., 1° 37′ E.; air 31°; sea 31°: "the spring ice is still intact and fresh as in the month of March, thus keeping the fishing ice all bound together—there is no drift on the main ice."

July 8.—73° 26′ N., 14° W.; air 34°; sea 35°: "came to a close pack which no ship could penetrate into."

,, 12.—73° 42′ N., 11° 30′ W.; air 35°; sea 35°: "there is positively nothing that the ship can do, all is close pack."

,, 13.—73° 15′ N., 12° 53′ W.; air 31°; sea 33°: "made the ship fast to a piece of ice, can go no farther (west)."

,, 18.—72° 53′ N., 15° W.; air 43°; sea 33°: "ship made fast to a floe, no farther progress to be made to the westward; ice all close."

Aug. 4.—70° N., 19° W.; air 36°; sea 33°: "reached into the pack which is simply as bad as bad could be; bore up for Peterhead."

1891.

In 1891 the weather and the state of the ice both seem to have been good, although I am unable to speak from personal experience, having made my last voyage the previous year. A splendid fishing bight, according to my father, broke out in May in lat. 78° 40′ off Prince Charles Foreland in which a number of whales were seen. The *Polar Star* got six and the *Active* three, but the *Eclipse* and the *Hope*, probably because they came out of this "bight" too soon, only got one each. At the southern fishing there was an enormous accumulation of ice and none of the ships succeeded in reaching the proper ground, the centre of which is in about lat. 73° long. 15° W. Very few whales were seen and none caught.

From Log of *Hope*.

May 15.—78° 42′ N., 2·52° E.; air 31·5°; sea 32°: "at noon took the ice and reached N.W.; 4 P.M. came to a floe; midnight saw a whale."

,, 16.—78° 50′ N., 1° E.; air 22°; sea 23°: "ship in a floe water; colour of sea green. At midnight saw a whale."

,, 18.—78° 40′ N., 1° E.; air 24°; sea 31°: "amongst loose (pack) ice; saw a (small) whale which we caught."

May 19.—78° 30′ N.; 1° E.; air 27°; sea 30°: "ship fast to a piece of ice. At 1 P.M. a whale seen going to the S.W."

„ 21.—78° 50′ N.; 3° E.; air 27·5°; sea 31°: "ship running to the N.N.E. along the edge of the ice. Colour of the sea here is dark brown. Birds very numerous."

„ 22.—78° 33′ N., 1° W.; air 27°; sea 31°: "ship in a floe water; 4 A.M. saw a whale."

„ 27.—79° 10′ N., 6° E.; air 26°; sea 31·5°: "noon took the ice and reached to the N.W., and at 8 P.M. came to a floe water. Colour of sea olive green."

„ 29.—78° 10′ N., 0° 15′ W.; air 25°; sea 30°: "amongst floes; caught a walrus."

„ 31.—78° 35′ N., 0° 0′; air 18°; sea 31°: "ship in a hole of water; 6 A.M. a whale seen."

June 2.—79° 2′ N., 2° 15′ E.; air 21°; sea 31°: "amongst loose (pack) ice; appearance of whales having been here and many narwhals about." *

„ 16.—76° 16′ N., 4° W.; air 29°; sea 31°: "ship between the pack and the floes (*i.e.* between the broken and unbroken ice) innumerable bears' foot-prints on the ice."

„ 24.—75° 9′ N., 9° W.; air 36°; sea 32°: "12 P.M. ship made fast to a floe; abundance of whale's food in the water."

July 13.—75° 23′ N., 10° W.; air 33°; sea 32°: "ship in a floe water; some narwhals seen."

„ 16.—75° 6′ N.; 12° W.; air 35°; sea 32°: "ship in a floe water; two or three Finners seen."

„ 18.—74° 27′ N.; 13° 55′ W.; air 35°; sea 36°: "Shannon Island in sight; some narwhals seen."

„ 19.—73° 58′ N., air 42°; sea 36°: "amongst loose (pack) ice; ship passing through whales' blowings and their other indications."

„ 25.—72° 30′ N.; 15° W.; air 33°; sea 32°: "ship in a 'floe water'; one whale seen."

Aug. 4.—72° 26′ N.; 12° 30′ W.; air 33°; sea 35°: "ship in a 'floe water'; some narwhals seen."

„ 6.—71° 57′ N., 11° W.; air 39°; sea 37°; "came into the sea."

„ 11.—69° 30′ N.; 13° 30′ W.; air 39°; sea 37°; "left the ice for Peterhead."

1893.

In 1893, as often happened, the ice lay too far west and was drifting much too quickly south-west. The *Windward* of Peterhead, commanded by my father, the only ship at the fishing, only saw two whales, one of which she caught. It, and another which accompanied it, were seen on 6th May in lat. 78° 46′ long. 0° 22′ E. when the whale-lines were still uncoiled into the boats. Fortunately the two whales remained in the same place until the lines were coiled and boats ready to leave the ship. It proved a fine whale which

* My uncle doubtless refers to "blowings" or mucus on the surface of the water.

yielded about 19 tons of oil and about 19 cwts. of bone. No whales were seen at the southern fishing. With the *Windward's* return, Peterhead's connection with the Greenland Sea and my father's whaling career both came to an end; the former lasted upwards of one hundred, the latter about fifty years.

The log-books of the *Active* and *Balaena* for the seasons 1895, 1896, and 1897 happen to be in my possession, and I now propose to supplement my paper with a few extracts from them.

1895

The season 1895 was unusually good; only two ships, the *Active* and *Polar Star*, both out of Dundee, were at the fishing. The former got nine, the latter two whales.

From Log of *Active*.

May 2.—79° 20′ N., 7° E.: "Amongst 'bay floes' (outside the ice proper); at 10 A.M. a 'fish' rose close astern of the ship; lowered three boats and D—— W——'s boat got fast and the 'fish' was killed in an hour. Length of bone 6 feet 2 inches. At noon: two boats after another 'fish' but it went into some bay ice where it could not be followed. 11 P.M. two more 'fish' seen; (next day) a number of narwhals about."

" 5.—79° 40′, 8° E.: "a 'fish' was seen to jump clean out of the water. It was about a mile from the ship in a 'hole of water' in the bay ice." *

" 6.—79° 52′ N., 8° E.: "swell from the south breaking the bay floes. 6 A.M. a 'fish' was seen jumping out of the water about 4 miles to the N.E.* 3 P.M. a small whale rose ahead of the ship; lowered two boats and D—— C—— got fast; 'fish' took out 3½ lines (420 fms.). Length of 'bone' 2 feet 7 inches."

" 9.—79° 32′ N.; 4° 40′ E.: "noon a small whale seen one mile ahead of the ship; strong bay ice all over the water. A few narwhals seen in the small holes."

" 18.—79° 38′ N., 5° E.: "ship working amongst young ice (outside the proper ice). 10 P.M. a whale seen to leeward of the ship; lowered two boats and D—— C—— got fast. 8 A.M. (next day) got the fish killed (length of bone 8 feet)."

" 21.—78° 38′ N., 4° E.: "10.45 P.M. saw four large whales ahead of the ship; lowered four boats and G—— M—— got fast; all the other whales went away, had the fish killed 1 hour after being struck; length of bone 9 feet 6 inches."

" 22.—78° 57′ N., 4° 30′ E.: "ship amongst streams of young ice; saw a dead whale . . . length of bone 10 feet 5 inches." †

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* Probably young animals.

† This proved to be a whale struck by the *Polar Star* on the 18th; it escaped with 25 "lines," *i.e.* 3000 fms. of rope. There were no "lines" attached to it when it was picked up, the harpoon having probably dropped out.

May 24.—78° 48′ N., 3° 30′ E.: "ship amongst young ice about two miles from the pack edge . . . nothing seen but floe seals and narwhals."

June 2.—78° 40′ N., 0° 0′: "saw a whale at a floe-edge; lowered boats and D—— O—— got fast; fish went under the floe and took out four lines (480 fms. of rope); she was dead an hour after being struck; length of bone 9 feet 6 inches."

" 5.—"at 8 A.M. a whale rose at the ship's (port) side: the starboard waist boat was lowered down and the fish went under the ship and came up at the boat's bow when G—— M—— got fast; length of bone 5 feet 10 inches.

" 6.—"4 A.M. 15 whales can be seen about five miles away; they are near some (close) pack ice, we cannot risk losing our lines.* 9 A.M. G—— M—— got fast to a large whale . . . the 'fish' took out 2 lines at great speed, came up and lashed the water with its tail, then took out ¾ of a line more and was not seen again. Later I saw (from the mast-head) a dead whale; length of 'bone' 9 feet 5 inches.†

" 11.—"I have not been able to get an observation of the sun for 13 days . . . we find we have drifted (S.W.) 70 to 80 miles during the last 6 days, keeping the same ice all the time."

" 27.—75° 40′ N., 8° W.: "steaming W.S.W. along the edge of a very large floe; many narwhals seen."

July 12.—72° 45′ N., 17 W.: Cape Hold with *Hope* in sight bearing N. by W., distant 70 miles; "ship between two large floes; at 7 P.M. saw a whale about 7 miles south of the ship; it was going S.W."

" 14.—72° 7′ N., 18° W.: "at 7 P.M. a large whale rose not far from the ship; it was going N.E."

" 17.—72° 29′ N., 17° W.: "amongst floes; nothing seen but narwhals; got a large female."

" 22.—72° 36′ N., 19° W.: "at 5 A.M. a 'fish' rose near the ship; lowered four boats; D—— C—— fired and missed."

" 26.—72° 19′ N., 17° 50′ W.: "4 A.M. great numbers of narwhals about; noon, passed a patch of whales' blowings; 4.30, saw a whale ahead of the ship; lowered two boats and at 6 P.M. G—— M—— got fast; 10 P.M., fish alongside, length of bone 11 feet."

Aug. 21.—71° 24′ N., 18° 15′ W.: "gave up the fishing, and came outside the ice."

1896.

In 1896 the weather and the state of the ice appear to have been moderately favourable. The *Active*, *Balaena*, *Diana*, *Polar Star* and *Terra Nova*—all out of Dundee—were at the fishing. The *Active* got four whales, the *Polar Star* and the *Terra Nova* one each, while the other two ships returned "clean."

* The whalers were very chary about attacking whales in the vicinity of close pack ice where they cannot be followed. Whales attacked in such circumstances usually escaped with the loss of much valuable gear.

† It proved to be a whale the *Polar Star* lost on 1st June.

From Log of *Active*.

May 13.—79° 20′ N., 1° 30′ E.: "at 4 P.M. stood into a small bight; at 7 P.M. a fish rose ahead of the ship; lowered two boats and T—— W—— got fast; 9 P.M., 'fish' alongside; length of 'bone' 5 feet 8 inches."

" 15.—79° 35′, 0° 0′: "ship in a water leading N.N.W.; floes on our port hand; loose ice on our starboard; nothing but narwhals, and next day great numbers of little auks and looms."

June 5.—78° 40′ N., 2° W.: "amongst small floes and loose (pack) ice; numbers of floe seals and narwhals; nothing else seen."

" 8.—79° 10′ N., 1° 20′ E.: "fine clear weather; ship steaming N.E.; passed some floes almost in the sea—very little pack ice outside them. 9 P.M. a 'fish' seen ahead of the ship, stopped steaming, made sail, and at the same time lowered two boats. At 1 A.M. (next day) A—— F—— got fast; she only took out 2½ lines and was killed, and alongside at 2.30 A.M.; length of bone 10½ feet. At 4 P.M. a 'fish' rose astern of the ship; lowered two boats, and A—— McK—— got fast; 6.30 A.M. 'fish' alongside; she only took out 2½ lines (300 fms.); length of bone 8 feet 8 inches."

" 15.—79° 25′ N., 2° 30′ E.: "amongst small floes and loose (pack) ice; a great number of narwhals."

" 20.—78° 30′ N., 1° 30′ W.: "ship plying south between the floes and the pack ice and tacking every half hour; in the afternoon a swell came in which broke the floes."

" 28.—73° 30′ N., 13° W.: "ship near a floe; water is a very dark green colour; numbers of floe seals and narwhals."

July 2.—72° 45′ N., 19° W.: "amongst small floes; one narwhal, a number of floe seals and great numbers of little auks."

" 12.—72° 40′ N., 18° 30′ W.: "amongst small floes and loose (pack) ice; a finner rose close to the ship; colour of water pale green."

" 14.—72° 35′ N., 19½° W.: "we are 35 miles off the Land Cape Parry, bearing W.N.W. true; great numbers of floe and ground seals but no narwhals or whales."

" 16.—72° 27′ N., 17° W.: "ship near the south end of a large floe. 3 P.M. two boats lowered after a 'fish' which was coming up towards the floe; 4 P.M. A—— McK—— got fast; 5.15 P.M. fish killed at the floe edge; 7 P.M. ship hooked on to the floe and whale alongside; 10 P.M. finished flensing; length of bone 7 feet 10 inches." *

" 20.—72° 20′ N., 17° 40′ W.: "ship hooked on to a floe; crew 'making off' (*i.e.* chopping up and stowing away) blubber; narwhals going E.N.E."

Aug. 3.—73° 10′ N., 16° 5′ W.: "amongst loose pack ice; a number of narwhals about the ship; water a pea-green colour."

" 12.—71° 10′ N., 20° W.: "fine clear weather; we are 30 miles from the nearest land; great numbers of little auks."

1897.

The season 1897 was on the whole very unfavourable; north-easterly winds prevailed, the ice was usually im-

* The *Active's* and the *Balaena's* whales were killed by means of rockets instead of lances, hence the celerity with which they were captured.

penetrable, with its edge lying far west.* The *Balaena*, *Active* and *Diana* were at the fishing. Only two whales were seen and only one caught.

From Log of *Balaena*.

April 26.—78½° N., 1° E.: "amongst loose pack ice; saw some narwhals."

May 19.—77° 55′ N., 4° W.: "very fine clear weather. From 80° N., 3′ E. to 78° N. 4′ W. there is nothing but a tight pack-edge; no chance of getting in anywhere. I am going south as far as 76½ in the hopes of seeing some signs of whales."

" 21.—76° 27′ N., 6° 30′ W.: "we are now at the head of a bight, the sea is a good colour and there is plenty of food here. Mallemokes are sitting about in all directions and there are narwhals and (? floe) seals to be seen. I would be in hopes of seeing 'fish' but the pack is tight all round. We can do nothing but go north again and wait for the ice to open."

" 25.—79° 30′ N., 1° 20′ E.: "the ice is in a good position here, 79° N., 1° 20′ E. It is considered good when the floes (*i.e.* the unbroken ice) are east of the meridian of Greenwich. Midnight, we are now in 80° 5′ N., and plenty open water can be seen to the N.E."

" 26.—79° 40′ N., 2° 10′ E.: "ship between the floes and the pack ice; a number of narwhals about. Got a large walrus."

" 27.—78° 39′ N., 0° 0′: "ship steering W.N.W., floes on starboard hand, pack on port. Great numbers of floe seals and narwhals. 3 P.M. saw a whale in a large hole to the N.W., distant about five miles; 8 P.M. got into the hole . . . at 10 P.M. the 'fish' rose under the ship's bow; lowered four boats. At midnight G—— M—— got fast; 3 A.M. the 'fish' killed; 4 A.M. fish alongside, commenced to flench at 6.30 and finished at 11; length of 'bone' 9 feet 2 inches."

June 1.—78° 11′ N., 2° W.: "ship in a bight and as far N.W. as we can get; sea a dark green colour and plenty of narwhals and (? floe) seals but with a tight pack all round and a swell rolling in."

" 9.—78° 22′ N., 0° 30′ W.: "at noon hooked on to the same sconce piece (*i.e.* a small floe) we have been at for nearly a week; since 3rd June we have drifted 60 miles south (south-west) with the same piece of ice . . . we have been here a fortnight and have seen nothing. I have decided to go south to the 75°, so at 8 P.M. we unhooked, made sail and steered to the S.W."

" 16.—74° 33′ N., 14° W.: "ship near a floe; at 1.30 P.M. a large 'fish' was seen about 3 miles to leeward; it was going to the N.E."

" 17.—74° 23′ N., 14° 30′ W.: "numbers of narwhals. 8 A.M. the 'blast' of a 'fish' reported, but it turned out to be a Finner's; ship dodging between the loose ice and the edge of a floe."

" 18.—74° 4′ N., 15° W.: "I fear there is a slight swell coming in from the eastward; numbers of narwhals going N."

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* During a succession of north-easterly gales, which commenced on 29th April, the *Balaena* drifted with the ice, while beset from 79° 13′ N., 1° E. to 75° 7′ N., 11° W.—a distance of about 300 miles (S.W.) in eleven days.

June 19.—74° 10′ N., 14° 40′ W.: "2 A.M. swell coming in and breaking the floes; 12 noon Pendulum Island in sight, bearing W. by N. distant 70 miles; 10 P.M. ship outside the ice; thick fog and a very heavy swell."

„ 20.—74° 30′ N., 13° W.: "great number of narwhals *outside the ice*."

„ 23.—75° 10′ N., 11° 30′ W.: "at 10 A.M. started to steam (north) along the pack-edge and continued till 4 P.M. As I found nothing but a tight edge and heavy swell rolling in I consider it no use going farther north. Turned and steered W.S.W. for the 73°."

Peterhead Ships at the "Greenland Fishery" and their Successes 1788-1893.*

Year.	Ships.	Whales.	Tons of Oil.	Year.	Ships.	Whales.	Tons of Oil.
1788	1	1	1	1804	2	36	228
1789	1	"clean"	...	1805	2	37	272
1790	1	"clean"	..	1806	2	6½	103
1791	1	1	...	1807	2	43	318
1792	1	1	...	1808	2	57	299
1793	1	1	...	1809	2	47	315
1794	1	1	...	1810	3	53	488
1795	1	1	...	1811	4	112	752
1796	1	3	37	1812	4	81	715
1797	1	2	12	1813	6	60	722
1798	1	4	71	1814	7	163	1390
1799	1	8	96	1815	8	65	840
1800	1	9	77	1816	8	114	866
1801	1	6	47	1817	10	64	717
1802	1	11	117	1818	12	134	1233
1803	1	7	84				

Year.	Ships.	Whales.	Tons of Oil.	
1819	13	74	782	including about 30 tons of seal oil, the produce of 2832 seals†
1820	15	105	1129	including 70-80 tons of seal oil, the produce of 6892 seals†
1821	16	155	1835	including 40-50 tons of seal oil, the produce of 4100 seals†
1822	9	36	494	including about 40 tons of seal oil, the produce of 3500 seals†
1823	8	88	695	... ...
1824	5	22	358	including about 45 tons of seal oil, the produce of 4021 seals†
1825	3	1	19	... ...
1826	1	6	75	... ...

* The whale and seal oil are unfortunately not shown separately in the statistics; after 1836 owing to the increasing proportion of seal oil the whale oil cannot be calculated with any degree of accuracy.

† Young saddle and hooded seals, mostly the former; 80-100 young seals according to their age and condition yielded 1 ton of oil.

Year.	Ships.	Whales.	Tons of Oil.	
1827	2	26	216	including about 35 tons of seal oil, the produce of 3000 seals*
1828	1	1	48	including about 35 tons of seal oil, the produce of 3000 seals*
1829	0	...	...	... ...
1830	0	...	...	... ...
1831	3	13	156	including 40-50 tons of oil, the produce of 4025 seals*
1832	5	16	229	including 75-85 tons of seal oil, the produce of 7450 seals*
1833	2	30	238	... ...
1834	4	7	77	... ...
1835	1	2	37	including about 26 tons of seal oil, the produce of 2300 seals*
1836	1	1	3	... ...

Year.	Ships.	Whales.	Tons of Oil.	Year.	Ships.	Whales.	Tons of Oil.
1837	4	7	...	1866	5	35	...
1838	7	58	...	1867	7	7	...
1839	11	25	...	1868	6	4	...
1840	10	7	...	1869	7	6	...
1841	11	37	...	1870	4	1	...
1842	10	3	...	1871	4	4	...
1843	4	15	...	1872	7	22	...
1844	4	6	...	1873	6	2	...
1845	7	18	...	1874	3	1	...
1846	10	22	...	1875	2	2	...
1847	10	32	...	1876	2	13	...
1848	11	8	...	1877	2	2	...
1849	7	10	...	1878	2	19	...
1850	5	33	...	1879	3	6	...
1851	9	16	...	1880	2	5	...
1852	12	45½	...	1881	2	23	...
1853	17	31	...	1882	1	...	...
1854	16	8	...	1883	1	1	...
1855	4	11	...	1884	3	11	...
1856	13	59	...	1885	3	12	...
1857	10	10	...	1886	3	14	...
1858	14	18	...	1887	3	2	...
1859	15	6	...	1888	3	4	...
1860	11	8	...	1889	3	10	...
1861	6	3	...	1890	4	...	...
1862	3	1	...	1891	2	2	...
1863	7	15	...	1892	...	...	...
1864	9	4	...	1893	1	1	...
1865	5	8	...				

* Young saddle and hooded seals, mostly the former; 80-100 young seals according to their age and condition yielded 1 ton of oil.

Summary.

1788 and 1789	2 voyages	1 whale
1790 to 1799	10 ,,	22 whales
1800 ,, 1809	16 ,,	259 ,,
1810 ,, 1819	75 ,,	920 ,,
1820 ,, 1829	60 ,,	440 ,,
1830 ,, 1839	38 ,,	159 ,,
1840 ,, 1849	84 ,,	158 ,,
1850 ,, 1859	115 ,,	237 ,,
1860 ,, 1869	66 ,,	91 ,,
1870 ,, 1879	35 ,,	67 ,,
1880 ,, 1889	24 ,,	82 ,,
1890	3 ,,	0 ,,
1891	2 ,,	2 ,,
1893	1 voyage	1 whale
	531 voyages	2439 whales

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OBSERVATIONS ON THE BIRD LIFE OF ARRAN.

By E. V. and A. D. WATSON, Midlothian Ornithological Club.

THE following were among the most interesting observations made during two visits to the Isle of Arran to study bird life, in April and June 1933 respectively:—

JACKDAW.—Completely replaced Rook as the prevalent member of the Corvidæ, the Rook being very scarce.

SKYLARK.—Proved to be very scarce, and the few that were seen were near the shore, not up in the hills.

CHIFFCHAFF.—Appeared to be present in fair numbers, as a summer visitor, especially round Brodick.

WHINCHAT.—During our June visit this species was met with all over the hills, being about four times as numerous as the Stonechat. The latter bird was noticed much more in April.

WREN.—During the spring the abundance of the Wren was striking, as many as 60 to 70 singing birds being heard in a 20-mile walk. Even up to 1000 feet amid the heather the Wren was present in numbers.

SHORT-EARED OWL.—Found to be resident around Lamlash.

GOLDEN EAGLE.—Found to be still a resident; an immature bird (showing white) being observed in Glen Rosa.

EIDER DUCK.—Three pairs of this hitherto unrecorded Duck were observed in Lamlash Bay on 16th April.

TURNSTONE.—Proved to be the principal Wader on the rocky shore at Lamlash in April. As many as 40 were seen together.

GUILLEMOT.—This bird was scattered about the water between Ardrossan and Arran in April and also appeared in Lamlash Bay. Most of them seemed to be the southern form but the examples seen

in Lamlash Bay were very dark and fairly definitely of the northern form. It is surely by accident that this bird has been omitted from the Arran avifauna in *The Geographical Distribution of Birds in Scotland* (by Misses Baxter and Rintoul)—see *The Geology of Arran*, by James Bryce, 1872.

GREAT NORTHERN DIVER.—One example was present near Brodick between 10th and 14th April, on both of which dates we had excellent views of it.

Further points of interest were the absence of Coot and all Grebes and the scarcity of the Moorhen—due to the lack of still ponds and inland waters on the island.

BOOK NOTICE.

Text-book of General Zoology. By WINTERTON C. CURTIS and MARY J. GUTHRIE. Second Edition, Rewritten and Reset. New York: John Wiley and Sons, Inc.; and London: Chapman & Hall, Ltd., 1933, 8vo, 588 pages and 438 figures. Price 23s. net. This excellent text-book is founded upon the course in General Zoology as developed in recent years in the University of Missouri, of the staff of which institution both authors are members. At the outset the student is introduced to the subject by the consideration of the detailed structure of vertebrates, taking the frog as a type. Then follow five chapters dealing with the various systems of organs in vertebrates which are concerned with metabolism, their co-ordination through protoplasmic irritability, the cell-theory, cell-division and differentiation of the germ cells, reproduction, development, heredity and variation. All these chapters are carefully written and appear to be thoroughly up to date. The various *Phyla* of the animal kingdom are then considered in detail, first by a full description of a selected type and then by a general account of the group to which it belongs. Concluding chapters deal with the origin of life, the evidences of organic evolution and the theories which have been advanced to account for such. An extensive glossary and a very complete index complete a work which is attractively printed and illustrated, and which can be highly recommended to all students of zoology. Attention should be drawn to a novel feature in the binding of this book. The cloth cover has, by certain chemical treatment, been rendered completely waterproof and vermin-proof, so that the student in the laboratory need have no fear of damaging the book while it is in use.

SCOTTISH INSECT IMMIGRATION RECORDS.

Compiled by PERCY H. GRIMSHAW, I.S.O., F.R.E.S., F.R.S.E.

As Recorder for Scotland for the Insect Immigration Committee of the South-Eastern Union of Scientific Societies, it becomes my duty to place on record the numerous observations which have been reported to me, or which have come under my notice in various ways. For the sake of completeness I have included in the notes given below, a few which have been published elsewhere (*e.g.* in *The Entomologist*) or in the columns of *The Scotsman* newspaper. The arrangement of these records, primarily under *Species* and then alphabetically under *Counties*, appears to me to be the most useful one for future reference, and in most cases the particulars given by the various correspondents are quoted verbatim, with his or her name attached, except in the case of newspaper correspondence.

All records in this compilation refer to Lepidoptera, and all are dated 1933. For the many records sent to me personally, I take this opportunity of expressing my thanks to the various correspondents whose names appear below.

Various Species of Butterflies.

CAITHNESS: "Wick, August 23, 1933. It is surprising to read that butterflies have been scarce this season, for in this region they have never been so 'thick.' . . . Coloured varieties were also plentiful."—Peter Sinclair, *Scotsman*, 26th August.

Red Admiral (*Pyrameis atalanta*).

ABERDEENSHIRE: "Red Admirals have been unusually early and abundant with us this season."—J. S. D., *Scotsman*, 28th August.

ARGYLL: One at Oban, flitting on shore, on 21st June, about 1.30 P.M. There was little wind and it was warm and fine after three stormy days following a hot spell.—Violet M. Peel, Swansea.

"Glen Saddell, Carradale, Argyll, August 24, 1933. This afternoon I came on a fine specimen of a Red Admiral."—John M'Leod Campbell of Saddell, *Scotsman*, 29th August.

BERWICKSHIRE: "Gordon, Berwickshire, August 28, 1933. On the afternoon of 24th August I was out for a walk here and I saw in one hour more than 300 Red Admiral butterflies. . . . I went the same walk next day and saw only two. There was a slight west wind each day."—Henry Peck, *Scotsman*, 29th August.

BUTE (Arran): "10.ix.33. Between Lochranza and Cock of Arran, D. C. Thomas and I saw 17 fresh specimens [of *Vanessa atalanta*]. From sea-level to 800 feet."—Rodger Waterston, Edinburgh.

CAITHNESS: Dunnet Head, 4th June, and Wick, 7th June (L. D. D.).—*Entomologist*, August 1933, p. 188.

DUMFRIESSHIRE: "Motoring from St Mary's Loch to Langholm on 5th Sept. by way of Ettrick and Eskdalemuir, one or two Red Admirals were noticed every few miles, both in Selkirkshire and Dumfriesshire, including two at the highest point of the road on the moors above Eskdalemuir Observatory (about 1000 feet) and one just outside Langholm."—C. Ethel Evans, North Berwick.

P. atalanta "quite common [at Powfoot, near Annan] . . . settling on the flowers of the Knapweed (*Centaurea nigra*). Often as many as half a dozen Red Admirals could be seen on any small bunch of the flowers. Larvæ of the Red Admiral were also found on the nettles."—H. C. S. Halton, B.Sc., Essex Museum of Natural History, Stratford, E. 15.

"Corrie Lodge, Lockerbie, September 1, 1933. Here also Red Admirals have been in considerable numbers. In fact, they are more common than the Cabbage Whites. To-day I saw eight on a *Buddleia*, and from twelve to twenty at a time have been seen sunning themselves on the phlox."—Jean E. R. Somerville, *Scotsman*, 4th September.

EDINBURGHSHIRE: "Six or more at a time on *Buddleia* in garden, Morningside Park, Edinburgh, on August 13th, and subsequently; one, at Penicuik, on Sept. 6th."—C. Ethel Evans, North Berwick.

"One on 15th June at the foot of Oswald Road near the Blackford Hill gate. Of the occurrence of *atalanta* during August it is almost superfluous to write. On every fine day both in the city and in the country, Balerno, Roslin and elsewhere, I have never failed to meet with it. On the forenoon of 13th August in a garden in Dick Place nine were counted on *Buddleia*, and a few minutes later four were noted on the same shrub in a garden in Blackford Road. It has not neglected my own garden. On 4th August one or two were noted in a small open area in a wood above Balerno

near the old road to Carlops (alt. 890 feet); . . . On 29th August I had occasion to visit the same spot. All the way up from the village, here and there *P. atalanta* was present in twos and threes wherever there were flowers to attract it, first in a garden, then on *Scabiosa* by the roadsides. On reaching the open spaces in the wood it was easy to count *a score*—there were probably more—in sight at once flying about and settling on the Scabious. As I was collecting other insects from the Crucifers and going slowly, I did not go over a great extent of the wood, but in every place where the Scabious grew freely *atalanta* was seen in smaller numbers up to half a dozen. It was a wonderful sight in such an upland locality, where in another year on a fine summer day one may see no more than a few Green-veined Whites and, in suitable places, Small Heaths."—K. J. Morton, F.R.E.S., Edinburgh, 3rd September.

"Juniper Green, August 25, 1933. . . . During the past fortnight or more Red Admiral butterflies have been very numerous in my garden; in fact, I have never seen so many together before. Cabbage Whites have been there too, but not in nearly such great numbers as the Red Admirals."—J. B. R. L., *Scotsman*, 26th August.

"Edinburgh, August 25, 1933. . . . On the following day [20th August] five of the insects [Red Admirals] appeared on a *Buddleia* in a Corstorphine garden, and since then the Admirals have been noted daily on the spike-shaped flowers when there was sunshine. I have reports of their presence also in other districts of Edinburgh this week—in Murrayfield, Liberton, Craigmillar, and Leith."—J. C., *Scotsman*, 26th August.

"Edinburgh, August 23, 1933. During the past ten days a Red Admiral had been frequenting the gardens about Dick Place."—T. A. M., *Scotsman*, 26th August.

"The Drum, Gilmerton, Midlothian. . . . We have never in our lives seen so many large and beautiful ones [Red Admirals] as this year. The *Buddleia* and mint blossoms are covered with them."—(Hon. Mrs) Mary Grant More Nisbett, *Scotsman*, 5th September.

Professor Sir T. Hudson Beare records the occurrence of two butterflies of this species in his garden in the city of Edinburgh on the 9th and 10th August. These are the first seen there during a period of thirty years.—*Entomologist's Monthly Magazine*, September 1933, p. 203.

"Edinburgh, October 5, 1933. While I was gathering Michaelmas daisies in the garden this afternoon, a Red Admiral flitted from flower to flower beside me. So tame was this beautiful

creature that it allowed me to stroke its wings very gently."—Morningside, *Scotsman*, 7th October.

ELGINSHIRE: "Red Admiral butterflies have visited the Highlands in some number this summer. I saw a beauty among nettles on the banks of the Findhorn in early August."—D. M., *Scotsman*, 26th August.

HADDINGTONSHIRE: Red Admiral seen on 7th June flying over the rocks at Canty Bay, and again later in the month.—C. Ethel Evans, SCOT. NAT., 1933, p. 155.

"Three or four on August 24th and following days, and one on Sept. 8th at Canty Bay, North Berwick."—C. Ethel Evans, North Berwick.

"Now we are back in East Lothian and find the Red Admirals are still about" [10th September].—C. Ethel Evans.

"One Red Admiral here on 14th inst." [September].—C. Ethel Evans.

INVERNESS-SHIRE: "Stoneyfield, Inverness, August 26, 1933. During a residence here of more than 32 years, I cannot remember ever having seen the Red Admiral either so numerous or so early in making its appearance as this summer. They were quite plentiful in June, rather less so during July, and quite common again in the garden here all through the present month. They were, in fact, the commonest coloured butterfly to be seen this season."—H. G. C., *Scotsman*, 29th August.

"Bruce Gardens, Inverness, August 28, 1933. On Thursday last [24th August] I observed a Red Admiral in my garden, where it remained for about fifteen minutes. . . . The previous week I saw one on the shingle walk in front of my house. This is the first time in 35 years that I have observed the Red Admiral in or about Inverness."—Wm. Milne, *Scotsman*, 30th August.

ISLE OF MAY: "During our visit to the Isle of May from 21st August to 4th September 1933 we had continuous fine weather with sunshine and very light westerly winds. Throughout this time there were Red Admirals on the island. On 2nd September we tried to count them and decided there were about twenty. When we were coming up the Firth on 5th September in dense fog one lit on the *Pharos* when we were about mid-channel just west of Inchkeith; after remaining a few minutes it flew off, making steadily to the south till we lost it in the fog."—Evelyn V. Baxter and Leonora Jeffrey Rintoul, Largo.

KINROSS-SHIRE: "Kinross, August 26, 1933. . . . regarding the Red Admiral, I write to say that they seem to be very prolific

in this neighbourhood, as I have been observing them in my garden for the last week or ten days. . . . I observed two specimens to-day (Saturday) where they seem to affect the blossoms of the dahlia."—J. M. R., *Scotsman*, 28th August.

KIRKCUDBRIGHTSHIRE: "Very plentiful in Solway around Rough Firth (Rockcliffe by Dalbeattie). Not unusual to see six or seven together."—R. Elmhirst, Millport.

PEEBLESSHIRE: "Passing through this county on 6th September I counted three Red Admirals between Traquair and Peebles, and four between Eddleston and Leadburn." — C. Ethel Evans, North Berwick.

"Edinburgh, August 31, 1933. Several of these [butterflies] have appeared in the Border country, being especially numerous near Peebles and Galashiels. The Red Admiral, Painted Lady, and Small Tortoiseshell have all appeared in great numbers, especially the Red Admiral, which in some years is far less abundant than others."—N. G. Murdoch, *Scotsman*, 2nd September.

RENFREWSHIRE: "Paisley, August 24, 1933. . . . we here in Renfrewshire have had the Red Admiral swarming all over the country. In the streets and gardens of a large town here you see them everywhere."—W. M. N., *Scotsman*, 26th August.

ROSS AND CROMARTY: "I saw a week later [August] two more [Red Admirals]—one in the neighbourhood of Invergordon, and the other on the Black Isle."—D. M., *Scotsman*, 26th August.

ROXBURGHSHIRE: "I have seen what I think is an exceedingly early record, namely that on 5th June a Red Admiral butterfly was observed in the garden here. . . . As far as I can remember I have never seen a Red Admiral butterfly in Scotland before the month of August."—A. J. Rintoul, Ancrum, 7th June 1933.

"Southdean Manse, Hawick, August 30, 1933. For the past week at least six Red Admiral butterflies have frequently been observed here on and in the vicinity of *Buddleias* and clinging to walls, etc. . . . Our garden is situated four miles from the English border."—Jim R. Spence, *Scotsman*, 1st September.

SELKIRKSHIRE: "Three or four playing about the Rodono Hotel, St Mary's Loch, and others at various points in the neighbourhood from 3rd to 6th September."—C. Ethel Evans, North Berwick.

SUTHERLAND: "The Hollies, Golspie, August 29, 1933. Red Admiral butterflies have been in our garden here in considerable numbers during the last few days. Some of them were very large

and their colouring was exceedingly brilliant."—James B. Simpson, *Scotsman*, 31st August.

Painted Lady (*Pyrameis cardui*).

ABERDEENSHIRE: "Deeside, August 26, 1933. . . . a Painted Lady was seen here a fortnight ago—the first in twenty-four years." —J. S. D., *Scotsman*, 28th August.

ARGYLL: One seen about 1 P.M., 20th June, on a peat moor on the new road to Glencoe, near Loch Bà. The weather was dull, after two or three rainy days following fine.—V. M. Peel, Swansea.

BERWICKSHIRE: One fresh female seen at 4 P.M. on 13th August on Gordon Moss. There was a westerly wind.—A. C. Butler.

One on sea banks above Fast Castle, 27th May.—Leonora Jeffrey Rintoul and Evelyn V. Baxter, SCOT. NAT., 1933, p. 155.

BUTE (Arran): One seen at entrance to Gleann Easan, Bhiorach, Lochranza, on heather, 12th September 1933. One also seen here by Mr A. J. D. Lothian, M.A., on 13th September, was probably the same specimen.—Rodger Waterston, Edinburghshire.

"Several on hill behind Dippin in S.E. of Arran, May 30th. Seen twice on Cumbrae, first week of June."—R. Elmhirst, Millport.

DUMFRIESSHIRE: "Whilst collecting Lepidoptera at Powfoot, near Annan, Dumfriesshire, from the 5th August until the 12th, *Pyrameis cardui* and *P. atalanta* were quite common."—H. C. S. Halton, B.Sc., Essex Museum of Natural History, Stratford, E. 15. [See also *Entomologist*, October 1933, p. 235.]

"Corrie Lodge, Lockerbie, September 1, 1933. Several very lovely Painted Ladies have visited us too."—Jean E. R. Somerville, *Scotsman*, 4th September.

One example seen at Redkirk on 5th June, another later near Gretna, and several others during the following week in various parts of the district. These are the first seen during the past eight years.—Jas. Murray, *Entomologist's Monthly Magazine*, September 1933, p. 204.

EDINBURGHSHIRE: "*P. cardui*.—One on 14th June, on the old road leading to the rifle range above Currie. I believe I saw the same species in the same neighbourhood on 10th August, but the butterflies disappeared before I could confirm, the sky having become overcast."—K. J. Morton, F.R.E.S., Edinburgh.

FIFE: One near Elie, 8th July; one in Largo, 4th August.—Leonora Jeffrey Rintoul and Evelyn V. Baxter, SCOT. NAT., 1933, pp. 155 and 156.

HADDINGTONSHIRE: "During the warm weather at the beginning of June a number of Painted Lady butterflies (*Pyrameis cardui*) were observed here."—C. Ethel Evans, North Berwick, SCOT. NAT., 1933, p. 155.

"One (the first seen since June) quite fresh but small, on Sept. 10th, at Canty Bay, North Berwick."—C. Ethel Evans, Edinburgh.

ISLE OF MAY: "We also saw Painted Ladies on the island, usually one or two, but on 29th August several were present. We were greatly struck by the beautiful condition of the butterflies; we did not see a rubbed or ragged specimen among them."—Evelyn V. Baxter and Leonora Jeffrey Rintoul, Largo.

PEEBLESSHIRE: ". . . near Peebles and Galashiels . . . the Painted Lady . . . appeared in great numbers."—N. G. Murdoch, *Scotsman*, 2nd September.

PERTHSHIRE: One worn female on 23rd June at Kinloch Rannoch. Weather: bright intervals.—G. V. Bull.

ROXBURGHSHIRE: "Painted Lady Butterflies (*Pyrameis cardui*) have been repeatedly seen in this neighbourhood during the month of August. During the thirteen years I have lived here I have never known of their being in this vicinity before."—A. J. Rintoul, Ancrum, Roxburghshire, 2nd September.

Small Tortoiseshell (*Vanessa urticæ*).

PEEBLESSHIRE: ". . . near Peebles and Galashiels . . . appeared in great numbers."—N. G. Murdoch, *Scotsman*, 2nd September.

WIGTOWNSHIRE: "Newton-Stewart, August 23, 1933. There are dozens of the Tortoiseshell butterfly on the *Buddleia* in this garden, and in our neighbour's, near Newton-Stewart."—X., *Scotsman*, 26th August.

Small Copper (*Polyommatus phlæas*).

DUMFRIESSHIRE: "Whilst collecting Lepidoptera at Powfoot, near Arran, Dumfriesshire, from the 5th August until the 12th . . . the Small Copper (*Chrysophanus phlæas*) occurred in teeming hosts both near the shore and inland in far greater numbers than I have ever seen it before. It was the commonest insect visible."—H. C. S. Halton, B.Sc., Essex Museum of Natural History, Stratford, E. 15, 15th September.

Clouded Yellow (*Colias croceus*) and Pale Clouded Yellow (*C. hyale*).

BUTE: "At Kildonan, at the southern end of Arran, on September 12th, whilst walking down a lane towards the shore I saw a *Colias croceus* flying towards me. It passed me, returned, and then disappeared over the bank, giving me quite a thrill, as I had never before seen this species alive."—A. M. Stewart, *Entomologist*, October 1933, p. 228.

DUMFRIESSHIRE: "Whilst collecting Lepidoptera at Powfoot, near Arran, Dumfriesshire, . . . I was surprised and delighted to see a *Colias croceus* on the 13th [August]. It proved to be a male in perfect condition when it fell to my net after a half-mile chase along the stony shore. The next afternoon—the 14th—I saw two *C. croceus* and one *C. hyale*, but they escaped my efforts at capture. . . . I may add that these insects were flying in a westerly direction whilst a strong south-westerly prevalent breeze was blowing, that they kept about two feet above the ground and followed every indentation of the low coastal cliffs. The specimens on the 14th gave me little opportunity to capture them, but swerving out to sea against the prevalent breeze and in the direction of Silloth on the Cumberland coast, after I had repeatedly struck with my net across their paths. Only the *C. hyale* allowed itself to be carried back on the breeze when it had almost disappeared from my sight; then it returned far above my head, over the coastal cliff and into a clover field, which I searched in vain. . . . I watched the coast-line at Powfoot with diligence until the 20th August, but did not see another specimen."—H. C. S. Halton, B.Sc., Essex Museum of Natural History, Stratford, E. 15. [See also *Entomologist*, October 1933, p. 235.]

INVERNESS-SHIRE: "Nethy Bridge, Inverness-shire, August 30, 1933. On the afternoon of Tuesday, 29th August, I procured a specimen of the Clouded Yellow butterfly."—D. P. M., *Scotsman*, 1st September.

KIRKCUDBRIGHTSHIRE: Pale Clouded Yellow seen twice in Rockcliffe district.—R. Elmhirst, Millport.

Scotch Argus (*Erebia æthiops*).

SELKIRKSHIRE: "Edinburgh, August 31, 1933. Near Selkirk, at 1200 feet on Foulshiels, it may be of interest to some readers to know that I caught three specimens of the Scotch Argus. This is a remarkable fact, as they rarely appear south of the Scottish Highlands."—N. G. Murdoch, *Scotsman*, 2nd September.

Death's-Head Hawk-Moth (*Acherontia atropos*).

AYRSHIRE: "I heard of two larvæ of this species being exhibited during August in a seed-shop window in Ayr."—A. M. Stewart, *Entomologist*, October 1933, p. 228.

BERWICKSHIRE: Two pupæ found during the last week of August at Whitecross Farm, Ayton. [These were presented to the Royal Scottish Museum by Mrs Buchanan, 12 East Cottages, Granton.]

One found in a garden at St Abbs, in August. [Presented to the Royal Scottish Museum by Mr William Paxton, The Haven, St Abbs.]

LANARKSHIRE: "Dr W. A. Galbraith wrote me from Low Carluke, in Lanarkshire, that he also got a fine specimen."—A. M. Stewart, *Entomologist*, October 1933, p. 228.

RENFREWSHIRE: "In June I had a [Death's-Head] moth, caught in Paisley, brought to me."—A. M. Stewart, *Entomologist*, October 1933, p. 228.

Humming-Bird Hawk-Moth (*Macroglossa stellatarum*).

DUMFRIESSHIRE: Seventy larvæ, all in one batch, feeding on Yellow Bedstraw, found near Gilchristland, Dumfriesshire, on 5th July 1933.—Dr O. H. Wild.

HADDINGTONSHIRE: "On the 7th [June] a Humming-Bird Hawk-Moth (*Macroglossa stellatarum*) was observed in the garden [at Canty Bay, North Berwick]. . . . for the last five days I have had the pleasure of watching the Hawk-Moth hovering round the tall spikes of red and white valerian, busily extracting the nectar from the flowers."—C. Ethel Evans, SCOT. NAT., 1933, p. 155.

Convolvulus Hawk-Moth (*Sphinx convolvuli*).

ARGYLL: One taken in factor's house at Glencoe, on 6th September.—A. F. Balfour Paul. [This specimen has been presented to the Royal Scottish Museum.]

EDINBURGHSHIRE: One caught on a clothes-line at Dalkeith, on 8th September. Reported to the Royal Scottish Museum by James Archibald, 56 Smeaton Cottages, Dalkeith.

OUTER HEBRIDES: One found in a garden at 9 P.M. on 11th October. Sent to the Royal Scottish Museum by Angus Oehler.

NOTES

Garganey and Great Shearwater on the Isle of May.—In view of the recent breeding of the Garganey in Forth (SCOT. NAT., 1928, pp. 77-80), it is interesting to note that a bird of this species was seen by us on 22nd August 1933. We flushed it from a pool on the north end of the Isle of May; it flew across us and lit in the sea, so we had an opportunity of seeing it very well, both in flight and on the water. This is the first record of this species for the island. The only other addition to the island list was a Great Shearwater which we saw close to the island on 12th September.—EVELYN V. BAXTER and LEONORA JEFFREY RINTOUL, Largo.

Breeding of the British Lesser Black-backed Gull on the Isle of May.—On returning to the Isle of May this autumn, we were interested to notice several British Lesser Black-backed Gulls about on the rocks, and, on 29th August, saw one feed a large young bird. We inquired into the matter and were told by the Lightkeepers that two, if not three, pairs bred on the island this year. This is a very interesting occurrence and is the first record of this species having nested on the May.—EVELYN V. BAXTER and LEONORA JEFFREY RINTOUL.

***Ontholestes tessellatus* in Perthshire.**—This beetle was found in August in one of the plots of grass in Marshall Place, Perth. This is directly opposite the South Inch. As it is so rare I am putting it in the collection of Perthshire Beetles. The piece of ground where it was obtained is at the corner of Marshall Place and Princess Street where there is a large through traffic, also it is on one of its sides opposite a railway goods depot. So it may have come in or been dropped off from any of these two sources.—JOHN RITCHIE, Perthshire Natural History Museum.

***Sirex cyaneus* Fab. in Berwickshire.**—A male example of this species was sent to the Royal Scottish Museum for identification by Mr H. Burn-Murdoch. It was captured at Balabraes, Ayton, on 5th September last. Another was seen the same day and a third during the previous week.—PERCY H. GRIMSHAW, Royal Scottish Museum.

***Sirex cyaneus* Fab. in Edinburgh.**—A female specimen of this species was sent to the Royal Scottish Museum by Mr S. Dobson for identification. It was taken in a garden in Morningside Terrace, Edinburgh, on 8th September last.—PERCY H. GRIMSHAW, Royal Scottish Museum.

Whales stranded on the Scottish Coast.—Two more whales have been stranded on the Scottish coast during 1933 and I am indebted to Mr F. C. Frazer of the British Museum for the following particulars:

CUVIER'S WHALE (*Ziphius cavirostris*).—A specimen, 18 feet in length, was stranded on the 4th March 1933 at Poolewe in Ross-shire.

SOWERBY'S WHALE (*Mesoplodon bidens*).—A specimen, probably a male, 16 feet in length, was stranded on the 17th July 1933 at Burwick Bay, South Ronaldshay, Orkney.—A. C. STEPHEN, Royal Scottish Museum.

Pilot Whale (*Globicephala melæna*) stranded in North Uist.—A male Pilot or Caa'ing whale, measuring 14 feet in length, was stranded on the shore at Vallay, North Uist, on the 6th August 1933. It was found by Mr George Beveridge, Vallay House, who kindly forwarded particulars of the animal.—A. C. STEPHEN, Royal Scottish Museum.

Lesser Rorqual (*Balænoptera acutorostrata*) in Kincardineshire.—A very much decomposed individual belonging to this species and measuring 27 feet in length was washed ashore about half a mile south of Hall Bay, Stonehaven, on the 9th September 1933.

The Lesser Rorqual is not uncommon on our shores and has been stranded on a number of occasions in recent years.—A. C. STEPHEN, Royal Scottish Museum.

Velvet Scoter in Clyde Area.—So far as I can gather, the Velvet Scoter has seldom been recorded in the Clyde area, and it was therefore of special interest to me to watch a party of fifteen of those birds as they rested on the water off the Troon shore. As they slept or lazily paddled, head to wind, one could note the dingy brown plumage of the females, as contrasted with the black colour of the drakes, whose orange bills could be seen at that distance. At such times the white wing patch is generally concealed by overlapping flank feathers, but when the birds are alert or startled a white line is visible, and when in flight, or on flapping the wings as they raise themselves on the water, the pure white speculum is fully displayed. Probably these birds had halted on their way further south.—C. CAIRNIE, Largs.

Short-eared Owl nesting in Renfrewshire.—In the "Birds of Renfrewshire" which appeared in the SCOTTISH NATURALIST,

1915, the authors refer to the Short-eared Owl as "known only as a winter visitor to the Moorlands." Since then a careful watch has been kept for its appearance in the nesting season. As it is known to nest in parts of the neighbouring counties of Ayrshire and Buteshire it was only reasonable to think it might turn up in Renfrewshire. In 1931 I was told of a pair of Owls which were constantly seen hawking for moths, etc., on Duchal Moor. They appeared again in 1932 and my gamekeeper friend tried to discover the nest—if any—but in vain. This year he was more fortunate. Out in the centre of the moor, near to the boundary between Duchal and Muirshiels Moors, he found a young bird on 16th May, wandering away from the nest. He tried to locate the actual nest but failed. As the young bird was very exhausted he took it home and tried to feed it, but it died and was then brought to me. I identified it as a young Short-eared Owl and sent it to Edinburgh for confirmation. Mr Grimshaw discussed the "pros and cons" and concluded: "I think it fair, therefore, to assume that the nestling is a Short-eared Owl." This is the first record for the County of Renfrew.—T. THORNTON MACKEITH, Kilmacolm.

CURRENT LITERATURE

King Eider seen in Orkney.—In *British Birds* for August 1933 (p. 75) A. G. Haworth reports the occurrence of this species close to land at Finstown, Orkney. An excellent view of a drake was had on 9th June and again the next day.

Breeding of the Whimbrel in Inverness-shire.—A detailed account of the habits of two pairs of Whimbrels whose nests were found in the county in 1932 is given by A. H. Dankes in *British Birds*, August 1933, pp. 76-78. The first pair was observed on 21st May, and their nest (with four eggs) found on 1st June; the nest of the second pair (also with four eggs) was found on 3rd June.

Recovery of Marked Birds.—A lengthy list of ringed birds since recovered, far too long to summarise here, appears in *British Birds* for September 1933 (pp. 87-102). Many Scottish records are included.

Unusual Nesting-Sites of Fulmar Petrel in Orkney.—On the north and east sides of the island of Sanday there are no rocky cliffs such as are normally chosen as nesting-sites by the

Fulmar. Here, therefore, nests were found on the low sandy banks facing the sea almost at sea-level and at the entrances to various rabbit burrows as much as a hundred yards from the sea.—A. H. Dankes, in *British Birds*, September 1933, p. 110 (with photographs).

Brambling reported Breeding in Inverness-shire.—W. B. Alexander, in *British Birds* for October 1933 (p. 133), reports that he was informed by a gamekeeper that a cock and hen Brambling and four young had again appeared on 20th July in front of the house and he thought the nest could not be far away. This was at Tomdoun, Glengarry, West Inverness-shire.

Duration of Life of the Arctic Skua.—A note on this subject, by Chas. Oldham, is printed in the October issue of *British Birds* (p. 139). From evidence obtained on the Isle of Foula it was ascertained that the potential life of this species is at least 23 years.

Notes on Braconidae: XIV. — Alysiides. — In the *Entomologist* for October 1933 (pp. 201-203) Claude Morley, F.R.E.S., continues his useful paper on this neglected group of insects. The present instalment gives a list of the known hosts and inquilines of *Alysia concolor* Nees, and describes a fine new species, *Dyscritus suffolciensis*, two females of which were taken by the author in two localities about four miles apart in the Old Fen Sea, Suffolk.

Biology of *Niptus hololeucus*.—An interesting and full account (with a photographic plate) of the life-history of this little beetle—a well-known household pest—is given by Mary Miles, B.Sc., in the *Entomologist's Monthly Magazine*, August 1933, pp. 182-186.

***Triglyphus primus* Lw., a new British Syrphid Fly.**—A female example of this insect—new to the British List of Diptera—was taken in the neighbourhood of Pembroke Square, London, W. 8, during July 1929.—Daphne Aubertin, M.Sc., and Cyril Diver, F.R.G.S., *Entomologist's Monthly Magazine*, August 1933, pp. 188 and 189 (with 2 figures).

The Genus *Monochamus* Latr. in Britain.—A useful paper on the British species of this Longicorn Beetle genus, which should be consulted by all students of Coleoptera, is printed in the September number of the *Entomologist's Monthly Magazine* (pp. 200-202). A key is given, by which any of the four European

species may be recognised. All are now on the British list, and a list of the known records, the originals of which could be traced by the author, is given.

Dumfriesshire Sawflies.—A list of 54 species of Sawflies, collected chiefly in the Gretna district, is given by Jas. Murray in the *Entomologist's Monthly Magazine* for September 1933 (pp. 203 and 204). The identifications have been made or checked by Dr R. C. L. Perkins.

Biology of Spiders.—The eighth, ninth and tenth contributions under this heading, by W. S. Bristowe, M.A., F.Z.S., appeared in the *Annals and Mag. Nat. Hist.* for March 1933, pp. 279-288, 289-302, and April 1933, pp. 509-514. These are all valuable papers which must be consulted by all students of British Spiders. The eighth discusses very graphically the meaning of the word "rare" and shows that it is a relative term, "impossible of exact definition and unsatisfactory owing to the different interpretations placed upon it by different people." This discussion is followed by a series of examples of rare Spiders which are common locally, and a short account of some imported specimens. The ninth contribution gives a detailed account, with distribution and biological notes, of the British Spiders allied to the Trap-door Spiders, of which there are two species belonging to the genus *Atypus*. The tenth paper is an account of British Cellar Spiders, with the description of a species new to Britain.

Variation in *Bombus jonellus*.—A paper on the colour variates of this species of Bumble-bee is given by O. W. Richards, M.A., in the *Annals and Mag. Nat. Hist.*, July 1933, pp. 59-66. Several Scottish localities are recorded for the various forms described, and a key for purposes of identification is included.

BOOK NOTICES

Fishes: their Journeys and Migrations. By LOUIS ROULE, translated from the French by Conrad Elphinstone. London: George Routledge & Sons Ltd., 1933, 270 pages and 54 figures. Price 12s. 6d. net. The migration of birds, though presenting as yet many unsolved problems, is a natural phenomenon more or less familiar to everybody. But that there is a regular migration of several species of fishes, which may be compared to that of birds, is a fact known to comparatively few. The volume before us, written in a charming style and which can be read with pleasure and understanding by anyone, places before the reader a full account of the wonderful journeys undertaken by such fishes as the trout, salmon, the shad, the herring, the sardine, mackerel and tunny, the golden perch and finally the European eel. The why and the wherefore of these migrations have been carefully investigated by the author, and many interesting results have come to light. The urge to migrate varies with the different species. Thus, for the spawning period the salmon and the trout require more oxygen, while the return of the smolt to the sea is apparently to avoid too strong a light, since their skin is only lightly pigmented; the shad, again, requires warmth, and so on. The remarkable story of the eel is told in full detail and in charming style; indeed the whole volume is written in a manner which has lost nothing in the translation, and which should prove fascinating reading to the general public. Written by a Frenchman, one is hardly surprised to find that in the chapter on herring shoals several statements are made which may be applicable in French waters, but which read strangely to one acquainted with and accustomed to Scottish practices.

Plants Useful to Man. By WILFRED WILLIAM ROBBINS and FRANCIS RAMALEY. Philadelphia: P. Blakiston's Son and Co., Inc. 8vo, 428 pages and 241 illustrations. Price $3.00. This is a book that will appeal to many classes of readers. The student of botany, the gardener, the farmer, and the ordinary searcher after knowledge, will each and all find within its well-printed and beautifully illustrated pages a mass of facts about most of the vegetable products which they come across in everyday life. The plants which contribute to our meals, our clothing and our furniture, and many others, are written of in some detail, and by the aid of a good index those questions which so often arise in the course of daily conversation, relative to the origin and nature of those vegetables which are of use to man, can be readily and satisfactorily answered. The introductory chapters are easily read and understood, while the later ones, dealing with the various families, are mostly in botanical sequence, although an exception has been made in the case of the section on "Ornamental Plants," the chapters on "Table Fruits and Nuts," and "Tea, Coffee, and Chocolate," and the closing ones on "Medicinal Plants" and "Industrial Products." This useful work should be found in the library of every one who is anxious to increase his general knowledge of plants in their relation to man.

INDEX

NOTE.—*No attempt is made to index in detail the species mentioned throughout articles.*

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CONTENTS

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