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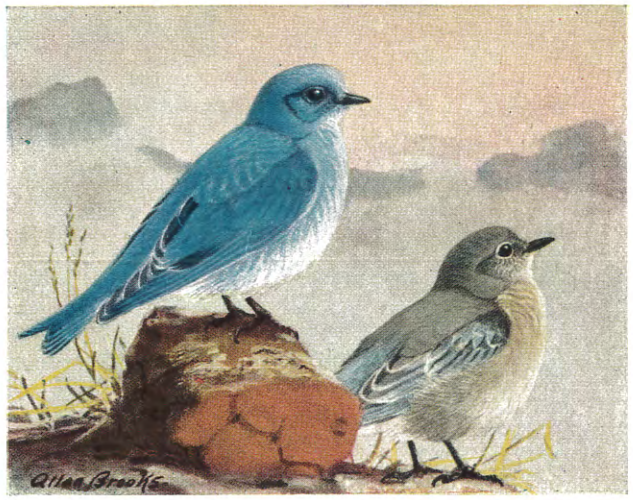
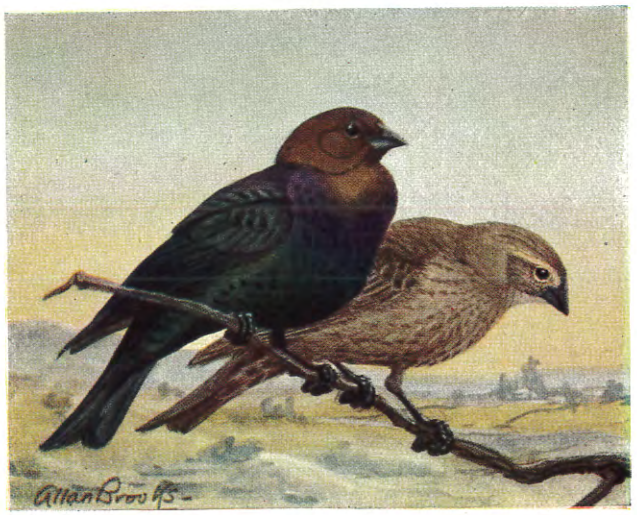


Mountain Bluebird; scale, ⅓

Male Female



Cowbird; scale, ⅓

Male Female

The Canadian Field-Naturalist

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A CRUSTACEAN NEW TO THE PLEISTOCENE FAUNA OF CANADA

By E. M. KINDLE.

THE ISOPOD crustacean genus Mesidotea includes two marine species with a circumpolar distribution which are of considerable interest to geologists concerned with the Pleistocene history of northern Europe and America. One of these, *Mesidotea entomon*, is found in Lakes Venern and Vettern in Sweden where its presence is explained as a result of communication between the Baltic and North and White Seas having been interrupted in late glacial times by a rising of the land in Scandinavia[2]. In the resulting brackish Anclyus Sea *M. entomon* survived and in its freshwater successors, Lakes Venern and Vettern, still survives as a relict species although it is elsewhere normally a marine form. The other species *M. sabinei* is also found in Sweden[3] as a fossil in the clay of the "Yoldia Sea" where it contributes to the evidence of Arctic conditions prevailing at the time of the deposition of these sediments.

Both of these crustaceans are known from the marine fauna of Labrador,[4] but neither has heretofore been recognized on this side of the Atlantic in the Pleistocene fauna. Recently Brother Alphonse F.E.C. of Ottawa, presented to the National Museum a fossil crustacean which has been identified as *Mesidotea sabinei*. The specimen forms the nucleus of a concretion which has the same physical characteristics as the concretions of the Ottawa district which often enclose the fish *Mallotus villosus*[5] and represents the same horizon.

This fish, which is known to fishermen as the caplin, has at present a boreo-arctic and circumpolar distribution. It is not found in numbers south of Trondhjemfiord on the Norwegian coast. Along the east coast of North America the caplin ranges as far south as Cape Cod. Along the Newfoundland and Labrador coasts it is exceedingly common but it is not abundant south of Halifax. In a recent paper, Dr. St. J. Bolkay of Sarajeno reports finding in S.E. Bosnia a fossil caplin at an elevation of 580 metres above the sea.[6] This appears to extend the Pleistocene range of the *M. villosus* fauna in Europe more than 1000 miles south of its present southern limit on the Norway coast.

The specimen figured here was discovered by Brother Alphonse F.E.C., east of Ottawa on the bank of the Ottawa river a few hundred yards below the Rifle Range. The specimen corresponds with *Mesidotea sabinei* in its long slender body, the ratio of breadth to length giving an index figure of 3.4 while in specimens of *M. entomon* from Alaska the breadth to length index is 2.7. The anterior pair of antennæ are missing in the fossil but the second pair are well preserved. In both *M. entomon* and *M. sabinei* the size of the antennæ is abruptly reduced after the fourth segment but its reduction is very much more abrupt in *M. sabinei* and is rather sharply contrasted with *M. entomon*. The fossil shows no trace of the legs corresponding in this respect to most trilobites.

Johansen states (quoted by Boone) that Mesidotea is adapted to live in water of various degrees of salinity or non-salinity, "often ascending creeks to lakes".[7] This characteristic of great adaptability fitted *M. sabinei* to live in the more or less brackish Pleistocene arm of the sea which furnished the fossil specimen here figured.

The known species which comprise the Ottawa valley Pleistocene fauna west of Montreal are all forms which can adjust themselves to a rather

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[1] Published with the permission of the Director, Geological Survey of Canada.

[2] A. G. Nothorst: "Sweden's Quaternary Deposits", pp. 166-169, 1894. The writer is indebted to Mr. Frits Johansen for a translation of parts of this work

[3] A. G. Nothorst: "Sweden's Quaterary Deposits," p. 162.

[4] P. T. Boone: Crustacea, Can. Arctic Exped. Rept. Vol. 7P & D, pp. 19-23, 1920.

[5] Figures of this and most of the other marine Pleistocene fossils of the St. Lawrence basin may be found in Sir J. Wm. Dawson's "The Canadian Ice Age", Montreal, 1893, pp. 206-271; The Post Pliocene geology of Canada: Can. Nat., Vol. 6, 1872, pp. 19-42, 166-187, 242-259, 369-416. See also H. M. Ami: Classified list of fossils from Ottawa and vicinity. Trans. Ottawa Field Naturalists' Club, No. 5, pp. 9-10, 1884. List of fossils to accompany report by Dr. R. W. Ells on the City of Ottawa map, Annual report Geol. Surv. Can., New Series, vol. 12, pp. 51G-56G, 1901. E. M. Kindle Range and distribution of certain types of Pleistocene concretions, Bull. Geol. Soc. Am., vol. 34, pp. 609-648, pl. 8, 1923.

[6] E. Loennberg: Mallotus villosus found as fossil in Bosnia ("Flora och Fauna", Upsala, Vol. 21, 1926, pp. 45-46).

[7] *Op. cit.*, page 22D.

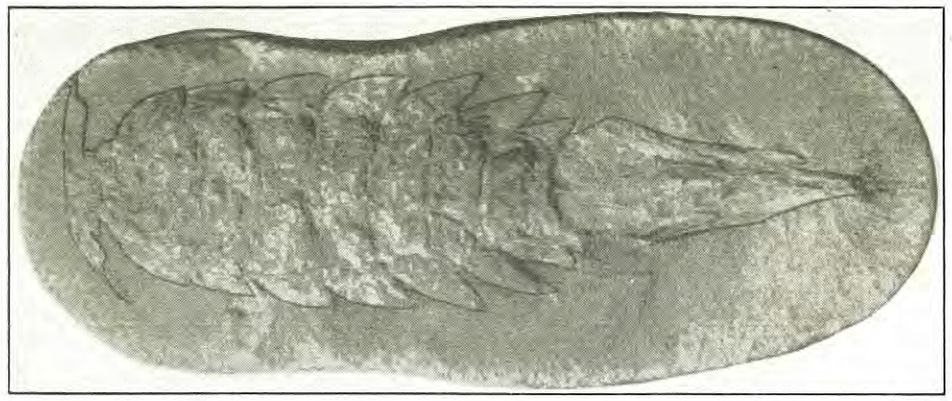

FIGURE: *Mesidotea sabinei.* Natural size. The figure shows the outline of the concretion in the centre of which this crustacean was found.

wide range of salinity. *Macoma balthica* which is probably the most common fossil in the Ottawa valley finds it normal habitat in the brackish waters of the Baltic Sea. This shell and its associates indicate for the Ottawa valley arm of the Pleistocene sea in which they lived a moderate degree of salinity, comparable with that of the upper Baltic of the present. Gastropods are rare in this fauna. Such typical marine creatures as sea urchins are wanting also. Brachiopods which require water of ordinary marine salinity are unknown in the Pleistocene deposits of the Ottawa valley. The relatively small number of species known from the Ottawa valley facies as compared with the considerable number known in the lower St. Lawrence basin clearly points toward the unfavourable low salinity conditions of the former for typical marine creatures. In Ami's lists of the Ottawa Pleistocene the mollusca are represented by only 40 species while in the lower St. Lawrence region Dawson found 340 species in this fauna. In its arctic and subarctic range *M. entomon* affords evidence supplementing that of *Saxicava arctica, Portlandia glacialis* (Wood) (*P. arctica*) and others of the molluscan fauna with which it is associated in suggesting climatic conditions approximating those of the Ottawa valley marine clays. *Portlandia glacialis* which is such a characteristic fossil in the Pleistocene clays of Eastern Canada has not been found south of the Strait of Belle Isle according to Whiteaves. *Saxicava rugosa* is a characteristic Arctic shell, though having a considerable southern range. The writer found it in such abundance as to nearly exclude other species in lat. 74.15 West Greenland on a mud bottom in front of Cornell glacier.

LANDSLIDES IN CANADA[1]

By D. A. NICHOLS

THIS PAPER deals with the occurrence and causes of landslides in Canada, and is based on observations by the writer and other field officers of the Geological Survey of Canada.

A landslide is the sliding or falling of a mass of earth or rock from its original position to a new one. It may occur as a smooth and easy downward and outward movement or slumping of soil or debris, or, as a violent and sudden one. It may occur as a movement along a bedding plane or as a splitting off of a huge mass from a cliff face transversely to the bedding plane.

Landslides of great magnitude generally occur in mountainous areas. However, extensive slides also occur in places of low relief, and are, perhaps, of greater human interest, for they frequently destroy buildings, roads, bridges, dams and other engineering structures. They are characteristic of youthful stream development, particularly in areas underlain by unconsolidated materials such as clays, sands or silts. At this stage of development, the stream begins to widen its valley by lateral erosion, the banks are undercut and landslides occur, often producing overnight almost as much change as does several years of normal rain erosion or frost creep. Although the magnitude and frequency of occurrence of slides is greatest at this period of stream development, they persist into maturity and beyond when conditions are favourable.

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In alpine areas, landslides occur where the extremes of heat and cold, in conjunction with incompetent or tilted strata favour the disruption of rocks.

Landslides may be grouped under several headings,—

1. Slides due to slipping of surface material over stationary substratum.
2. Slides due to movement of materials in a substratum.
3. Slides due to movements at right angles to, or inclined to, the substratum.
4. Slides due to mining or other excavations made by man.

A common cause of landslides is the saturation of the ground as a result of excessive rainfall. Where there is a somewhat impervious layer overlain by a more permeable one, the groundwaters collect just above the impervious layer and act as a lubricant which greatly assists the gravitative movement of the mass. This movement may be started by earthquakes, frost action, the readjustment of stresses within the material, or by the works of man. Conditions favourable to the occurrence of the slide may exist for a long time, and yet no movement take place until some unusual event precipitates it.

Along the rivers of Ontario and Quebec, throughout the areas once occupied by the glacial lakes and the Champlain sea, landslides are of frequent occurrence, for there, the streams are in a youthful stage of development, and generally flow through unconsolidated material.

About April 20th, 1927, a landslide occurred on the Blanche river, one and one half miles north of Wawbewawa, Timiskaming district, Ontario. At a small fall on the river, the varved clay deposit of the east bank of the stream slid out, leaving the striated rock surface exposed, and the river migrated easterly to flow for several hundred feet in an old channel excavated in bed rock. (View 3). The stream also shifted laterally 300 feet, in some places cleaning out the entire varved clay deposit; in others, leaving large masses of clay stranded on the sides of the old channel. (View 1). On the east side of the stream are banks of varved clay 60 to 80 feet high. On the west side is a landslide scar and an irregular terrace of hummocks typical of landslide topography, showing that movements have occurred there antedating the one of April, 1927.

The old rock channel disappears under the clay banks of the east side of the stream, and the river forms an eddy at a sharp bend around the foot of the bluffs where masses of clay were still falling on May 17th when the site of the slide was visited. Eventually, this bluff will be undermined and the river will seek the old rock channel which underlies it.

The clay in the bluffs is distinctly varved horizontally, but near its base there are contorted zones, probably due to slumping. At the contact with the underlying rock, the laminæ feather out and partly conform to the irregularities of the rock surface. (View 4).

Previous to the slide, the river flowed over the clays to one side of a buried rock channel, and fell over a knob of the old uneven surface. (View 3). This unevenness caused the river to erode to the east where the rock surface stood lower. A cribwork, for diverting logs over the fall, dammed back the water, thus superimposing extra weight on the clays above the fall and causing erosion of the clay banks at the side of the cribwork which was built at a sharp bend in the river. The stream, especially at flood time, impinged on the clay banks on the east or slip-off side of the buried depression, undercutting them at a critical point. These conditions added to the saturation of silty layers in the clay or the lubrication of the underlying polished rock surface disturbed the equilibrium of the mass which eventually slid out downstream.

On the same river, there are evidences of other landslides, in fact, they are common. About three miles east of Englehart, in the township of Evanturel, another slide was visited, where an area several hundred feet long and about 350 feet wide slide into the Blanche river destroying a bridge and a part of the highway, and engulfing a wagon which was being driven across the area at the time of the catastrophe. The driver of the vehicle escaped. Here, as at Wabewawa, evidences of an ancient slide are visible. From near the edge of the slide, a gully, with hummocky topography, joins the Blanche river with a distinct upstream barb, an indication of faulting. (View 6).

This slide dammed the river, backing up the water for a mile or more until the river excavated a new channel for itself. The present road passes down from the upper terrace to the slide, which it crosses to the bridge spanning the river. The bridge is built on piling driven to a depth of 40 feet in clay, bed rock not being reached. The

bridge seems to be in a rather dangerous location, as slides may again occur due to the unstable condition of the slide material, portions of which were being undermined and dropping off a few yards from the bridge while the site was being examined.

The cause of the Englehart slide appears to be the saturation of the silty layers of the varved clays. These layers attain a semi-liquid condition and greatly increased weight at times of undue rainfall, so that very little undercutting of the banks precipitates the movement of the unstable mass which either flows out like a liquid or faults down in step-like mases. These step-faults are clearly shown in View 6.

Another slide of more disastrous character is described by Ells, (11). This occurred on April 16th, 1908, at Notre Dame de la Salette on the Lievre river, Quebec. This slide, while of no great dimensions, involved a great loss of life and property. It extended for about 1300 feet, with a width of 400 feet along a clay bank which rose about 60 feet above the river.

At the site of the slide, a fissure developed about 200 to 300 feet back from the river. Into this the spring run-off descended and reached an inclined stratum of clay which dipped towards the river. This became lubricated and the over-weighted sands, silts and clay precipitated themselves into the river which was frozen at the time. The rush of soil, ice and water was carried up over the opposite banks of the river, across the village of Notre Dame de la Salette, overwhelming the village and carrying the demolished buildings a considerable distance inland to a height of 50 feet above the bed of the stream. The backwash from the flood, again swept over the village removing a great deal of the debris and carrying it downstream. Twelve houses and twenty-five outbuildings were demolished with a loss of thirty-three lives. A clay dam was thrown across the river, backing up the water for some distance causing considerable property damage upstream. Eventually, the dam was swept away and the river regained its old channel. Owing to the unstable and tilted condition of the clays of this locality a recurrence of such slides is probable. There is indication of ancient slides in the vicinity as is shown by the hummocky topography and by the presence of trees partly buried in the clays.

Previous to the Salette catastrophe, there had occurred a slide at Poupore on the Lievre river. Here, an area of about 95 acres of clay slid into the river damming it up to the locks about a mile upstream. The slide was in undisturbed clays.

A slide of somewhat different character occurred on the Riviere Blanche, Portneuf county, near St. Thuribe on May 7th, 1898, destroying three farm buildings and with the loss of one life.

The movement started first on the 6th of May, in a small hollow from which a tiny stream trickled. Early in the morning of the 7th, the movement began to accelerate, gradually gathering force and continuing for about three hours. An irregular chasm was formed with its narrow mouth towards the river. This extended inland 1800 feet widening gradually to a maximum of 1800 feet, with a depth of 28 feet. Through this channel, a soft fluid material flowed out into the river, carrying with it huge blocks of the more coherent clays, while large masses were left stranded on the bottom of the depression, in all sorts of attitudes. As in many other instances, evidences of ancient slides were noticeable in the vicinity.

On October 11th, 1903, another slide of considerable extent occurred on the Lievre river not far from Buckingham village. For several days preceding the movement there were heavy rains. On a small tributary, water was seen issuing from the sides of the gully. Suddenly, a large area of clay, which had become saturated, slid into the river, passed across its bed and up the east banks which were 20 to 30 feet high, carrying away a portion of the highway which crossed the area. Large islands of clay, 4 to 5 acres in extent were moved bodily and rested intact with crevasses of 15 to 18 feet in depth surrounding them. The stream was temporarily dammed.

The immediate cause was similar to that of most of the movements in the clay deposits. A silty layer, about 20 feet below the surface became saturated and lubricated so that the superincumbent mass moved bodily forward with disastrous results.

Along the St. Maurice river and its tributaries numerous slides have been recorded, several of great intensity. Below Shawinigan, at Matteau farm, a block of farmland, 900 feet by 450 feet settled about 30 feet making a sharp slide scar where once was level farmland. The material flowed out like water and drained through a gully into the St. Maurice. The area is underlain by laminated clay, silt and sand which had become saturated by long continued rains.

Records of slides are not restricted to the clay belt of eastern Canada. In the alluvial areas of the west and in the alpine areas numerous records of slides have been made.

In October, 1881, a few miles above Ashcroft, B.C., about 150 acres of benchland, 2000 feet wide sank about 400 feet sliding laterally about

1000 feet, crossing the Thompson river and filling the valley to a depth of 160 feet. The river was so completely dammed that persons were able to cross dryshod below the dam. The river soon swept this away, causing heavy floods downstream.

At Spences Bridge, B.C., just below the town, on August 13th, 1905, an alluvial bluff slid into the river filling it to a depth of ten to fifteen feet, carrying away the Rancherie, an Indian village, killing twenty Indians, injuring thirteen others and causing considerable property damage.

On February 28th, 1903, a mass of rock broke away from a precipice on the northeast arm of Arrow lake, two miles from Arrowhead. It slid down a narrow draw into the lake forming a rock fan. The lake was frozen over at the time, and the debris broke through the ice forming waves 6 feet high which threw a tug up on the shore and drew it back three times. The rock mass had become unstable due to atmospheric agencies and the tremors of 1901. The heavy accumulation of snow during the preceding winter months may have caused its final disruption and the slide resulted. Several other slides have been noted in the same district.

Perhaps the most disastrous landslide in Canada was the one which occurred at Frank, Alta., on April 29th, 1903. This slide occasioned the loss of about seventy lives and immense property damage. The greater part of the town was wiped out, together with about 7000 feet of the Crows Nest railway.

Turtle mountain from which the slide fell has an altitude of 7204 feet, the town of Frank, 4200. The mountain consists of a base of shale interbedded with sandstones and coal seams, all standing nearly vertically. A steeply inclined thrust-fault plane, dipping into the mountain, separates these from an overlying series of strongly jointed limestones with two very intricately contorted zones near the base. The limestones dip steeply into the mountain, whose cliff face varies from 13 to 67 degrees with strong overhangs in many places. (View 8).

A huge mass, nearly half a mile square, of the upper part of the mountain, suddenly precipitated itself to the valley beneath, crossing the Crowsnest river at about an elevation of 4150 feet, and continuing its course across a terrace bordering the river, flowed up over a cliff to an elevation of 4550 feet at a distance of 1.8 miles from the crest of the mountain. It also spread laterally in a series of lobes, the greatest width being approximately 1 mile.

At the base of the terrace it was turned laterally, being diverted along the cliff face. The front of the slide farthest from the mountain presents the appearance of a huge congealed rock wave, with a very definite clearly marked edge. There are few isolated pieces of rock away from the edge. (View 9).

A remarkable ridge, parallel with the face of the slide, appears about halfway across the debris, and seems to represent the face of a second slide, which immediately followed the first, but did not travel so far. It is along the depression between this ridge and the main slide that it was possible to rebuild the railway, although the grade is very heavy.

The material of the debris consists of fragments of all sizes from extremely small ones to masses of 40 feet or more, the largest being a huge rock 70 feet long. The blocks are scattered about in numerous small ridges with intervening depressions, the whole simulating ground moraine topography. On most of the large blocks, there are small stones and tiny rock fragments balanced precariously as if placed there by hand. (View 10).

On the western side of the slide, there is a series of peculiar conical rock heaps, some of those examined containing a huge boulder as nucleus. These cones are from one foot to several feet in height. (View 11).

The immediate causes of the slide were:—

1. The unstable base of the mountain with its thrust plane and contorted incompetent zones.
2. The strongly jointed condition of the limestones.
3. Internal stresses inherent from the original thrusting and folding.
4. Jars caused by the 1901 earthquake and from mining operations at the base of the mountain.
5. The weakening of the base of the mountain by the removal of the coal.
6. Intense atmospheric agencies operating on the summits; rapid contraction and expansion of the rocks and the prying action due to freezing of water in the joint planes. While surveying the slide area in 1912 it was noticeable every day, that soon after the morning sun struck the face of the mountain small slides were precipitated from the summit of the mountain.

The above causes all had a cumulative effect, until equilibrium was overcome and the unstable mass precipitated itself valleyward.

There are numerous slides similar to the Frank one but less disastrous in nature, in many places in the front ranges of the Canadian Rockies. Rock streams and rock glaciers are common

features at the base of many cliffs and in abandoned glacial cirques.

Landslips of small extent, but numerous are met with along the banks of the streams crossing the Foothills of Alberta. The streams are all deeply entrenched through glacial and fluvial material into the solid rock below. The overburden of unconsolidated material is constantly faulting down where streams issue at the contact with the underlying rock.

On the Ghost river, a few miles above its mouth, in the spring of 1927, a slide partly dammed the frozen river. The great rush of water, when finally released, roared down the river carrying ice before it and scoring the sides of the canyon in several places.

Many other slides might be described, but those mentioned suffice to illustrate their common characteristics. A bibliography which includes most of the important Canadian occurrences is listed below.

The main fundamental causes of landslides are as follows:—

1. Undermining of the banks of youthful rivers by lateral erosion.
2. Oversteeping of mountain slopes.
3. The incompetence of some underlying beds, and jointed areas.
4. Lubrication of silty layers in clay beds or along the rock contacts allowing the superincumbent beds to slide out.
5. The effect of weathering agencies such as frost, rain, etc.
6. Accumulated stresses inherent in folded and faulted areas.
7. Earthquakes.
8. Artificial conditions such as mining, etc.

The most important, and perhaps final cause of all landslides is possibly the weakening of the rocks by ground waters and atmospheric agencies. These are continuously operating, and conditions for slides only require some excessive amount of groundwater or some slight tremor to start the movement of the unstable mass.

From a study of slides, especially of those in areas where mining operations or engineering works are being established or in the clay belt where dams, bridges or power houses are being constructed, a careful examination of the conditions and general topography of the vicinity should precede any such undertaking.

Interlaminated silts and clay provide favourable conditions for slides. Clays or gravels, or smooth bed rock contact are particularly treacherous; unusual precipitation should be watched; the effect of earth tremors should be noted; in fact geological and metereological knowledge should be taken into consideration in any large engineering projects in areas where these are to be undertaken.

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VIEW 1.

VIEW 2.

View 1 shows the preglacial channel of the Blanche river excavated in granite-gneiss. This channel was filled with glacial varved clays which slid out causing the slide of April, 1927.

View 2 taken from the same point, looking upstream shows the position of the present falls located on bed rock 1000 feet upstream from the position of the old falls.

VIEW 3.

VIEW 4.

View 3, looking downstream shows the debris of varved clay piled on the side of the pre-glacial channel. The horizontal line shows the pre-slide river level. Near the arrow was a cribwork for diverting logs into the main channel of the river.

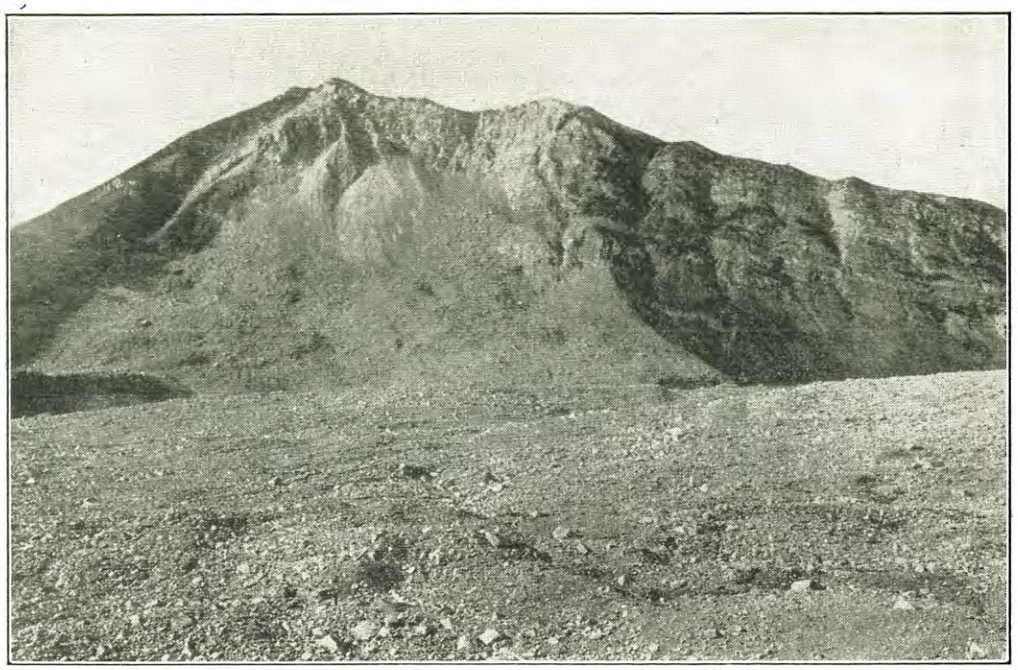
View 4 shows the laminated clays that formed the bed of the river. They are much distorted in place due to movement during the slide or to gentle long continued movement preceding the actual slide To the right is an old channel in the clays now filled wtih silt and logs.

VIEW 5.

VIEW 6.

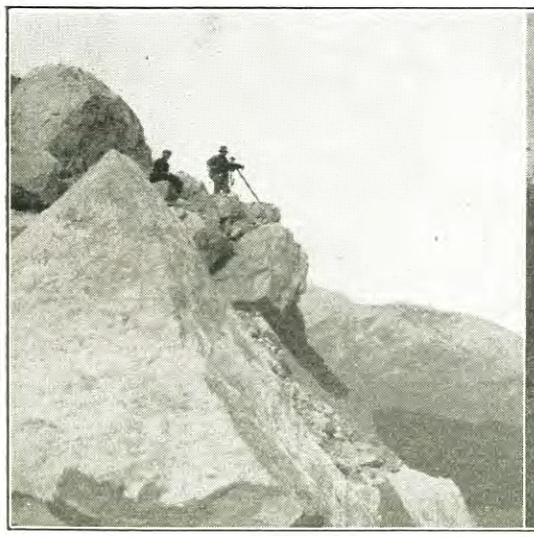
View 5 looking upstream at the Wawbewawa slide shows the varved clay debris on the bed of the old stream. To the right are banks of clay, 60 to 80 feet high, that are in immediate danger of sliding as the stream is undercutting on the banks at a sharp bend in the stream.

View 6 shows a landslide on the Blanche river about 3 miles east of Englehart where a bridge and several hundred feet of road were destroyed.



VIEW 7.

View 7—View of landslide scar and debris at Turtle mountain, Frank, Alta. Turtle mountain elevation is 7202 feet, the base of the mountain about 4150.



VIEW 8.

View 8 shows the angle of slope of the face of Turtle mountain, and some of the boulders perched on the slope. The rocks where the plane table is shown dropped to the valley below, a few days after the view was taken.

VIEW 9.

View 9 shows a large boulder at the edge ofthe slide.

CONTRIBUTION TO THE KNOWLEDGE OF THE AVIFAUNA OF NORTH-EASTERN LABRADOR

By BERNHARD HANTZSCH

"Beitrag zur Kenntnis der Vogelwelt des nordöstlichsten-Labradors," von Bernhard Hantzsch, *Journal für Ornithologie*, Sechsündfünfzigster Jahrgang (56th annual publication), No. 2, April, 1908, and No. 3, July, 1908. Leipzig. I. Allgemeiner Teil (General Part), pages 175-202. II. Besonderer Teil (Detailed Part), pages 307-392.

(Translated from the original German text in the Emma Shearer Wood Library of Ornithology, Library of McGil University, Montreal, by M. B. A. Anderson, M.A., and R. M. Anderson, Ph.D., Ottawa, 1927.

(*Continued from page 207*)

Branta bernicla glaucogaster (Brehm)[40] [p. 349]. *Ringel-gans.*—BRANT.

Not rare migrant, often in considerable flocks. At Killinek, I observed five individuals, apparently (p. 350) old and young, on 16th September, as well as two old individuals with white under parts on 24th September. To be sure, this shy bird, which generally keeps at considerable distance from shore, is not frequently killed. Kumlien did not observe the species, perhaps by chance, in Cumberland Sound district, although Crawford Noble, Jr., collected it there and a specimen is in the Marischal College Museum in Aberdeen (*in litt.*). Payne met it in Prince of Wales Sound, Hudson Strait, at the beginning of September, 1885, in company with Hutchins Geese and Snow Geese (Macoun, I, p. 120). Bigelow secured a specimen killed at Nain, northeastern Labrador, in October, 1899 (1902, p. 28).

NOTE: It is to be assumed that species of the Family Anatidæ other than those mentioned, occasionally appear in our district, which has been so little explored, for example, *Chaulelasmus streperus* [Bald-pate], *Querquedula discors* [Blue-winged Teal], *Mareca penelope* [European Widgeon], *Charitonetta albeola* [Bufflehead], *Erismatura jamaicensis* [Ruddy Duck], etc., as also *Olor* [*Cygnus*] *columbianus* [Whistling Swan] and *Branta leu opsis* [Barnacle Goose], of which latter species Moeschler offered for sale a specimen from northeastern Labrador in his catalogue of Jan. 3, 1871.

Crymophilus fulicarius (L.) [41] [p. 350]. *Breilschnäbliger Wassertreter.*—RED PHALAROPE.

Eskimo : *Savgak, -gâk, -gat* (partim), with the people of the southeast of Ungava Bay as well as in Greenland, *Kajok, -jûk, jut* (=the red one).

Rather frequent migrant, especially in the springtime, according to the statements of the inhabitants. I observed different individuals only at the end of July, and the beginning of August, on open places between the ice-cakes; later I did not see any. Turner says that on migration the birds appeared in great numbers on the coasts of Hudson Strait, even if only a few bred there (1886, p. 284). In the most south-eastern portion of Baffin Island, very near our district, according to Kumlien's investigations, they are said to appear very frequently and also apparently to breed in places in great numbers (1879, p. 86). In our region the birds would not settle down in large numbers on account of the steep, rocky coasts. The fact of their breeding now and then may be accepted with certainty.

One skin in my collection from Rama, female adult, apparently breeding bird of June, 1902, shows the following measurements: Wing: 134 mm. Tail: 79. Bill: 22.5. Tarsi: 20. Middle toe including the 2 mm. long claw: 21 mm.

These graceful, light-moving phalaropes are well-known to the inhabitants. When the birds swim about confidingly, with nodding heads, they are scarcely to be confused with any other species. On the other hand, when they hurry through the air in hasty flight and at the same time utter their short *Git, Sit, Zit* calls, it is not so easy to distinguish them from their (p. 351) smaller relatives. In summer plumage the red-brown under parts of course make them distinguishable. As a rule the natives do not shoot these little sandpiper species; they would have to meet a very closely-sitting flock or else have bagged no other game.

Phalaropus lobatus (L.)[42] [p. 351]. *Schmalschnäbliger Wassertreter.*—NORTHERN PHALAROPE.

Eskimo: *Savgak, -gâk, -gat* (partim); with the people of the southeast of Ungava Bay, *Aivigiak* (*Aiveriak*), *-ak, -at* (etymology of both names not clear.)[43]

A not very abundant migrant, rarer than *Crymophilus*; according to report of the natives almost always observed only in spring. I merely saw a single individual once myself on 22nd July rather far from the coast. Our district seems to be too rocky for this bird. Yet it is said to resort to localities suitable for breeding

[40] *B. b. glaucogastra* (Brehm) of A. O. U. Check-List, 1910.—R.M.A.

[41] *Phalaropus fulicarius* (Linnaeus) of A.O.U. Check-List, 1910.—R.M.A.

[42] *Lobipes lobatus* (Linnaeus) of A.O.U. Check-List, 1910.—R.M.A.

[43] The latter name is perhaps derived from *Aivik*—walrus. In the Western Arctic this species as well as the preceding species is often called "Bowhead Bird," on account of being commonly found on the whaling grounds after the breeding season of the birds.—R.M.A.

here and there, namely freshwater lakes surrounded by grass and on flat islands by the shore, in small numbers or in isolated pairs. Turner says the bird was common along the northern coast of Labrador. This perhaps applies more to the flatter districts west from the east coast. He also found them breeding on small islands in Ungava Bay (Macoun, I, p. 146). Kumlien calls them not rare, but still not nearly as common in Cumberland Sound district as the preceding.

A breeding pair in my collection from Rama, 1st July, 1907, male and female, show the following measurements: Wing: 106.5; 112.5 mm. Tail: 57, 52 (incomplete). Bill: 22; 23. Tarsi: 19.5; 20. Middle toe including the 2.8 and 2 mm. long claws respectively: 21 mm.

NOTE: *Gallinago gallinago delicata* (Ord)[44] [Wilson Snipe], Eskimo: *Otototojok*, from the voice, appears to fly exceptionally from the south of Ungava Bay to our district. Yet a confusion with a similar species is possible. According to Missionary Perrett, the bird breeds in northeastern Labrador regularly only southward from Hopedale.

Tringa canutus L.[45]. [p. 351]. *Islandischer Strandläufer.*—KNOT.

Eskimo: *Tâllik, -lîk, -lit* (partim); perhaps from the voice.

Apparently only a rare migrant. I observed on 22nd July a flock of 20-25 birds in summer plumage, which I recognized as this species by the colouring of the head and the dark bill. It is worthy of mention that the swarm flew from the land, directed their course toward our ship, flying rather close to it, and then flew away (p. 352) in a straight line toward Greenland. On 24th July and 1st August, I once more observed two birds each day on ice-cakes in Ungava Bay. Apparently it was here a case of non-breeding younger birds, or perhaps even birds disturbed in the affairs of breeding. Kumlien only once saw a small flock passing by on Cumberland Sound, in November, 1877 (1879, p. 87). My information from the natives makes it appear that this species seldom occurs to their knowledge.

Arquatella maritima maritima (Brünn). p.[352]. *Meeres-Strandläufer.*—PURPLE SANDPIPER.

Eskimo: *Tâllik, -lîk, -lit* (partim); probably after the voice, as v. Schubert's well-informed missionary also believed; it may not have any connection with *Tullik=Urinator imber* [Loon]).

Rather abundant visitor and migrant, but apparently breeding only in slight numbers on flat coastal islands and farther in the interior. As long as a strip of coast remains only a little open, this strongly-built bird remains in the country, and appears just as early in the spring again. Whether it occasionally spends the winter also, I could not ascertain, but this is in no way improbable.

5 males in my collection, collected in September at Killinek, show the following measurements: Weight in the flesh: 64-75 g. (7 females, at the very same place), 75-84 g. Total length: 206-215 (218-232) mm. Spread of wing: 380-400 (408-412). Wing: 115-124 (122-129). Tail: 64-69 (68-71). Bill: 28.5-30.5 (33-36). Tarsi: 22-23 (22.5-24). Middle toe including the 5 (4.5-6) mm. long claw: 25-27 (26-27) mm. The measurements depending on conditions of plumage are incomplete, because all the birds were far advanced in moulting. At the beginning of September the steering feathers of the tails were lacking, but the largest wing quills were present; from 17th September on, the tail had almost completely renewed itself, the first two wing quills, however, were lacking and the quills following these had not yet grown out to full length. The stronger females are especially distinguished in life from the weaker males by the larger bill. Colour of iris: dusky black-brown. Bill: anteriorly more or less extensive black, changing into yellowish or reddish-brown at the base; lower mandible often yellowish for the most part. Feet: pale dusky yellow-brown to vivid yellow-ochre; anterior side, especially ankles and toes, more or less washed with blackish-gray. 9 stomachs contained fragments of mussels and snail-shells (Balanidæ ? H.) in great numbers, some a felt-like, thread-like mass (Algæ ? R.), of mineral substances up to 0.34 g. of sand and small pebbles, of which the largest was 7.0×4.5×2.0 mm. (Rey.). Among the entrails of one specimen I found numerous flat-worms, which were examined by Veterinary Doctor Arnsdorff, through the kindly mediation of Prof. Dr. Braun, Director of the Zoological Museum in Königsberg, Prussia, and proved to be endoparasitic trematodes (p. 353) of the Family Monostomidæ, and indeed represent a new species, *Monostomum vicarium*. Many thanks also to the gentlemen mentioned from the ornithological side! Unfortunately, it is quite difficult to see collected objects which are taken by specialists for identification.

During the whole time of my stay near Killinek I kept under observation some small companies of the Purple Sandpiper, for the occurrence of which in Labrador, it is worthy of note that no certain proof exists since the time of Audubon (1833). Yet Kumlien mentions this species as common in Cumberland Sound (1879, p. 86), and the Marischal College Museum in Aberdeen has a skin collected there by Crawford Noble, Jr. (*in litt.*). The birds at Killinek generally

[44] *Gallinago delicata* (Ord) of A.O.U. Check-List, 1910. A. C. Bent in his "Life Histories of N. A. Shore Birds," Part I, 1927, p. 81, lists the American bird as *Capella gallinago delicata* (Ord), a subspecies of *C. g. gallinago* (L) European Snipe. -R.M.A.

[45] Robert Ridgway, Birds of North and Middle America, Bull. U.S. Nat. Mus., No. 50, 1919, p. 230, revives the genus *Canutus* Brehm, Vög. Deutschl., 1831, p. 653, making the name of this species *Canutus canutus* (Linn.). The 18th Supplement of A.O.U. Check-List, *The Auk*, Vol. XL, 1923, p. 516, gives the name of the species as *Calidris canutus* (Linnaeus).—R.M.A.

keep quietly on rocky coasts, where they find for food small snails, mussels, crabs, and the like, on the rubble stone overgrown with sea-weed (*Fucus*). In comparison with the other sandpipers, they appear to be always less active, often remaining for hours among the same broken rocks, and do not creep out at last until a person comes within a few metres from them. Even then they often do not fly away unless fired upon, and trip about half anxiously, half curiously, to vanish suddenly again behind the stones. Occasionally a whole band stays together, although at times one can scarcely see any of the creatures. In spite of their slight shyness, they are not always easy to shoot at a suitable distance and to find afterwards. Often they seemed to me quite boorishly awkward, indeed clumsy in contrast with the other sandpipers. In their gray, unobtrusive, plumage they showed something plebiean and commonplace. The far from graceful shape of the feet causes a certain helplessness in moving on the land. At other times, indeed, the confiding, mysterious, little creatures touched me by their innocence in thinking to deceive us human beings by playing at concealment or by merely standing still. One does not hear their fine *Ti, Tüt, Tulit*, (Tullik ?) particularly often at this season of the year. Not until later in the autumn did I hear birds which were engaged in going farther utter a loud, comparatively deep-rolling *Tüüü . . .* or *Trrr . . .* with penetrating *ü*, which suits the robust form of the bird better than the high warning cry. At this time another, wilder mood comes over our phlegmatically inclined creatures, making them restless and active, and brings their strength and quickness of flight into play. The Eskimos shoot and eat this bird only now and then, in spite of the fact that it possesses exceptionally tender flesh and in the fall is also quite fat for the most part.

Actodromas maculata (Vieill.)[46] [p.353]. *Gefleckter Strandläufer.*—PECTORAL SANDPIPER.

Eskimo: *Siksariarpâk, -pâk, -pait* (*-pak*=a large one, that is to say, a large *Siksariak* [White-rumped Sandpiper].

According to report of the Eskimos, not a rare migrant on the coasts and in the interior. Macoun calls the species common along the whole Atlantic coast southward from Cape Chidley, which belongs to our district (I, p. 159). Kumlien, on the other hand, does not mention it for Cumberland Sound. I met only once a flock of six individuals myself, namely on 30th August, near Killinek and killed them. On the same day little flocks were observed at other places and some specimens shot from them.

8 skins of these in my collection, 7 females and 3 males, all young birds of the same year, not fully moulted, show the following measurements: Weight in the flesh: 45-55 g. (male 66 g.). Total length: 199-212 mm. (222). Spread of wing: 119-128 (134). Tail: 56-61.5 (62). Tail+wing: 2-4. Bill: 25.2-28 (28.5). Tarsi: 25-26.5 (27). Middle toe including the 5 mm. long claw: 25-26 mm. The male is also considerably stouter built than the female. Iris: dark gray-brown. Bill: on the distal half blackish; upper mandible at the base, dark red-brown; lower mandible, yellow-brown. Feet: anterior sides, greenish gray-yellow; posterior sides, and soles, yellowish.

4 stomachs showed the following contents: fine shreds of plants, apparently algæ, in one a seed grain; of mineral substances, 0.05—0.35 g. sand and small pebbles, of which the largest measured 3.1×2.0×1.0 mm. (Rey).

The birds observed by me stayed at the time of the ebb-tide on a mossy and grassy flat in the inner part of a deep inlet of the sea, where a brook emptied. They were not at all shy. When two were shot, the others only flew frightened here and there over the place, at which time they uttered a short *Pschütt, pscht*, (much deeper than the high *Sit* of *A. fuscicollis*). They soon settled down in the grass again, tripped about excitedly with quick steps, in order to then flatten down suddenly on the ground. The other flocks were observed far from the sea on grassy banks of ponds.

Actodromas fuscicollis (Vieill.)[47] [p. 354]. *Bonaparte's Strandläufer.*—WHITE-RUMPED SANDPIPER.

Eskimo: *Siksariak, -ak, -at* (=sandpiper, from *siksak*=strand, and *-riak*=one, who walks; is used also of other related species.)

Most abundant sandpiper species on the coasts on the migration, rarer on edges of ponds in the interior; is said to occur much more rarely in spring than in the fall. Payne, Spreadborough, and Turner also found them in large numbers on the south coasts of Hudson Strait and Ungava Bay (Macoun, I, p. 160). Kumlien found them in Cumberland Sound; he believed that the birds breed there (1879, p. 86). Whether they do this in our district also is questionable; to begin with, nothing is known about it. (p. 355).

In the case of 32 skins of my collection, prepared by myself, namely, 4 male adults, 14 female adults, 6 male juveniles, and 8 female juveniles, from the period of 16th August to 29th September 1906, as well as some other birds examined in the flesh, the sexes and different ages show no characteristic differences in respect to their measure-

[46] *Pisobia maculata* (Vieillot) of A.O.U. Check-List, 1910. —R.M.A.

[47] *Pisobia fuscicollis* (Vieillot) of A.O.U. Check-List, 1910. -R.M.A.

ment: Weight in the flesh in the adult: 36-49.5 g.; in juveniles, 28.6-39.6 g. Total length: 171-188 mm. Spread of wing: 365-338. Wings: 114-125. Tail: 50-63. The tail usually exceeds the wing by some millimeters (measured up to 31 mm.), but many times recedes behind this as much as 10 mm. Bill: 22-25.5. Tarsi: 21-25. Middle toe including the 4-5 mm. long claw: 21-24 mm.

Iris: dark brown-black. Bill: dark brown-black, lower mandible at the base a little dark yellow- or reddish-brown. Feet: dull olive-blackish, greenish, reddish-gray, or blackish-brown. Tarsi: the lightest, toes and joints almost black; in juveniles, somewhat paler, dusky olive-brownish.

38 stomachs showed the following contents: In 34 cases small black pebbles and in some instances grains of quartz, pieces of feldspar, or sand; in one case fragments of mussels; in 4 cases more or less ground-up remains of beetles; in 1 case other insect remains; in 7 cases remains of fishes (scales, muscles); in 13 cases small black parts of snails; in 15 cases remains of small crustaceans (once of the family Gammaridæ) (Rörig).

3 specimens of bird-lice (Mallophaga) which were parasites on the skin proved to be 2 females corresponding to *Colpocephalum uniforme* Kellogg, as well as 1 female approaching *Nirmus fissus* Nitzsch, yet showing a certain similarity to *N. holophæus* Nitzsch (T. Müller).[48]

On 16th August, I observed the first small flocks of birds in the inner part of a bay. From that time until the end of the month such flocks were seen on all the larger excursions on the beach, and proved to be old birds. Their contour plumage was already moulting more or less into the winter plumage. It was a striking fact that I met old males only on 17th August, and a small flock apparently consisting only of the same, on 19th of this month, never again later. The sexes seem to like to travel separately, and the males start the fall migration, while the females which have brought up young remain behind with these a little longer in the breeding district. (p. 356). With the single exception of a single August specimen on the 24th of the month, I did not find young birds until 4th September and later. They were still accompanied by some old females; later, however, they seemed to travel alone. Among the 18 preparations of adult birds of my collection from the month of September, there is only one specimen of the 10th; among the 14 young, on the other hand, outside of one of 24th August, these were only taken in September, the last on 29th of the month. With the most of these young birds, the bright red-brown back-colouring, prettily edged with white, was still showing; the gray winter dress was just beginning to show up sparingly with a number of them. I observed the last bird of this species on 2nd November at Hopedale.

The migration proceeds quite gradually, at least in such a beautiful autumn as 1906. The birds do not hurry with their advance and often remain for days in the same places. At high tide they like to ramble about, at low tide they hunt up the stretches of the shore. They prefer slimy flats, which are broken by little hummocks and streaks of water, the inner part of bays, as well as sandy beaches and flat strips of coast overgrown with seaweed on its stony and barren shores; but in a violent wind, like to seek shelter behind the heavy rock boulders on the beach. With the beginning of darkness, they fly very quickly around to their special sleeping places, though from the tent during the hours of the night I heard them hasten through the air, calling. I surprised the birds at their sleeping places several times. These were places where hardy grass grew among slimy, sandy flats and hummocks near the shore. When, towards evening it grew too dark for the work of preparing specimens in the tent, I liked to take my gun on my back and wander about a bit in the gathering twilight, while my Eskimo friend prepared the supper and the tea at the smoking fire. When he had everything ready and the tent arranged for the night, he called me back with a loud blast from a signal horn.

On such quiet, evening walks after the day's work was done, the exquisite peace and the sublime solitude of the landscape impressed me with fairy-like magic. Every little manifestation of life charmed one into attention. How enchanting it was then, when suddenly among the water pools near the beach, clearly mirroring the sky, one of the little birds drowsily tripped forth, bent down, ruffling up the plumage, shook itself, then stood still, gazed at me with surprise but scarcely with anxiety, and finally vanished among the plants. Many mysterious dialogues have I held with such a little creature and then made a wide detour in order not to disturb it in its rest.

Only in such sleeping places did I meet this sandpiper alone, otherwise always in closely-knit companies of (p. 357) 4 to 20 individuals. The birds run about on the sea-shore not very shyly for the most part, on stony terrain flying some

[48] Dr. T. Müller, head teacher of Ebbing, West Prussia, had the kindness to examine most carefully the parasitic insects which I collected, and to identify them as far as the material allowed. There were 9 species of Mallophaga on 5 hosts. I also give him my best thanks once more for his trouble. When I was collecting on the bird mountains in Iceland in 1903, I was at times astonished at the numbers of Mallophaga and mites which many birds harboured, but at that time I had not arranged for their preparation, as I did at this time. I was so much more disappointed, to find some small creatures on only five bird species in spite of careful search. After the breeding season of the birds and as soon as the weather becomes cooler in late summer, most of the parasitic insects seem to die off.

meters, scatter a little, but always call each other together again with the oft-repeated *Sit, Sitit, Zit, Pit, Pitepit.*

On longer flights this high, short call sounds somewhat sharp. It can be imitated rather easily with the mouth. I repeatedly lured some individuals to me in this way, so that after long, irresolute flying about, they settled down on the banks of ponds away from the beach. In such places they are met with only as an exception, even if the flocks not rarely are seen flying rather high across the country to go from one part of the sea to another. They almost always fly very low across the water. Their flight is quick, active, and graceful. On the whole, these little birds appear charming in every respect.

The Eskimos kill them at times for purposes of food, especially when many are sitting close together. If the hunter keeps quiet then, the unwounded members of the flock which has been shot at, do not usually leave the spot, but fly about here and there calling excitedly, and return to the wounded companions. But towards the birds of prey they are said to behave very warily. When wounded on the wing, they often swim for a short distance, but soon seek the land again.

Limonites minutilla (Vieill.).[48] [p. 357]. *Kleiner amerikanischer Strandläufer.*—LEAST SANDPIPER.

Eskimo: *Sullaijok, -jûk, -jut* (partim; according to v. Schubert from *sullinek* = busy, thus, "the busy one," because always running about hunting food.

Apparently not particularly common migrant in our district, which may be too rocky and barren for this bird, at least in its northern part. Whether single pairs breed in favourable places has not been established up to the present. Farther in the south they may breed more frequently. Turner found the species at the mouth of the Koksoak, Ungava Bay, apparently breeding (1886, p. 247), and Macoun asserts this for the whole of eastern and northern Labrador (I, p. 162). Bigelow, indeed, says the bird breeds commonly along the eastern Labrador coast (1902, p. 28), but this informant calls all birds "common" that are not quite rare. One has to look quite sceptically upon all the records about eggs of this species, especially in respect to some confusion with *Ereunetes pussillus.* I collected no bird of this species, and Kumlien also mentions it only briefly as observed in September, 1877, in Cumberland Sound (1879, p. 86).

[48] *Pisobia minutilla* (Vieillot) of A.O.U. Check-List, 1910 —R.M.A.

Ereunetes pusillus pusillus (L.) [p. 357]. *Ostlicher amerikanischer Zwerg-Strandläufer.*—SEMIPALMATED SANDPIPER.

Eskimo: *Sullaijok* (*Sullajok*), *-jûk, -jut* (partim). [p. 358].

Not rare migrant, and according to all appearances a breeding bird now and then in our district. Different collections claim to possess eggs of the species from Labrador. However, confusions, especially with *Limonites minutilla,* are not precluded here. Turner believes that this species breeds in the district at the mouth of the Koksoak, in Ungava Bay, even if it was only rarely met with in that place (1886, p. 247) Bigelow claims to have found the downy young of the bird on Seal Island on the east coast of Labrador (1902, p. 28)[49].

I secured three young birds myself, just moulted, all males, on 18th August, 7th September, and 10th September, in different localities on Ungava Bay and on the Atlantic coast.

The measurements are as follows: Weight in the flesh: 25-34 g. (latter bird very fat). Total length: 144-157 mm. Spread of wing: 290-309. Wing: 90-96. Tail: 40-43. Tail+wing: 2-6. Bill: 19.5-22. Tarsi: 21.5-22. Middle toe including the 3 mm. long claw: 18-20 mm. Iris: dark brown. Bill: black, smooth; much narrower than in old birds. Feet: dusky olive-greenish, tarsi the brightest. The stomachs in each case contained fine sand, little pebbles, whitish powder of indefinite origin, small black snails (Rörig).

All three times I met three birds together, and suspect that they were siblings (*Geschwister*)[50], which at least in the first case had been hatched at no very great distance. That the old birds desert the young which have become independent, and fly away ahead of them, one notes indeed in different species of sandpipers. These exceedingly graceful, light-footed and light-

[49] According to the notes most kindly made for me by Dr. O. Ottosson, the eminent oölogist, in Strömsholm, Sweden, certain eggs in one clutch each of *Ereunetes pusillus pusillus* and *Limonites minutilla* of his collection show quite a different type. The first resemble large eggs of *Limonites minuta* (Leisl.) or small ones of *Pelidna alpina* (L.), the latter resemble large eggs of *Limonites temmincki* (Leisl.).

E. pusillus: Ground-colour gray-yellowish, with superficial leather-brown and deeper ash-gray to gray-violet spots; shape elongated, beautifully pear-shaped; luster rather strong; spiral marking very distinct.

L. minutilla: Ground-colour light-gray sand-colour, with superficial red-brown and deeper ash-gray and violet spots; shape compact scarcely or not at all pear-shaped; luster very faint; no spiral marking.

The alleged genuine eggs likewise of both species in the Royal Zoological Museum in Dresden do not indeed show clearly the differences mentioned. Authentic material is very difficult to secure and perhaps is present in very few collections.

[50] "Sibling," a new word coined by American anthropologists and coming into general use in their literature, seems to be equally needed by zoologists. It is equivalent to the German word "Geschwister," and combines the meanings of both "brother" and "sister"; that is to say, it denotes common parentage without making any distinction in regard to sex. In this case, it means birds of the same brood.—R.M.A.

winged birds kept themselves concealed on moor-like, grass-bordered water surfaces near the shore and were not shy (p. 359). After a shot, however, the unwounded birds flew away without returning. Their short twittering *Bib, Bibib*, was heard at the same time.

Calidris arenaria (L.)[51]. [p. 359].—*Sanderling.*—SANDERLING.

Rather rare migrant in our district, entirely unknown to the natives in spite of its characteristic colouring and lack of shyness. I met only one single adult female, on 19th August, on the rocky shore in northeast of Ungava Bay, and killed it. Bigelow also calls the species rather rare in northeastern Labrador (1902, p. 28). According to Turner's record, two were collected at the mouth of the Koksoak (1886, p. 247). Missionary Perrett, to his knowledge, never had the bird in his possession at all. Kumlien saw a small flock only once, in September, 1877, in Cumberland Sound, without being able to collect a specimen from it (1879, p. 87).

The bird mentioned in my collection shows the following measurements: Weight in the flesh: 62 g. Total length: 193 mm. Spread of wing: 390. Wing: 126. Tail: 62. Tail=wing [*i.e.*, tip of wing comes to tip of tail]. Bill: 26. Tarsi: 25. Middle toe including the 3 mm. long claw: 18 mm. Iris: dull brown-black. Bill: dark-brown-black. Feet: very dusky olive-green, toes darkest. The stomach contained the remains of small crustaceans (Rörig).

Totanus melanoleucus (Gm.) [p. 359]. *Grosser Gelbschenkel.*—GREATER YELLOW-LEGS.

Eskimo: *Nioluk, -lûk, -luit* (=the large-boned one), also *Kanaige, -gik, -git* (from *kannâk*=leg or *kannâk*=tent pole, on account of the long legs.

Not common migrant, and not observed at all by me. But Missionary Perrett knows it very well and for the districts farther south notes it as common in many years. Macoun, too, also on the basis of his data, not always authentic to be sure, calls it a common bird on the spring and fall migrations along the whole Atlantic coast (I, p. 171). Bigelow met a few individuals in September, 1900, at Port Manvers (1902, p. 29). Turner calls the species not common in the Ungava district; he collected some fall birds at the mouth of the Koksoak (1886, p. 247). Kumlien secured a single specimen on 14th September 1877, in Cumberland Sound (1879, p. 88).

Tryngites subruficollis (Vieill.). [p. 359]. *Kurzschnäbliger Uferläufer.*—BUFF-BREASTED SANDPIPER.

[51] *Calidris leucophaea* (Pallas) in A.O.U. Check-List, 1910, but later changed to *Crocethia alba* (Pallas) in 17th Supplement to Check-List, 1920.—R.M.A.

Robert Bell claims to have secured this species in one specimen on 28th September, 1884, at Killinek (Port Burwell), and Townsend and Allen acknowledge this occurrence as correct (p. 360), apparently according to information about it from J. Macoun, and also the record of Coues, that on 20th August, 1860, a specimen of the species was collected at Henley Harbour (1907, p. 352). The identity of the Bell skin does not seem to be quite without objection, since unfortunately in the same work there are also mistakes in identification in the case of the alleged occurrence of *Puffinus tenuirostris, Olor buccinator*, and *Heteractitis incanus*, as Townsend and Allen explain (*l. c.*). The species is more western American, and in the northeast of the continent not known with certainty farther than up to Repulse Bay (Cat. Birds Brit. Mus., XXIV 1896, p. 624). After all, an occasional occurrence in our district of these agile-winged birds, which have so often been collected in England, is not very wonderful.

Tringoides macularius (L.)[52]. [p. 360]. *Drossel-Uferläufer.*—SPOTTED SANDPIPER.

Eskimo: *Sullaijok, -jûk, -jut (partim)*, also *Aivigiak, -giûk, -giut* (etymology not clear); the names for the smaller species of sandpipers are often applied without certainty and interchangeably.

Occasional visitor of our district, but apparently no longer a breeding bird there, or at the most very sporadically in the more favourable southern parts. No specimen came into my sight. In the rest of Labrador it is said to breed more or less commonly, northward as far as southern Ungava Bay (Macoun, I, p. 180). On the other hand, Kumlien does not even mention the species for Baffin Island.

Numenius hudsonicus Lath. [p. 360]. *Hudsonischer Brachvogel.*—HUDSONIAN CURLEW.

Eskim: *Akpingek, -ik, -it (partim)*; according to G. H. von Schubert's informant, because the birds like to eat the fruits of the Polar blackberry (*Rubus arcticus* L., and probably also *Rubus Chamæmorus* L.), the Eskimo *akpik*, a thing which is quite credbile.

Not common migrant in the late summer, but is said to appear annually in small flocks, and often also in rather large flocks; it is not determined, indeed, whether it is always a case of the species or of the following species. Chapman maintains, to be sure, that *Numenius hudsonicus* appears far more abundantly than the following species on the Atlantic coast (1906, p. 170), yet I have not found positive records of its occurrence

[52] *Actitis macularia* (Linnaeus) of A.O.U. Check-List, 1910.—R.M.A.

in districts which are neighbours of ours. Turner says, to be sure, that he saw three specimens at the mouth of the Koksoak in September, 1882 (1886, p. 248), and Weiz mentions the species also for northeastern Labrador (G. Neumeyer, Intern. Polarforschung I, 1891, Appendix, p. 100). Others follow them in the determination; authenticating specimens nevertheless do not appear to have been in hand. (p. 361).

From the end of August to 18th September curlews were observed repeatedly at Killinek, but not one of the very shy, restless creatures, which are hard to recognize on the ground, was taken. According to exact descriptions of specimens collected there earlier by Mr. J. Lane, I considered the birds as belonging mostly to the above species. This view was strengthened, when towards evening on 30th August, I heard the long-drawn-out, trilling *Bibibibübü* of curlews, which reminded me instantly of *Numenius phæopus* [Whimbrel]. My two Eskimo companions also knew the voice as that of the *Akpingek*, without separating the two species, to be sure. At different times we heard the tones which came from the mountainous interior; our search, however, remained without success. G. H. Mackay states in his detailed biological descriptions of *Numenius borealis*, that he has never heard other notes than short ones, cries very similar to the voice of *Sterna hirundo* (*Auk*, IX, 1892, pp. 16-21). The trilling of *Numenius hudsonicus* is known, however.

Numenius borealis (Forst.). [p. 361]. *Eskimo-Brachvogel.*—ESKIMO CURLEW.

Eskimo: *Akpingek, -ik, -it (partim)*.

This curlew is mentioned by different authors as migrant in districts which are neighbours to ours. Yet because of the lack of skin-material the species has not always been determined with certainty. Chapman writes, that *N. borealis* visits the interior of the country more frequently than the Atlantic coast (1906, p. 171). Other informants refer their observations on curlews, not always unobjectionable, to this species. Turner observed large flocks over the mouth of the Koksoak in Ungava Bay; Spreadborough, on the other hand, saw no specimen on his ornithological journey to that place nor in the rest of Labrador in July, 1896 (Macoun, I, p. 183). Bigelow states that in former times the species appeared in great numbers on the Labrador coast, but at the present time appears only in exceedingly small numbers . In the fall of 1900 he saw only five specimens on the coast himself and did not hear of any others (1902, p. 29). Others also try to show, that the curlews migrating through Labrador are diminishing in numbers considerably and constantly. Townsend and Allen carefully compile the references about this (1907, p. 354 f.). On the other hand, the apparently well-informed Labrador informant of G. H. von Schubert writes explicitly: "They come as migrating birds in autumn, yet they are not seen in all years" (*Gelehrte Anzeigen, Bull. bayer. Akad. Wiss.*, 1844, p. 427). The reasons for an actual diminishing in numbers are just as unknown to us as the reasons for the extinction of the Labrador Duck, *Camptolaimus labradorius* (Gm.). In this case it is perhaps (p. 362) only a matter of changes in migration. Or should years of completely unfavourable weather have so thinned the number of the birds? Kumlien calls *N. borealis* a species well known to the Eskimos of Cumberland Sound, but himself saw only a small flock that passed Kingua Fiord northward in June, 1878; one specimen from it was killed (1879, p. 88). In Greenland both species have occurred (H. Winge, Grönlands Fugle, 1898, p. 159).

(*To be continued.*)

ERATUM—In article on Mammal Fluctuations, *Canadian Field Naturalist*, xlii, 8, Nov. 1928, p. 190, for "produced 33 families of young," read "13 families."—R. M. ANDERSON.

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