

Watkins, L. W.

1900. Michigan Birds that Nest in Open Meadows. First Report of Mich. Acad. of Sci., pp. 66-75.

Whitford, H. N.

1901. The Genetic Development of the Forests of Northern Michigan; A Study in Physiographic Ecology. Bot. Gaz., 31, pp. 289-325.
1905. The Forests of the Flathead Valley, Montana. Bot. Gaz., 39, pp. 276-296.

Young, R. T.

1907. The Forest Formations of Boulder County, Colorado. Bot. Gaz., 44, pp. 321-352.

THE BIRD COLONIES OF THE OLYMPIADES.

BY WILLIAM LEON DAWSON.

THE recent creation by executive order of three reserves among the islands which lie off the west coast of Washington has served to call attention for the first time, in an ornithological way at least, to this hitherto little-known coast. The reasons for previous neglect are not far to seek. No really safe harbors offer, for even the smallest craft, between the mouth of Gray's Harbor, Lat. $46^{\circ} 56'$ N., and the Straits of Juan de Fuca, Lat. $48^{\circ} 24'$ N. The prevailing winds are westerly, and the aspect of the coast so menacing, as viewed from the seaward side, that mariners have always given it a wide berth, save when seized by some hapless mischance of reckoning or tackle.

No commercial exploitation of the tributary country has been attempted, beyond the preëmpting of timber lands some twenty years ago, and the occupation by hardy settlers of a few small prairies and rich alluvial bottoms. Only recently a spur of the Northern Pacific Railway has been built from Hoquiam, on Gray's Harbor, to Moclips, on the coast; and this latter point marks nearly the northern extension of a splendid sea-beach, hard as macadam, which stretches south, practically to the Columbia River. To the north of Moclips the beginning of the rough way is marked by Point Grenville, and the ocean drive becomes a tradition.

The ruggedness of the succeeding stretch is occasioned apparently by a great fault, or crack in the earth's crust, running roughly north and south. The sea-floor has been dropped to westward leaving the exposed edges of the strata on shore to the mercy of the waves. In some places the tough strata, chiefly sandstone and conglomerates, presumably Miocene, were bent sharply before breaking; so that now, in the form of detached islets and promontories, they stand on edge, balancing in the most precarious and fantastic forms. One such rock, off Toleak Point, rises to a height of one hundred feet, with a thickness of only twenty at the tide line,—so thin, indeed, that the sea has worn a keyhole near the bottom and the air another near the top. Moreover, the shore-line is complicated by transverse folds of rocks, the precursors of the Olympic Mountains to the eastward; and these are usually marked offshore by a chain of islets in descending series, the outermost member of the series being the most denuded, and the innermost being mere detached fragments of the mainland with forest crowns intact. It is thus that the more than one hundred and thirty islets which rise above the spray-line, are grouped into nine principal systems, roughly corresponding to the chief promontories.

The coast-line of this hundred mile stretch is further interrupted by several rivers, none of them long streams, but each of considerable volume because of the extraordinary rainfall which characterizes this section. The precipitation at La Push was 155 inches for the year 1905, and 100 inches for the last five months of 1906. It goes without saying that "saturated" plumages may be found here in their perfection. There is a corresponding density of vegetation, especially along the crest of the sea-wall, where the jungle of salal and dwarf salmon-berry is nourished by ten months of rain and mist and two of fog, and where the rough trail which is resorted to at high tide resembles a tunnel rather than a footpath. A luxuriant growth of evergreen timber, chiefly tideland spruce and giant cedar, covers the entire western slope of the Olympic peninsula; but along the immediate shore-line it often presents a stunted appearance, due either to salty spray or wind, or both. Those islands which are totally devoid of trees may, nevertheless, be crowned with an almost impenetrable growth of mingled salal

and salmon-berry; or, failing that, may support a heavy crop of saw-grass centrally, and wire-grass upon the slopes.

Because of their proximity, considered as a whole, to the Olympic Mountains, and because they are in a sense a by-product of the same orogenetic movement, I have proposed for these western islands the name Olympiades (pronounced Olympiah'-deez). The name will be all the more convenient now that they are arbitrarily divided into three administrative groups, the Copalis Rock Reservation, the Quillayute Needles Reservation, and the Flattery Rocks Reservation.

In July, 1905, the writer, accompanied by wife and child, effected a reconnaissance of these islands, using for the purpose the staunch cedar canoe of the Northwest, manned by two Indian boatmen. We launched at Point Grenville on July 7 and arrived at Neah Bay on the 25th of that month. As the trip was purely ornithological, practically all the rocks, save Copalis at one extreme and Tatoosh at the other, were inspected, and landings were made upon twelve of them which bore the largest bird colonies. In each case the attempt was made to estimate the bird population as well as to ascertain the horizon of species. The results obtained were supplemented by an expedition in June, 1907, in which I had the pleasure of being accompanied by Professor Lynds Jones. On this latter occasion, starting from Neah Bay, we went as far south as Destruction Island, using as before the Indian canoe, and returned over the same course, June 4 to 24.

Among the sea-birds we found the breeding population of the Olympiades to comprise the following species:

- Tufted Puffin (*Lunda cirrhata*).
- Rhinoceros Auklet (*Cerorhinca monocerata*).
- Cassin Auklet (*Ptychoramphus aleuticus*).
- Pigeon Guillemot (*Cepphus columba*).
- California Murre (*Uria troile californica*).
- Glaucous-winged Gull (*Larus glaucescens*).
- Western Gull (*Larus occidentalis*).
- Kaeding Petrel (*Oceanodroma kaedingi*).
- White-crested Cormorant (*Phalacrocorax dilophus cincinnatus*).
- Brandt Cormorant (*Phalacrocorax penicillatus*).
- Baird Cormorant (*Phalacrocorax pelagicus resplendens*).
- Black Oystercatcher (*Hæmatopus bachmani*).

Of these twelve three, viz., *Cerorhinca monocerata*, *Ptychoramphus aleuticus*, and *Oceanodroma kaedingi*, were never seen by daylight save as unearthed from their nesting-burrows.

Baird Cormorants, the Gulls, and the Oystercatchers are by no means confined to the islands enumerated below, but are found upon all the lesser rocks as well as upon the more rugged parts of the mainland shore,—in short, wherever conditions are suitable. The Oystercatchers do not colonize in the strict sense, and are usually distributed at the rate of a pair to a rock, but the largest islands may boast from three to a dozen pairs of them. The Baird Cormorants have a single eye to the availability of a nesting spot, stipulating only that it shall be upon the side of a wall, and as nearly inaccessible as possible; but whether affording shelter for one pair or a hundred matters nothing.

The Western Gulls occupy exclusively the southern members of the Olympiades, and give way before Glaucous-wings from Destruction Island northward. A slender strain of the darker bird, however, reappears in the larger northern colonies of nesting *glaucescens*, and their apparent interbreeding with the latter is worthy of careful investigation. The Gulls, while preferably nesting in colonies, nevertheless overflow by pairs and dozens upon the smaller pinnacles, so that no exact account of their nesting places is possible.

The following species of non-breeding sea-birds appear to occur regularly along this coast in summer, and are listed in the order of their abundance, beginning with the most numerous:

- Marbled Murrelet (*Brachyramphus marmoratus*).
- Dark-bodied Shearwater (*Puffinus griseus*).
- White-winged Scoter (*Oidemia deglandi*).
- Surf Scoter (*Oidemia perspicillata*).
- Harlequin Duck (*Histrionicus histrionicus*).
- American Scoter (*Oidemia americana*).
- Holbæll Grebe (*Colymbus holbællii*).
- Western Grebe (*Aechmophorus occidentalis*).
- Loon (*Gavia imber*).

So late as the 5th of June Pacific Divers (*Gavia pacifica*) were found migrating northward in considerable numbers; as were also Northern Phalaropes (*Phalaropus lobatus*). A flock of Heermann

Gulls, sighted on Split Rock July 12, 1906, are believed to have been migrants *en route* to Puget Sound (more strictly Washington Sound, as the lower portion is called) via the Straits of Juan de Fuca.

As early as the 7th of July shore birds were returning, and we noted the following species in that month:

- Pectoral Sandpiper (*Actodromas maculata*), July 7.
- Western Sandpiper (*Ereunetes occidentalis*), July 7 ff.
- Knot (*Tringa canutus*), July 7.
- Black Turnstone (*Arenaria melanocephala*), July 12 ff.
- Wandering Tattler (*Heteractitis incanus*), July 13 and 16.
- Semipalmated Plover (*Equalitis semipalmata*), July 16 and 17.
- Yellowlegs (*Totanus flavipes*), July 16.
- Hudsonian Curlew (*Numenius hudsonicus*), July 16 and 25.
- Ruddy Turnstone (*Arenaria morinella*), July 17.
- Northern Phalarope (?) (*Phalaropus lobatus*), July 25.

It is not expected that the Censuses following will prove anything less than tedious to the casual reader; but it is believed that a concise record of the present bird population of the Olympiades will prove of value in the future in attempting to measure the effect of changed conditions. Inasmuch as some of the islands are here named for the first time, it has seemed wise to add a brief physical description of each, as well as to give its approximate location as determined by measurement of Coast and Geodetic Survey Chart No. 6400. Heights of islands are oftener guessed than otherwise, inasmuch as the Coast and Geodetic Survey chart figures are sometimes grossly inaccurate; *e. g.*, "Perkins Reef (110)" — it is not really more than 25 feet above tide; "Carroll Islet (126)" where (226) is evidently intended, etc.

"R" signifies breeding resident; and "V" visitor, whether migrant or from the mainland. Only adult birds are counted.

ERIN.

Loc.— Lat. 47° 18' N.; Long. 124° 16'; S. E. from Point Grenville; offshore 200 yds.

Area.— About 1½ acres.

Desc.— A rock, 125 feet high. Perpendicular half-walls except on north side, where climbable. Shaped like a curb roof on top, sloping W., N., and E. Earth-capped, with dense wire-grass.

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|---------------------------------|---------------------------|
| R. Tufted Puffin, 2000. | R. Baird Cormorant, 50. |
| R. California Murre, 20. | V. Pectoral Sandpiper, 6. |
| R. Kaeding Petrel, 10000-25000. | |

ERIN'S BRIDE.

Loc.— As last; offshore 275 yards.

Area.— About half-acre.

Desc.— Narrow rock 125 feet high with nearly perpendicular sides and unclimbable. Covered with fresh Cormorant guano.

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| R. Western Gull, 50. | R. Baird Cormorant, 100. |
| R. White-crested Cormorant, 100. | |

THE GRENVILLE ARCH.

Loc.— Lat. 47° 18' 20" N.; Long. 124° 17' W.; S. W. from Point Grenville; offshore half mile.

Area.— About 1 acre.

Desc.— Conical rough rock 100 feet high, sloping on S. and W., perpendicular on N. and E.; tunnelled through middle by large arch about 40 feet high.

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| R. Pigeon Guillemot, 10. | R. Brandt Cormorant, 100. |
| R. California Murre, 10. | R. Baird Cormorant, 100. |
| R. Western Gull, 50. | R. Black Oystercatcher, 1 pair. |
| R. White-crested Cormorant, 100. | |

THE GRENVILLE PILLAR.

Loc.— Just off Grenville Point.

Area.— About quarter acre.

Desc.— Perpendicular, undercut on N., unscalable. Earth-topped, with grass.

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| R. Tufted Puffin, ? | R. White-crested Cormorant, 100. |
| R. California Murre, 500. | R. Brandt Cormorant, 100. |
| R. Western Gull, 40. | R. Black Oystercatcher, 1 pair. |

SPLIT ROCK.

Loc.— Lat. 47° 24' 20" N.; Long. 124° 21' 45"; offshore about one mile.

Area.— About 1 acre.

Desc.— Barren double rock of metamorphic breccia, 85 feet high, very rough as to surface; north slope covered with small water-holes.

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| R. Pigeon Guillemot, 10. | R. Black Oystercatcher, 1 pair. |
| R. Western Gull, 200. | V. Heermann Gull, 10. |
| R. White-crested Cormorant, 2 pairs. | V. Western Sandpiper, 6. |

WILLOUGHBY ROCK.

Loc.— Lat. 47° 24' 40" N.; Long. 124° 21' 22" W.; offshore $\frac{3}{4}$ mile.

Area.— About 3 acres.

Desc.— 125 feet high, rounded, earth-capped over worn metamorphic conglomerate; vertical on W., very steep S., N. and E., but climbable on south. Heavily grassed on top, guano-covered on sides,— a varied and populous rookery.

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| R. Tufted Puffin, 500. | R. Baird Cormorant, 500. |
| R. Pigeon Guillemot, 10. | R. Black Oystercatcher, 1 pair. |
| R. California Murre, 300. | V. Black Turnstone, 1. |
| R. Western Gull, 100. | V. Western Sandpiper, 10. |
| R. White-crested Cormorant, 50. | |

DESTRUCTION ISLAND.

Loc.— Lat. 47° 40' 20" N.; Long. 124° 30' W.; offshore 3 $\frac{1}{2}$ miles.

Area.— Top 60 acres — with surrounding reefs; about $\frac{1}{2}$ square mile.

Desc.— A flat-topped island with sharply sloping or nearly perpendicular sides, rising 60 feet above tide. Covered by dense growth of vegetation, chiefly salmon-berry and salal thickets growing to height of a man's head, or higher on top; same with grass and bushes of other sorts on sides. Composed of deep loam (guano?), clay, gravel (incipient conglomerate of Pleistocene age) in descending series, resting unconformably upon the upturned edges of Miocene sandstone. Extensive area of sandstone reefs exposed on all sides of island at low tide, including ribs and ridges of sculptured rock unreached by water save in time of storm.

- R. Rhinoceros Auklet, 10,000.
- R. Pigeon Guillemot, 30.
- R. Glaucous-winged Gull, 2 pairs.
- R. Black Oystercatcher, 12 pairs.
- R. Rufous Hummer (*Selasphorus rufus*), 20.
- R. Rusty Song Sparrow (*Melospiza cinerea morphna*), 100.
- R. Sooty Fox Sparrow (*Passerella iliaca fuliginosa*), 100.
- R. Barn Swallow (*Hirundo erythrogaster*), 20.
- R. Lutescent Warbler (*Helminthophila celata lutescens*), 100.
- R. Yellow Warbler (*Dendroica aestiva*), 4.
- R. Western Winter Wren (*Olbiorchilus hiemalis pacificus*), 10.
- R. Russet-backed Thrush (*Hylocichla ustulata*), 100.
- R. Western Robin (*Merula migratoria propinqua*), 2.

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| V. Glaucous-winged Gull, 300. | V. Yellowlegs, 1. |
| V. Western Gull, 20. | V. Wandering Tattler, 1. |
| V. Heermann Gull, 10. | V. Hudsonian Curlew, 2. |
| V. White-crested Cormorant, 40. | V. Semipalmated Plover, 6. |
| V. Baird Cormorant, 200. | V. Ruddy Turnstone, 3. |
| V. Fannin Heron, 2. | V. Black Turnstone, 25. |
| V. Western Sandpiper, 400. | |
| V. Bald Eagle (<i>Haliaeetus leucocephalus</i>), 1. | |
| V. Peale Falcon (<i>Falco peregrinus pealei</i>), 1. | |
| V. Black Merlin (<i>Falco columbarius suckleyi</i>), 1. | |
| V. Desert Sparrow Hawk (<i>Falco sparverius phalæna</i>), 1. | |
| V. Northern Raven (<i>Corvus corax principalis</i>), 2. | |
| V. Northwest Crow (<i>Corvus caurinus</i>), 2. | |

NORTH ROCK.

Loc. — Lat. 47° 44' 45" N.; Long. 124° 29' 50" W.; offshore 1½ miles.

Desc. — An inaccessible pillar of barren rock 100 feet or so in breadth, 40 in thickness, and 100 in height; whitened by long use as cormorant rookery, and very picturesque.

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| R. Glaucous-winged Gull, 10. | R. Baird Cormorant, 200. |
| R. White-crested Cormorant, 100-300. | R. Black Oystercatcher, 1 pair. |

ALEXANDER ISLAND.

Loc. — Lat. 47° 47' 40" N.; Long. 124° 30' 30" W.; offshore 1¼ miles.

Area. — About 10 acres.

Desc. — A large green-topped, curb-roofed mass of fine conglomerate, about 100 feet high, perpendicular on N., sloping approach on S. Deep embayment on south side of island, with steep sides. Crown with heavy turf, stunted brush, and several dwarfed spruce trees.

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| R. Tufted Puffin, 5000. | R. Baird Cormorant, 300. |
| R. Cassin Auklet, 1000. | R. Black Oystercatcher, 12 |
| R. Glaucous-winged Gull, 50. | R. Rusty Song Sparrow, 6. |
| R. Western Gull, 2. | V. Northern Raven, 2. |
| R. Kaeding Petrel, 1000-10000. | V. Northwest Crow, 2. |

ROUNDED ISLET.

Loc. — Lat. 47° 49' 40" N.; Long. 124° 34' W.; offshore half mile; off Toleak Point SW.

Area. — About 1 acre.

Desc. — A rounded rock mass about 100 feet in height, with dome-shaped green top, dense with vegetation, coarse grass, and dwarf bushes.

Not explored, but known to harbor:

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| R. Tufted Puffin, 500. | R. Baird Cormorant, 200. |
| R. Glaucous-winged Gull, 100. | R. Black Oystercatcher, 1 pair. |

THE GIANTS' GRAVEYARD.

Loc.— Lat. 47° 50' 30" N.; Long. 124° 34'; offshore 100 yards to $\frac{1}{2}$ mile.

Desc.— A group of jagged rocks and pinnacles, some nineteen in number, rising from 40 to 150 feet above tide, and representing the last stages of erosion of a Miocene sandstone set on edge. It is impossible to exaggerate the sharpness or sheerness of some of these headstones but even the wildest, if high enough, affords lodgment for the Gulls and the Baird Cormorants; while the bases of the largest all boast their pair of Black Oystercatchers. Only one rock deserves particular mention:

Ghost Rock.—The northernmost of the group, very bold in outline, higher than wide and narrowing at base. This rock is everywhere white with excrement and is entirely given over to the nesting of cormorants.

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| R. White-crested Cormorant, 50. | R. Baird Cormorant, 100. |
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THE QUILLAYUTE NEEDLES.

Loc.— Lat. 47° 33' 4" N.; Long. 124° 39' W.; offshore 100 yards to 1 mile.

Combined *areas*, 4 or 5 acres.

Desc.— An exceedingly picturesque group of rocks off Tealwhit Head, each possessed of strong individuality, whether pinnacle, oval, sugar-loaf, or flat-top, and each distinguished by appropriate Indian (Quillayute) names, which ought as far as possible to be retained.

Dhuoyuatzachtahl (Place-where-we-catch-Petrels) or *Dhuoyuatz* (Petrel) for short.—The western of two distinct islets, lumped on the chart (Coast and Geodetic Survey, No. 6400) as "Huntington Rock," has a height of over 100 feet and an area of above an acre; is perpendicular on W., N. and E., sloping and climbable on S. E. Crest covered with dense coarse "saw-grass" with surrounding border of turf.

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| R. Tufted Puffin, 300. | R. Western Gull, 10. |
| R. Cassin Auklet, 500. | R. Kaeding Petrel, 40,000. |
| R. Glaucous-winged Gull, 10. | R. Baird Cormorant, 20. |

Keeksoostahl ("Landing-place," no longer appropriate).—Companion to last on the east; of practically equal area; nearly inaccessible.

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| R. Tufted Puffin, 500. | R. Baird Cormorant, 100. |
| R. Glaucous-winged Gull, 200. | Kaeding Petrel, ? |
| R. Western Gull, 6. | |

An inaccessible colony of Glaucous-winged Gulls also appears upon Table Rock, 75 yards or so due south of Keeksoostahl.

THE JAMES ISLAND GROUP.

Loc.— Opposite La Push, connected with shore at low tide.

James Island is the ancestral fortress of the Quillayute Indians now resident at La Push. It is heavily timbered except on the eastern end, which is given over to gardening; but its abrupt sides support several small colonies of Baird Cormorants. Of the associated rock masses recently disrupted from James only one, *Kohchāā(uh)*, carries an extensive colony of Baird Cormorants, say 200, with associated Glaucous-winged Gulls. A pair of Peale Falcons tyrannize over this group, and rears its young midway of one of the steepest walls.

CAKE ROCK.

Quillayute name, Chah-chah-lakh-hoos-set.

Loc.— Lat. 47° 55' 50" N.; Long. 124° 41' 30" W.; offshore 2 miles.

Area.— About 10 acres.

Desc.— Elliptical rock mass 115 feet high, with sides nearly perpendicular all around. Flat top with rounded elevation in center, all densely covered with brush and turf. Has been climbed by Quillayutes of passing generation, but now practically unscalable.

R. Tufted Puffin, 500.

R. Baird Cormorant, 100.

R. Glaucous-winged Gull, 1000.

R. Black Oystercatcher, 1 pair.

DÖH'ÖDÄĀĀLUH.

Loc.— Lat. 47° 57' N.; Long. 124° 41'; offshore half mile.

Area.— About 1 acre.

Desc.— Very diversified rock; a sharp ridge of metamorphic sandstone running to a high point and reappearing in outlier spurs or columns; a little wire-grass on upper levels and slopes.

R. Tufted Puffin, 40.

R. Baird Cormorant, 100.

R. Glaucous-winged Gull, 50.

R. Black Oystercatcher, 12.

R. White-crested Cormorant, 20. V. Black Turnstone, 1.

CAPE JOHNSON GROUP.

Loc.— Centering Lat. 47° 58' N.; Long. 124° 42' W.; offshore 100 yards to $\frac{1}{2}$ mile.

Desc.— Group of some dozen rocky islets, mostly sharp peaks, of which about half carry small colonies of Gulls and Baird Cormorants, with the omnipresent Oystercatchers at base.

JAGGED ISLET.

Loc.— Lat. 47° 59' 25" N.; Long. 124° 44' W.; offshore about 2½ miles.

Area.— Two or three acres.

Desc.— A long ridge of fantastically eroded sandstone, running substantially parallel to shore line, 200 yards long, about 50 yards wide, 68 feet high. Swept by severe storms and entirely destitute of vegetation. Only central and highest portion of island used by sea-birds,— end frequented by sea-lions.

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| R. California Murres, 6. | R. Black Oystercatcher, 6. |
| R. Glaucous-winged Gull, 200. | V. Baird Cormorant, 100. |
| R. Brandt Cormorants, 50. | |

WISHALÖÖLTH.

Loc.— Lat. 47° 59' 48" N.; Long. 124° 42' W.; offshore about ¾ mile.

Area.— About 20 acres.

Desc.— A lofty, jagged ridge of metamorphic conglomerate with sharply sloping sides covered with guano ledges and resulting areas of shallow earth, which are clothed with grass and other vegetation — yarrow, painted-cup, and the like; 175 feet high; 200 yards long along crest. One principal outlier and several minor ones on E. of same character.

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| R. Tufted Puffin, 1000. | R. Baird Cormorant, 100. |
| R. Glaucous-winged Gull, 2000-3000. | R. Black Oystercatcher, 6. |
| | R. Rusty Song Sparrow, 12. |
| R. Western Gull, 100-500. | V (?) Rufous Hummer, 1. |
| R. Kaeding Petrel, 5000-15000. | |

CARROLL ISLET.

Indian name, Habaah-ayleh.

Loc.— Lat. 48° 10' N.; Long. 124° 43' 30"; offshore about 2 miles.

Area.— Ten to fifteen acres.

Desc.— The gem of the Olympiades! A high, rounded mass of sandstone, tree-crowned (20-30 spruces), and with sides chiefly precipitous. The crest is covered also with a dense growth of elder-berry, salmon-berry, and salal brush, while the upper slopes N. and E. are covered with luxuriant grasses. The elevation is nearly 250 feet, and the extraordinary variety of cover attracts every bird known to breed along this coast, save the Rhinoceros Auklet and the Brandt Cormorant, and the latter may be seen from the western crest of Carroll, as it nests on the outlying pinnacle, Paahwoke'-it.

R. Tufted Puffin, 5000.	R. Rufous Hummer, 8.
R. Cassin Auklet, 1000.	R. Rusty Song Sparrow, 12.
R. Pigeon Guillemot, 20.	R. Sooty Fox Sparrow c. 12.
R. California Murre, 700.	R. Western Winter Wren, 8.
R. Glaucous-winged Gull, 1000.	R. Russet-backed Thrush, 4.
R. Western Gull, 50.	V. American Crossbill (<i>Loxia curvirostra minor</i>), 5.
R. Kaeding Petrel, 500.	V. Barn Swallow, 6.
R. White-crested Cormorant, 100.	V. Audubon Warbler (<i>Dendroica auduboni</i>), 1.
R. Baird Cormorant, 500.	
R. Black Oystercatcher, 6.	
R. Peale Falcon, 2.	

PAAHWOKE-IT.

Pinnacle of bare rock, about 75 yards west of Carroll; 125 feet high; inaccessible.

R. California Murre, 200.	R. Brandt Cormorant, 60.
R. Glaucous-winged Gull, 10.	R. Baird Cormorant, 150.

WHITE ROCK.

Indian name, Peechwah'.

Loc.—Lat. 48° 8' 10" N.; Long. 124° 43' 20"; offshore $\frac{3}{4}$ mile.

Area.—About 1 acre.

Desc.—Rock mass about 150 feet high, with abrupt walls and narrow proportions, but with sloping top well grassed. Said to have been scaled by Ozette Indians, but must be very difficult.

R. Tufted Puffin, 200-500.	R. Baird Cormorant, 100.
R. Glaucous-winged Gull, 300-500.	

THE FLATTERY ROCKS.

Loc.—Lat. 48° 10' 45" N.; Long. 124° 45-6' W.; off Cape Alava from $\frac{1}{2}$ to 1 mile.

Area.—Ten to forty acres.

Desc.—Four high islands (about 200 feet elevation), straight in line running W. N. W. from Ozette. Two innermost are wooded and sloping, save that second is precipitous on west end. The two outer are barren rocks with steep sides. Outermost, upon which birds chiefly colonize, may be called *Old Rock*.

R. Tufted Puffin, 500-1000.	R. Black Oystercatcher, 6.
R. Glaucous-winged Gull, 500.	V. Black Turnstone, 1.
R. Baird Cormorant, 500.	

FATHER AND SON.

Loc.—Lat. 48° 13' 50" N.; Long. 125° 43' W.; offshore ½ mile.

Area.—¼ acre.

Desc.—A guano-covered shaft 150 feet high, nearly destitute of vegetation; unscalable. Outlier (the "Son"), 30 feet high, rising from same base at distance of 100 feet N. E.

R. Glaucous-winged Gull, 100. R. Baird Cormorant, 200.
R. White-crested Cormorant, 20. R. Black Oystercatcher, 1 pair.

POINT-OF-THE-ARCHES GROUP.

Loc.—Lat. 48° 15' N.; Long. 124° 43' W.; offshore 0-½ mile.

Desc.—A series of some thirty conglomerate blocks and shafts, variously undercut and arched, all very bold in outline and arranged chiefly in two parallel groups running west in extension of two prominent headlands. Outermost members of group bear scattered colonies of gulls and cormorants, but only northwesternmost, *Silversides*, heavily populated.

R. Tufted Puffin, 1000. R. Baird Cormorant, 200.
R. Glaucous-winged Gull, 500. R. Black Oystercatcher, 10.

FUCA'S PILLAR GROUP.

Loc.—Lat. 48° 22' 30" N.; Long. 124° 43' 30" W.

Desc.—A series of precipitous outliers of Cape Flattery, typified by Fuca's Pillar, which stands out as sharp-cut and awful as the leaning tower of Pisa. The rocks lying further out are for the most part worn down below the point of safe nesting; but the Pillar proper and its immediate neighbors, together with the adjacent cliffs of the mainland, present unexampled facilities for nesting, being hollowed out by wind action into a perfect honeycomb of recesses and countersunk ledges.

R. Glaucous-winged Gull, 200-500. R. Black Oystercatcher, 12.
R. Baird Cormorant, 1000.

TATOOSH ISLAND.

Loc.—Mouth of Straits of Juan de Fuca.

Desc.—Low-lying, grass-covered, flat-topped, conglomerate rock, with maze of similar outliers. Occupied by Lighthouse and Gov't Wireless Station and imperfectly explored. Would repay closer study.

R. Tufted Puffin. R. Sooty Fox Sparrow.
R. Cassin's Auklet (?). R. Barn Swallow.
R. Pigeon Guillemot. R. Rough-winged Swallow (*Stelgidopteryx serripennis*).
R. Glaucous-winged Gull.

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| R. Western Gull. | V. Harlequin Duck (<i>Histrionicus</i> |
| R. Kaeding (?) Petrel. | <i>histrionicus</i>). |
| R. Baird Cormorant. | V. Northwest Crow. |
| R. Black Oystercatcher. | V. Black Cloud Swift (<i>Cypseloides</i> |
| R. Rusty Song Sparrow. | <i>niger borealis</i>). |

Adding the maxima of estimates for the separate islands and groups above enumerated (and this is manifestly fair, in view of all the lesser breeding places disregarded throughout the region), and taking out for the nonce Kaeding Petrel, we have a total of some 46,000 for the adult summer population of the eleven species of sea-birds nesting in the Olympiades. Of the Petrels alone it is safe to say that there are from 55,000 to 100,000 more, making a grand total of upwards of 100,000 sea-birds now harboring in the three refuges recently appointed by President Roosevelt.

AN UNPUBLISHED LETTER OF JOHN JAMES AUDUBON TO HIS FAMILY.

BY RUTHVEN DEANE.

THE following letter is one of unusual interest, as it shows the great author in the height of his vigor and enthusiasm, toiling day and night in the city of Baltimore, Md., soliciting subscriptions for the octavo edition, 1840, of his 'Birds of America.' In this city, as well as in all others where he visited, he not only in a short time made many friends, but the most influential citizens rendered him great service in furthering his object.

At the date this letter was written, about 500 copies of Parts 1 to 5 had been published. The work was principally done in Philadelphia. J. and J. B. Burke, 523 No. Front St., furnished the paper, Edward G. Dorsey, 12 Library St., was retained as the printer for the text, while Edward H. Rau, 85 Dock St., did the binding of the Parts as issued. J. T. Bowen, 12 So. Broad St., furnished the paper for the plates and executed the coloring and printing thereof, his charge being \$34 per hundred. Bowen furnished all the lithographs with the exception of the fifteen plates