



Hudsonian Curlew and downy young.

I. THE BIRDS OF CHURCHILL, MANITOBA.

BY PERCY A. TAVERNER AND GEORGE MIKSCH SUTTON.

(PLATES I-XIV.)

HISTORICAL INTRODUCTION.

In Lauridsen's highly interesting account (1883) of Jens Munk's explorations in Hudson Bay appears the reproduction of an old drawing—a picture full of action: men chopping wood near a tall, three-windowed, chimneyed house; men shooting some animal, a bear or caribou; men carrying a wounded comrade into a hut; still other men bringing in on their backs wolves or foxes from the forest. In the very center are two vessels close against the bank of the stream. This was Munk's Winter Harbor, where he and his men spent the winter of 1619-20: the winter that only he and two others survived.

The picture, in spite of its naïve proportions and perspective, its omission of many characteristic details, and its abundant and picturesque additions, is on the whole a faithful one. The course of the river, its narrowed mouth, the clumps of trees and bushes, Button Bay to the left and Cape Churchill to the right are all recognizable; for Munk's Winter Harbor was the mouth of the great river known today as the Churchill, and Munk's cabin stood on ground destined to become famous as the site of impressive masonry fortifications, of a prominent Hudson's Bay Company trading-post and, later, of an ocean port—the terminus of an important railway.

Fort Churchill was established as a Hudson's Bay Company trading-post in 1686 and, as the only good harbor on the west side of the Bay, has been an important point ever since. Many of the old accounts of the wild life of the north were probably based in part on experience at or out from this post. Samuel Hearne built Fort Prince of Wales from plans made by military engineers who had served under Marlborough. The remains of this fort, with their solid masonry and old guns, are still comparatively intact. Undoubtedly much of the information Hearne (1795) gives us of northern animal life was obtained here. Dr. John Rae probably stopped at Churchill before

wintering at Repulse Bay, and it is not unlikely that some of the rather extraordinary records attributed to the latter locality in the *Catalogue of Birds in the British Museum* were made *en route*, much farther south. Many of the specimens that are historically attributed to "Hudson's Bay" probably came from the vicinity of Churchill. It is to be noted, however, that this and other similar trading-posts on the Bay were the commercial outlets for a vast and ever widening hinterland, even down to the present United States border; and that in the early days of generalized science the locality "Hudson's Bay" was likely to be attached to material that came out of any of them. Thus many of the birds figured by Edwards (1743-1751) as from Hudson Bay, and upon which Linnaeus based his names, were undoubtedly taken far south of their assigned type-localities, and in what are now the Provinces of Manitoba and Saskatchewan.

There is little matter of importance in the earlier authors that can definitely be linked with Churchill. Dr. Gillespie, Jr., a Company officer, made a collection of birds at Churchill which he presented to the Edinburgh Museum in 1845, and upon which W. Eagle Clarke (1890) reported. Seventy-seven species are named in the list and many of these have not since been recorded in the locality. During the 1880's Dr. Robert Bell, geologist of the Geological Survey of Canada, made several trips to Hudson Bay, touching occasionally at Churchill and making a few notes on the birds and mammals he encountered. Such specimens as he collected have since been lost or bear only the generalized locality of "Hudson Bay." It is not certain that all these were taken in the Bay itself rather than *en route* to the Bay in Hudson Straits or along the Labrador coast. J. M. Macoun, botanist of the Geological Survey of Canada, passed through Churchill during some of his northern explorations, collected a few fragmentary specimens, and has given us some random notes on the bird life. No further material addition to our knowledge of the fauna was made until 1900, when Mr. Edward A. Preble of the United States Biological Survey made a special investigation along the west shore of Hudson Bay. With his brother, Mr. Arthur E. Preble, he made Fort Churchill by way of Lake Winnipeg, the Hayes River, York Factory, and the coast of the Bay, arriving about the end of July. Leaving his brother to collect in the vicinity, he made his way northward to Cape Eskimo, returning to Churchill August 19. The two men left for home August 21. A full account (1902) of this trip has been given us. One of the

most valuable features of the report is the exhaustive discussion and extensive bibliography of all previous biological work done in the Hudson Bay region.

RECENT WORK.

In 1930 the new Hudson Bay Railroad from The Pas, Manitoba, was nearing completion, and it seemed desirable to make a faunal survey of Churchill before the effects of commercial activity should seriously modify conditions there. Consequently, the senior author was directed to proceed with such an investigation. Accompanied by Mr. Albert C. Lloyd of Davidson, Saskatchewan, as assistant, he arrived at Churchill on May 26, 1930. Through the courtesies of the Department of Railways and Canals of the Canadian Federal Government, which had full charge of the port in making, camp was established on the rocky point between the townsite and the ruins of the old battery on the east side of the mouth of the river. The ground at this date was generally bare of snow, but heavy drifts remained in the gullies and sheltered nooks. The river was frozen as fast as in mid-winter and traffic across it had not yet been interrupted. The Bay without was a continuous ice field, broken only by occasional open leads, shifting with the tide, and the horizon was thrown up into fantastic white pinnacles and frowning precipices by the distorting mirage. Flocks of Snow Buntings and Horned Larks fed familiarly about the doorsteps of the townsite; but few other migrants had appeared. On June 9 the party was joined by Mr. Victor E. Gould of Wolfville, Nova Scotia. From the Churchill camp, work was carried on mostly along the east side of the river, and within walking-distance inland as far as Landing Lake. After the ice left the river, June 10, several trips were made across the harbor to Sea Horse Gully, Button Bay, the vicinity of Fort Prince of Wales, and the old trading-post of Fort Churchill. Occasional expeditions were also made by canoe up-river and off the mouth of the harbor.

On June 18 camp was moved to Mosquito Point (well named), about seven miles up the west side of the river at the head of tide-water, and at the foot of the first rapids. From here the surrounding country was worked, especially along the river, and to Landing Lake, with occasional trips back to Churchill, the base of supplies.

On June 30 Taverner left on a Hudson's Bay Company schooner for Chesterfield Inlet, returning to Churchill July 11. In the mean-

time Lloyd and Gould had moved camp to the shores of Lake Rosabelle, some three miles south of the original camp and near the edge of the platted townsite, in a tundra lake region, the source of the townsite's water-supply, and adjacent to timber. On July 28 Taverner left for Ottawa. Lloyd and Gould moved back to the original Churchill camp on July 29, and across the river near Fort Prince of Wales on August 5. Gould left September 1.

On September 2 the junior author, returning from a year's sojourn on Southampton Island, had his first glimpse of Churchill. Making his way down the west coast of Hudson Bay on the Hudson's Bay Company's motor yacht *Nowya*, he reached Churchill just in time to gather a little first-hand knowledge of the bird life of the region and to help Lloyd in collecting a few specimens. It was at this time that he made definite plans to return to Churchill at the first opportunity, to find, if possible, the eggs of Harris's Sparrow. He left Churchill the following Monday, after having traversed with Lloyd much of the best collecting-ground. Lloyd continued his observations and collecting until October 4.

In 1931 two parties worked at Churchill. The first of these was under the direction of the Carnegie Museum of Pittsburgh, Pennsylvania. Mr. John Bonner Semple of Sewickley, Pennsylvania, and a Trustee of the Carnegie Institute, was leader. Other members were Mr. Albert C. Lloyd, mentioned before, Dr. Olin Sewall Pettingill, Jr., of Middleton, Massachusetts, and the junior author. This party reached Churchill May 24. With the assistance of the Department of Railways and Canals, camp was established on the site of the 1930 base camp near the mouth of the river. The whole countryside was snow-covered at this time, a drift just south of the ridge near camp being twenty feet deep. Camp remained here throughout the season, the members of the party walking daily from five to ten miles up-river, inland to the Landing Lake district, or along the railroad tracks. After the river opened, on June 11, a few trips were made by canoe to Button Bay, Fort Prince of Wales, and Mosquito Point. Semple and Sutton left Churchill July 6, leaving Lloyd and Pettingill to collect a few downy young of certain species and to take desirable photographs. Pettingill left and Lloyd ceased work on July 13.

The second party, consisting of Messrs. Arthur Twomey and Frank Farley of Camrose, Alberta, accompanied by Messrs. D. Twomey and Hugh A. MacGregor, arrived at Churchill on June 8. Farley left

on June 22, and D. Twomey and MacGregor on June 29. Arthur Twomey remained until July 27. This party, with headquarters at the townsite, worked the surrounding country, tidal flats, tundra and bushland as far as Landing Lake, with occasional trips to Goose Creek some fifteen miles inland.

In 1932 Mr. Arthur Twomey returned to Churchill on May 29, remaining until July 26, with the exception of three days, July 6, 7, and 8, that were spent investigating the Fox Islands.

In 1933 three ornithologists worked in the Churchill region: Mr. Arthur Twomey, from June 5 to July 24; Miss Marguerite Heydweiller, of Rochester, N. Y., from June 5 to August 1; and Mr. Frank Farley, from June 12 to June 19. Twomey and Miss Heydweiller collected throughout the Churchill neighborhood and made one trip, July 3 to 8, to Cape Churchill, some thirty miles to the east. They found the season late. There was much snow on the ground on June 5, the heavier drifts being ten feet deep.

Miss Heydweiller made an intensive study of the nesting-habits of the Tree Sparrow in connection with graduate work at Cornell University.

Lemmings were found to be unusually abundant during the summer of 1933. During our first season's investigations (1930), all small mammals were decidedly rare, though old tunnels and runways in the moss indicated abundance during a preceding year. A comparison of notes for the years 1930 and 1933 furnish interesting evidence of the effect of food-supply upon distribution of such raptorial species as the Snowy Owl, Short-eared Owl, and Rough-legged Hawk.

DESCRIPTION OF COUNTRY.

Churchill is situated at the mouth of the great river of the same name, a little over halfway up the west side of Hudson Bay, in the more northern of the two conspicuous indentations of that smooth coastline, in latitude about $58^{\circ} 45'$ North. Here occurs the only rocky outcrop and practicable harbor that breaks the hundreds of miles of shoal, alluvial shore; here the river empties due northward into the Bay between the approaching tips of two pre-Cambrian quartzite ridges; and here there are scanty remains of an original limestone capping, now eroded away, which never within historical times was sufficient to affect appreciably the landscape, its fauna or flora.

On the west bank of the river-mouth, projecting in a long, narrow point that bounds Button Bay on its outer side, a ridge of rounded granite rises from the general level to a height of 125 feet at its outward end. This ridge is broken a short way back by the tundra and muskeg of Sea Horse Gully, that forms a low land connection between the harbor and Button Bay. The point terminates in low sand-dunes, from which the impressive ruins of Fort Prince of Wales still dominate the harbor entrance. Off the tip of the point lies a low sand-bank, Eskimo Island. Up the river, within a few miles, shortly beyond Mosquito Point, the ridge of rock gradually sinks to the general tundra-and-muskeg level of the interior.

On the east side of the river the rocky backbone of the long, narrow point that separates the river from the Bay is lower and less bold, fifty to seventy-five feet in elevation, and is more or less buried in gravel deposits. The terminal point is rugged, broken rock, upon which are perched the remains of the old battery and powder magazine that complemented the fort opposite in the historic defenses of the harbor. The ridge runs through the townsite in solid masses, sinking below the tundra within the townsite limits.

The entrance to the harbor is constricted, being only about half a mile wide; but the basin within, as far as Mosquito Point some eight miles up-stream, widens out considerably. At low tide this basin averages about two miles wide, with broad mud-flats on either hand, liberally sprinkled with erratic, upstanding boulders, the largest as big as hay-cocks. At high water the river widens approximately a mile on both sides, but must be navigated with due care for hidden obstructions. Bordering the tidal mud-flats are wide, bare or scantily grassed clay-flats. These blend into the higher mossy barrens, whence rise the rocky ridges or gravel banks that lead to the general tundra level at about twenty-five feet elevation.

"Fort" Churchill, the historic trading-post of the Hudson's Bay Company, is a group of neatly white-painted buildings and a little church, on the west side of the river, about five miles from the mouth, built on the gently rising slope between tidewater and the rocky ridge, on a little hook-like point. To the south it overlooks an immense expanse of intertidal mud, and to the southwest broad, meadow-like flats.

The Port of Churchill, the new townsite, Mile 511, at the end of steel of the Hudson Bay Railroad, is on the east side of the river,

occupying, within its platted lines, four miles of the rock ridge, tundra, and meadow flats of the narrow terminal point.

At the time of our first visits, Churchill consisted of workshops, bunk-houses, mess-houses, and administration buildings, scattered over several miles of platting, but strung together with makeshift roads and a network of narrow-gauge tracks. Reeling, puffing "dinkey" engines scurried about, pulling or pushing overladen trains of gravel, timber, and other rough construction material. Everywhere were men at work with transit, shovel, or hammer. On the river, dredges were deepening the channel and sending off barge-loads of bottom mud to be dumped at sea. On shore, barges, docks, grain-elevators, round-houses, and freight-sheds were being built with feverish haste while the short summer lasted. Inland, steam-shovels were levelling off the gravel ridges as fast as the frost could be coaxed from the ground; marshes were being filled; and drag-line outfits were scooping a reservoir out of the tundra for the permanent water-supply. It was a busy scene. In this wild, subarctic setting, a modern ocean port, with all its accessories, was rising. Within a few short months a gigantic project was becoming reality. On these inhospitable barren grounds, a task that normally would demand years of labor was being accomplished in months.

In the very heart of all this confusion and activity was a shallow, lagoon-like, muddy slough, several acres in extent, with meandering outline. Here many observations upon waders and other birds were made. The slough is referred to in the succeeding pages as the "town-site" or "Churchill" slough; it is a place of many pleasant memories. Unfortunately, however, it is adjacent to the elevator and docks and is destined to become a switching-yard. It will be filled up, levelled off, and covered with oily trackage, and as a place of ornithological interest cease to exist.

Churchill was, and is, a busy, noisy place. Yet one has only to walk a few steps from the center of activity to find one's self in a primitive wilderness. No farther than a mile away Churchill becomes only a smudge of smoke and an incongruous bit of sky-line. The age-old tundra rules to the very edge of the right of way. The waders and longspurs go about their affairs undisturbed by softened whistles and sounds from afar. Nor are they likely soon to be seriously disturbed. The only roadways out of "town" are now mere traces, rapidly being obliterated, where caterpillar trucks passed in the early construction

days, and heading into country which no one now has reason to visit. Today there is no objective to road-building for many hundreds of miles. The only transportation, besides the railroad and the rapid river, is by foot in summer and by dog-team in winter. Modern industrialism may invade the tundra, but its influence does not extend far.

Faunally, Churchill stands at the junction of two life zones. It is precisely at the limit of tree growth, where the spruce forest dies out on the arctic tundra and both types of biological association are in contact. The country south of the townsite is bare, mossy tundra, in which the foot sinks as in a cushion. In spring it is soft and boggy with melting snow, but the surface of the higher levels dries to a state of aestivation later in the season. Fronds of juniper, crowberry, and lowly willow, hugging the ground or draping the sheltered cranies, compose the principal shrubby elements of the flora. Dwarf spruces, gnarled and twisted from their years of fighting with the hostile elements, stand widely scattered or grouped in matted friendliness in clefts and sheltered hollows, the advance guard or spiers-out of the serried forest hosts that are continually struggling to extend their domain. Inland, the trees increase in number and in size, especially on warm, well drained declivities and along the river, where the bush is more or less continuous, and where spruce and tamarack with trunks eight or ten inches in diameter may be found.

Everywhere is evidence of an undeveloped drainage system. Shallow ponds of irregular outline, with abrupt mossy edges and no appreciable outlet, dove-tail into each other on the broad, flat levels. Perpetual ice lies within three feet of the surface of the soil, dwarfing the trees by limiting their root growth and forming an impervious substratum which prevents the ground seepage that should develop drainage channels. Every hollow, whether in porous moss or dense clay, holds water like solid rock, and this water, instead of cutting through permeable retaining ridges, tends to build them up with ice-formed dams, preventing rather than developing outlets. The tundra ponds are of the clearest water, with clean, firm, gravel bottoms and without vegetable growth. Since they freeze to the bottom in winter, they contain no fish and very little other animal life. Typical of these ponds is Lake Rosabelle, one of the group of lakelets at the edge of the townsite, approximately one-half by one-third of a mile in extent. Here the 1930 party had their camp for a considerable time. Landing

Lake, often mentioned in the following list, is a much larger body of water, some one by two miles in size, four miles south of the town line and about two miles from the river. It is surrounded by considerable spruce and tamarack bush, deep muskeg bogs, higher open land, and many shallow surface pools. Along part of one side is a grassy marsh, and alder thickets fringe the ends.

The rock masses that rise through the tundra are bare, austere granite, with little mossy valleys and ponds and pools in their hollows. Clumps of scrubby, matted spruce crouch in their sheltered nooks or climb their warmer gravel shoulders.

The characteristic birds of the open barrens are the ubiquitous Longspurs—the Lapland by far the more common, Smith's much less so. A few waders nest here and there on the higher ground, but their favorite haunts are the lower levels adjoining the tidal flats. As the ground dries with the advancing season, or as the young hatch, these waders gradually drift riverward; but strangely enough, at least up to the beginning of the autumnal migrations, they are practically never found on the tidal flats, in spite of the fact that these flats are apparently an ideal feeding-ground. On the ponds of the open country the Old-squaw is the bird most often seen, but Arctic Loons are not uncommon, and a colony of Arctic Terns is known to nest on an islet in one of them. Inland the bush-girt lakes are inhabited by Bonaparte's Gulls, Bitterns, Sora Rails, and other species not commonly seen elsewhere. In the shrub-covered areas of the forest-edge Tree Sparrows and Redpolls are the most noticeable species; while deeper in the woodlands live Gray-cheeked Thrushes and Black-poll Warblers. The higher bare outcrops of rock are inhabited principally by Pipits, while the scrub about them harbors White-crowned and Harris's Sparrows. Other species of land birds present are few in number and local in distribution. During the period of our field work a flock of gulls, mostly Herring Gulls, continually lingered about the river-mouth with the Arctic Terns and a group of Parasitic Jaegers that eternally badgered them. The river itself, immediately after the break-up of the ice, fairly swarms with ducks and loons of various species, but these soon depart and through the summer the only birds commonly seen on it are a few Arctic Loons and occasional Black Ducks.

Some nineteen miles east of Churchill are the Fox Islands: two tidal islets of very unequal size, the larger about a mile in length and

a quarter of a mile in greatest width. They lie some four miles off the high-tide shore in the midst of a boulder-strewn tide-flat about ten miles wide, and are completely insular only when the tide is in. The larger island rises about twelve feet above high tide, and, except for one small sandy beach, has rocky or bouldery shores. It is generally level on top, is heavily grassed, and contains two shallow fresh-water ponds, the more important of which is approximately seventy-five by two hundred yards in extent. This larger pond is fringed with reeds and tall grass, and at one end there are some low arctic willows.

Cape Churchill is the extreme northern tip of the first strong salient of the west coast, about thirty miles east and a little north of Churchill. Twomey in 1933 (July 3-8) established headquarters on one of the small islands off the Cape, and made several trips along the adjacent coast and a short way inland. He describes the mainland around the Cape as low and covered with flat gravel and sand-dunes interspersed with numerous lakes, the country tending to become more level and sandy towards the south. He noted no evidence of forest growth from the coast but was informed that the tree-line lay some fifteen miles back from the shore. He saw many large icebergs among the shifting ice fields that completely surrounded the Cape.

ANNOTATED LIST OF SPECIES.¹

In the following list the senior author is responsible for the account, quotations, and conclusions recorded under the paragraphs covering 1930 and 1932, and the junior author for those pertaining to 1931. Wherever differences of opinion or observation exist both sides with the authority for each are given.

1. *Gavia immer* (Brünnich). COMMON LOON.

A regular but not common transient. Though loons were numerous on the river and on many tundra ponds throughout the summer of 1930, this species was positively identified but once, June 19, when a female was taken.

During 1931 loons thought to be of this species were seen three or

¹The scientific nomenclature and sequence of species used in this paper follow those of the American Ornithologists' Union "Check-List of North American Birds," Fourth Edition, 1931. As that work provides no official vernacular specific names, we have used our own discretion in adapting names for the purpose as has the senior author in his several official works.

four times, but only one was positively identified. This individual was noted by Sutton, June 19, near the river-mouth after a severe blizzard from the northeast. None were detected nesting on any of the lakes. Familiar loon calls were heard continually, but never the well-known laugh which is characteristic of *immer* but not of *arctica*.

Mr. L. T. S. Norris-Elye of Winnipeg, Manitoba, informs us that he received an unsexed specimen of this species taken at Churchill during the season of 1932.

On July 7, 1933, Twomey examined a Common Loon that had been shot by a trapper about ten miles down the coast from Churchill. This appears to be his only record for the species.

Measurements of the female specimen taken in 1930 are: wing, 330 mm.; culmen, 72 mm.; tarsus, 88 mm. These are small for the species and indicate a typical Lesser Loon, *G. i. elasson*, postulated for the interior and western parts of the continent.

2. *Gavia arctica* (Linnaeus). ARCTIC LOON.

Common transient and summer resident; breeds. Noted many times during the summer of 1930 from June 10, when the ice went out of the river, onward. Often seen on the lower river and on the tundra ponds where it nested. Two nests found, the eggs in one hatching July 15.

This loon seems just as fond of visiting its conspecific friends on adjoining waters as the Common Loon. Evenings, upon our first arrival at Lake Rosabelle, a number made rendezvous there and six or seven birds might be seen companionably swimming together and talking loudly. None were known to be nesting on this particular lake, though one nest was found on an islet in an adjoining pond. After being disturbed a few times the congregation discontinued their meetings or held them elsewhere. These lake and pond waters are shallow, seldom over six feet in depth, and in winter freeze to the bottom. They have no well defined outlet or other practicable connection with deep water and so far as we know contain no fish or noticeable amount of other loon food. The birds probably obtain their food from the river or sea nearby and carry it to their young on the ponds. Many of the calls of this species seem indistinguishable from those of the Common Loon, but we never heard them give the long, weird laugh that is so characteristic of *immer*. The species was observed rather commonly through August and occasionally in Sep-

tember. The last was recorded with a query, on October 3, by Lloyd.

During 1931 the species was very rare prior to the breaking up and going out of the ice on the river. On May 29 a single bird was noted on one of the lakes not far from the townsite. On June 10 two birds, probably a pair, were seen at high tide at the river-mouth. On June 11 the river became free of ice. On June 13 a spectacular sort of migration of loons took place all along the river. Most of these birds, apparently, were Red-throated Loons, but there were many Arctic Loons among them. They all behaved as if much elated over the opening of the river. Calling loudly, they passed back and forth all day in pairs and small flocks, sometimes as many as a hundred being visible at one time. They appeared to be issuing endlessly from the interior; but by following certain individuals, we could see that many of them were circling over the Bay, flying overland back to the river, and thence down once more to the mouth.

On June 16 and 17 several pairs were seen in the Lake Rosabelle district. On June 20 a nest just ready for eggs and one pair of birds were noted by Sutton and Lloyd at Landing Lake, and on June 23 a pair were seen on a lake near the gravel-pit. On July 6, 1933, Twomey found a nest with two eggs at Cape Churchill.

All specimens taken are referable to the American race, *G. a. pacifica*, the so-called Pacific Loon, found throughout most of the American range of the species.

3. *Gavia stellata* (Pontoppidan). RED-THROATED LOON.

Common transient; apparently does not breed. During 1930 Red-throated Loons became common as soon as the river opened, on June 10. Loons continued to be common on the river throughout the summer, but were difficult to approach, and this species was not positively identified after June 20, though Preble records it as "fairly common" at Churchill on July 21. We were surprised not to find this species breeding here, for it does so commonly at considerably lower latitudes, notably on the north shore of the Gulf of Saint Lawrence, where similar ecological conditions obtain.

In 1931, before the ice of the river went out, this loon was noted much more frequently than was the Arctic Loon. On May 29 four birds, probably two mated pairs, were seen flying over. On May 30 four pairs were seen and one very fat male shot. On June 2 several were noted. On June 5 a pair were seen. On June 6 Lloyd shot a

male at the river-mouth. On June 13 great numbers of loons, as described under the preceding species, were seen moving about the mouth of the river, apparently *en route* to more northerly nesting-grounds. Most of these were undoubtedly Red-throats, probably in a ratio of about one hundred to one. On June 17 two were seen on one of the lakes near the coast northeast of Lake Rosabelle. On June 28 four were seen on the river while we were on our way to Mosquito Point. No nests of the species were located.

In 1933 Twomey observed a heavy flight of this species from June 12 to 15, similar to that noted at about the same time of the month in 1931. He says: "At one time during these dates I counted as many as one hundred and fifty in and about the mouth of the river."

4. **Colymbus auritus** Linnaeus. HORNED GREBE.

Rare summer resident; breeds locally. It was not noted in 1930, although Clarke (1890) records a specimen in summer plumage taken prior to 1845.

On May 27, 1931, Semple saw one on the slough at the edge of the construction camp and his sight identification was later confirmed when, on June 20, Lloyd and Sutton located a nesting pair at Landing Lake and collected six fresh eggs and the incubating female. The nest was built between the slender trunks of some alders in a quiet corner of the lake, in water not more than four feet deep. The birds were very wary. The eggs were so fresh that they were not badly nest-stained. The condition of the ovaries of the female indicated that one, and perhaps two, more eggs would have been added to the set.

5. **Podilymbus podiceps** (Linnaeus). PIED-BILLED GREBE.

Mr. L. T. S. Norris-Elye of Winnipeg informs us that he recently received from Mr. Hugh Conn of the Hudson's Bay Company the skin of a Pied-billed Grebe taken at Churchill, presumably during the summer of 1933.

6. **Botaurus lentiginosus** (Montagu). AMERICAN BITTERN.

Rare summer resident; breeds locally. Recorded several times in the Landing Lake district during 1930. A female taken June 28 contained eggs nearly ready to deposit. Seen almost daily (probably the same individuals) until July 25; a single bird noted September 30.

In 1931 the Bittern was recorded only four times. On June 6 Lloyd saw one along the river about seven miles from the mouth, and Sutton saw another at a woodland pool. On July 1 one was observed near Landing Lake. Twomey collected one near Goose Creek on July 12.

The species was recorded several times in 1932 and 1933.

7. *Cygnus columbianus* (Ord). WHISTLING SWAN.

Probably a regular transient, much rarer now than formerly.

Bell (1883) reports Whistling Swans breeding near Churchill and on islands towards the eastern side of Hudson Bay, stating that their breasts are an article of trade although only small numbers are collected annually.

In 1930 swans were seen or reported flying over the river on June 3, 4, 10, and 16. On June 10 eleven birds were counted.

In 1931 swans were seen several times. On May 27 two were noted flying toward the open water of the Bay, and on May 29 two more were seen flying over the ice-covered river. On May 30 seven were observed flying toward the river-mouth, and on June 2 a pair and a flock of four were seen near the river. On June 6 six (perhaps the same birds that were noted on the 2nd) were seen. On June 8 a flock of nine was noted, one of which was a grayish, immature individual.

In 1932 Twomey noted four at Lake Rosabelle on June 7; two flying over Churchill on June 8; and one at Landing Lake on June 10.

In 1933 swans were noted in greater numbers than during the three preceding years. From June 7 to 18 flocks of from six to twenty individuals were seen almost daily flying down the river and out into the Bay, where they often settled. Reports that swans were nesting some distance up-river were not substantiated.

Cygnus buccinator Richardson. TRUMPETER SWAN.

Hypothetical. Possibly, in former times, an occasional visitor this far north. Bell (1885) lists the Trumpeter Swan from Churchill, but confidence in the record is shaken by his extending the range of this relatively southern species north to Marble and Nottingham Islands, where the Whistling Swan is known to be a common species today. We understand that in the early days, when swan skins were a recognized article of the fur trade, two sizes of swan pelts were commonly known to come out of Hudson Bay. The larger ones were undoubtedly of Trumpeter Swans, but there is no certainty that these birds were not captured much farther south in the interior, the pelts filtering by trade to the established commercial outlets.

8. *Branta canadensis* (Linnaeus). CANADA GOOSE.

B. c. canadensis is a common transient, which breeds sparingly in the vicinity.

During the spring of 1930, Canada Geese were seen occasionally as late as June 24, but not thereafter. One was taken from a flock on June 19, but no definite evidence of breeding was obtained. Canada Geese were noted again on August 28, and migratory flocks of from twenty-five to one hundred individuals were seen intermittently until the end of September.

In 1931 many more birds were seen than in the previous year; they were noted almost daily throughout the period of observation. A flock of four was seen May 22. On May 24 and 25 several flocks of from four to sixty birds were observed, all flying northward. On May 27 several flocks were seen, some individuals of which appeared to the junior author to be of smaller size than the others. These smaller birds may have been *B. c. hutchinsi*. On May 28 a pair flew over headed for the woodland, not migrating northward, and on May 29 many birds were observed, some in pairs in the woodlands, others in flocks moving northward, high in the air.

On June 2 Lloyd collected a pair of large *B. c. canadensis* as they flew from the woods out to their favorite feeding-grounds on the tidal flats. The gonads of these birds were much swollen. Between June 4 and 20 numerous birds were seen singly, in pairs, and in small flocks, many of them being agitated as if over the safety of their nests. On June 16 Sutton found a large female (again plainly *B. c. canadensis*) with bare incubation patch dead at the edge of a tidal stream.

On July 1 Pettingill encountered three pairs of geese with young in the woodlands of the Landing Lake district. Since none of the adults attempted to fly, they were probably in mid-summer moult, though no definite datum was recorded as to the condition of their wings. The young stayed with the old birds, making their way to water. They dived well at first, progressing rapidly a short way under the surface; but they soon became tired and on trying to get under again were unsuccessful. Specimens of the young were obtained.

In 1932 Twomey saw a flock of about thirty July 6 to 8 off the Fox Islands, some nineteen miles to the east. They were very wary and kept off the island while he was there and gave no definite evidence of nesting.

In 1933 Twomey found them breeding on the little lakes about Cape Churchill. The species was very numerous there and he noted four or five hundred birds.

It is apparent from the evidence and specimens at hand that the large Common Canada Goose, *B. c. canadensis*, is the breeding form of the locality. The occurrence of the smaller Lesser Canada Goose, *B. c. leucopareia*, and the diminutive *B. c. hutchinsi* as transients is indeed very likely, but actual specimens of these forms have not yet been collected.

9. **Anser albifrons** (Scopoli). WHITE-FRONTED GOOSE.

Preble (1902) tells us that Barnston recorded the White-fronted Goose as "frequent at Fort Churchill." This is quite possible, but we have no substantiating evidence today. It will probably be found, on receipt of specimens, that the smaller, typical *A. a. albifrons*, common to most of the continent, is the race present in this region, though a late author identifies a British Museum specimen from Repulse Bay, some six hundred miles to the north of Churchill, as *A. a. gambelli* (cf. Kuroda, 1929).

10. **Chen hyperborea** (Pallas). SNOW GOOSE.

Regular transient. Bell (1880) reports the "common white wavy" as "abundant at Churchill and York during the spring and autumn migrations." Again (1885) he says "Beginning to arrive at Churchill 5th September." The species appears not to be so common now, however.

In 1930 a flock of six was seen passing overhead on June 4, the only observed occurrence that year.

In 1931 a flock of four flew directly northward over the frozen river on May 29. On June 1 a large flock headed northeastward across the Bay at sunset. On June 3 a small, north-bound flock passed over the river-mouth. No Blue Geese were observed in these flocks.

Since no evidence that the Greater Snow Goose, *C. h. atlantica*, occurs anywhere on Hudson Bay is conclusive and since there is no indubitable record of that form from the west side of the Bay, we can confidently refer these birds to the Lesser Snow Goose, *C. h. hyperborea*.

Chen rossi (Cassin). ROSS'S GOOSE.

Hypothetical. Probably formerly a rare straggler. Hearne (1795, *vide* Macoun, 1909), who describes the "Horned Wavy" and makes clear the differences between it and the "Common Wavy," declares that it is very scarce at Churchill. Bell (1880) under the name "*Chen hyperboreus* var. *albatus*, Lesser Snow Goose," may refer to this species when he reports one shot at Fort Churchill by Mr. J. R. Spenser and comments on its rarity. Immediately afterwards he lists the "Common Wavy" as abundant. Since the common and abundant Snow Goose of Hudson Bay is the Lesser and as there is no other similar goose that is smaller except Ross's it is not unreasonable to suppose that it is this species he intends to designate. The taking of stray specimens in southern Manitoba in 1901 and 1902 (Macoun and Macoun, 1909) indicates that when the species was more abundant than it is now it did occasionally stray eastward from its normal migration range, and lends color to the supposition that it might have appeared occasionally at Churchill.

11. Anas platyrhynchos Linnaeus. MALLARD.

Clarke (1890) lists an adult male Mallard taken at Churchill sometime before 1845. The species was not recorded with certainty in 1930.

In 1931 it was noted several times. On June 6 Lloyd saw a large flock composed principally of green-headed males. During the following three weeks both males and females were observed now and then, though no definitely mated pairs were noted nor were nests or young found. On June 28 Pettingill took an interesting specimen of a male in eclipse plumage on a pond at Mosquito Point. It was unable to fly and was exceedingly difficult to prepare as a specimen.

12. Anas rubripes Brewster. BLACK DUCK.

Common summer resident; probably nests. Specimens taken June 10 and 19, 1930, were flightless, with moulted wings, and all birds taken after the first date were males. The assumption is that the females were nesting, probably inland beyond our sphere of activity; but we obtained no direct evidence of breeding. Considerable numbers, flocks of as many as sixty birds, were noted during the first half of August, but the species became rarer thereafter. The last record is of twenty-five seen on October 4.

In 1931 the Black Duck was first recorded on June 2, when a flock of six was noted by Lloyd. Probably the same birds were seen again on June 6. On June 8 several flocks, totalling at least fifty individuals, were noted. On June 12 several flocks and what appeared to be a few mated pairs were seen along the river and in woodland ponds. From June 15 to 20 single birds, probably males, and pairs were to

be seen here and there on the woodland pools, and on June 20 a few pairs were observed in the Landing Lake district. On June 29 Semple took an eclipse male at Mosquito Point. The bird was unable to fly and was swimming about in the river several hundred yards from shore. Another bird, probably also a male in eclipse, was seen nearby, but no females nor young were noted.

In 1932 Twomey observed about a thousand in scattered flocks on July 7, and five hundred more on July 8, all on and in the vicinity of the Fox Islands.

In view of the rarity of the Black Duck in southern Manitoba, the occurrence of the species in some numbers at Churchill is something of a surprise. The species probably migrates along the shores of Hudson and James Bays and southward through Ontario.

The legs of all birds that passed the eye of the senior author at the time of collection were decidedly red. The colors named from color-sketches made at the time were as follows. Legs: between bitter-sweet pink and oriental pink (Plate II, Ridgway's "Color Standards and Color Nomenclature," 1912) with dusky webs and joints. Bills: Rinnemann's green (Plate XVIII). The birds are therefore clearly within the description requirements of *A. r. rubripes*, the Red-legged Black Duck.

Chaulelasmus streperus (Linnaeus). GADWALL.

Mr. A. C. Bent, in his "Life Histories of North American Wild Fowl" (1923) cites this species as breeding north to Churchill but gives no authority for the statement.

13. **Mareca americana** (Gmelin). BALDPATE.

Fairly common summer resident; breeds. During 1930 a number of nests were found. The last bird recorded during the season was taken on September 30.

In 1931 Baldpates were seen nearly every day, the first individuals, probably a mated pair, being recorded on May 28. On June 15 Lloyd found a nest and ten fresh eggs under a small spruce tree. On June 29 many adults were seen at Mosquito Point. During the course of the season several specimens were collected.

14. **Dafila acuta** (Vieillot). PINTAIL.

Common summer resident; breeds. During 1930 this was considered one of the commonest ducks of the summer and early autumn. It was

first noted on May 30. Occasional birds were recorded through July to the 25th, when the numbers jumped from two to four a day to twenty-five and fifty, increasing by the middle of August and the first week of September to one and two hundred. Few were noted thereafter until September 29, when five hundred were recorded. Seven were observed on October 3, when the record closed. A number of nests were found.

During 1931 the Pintail was considered the commonest of the ducks. The species evidently arrives early, for on May 25 we saw not only a mated pair on the townsite slough, but also a flock of five passing northward over the frozen mouth of the river. On May 26 a male was shot, its back already containing a few feathers of the eclipse plumage. On May 30 a female with a fully formed egg in the oviduct was taken, and on June 2 a male in almost full breeding plumage, but with a few eclipse feathers in the back and scapulars. The first complete set of eggs, nine, slightly incubated, was found on June 6. By June 12 male Pintails were beginning to fly by themselves or in little companies. On June 15 it was noticed that female birds that had just left the nests were promptly joined by males. On June 17 a flock of males was noted in which at least two individuals were in almost complete eclipse plumage though all could fly perfectly. On June 26 a moulting female was taken at Button Bay and on June 29 three females with small young were noted. By this time separate flocks of male birds were to be seen everywhere along the river.

15. *Nettion carolinense* (Gmelin). GREEN-WINGED TEAL.

Regular though not very common transient; probably breeds occasionally. During 1930 it was not common during summer, but became somewhat more abundant in the fall. On June 28 two were seen by Gould; on June 30 a juvenal female was taken; and on August 8 an adult female was collected. Lloyd saw birds occasionally through August and September, and on September 4 and 30 saw flocks of forty and one hundred birds respectively. We obtained no definite evidence of breeding.

During 1931 the species was recorded on four dates. On June 6 a solitary male was seen by Lloyd. On June 8 Sutton collected a male in full courting plumage on a small woodland pool, but no female was seen nearby. On June 26 a flock, most of them apparently males, was seen at Button Bay. On June 29 a male was seen at Mosquito Point.

In 1932 Twomey saw single birds on the townsite slough on May 29 and June 5, collecting the latter. On June 14 he saw a pair on Lake Rosabelle. In 1933 he observed several individuals, mostly males, in and around the townsite during June and July.

16. **Querquedula discors** (Linnaeus). BLUE-WINGED TEAL.

Rare summer resident; nests. Preble (1902) tells us that a specimen from "Repulse Bay" is recorded in the British Museum Catalogue of Birds. The chances are this specimen was collected by Rae and that it came from some point considerably south of Repulse Bay, presumably in wooded country rather than in the Barren Grounds.

Twomey saw a female with a brood of young on July 12, 1931. He observed these birds at close range and is quite confident of their identity.

17. **Spatula clypeata** (Linnaeus). SHOVELLER.

Summer resident; breeds occasionally. In 1930 we observed it infrequently, first on June 8, when four males were seen in the townsite slough. On July 25 a downy young was taken by Lloyd at Landing Lake, this specimen furnishing evidence that the species breeds in the vicinity.

In 1931 Shovellers were recorded several times, but no nests were found. A male in worn breeding plumage was taken by Lloyd from a flock of three seen on June 2. On June 8, and on several dates thereafter, a pair were seen at the edge of town; the female probably had a nest not far away. Solitary males were noted at the mouth of a creek about seven miles up-river on June 12. The species was last recorded on June 21.

Mr. L. T. S. Norris-Elye of Winnipeg informs us that a specimen in his collection was taken at Churchill during the season of 1932.

18. **Nyroca marila** (Linnaeus). GREATER SCAUP.

Transient and summer resident; breeds occasionally and perhaps regularly. In 1930, from the time the ice went out of the river to the end of June, Scaups were common on the river. All specimens taken were Greater Scaups and the rest were assumed to be of the same form. Gould took a female with an egg in the oviduct on June 13, and a nest with eggs and parent on June 27. No Scaups were noted after June 30 except one seen by Lloyd on September 30.

In 1931 Scaups were recorded several times, and although the collecting of a single specimen of Lesser Scaup proves that both species occur, most of the birds seen were Greater Scaups. On May 25 a mated pair were seen swimming about at the river-mouth. Another pair continued to be seen about the townsite slough from May 26 to the end of the month. On May 30 a male was seen at the mouth of the river. On June 2 Lloyd collected a pair from a flock of forty about seven miles up-stream. The gonads of these were very small. On June 10 Sutton found a male in full plumage dead from striking telegraph wires. On June 17 a wary pair were seen on Lake Rosabelle. On June 29 three females and a male, all able to fly, were noted at Mosquito Point. On July 4 a pair were seen on Lake Rosabelle. No nest or female with young were found during this season.

In 1932 Twomey found the species common and took several specimens.

19. *Nyroca affinis* (Eyton). LESSER SCAUP.

Uncommon transient; may nest occasionally. The species was not recorded during 1930. In 1931 Lloyd collected a female on June 2. The ovaries of this specimen indicated the possibility of its nesting, but no male was seen nearby and no further evidence of nesting was obtained. Twomey noted two birds on July 12 that, on the basis of apparent size, he referred to this species.

20. *Glaucionetta clangula* (Linnaeus). GOLDEN-EYE.

Occasional visitor; probably does not breed. The absence of timber large enough to furnish nesting-holes would preclude its regular breeding in the vicinity. Macoun (1909) reports a Golden-eye from Churchill, but the specimen cannot now be located in the collections of the National Museum of Canada. We did not meet with it in 1930.

During the summer of 1931 the species was recorded on three dates: June 24, a flock of eight, apparently all males, swimming in the Bay not far east of the mouth of the river; June 26, two at the river-mouth; and June 29, two at Mosquito Point. These were carefully identified with good glasses.

In 1933 Twomey saw many flocks of from ten to twenty individuals at Cape Churchill, July 3 to 8, and collected a male in eclipse plumage.

21. *Charitonetta albeola* (Linnaeus). BUFFLE-HEAD.

Probably an occasional straggler. A specimen from Churchill taken previous to 1845 and reported by Clarke (1890) is our only record for the locality. There is no timber suitable for the nesting of this species anywhere in the immediate vicinity.

22. *Clangula hyemalis* (Linnaeus). OLD-SQUAW.

Very common transient and summer resident; nests abundantly. The Old-squaw and Pintail are the commonest ducks of the vicinity. In 1930, during spring and early summer, one or more pairs of the former species were to be seen on almost every tundra pool. A set of six fresh eggs was taken on June 13. After the first of July the males disappeared and shortly afterwards broods of young were to be seen everywhere. The species was noted in fairly constant numbers as late as September 4. After this date, only solitary birds or groups of two or three were noted on the ponds. By September 29, the last had apparently left, probably for the larger waters or the sea. All males appeared to be in complete summer plumage ("eclipse," see Sutton, *Auk*, XLIX, 1932, 42-51) when we started work on May 30.

The call-note of the Old-squaw is characteristic. It is generally given by our Great Lakes shooters as "cock-a-wee," and from this one of their common vernacular names is derived. These syllables do not, however, adequately represent the call that became so familiar to us as we camped on the shores of Lake Rosabelle. The birds very distinctly said to us "owl-owl-lick" with a slight rising inflection on the "lick."

In 1931 Old-squaws were noted almost daily. Lloyd recorded the first arrivals from the south, three birds on May 21. Flocks of males seen late in May were in all stages of moult into the summer, eclipse plumage. On May 25 a flock of at least two hundred birds was seen at the river-mouth. By mid-June the females were laying eggs. Remains of a nest and six eggs destroyed by a fox (?) were found on June 24. Another nest with seven fresh eggs was found on June 30. At this time the males were still chasing the females about.

In 1932 and 1933 Twomey noted great rafts of Old-squaws on the Bay off the mouth of the river, a thousand or more, mostly males and probably the mates of the females sitting ashore. In 1932 he found great numbers on the Fox Islands, where he estimated a population of

a thousand or more individuals and found about fifty nests. He found large numbers breeding also at Cape Churchill in 1933.

23. *Somateria mollissima* (Linnaeus). COMMON EIDER.

Common transient; regular summer resident; nests in suitable situations. In 1930 a few Eiders were commonly seen on the waters of the Bay, on the river near its mouth, and occasionally up-stream to near the head of tide, as late as June 18. A laying female was taken off the mouth of the river on June 19; but no other evidence of nesting in the immediate vicinity was obtained. The species has a pronounced predilection for sea islets as a nesting-ground, and there are no such islets in the immediate Churchill district. Eiders are said to nest numerously on the Fox Islands, about twenty-two miles to the east, and on Egg Island, about sixty miles northward, but see below.

In 1931 Eiders were recorded on three dates: May 30, two males and a female at the river-mouth near a great, noisy flock of Oldsquaws; June 3, a female, taken by a trapper and presented to us; and June 26, a male, seen at the mouth of the river.

In 1932 Twomey, on July 7 and 8, saw from one to five thousand in the vicinity of the Fox Islands, but discovered no indication of their nesting there. According to the charts the Fox Islands are tidal islands only, at low tide being connected to the mainland by wide flats. This imperfect insularity and absence of the continuous protection from wandering land predators is probably the reason that they are not used for nesting by numerous species.

In 1933 Twomey encountered two broods, of four each, on July 7 and 8 at Cape Churchill, where the species evidently finds a more secure nesting-ground.

The northern and southern Eiders are not always very strongly differentiated. Three female specimens examined by the senior author seem to bear slightly closer resemblance to *S. m. dresseri* than to *S. m. borealis*. A single male taken at Cape Churchill on July 7, 1933, and examined by the junior author, is apparently closer to *borealis* than to *dresseri*, for the membranous processes at the base of the bill are much narrowed (averaging 9 mm. in width), comparatively pointed, and much shorter than in *dresseri*; furthermore there is practically no greenish wash on the side of the head from the region of the eye forward.

24. **Somateria spectabilis** (Linnaeus). KING EIDER.

A transient, probably commoner than our two records tend to show. A female was taken by Lloyd on September 5, 1930, at one of the ponds near Lake Rosabelle. This bird was with another Eider, and it is highly probable that both ducks were of the same species.

Twomey took a male from a flock of fifteen noted at Cape Churchill on July 6, 1933.

25. **Melanitta deglandi** (Bonaparte). WHITE-WINGED SCOTER.

Fairly common transient and summer visitor; no evidence, at present, of its nesting at Churchill.

In 1930 the White-winged Scoter was fairly common on the river from June 10 to about June 20, but it was not noted thereafter until July 22, when it began to appear again. Most birds apparently were males. A not quite mature female was taken on August 2. It is inferred from experience with the species elsewhere that these were largely non-breeding birds; or, in the case of males seen later in the season, birds that had discharged their mating duties on their inland breeding-grounds.

In 1931 two fair-sized flocks, composed apparently exclusively of males, were seen on the Bay east of the river-mouth by Lloyd and Sutton, on July 4.

In 1933 Twomey saw considerable numbers of White-winged Scoters at Cape Churchill from July 3 to 8.

26. **Melanitta perspicillata** (Linnaeus). SURF SCOTER.

A transient, irregularly common. In 1930, when the ice went out on June 10, a number of Surf Scoters appeared on the river. They were seen daily until the end of the month. After this none were certainly identified until July 31, when a flock of fifty was noted by Lloyd. No evidence of breeding was obtained.

In 1931 the species was recorded twice. On June 17 an Indian killed a handsome male along the river, and on June 26 four males were seen near the river-mouth.

In 1933 Twomey noted ten at Cape Churchill from July 3 to 8.

27. **Oidemia americana** Swainson. AMERICAN SCOTER.

A transient, irregularly common. Clarke (1890) lists an adult male taken prior to the year 1845, and Macoun (1909) records the species from Churchill.

In 1931 a flock of about thirty was seen on June 2 at the mouth of a tributary to the Churchill River, about seven miles up-stream. Later in the day, a separate pair were noted in the same region and Lloyd succeeded in taking the male.

In 1932 Twomey saw one on the townsite slough on May 29, and from one to four occasionally at the same place until July 26. He took one on June 3, which is now in the collection of the Royal Ontario Museum in Toronto. In 1933 he saw numbers of the birds at Cape Churchill from July 3 to 8.

It is not safe to infer that Scoters found summering on the sea coast indicate breeding-grounds nearby, for it is customary for males and non-breeding individuals of these species to forsake their inland nesting-grounds as soon as incubation is well under way.

28. **Lophodytes cucullatus** (Linnaeus). HOODED MERGANSER.

Scarce summer visitor; probably does not nest. In 1930 it was noted occasionally on the river near or above the rapids at Mosquito Point, from June 20 to July 27. Four specimens taken were females, and juvenal or eclipse males. We obtained no definite evidence of the nesting of the species; in fact, since there are no trees large enough to furnish suitable cavities for nesting it is unlikely that the species breeds in the immediate vicinity.

29. **Mergus serrator** Linnaeus. RED-BREASTED MERGANSER.

Common summer resident; breeds. During the summer of 1930 it was fairly common, being noted almost daily on the river. Specimens from a brood of newly hatched young were taken on August 2. The species was still present on October 4, when the records closed.

In 1931 the species was recorded many times, along the river and on the lakes. It was first seen on May 29: a pair at the mouth of a creek about seven miles up the river. On June 17 an interesting male, just moulting into eclipse plumage, was taken by Sutton at Lake Rosabelle.

In 1932 Twomey noted from fifteen hundred to two thousand on July 7 and 8 at the Fox Islands; and on June 25 he took a set of ten fresh eggs from a down-lined nest at the base of a willow clump on a high bank at the edge of Lake Isabelle, northeast of Lake Rosabelle.

In 1933 Twomey found several nests in the Churchill vicinity and

observed numbers of the birds flying along the shore-line at Cape Churchill, where they passed in flocks of from twenty-five to fifty individuals every five minutes or so. He observed them also feeding amidst flocks of American Eiders.

30. **Astur atricapillus** (Wilson). AMERICAN GOSHAWK.

Probably a scarce transient or straggler. Clarke (1890) reports an adult female taken at Churchill before the year 1845.

In 1932 Twomey saw a Goshawk at the gravel-pit on June 9. He had it under field-glass observation at one hundred yards range but could not collect it.

Since the Western Goshawk, *A. a. striatulus*, appears to be confined to the far west, these birds were almost certainly of the eastern race, *A. a. atricapillus*.

31. **Buteo borealis** (Gmelin). RED-TAILED HAWK.

Probably a rare wanderer from the forested interior. Bell (1880) records the species from Fort Churchill.

In 1930 Lloyd saw two Red-tails, on August 23 and 24—probably the same individuals.

In 1933 Twomey saw an adult bird on July 12, at Goose Creek.

The subspecies represented by these individuals is entirely problematical.

32. **Buteo lagopus** (Gmelin). ROUGH-LEGGED HAWK.

Regular and fairly common transient; apparently nests when lemmings are abundant. In 1930 at least three individuals were observed on June 11, beating back and forth along the steep rocks bounding Sea Horse Gully back of Button Bay. One was in the black, the others in the light phase. One of the latter, in faded yearling plumage with dark abdominal patch, was taken. We had every expectation of finding them nesting in the vicinity, but in spite of several return visits, we did not see them again. A hawk seen on July 2 was doubtfully referred to this species.

During 1931 the Rough-leg was noted several times. On May 27 two black-phased birds were seen flying eastward along the river shore, and on May 29 and 30 single birds were observed along the river. On June 3 three birds, all in light phase, were seen. On June 4 nine

were seen heading eastward towards Cape Churchill. All of these were, we think, transients, for we nowhere found indication of their nesting.

In 1933 Twomey observed a considerable northwesterly migration of the species along the rock ridge near the townsite: on May 29, thirty birds passing at half-hour intervals, two or three being in view at once; on May 30, forty birds; on May 31, fifty birds; on June 1, ten birds; and on June 2, twenty birds. For several days following this period only one or two birds were seen. On June 16 ten were observed following the same northwesterly course.

In 1933 Twomey discovered three nests on cliffs overlooking water near the river-mouth. These were built of sticks, driftwood, chips, grass, and sea-weed.

33. ***Aquila chrysaëtos*** (Linnaeus). GOLDEN EAGLE.

Probably an occasional visitor. The junior author (1931) has already recorded a Golden Eagle taken some thirty miles inland from Cape Eskimo, about 160 miles north of Churchill. Through the courtesy of Mr. Hugh Conn, of the Hudson's Bay Company, this specimen is now in the collection of the National Museum of Canada.

On May 23, 1931, a Golden Eagle was seen clearly by Semple, Sutton, and Pettingill from the train window, in wooded country, not far south of Churchill. The bird apparently had been feeding near the railway track upon a ptarmigan.

34. ***Haliaeetus leucocephalus*** (Linnaeus). BALD EAGLE.

Probably an occasional visitor; may breed nearby. Preble (1902) was informed that "white-headed eagles were occasionally seen" at Churchill, and that they nested in the vicinity. He obtained in confirmation of this report the upper mandible of a bird that had been killed here.

35. ***Circus hudsonius*** (Linnaeus). MARSH HAWK.

Fairly common summer resident; breeds. Marsh Hawks were frequently seen throughout the summer of 1930, mostly inland but occasionally at the river-mouth or over the townsite of Churchill. About August 15 the species suddenly became more common near Fort Prince of Wales, and from three to five were seen there daily until September 5, when they disappeared.

In 1931 the species was seen frequently also, from May 28 on. On June 9 one was seen feeding on a freshly killed Pintail. On June 29 Pettingill collected a set of four eggs at Mosquito Point.

36. **Pandion haliaëtus** (Gmelin). OSPREY.

Summer visitor; may nest occasionally. An Osprey was killed near the townsite by some Indians and presented to us on June 19, 1930. Another was seen at Mosquito Point on June 24, being badgered by a flock of Arctic Terns. In 1931 Sutton saw an Osprey along the river on July 3.

No direct evidence of the Osprey's breeding at Churchill was obtained, but the species probably nests up the river, as reported by Bell (1880).

37. **Falco rusticolus** Linnaeus. GYRFALCON.

Irregular transient and winter visitant. Clarke (1890) records two specimens of "*Falco rusticolus gyrfalco*" taken prior to 1845 at Churchill, and Preble (1902) tells us that residents told him of "white hawks" they had seen. Lloyd, who spent two winters at Churchill, reports having seen white hawks in winter.

The status of the various races of Gyrfalcon in America is still in an uncertain condition. At least two races or color-forms of the species occur at Churchill, and it is probable that all American forms and phases will eventually be recorded there except perhaps the excessively dark Labrador coast type.

38. **Falco peregrinus** Tunstall. DUCK HAWK.

Fairly common transient and summer resident; probably nests in suitable localities. On June 6, 1930, a Duck Hawk dashed into a flock of Bonaparte's Gulls on the townsite slough. Next day one was seen on "the point"; and on June 11 another was observed beating about the rocky bluffs overlooking Sea Horse Gully back of Button Bay. Since these bluffs were fairly high we thought we might find the birds breeding there, but we obtained no evidence that they did so, and did not observe the species again until September 30, when Lloyd noted three, probably young birds reared not far away.

In 1931 Duck Hawks were seen frequently at the mouth of the river, along the flats where the shore birds were feeding, about the con-

struction camp and at Sea Horse Gully. The first was recorded on May 27. Semple shot a large female, with ovaries somewhat enlarged, on May 28. On June 1 two sub-adult males were taken. On June 5 and 9 young males were taken.

In 1933 Twomey observed an adult male every day or so during the last week of June and the first two weeks of July. It was always hunting along the edge of the spruce woods or over the tide-flats or tundra.

39. **Falco columbarius** Linnaeus. PIGEON HAWK.

Common summer resident; nests. In 1930 two Pigeon Hawks were seen near Mosquito Point and a high-plumaged male was taken on June 27. On July 25 an adult female and two accompanying young of the year were taken in the scrubby bush directly across the river. Later the species became more numerous, probably attracted from the spruce bush to the flats by the flocks of waders. Single birds were recorded by Lloyd on many occasions through August and as late as September 29.

In 1931 Pigeon Hawks were frequently seen. One of the employees of the Hudson's Bay Company shot an adult on April 25, preserving a photograph which we examined. On May 25 a male was seen flying rapidly along the edge of the Bay. On June 6 Pettingill collected a set of five fresh eggs and a brown-backed female at about Mile 506, not far from the railway tracks. On June 16 one attacked Semple in the woods not far from Landing Lake. On June 29 Sutton collected a pair and complete set of three eggs at Mosquito Point, the nest being in a spruce tree about twenty feet from the ground. Only one egg was fertile and this was considerably incubated. About the nest and at the base of the tree were the remains of several small birds.

The twelve specimens collected are all clearly referable to the eastern race, *F. c. columbarius*.

40. **Falco sparverius** Linnaeus. AMERICAN SPARROW HAWK.

Uncommon and irregular autumnal visitor. In 1930 it was not seen until August 19, when there appeared to be a sudden invasion from the interior. Comparatively common thereafter until September 6, from one to six individuals daily being noted on eight of the days during that period. Several were taken, all young of the year, and all referable to the eastern race, *F. s. sparverius*.

In 1931 the species was not recorded prior to July 13, when the junior author's party ceased work; but in 1932 Twomey found one dead within the townsite on July 4.

41. **Canachites canadensis** (Linnaeus). SPRUCE GROUSE.

A straggler or very rare and local permanent resident. Clarke (1890) reports a specimen taken at Churchill previous to 1845. It is reported as "rare at Fort Churchill" by Bell (1880) and there is in the National Museum of Canada a pair of feet obtained at Churchill by James Macoun in September, 1910.

On May 23, 1931, Lloyd saw a handsome male near camp at Churchill, not far from one of the buildings; it flew off to the southward. So far as any one thereabouts knew it was the first that had been seen at Churchill. On June 9, at about Mile 504, and in the deepest woodlands thereabout, Sutton found the feathers of a female which had evidently been killed by some predator.

Twomey found the remains of a male in the spruce woods near the gravel-pit on June 28, 1933.

These birds were probably of the so-called Hudsonian race, *C. c. canadensis*.

42. **Lagopus lagopus** (Linnaeus). WILLOW PTARMIGAN.

Breeds abundantly; probably irregularly common in winter. During the spring and early summer of 1930 the males, with their largely white, piebald coloring, were very conspicuous against the mossy ground. The summer plumage of the females was much farther advanced. Hidden on their well concealed nests, they were difficult to find until after they had brought off their chicks, when we met them almost everywhere. The males, unlike most male grouse, are devoted parents and were often seen in close attendance on their families. According to Lloyd's notes this species became considerably more common toward the end of August and the first week of September, when fifty to seventy-five individuals were listed on several days. Whether these comprised a fortunate number of broods encountered or the beginning of an influx of winter visitors, we do not know.

During 1931 Willow Ptarmigan were abundant. On May 18, when Lloyd first arrived, the males were noticeably whiter than the females. The first nests were found on June 9, and complete sets of eggs from June 11 on. On June 16 a female was heard to "crow"

more or less like a "singing" hen. Young were first observed on July 3. After this date broods of young were to be seen everywhere.

In 1932 the species was not nearly as common as during the previous year. Twomey and Farley found twenty-five nests in 1931, while Twomey found but a single nest in 1932.

In 1933 Twomey found the species more numerous than during the preceding year and located fifteen or twenty nests.

Rather complete series of various plumages were obtained. All specimens apparently are referable to the common continental form with black primary shafts (see Taverner, 1930), now recognized by the A. O. U. "Check-List" as distinct from the European race as *L. l. albus*.

43. *Lagopus rupestris* (Gmelin). ROCK PTARMIGAN.

Apparently a winter visitor, irregularly common. Lloyd, who was stationed at Churchill for several years, saw Rock Ptarmigan every winter, but he is of the opinion that the species never occurs regularly in summer. In 1930 the only one noted was a single female in autumn plumage taken on August 19, near Fort Prince of Wales.

In 1931 Lloyd took two specimens on January 28, that are now in the Royal Ontario Museum, Toronto.

The species was rather numerous during the early part of our 1931 sojourn, being noted from May 25 to June 10. On May 26 a male in complete winter plumage was found dead near camp. On May 28 a large flock, many of them females with dark spotting, were seen at the river-mouth. Semple collected two of these in the most advanced summer plumage he could observe. On June 2 one was seen flying over camp, and on June 5 a freshly killed female was found. On June 10 one bird, probably a cripple, was seen walking among the rocks not far from the Bay.

In 1932 Twomey found a dead bird on May 24 at Lake Rosabelle, the only one seen that year.

Such specimens as are identifiable are apparently referable to the southerly, typical form, *L. r. rupestris*.

44. *Grus americana* (Linnaeus). WHOOPING CRANE.

Cooke (1914) quotes Hearne as to the occurrence of this species at Churchill in his day (*circa* 1700). In 1930 report of a large white crane with black wings killed recently by natives back from Eskimo

Point was current among the Hudson's Bay Company officials, but details concerning the specimen could not be obtained. This is undoubtedly the same Whooping Crane that Sutton (1931) records.

Eskimo Point is some 160 miles north of Churchill, but the relative geographical position of the two stations suggests the probable occurrence of the species here.

45. ***Grus canadensis*** (Linnaeus). SANDHILL CRANE.

Probably a more or less rare but regular transient; may nest occasionally.

In 1930 Sutton (1931) recorded the species at Nunalla, some seventy-five miles north of Churchill and almost at the Manitoba boundary on the Bay.

In 1931 Farley saw a gray-colored crane on June 10.

In 1932 Twomey saw one on a muskeg near Lake Rosabelle on May 29, as well as every day he visited the locality thereafter until June 7. He approached the bird within 150 yards and made definite identification. On July 15 he noted another, or the same bird, flying over Churchill.

The subspecies is almost certainly *G. c. canadensis*, the Little Brown Crane, which nests from the Arctic islands southward, for the larger Sandhill Crane, *G. c. tabida*, is a much more southern race. Specimens from Mistake Bay and northward in the National Museum of Canada and Carnegie Museum are clearly Little Brown Cranes.

46. ***Porzana carolina*** (Linnaeus). SORA RAIL.

Rather uncommon summer resident; nests locally about the more inland lakes. In 1930 a nest full of newly hatched young was found near Landing Lake on July 15. The parents were flushed and taken before the nest was discovered. The young immediately scattered in the grass and could not be found. Gould then set mouse traps in the runways near the nest and kept circulating about until he heard the traps spring. In this way he obtained three of the brood. The next day he returned and found that the remainder of the brood had returned to the nest.

In 1931 Sutton collected a male at a little marshy pond not far from Lake Rosabelle, on June 24. The bird was calling loudly and there probably was a nest somewhere in the vicinity.

In 1932 Twomey saw a single bird.

Coturnicops noveboracensis (Gmelin). YELLOW RAIL.

Hypothetical. Probably a rare, though perhaps regular, summer visitor. Its mouse-like, secretive habits usually render its numerical status particularly difficult to determine.

In view of the fact that Preble (1902) took several Yellow Rails at York Factory, we looked for it at Churchill, but it was not until 1932 that any evidence could be obtained of its presence here. On June 20, in a grassy marsh at Goose Creek some twelve miles south of the townsite, Twomey heard some peculiar clicking notes that he ascribed to this species. He spent two hours in endeavoring to glimpse the author of the notes but had no success. The bird was within ten feet many times, but it refused to flush even when rushed. If Twomey sat still for five minutes or so the notes would start up again and gradually approach until they seemed within hand's reach, but never could a sight of the bird be obtained. All this behavior is in accord with familiar accounts of the Yellow Rail, and it is so unlike that of any other species that Twomey's assumed identification seems justified.

47. Charadrius semipalmatus Bonaparte. SEMIPALMATED PLOVER.

Very common transient and summer resident; nests abundantly. In 1930 it was present on the date of our arrival, May 26, and was considered, throughout the summer, a very abundant wader. It nested on bare ground, or less frequently on the moss of the tundra. It was common until August 27, when most of the birds left, but a few stragglers remained until September 16.

In 1931 Lloyd saw the first spring individual about May 20. On May 25 he saw two not far from "town." Many nests were found during the course of the spring and summer.

48. Oxyechus vociferus (Linnaeus). KILLDEER.

Uncommon although regular summer resident; nests locally.

In 1930 a pair or two were seen off and on about the townsite slough and a downy young was taken there. This specimen was so dark and grimy with soot from the construction works and engines as to be specifically almost unrecognizable. The species was not noted after August 30.

During 1931 Killdeers were seen about town from May 26 on, and two pairs were thought to have nested in the vicinity. On June 10 a female that was building her nest was collected. All the birds were very dirty as a result of the smoke from the camp.

49. *Pluvialis dominica* (Müller). AMERICAN GOLDEN PLOVER.

Common transient and summer resident; nests. In 1930 it was first noted on June 4, and a few were in evidence almost daily thereafter. Nests were found with fresh eggs on June 14 and with newly hatched young on July 14. The first was on a small knoll in the middle of the low tundra, the surrounding moss being still wet with spring surface water. The other was in the moss between half-buried boulders on higher dry ground. Neither was within half a mile of permanent water. Toward the end of August and the first of September there was a slight increase in the numbers of Golden Plover, and small groups or flocks, instead of isolated single individuals, were noted. These probably were arriving migrants. The last was noted on September 16. No partly grown young were seen and the notes available do not show how much time elapsed between the departure of the juveniles and that of the adults.

In 1931 Golden Plovers were recorded flying over camp on May 29 and 31, and on June 2 a male was taken. On June 17 Sutton collected a set of four fresh eggs with the incubating male, the female not being seen. On July 1 three nests were found by Semple, Lloyd, and Sutton and a pair were collected. No downy young were taken. The birds were rather quiet about their nests and the discovery of nesting pairs always came as a surprise. The principal nesting-ground was the open tundra just inland from the Bay between the coast and the belt of stunted spruce trees. Specimens taken are referable to the eastern race, *P. d. dominica*.

50. *Squatarola squatarola* (Linnaeus). BLACK-BELLIED PLOVER.

Uncommon transient. A single bird was noted on June 10, 1930, but the species did not appear again until July 25, when five adults were seen, and one in full summer plumage with little sign of plumage change was taken. On August 2 a small flock was noted near Mosquito Point. On August 19 an adult about half changed to winter plumage was secured. The largest flight occurred on September 29, but the species was occasionally noted as late as October 4, when the records closed.

In 1931 the species was seen several times, but it was never common and gave no indication of nesting. It was first recorded on June 1, and two were seen the next day. A male was taken by Lloyd on June

6. On June 8 a flock of about forty was seen. On June 12 another large flock was seen and a dull-colored female collected. The species was last recorded on June 18.

In 1933 Twomey saw several flocks of from ten to twenty birds on June 10, and a single adult male that remained until June 28.

51. ***Arenaria interpres*** (Linnaeus). TURNSTONE.

Regular transient. In 1930 it was noted from May 27 to June 14 and from July 22 to September 25. On first arrival in spring the birds frequented the garbage dump of the construction camp at the edge of the sea ice. It was unexpected and novel to see these gaily colored waders contentedly picking their way about the white snow and ice masses.

In 1931 Turnstones were seen from May 29 (two recorded) to June 29, when one was detected along the edge of the river searching for food among old tin cans. Several specimens were taken. A pronounced migratory movement was noted on the evening of June 9, when many noisy flocks continued to fly over camp, high in the air, evidently headed for distant parts to the north.

In 1932 Twomey saw the species commonly from May 29 to June 9. The first autumnal migrants were two noted on July 18; on July 26 a flock of about two hundred was noted.

In 1933 Twomey found Turnstones very plentiful at the time of his arrival on June 5. A number lingered for some time, indulging in courting ritual and mating songs until there was some expectation that at least two pairs might nest. All suddenly disappeared, however, about mid-June.

52. ***Capella delicata*** (Ord). WILSON'S SNIPE.

Fairly common summer resident; nests. In 1930 it was tolerably common on the muskegs adjacent to timber, where it was often heard high overhead whinnying in its spring flight. Gould took young, able to fly, but with stubby tails and down still adherent to the head, on July 18, 20, and 25. On these dates no adults were in evidence and it appears that as in the case of certain other waders the adults leave for the south just as soon as the young can fend for themselves. Neither young nor old birds were noted after July 25.

In 1931 Twomey took downy young on July 12.

53. **Phaeopus hudsonicus** (Latham). HUDSONIAN CURLEW.

Common transient and summer resident; nests. Because of its size and noisy reaction to intrusion it is one of the most conspicuous birds of the lower lying tundra. In 1930 it was common by May 31, and it remained so until September 7, when it suddenly left, only a single individual (September 12) being observed thereafter. The largest numbers, probably augmented by transients, were recorded during the third week in August. Fresh eggs were found on June 13 and 14 and moderately incubated sets on June 14 and 21. Newly hatched young from two broods were taken on July 11.

In the vicinity of their nest these curlews are noisy and agitated, spying the intruder from afar on the open tundra, both birds of a pair, and sometimes adjacent neighbors, flying to meet him, protesting vigorously, beating away in great circles, returning in long dives that glide upward just short of actual attack, and then making off for a repeat. For a time they may mount some distant hummock or small tree-top from which to watch and tell the world of the unparalleled danger that threatens the community.

Though we found several broods of newly hatched young, we failed completely in locating partly grown birds. Once well on their legs the young are good runners and hidiers and are too well warned by their vigilant parents to be surprised in exposed positions. The most patient waiting in the all too slight cover that was available failed to restore enough confidence to the agitated old birds to induce them to betray the location of their ganglings. Young birds were taken on August 19, but these were already fully fledged and practically ready for migration.

This is the first definite evidence that this species breeds east of the Anderson River region, Mackenzie,² and since the downy young seems not to have been previously known, we present herewith a description of the plumage, which is also illustrated in color in the frontispiece.

Ground-color about pale olive-buff,³ whitening on the abdomen, breast, and foreneck, and warming towards clay-color on face and hind-neck. On this many rather indefinite spots and broad, broken stripes of dark brown, or nearly black, on back, thighs, and in front of wings.

²The junior author found the species in midsummer on Southampton Island, but neither eggs nor downy young were actually collected.

³The names of colors are from Ridgway's "Color Standards and Color Nomenclature," 1912, Plates XL and XXIX.

A similarly black bar running back from eye towards nape, a fine line from bill to eye and a broader one up forehead, succeeded by two broad crown-stripes. Bill blackish, slightly fleshy towards base. Legs and feet dull lead-color.

In 1931 the Hudsonian Curlew was first recorded on May 28, when two birds flew over camp. The species became common thereafter. Several were collected on June 2. During latter June many nesting pairs were located. Pettingill took a set of four eggs on June 24. Other nests were found on June 29 and July 1.

Several nests were found by Twomey and Miss Heydweiller in 1933, and Twomey is of the opinion that the species was more abundant this season than during the two preceding years.

Phaeopus borealis (Forster). ESKIMO CURLEW.

Hypothetical. Probably formerly a common transient, and perhaps a regular summer resident; now extirpated and practically if not actually extinct. This Curlew has been confused in literature with the Hudsonian and its former distribution is now difficult to determine. Its only known former breeding-ground is the Anderson River region of the northwest Arctic coast, but it may well have extended eastward to Hudson Bay and the Churchill neighborhood. Bell (1880) lists the Eskimo Curlew as well as the Hudsonian as common at Churchill in July and August. This statement is not out of harmony with past conditions as we know them.

In 1930 Gould saw four very small curlews in a flock of larger Hudsonians on July 10. He watched them in close association through glasses under good observational conditions and is confident that they were of this species. They did not permit of close approach and could not be collected. That the small ones flew with the rest lessens the possibility that they might have been partly grown youngsters of the larger species. In 1933 Twomey had a similar experience with a flock of large and small curlews, and coincidentally on the same date, July 10. He watched them for some minutes with field glasses but like Gould was unable to confirm his impression of Eskimo Curlew by taking specimens. It would be a matter for congratulation if it could be proved that the Eskimo Curlew is still extant, but with our present knowledge it does not seem that any sight record can accord the species more than hypothetical status.

Partramia longicauda (Bechstein). UPLAND PLOVER.

Hypothetical. Preble (1902) met the Upland Plover south of Cape Eskimo. Though we did not see it in either 1930 or 1931, it eventually will probably be noted.

54. **Actitis macularia** (Linnaeus). SPOTTED SANDPIPER.

Rather rare and local summer resident; nests. In 1930 a pair nested on the gravelly edge of the river at Mosquito Point, and a solitary

bird was seen throughout the summer on the townsite slough. The species is probably more common up the river.

In 1931 it was noted several times about the ponds at the edge of town and at Mosquito Point. One was collected on June 16. On June 17 two were seen. On June 24 many were seen and heard. It appears from these data that this species may slowly be establishing itself at the mouth of the Churchill River.

55. *Tringa solitaria* Wilson. SOLITARY SANDPIPER.

Summer resident; breeds regularly and probably in considerable numbers. In 1930 Gould took Solitary Sandpipers on July 18 (a single male) and on July 25 (two or three seen). These were all apparently without mates, though the male taken July 18 protested strongly and may have had young nearby. No other sign of breeding was observed.

In 1931 the species was first noted on June 4, when a male was collected from a water-filled rut along one of the roads in the spruce woods. On June 8 a female with an egg almost ready for laying was taken from a shallow woodland pool. A male was seen at the same place, but neither bird was agitated at our approach or acted as if the nest were close by. During mid-June we several times saw Solitary Sandpipers giving display flights high in air. On June 11 remains of two birds were found in the grass at the edge of the woods, victims perhaps of a Short-eared Owl, Marsh Hawk, or Pigeon Hawk. On June 16 a female with a pronounced brooding-patch was collected. Twomey took one and two specimens on July 5 and 12 respectively. There can be no doubt that the species was breeding somewhat commonly in the suitable woodlands.

The six birds collected are all adults; in all of them the spotting of the back is white without a trace of cinnamon; the primaries are more or less mottled; measurements, particularly of the wing, are large for the species; and they are therefore clearly referable to the western race, *T. s. cinnamomea*.

The distinctive characters of this race are:

1. Outer primaries more or less mottled or marbled with whitish, a character not altogether constant but conclusive when present.
2. Wing averaging longer than in the eastern race, but with some overlapping between the two forms.
3. Back-spotting cinnamon in the young of the year, but white and inseparable from that of the Eastern Solitary in the adult.

The wing measurements⁴ of the six specimens taken are: males 5.23, 5.00, and 5.25 in. (133, 127 and 134 mm.); females 5.35, 5.37, and 5.36 in. (135, 137, and 136 mm.).

The breeding of the Western Solitary Sandpiper as far east as Churchill is of more than passing interest. The only nestings of the species heretofore actually demonstrated have been in western Alberta and central Saskatchewan, and these birds are definitely referable to the eastern race, *T. s. solitaria*. Birds taken in eastern Alaska and adjoining Yukon Territory, and presumed to be nesting, are the western form, *T. s. cinnamomea*. The two races migrate through British Columbia and western Alberta, and (with the Western in gradually lessening numbers) east occasionally to Manitoba. With the evidence now at hand it appears that *cinnamomea* may be a northern race, breeding from Hudson Bay west to Alaska, rather than, as has been supposed, a western one.

With this new light on the summer distribution of the two forms it may be well to call attention to the necessity for very careful identification of Solitary Sandpipers during the period of migration. The chances are that some of the birds found in spring and fall in regions directly south of Hudson Bay are *cinnamomea* rather than *solitaria*.

56. **Catoptrophorus semipalmatus** (Gmelin). WILLET.

On June 2, 1931, Sutton collected a well-plumaged male from a flock of shore birds feeding at high tide along the river about five miles from its mouth. The specimen proves to be referable to the western race, *C. s. inornatus*.

57. **Totanus melanoleucus** (Gmelin). GREATER YELLOW-LEGS.

A transient, more common in autumn than in spring. Though Preble (1902) considers the Greater Yellow-legs as common from Churchill to Cape Eskimo in August, the species was not seen in 1930 until August 2, when two adults in worn, very heavily marked plumage were taken near Mosquito Point. On August 15 two more were obtained, one in nearly complete winter plumage. The species was noted in small but fairly regular numbers through the latter half of August and the first week of September, after which but occasional

⁴The junior author wishes to acknowledge the assistance of Mr. W. E. Clyde Todd of the Carnegie Museum, in securing measurements of several specimens taken in 1931.

birds were seen; it was last recorded on September 30. It was never as common as the Lesser Yellow-legs and there were no indications of its breeding.

In 1931 the species was observed but once, on May 25, when one was heard "yammering" loudly at the townsite slough.

58. **Totanus flavipes** (Gmelin). LESSER YELLOW-LEGS.

Common summer resident; nests on the more open muskegs in the forested country. In 1930 it was not seen until June 6, but thereafter it became common, even to the point of being a common nuisance, as its loud protestations and wild dashes on the appearance of an intruder put all the birds of the vicinity on the *qui vive* and spoiled many a quiet approach. Fresh and slightly incubated sets of eggs were taken on June 25. On July 16 young showing the first intrusion of new body plumage among the down were obtained, and on July 10 and 18 half grown birds were taken. As late as July 28 old birds were still giving loud protest, alighting in trees and scolding as if yet with young, when most of the other waders were freeing themselves from family responsibilities. They remained in fairly constant numbers until August 26, and three were observed September 3.

In 1931 the species first appeared on May 27, when two birds were seen and courtship activity was noted. From this date on, it was noted every day.

59. **Calidris canutus** (Linnaeus). KNOT.

A transient, regular in the spring, not recorded in the fall. In 1930 Knots were taken on June 2 and 12, on the latter date a male still half in winter plumage. None were noted thereafter.

In 1931 three Knots were seen by Lloyd and Sutton on June 12, about seven miles up-river. A male in almost complete breeding plumage, but with an injured leg, was taken by Lloyd.

Specimens taken are presumably of the American race, *C. c. rufus*.

60. **Pisobia melanotos** (Vieillot). PECTORAL SANDPIPER.

A transient, more common in autumn than in spring. In 1930 no Pectoral Sandpipers were seen in spring. The first were noted on July 6, these being adult birds and apparently transients. From July 12 on they appeared in some force, but all taken prior to August 1 were

adults. On this date the first juvenile was secured. The species remained until August 14 in reduced but constant numbers. It was seen in smaller numbers as late as September 16, with one flock of thirty-five noted on September 3.

During the spring of 1931, however, the species was recorded three times. On May 27 Sutton collected a solitary female along the tidal flats of the river, and on June 1 he took another single female in almost the same place. On June 2 an individual was noted in a flock of White-rumped Sandpipers.

In 1932 Twomey noted one on June 21, four on July 4, and about two hundred on July 15.

In 1933 Twomey found transient individuals common in the grass along the tidal flats for the first two weeks of June, and noted even larger numbers of the birds during the middle of July.

61. *Pisobia fuscicollis* (Vieillot). WHITE-RUMPED SANDPIPER.

Common transient. In 1930 White-rumps were common in migration, but none summered and there was no indication of their breeding. A few were noted on the townsite slough at the time of our arrival, May 28. By May 31 they were abundant there, remaining in constant numbers until the ice went out of the river on June 10, when most of them left. None were noted after June 14. The first southward migration was noted on July 27, when two adults were taken, one in almost complete winter plumage, the other in old, worn plumage just beginning to change. The species was not seen thereafter until August 17. A few were noted daily until August 23.

It is perhaps a coincidence that in 1931 the species was not noted until May 28, when two were observed and one collected along the tidal flats of the river. Large flocks did not arrive until June 1, and the great wave of migration passed about June 19. On June 21 and 22 single individuals were seen. In some of the specimens taken the gonads were somewhat enlarged but no other sign of breeding activity was noted.

In 1932 Twomey recorded fifty on May 29; observed that the species became steadily commoner thereafter; saw three hundred on June 4; and noted the last on June 8. The first southward moving transients he saw on July 23: two birds. On July 26 he noted twenty.

In 1933 Twomey found it abundant in early June and again in latter July.

62. *Pisobia bairdi* (Coues). BAIRD'S SANDPIPER.

Not very common transient. In 1930 only a few were noted in the spring—two to four daily between May 31 and June 1. The first of the fall migrants appear to have arrived on August 6, when three adults and one juvenile were collected. Fall adults are rare enough in collections to make these of more than passing interest. The adults usually pass through or over the more settled districts without being detected and it is only the juveniles that linger and are observed in the autumn. Juveniles alone were collected as late as August 20, and all had left by August 25.

In 1931 the species was similarly uncommon, though several specimens were taken. It was first noted on June 1, when a female, one of three birds, was taken. On June 2 several were seen among flocks of other shore birds. The species was rather numerous on June 5. Thereafter only single birds were noted on June 10, 12, 18, and 19. Baird's Sandpipers were usually seen along the gravelly margins of the upland pools rather than along the tidal flats. They were very quiet as a rule, and their clay-colored backs rendered them very inconspicuous.

In 1932 Twomey saw one on May 29; ten on June 4; and four on June 7. Four autumnal migrants were seen on July 18. The species became common thereafter.

63. *Pisobia minutilla* (Vieillot). LEAST SANDPIPER.

Summer resident; nests abundantly. It is uncertain how much farther north this species goes. It is not a far northern breeder like the Semipalmated Sandpiper, though it has been confused with this species often enough to raise doubt as to the authenticity of many of the more northern records that are to be found in the literature. On present evidence we think it probable that the nesting-range of the Least Sandpiper does not regularly extend to the north much beyond the tree-line.

In 1930 it was present at the time of our arrival on May 28, and remained in fairly constant numbers without marked influx of migrants until August 8, when it suddenly disappeared.

In 1931 it first appeared on May 27, when two males were collected. On the following day many were noted and both sexes collected. On May 31 a pair were seen mating near the camp-site,

and on June 2 a nest ready for eggs was found. The first full set was recorded on June 11; thereafter many nests were found. So far as could be determined this species and the Semipalmated Sandpiper nested in precisely the same sort of place, so it was not always easy to identify the eggs satisfactorily.

64. *Pelidna alpina* (Linnaeus). DUNLIN.

Abundant transient and common summer resident; nests. In 1930 the American Dunlin or Red-backed Sandpiper, the form of the species accredited to the New World, was fairly common all summer. The first one appeared on May 29, and by June 2 they were common on the townsite slough. About June 6 they practically deserted this locality and were found back from the tidal flats, scattered over the lower tundra, which was still wet with melting snow. Nests with fresh eggs were taken on July 12. Later, when we began special search for downy young, we had a difficult time. There were always a few adults on the low ground near the tide-flats, but even with the most persistent watching we failed to discover the young. The old birds in our presence sat about on boulder tops, phlegmatically watching, moving from rock to rock, not going far away, but with a remarkable patience and unconcern that outdid all our efforts at finding their progeny. We finally decided that these were birds on relief and that the young were some distance away on higher ground. One downy young with wing-quills just beginning to show was taken by Gould on July 15.

By July 23 three-quarter fledged young were comparatively easy to find. Many in this stage were observed on July 28, when the old birds began to disappear, leaving their young, barely able to make short flights, with stubby tails and down still on their heads, to fend for themselves. The young moult from the down into a distinct juvenal plumage, quite different from any plumage that is seen farther south on migration, in which the back feathers have a strong rufous edging. Across the breast and foreneck there is a wash of light buff that weathers rapidly to light dusky; this area is finely striped with blackish, much as in the Pectoral Sandpiper. The flanks are more or less heavily marked with soft black flecking. This plumage is definitely shed for the usual soft gray and white winter plumage before the autumnal migration is commenced.

Juvenile Red-backed Sandpipers remained in fairly constant

numbers until August 20, when they disappeared. It is a matter of much speculation where these birds, the adults that leave Churchill the end of July and the juveniles that disappear the end of August, in summer and juvenal plumage respectively, spend the time until their much later appearance on migration in well-advanced winter coats in southern Canada.

In 1931 Red-backs were first noted on May 25, along the tidal flats of the river. By May 28 they had become common. On May 30 isolated pairs and migrant flocks were noted, the former back on the tundra, the latter along the flats with other shore birds. The first complete set of eggs was noted on June 16, and thereafter many nests were found, most of them in tussocks of grass in marshy places. On June 30 a nest with almost fresh eggs was found and downy young probably not more than two days old were collected. Incubating birds which were collected proved with one exception to be males.

Twomey informs us that five birds collected from their nests in 1932, and six birds similarly taken in 1933, *all* were males. According to this statement, to experience during 1931, and to the junior author's (1932) experience at Southampton Island, the male Red-backed Sandpiper must assume a large share of the duties of incubation.

65. ***Limnodromus griseus*** (Gmelin). DOWITCHER.

Transient, common in autumn; rare and local summer resident; breeds sparingly. In 1930 single birds and pairs were taken along the river just above Mosquito Point during the latter half of June. On July 18 an adult was taken in the vicinity of Landing Lake, and on June 20 juveniles able to fly, but with down still adherent to the head, appeared, corroborating our suspicion that the species had bred locally. This is the first verified breeding record of any Dowitcher east of the Anderson River and central Alberta. Beginning with the first of August the species was seen almost daily, but all birds appeared to be juveniles. About sixty were seen on the tidal flats on August 8, when the bulk of the migration passed. None were observed after August 20. Juveniles of the year all have striking rusty feather-edging on the back, and none of them show any trace of the incoming gray winter plumage.

During 1931 the species arrived in early June, a female being taken by Pettingill at the edge of the spruce woodland on June 2. On June 13 a female was collected at the edge of a little gravel islet in

the river about seven miles up-stream. A male with noticeable brooding-patches was taken at the townsite slough on June 18, and on June 20 a male and female were taken at Landing Lake. On July 1 a pair, evidently with young, scolded us as we went through the woods. Twomey informs us that he took six specimens at Goose Creek during the season of 1931.

In 1932 Twomey saw the species frequently during June and July about the townsite slough. At Landing Lake he watched four pairs from the middle of June to the first week in July. These birds appeared to be breeding, but no nest was found. On June 5 he collected a female with a completely formed and colored egg in the oviduct.

Specimens examined have consistently short bills, those of four adult males running from 55 to 59 mm., and of three females from 58 to 64 mm. The breasts are rather pale and much spotted. The high extreme for the bill of *L. g. griseus* and the low extreme for that of *L. g. scolopaceus* is quite consistently 60 mm. for the male and 65 mm. for the female. It is evident therefore that these birds are short-billed, as in the eastern *L. g. griseus*. It is to be noted that the specimens taken in 1930 formed part of the material examined by Rowan (*Auk*, XLIX, 1932, 14-35) in his establishment of the new race, the Inland Dowitcher, *L. g. hendersoni*, and are included by him under that name. Material is not at hand to confirm all his conclusions as to the differences of this new form from *L. g. griseus*, but from the specimens available we are inclined to accept *hendersoni* as a valid subspecies.

66. **Micropalama himantopus** (Bonaparte). STILT SANDPIPER.

One of the commonest of the breeding shore birds. In 1930 a few were noted on the Churchill slough on May 28. By June 2 they were numerous. After June 6 they thinned out on the slough and scattered over the tundra. The first nest was found June 17. Other nests were found thereafter. Later in the season many young were seen and specimens were taken in various stages from downy young to almost mature birds. The adults left about July 17, before there was any marked incoming of winter plumage and while the young were still quite undeveloped. After all the adults had disappeared many young that could scarcely fly, and with considerable down still about the head, remained for quite a while. The record indicates no particular influx of transients. The species was last seen about August 23.

In 1931 the species arrived May 26, when several were seen on the townsite slough. The following day fully twice as many birds were noted, though the tundra was covered with snow and only a few of the ponds were thawed. On May 28 a mated pair was observed, though as late as June 4 flocks were noted along the river-bank. On this date a male still in almost complete winter plumage was taken. On June 10 the first eggs were recorded and on June 15 the first complete set. On June 18, during a severe blizzard, most of the shore birds deserted their nests and many pairs of Stilt Sandpipers were seen standing disconsolately about the slough. The first young birds were seen on June 30. On July 3 a brood of young were found on the railroad track just after a freight train had passed over. The young could not surmount the rails.

67. **Ereunetes pusillus** (Linnaeus). SEMIPALMATED SANDPIPER.

Abundant transient and summer resident; breeds commonly, but the nest is sometimes a little harder to find than that of the Least Sandpiper, as the Semipalmated is a rather wilder and less confiding bird. In 1930 the species was already present and common by May 28, remaining so until about July 23, when it began to thin out. By July 28 it was almost scarce on the tundra. On the tidal flats it became common again during the first three days of August, then less common until August 28, when it nearly disappeared, though individuals of somewhat doubtful identification were noted through September.

The Semipalmated Sandpiper has a rather attractive little song that is given both on the ground and in the air; a repeated "ree-ree-ree" continued for a considerable fraction of a minute with little variation. The bird circles about in the air singing this little tinkling ditty, and when mating is in full swing the air is so full of it that it is unusual for even a few minutes to pass without its being heard. One hearer likened the *ensemble* of many voices to the distant chattering of a mowing machine; to another it resembled the chorus that arises from the meadow pools when spring peepers are going strong.

In 1931 the species arrived on May 26, when one bird was seen in company with a flock of Stilt Sandpipers. On the following day three were noted and by May 29 the species was common everywhere. The first eggs (two) were noted on June 14, and the first full set on June 17. The males incubated fully as much as did the females.

68. *Tryngites subruficollis* (Vieillot). BUFF-BREASTED SANDPIPER.

Uncommon transient. In 1930 the first Buff-breasted Sandpiper was observed on July 22, when a flock of twenty was noted near the river-edge opposite the Lake Rosabelle camp. The species was seen or taken several times from August 1 to 21. All specimens collected prior to August 3, and one taken on August 17, were adults in worn breeding or part winter plumage. In these the relict plumage is much like that of the juvenal, showing many fine white semicircles on the back, but unlike the juvenal, the effect is obtained by wear and fading, the former cutting the broad feather-edges down to fine pencil lines and the latter bleaching them from warm buff to white. The incoming plumage is broadly and softly edged with warm buff as in the spring plumage.

In 1931 the species was not observed.

In 1932 Twomey saw five on July 24 and ten on June 25, all on the high ridge along the pipe-line from Lake Rosabelle to the townsite. Specimens were collected on both days.

69. *Limosa haemastica* (Linnaeus). HUDSONIAN GODWIT.

Finding this species breeding at Churchill was one of the interesting attainments of 1930, as the only nesting-localities previously known were the Anderson River and the mouth of the Mackenzie River. A pair were noted on the Churchill slough on May 29 and 31, and what may have been the same birds were taken on June 4. The female of these two was found to have well developed eggs in the ovaries, one, lacking only the shell, probably being ready for deposition the next day. No other Godwits were seen until Gould noted a single bird near Landing Lake on July 20. On July 25 half a dozen or more were seen on the river-flats opposite to Mosquito Point. Three were taken, all adults, and one just beginning to change to winter plumage. On August 2 two more were taken in the same general neighborhood, one just beginning to moult, the other in almost complete winter plumage. On August 11 and 14 several juveniles in full first winter plumage were taken near Fort Prince of Wales. These differ from adults in winter plumage in having the back feathers heavily edged with rusty ochre.

In 1931 the species was not noted until May 29, when two handsome adults were seen along the eastern shore of the river about six miles from its mouth. On June 2 two were seen, and on June 12 four were

collected out of six seen. The call-notes heard on this date might be written "*too-it.*" The birds were not particularly wary. On July 1 one was seen flying high in the air, calling loudly as if in courtship display, and Pettingill encountered in a wooded muskeg two pairs which behaved much as if they had eggs or young. On June 3 eleven birds were seen along the banks of the river, not in country where the species was thought to be nesting, and a male and female were collected.

The species probably nests in scattered pairs back in the muskeg country, coming out to the river-flats as soon as the young are nearly grown and thereupon leaving almost immediately for the south. The young follow to the shore as soon as they are fairly well fledged and migrate after their elders have departed.

It was noted during both 1930 and 1931 that after the courting season the orange color of the base of the bill in the male faded rapidly to dull fleshy. In field sketches made by the junior author from freshly killed specimens the base of the bill in the courting male is clear, rather bright orange; in females taken at the same time the base of the bill is purplish flesh-color of a distinctly different appearance. Fading of the bill in the male brings it to a color approximately that of the female's. In 1930 all specimens collected after June had dull, flesh-colored bills.

In 1932 Twomey saw only a single individual at Landing Lake on June 5.

70. **Crocethia alba** (Pallas). SANDERLING.

A transient, usually commoner in fall than in spring. In the spring of 1930 it was noted only once, when two were collected on June 4 at the garbage piles on the edge of the bay ice. In the fall single birds were observed on August 6 and 7, and on August 10 four adults changing into winter plumage were taken. The species remained fairly constantly common until August 24, when all disappeared.

In 1931 the species was observed many more times in the spring than in the previous year. It was first noted on June 2, when two were seen. On June 4 a male was taken on the Churchill slough. On June 5 a male and female, and on June 10 three females were collected. On June 12 at least six birds were noted and one male was collected. On June 16 ten were seen in a loose flock along the bank of the river, and on June 19 a male and female were taken.

71. **Phalaropus fulicarius** (Linnaeus). RED PHALAROPE.

Rare transient; may breed locally. Though Preble (1902) found the Red Phalarope feeding young apparently in the neighborhood of what is now Nunalla, some seventy-five miles north, the species does not occur more than casually at Churchill at the present time, and does not normally nest here. Clarke (1890) lists a pair in breeding plumage from Churchill taken prior to 1845.

In 1930 only a single individual was noted; this was taken on August 9, near Fort Prince of Wales.

In 1931 the species was seen several times but no evidence of nesting was obtained. Sutton took a male in breeding plumage along the river about six miles from its mouth on June 2, and a pair were noted next day at the river-mouth by Mr. James Spence of the Hudson's Bay Company. Farley took a specimen on June 11, and Lloyd one on June 12. A male taken by Semple on June 17 had enlarged gonads.

In 1932 Twomey took from a deserted and unidentified nest a set of eggs that agree so closely with those of this species as to suggest the possibility of its occasionally breeding here.

In 1933 Twomey noted larger numbers of Red Phalaropes than in the two preceding seasons, counting twenty-five at one time about a small lake.

72. **Lobipes lobatus** (Linnaeus). NORTHERN PHALAROPE.

Common transient and summer resident; breeds abundantly. In 1930 it was present at the time of our arrival, May 28, and remained common until the middle of August, when the bulk of the species disappeared. The last was noted on August 18.

Through the summer no pond, lakelet or pool was complete without one to several of these graceful little birds disporting themselves and cutting graceful circles on its placid surface. Notwithstanding their omnipresence and the obviousness that they were breeding commonly, no nests were discovered. Both males and females acted as if much disturbed at our presence, but in spite of our continued watching, none ever led us to a nest. Incubating birds flushed far ahead of us and refused to return until we had departed. By July 11 many young were abroad; and by July 28 nearly full-fledged juveniles were common. About July 25 the adults began to disappear from the nesting-grounds, leaving the young, still carrying traces of down about their backs, and

flying but little, to shift for themselves. So far as we know, none of the adults had begun to change to winter plumage before they left. The last one taken, a male (July 31) shows no sign of moult. Early autumn migrant specimens of corresponding date (July 28) in collections from southern Manitoba are already consistently well-advanced in change to winter plumage, and are probably non-breeding birds moulting in advance of their nesting brethren. It may be surmised that the breeding birds, leaving the nesting-grounds at the earliest possible moment the young can fare without them, undergo the greater part of their summer moult at sea, where, at this season of the year, large flocks are often encountered by the voyager.

Similar migrational conditions exist in most of the waders. Throughout our more southern regions the autumnal wader migration opens very early, obviously before many of the parent birds can be through with their nesting-duties. These early arrivals generally are adults that hasten through and are quickly gone. They are few in number and do not form any notable portion of the adult population. Many of them are advanced in moult, which is not regularly begun until after reproductive responsibilities are discharged. They probably comprise the non-breeding or the unsuccessful breeding element, leaving the summering grounds early and not rushing through with the breathless haste of the bulk of older birds, that pass without being observed. Later, when the great hordes of migrants arrive, they are found, almost without exception, to be young of the year moving south in a leisurely fashion and lingering on the way.

In 1931 the Northern Phalarope was first noted on May 29, when two females were seen about six miles up the river. On May 30 a solitary female was shot on the townsite slough and two other females were observed flying about the open water at the mouth of the river. On June 1 many birds, both males and females, were seen. A nest containing one egg was found by Twomey on June 18, and the first complete set was collected on June 21. Thereafter many nests were found. Downy young were first noted on July 15.

73. *Stercorarius pomarinus* (Temminck). POMARINE JAEGER.

Though Preble (1902) saw several Pomarine Jaegers near the mouth of the river on July 21, and though Clarke (1890) records an adult from Churchill taken previous to 1845, our only note on the species is of a sight record made by Gould on June 30, 1930.

74. *Stercorarius parasiticus* (Linnaeus). PARASITIC JAEGER.

Common summer visitor; nests occasionally. In 1930 it was very common all summer off the mouth of the river, where a number were always to be seen occupying Merry Rocks (off the townsite point), or harrying the Arctic Terns. Espying a tern carrying food, they would swoop at it again and again, often two working as a team, one driving to the other. The tern would dodge this way or that, endeavoring to escape by speed or agility, but usually without avail. To rid itself of its tormentors it would finally drop the fish, which one of the jaegers dexterously caught before it reached the water. The stoops and strikes at the smaller tern were so vicious and determined, and the tern apparently so helpless, that we often wondered whether the robbers were not as much interested in devouring the bird as the fish it carried. However in every case observed the jaegers seemed satisfied with the tribute exacted and gave up pursuit when this was obtained. A few jaegers often wandered up-river and over the higher tundra. In every case they devoted their attention to the terns and we never saw them chasing any of the small waders or longspurs that abounded everywhere.⁵

All Parasitic Jaegers seen during 1930 were in light phase. The darkest were two taken on July 30. These are barred with dark below, but do not approach the usual dark phase. The legs and feet of all others taken are solid black, but in these they are irregularly splotched with bluish gray. It is assumed that they are birds of the previous year. In the collection of the National Museum of Canada are Parasitic Jaeger juveniles of the year with tarsi and exposed tibiae light blue and webs clear pink at the base. It appears that the juvenile of the light phase is more or less barred below, with blue tarsi and pink webs, changing with age to purer white below, and to black legs and feet. This change is not complete by the first part of the second summer.

The species remained fairly common through August and the first days of September, after which but a single individual was noted, on September 13. Lloyd says that he had reason to believe a pair had bred near the townsite the previous summer.

⁵This observation is at considerable variance with that of the junior author (1932) at Southampton Island, where the Parasitic Jaeger was found to be a constant enemy of all small birds—Snow Buntings, Lapland Longspurs, Horned Larks, and shore birds.

In the spring of 1931 the species was noted nearly every day, first on May 28, when two birds were seen flying along the coast of the Bay about four miles east of the river-mouth. Single birds were usually seen. On June 25 a single bird in the black phase was observed for some time at the river-mouth. On July 1 Twomey found a nest, containing one egg, in the muskeg country not far from Landing Lake.

In 1932 Twomey found a nest with two eggs near Landing Lake on June 23.

In 1933 "several" nests were found by Farley and Twomey.

75. ***Stercorarius longicaudus*** Vieillot. LONG-TAILED JAEGER.

Preble (1902) reports a specimen of Long-tailed Jaeger from Churchill in the United States National Museum. The species was not observed in 1930. On May 29, 1931, five were seen at the mouth of a small tributary to the river, about seven miles up-stream. They were flying with, but not chasing, the Bonaparte's Gulls. One specimen was taken. One was noted on June 2, and another taken on June 4, at the river-mouth. Single birds were noted also on June 8, 11, and 16. Between June 23 and July 2 Twomey took five specimens, that are now in the Royal Ontario Museum of Zoology, at Toronto.

In 1932 Twomey took one on June 23. On June 24 he saw thirty sitting on the ice-floe off the Merry Rocks at the mouth of the river. These remained until July 4, leaving when the ice moved out to sea.

76. ***Larus hyperboreus*** Gunnerus. GLAUCOUS GULL.

A transient, fairly common in spring and late fall. During May and June of both 1930 and 1931 a few Glaucous Gulls were commonly seen among the flocks of Herring Gulls that frequented the garbage dumps on the ice near the townsite or hung about the mouth of the river. None appeared to be fully mature and all specimens taken were in faded white juvenal plumage. As our attention was later largely directed away from this quarter we are unable to say whether or not these individuals remained throughout the summer, although we are inclined to think that they did not. In 1930 Lloyd and Gould did not see the species at Fort Prince of Wales camp from September 19 to 28, but Lloyd reported it as common in the harbor about the docks from about the end of October to at least the middle of November.

In 1932 Twomey collected specimens off the mouth of the river on July 16, 20, and 21.

77. **Larus argentatus** Pontoppidan. HERRING GULL.

Common summer resident; breeds rarely in the immediate neighborhood.

In 1930 it was present in numbers at the time of our arrival on May 28, and until the ice went out there was always a considerable flock about the garbage piles on the edge of the floe, and later about the mouth of the river between Eskimo Island and the Merry Rocks. A large proportion of these birds were sub-mature. The species greatly increased in numbers about August 25, and remained abundant until the record closed October 4. Lloyd saw a few juveniles as late as November 2. In 1931 and 1932 conditions were similar, but on July 2, 1932, Twomey found a nest with two downy young on a rock in a small lake northeast of Lake Rosabelle.

All specimens examined, except one, are typical of the heavily wing-marked form generally accepted as *L. argentatus smithsonianus*. One, No. 32-8-27-147, in the Royal Ontario Museum of Zoology, Toronto, taken by Twomey July 20, 1932, is a small-sized female moulting into the fourth year plumage, the wings and tail being obviously of a previous year's growth, while the body plumage is fresh and new. The dark pattern of the wing-tips is both pale and restricted for this stage of *smithsonianus*, the specula of the two outer primaries are very large, and that of the second almost joined to the gray basal wedge. The senior author refers the specimen to *L. a. thayeri*.

78. **Larus kumlieni** Brewster. KUMLIEN'S GULL.

Probably non-breeding individuals are of regular occurrence in summer. Many of the larger gulls remain wanderers until full breeding maturity urges them to their nesting-localities. In 1932 Twomey took a faded, not quite mature female gull that seems to be what might be expected of the sub-adult of this species. This specimen is now in the Royal Ontario Museum of Zoology, Toronto (numbered 32-8-27-148), from whence the senior author had the privilege of borrowing it for examination. He would say that it is in its fourth summer, moulting into fourth winter adult plumage. The wings and tail are old, much worn and faded and with obvious juvenile characters, but the body plumage is new, fresh and apparently of adult type.

In 1930 two specimens of similar character were taken, which upon close examination appear to be of this species. One, N. M. C. 23,912,

June 10, is practically identical with the above, though the flight feathers show less evidence of extreme weathering and are several shades darker. The other, N. M. C. 23,953, June 17, seems to be in the moult of the second summer, with wing and flight feathers (though much faded and worn) agreeing closely with the plumage of this species illustrated in color by Dwight (*Auk*, XXIII, 1906, Pl. I).⁶

MEASUREMENTS IN MILLIMETERS.

Mus.	No.	Sex	Date	Height of bill		Wing	Tarsus	Middle Toe and Nail
				Culmen	at base			
R. O. M. Z.	148	♀	July 16, 1932	44	16	385	59	59
N. M. C.	23912	♀	June 10, 1930	45	15.5	380	57	56
	23953	♀	June 17, 1930	45	15	385	61	56

According to the junior author, three white-winged gulls were noted in a great flock of Herring Gulls on May 26, 1931, about the garbage piles on the ice near the townsite. Two of these were undoubtedly Glaucous Gulls; but one was noticeably smaller, of Herring Gull size or even slightly less. The bird was shot but could not be retrieved and at the time was recorded as an Iceland Gull. Faded *kumlieni* in life would, however, except under the most unusual circumstances, have an exactly similar appearance, and there is a strong possibility that the bird in question was of that species.

Kumlien's Gull in sub-maturity most closely resembles the Iceland Gull, *L. leucopterus*. The size is about the same but the blue mantle as it appears averages a little darker, although occasional specimens are quite as light. The general pale ashy brown washes and the light brownish flecking of the mantle are about the same in the younger stages of the two species. Early plumages can probably be best distinguished from that species by the lighter colored primaries—in first winter hair brown⁷ fading to drab gray at tips instead of light drab extensively fading to white. The adult more closely approaches

⁶This specimen was originally figured by Dwight as a "juvenal" or first summer plumaged Kumlien's Gull. Later, in his paper on the "Gulls of the World," p. 252, he reidentified it as an Iceland Gull in the second winter. It is difficult to understand this later decision, for no one knew better than Dr. Dwight that no second-year gull can normally have darker, more generalized primaries than it had the first year, as would be the case under this reconsidered identification. Though the specificity of this specimen was arrived at by a process of elimination rather than by actual knowledge of parental origin, the first identification was almost certainly correct.

⁷Colors from Ridgway's "Color Standards and Color Nomenclature," 1912.

argentatus but is smaller, with shorter, lighter bill, and the mantle averages a little paler. The black primary-tips of that species are replaced by a pale gray pattern of reduced extent. In some specimens this pattern may be nearly as extensive and almost as dark as in some specimens of *L. argentatus thayeri*, while in others it may be reduced to inconspicuous traces or occasionally absent altogether. It is uncertain whether this variation is an age succession or not.

These birds are just about what would be expected of *kumlieni* under these postulates. The senior author is convinced that Kumlien's Gull is a distinct species and not a hybrid as is represented in the last A. O. U. "Check-List." He bases his conclusion on evidence obtained by Soper, 1928-1931, who found it breeding in pure communities as well as associated with *L. argentatus smithsonianus* and *L. hyperboreus* on southwestern Baffin Island, as well as on his own researches that have failed to find any but negative evidence of the breeding of *L. leucopterus*, one of its postulated parents, anywhere in the Canadian Arctic. It will be observed that with a breeding-station for the species at the mouth of Hudson Bay the occurrence of *kumlieni* in non-breeding condition in summer at Churchill is not only possible but very probable.

79. **Larus delaw arensis** Ord. RING-BILLED GULL.

Preble (1902) took an immature Ring-billed Gull fifty miles below Cape Eskimo on August 8. This record is within a hundred miles north of Churchill, and is presumptive evidence of its occasional occurrence here.

80. **Larus philadelphia** (Ord). BONAPARTE'S GULL.

Common summer resident; breeds. This species arrived in 1930 in small numbers on May 30. By June 2 it was common, feeding on the garbage piles on the ice and frequenting the slough within the town-site in considerable numbers. Later it was found nesting at Landing Lake and other lakes a few miles inland. The nests were well built of moss and lichens, like magnified Olive-sided Flycatcher's nests, and were situated in spruce trees, on ridges between or adjacent to the lakes and ponds. There were many more old nests than occupied ones and the relics of many generations of nesting were seen. These nests were not found until July 20, when the young, nearly half grown and out of the nest, were swimming about the ponds. In 1931 Twomey

took the first completely downy young ever brought to the attention of ornithologists and a July 21 specimen submitted to the senior author can be described as follows:

Ground-color, light brownish buff (nearly tawny olive of Ridgway's "Color Standards and Color Nomenclature," 1912), darkest on back, lightening to deep cream of same tint on crown, face, chin and abdomen, leaving a slightly darker breast or fore-neck band. Above, and on thighs and wings, many spots and curious, indefinite meanderings of black. Crown, face, and sides of throat with scattered, sharp black spots, largest on sides of upper throat and under cheeks. In general, much like the comparable plumage of Franklin's Gull, but appearing to be of slightly deeper, richer coloring and with sharper and better defined spotting.

The species remained constantly common, being noted daily until September 24, after which only a few individuals were seen, on September 26 and October 2.

In 1931 the species arrived on May 23, when two were seen on the townsite slough in company with several Herring Gulls. Large numbers of birds were seen on May 27 and 29. On June 12, in the wooded districts near Landing Lake, the gulls scolded us as if they had chosen their nesting-territories. On June 19 an incubating female was collected, and on July 1 nests with three eggs were found by Lloyd and Sutton near Landing Lake. During the following week Semple and Pettingill found other nests and on July 6 Twomey took the first downy young.

81. *Xema sabini* (Sabine). SABINE'S GULL.

Rare transient. Not noted in 1930. On June 5, 1931, Pettingill collected a female from a flock of Bonaparte's Gulls which were feeding and circling about the townsite slough. On June 8 Sutton took another female about six miles up the river. On June 9 one was seen along the river-bank, not far from the mouth, and on June 10 Semple took a male.

In 1933 Twomey took adult specimens on June 28.

82. *Sterna paradisaea* Brünnich. ARCTIC TERN.

Common transient and summer resident; breeds. In 1930 the first Arctic Terns were seen on June 2. Thereafter they were common. Throughout the summer a considerable number frequented the mouth of the river, where the conflicting currents brought many tidbits to

the surface but where they were also continually badgered by Parasitic Jaegers. They nested on a little mossy islet on a tundra pond near the Lake Rosabelle camp. The nests had been robbed by Indians and when we visited the island July 11 many were empty or with incomplete sets of eggs. Some young, still in complete down, from nests the Indians had overlooked, had hatched. These chicks took to water at our approach, but their swimming was premature and we rescued many that were watersoaked, exhausted and obviously drowning. We suspect that some were blown too far from their island to return and we disturbed them as little as possible thereafter. Their taking to water seemed more the result of parental suggestion and excitement than of innate fear, for many of the tiny paddlers that struggled strenuously away, when once overtaken by our canoe turned to us with evident relief, rested contentedly in the hand and even accepted freedom with reluctance, following us as if wanting to experience again the rest and warmth.

There is considerable variation in the coloration of the newly hatched young and two color-phases are evident. The dark one is strongly dull ochre in ground-color while the light one is cream, almost white, giving a generally pale ashy instead of dull or muddy buff effect. Food for the young probably is procured in the Bay or in the river. The tundra lakes are shallow, freezing to the bottom in winter. So far as we know they contain no fish, and insect life in them appears to be very scarce. The bottoms are clean, hard gravel without vegetation, and the only life we saw in them were some snails and a few pollywogs of an undetermined species of frog that was looked for but not found.

Arctic Terns remained common until August 27, when the bulk of them left. The last record (a single bird) was made September 4.

In 1931 the Arctic Terns arrived on May 29, when two were seen about the open water some seven miles up-river. On May 30 four were seen at the river-mouth and thereafter the species was seen every day. The first complete sets of eggs were found on June 23.

Twomey reports about ten thousand nesting on the Fox Islands, some nineteen miles east of Churchill, on July 7 and 8. Nests were situated only a few feet apart, and the birds defended their territory with vigor, one taking the skin off his head in its attack.

In 1933 Twomey found them nesting in numbers at Cape Churchill from July 3 to 8.

We have no evidence of the occurrence of the Common Tern, *Sterna hirundo*, numbers of which might well occur among the flocks of Arctic Terns without being recognized.

83. **Hydroprogne caspia** (Pallas). CASPIAN TERN.

On June 19, 1931, Twomey took a male Caspian Tern, which he deposited in the National Museum. The crown is flecked with white and the bird is probably a sub-mature.

84. **Chlidonias nigra** (Linnaeus). BLACK TERN.

Summer resident, probably rare as a rule; nests locally. On July 7, 1932, Twomey found several pairs nesting on the small fresh-water ponds in the interior of the Fox Islands, some nineteen miles east of Churchill. They already had hatched their young, which were seen swimming about the reedy shores.

Uria aalge (Pontoppidan). COMMON MURRE.

Hypothetical. There is no unquestionable evidence that this Murre occurs in Hudson Bay. In the light of present knowledge it seems probable that the species normally does not extend up the Labrador coast much beyond Nain or into Hudson Strait, where the Brünnich's Murre, *Uria lomvia* (which is so much like *aalge* as not to be readily separable from it in the field), is common. There is a specimen of *aalge* in the National Museum of Canada labelled "Hudson Bay." This was taken by Bell on his *Alert* expedition of 1885, but since no definite locality is given it is not certain that the specimen was taken in the Bay itself. Richardson ("Fauna Boreali-Americana," II, 1831, p. 477) describes two specimens from York Factory. One of these, being of the *ringvia* type, peculiar to *aalge*, would substantiate the occurrence of the present species in Hudson Bay if the locality could be completely relied upon. If this species is ever more than an occasional straggler on the southern waters of Hudson Bay it will almost certainly eventually be noted at Churchill. Common Murres taken in this region should be referable to the eastern race, *Uria aalge aalge*, the Atlantic Murre.

Uria lomvia (Linnaeus). THICK-BILLED MURRE.

Hypothetical. The eastern form of this species, Brünnich's Murre, *Uria lomvia lomvia*, is the common murre of the northern part of Hudson Bay. It almost certainly occurs over most of the Bay. It has been reported in winter from Great Whale River; the senior author has observed it well south of Cape Eskimo in summer; and the junior author has taken it along Southampton Island's southern shore in spring and summer. Its occasional occurrence off Churchill is almost a certainty, but we have no definite record at present.

85. **Cepphus grylle** (Linnaeus). BLACK GUILLEMOT.

Preble (1902) saw a guillemot on Button Bay near Churchill on August 19. The species has been recorded twice during recent years: five seen by Lloyd off Eskimo Island at the mouth of the river, on August 6, 1930; and one seen by Twomey on July 15, 1933. No specimens have been taken, but the form almost certainly is that listed by Preble, Mandt's Guillemot, *C. g. mandti*. This race is known to inhabit the northern part of the Bay and to occur at Great Whale River; and it is not probable that the more southerly *C. g. grylle* ever occurs in Hudson or in James Bay.

86. **Zenaidura macroura** (Linnaeus). MOURNING DOVE.

Rare casual visitor. On June 21, 1930, near the river at Mosquito Point, Lloyd picked up desiccated fragments of the head and wing of a Mourning Dove, enough to identify the species, but insufficient for the determination of the subspecies.

87. **Ectopistes migratorius** (Linnaeus). PASSENGER PIGEON.

Probably formerly an occasional visitor; now extinct. Though Bell (1880) tells us that this species has never been known at Churchill, Clarke (1890) reports an adult male and a female taken there previous to 1845.

88. **Bubo virginianus** (Gmelin). GREAT HORNED OWL.

Probably an occasional visitor to the forest-edge; nests rarely and locally. Preble (1902) tells us of a specimen reported by Clarke (1890) ascribing it, on geographical considerations, to *B. v. arcticus* (Swainson) = *B. v. subarcticus* Hoy, of the present "Check-List."

In 1930 Lloyd and Sutton saw a Great Horned Owl several times in the more or less open woodlands northeast of Lake Rosabelle on September 4. The bird was decidedly whitish in general appearance.

In 1931 Sutton saw another rather white individual in the deep woods not far from Landing Lake on June 6.

On June 28, 1933, Twomey caught alive near the round-house a young bird just beginning to fly. He kept it as a pet for some time. A photograph of this bird (taken by Miss Heydweiller) has been critically examined by the junior author and there is no doubt that the individual is very light in general color-tone—whitish rather than buffy,

if it be safe to judge by comparison with photographs of young Great Horned Owls taken in the eastern United States. One other young bird was picked up by workmen on July 1. No adult birds were seen, and the location of the nest is unknown.

Judging from what we know of the distribution of the Horned Owls, the race represented at Churchill should be *B. v. subarcticus*, the so-called Arctic Horned Owl. This concept is strengthened by the fact that birds seen in life were whitish. The locality nearest Churchill from which a National Museum of Canada specimen of *subarcticus* has been taken is Herb Lake, Manitoba, about three hundred and fifty-five miles to the southwest. This specimen, a November bird, and possibly a migrant from farther north, is light-colored, but not strikingly white. In fact, the general assumption that the farther north we go the whiter we find the Horned Owl is not in harmony with the evidence. According to rather a large series in the Canadian National Museum, the whitest breeding birds are to be found not in the far north but in the dry belt of Saskatchewan and Alberta near the international boundary.

89. *Nyctea nyctea* (Linnaeus). SNOWY OWL.

Regular winter visitor and occasional summer resident; nests.

In 1930 a fresh dead bird was picked up by some workmen on May 26 and presented to us. It was extremely emaciated and seemed to have come to its death through starvation or attendant ills. A few days later Lloyd found another dead bird in the same starved condition near Fort Prince of Wales. Systematic trapping developed the fact that mice and lemmings were decidedly scarce. Old workings were evident and plentiful, but fresh ones very few. In most places, a dozen traps did not yield more than two or three small mammals a week.

In 1931 the species was observed several times. On May 25 one was seen flying low along the ridge not far from the Bay. On May 27 one was heard hooting about four miles east of the river-mouth. On May 29 one was seen along the river-bank about six miles inland. On June 2 two were seen along the frozen river and on June 13 another near camp at the river-mouth. On June 24 one was noted not far from the townsite and on June 26 a very white individual was observed at Button Bay.

From the above paragraphs it will be observed that Snowy Owls

were more frequently seen in 1931 than during the previous year. During 1931 small rodents were apparently fairly numerous, lemmings being seen several times near camp and other small mammals being observed on the tundra or in the woodlands from time to time.

In 1932 Twomey saw one near Lake Rosabelle on June 3.

In 1933 Twomey found a nest containing eight young at Cape Churchill, on July 6. The male parent, an almost immaculate bird, was very active in defence of its young but its mate watched proceedings from afar and took no particular interest in them. The young were in various stages of development: the youngest in white down, just from the egg, the eldest from ten to twelve days old, gray, with pin-feathers well developed in wings and tail and just appearing on body.

90. **Surnia ulula** (Linnaeus). HAWK OWL.

Clarke (1890) reports a specimen taken at Churchill previous to 1845.

91. **Asio flammeus** (Pontoppidan). SHORT-EARED OWL.

Summer resident; nests irregularly. In 1930 the species was not common through the summer. Single birds were seen on various days in June and July and one was taken in the dwarf shrubbery back from the tidal flats of the river. Three were noted on September 30.

In 1931 the species was noted several times during spring and summer. It was first recorded on May 27, when three birds were observed circling stiffly about high in air, as if going through some sort of courtship ritual. One was flushed from the deep woodland on June 11, where it had evidently been feeding on a Solitary Sandpiper. On June 26 two were seen at Button Bay.

In 1932 the species was not recorded.

In 1933 the species was common and twelve nests were found by Twomey and Farley. All these contained large sets of eggs, six or seven as a rule, and in one case eight. Why this sudden increase in the number of Short-eared Owls? Why all these nests, when we failed to find a single nest in 1930, 1931, and 1932?

Obviously, the abundance of lemmings, and perhaps of other small mammal life, in 1933 made possible the nesting of this raptorial species as well as such other mouse-eaters as the Snowy Owl, Rough-legged Hawk and Parasitic Jaeger. The effect of periodic abundance

of small mammals upon the breeding range of certain bird species is well brought out by our four-year survey of the Churchill region.

92. **Chordeiles minor** (Forster). NIGHTHAWK.

Clarke (1890) reports a Nighthawk taken at Churchill previous to 1845. We did not see it in 1930. On June 28, 1931, we saw two flying high in air over the river-mouth, calling loudly, and headed northwestward.

93. **Megaceryle alcyon** (Linnaeus). BELTED KINGFISHER.

Clarke (1890) records an adult female taken at Churchill previous to 1845.

94. **Colaptes auratus** (Linnaeus). YELLOW-SHAFTED FLICKER.

Uncommon summer resident; nests. In 1930 Flickers were heard or seen in the region of Landing Lake on July 2 and 3. On July 25 a family recently from the nest was discovered in the spruce bush along the railroad track and two juveniles were taken. Only one was recorded thereafter: September 3.

In 1931 Flickers were noted several times, first on May 29, when a single bird was seen near camp, climbing about the rocks; on June 4, when one was heard singing its spring "song" from a dead spruce in a "burn"; on June 15, when a female which had been incubating eggs was collected; on June 16, when a male was noted near Landing Lake; and on June 22, when two were seen.

In 1933 Twomey saw three pairs of Flickers nearly every day from June 10 to July 25 between Rosabelle and Landing Lakes.

95. **Sphyrapicus varius** (Linnaeus). YELLOW-BELLIED SAPSUCKER.

Clarke (1890) records an adult female Sapsucker taken at Churchill previous to 1845.

96. **Dryobates villosus** (Linnaeus). HAIRY WOODPECKER.

Clarke (1890) reports an adult male taken at Churchill previous to 1845.

Judging from specimens from the more northern parts of Ontario, Manitoba, and other more or less adjacent localities, examined by the senior author, the geographical probability is the Northern Hairy Woodpecker, *D. v. septentrionalis*.

97. **Picoides tridactylus** (Linnaeus). LADDER-BACKED THREE-TOED
WOODPECKER.

Probably a rare permanent resident in the wooded areas. Clarke (1890) reports five specimens of "*Picoides americanus*" taken at Churchill previous to 1845.

In 1930 a male was taken near Mosquito Point on June 28. Its testes were small and showed no particular signs of breeding. On September 6 Lloyd took a male and female. The latter female and the former male are notable for the small amount, almost the absence, of white barring on the back.

On June 11, 1931, in deep spruce woodland about five miles from the townsite, Sutton took a male that plainly had been incubating. Prolonged search in the neighborhood disclosed the location of several unused drillings or nests but neither the occupied nest nor the female was discovered. On June 29 Lloyd took a female at Mosquito Point across the river.

All specimens are referred to the eastern American race, *P. t. bacatus*.

98. **Otocoris alpestris** (Linnaeus). HORNED LARK.

Very common transient and summer resident; nests abundantly. In 1930 Horned Larks were very numerous when we arrived on May 28. They were everywhere, feeding confidently with Snow Buntings even about the doorsteps of the offices and workshops of the townsite. They sang more persistently and finely than we had ever heard them before. The male of a pair nesting close to our Churchill camp habitually perched on the ridge-pole of the tent and sang continuously for many minutes, deserting his post only for momentary feedings or when he flew to the adjoining tennis-court, where he continued to sing. About June 10 the species became less noticeable about the dooryards, but continued abundant all over the tundra.

On our arrival, there were obviously two races present. In one the male had a strong yellowish wash on the face; in the other the face was much duller and grayer. The two forms were quite distinguishable in life and were respectively, the so-called Northern Horned Lark, *O. a. alpestris*, and Hoyt's Horned Lark, *O. a. hoyti*. Most of the yellow-faced birds left with the transients, though a few less distinctly characterized individuals remained and bred, mating some-

times with perfectly typical *hoyti*. The species remained in about constant numbers to the end of September and were still present when the records closed on October 4.

In 1931 many Horned Larks, both *hoyti* and *alpestris*, were noted by Lloyd on May 18. They were seen commonly every day thereafter and many nests were found. The first nest, found on June 13, contained a single egg. Young birds in the nest were first noted on June 18. One nest was found in the middle of camp, built on a low pile of shavings.

99. **Iridoprocne bicolor** (Vieillot). TREE SWALLOW.

Clarke (1890) reports an adult male taken at Churchill previous to 1845. In 1930 single birds were observed flying about the staff offices on June 6 and 10. In 1931, on June 15, 22, and 24 one, two and three Tree Swallows, respectively, were seen flying about the townsite.

100. **Petrochelidon albifrons** (Rafinesque). CLIFF SWALLOW.

Two Cliff Swallows were observed on June 10, 1931, near the townsite. These were easily recognized by the tan-colored rump-patch.

101. **Perisoreus canadensis** (Linnaeus). CANADA JAY.

A permanent resident, moderately common in the bush lands, and usually seen in family groups. In 1930 sooty juveniles were seen at least as late as the end of July. The species did not seem to become any more numerous later in the season and was noted only occasionally through August and early September.

In 1931 Jays were noted several times, sometimes in large family groups, the young begging for food; or adults in much worn plumage. Young birds seen on June 9 had tails only about two inches long.

Specimens collected are referable to the eastern race, *P. c. canadensis*.

Cyanocitta cristata (Linnaeus). BLUE JAY.

Hypothetical. Macoun (1909) quotes Bell to the effect that this species has been taken at Churchill, but we have been unable to locate the statement in Bell's published writings. It may have been given verbally or in manuscript. There is nothing very improbable in an occasional Blue Jay's wandering northward to the forest-edge, but without confirmation it is best to regard the record as hypothetical.

102. **Corvus corax** (Linnaeus). RAVEN.

A regular though not common permanent resident; probably nests in the vicinity. Lloyd says that Ravens are not uncommon in winter. In 1930 one was seen and heard on May 31 on the townsite point. Two dull-colored juveniles were taken on August 8, and others were seen throughout September. Four were the most noted in any one day, and these probably constituted a family party.

In 1931 the species was recorded only on June 8 and 9.

In 1932 Twomey found one dead on June 2, on the tundra near the pipe-line.

No specimens suitable for subspecific determination are available and the race is, by conventional inference, the northern race, *C. c. principalis*.

103. **Corvus brachyrhynchos** Brehm. AMERICAN CROW.

Uncommon summer resident; nests. In 1930 a crow was heard about the townsite upon our arrival and two were seen at Mosquito Point as we were making camp on June 18. On July 24 a family was located in the bush along the railroad track and a young, barely fully fledged bird was taken on September 3.

In 1931 Crows were noted several times, first on May 30, when one was seen and heard about the townsite; on June 4, when one was heard in the bush about five miles inland from the river-mouth; on June 8 and 9, when a pair were noted at about Mile 506 on the railroad; on June 12, when Sutton took a male; and on June 15 and July 1, when one or two birds were heard.

In 1932 Twomey saw one on May 29 but none after June 9.

The 1930 specimen is hardly developed enough for definite subspecific determination but the male taken June 12, 1931 is, in the opinion of the junior author, the well-known Eastern Crow, *C. b. brachyrhynchos*.

104. **Penthestes hudsonicus** (Forster). BROWN-HEADED CHICKADEE.

Rather rare; probably a permanent resident. In 1930, on June 21 and 28 respectively, a male and female in worn plumage were taken at Mosquito Point. Occasional single birds were noted from August 15 to September 6, when a well plumaged female was taken.

In 1931 Chickadees were noted several times during the spring

and summer, three specimens being taken on June 6, a male being taken at Mosquito Point on June 29, and a nest and five eggs being found in an old excavation of a Three-toed Woodpecker on June 11. The nest was made largely of fur of the Varying Hare.

In 1933 Twomey saw two on June 18 among the spruces near the railroad "Y."

Specimens secured are probably referable to the Hudsonian Chickadee, *P. h. hudsonicus*.

105. **Sitta carolinensis** Latham. WHITE-BREASTED NUTHATCH.

Clarke (1890) records a specimen of White-breasted Nuthatch taken at Churchill before 1845.

Sitta canadensis Linnaeus. RED-BREASTED NUTHATCH.

Hypothetical. Rae (1850) tells us that a specimen of Red-breasted Nuthatch was taken flying over Broad River, between Churchill and York Factory. This record is from about fifty-five miles south of Churchill and suggests the possible occurrence of the species here.

106. **Turdus migratorius** Linnaeus. AMERICAN ROBIN.

Fairly common summer resident; nests. Many nests were found both in 1930 and 1931. Most of these were situated in low spruces or in the scaffolding or piles of ties about the construction camp.

In 1930 Robins were noted as late as September 6.

In 1931 the species arrived apparently on May 24, when the Rev. Samuel Martin recorded one. On the following day one was heard singing about the camp. Nest-building began on May 26. The first complete set of eggs was found on June 6.

The National Museum material is not sufficient for final decision as to the subspecies represented. The junior author thinks the 1931 specimens are doubtfully referable to the eastern race, *T. m. migratorius*. It seems best at the present moment, however, to include them under this form.

107. **Hylocichla minima** (Lafresnaye). GRAY-CHEEKED THRUSH.

Fairly common summer resident; nests in the denser spruce bush. The only species of thrush noted. In 1930 it was first seen on June 6. On this date it was common. More often heard than seen, it was noted in its proper habitat practically daily throughout the summer. A nest with heavily incubated eggs was found under a small spruce on

June 25. The species was occasionally noted throughout August and as late as September 6.

In 1931 the Gray-cheeked Thrush arrived on June 2, when one was noted. It became common four days later. A pair were found building on June 18, and four heavily incubated eggs were found on June 25. Many nests with from two to four fresh eggs were found on June 26, at Button Bay. Most of these were placed on the ground under spruces, or in wet places between the bases of willow shrubs. Semple found one nest about three feet from the ground in a spruce tree on June 26.

In 1932 Twomey found occupied nests on June 16 and 23. Both were in small bushes two or three feet from the ground.

Specimens taken are referable to the northern race, *H. m. aliciae*, which is apparently characteristic of the Hudsonian Life Zone across the continent of North America.

108. *Sialia* sp. ? BLUEBIRD.

Twomey took a very young Bluebird on June 10, 1931, in the spruces three miles south of "town," but the species was not recognized and unfortunately the specimen was lost. It is a matter of conjecture whether this bird was *sialis* or *currucoides*.

109. *Regulus satrapa* Lichtenstein. GOLDEN-CROWNED KINGLET.

Probably an occasional visitor to the forest-edge.

In 1932 Twomey saw two on June 11, near the gravel-pit, and collected a female. Single birds were seen on June 20 and 25, and two on June 27.

In 1933 Twomey saw several at Landing Lake on June 18 and four more on June 25.

110. *Corthylio calendula* (Linnaeus). RUBY-CROWNED KINGLET.

Uncommon summer resident; nests irregularly in the spruce woods. In 1930 one was taken of three seen on September 5, and a single bird was noted the following day.

In 1931 a single male, singing brilliantly, was observed on June 4, and the species was thereafter noted several times on June 6, 8, and 11. On the latter date two males were observed chasing each other. On June 29 a male was taken at Mosquito Point. An old nest was found in a spruce tree not far from the railway track.

In 1932 it was very common in the spruce woods about the gravel-pit, where it could be heard singing at any time.

The singing male taken in 1931 is referable to the eastern race, *C. c. calendula*. Fall specimens are not readily identifiable.

111. *Anthus spinoletta* (Linnaeus). PIPIT.

Fairly common transient and summer resident; nests among the rocky hills and in the more "arctic" localities. In 1930 we found it present on our arrival, May 28. Three males taken June 12 are in the rufous-breasted, gray-backed plumage, while those taken thereafter are all in the usual dull olive. It is still uncertain just what these two very distinct plumages represent. Pipits increased greatly in number from August 5 to near the end of the month, and twenty-five were noted daily instead of the two or three on occasional days as previously. They remained common until about September 22, after which they became rarer and none were noted after September 30.

In 1931 Lloyd saw the species first on May 22. On May 25 three were seen, and on the following day Pipits were everywhere. Lloyd found a nest with four eggs, built into the side of a ditch near the gravel-pit. On June 20 this nest was destroyed by the caving in of the ditch. On July 4 Sutton collected a nest and five eggs along the rocky ridge bordering the Bay east of the river-mouth.

112. *Bombycilla garrula* Linnaeus. BOHEMIAN WAXWING.

Irregular summer resident; probably nests during some years. Three were noted by Preble (1902) on July 25, 1901. While this waxwing was seen in considerable numbers during the summer of 1930, and evidently nested, there can be no doubt that it is very local; and the fact that it was not once noted during 1931, 1932, and 1933 makes it apparent that it is also highly irregular.

In 1930 Bohemian Waxwings were seen in the muskeg of Sea Horse Gully and at the edge of the bush along the river-plain just above Mosquito Point. They cruised about in small, loose groups, alighting on the tips of the tallest spruces, sitting placidly there for a few moments, dashing off to circle erratically, then often returning to the very perches whence they started. So far as we could see, they were not catching insects, as Cedar-birds commonly do, nor winnowing the air like swallows, but merely disporting themselves. Of the seven specimens taken, six were males, the one female having a bare space on the belly indicative of breeding.

113. *Lanius borealis* Vieillot. NORTHERN SHRIKE.

Irregular summer resident; probably nests. Clarke (1890) records specimens taken at Churchill previous to 1845 and Preble (1902) found them rather common in 1900. Our failure to find them in 1930 may have been due to the scarcity of small mammal life mentioned under the heading of the Snowy Owl.

In 1931 Semple took a singing male on June 15, and Twomey and Farley took specimens on June 15 and July 3. The first of these (the only one available at present) is referable to the eastern race, *L. b. borealis*.

114. *Vermivora peregrina* (Wilson). TENNESSEE WARBLER.

Common but local summer resident; nests. In 1930 this warbler was not noted until June 22 (Mosquito Point); but thereafter it was found to be fairly common in limited areas in the bush. Parent birds feeding young were observed on July 18, but the species was not recorded after this date.

In 1931 two males were taken at Mosquito Point on June 29, and one was seen on the opposite bank of the river on the following day.

115. *Vermivora celata* (Say). ORANGE-CROWNED WARBLER.

Rare summer resident; almost certainly nests. On June 16, 1931, Sutton collected a singing male with much enlarged gonads in a "burn" at about Mile 506, west of the railroad track. On June 29 a male was taken and another singing male seen at Mosquito Point. On July 3 a singing male was taken in a clump of tamaracks in the Landing Lake district.

These specimens all are referable to the eastern race, *V. c. celata*.

116. *Dendroica aestiva* (Gmelin). YELLOW WARBLER.

Summer resident; nests. In 1930 not common and quite local. A few pairs inhabited the scrub willows along the river at Mosquito Point where, on June 19, a nest with eggs was found. In this same place ten were noted on August 15 and one on the 18th.

In 1931 the species was recorded at several additional points. A singing male was seen and heard along the slough in the townsite on June 17. On June 22 a male with enlarged gonads was taken near the town. On June 24 another male was taken along the river-bank and

on July 26 one was taken at Button Bay. On June 29 many were seen and a pair taken in the willow shrubbery at Mosquito Point.

Specimens examined by the junior author are referred provisionally to the eastern race, *D. a. aestiva*.

117. ***Dendroica coronata*** (Linnaeus). MYRTLE WARBLER.

Probably a rare summer resident in the higher timber; may nest. Clarke (1890) records two male Myrtle Warblers taken at Churchill previous to 1845. The species was not seen in 1930. In 1931 Sutton and Semple saw a male on June 9; it was very wary, flying from one clump of stunted spruce to another as if disturbed at being in unfamiliar and inhospitable surroundings.

118. ***Dendroica striata*** (Forster). BLACK-POLL WARBLER.

Summer resident; nests; the commonest warbler of the region. In 1930 it was first noted on June 6. Thereafter it was found to be fairly numerous wherever there was spruce bush. A nest with eggs was found on June 25. It was noted occasionally through August and until September 6.

In 1931 it arrived June 2, on which date a male was taken. The first nest (four fresh eggs) was found at Button Bay on June 26. Another nest with five well incubated eggs was found on the ground on July 3.

119. ***Dendroica palmarum*** (Gmelin). PALM WARBLER.

Probably a rare and casual visitor. One specimen is reported by Clarke (1890) as taken at Churchill before 1845. In all probability this was *D. p. palmarum*, the more westerly race.

120. ***Seiurus noveboracensis*** (Gmelin). NORTHERN WATER-THRUSH.

Not uncommon summer resident, breeding in suitable localities.

In 1930, in the scrub willow along the river at Mosquito Point, Water-Thrushes were exceedingly common, but so decidedly shy and in such dense cover as to be difficult to collect. Only two specimens were taken (June 8 and 19), one of these a female with fully formed egg in the oviduct. The species was last seen on August 15.

In 1931 it was first recorded on May 28, when a male was taken in the wet spruce woods at about Mile 506 along the railroad tracks.

On June 6 four were seen and a male and female collected. The species was seen almost daily thereafter in suitable country, especially at Mosquito Point and Button Bay.

In 1932 Twomey saw and heard six at Goose Creek on June 6.

Preble (1902) obtained specimens here that he calls intermediate between *Seiurus noveboracensis noveboracensis* and *Seiurus noveboracensis notabilis*, but nearer to *notabilis*.

All specimens taken in 1930 and 1931 examined by us are intermediate between the white and yellow extremes, perhaps slightly closer to the latter than to the former, and are therefore corroborative of the above identification. However the senior author acknowledges some uncertainty as to the validity or the assumed range of *notabilis*. In the National Museum of Canada are 98 specimens of this species taken with very even distribution across the continent from Nova Scotia to British Columbia and north to the north shore of the Gulf of St. Lawrence, Northern Ontario, Churchill, Banks Island and Mount Logan. White *noveboracensis* and yellow *notabilis* with their accompanying characters are scattered indiscriminately throughout the series. Many of these are undoubtedly migrants, but in some forty whose collection dates fall within June and July and that can be taken as fairly representative of breeding stock, practically the same confusion persists. Neither can the distinctions be ascribed to age as there are ultra-typical examples of both races in young birds with ungranulated skulls. This may not completely dispose of the subspecies *notabilis* but until some definite distributional distinction can be correlated with the postulated subspecific characters it seems best to withhold full approval of the race, or to regard it as the extreme development of individual variation in a highly variable species.

121. **Geothlypis trichas** (Linnaeus). YELLOW-THROAT.

Probably a rare and local summer visitor. In 1931 Twomey saw two on July 12 along Goose Creek, some fifteen miles south of Churchill. In 1932 he saw four in the same place. As he was unable to collect any of these it cannot be stated whether they were *G. t. brachidactyla* of the east or *G. t. occidentalis* from the prairies.

122. **Wilsonia pusilla** (Wilson). WILSON'S WARBLER.

Probably a casual summer visitor. Lloyd collected a female from a stunted spruce thicket along the river-bank on May 27, 1931.

123. *Passer domesticus* (Linnaeus). ENGLISH SPARROW.

Rare summer resident at the townsite. In 1930 a pair occupied the navigation beacon on the townsite point. They were exceedingly inconspicuous as if they felt that in this far northern clime they were intruders and out of place. Though we passed directly under the nest several times every day when in the townsite, we discovered them by accident, and they were seen and heard only a few times all summer.

In 1931 Lloyd took a male at this same beacon.

Twomey reports that twelve spent much of the winter of 1931-32 in the round-house but in spite of being fed with grain by the railroad men they all perished before spring, supposedly freezing to death.

124. *Sturnella neglecta* (Bonaparte). WESTERN MEADOWLARK.

Probably a rare or casual summer visitor. On June 1, 1931, Pettigill saw a Meadowlark but did not succeed in collecting it. It flew up from the open tundra along the river-bank about a mile from the mouth.

In 1932 Twomey noted one every day from June 10 on. As it was noted by and under the particular protection of the men working on the townsite it could not well be collected. Its song was the same as that of the Western Meadowlark he knows in Alberta.

125. *Euphagus carolinus* (Müller). RUSTY BLACKBIRD.

Common summer resident; nests. In 1930 the first Rusty Blackbird was seen on June 4. Later the species was found to be fairly common in the more wooded localities inland. On July 23 fledglings barely able to fly were taken. According to Lloyd the species remained fairly common until about October 2.

In 1931 the species was found to be especially common in the Landing Lake district and about three miles inland from Button Bay. It arrived about June 4, when a male and female were seen and a male collected. On June 12 two males were taken. On June 26 two males and a female were taken at Button Bay and a nest containing three eggs was found by Lloyd. At least one egg had fallen from this nest, probably during a recent storm. On June 29 Sutton found a nest with six half-grown young at Mosquito Point. On July 1 parents feeding young were observed at Landing Lake.

126. **Quiscalus quiscula** (Linnaeus). GRACKLE.

Probably of only casual occurrence. Clarke (1890) under *Q. q. æneus* records an adult male Bronzed Grackle taken at Churchill previous to 1845.

127. **Pinicola enucleator** (Linnaeus). PINE GROSBEAK.

Rare and local summer resident at the forest-edge, probably more common up the river; nests. Bell (1880) notes the species as frequent on the Churchill River and surmises its breeding. Clarke (1890) records specimens taken at Churchill previous to 1845. The species was reported to Preble (1902) by residents of Churchill.

In 1930 Lloyd observed a bird on June 21, closely enough to identify it as this species.

In 1931, on June 8, Sutton collected a singing male and a female with a fully formed egg in the oviduct at about Mile 504, in a patch of very dense spruces along the railroad tracks. On July 5 Twomey saw a red male, a female, and two juveniles.

The junior author refers his specimens to *P. e. leucura*.

128. **Acanthis hornemanni** (Holbøll). HOARY REDPOLL.

Transient and summer resident; nests. In 1930 the Hoary Redpoll was seen throughout the summer, apparently in somewhat smaller numbers than the Common Redpoll, with which it freely associates. Some very high-plumaged males and, on May 31, a female with well formed eggs in the ovaries, were taken. The species was noted throughout the first half of August and one was observed by Lloyd on October 4.

In 1931 the Hoary Redpoll was seen almost daily from May 26 on, and the impression given us was that the species was fully as common as *linaria*. The two species were found flying together practically all the time and nesting actually within stone's throw of each other. It was not an easy matter to distinguish the birds, generally speaking, though the adult males were not difficult to recognize. Twomey took a set of four eggs on June 16. Semple found a nest with two eggs on June 17 that, with four eggs and the female parent, was collected on June 22. On June 24 Sutton collected a set of four from a nest built in a sheltered place in a low spruce, succeeded in securing both parent birds, and found another newly built nest not far away in a spruce

about ten inches from the ground. On June 26 several pairs were seen flying about with Common Redpolls. On June 30 a nest with four eggs and the incubating female were taken. On July 1 Semple took a set of four together with the highly colored male parent.

With one notable exception the specimens collected are *A. h. exilipes*. The exception is one specimen of Greenland Redpoll, *Acanthis hornemanni hornemanni*, with unenlarged gonads, taken by the junior author from a flock of Common Redpolls in the willows along the river-bank on May 26, 1931.

Practically all records of this race in North America are from Fort Chimo, where Turner collected so many in winter, in about the year 1883; from southern Baffin Island, where Soper took a number in late autumn and winter, in 1924-1928 (specimens in National Museum of Canada); and from Southampton Island, where Sutton (1932) took specimens in spring and fall. Clarke (1890) records two specimens of *Acanthis hornemanni* taken at Churchill prior to 1845. This specific name might as well refer to *A. h. exilipes* as to *A. h. hornemanni*, so without our present Churchill specimen of *A. h. hornemanni* we could not be certain that both races actually occur.

129. ***Acanthis linaria*** (Linnaeus). COMMON REDPOLL.

Summer resident; nests. In 1930 the Redpoll was met with practically wherever there was a little bush. A nest was found in an isolated stunted spruce on the open tundra, half a mile from the nearest bush. The birds fed largely in the tops of the tamaracks and cruised about in small, restless flocks, flitting from tree-top to tree-top, remaining for only a few moments and then swinging off again, often after a few circlings returning to the same tree time after time. Probably these roving bands were non-breeding individuals and birds on incubation relief. The species remained common until September 6; thereafter it was noted only on September 11 and 16. According to these observations the Common Redpoll, as might be expected, does not linger as late in the fall as the Hoary.

In 1931 this species, together with the Hoary Redpoll, was seen nearly every day. Adult males were not difficult to recognize in the field; female and young birds, however, were not to be identified with certainty. Handsome *linaria* were collected on several dates. A female carrying feathers in her bill was noted on June 8. On June 9 a Redpoll was seen to feed a large insect, a crane-fly of some sort

apparently, to another fully grown bird. Farley found two nests, with incomplete sets, on June 14, and Twomey found a set of four on June 16. On June 20 Lloyd found a nest with heavily incubated eggs in a leaning tamarack tree near Landing Lake. The female slipped off the nest very quietly. On June 26, at Button Bay, several Redpoll nests were found, some of them probably *hornemanni*. On June 30 Sutton took a nest with incubating female and four fresh eggs near Lake Rosabelle. This nest was not more than fifty yards away from a nest of *hornemanni*.

Specimens of this species collected apparently are all referable to the small *A. l. linaria*. *A. l. rostrata* probably is of occasional occurrence as a migrant, however.

130. ***Loxia leucoptera*** (Gmelin). WHITE-WINGED CROSSBILL.

Probably an erratic visitor to the forest-edge. Clarke (1890) reports adults of both sexes from Churchill taken before 1845.

131. ***Passerculus sandwichensis*** (Gmelin). SAVANNAH SPARROW.

Common transient and summer resident; nests. In 1930 it was already common by May 28, and remained in fairly constant numbers until September 6, after which date it was not noted. A good series was taken.

In 1931 it apparently arrived on May 27, on which date several were seen and heard. On June 23 a female with an egg ready to lay was collected. On June 27 a nest with three eggs was found near camp at the river-mouth. On June 28 a nest with six eggs was found by Pettingill.

Specimens collected are rather dark, like birds from other northern localities, or occasional late migrants from southern Ontario, and may possibly be referable to *P. s. labradorius*.

132. ***Junco hyemalis*** (Linnaeus). SLATE-COLORED JUNCO.

Rather rare summer resident; nests. Clarke (1890) lists two specimens taken at Churchill before 1845.

In 1930 two Juncos, probably a mated pair, were taken on June 6 in the bush near Lake Rosabelle, and a striped juvenile was collected in the same region on July 30. Two more were noted on September 20 and eight on October 3 and 4.

In 1931 Juncos were noted several times. On May 26 Lloyd took a male among the small willows near the townsite slough, and on June 4 three pairs were seen in the bush about Mile 507 along the railway. The species was recorded on June 15, 16, and 20, the last a single bird at the river-mouth.

All specimens prove to be typical *J. h. hyemalis*.

133. *Spizella arborea* (Wilson). TREE SPARROW.

Abundant summer resident; nests. In the bush lands probably the commonest bird. Found also on the tundra wherever there are scattered shrubs.

In 1930 it was present in some numbers on May 26, and remained common until September 29. It was not recorded thereafter. The great autumnal migration wave of this species reaches southern Ontario about October 1.

In 1931 the species arrived on May 25, when two males were heard singing. On the following day about ten were heard, all apparently males. On May 27 the species was abundant, both sexes being present. First nest-building activities were noted on June 11. A nest with three eggs was found on June 18, and many nests with from three to seven eggs were found thereafter. Most of these nests were situated in rather open country, often among the willows or in clearings not far from the railroad track.

In 1933 Miss Heydweiller found the species paired and in full song upon her arrival, June 5. The first nest, practically completed, was found that day. The first egg was deposited in this nest on June 11, and this egg hatched June 28. Another nest, discovered on June 29, held young at least a day and a half older than in the first nest. First eggs appeared in most nests about June 18. Young birds just out of the nest were first noted on July 8. Juvenile birds remained in the brush near their nests throughout July. No indication was noted of the rearing of more than one brood.

When Miss Heydweiller left Churchill on August 1, male Tree Sparrows were still singing intermittently on their nesting-territories; young birds were still in full juvenal plumage; and among old birds there was little evidence of the postnuptial moult. One bird collected had begun to lose the summer's plumage, however, for there were several unbroken pin-feathers among the body plumage.

All specimens collected are referable to the Eastern Tree Sparrow,

S. a. arborea, indicating that the species arrives from the east and not from the south, since southern Manitoban transients represented in the collections of the National Museum of Canada are, without exception, plainly referable to the western race, *S. a. ochracea*.

134. *Zonotrichia querula* (Nuttall). HARRIS'S SPARROW.

Common summer resident; nests. In 1930 common throughout the season, first noted on May 28, and seen in greater numbers by June 6. A nest containing young nearly ready to fly was collected on June 27. The species remained fairly common until September 5, after which it was not noted.

In 1931 it arrived on May 27, when two were seen along the bank of the river not far from its mouth, and a female was collected. Single birds or pairs were noted practically every day thereafter, but the species was not abundant until June 4, when many birds, some of them mated, were seen in the bush country. On June 15 a bird with a piece of dry grass in its bill was seen near the ground, but no nest could be found. On June 16 a nest with four slightly incubated eggs and the brooding female were collected in the spruce woods west of the railroad at about Mile 505. Thereafter several nests were found, ten in all, with sets ranging from three to five eggs. It was found to be very common inland from Button Bay. The nests were all placed on the ground, usually on a mossy hummock in a wet place among the spruces or in a southern exposure at the edge of a burn. The females were found to flush very closely once the set was complete. A full account of the nesting of the species at Churchill was published by Semple and Sutton (*Auk*, XLIX, 1932, 166-183).

In 1932 and 1933 Twomey took several sets of eggs.

135. *Zonotrichia leucophrys* (Forster). WHITE-CROWNED SPARROW.

Very common summer resident; nests. In 1930 single birds were seen May 26 and 27, and the species was fairly common by June 4. Through the summer many young birds were seen at the Lake Rosabelle camp, one pair regularly bringing their brood to the tent door to feed on the oatmeal largess scattered for them and for the Longspurs and Horned Larks. The species was common until September 15, after which date a few were seen, the last being noted on September 30.

In 1931 the species was first seen on May 27, when several were heard singing. On June 5 a female was noted building her nest. On June 14 a nest with four eggs and another just ready for eggs were found. From this date on nests were found almost every day.

Though both *Z. l. gambeli* and *Z. l. leucophrys* occur at Churchill, a study of them leaves the question of the proper status of the forms even more uncertain than before. We have under examination twenty-two adult-plumaged specimens besides others in various stages of juvenility, all taken in the three seasons of collection at Churchill. Of these, thirteen are unmistakably typical *gambeli*, with white superciliary line continuous with the light gray lores. Three are equally typical *leucophrys*, with superciliary line ceasing abruptly over the eye and the lores solid black. Six may be described as being of the *gambeli* type, but with the superciliary line separated from the light colored lores by a narrow black bar from the anterior corner of the eye to the black forehead. These have every appearance of intergradation between the two forms and might be so regarded did not the examination of a larger series of specimens indicate that birds of this type show a wider distribution than any zone of contact that can be postulated for the two geographical races. That this scattering of intermediate specimens is not the result of migrational wandering is indicated by a summer specimen taken June 2 near the Moisie River, north shore of the Gulf of St. Lawrence, and a breeding bird taken with nest and eggs on Great Mecattina Island on the same coast. A study of a continent-wide series of 145 adult specimens shows the distinctly western distribution of *gambeli* and the definitely eastern distribution of *leucophrys*, no typical example of *gambeli* being represented east of Manitoba and no typical *leucophrys* from British Columbia. The above intermediate type is common wherever *leucophrys* occurs, though it is rare or absent where *gambeli* is predominant. It is therefore impossible to consider the extreme eastern Canadian Labrador bird as either a hybrid or an intergrade with *gambeli*, and the conclusion is forced upon the senior author that this intermediate appearing type is an extreme variant within the limits of *leucophrys*, and that it cannot be taken as proof of intergradation with another form. Whether *gambeli* is to be regarded as a full species or not yet remains for demonstration.

Unfortunately, though the species breeds commonly at Churchill, where all three of these types occur throughout the nesting-season,

we have no direct data on their breeding-relation with each other, nor do we know whether or how they cross-mate, or if any distinction can be made between them according to habitat.

136. *Zonotrichia albicollis* (Gmelin). WHITE-THROATED SPARROW.

Probably a casual summer visitor from the timbered interior. Clarke (1890) records an adult pair of White-throated Sparrows taken at Churchill before 1845.

In 1930 one individual was taken on a cold raw day, June 9, in the friendly shelter of the rocky buttresses behind the Hudson's Bay Company offices near the townsite camp.

137. *Passerella iliaca* (Merrem). FOX SPARROW.

Rather rare summer resident, nesting in the spruce "bush." In 1930 a bird seen at Mosquito Point on June 13 was tentatively referred to this species, but it was not until June 17 that the species was taken and positively identified. A juvenile of the year with ungranulated skull was taken on July 25, and others were noted or taken on August 2, and September 3, 5, and 6.

In 1931 the species was first noted on May 30, when Lloyd took a singing male at the river-mouth not far from camp. On June 4 two pairs were seen and a male collected. On June 11 at least three pairs were observed. On June 15 Sutton collected a nest with four eggs and the parent birds. The species was also recorded at Button Bay on June 26, and at Mosquito Point on June 29.

Specimens taken are all of the eastern race, *P. i. iliaca*.

138. *Melospiza lincolni* (Audubon). LINCOLN'S SPARROW.

Found throughout the summer; it is uncommon, but probably nests. On June 15, 1931, Lloyd took a singing male with much enlarged gonads at the edge of the bush back from the river-bank at about Mile 506, and on June 27 Sutton collected a worn male that was not singing. The species was recorded again on July 3, when one was heard and seen in the Landing Lake District.

The two specimens taken are referable to the eastern race, *M. l. lincolni*.

139. *Melospiza georgiana* (Latham). SWAMP SPARROW.

On May 27, 1931, Lloyd and Sutton collected a male Swamp Sparrow which was frequenting some stunted spruce trees along the river-bank in company with Tree Sparrows.

140. *Calcarius lapponicus* (Linnaeus). LAPLAND LONGSPUR.

Probably the most abundant and generally distributed nesting bird of the region; abundant also as a transient.

In 1930 the species was present in considerable numbers on May 25. During spring and early summer the birds fed largely at the pond- and slough-edges, wading about in a very un-sparrowlike manner. Many times they were seen belly-deep in the water along with Least, Semipalmated, and Stilt Sandpipers when, from a distance, it was difficult to tell waders from longspurs. They were accompanied by Snow Buntings, but the latter never went into the water, keeping to the bunch grass and drier places. Longspurs remained in fairly constant numbers throughout the season to the closing of the records on October 4. About September 5 there seemed to be an influx of transients, but these immediately passed.

In 1931 the species arrived shortly prior to May 25, on which date many singing males but no females were seen. On the following day a few females appeared. Nest-building was first observed on June 1, the first egg on June 5, and the first full set on June 11. Before the termination of the season's work at least a hundred nests must have been found.

141. *Calcarius pictus* (Swainson). SMITH'S LONGSPUR.

Summer resident; nests commonly but somewhat locally. Nests are to be found in the open tundra in almost the same sort of place as that selected by the abundant Lapland Longspur; but the favorite nesting-grounds are the strips of somewhat sheltered tundra extending between and among the tongues of spruce bush.

In 1930 the species was first observed on May 31. Most individuals departed for the south from August 15 to 18, after which date two were noted on August 29 and one on September 3.

In 1931 the first Smith's Longspurs, three males and one female, were noted on June 4. The species evidently arrived a little later than the Lapland Longspur. On June 22 the first nest, just ready for eggs, was found, and on June 29 Pettingill took a set of four at Mosquito

Point. Thereafter several nests were found. Sets consisted of three or four eggs.

In 1932 Twomey found nests with five and three eggs respectively on June 22 and 25.

Male birds, when they first arrive, sing brilliantly while perching on mossy hummocks or the tops of stunted spruces, and sometimes even while flying; but they do not, apparently, have a regular flight performance as do both the Lapland Longspur and the Snow Bunting. When the females appear the males fly about in pursuit for a time, but mating is consummated rapidly, and the dull-colored females begin nest-building so quickly that males are nearly always to be seen in little flocks by themselves, roving here and there, singing gaily sometimes actually in a chorus, or flying off high in air giving their strange, *ticking* call-note, which Lloyd likens to the sound produced by winding a cheap watch.

Nests are not very easy to find, for the females incubate closely and the males seem curious and puzzled rather than alarmed or angry when an intruder appears on their nesting-grounds. Since they are inclined to be shy, they may fly straight away and disappear in the distance instead of staying about to scold or warn the female of danger.

Females, in flushing from their nests, characteristically fly off slowly, spreading their tails widely, rather than running away or falling to the ground to feign injury.

142. *Plectrophenax nivalis* (Linnaeus). SNOW BUNTING.

Common transient, probably casual in winter; apparently does not breed.

In 1930 Snow Buntings were very numerous when we arrived on May 26, and were feeding familiarly in company with Horned Larks about the doorsteps and roadways of the townsite. On June 10 their numbers were noticeably reduced and none were seen after June 16. The vanguard of the autumnal migration appeared September 15. The species immediately became common, being noted daily to the close of the record, October 4. Flights must have passed through on September 29 and October 2, for 100 and 500 individuals are listed respectively for those days. Lloyd noted "an odd Snow Bunting about" as late as November 2.

In 1931, when Lloyd reached Churchill on May 18, he found the

species fairly common in flocks along the shore of the Bay and the river-bank. By May 25 numbers of the birds were to be seen about the townsite, and the species was recorded practically every day thereafter until almost the last of June, sometimes one or two birds being observed, sometimes hundreds in large flocks. It was last noted on June 26, when a single male was seen.

In 1932 Twomey noted the last flock on June 12 and the last individual on June 20. In 1933 he took a male on July 23.

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Spruce Forest and Muskeg Pool near Mosquito Point.
Photograph by Percy A. Taverner.



Lake Rosabelle and adjoining tundra lakes, showing characteristic Shore Lines.
Photograph by Percy A. Taverner.



Nest and young of Arctic Loon.
Photograph by Percy A. Taverner.



Downy young of Arctic Loon removed from nest.
Photograph by Percy A. Taverner.



Nest of Pintail, June 14, 1931.
Photograph by Olin Sewall Pettingill, Jr.



Old-Squaw on nest, July 4, 1933.
Photograph by Miss Marguerite Heydweiller.



Willow Ptarmigan in changing plumage, May 30, 1931.
Photograph by Olin Sewall Pettingill, Jr.



Rock Ptarmigan in winter plumage, May 30, 1931.
Photograph by Olin Sewall Pettingill, Jr.



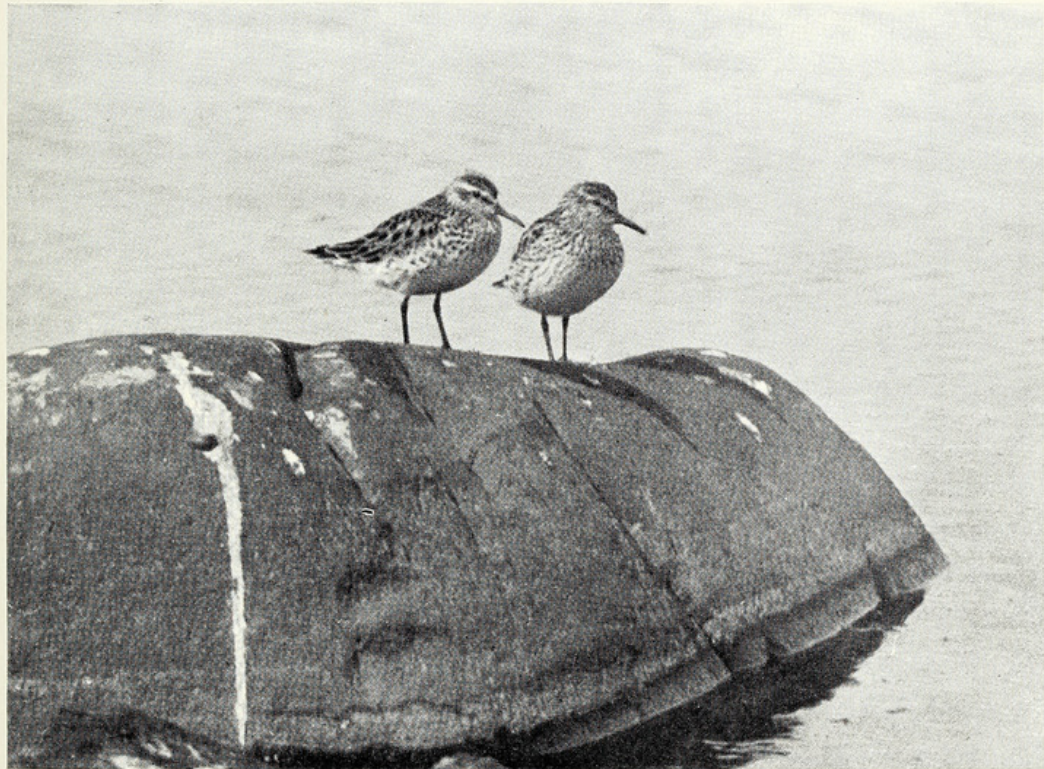
Semipalmated Plover.
Photograph by Olin Sewall Pettingill, Jr.



Golden Plover and downy young.
Photograph by Percy A. Taverner.



Nest of Hudsonian Curlew, June 23, 1931.
Photograph by Olin Sewall Pettingill, Jr.



White-rumped Sandpipers.
Photograph by Percy A. Taverner.



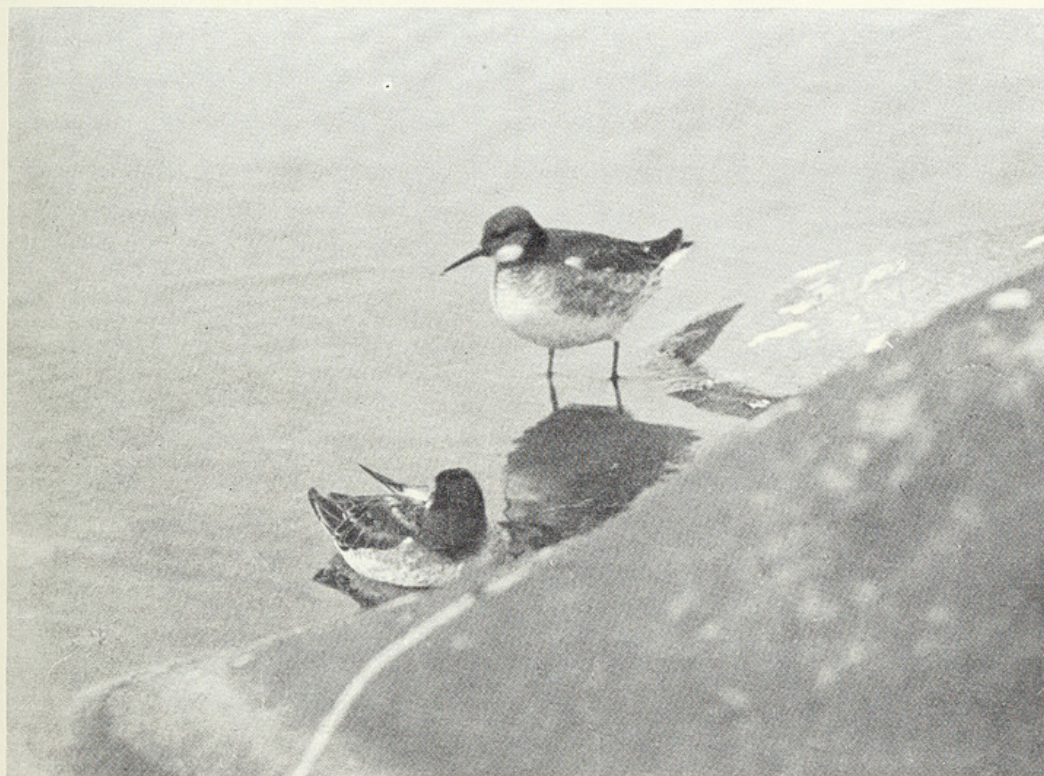
Stilt Sandpiper on nest, June 19, 1933.
Photograph by Miss Marguerite Heydweiller.



Nest of Stilt Sandpiper, June 21, 1931.
Photograph by Olin Sewall Pettingill, Jr.



Semipalmated Sandpiper on nest, June 30, 1933.
Photograph by Miss Marguerite Heydweiller.



A pair of Northern Phalaropes (female above).
Photograph by Percy A. Taverner.



Bonaparte's Gull scolding from top of Spruce near nest.
Photograph by Olin Sewall Pettingill, Jr.



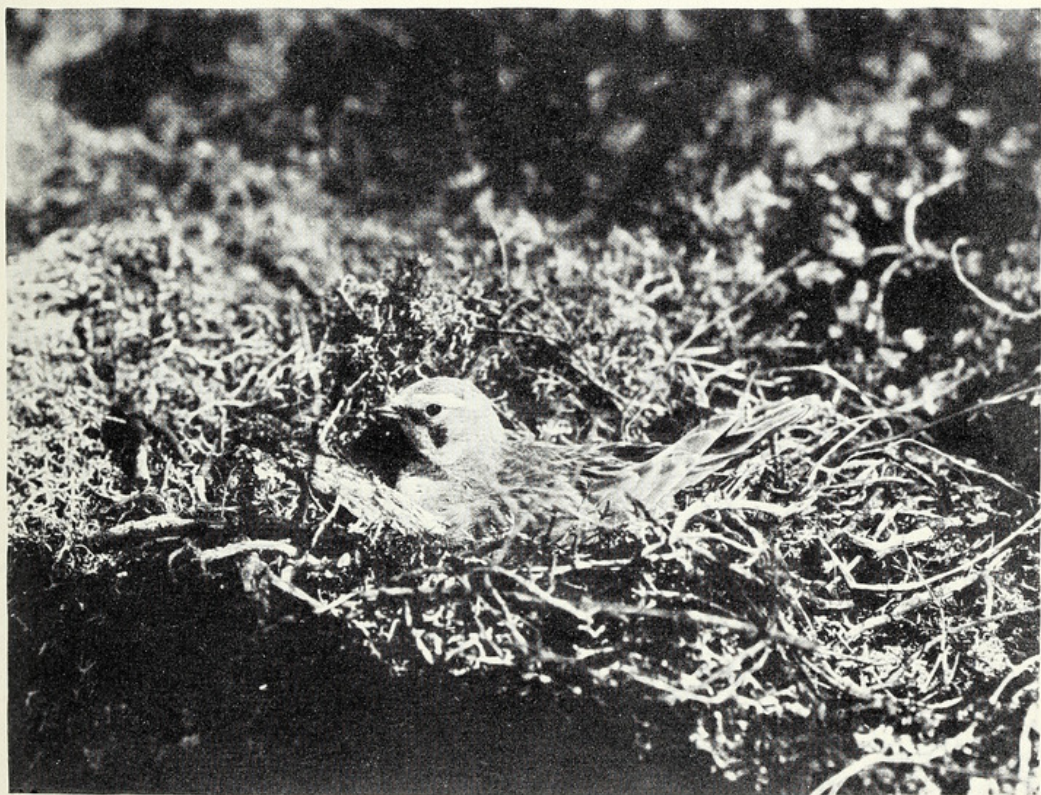
Nest and eggs of Bonaparte's Gull, June 22, 1933.
Photograph by Miss Marguerite Heydweiller.



Nest, egg, and young of Bonaparte's Gull, July 11, 1931.
Photograph by Olin Sewall Pettingill, Jr.



Young Arctic Horned Owl, June 8, 1933.
Photograph by Miss Marguerite Heydweiller.



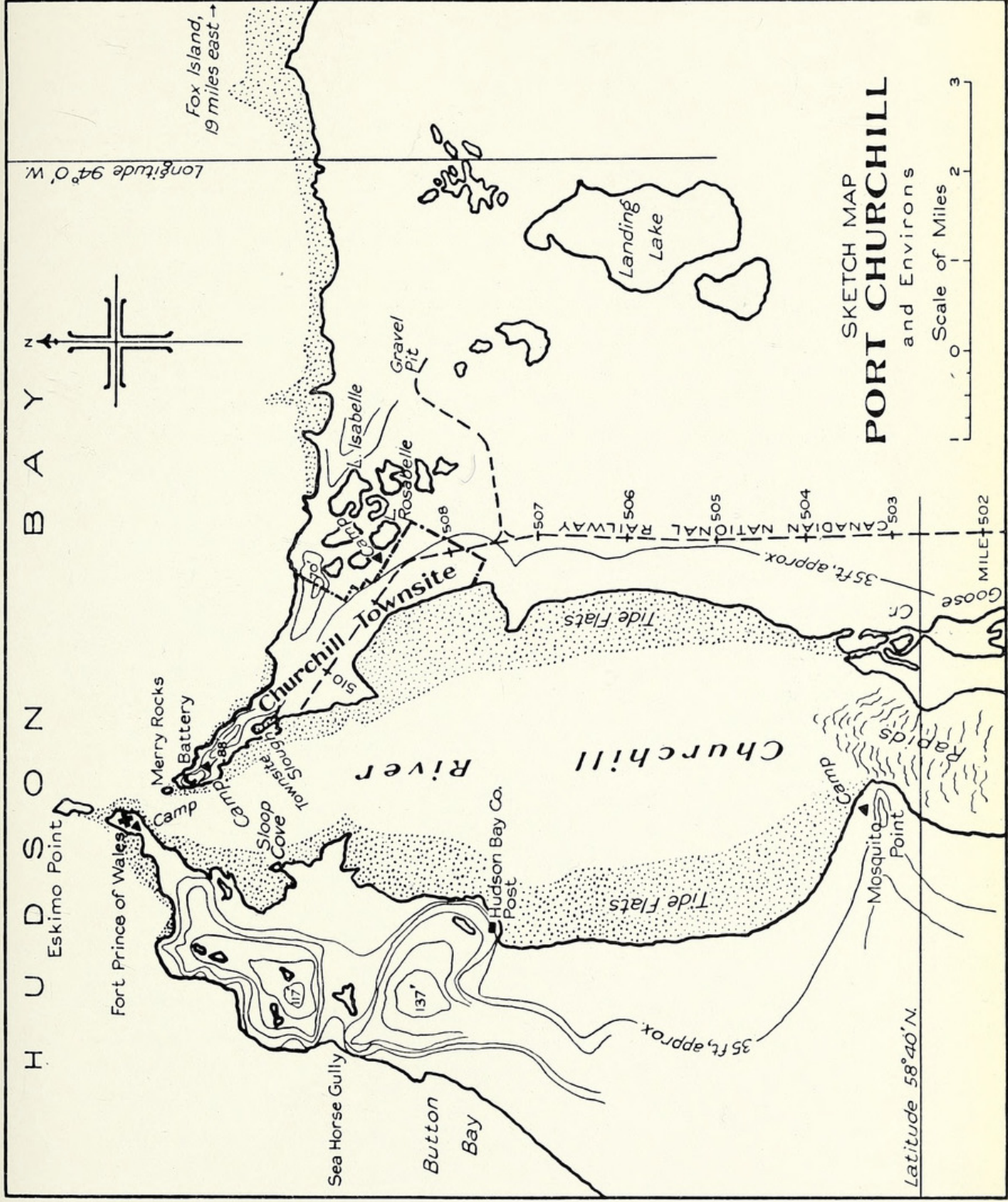
Hoyt's Horned Lark on nest, June 21, 1931.
Photograph by Olin Sewall Pettingill, Jr.



Hoary Redpoll on nest, June 22, 1931.
Photograph by Olin Sewall Pettingill, Jr.



Smith's Longspur at nest, July 9, 1931.
Photograph by Olin Sewall Pettingill, Jr.



SKETCH MAP
PORT CHURCHILL
and Environs

Scale of Miles
0 1 2 3

H U D S O N B A Y

Longitude 94° 0' W.

Fox Island,
19 miles east →

Latitude 58°40' N.

MILE 502

Goose Cr.

35 ft. approx.

503

504

505

506

507

Churchill River

Churchill Townsite

Camp

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