

Vancouver Island, B. C.

Apr. 25-1908 - June 17, 1908

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Sat. April 25 - 1908

I left New York at 8.58 A.M. on the N. Y. Central R. R. from the Harlem Station. A slight rain was falling which continued intermittently until a short time after noon - by 4.30 P.M. the sun had broken thru the clouds and the beautiful sunset gave promise of a perfect day on the morrow.

The first part of my trip, from New York to Albany, was along the shores of the Hudson River, which is always beautiful but today particularly so. A heavy blanket of grey fog lay over the water; this gradually rose till it hung just at the tops of the Catskills. The bases of the mountains, beautiful in soft tints of brown and purple, were reflected in the water as in a mirror. The forest trees have only just begun to bud, but the "juncos" are out and the grass is everywhere of the most intense green.

I saw a few ducks in a marsh on the east side of the tracks and one on the Hudson; Crossopiza were plentiful along the river, and flocks of what I took to be Quiscalus quiscula were also seen. A hawk,

probably *Circus hudsonius*, alighted
in a field near the tracks.

From Albany the country was
mostly rolling, with many moraine
hills, and frequent swamps in the
lowlands. The brown & grey of
the swamps, studded here & there
with green bushes made a beautiful
picture in the sunshine of the
late afternoon.

Sun. Apr 26

I was surprised on waking this
morning to find how ^{much} further
vegetation had progressed in
Illinois & Wisconsin than in
the East. The forest trees were bud-
ding & the apple & cherry trees in
full bloom. Last year when I
left New York I found the opposite
conditions existing, for the spring
was decidedly more advanced along
the sea coast. In a pond, a few
miles below Crystal Lake, I saw
from the tarsi one *Olyptus* sp.
& two or three other birds in the
water which I take is one of the
same genus. However the view was
too short for positive identification.

Apr 30/08

I left Beloit Wisconsin at 8.10 P.M.;
going to Janesville where I caught
the 9.15 P.M. train for St. Paul, & on
Beloit & occurred many spring
birds were to be seen. The first
thing I heard upon awaking Monday
morning was the familiar call
of the Flicker (*Colaptes*)

I saw many chimney swifts
(*Chistura pelagica*) a few Red headed
woodpeckers Kingbirds
(*Tyrannus tyrannus*), *Melospiza fasciata*
Phoebe, *Robin*, *Redwing*, *Blackbird*
and one or two *Anas* sp.

May 2nd 08 I left Minneapolis last night at
10.40 on the Northern Pacific. It was
rather cold all day yesterday with
a little rain, some sunshine & occas-
sional flurries of snow. In the a.m.
I met one of my college friends and
we went out to Minne-ha-ha Falls,
& from there to Fort Snelling.
I was particularly interested in
the latter place as we ^{at the museum} have con-
siderable geological material from
there collected by Dr. E. A. Mearns
when he was stationed at the fort.
This morning when I awoke, I found
we had passed through the state of Minn.

and were well ~~sites~~ into North Dakota
 Mill after mill of wheat land could be
 seen from the train above immense
 ploughs were at work cultivating. I
 have as yet seen only one of the steam
 ploughs, for most of them were drawn
 by five, six or seven horses.

Now, at 10 o'clock, we are passing
 through rolling prairies, stretching
 as far as the eye can reach in
 every direction, here & there a farm
 house may be seen, out on the
 bare prairie, or perhaps nestled
 into the side of a little hill or gulley.
 Occasionally, a little town, consisting
 of a saloon, a general store & a few
 houses, will come in view. These
~~little~~ towns seem to have no par-
 ticular reason for their existence at
 that spot, but like "Topsy" to have
 just "growed" - I've seen ^{ploughs} ~~spots~~
 in this section of N. Dakota (the south
 central part) very little of the land
 seems to be under cultivation, it
 being mostly used for pasture.
 At several places near the track I
 have seen shallows ~~found~~ in
 which were flocks of ducks and
 on the margins a few yellow legs

or sandpeps. At times also, a large hawk will come into view circling up & up until it becomes a mere speck in the intense blue of the sky above. It is a beautiful sight to see the prairie, rich in changing tones of brown & green stretching away on ~~each~~ ^{either} side of the train, as if dotted here & there by herds of cattle, or perhaps a flock of sheep. It takes but a slight ~~amount~~ amount of imagination to believe that they are the last remains of the great herds of buffalo which once roamed these very prairies. In most places not a tree is in sight, the long reaches of prairie being broken only by a ^a fence or a settler's cabin.

I just saw two Bitterns; probably *Botaurus lentiginosus* fly up from a little marsh & a great flock of dark birds which seemed to be ^{to me} Cowbirds.

6 P.M. Since about two o'clock this afternoon we have been passing through the bad-lands of N. Dakota & Montana. The scenery of course changed radically as soon as we struck this section of the country. At first only single conical "buttes" would rise from

~~out~~ of the plains but gradually they became larger and more frequent. There where we were in the bad-lands themselves the buttes were joined in great chains like miniature mountains. The ground between these butte-ranges ~~is~~ cut into gulches of all shapes & sizes making a net work of hills & valleys.

The sides of the buttes ~~are~~ bear little vegetation other than brown bunch grass and sage brush, and the tops are usually completely bare.

Here & there outcrops of stratified red sandstone appeared, giving beautiful red & purple, which contrasted with the olive green of the sage brush, put a dash of rich color into the sadder borders of the landscape.

At one place almost on the border between Dakota & Montana, I noticed a typical little cowboy town backed up against a high chain of buttes with a narrow stream of brown water in front. I had just remarked what a typical place it was when a sign came into view bearing these words

The Little Missouri River
 at one time
 Theodore Roosevelt
 raveled in this valley.

As I looked at the ~~valley~~^{river} & rugged surroundings, ~~at that~~ they seemed to me exemplary in a way, of the indomitable courage, & healthy, hardy spirit which lives in the President of Our Country. The ground in the valley was completely intersected with the burrows of a great colony of Prairie Dogs (*Cynomys*) & it was very interesting to watch the little fellows sitting at the edges of their holes, their hands crossed over their yellow breasts watching the train as it passed with their shiny black eyes. Sometimes one would become frightened, & disappear instantly looking as tho' he had fallen over backward into his hole. As we left Dakota behind us & got further into Montana the hills became larger, & of greater extent, and the gullies between them deeper. And these are the bad lands of the West.

May 3d '08

Since early morning the train has been making its way slowly up into the mountains of western Montana. At first we were among the foothills, but now at 2.30 P.M. we are well into the mountains themselves, being about five thousand feet above sea level. In the distance peak after peak may be seen, their snow covered caps lost in the heavy rain clouds which cover the sky. The nearer hills are ^{mostly} covered ~~are~~ ^{mostly} with scrubby pine trees, which become shorter + thicker in distribution as the summits are approached.

Tall slender poplars just putting forth their yellow buds, are thickly mixed with the pines at the bases of the hills giving a touch of color to the masses of dark green.

Birds seem fairly plentiful, especially Falco sparverius. I have seen a number of these hawks, singly or in pairs, and some have come so close to the train as to make identification positive. While passing a rather narrow stream I observed five or six Ardea herodias at different times, and a few ducks.

Ceryle alcyon, Corvus americanus

Circus hudsonius, Sturnella magna
neglecta and Pipilo — an also
particular.

May 6th After a most delightful and wonderful ride through the mountains of Washington, I reached Seattle Monday P.M. at 2.30 I looked up Capt. David Jarvis, to whom I had a letter from Mr. Frank Wood, and found Capt. Jarvis a very pleasant man. He gave me a letter to a friend of his in Victoria, and the next day (Tuesday) at 8.30 A.M. I left on the boat "Chippewa" for Vancouver Island. The ride up the sound, and thru the beautiful straits of Juan del Fuca is a moving picture of sparkling water and hills of emerald green, with the snow covered peaks of the Olympics for a background.

I registered at the "Empress" hotel upon my arrival at Victoria, which is one of the finest buildings of its kind, out of New York City and at once went to the American Consulate, I found the Hon. A. E.

Smith, to be a pleasant elderly gentleman, who was pleased to assist me in any way. Through his influence I was able to have my trunks passed by the Customs officials free of duty, thereby saving considerable expense. Capt. Balcom, of the Pacific Whaling Co. to whom I had letters, was not at his office, and consequently I had to wait until today before seeing him.

May 16-08

Dr. Bismüller, Pres. of the Pacific Whaling Co., was at the station with a friend, and consequently there was no room for more. He was expected to come in on the 13th & telegraphed for me to await his return in Victoria. Not wishing to remain idle, I packed up a few collecting instruments and took the train for Channing Lake. This is a beautiful body of water on the Esquimalt & Nanaimo Railway, some twenty-six miles from Victoria. The country surrounding the lake is mountainous, the hills reaching a height of 1,000 feet, and ^{are} covered with coniferous forest. There are very few deciduous trees, the forest being mostly composed of pines, firs & hemlock. Deer are plentiful, bear are some-

times taken, and occasionally a panther is killed - a short time before my arrival a large panther had been poisoned near the lake. Otters were once frequently trapped & many water ouzel still taken - also ~~much~~ no muskrats or rabbits are found on the island.

I spent four days collecting at Shawmigan Lake and secured a number of birds, besides a few white-footed mice, two rats and one shrew. These mice were all caught about old stumps & logs near the lake shore, as were the rats & shrew. I found a number of mice in the traps partly eaten, usually with the head & eyes completely gone. I believe it was the work of shrews. But altho' I baited several traps with meat & mice, I was unable to get any specimens in that particular place. The woods were full of ~~the~~ Sooty Grouse (*Dendragapus desmussulphigenus*) but the male birds were exceedingly hard to find.

In the morning & evening the oo-oo-oo-oo of the cockles could be heard from every direction, but whenever one had located the tree

in which a bird was "hooting" it was next to impossible to discover the author of the sound. The grouse ~~was~~ always chose the tallest trees in which to perch while calling, and when hiding close to the trunk in the topmost branches of a fir 250 or 300 feet high were effect-ually protected from enemies on the ground. The female birds on the con-
trary were always to be found upon the ground and would flush from almost under ones feet. I found one nest of this grouse containing four eggs, well along in incubation and knew of two or three others nests in neighboring localities.

I shot one Osprey (*Pandion haliaetus carolinensis*) and found the nest which was built on the top of a old stump ~~at~~ some forty feet high. The male bird was very wild and it was unable to get near enough for a shot, altho' he flew above my head constantly. I did not climb up to the nest as it would have been practically impossible, but since I found several eggs in the orifice of the hole I shot. I judge the nest had only been built a short time.

I collected a few Song Sparrows (*Melospiza cinerea morphna*) which were everywhere abundant. These birds were continually being caught in the traps which I had set along old stumps for mice, and it was rare if I did not find two or three every morning with their skulls crushed by the trap spring - usually birds so caught would be found with their eyes eaten out.

I shot one Red Squirrel (*S. h. var. canescens*) + saw only two others - a rather remarkable occurrence as they are reported as very common. While lying in wait for deer one evening near a small meadow, a red squirrel came down on a log close to me + regarded me curiously with his round black eyes, but when I raised my hand, he dashed off into the woods as tho' he had forgotten an important engagement.

May 15-08 Upon receiving a telephone message from Capt. Balerin, I left Shawongar Lake Wed. A. M. at 11 o'clock. On the train I met Dr. Pissmiller who was returning from the whaling station and came on to Victoria with him.

I completed arrangements with him for my trip to the station and will leave tomorrow night, May 16, on the ship "Tees" for Sechart, Barclay Sound, where the whaling station is located. Today after arranging for the shipment of two barrels of plaster, excelsior, alcohol, etc I took a short walk thru Victoria Park (or Beacon Hill Park) to collect ants for Dr. Wheeler. The park is one of the most beautiful places in which I have ever been! A small artificial lake, crossed by an arched stone bridge occupies one end, and this is surrounded by trees of all sorts + flowering shrubs in profusion. The Park is one of the many paths I followed walked toward Beacon Hill, and suddenly came out upon a sort of heath covered with a mass of bushes in full bloom. These were the English Broom & most beautiful plants they are! The flowers look something like large sweet peas, and of a most intense yellow. From the top of Beacon Hill, looking out over the straits of Juan del Fuca toward the blue mountains of the Olympics, their snow covered caps glistening in the sun.

in sum, a more beautiful picture could hardly be imagined. The gentle slope of the hill ~~to the water edge~~ ^{toward} is ~~covered~~ a mass of yellow brown blossoms, which at the shore give way to a soft carpet of buttercups. In the distance, across the straits, the American shore rises in the bold outline of the Olympian Mountains, whose bases ~~of~~ are of an intense blue, their tops white with perpetual snow. At the left as far as the eye can reach, stretch the green waters of the Sound, dotted here & there with fishing boats ^{& steamers}. The air above the water is full of white-winged gulls, lazily flapping close to the surface, or sailing on snottailers wings high ~~above~~ overhead. At the right the coast line of the island upon which we stand, curves gently, ~~but~~ ~~in~~ ~~the~~ ~~distance~~ toward Cape Flattery a rocky dim misty headland just discernible in the distance. The whole forms a picture of green water, blue mountains & yellow blossoms.

May 17/08 I am sitting in the little cabin
 of the steamship "Tees" writing on the
 long table in the middle of the room.
 We are tied to the wharf at Albernie,
 where freight is being unloaded, &
 will run from here back thru' the
 "Albernie Canal" to the Sechart and
 the whaling station. Outside the rain
 is falling in a steady, monotonous,
 drizzle which has never ceased since
 it began early this morning. The
 cabin is cold & only lighted by three
 small electric lamps, and the
 situation is anything but a pleasant
 one. After passing Cape Flattery
 about nine o'clock this morning,
 we ran full into the face of a
 tremendous sea, which came in
 from the open Pacific with no
 land to back its force. The little
 ship stood the blows of the gigantic
 waves magnificently, but rolled
 & pitched like an egg shell on the
 water. At first it was a beautiful
 & inspiring sight to see the
 great waves break with terrific
 force against the vessel's side,
 throwing spray high into the
 air & rocking the decks. ~~The~~

I stood on the deck amidships shielded from the water by the little deck house, watching the great waves as they chased each other astern, curl & break in a shower of foam of an almost emerald green. For a time it was enjoyable and I thought I would not be sea-sick, but as we got further & further out into the open ocean & the size & strength of the waves increased, I found that every time the ship climbed up ~~up~~ to the top of a great corner & plunged down on the other side, the pleasure grew less & less. I stood it as long as I could & then beat a retreat for my stateroom where I learned what it was to be sea-sick. Every time the ship came down from the top of a big wave, I seemed to leave my stomach up there, to follow along on the next white-cap. To say that I was sick is putting it mildly; I didn't care whether the ship went to the bottom or not - in fact I rather hoped she would. However about one o'clock in the afternoon when we left the open Pacific & got into

the sheltered waters of Barclay Sound, the ship stopped tossing and I felt better. Tonight I in all right again but a little weak around the region of my belt, & not wanting to eat very heartily.

May 20-'08 we reached Sechart on the morning of the 18th about 8.45, in a drizzling rain.

The whaling station consists of a group of ^{dirty white} buildings jammed up against the foot of a mountain, which rises some three hundred feet behind it. In the center is a long wharf, at the right side of which are the sheds for cleaning & storing the whale-bone, the glass covered tanks for bleaching the oil, and behind these the superintendent's quarters.

On the other side of the wharf, ~~and~~ is the great "ship" upon which the whales are pulled & stuffed of blubber, the engine house & the tanks for extracting the oil from the flesh & blubber. Also the drying machines for making the flesh into grease & the bone crushers are here. Behind & on the hill are the quarters for the different gangs of men, the Swedish gips & Finns.

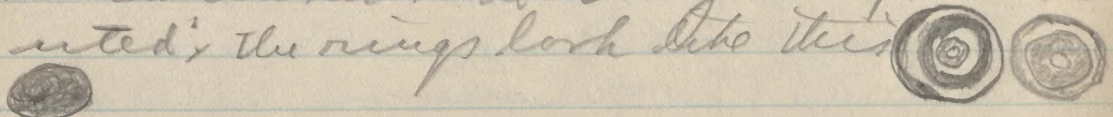
May 21-'08 The weather has been very bad, & it has rained every day since I reached here,

The "Orion", the whaling vessel, was in at the wharf when I came here, & left early the next morning May 19. She has not returned as yet but will be in tonight or all probability, when the weather is thick or there is much sea on, she does not venture out as it is practically impossible to kill many whales.

Humpback

whale No I Color

Back, tops of head & sides deep blue black, ~~the black of the sides~~ On the throat streaks + splashes of white which run well up under the pectorals. A few small white flecks + circles of white along both ramus of mandible - Less white on the breast than on the throat + still less on the belly - The circles of white show on throat to some extent; flecks + patches of white about genitalia, + on the inner edge of the peduncle to the flukes. The mucous membrane in the roof of the mouth is flesh colored, except at the extreme posterior end where it is black.

The right pectoral has the inferior surface entirely pure shining white except at point of insertion where a large black patch encroaches. A mass of ^{small} black patches are in the center of the flipper opposite the widest part, which is about at the end of the first or third. There are 12 or 15 rings + spots of black on the inner side irregularly distributed; the rings look like this 

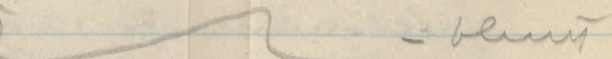
External Characters

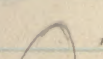
External characters

On the top of the head there is a double line of prominent knobs alternating, & running from the tip of the snout to a point opposite the blowholes. On the median line from the ant. end of blowholes a line of knobs runs to the tip of the snout. The eye has a deep furrow above & below it - The ear is small opening large enough to insert a small lead pencil.

From the post. base of the dorsal fin to the pectorals, the top edge of the peduncle is gently crenulated.

The dorsal fin is small & limb like this

 - blunt at the top & rises in an even regular slope to the tip. Midway between the pectorals & the pectorals on the superior edge of the peduncle are several deep notches or creases &

The tip of the ~~upper~~ rostrum is faintly pointed; about like this .

The tip of the lower mandible (symphysis) is

blunt rounded & a mass of irregular
 knobs ^{sum} one to three inches in height; these
 knobs are all thickly covered with
 parasites - barnacles & Cyamms. There
 are approximately 20 furrows on the
 breast - I could not count each one.
 The ^{strongest} pectorial on the anterior edge has
 7 bunches all covered with barnacles
 & Cyamms.

T. balen The balen of both sides is
 a deep ~~black~~ black in color, with a
 brownish tinge when reflected in
 the sunlight. On the inside the balen
 are very thick & long. ~~are~~ From the
 front to the back of the balen row a
 broad band of dirty grey ^{sum} about
 18 inches wide ~~extends~~. This
 greyish band begins at the bases
 of the balen plates & extends up-
 ward about 18 inches - the plates
 thence to the tips are very dark
 brown ~~of a brownish~~. ^{The margins of this band are very sharply} As the plates
 of balen become shorter toward
 the anterior end of the row more
 & more of their length is occu-
 pied by the grey band until
 all the balen of the anterior
 portion of the row are grayish
 even the tips. The inner edges ^(supporting the balen) of

the balen are very thick & long, but much of the greyish band is occupied by the balen

the greater portion of the baleen plates are streaked to a greater or less white to varying degrees - some have nearly half the plate white, & streaked, & others but slightly or not at all. These streaks run longitudinally, ~~where~~ the white streaks seem to always be on the inside (inside bearing) half of the plate & can not be seen from the outside.

This whale contained a small foetus about 2 inches long.

Since the whales are all blown up as soon as killed the circumference must be only an approximation - however I have allowed simply for this swelling in taking this measurement.

The flukes had been cut off before whale was towed in but the small part remaining showed the under surface white & above black.

The baleen extends in a thin line entirely around point of snout, thus connecting the two sides.

550
310
240

300

460
335
125

140

305

27

Total length = 13 m. 50 cent.

Circ. of body = 6 m. 20 c

Snout to eye = 3 m. 80 c

" to center of blowhole = 2 m. 90 cent.

" to post. insert. of pectoral = 4 m. 80 "

" " " edge of dorsal = 10 millers

Distance from eye to ear = 60 cent.

" eye above ear = 20 "

Length eye opening = 8 cent

width of pectorals to arms = 3 m. 10 cent

width of flukes to center of vulva = 3 m. 5 c

" " " " navel = 5 m. 50 c

" " " " post. insert. of pectoral = 8 m. 70 cent

Length of pectoral (tip to head of radius) = 3 m. 60 cent

Greatest breadth pectoral = 1 m. 10 cent.

Height of dorsal axial at post. margin = 20 cent.

Greatest thickness flukes at insertion = 20 cent.

Depth peduncle at ant. insert. of flukes = 80 "

Ant. margin of arms to center of vulva = 1 meter

Arms to navel = 2 m. 40 c

Length manway slit = 6 cent.

Dist between manways = 22 cent

Length row of baleen = ~~300~~ 3 m. 40 cent

" length plate " = 85 cent.

no. plates of baleen = 317

Depth peduncle midway between insert. of flukes & arms = 1 m. 30 c

Lower jaw extends beyond upper jaw = 40 cent

Number sternal furrows = 26(?)

Osteology of no. I

Length of mandible (straight) = 3 m 80 c.

" " " (curved) = 4 m 10 c

Length of humerus = 65 cent

width of head = 35 "

Height of scapula = 1 m. - 5 cent, (?)

Breadth " " = 1 m. - 65 " (?)

" " glenoid fossa = 27 c.

skullLength trap to occ. condyle taken on the
under side in a straight line = 4 ^{deduct 5 cent} meters

Breadth (squamosal, greatest) = 2 m 25 c

" occ. condyles = 35 c.

Greatest height = 1 m (approximately) ?

Breadth of rostrum one meter from tip
on under side = 70 cent, (?)

Two meters from tip = 1 meter (?)

Ribs = 13

Length 1st rib straight = 1 m. 30 c.

Breadth " " distal end =

Height of atlas = 42 c

Breadth " " = 77 c

Humpback

Whale No. 2 May 22 - 08 Sechart B.C. ♂

Color Back top of head & sides deep blue black - much white on chin & throat ~~to~~ taking the form of streaks & splashes.

The white is heaviest in the median line & this, which extends in a V shaped mass

down on to the breast - it ends out a scar ^{in the center of the breast} which looks much like the navel -

below this scar & on the belly there is but little white - only a few scattering streaks - there is little white on the

sides below the pectorals except in the ^{superior} median line of the breast - There

are a few white circles along the jaw bone, but not a great many

There are specks & dots of white from the penis nearly to the insertion of the flukes on the inferior median edge of the peduncle. The inner sides of

the lower lips are blue black, but a shade lighter than the out side - 2 small blotches of white were present on inside of

lips - The skin of the tongue is much lighter than the lips - a beautiful blue gray - this membrane look exactly like crepe paper

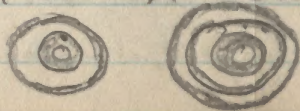
The circles of white were mostly confined to the region of the jaw bones in both whales -

The penis was flesh color - there is much white about the genitalia. The flukes had been cut off but the under side of the strap was white - above black -

The mucous membrane of roof of the mouth is a light purple with small black flecks - at the entire posterior end of the roof of the mouth there is mucous membrane is black - this black area had the same shape in both whales & was about 1 foot in length.

Pectorals

The right pectoral on superior surface is black - toward the tip along both margins the white streaks & circles encroach on the black upper surface. For one half its distance (from insertion) there is no white except along the thick anterior edge. The inner surface of this flipper is black ~~for~~ the thickly circled with white for the third of its length nearest the insertion. The remaining $\frac{2}{3}$ to the tip has a white background circled with black - the circles are like this



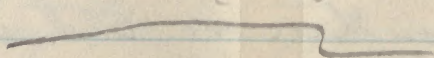
The left pectoral has 8 bunches on the thick anterior margin - the right pectoral has seven. The first bunch is largest in all flippers - these bunches are all thickly encrusted with barnacles & infested by Cyamus. The posterior margin is thin (about 1 inch thick) & rounded - it is only slightly crenulated, particularly toward the tips. The tips of both pectorals are absolutely covered with barnacles.

External Characters

The roof of the mouth is about six inches wide at the tip between the plates of baleen & flat on either side of the median line are two large folds - the ant end of these folds are lined longitudinally with fine creases - passing toward the throat the median line of the roof of the mouth begins to raise in a gradual slope till at the posterior termination it ends in a ridge 1 1/2 inches high - going backward the distance between the bases of the baleen rows becomes greater & the

roof of the mouth is strong, widened. The whalebone extends in a thin line around tips of jaw meeting, & joining the two baleen runs in front.

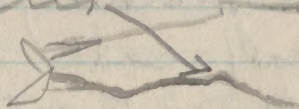
On the top of the head there is a double line of knobs running from opposite the blowhole eminence along the margin of the rostrum on either side to the tip. These knobs are for the most part alternate, also a line of knobs from ant. point of blowhole to snout - There are 29 of these knobs on top of head - 15 on ~~left~~ right side of head & 14 on left.

From dorsal fin to flukes the superior edge of peduncle is gently crenulated - the edge here is about $1\frac{1}{2}$ inch thick & rounded. The peduncle is very narrow, at insertion of flukes, both laterally & longitudinally. - The dorsal fin in this whale is low & of this shape  The fin does not run evenly to its tip as in the other but has made the form of a hump -

The symphysis is, like No 1, a


bunch of knobs - just below the symphysis is a deep depression ^{or notch}, then the chin bulges out - at this bulge the barnacles are especially thick.

Exactly midway between anus & insertion of flukes on the inferior edge of the peduncle is a prominent round hump - I did not notice this in no 1, - Also there are numerous ~~lateral~~ ^{deep} transverse creases or furrows on the upper margin to the flukes. Just posterior to the anus there is a decided notch in the peduncle, making the whales anterior at this part look like this



The throat folds are wide and ~~many~~ many of them divide on the throat just ~~of~~ ant. to insertion of pectorals - they are widest ~~on~~ the belly at their posterior ends - here are measured 19 cent. - there were 18 furrows on throat, ^{which} are about $\frac{1}{4}$ inches deep

Total length	= 14 meters
circ. of body	= 6 "
Tip operculum to eye	= 3 m 40 c
" " " " operculum	= 2 " 60 "
" " " " post. insert of pectoral	= 5 m 20 c
" " " " post base of dorsal	= 9 m 25 c
Ant eye to ear	= 75 c
" " " " " "	= 20 c
Length open. of eye	= 7 c
" " " " ear	= 1 c
Width of flukes to anus	= 3 m - 35 c
" " " " " penis	= 4 m - 60 c
" " " " " navel	= 5 m - 90 c
" " " " to post. insert. of pectoral	= 9 meters
Pectoral length (tip to head of radius)	= 3 m 50 c
" " " " " " post. insert	= 3 " 70 c
Greatest breadth pectoral	= 1 meter
Height dorsal (axial)	= 10 cent.
Width flukes (width to ant margin)	= 1 m 25 c
Thickness " at insertion (greatest)	= 25 c
Depth peduncle at ant. insert. of flukes	= 80 c
Height of em. surr. blebbles	= 25 c
Length anal open.	= 15 c
Ant. anus to center of penis	= 1 m 25 c
Anus to navel	= 2 m 30 c
Length row of baleen	= 3 m 20 c
Length plate	= 85 c
Number " "	= 270
Depth ped. between flukes + anus	= 1 m 60 c



 Lower jaw extends beyond upper = 40 cent.
 Number throat furrows = 18
 Length penis = 1 m 30 cent.

Calcitrans
Rites 14

Length jaw (straight) = 3 m 85 c
 " " (curved) = 4 m

Humerus length = 70 cent.
 Breadth head = 40 "

Height scapula = 1 m 20 c (?)
 Breadth " = 1 " 75 c (?)
 " gland fossae = 35 c

skull

Length (below) = 3 m 75 cent
 Breadth (squamous) = 2 m 22 cent
 Height = 1 meter (approx) (?)
 Breadth occ condyles = 39 c
 Rostrum breadth one meter from tip = 80 c (?)
 " " 2 " " " = 1 m 7 c (?)

1/ Lumbar (sure) ^{posterior}
 Greatest height for lumbar = 80 c
 " breadth " " = 1 m 25 c

Height neural spine = 37 cent
" body = 32 "
Basis " = 35 - C

Height atlas = 45 - C
Basis " = 85 - C

Humpback Sex ♀

No. 3 May 23-08 Seward B. C.

Color Back sides + belly black - little white on throat, but on breast in median line opposite the insertion of the pectorals there are several large patches + many streaks. On both sides of the mandible are numerous rather faint white circles + half circles. There are no circles or white from eye to insertion of pectoral, + none on belly back of posterior insertion of pectorals.

Mucous membrane of roof of mouth light salmon-purple strongly marked particularly along the median line with dark olive-green streaks. The large patch at posterior part of roof of mouth where it passes into throat, had the same shape as the others but was of a bluish green color. The inner side of lips on left side was greenish-black + on right lighter + more of a gray-green + spotted with darker

Pectorals

Right inferior surface from insertion for $\frac{1}{2}$ length black, rest white except at tip which is black - the black parts are circled with white + the white parts " " black

Superior surface most all black
heavily circled with white & white
spots chiefly toward posterior edge
on anterior $\frac{1}{2}$.

Left pectoral above black circled
with white toward tip & posterior
edge, white circles on thick
anterior edge of both fins.

6 Bundles on right pectoral

7 " " " left " "

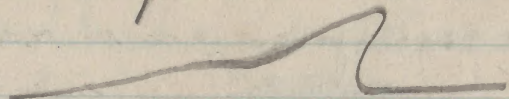
The thick ^{posterior} edge of right pectoral
slightly crenulated toward tip for
about $\frac{1}{3}$ of its length - hooks all
curved with barbed Cyanus on
one tips - Right pectoral is 27c

thick at heel of radius - left is
24c.

Baleen. The baleen has the same
band of dirty grayish - white bristles
about 1/8 inches wide, as all the others
have had - the remaining part of bristles
to their tips are brownish; all the
bristles of the plates on the anterior
half of the baleen rows are dirty
grayish - white - with sides same.

External Characters

The dorsal fin is falcate + higher than any of others - its shape is quite different from 1+2. There is a decided dip in the anterior portion so that the gradual slope to the tip is broken - it is like this




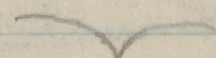
The superior edge of peduncle from 1st fin to flukes is but very slightly crenulated - just wavy. I did not notice about 10 small teeth lower edge of peduncle.

Some double line of keels on edge of top of head as in others + line from lower hole to snout - these are usually - keels begin off front of blowholes - there was a large scar 4 feet behind blowholes on side. There were 18 keels on right side of top of head counting them in median line. The ~~snout~~ symphysis of mandible was knobbed as in others - The throat folds extend to navel on belly in median line.

	cent.
Total length	1380
Circum. of body (where not blown up)	575-
Snout to eye	395-
" " blowhole	295-
" " post. inser. of pectoral	460
" " " base " dorsal	995
Dist. eye to ear	61
Eye above ear	16
Opening of eye	8
" " ear	1
Width of flukes to anus	335
" " " " clitoris	400
" " " " mammary	390
" " " " navel	585-
" " " " post. inser. of pectoral	900
Length pectoral (tip to head notches)	370
Greater breadth pectoral	100
Height dorsal	27
Breadth flukes (notch to air margin)	115-
Depth peduncle at insertion of flukes	85-
Length anus	5-
Anus to center of clitoris	65-
Length mammary set	17
Dist between " air	45-
Length row of baleen	346
" longest plate	80
Depth peduncle between anus & notch of flukes	135
Lower jaw beyond upper	35

The circumference of this whale
could be determined very well
since it had not been blown
up - (No 4 had " " " up.)

The ear has an opening at the top about
1 cent. in breadth, but ^{1 cent} the real opening
at the bottom would not admit ^{the} ^{end} of
a small lead pencil. - The eyes in
all the whales had a deep crease above
+ below it like this 

The slit for the teat is a V shape same
as slit for ear - the slit at top is
17 cent wide, + the ~~new~~ teat is nearly
as large round as my thumb + flesh-
covered - The mammae lie exactly
along side the genital opening - ~~at~~
The flukes were cut off but the
notch was V shaped + not very
deep, shaped like this 

Osteology No. 3
skull

Length (tip to condyles) 380
 Greatest breadth (squamous) 226
 " " 1 meter from tip 80(?)
 " " 2 " " " 100(?)
 " " occipital condyles 36

Height scapula = 96 (?)
 Greatest breadth " = 168(?)
 Breadth glenoid fossa = 32

Length humerus = 66
 Breadth head " = 36

Length jaw curved = 385

(13 pres ribs
 10 lumbar double)

The length of skull is taken from
 tip to occ. cond along median line
 below

Humpback

No 4 Sex ♂ May 23-08 Sechart B.C

Color Top of head, back, sides & belly black - white circles about on both ramus of mandible rather than they distributed - a ^{very} few of these circles run down on throat for a short distance chiefly on the sides; most of white of throat & breast is in streaks & flecks which are small; in the median line of breast between the insertion of the pectorals is a large solid, pure, white spot. The white on the throat & breast is mostly confined to the median line - farther to the pectorals, ^{to the arms} there is white except for the faintest tinges along the very edges of the fold. ^{most of the folds are edged with white during}

From the arms to within 2 feet of the end, insertion of the flukes on the superior edge of the peduncle there are fine specks & flecks of white thickly scattered - hardly any white about the penis slit, but this portion is heavily encrusted with barnacles -

From the chin to between the pectorals on the median line of the breast there is a solid band of barnacles about 10 or 12 inches wide. (See photo) - Stumps of flukes white below, black above.

Pectorals

Right pectoral black ~~on~~ on superior surface with a narrow white band running obliquely across at the tip - the anterior half of the posterior edge of the fin is thickly covered with small white circles - also the tip. The thick anterior edge of the fin to within a short distance of its insertion is white.


The inferior surface of this fin is pure shining white for its whole extent, save for a black patch at the point of insertion. The anterior and thick along the tip & posterior margins is thickly circled & spotted with black - There are 7 bundles on anterior margin of this fin.

Left pectoral black above, strongly circled with white along tip & posterior margin - no white on the $\frac{2}{3}$ of fin toward body - anterior margin white. Below fin is white, circled with black toward tip & edged with black. The posterior margin is strongly crenulated toward tip on both fins. Seven bundles on anterior margin of this fin ^{mostly} all covered with papillae.

Part of the mouth light salmon -

purple, & bristles ^{of paleen} greyish-white same ^{dirty} as in others.

External Characters

Same hump on superior edge of peduncle exactly midway between anus & flukes as in others - this hump was seven inches high & shaped like this 

Peduncle, superior edge, from dorsal fin to flukes strongly crenulated - Dorsal fin foliaceous & shaped almost exactly as in no. 3 with same dip at anterior base - Symphysis ^{of mandible} all hooks same as others - same bulge of chin just below symphysis as in no. 2 -

There are 16 hooks on right ramus of mandible - none go on throat - these hooks are not as large as those on top of head.

There were 11 throat furrows on the right side from eye to median line ^{of breast} from this I compute that there must have been about 22 furrows altogether - I could not get at other side. The folds divide for the most part about ~~middle~~ between pectorals - they are widest at posterior end, & at chin where they

curve in to end. (or begin) Furrows
 are about one inch deep + the
 same in width - their bottoms
 are finely creased + same color
 as ~~top~~ fold - folds have rounded
 edges + flat tops - One deep crease
 or furrow runs up over pectoral
 at shoulder - four other short creases
 run half way up on pectoral at
 posterior insertion - One wide fold
 runs from corner of mouth to
 anterior edge of pectoral

Twelve keels on left side of top
 of head, counting ^{basal} median line -
 same arrangement as in other
 specimens.

Blubber about 1/1 cent, thick -
 whitish yellow in color.

No 4

	cent
Total length	1130
Eye of body	535-
Snout to eye	325-
" " blowhole	222
" " post. inst. of pectoral	455-
" " " edge of dorsal	780
Eye to ear	47
Eye above ear	17
Opening of eye	7
" " ear	2
Mouth of flukes to anus	265-
" " " " perit (center)	385-
" " " " navel	475-
" " " " post. edge of dorsal	350
" " " " " " pectoral	705-
Length of pectoral (top to head radius)	303-
" " " " " " post. insertion	321
Greater breadth of pectoral	90
Height dorsal	17
Ant. post breadth of flukes (width)	85
Greater thickness of flukes at insertion	2.2
Depth peduncle at flukes	75-
Length right blowhole (axially)	35-
Divergence blowholes anteriorly	7
" " " " posteriorly	15-
Height emus. about blowholes	—
Length anal opening	12
Anus to middle of penis	120-
" " " navel	219

Depth of peduncle between notch flukes of arms	107
Length of jaw beyond upper throat furrow	50
Depth of notch of flukes	22
	25

(Body not blown up)

© Steady no 4
skull

Length = 300
 width (squamosal) = 185
 " 1 meter from tip = 68 (?)
 " 2 " " " = 85 (?)
 " occ. condyles = 31

11 Lumbar (sure)
 14 Ribs (sure)
 Last rib measures 134 (straight)
 First " " 100 "

Jaw bone 335 (straight)

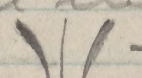
Section B. C.

no 5 Humpback sex ♀ May 27-08
 Color Back sides top of head & belly
 black - much white on throat &
 breast to insertion of pectorals thickert
 air the median area; the white here
 is mostly in streaks & splashes -
 Each ramus of the mandible,
 chiefly toward the tip is, is practically
 covered with small white circles,
 which take every kind of pattern -
 some overlapping, some heavy on
 one side & light on other, etc, etc.
 These circles are smaller than those
 on any of the other whales - many
 circles extend on to the chin &
 some on the breast - scattering
 faint white circles on sides of pe-
 duncle from anus back to flukes -
 five white circles on sides of back just
 above pectoral - The furrows are
 well edged with white - From the
 eye to the ant. insertion of pectoral
 are many streaks & splashes of
 white - The knobs or bunches on
 the right side of top of head seem to
 have been injured (the tips look as
 tho they had been rubbed off) & are
 deep yellow. - knobs on left side of
 head are black (healthy)
 Roof of mouth flesh colored - the

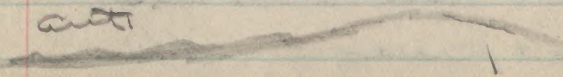
inside of jaw light slate blue as in
tongue

Pectorals Both pectorals black above
white below and with black toward
tip of anterior margin.

External Characters

Superior edge of peduncle wavy with
shallow crenulations from a point
opposite the anus to the flukes - two
well marked furrows run up over
the pectorals at insertion - blowholes
look like this  - The blow holes are
~~situated~~ have their anterior ends at
the highest part of the eminence
on the top of the head - between them
is a deep crease or sinus - the
posterior end of the opening is the
widest - a crease runs beyond the
end of the opening at both the ant.
& post. ends - The eminence surrounding
in which the blowholes are
situated varies greatly in height;
in some animals it is very prominent
and in others much less - the
slope from the median line of the top
of the head is gradual like this -

ant

 The widest fold
post. in this whale
was on belly just at the posterior end.

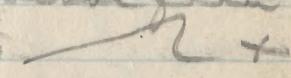
(top of eye dorsal fin lightly marked with white)

It was 21 centimeters wide.

Total length	1010
Cir. of body	465-
Snout to eye	260
" " blowhole (center)	200
" " just in front of pectorals	370
" " " base " dorsal	675
Eye to ear	451
Eye above ear	21
Opening of eye	7
" " " ear	.05-
Notch of flukes to anus	260
" " " " clitoris	330
" " " " navel	450
" " " to posterior of dorsal	345
Length pectoral (tip to base of rostrum)	260
To just in front of "	260
Greatest breadth of pectoral	72
Flukes (notch to ant. border at insertion)	90
Greatest depth of peduncle at insertion of flukes	70
Length right blowhole	22
" left "	21
Divergence anteriorly	2
" " posteriorly	24
Height of annulus about blowholes	5
Length row of baleen	205
" longest plate "	55
Depth peduncle between flukes & anus	110
Lower jaw beyond upper jaw	45

Paleen - The bristles of the anterior plates are very white - those of the remaining plates except the tips are ^{dirty} grey - tips brown.

No. 6 Humpback Sex ♂ May 28 - '08 Sechart
Color Top of head, back, sides + belly black - many large white circles on both sides of mandible which extend down on throat and chin half way back to pectorals; from here back to insertion of pectorals the white is confined to small flecks + not many of these mostly in median region, mid white in fine specks from head to flukes, like pepper + salt. - On upper edge of peduncle at insertion of flukes there is a large yellowish-white spot - Stub of flukes black above. A large white transverse spot with ragged margins in median line of breast, a little back of insertion of fins - edges of folds strongly edged with white on breast - Roof of mouth light purple
Pectorals Left Pectoral below toward body $\frac{1}{2}$ black - $\frac{1}{2}$ toward tip white with sparse ^{black} white circles - both margins edged with black above black - few white circles along posterior margin -
 Right pectoral - black above - many circles +

spots of white along posterior border thickest
 toward tip - circles also on anterior
 edge - Below white - many dashes &
 circles of black - black on ext. edge &
 also on posterior edge in the anterior
 half of tip - Stubs of flukes black above -
Baleen Bristles grayish white -
External characters - Dorsal fin only
 slightly falcate like this  &
 contracted at tip - only a very few
 knobs on left ramus of jaw - knobs
 on top of head begin opposite blowholes -
 one deep furrow runs up over base of
 peduncle - The ear in this whale is
 small (5 millimeter). I find that
 this varies in different individuals
 to a marked degree - in some (like this
 whale) the ear is only a small elliptical
 opening not situated in a depression -
 in others it is at bottom of V depression
 elliptical or round at top - ~~the~~
 The eye has a deep furrow above & below
 & curving around it; the eye is situated
 above & a little forward to the corner of the
 mouth. Top of peduncle only slightly
 crenulated. Only a slight hump on
 lower edge of peduncle between anus
 & flukes

note

Total length	1200
Circ. of body	510
Snout to eye	340
" " " " " " "	260
" " " " part. insert of pectoral	438 460
" " " " base " dorsal	822 830
Eye to ear	58-
" above "	24
Opening of eye	7
" " " " ear	105-
Notch flukes to anus	280
" " " " opening (center)	360
" " " " navel	490
" " " " part. insert of dorsal	378 385-
" " " " " " pectoral	762 785-
Length pectoral (tip to head navel)	320
" " " " " " part. insertion	320
Height dorsal	-
Breadth flukes (notch to ant. border)	105-
Depth peduncle at flukes	75-
anus to navel	230
Length row of baleen	275-
Length platea "	65-
Depth peduncle between flukes + anus	115-
Number iterat fur rows	22

Humpback

NO 7 Sex ♀ May 29-'08 Sechart B. C

Color Back, sides, belly & top of head black

The white circles on right ramus of mandible large, faint & mostly toward symphysis - On left ramus there is a splash of white midway between tip & corner of mouth - behind this no more white - in front of it to tip more splashes & a few large circles - white does not run up on lips at all - only on ramus. Small streaks & splashes of white from tip of snout on throat, nearly to opposite pectorals in median line - a few scattering white circles on sides of chin - From pectorals back no white on breast or belly except a very very few small white flecks along the edges of the folds - almost no white at all - On navel a transverse white spot about 2 in. long & a white streak at posterior edge of navel 6 in. long. - from armpits flukes on superior edge of peduncle many fine white dots of spots, "jeffer + saet" - very little white about genitalia - mostly in fine specks & dots - Streak of flukes black below -

Pectorals Superior surface of left fin black - a few white circles & spots along the posterior edge & toward tip

but not many - anterior edge of fin
 mostly black with circles patches
 + splashes - Inferior surface of
 left pectoral has a large black patch
 on the third spines length near the
 body; this patch does not reach either
 edge. Rest of fin white with black
 circles spots + streaks toward tips

The center third of this fin is almost
 without spot or mark. 8 bunches on anterior
 The right pectoral is almost exactly
 like the left in coloration on its
 inferior surface - alone it is black
 at the $\frac{1}{2}$ of the fin toward the tips which
 circles begin along the posterior edge
 getting thicker toward the tips which
 is covered. 9 bunches on anterior
 edge

Roof of mouth, ^{very} light purple
Baleen - The bunches at the extreme
 bases of the plates are brown - then
white in the middle of the baleen row
 for a space about 1 ft. wide, then
 brown at tips. The brown fades
 gradually into the white at both
 bases + tips. The baleen plates
 themselves are black streaked with
 white to a greater or less extent -
 the streaks are always on the side which

bears the bristles + don't show from the outside.

External Characters

12 bristles bunches on the right side of the mandible, toward supra-pharynx mostly

16 knobs on the top of the head right side including the median line from the black hole to tips.

The bunch between anus and flukes on upper edge of peduncle is very prominent & is 20 centimeter high.

The superior edge of peduncle from dorsal fin to flukes has no curvature - a straight line - The notch on chin deep & bunch large -
(See photo of dorsal fin)

no 7 ♀

Total length	1430
Circ. of body	600
Snout to eye	370
" " blowhole	800
" " port. ins. pectoral	470
" " " base dorsal	990
Eye to ear	65
Eye above "	29
Aperture of eye	9
Flukes to anus	350
" " mammary slit	407
" " clitoris	"
" " navel	598
" " port. insert of pectoral	935
" " " " " dorsal	416
Length of pectorals (tip to head of radius)	405
" " " " " ant. insertion	460
Greatest breadth pectoral	100
Height dorsal	25
Depth flukes (notch to ant. border)	105
Thickness flukes at insertion	23
Depth peduncle at ant. insert. of flukes	65
Length right blowhole	35
" left "	35
Divergence anteriorly	7
" posteriorly	25
Height ear, about 2 holes	10
Length mammary slit	25
Dist. between mammae	55

Length row of baleae (standard)	290
" length plate (inside base to tip)	84
Depth fulcrum between notch of anus	135-
Lower jaw beyond upper	66
Number throat furrows	27

No. 8. Humpback sex ♂ May 27-08 Sechart B. C.
 Color - Back, top of head, sides & belly black -
 no white on belly, but even edging to pectorals
 or on the sides of the breast - the white on
 the median line of breast extends to the
 pectorals; the last half way only a little.
 The white on the breast & median line of
 breast as circles, flecks & splashes -
 the white in median line of breast to opp
 insertion of pectorals is in small flecks.
 From nard to penis is a little white - small
 flecks - from penis to flukes "pepper & salt"
 Under side of stub of flukes black - anterior
 margin white - penis yellowish white -
 Roof of mouth light purple flecked with
 olive green mostly in median line
 inside of both ramus of mandible, slate
 blue as in tongue.
 Pectorals Right, superior surface, all
 black, no white circles but many
 bands along posterior margin -
 Superior surface white, except at body with

a little black at tip & along posterior margin near tip.

Left & posterior is black above - under
 with much like no 7 (See photo) a large
 arrowshaped black patch extends out from body
 not touching either margin far on third
 look up of fin - rest of fin white both edges
 black - (a large white scar on left eye)

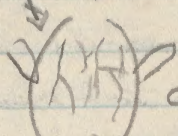
Baleen Bristles of baleen all steel gray
 even to tips, except the anterior portion
 which is white - the short plates of the
 very anterior portion of the baleen
 are all white, showing from outside
 side (see photo of head)

External characteristics

13 knobs on left ramus

16 top of head left side

The bunch on the chin is very frag-
 ment + the depression between it &
 the snout deep - Many barnacles
 on throat folds - This whale is
 blown up so that the furrows between
 folds on throat & breast are in some
 places nearly 10 or 12 inches wide
 The furrows are $\frac{1}{2}$ inch deep (deeper
 than on most of the others) The folds
 would normally lie about $\frac{1}{2}$ inch
 apart - greatest division of folds
 is on the breast near insertion of

pectorals, for the obvious reason of
 allowing for the swelling of the body
 at that place. The folds do
 not divide to a  great extent -
 only a comparatively few - they
 expand of course both at beginning
 and end. The folds lie flat
 on top with rounded edges - 2 furrows
 run up over the crest of the pectoral
 on the right side. Bottoms of furrows are
 of same color as tops & finely creased skin
 shows that it is expansive tissue.

The tongue of these whales extends clear
 to the tip of the lower jaw & completely
 fills the space between the ramus of the
 mandible. This whale was lying on the slip
 with its mouth slightly open, and I
 crawled well ~~in~~ inside thus getting
 a good opportunity to see how it lies
 in life. It is a loose flabby mass of
 blubber & flesh, & when taken out lies
 in definite shape whatever - it simply
 lies flat on the slip. The skin which
 covers it is slate-blue in color &
 looks like nothing so much as ~~some~~
 coarse crepe paper. It is, therefore
 very elastic & can be pulled into
 almost any shape. In the mouth
 the tongue is held in shape by the

jaws + throat completely filling the inside of the mouth. The ends of the baleen apparently fit down on either side + the tongue also wedges itself to the space between the rows.

(See photos) The tip of tongue is like this

The top edge of the peduncle is very slightly crenulated.

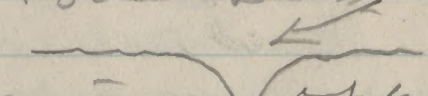
The excrement of these whales is about the consistency of thick cream + is brick-red in color. When drawn on the slip + cut into, the air with which they have been blown up forces out the excrement, which is sent forth in a thick stream + sometimes thrown eight or ten feet from the animal - its odor is very disagreeable.

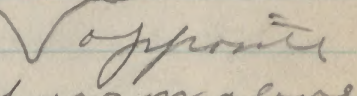
The stomachs of all the whales so far, have contained the same sort of food - shrimp like animals, from $\frac{1}{2}$ to $\frac{3}{4}$ of an inch long + occasionally a few worms, very much like earth worms. The stomachs all contain a great mass of this food in all stages of digestion, * mixed with a dark brown-red fluid the whole making a mass about the consistency of thin cream, when the stomach is first

opened the stretch arising from it is almost overpowering + for a few moments makes close examination an impossibility; the contents however run out upon the slip & may then be easily examined (see fls to dorsal fin)

Length	1275
Extent of body	540
Snout to eye	370
" " blowhole	290
" " post. ins. of pectoral	500
" " " base " dorsal	920
Eye to ear	52
" " alone "	20
⊙ length of eye	9
" " " ear	2
Notch flukes to anus	290
" " " " penis	400
" " " " navel	515
" " " " post. ins. of dorsal	355
" " " " " " pectoral	975
Length pectoral (tip to head radius)	295
" " " " " " ant. insert. of	348
Greater breadth pectoral	95
Depth dorsal	20
Breadth flukes (notch to ant margin)	95
Thickness " at insertion	21

Depth peduncle at insert of flukes	75-
Length right blowhole	35-
" left "	30
Diameter anteriorly	5-
" posteriorly	18
Height anal. about blowholes	9
Length anal opening	10
Ant. margin anus to center penis	110
Length row of baleen	290
Longest plate	75
Depth peduncle between flukes & anus	115-
Lower jaw beyond upper	35-
number throat furrows	28

The bundle on peduncle, lower edge
 is 2 meters from notch of flukes
 & 85 centimeter from anus
 notch of flukes deep & shallow like this
 with crenulated margins 

Rub on top of head begins  opposite
 the blowholes - this is one furrow above
 & one below the eye 23 cent. long - they
 curve around the eye.

No. 9 Humpback ♂ May 27-08 Sechart B.C.

Color Top of head, back sides black - belly
 + breast back of pectorals black with
 the exception of four white streaks
 in the bottoms of the furrows - no
 more white back to penis - This is the
 first whale in which there has been
 white in the bottoms of the furrows
 peduncle, infer. edge from penis to
 flukes "pepper + salt" - On median
 line of breast between pectorals is
 a transverse white blotch with
 ragged edges, 18 inches longitudinal
 dia, by 3 in. cross diameter. This is
 like spot on No. 6 whale. The white end
 on both ram of the mandibles are
 mostly toward the symphysis, there
 run down on dorsal to median line
 the white on throat extends in mid-
 back for about six feet of their ends -
 from here to the white spot opposite the
 pectorals are median line there
 are only small flecks of white -

Penis from base toward tip for 2 feet
 brownish black - then flesh colored to
 tip -

Pectorals Left - black above the post-
 erior margin white ^(anterior) & thickly studded
 with barnacles - ant. margin same.
 Below large black patch at insertion

running off at posterior edge - both edges black & rest of face white, the center streaked. Right pectoral practically the same in coloration. 7 knobs on right fin; 8 on left fin.

The inner skin of the anus is sky blue - roof of mouth light purple shaded with white. Vard of roof of mouth slate blue as is tongue & inside of both rams of mandibles.

Baleen bristles steel-gray at base for 4 inches then grey white to tips - at anterior one-third of row, the bristles are white. The entire plates, bristles & ad, are white for 30 cent. from tips.

External Characters

13 knobs on right ramus of mandible - tip margin of pectoral only slightly crenulate; fin ray - The blanch between anus & flukes, lower edge peduncle, is prominent - great mass of barbels on the throat - Dorsal fin almost exactly like no 8

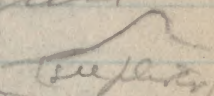
no 9 ♂

Total length	1305
Cir. of body	570
Snout to eye	350
" " " " " " " "	280
" " " " " " " "	480
" " " " " " " "	890
Eye to ear	55
" " " " " " " "	22
Opening of eye	9
" " " " " " " "	.08
Fishes to anus	303
" " " " " " " "	425
" " " " " " " "	535
" " " " " " " "	430
" " " " " " " "	850
Pectoral (tip to head radius)	355
" " " " " " " "	400
Greatest breadth pectoral	95
length dorsal	15
Breadth pectoral (notch to ant margin)	110
Thickness pectoral at insertion	21
Depth peduncle at ant. " " pectoral	80
Length right blowhole	30
" " left " "	25
Diameter anteriorly	6
" " " " " " " "	26
Eminence about blowholes	10
Length anal opening	10
anus to penis center	170

Length row of baleen	270
" longest plate "	75-
Number plates "	295
Depth peduncle between notch & anus	122
Lower jaw beyond upper	60
Number throat furrows	24

No. 10 of Humpback June 1 - 5 Sechart B.
 Color Top of head back ~~black~~ black - red
 white whatever on belly or vent back of
 pectorals to genitalia - a very little white
 about genitalia - almost red white circle
 on left ramus except at tip, but a
 number on chin which run down as
 to throat - the white on left ramus is
 all forward to one meter from tip; no
 back of it - much white on the anterior
 side of right side of throat & chin - circles
 & in the very center of throat running
 nearly ^{opposite} to the anterior insertion of pectoral
 a few long streaks of white in the bottom
 of the furrows just back of pectorals -
 just a dash of white from anus to flukes
 on lower edge of peduncle - inferum sur-
 face of club of flukes black - Row of
 mouth light purple except at tip where
 the center is white - spot on back of
 row of mouth blue green - inside of jaw
 of mandible dark slate blue as is tongue
Pectorals Left - below, black at insertion for
 $\frac{1}{3}$ its length then all white - black spot at tip
 & circles at tip - both margins black -
 above black, thickly circled with white
 along posterior margin & at tip
Baleen Bristles most all dark brownish
 gray except the center longitudinal
 band of lighter gray - all the bristles are
 light gray at the anterior part

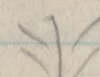
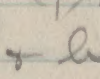
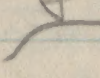
External Characters

18 white hairs / cent. long on extreme tip of symphysis of mandible - a deep crease runs back to tracheal from vulva - a deep slit on either side of the mammæ - the folds are 17 cent. wide at end (part.) - tip of peduncle only slightly crenulated - many deep scar-like transverse creases on folds of throat & breast back to pectorals - Tubercles 14 cent. thick - 13 knobs on right side top of head (counting center line from blowholes) no hair anywhere except at symphysis - hump between anus & flukes prominent - a very abrupt dip in outline of peduncle just back of vulva - Dorsal fin like this  The mammæ are in front of the center of the vulva just 17 centimeters - This whale had a foetus about 8 inches long (No. 12)

Total length	1510
Cr. of body	700
Snout to eye	395-
" " Ear	460
" " blowhole	300
" " front insert of pectoral	580
" " " base of dorsal	1020
Eye to ear	66
" above ear	20
Opening of eye	9
" " Ear	51
Flukes to anus	360
" " mammæ	405

Flukes to navel	630
" " part insect dorsal	460
" " " " pectoral	970
Paternal tip to head rodens	415-
" " " " ant insertion	460
Greatest breadth	112
Height dorsal	20
Breadth flukes (notch to ant insert)	120
Greatest thickness flukes at insert	24
Depth peduncle at ant insert flukes	85-
Length right bladder	35-
Divergence anteriorly	9
Height emus about bladder	10
Length manway slit	25-
Dist between manway	35-
Length row of balen	340
Length plate " "	85-
Depth peduncle between notch + anus	140
Number throat furrows	24
manway anterior to center of clitoris	17

The opening of the ear in this whale was very large at top + elliptical & it was large enough at bottom to insert a small pencil

No 11 ♂ Humpback June 1-08 Sechart B. C.
Color, Top of head back + sides black - The
 median line of breast + throat from
 snout to opposite pectorals is all
 white streaked with long or narrow
 black marks pointing obliquely toward
 the median line - from both sides
 like this  The white in median
 line only  runs back of pectorals
 to anus + here it is only in dashes
 + pecks - On the sides of throat +
 breast, the white median line gives
 place to the black of the rest of the
 body, but it is very strongly dashed
 with narrow white streaks all point-
 ing obliquely toward the median line.
 The white of the breast does not run
 up to the ramus so there is an
 area here not very heavily marked.
 Right ramus of mandible is heavily
 circled with white, but from the
 beginning of the down curve of the
 mandible  on the sides back to the
 flukes no color except the faintest
 tinges of white in the crevices of
 the folds where they end. From
 navel to penis little white and many
 barnacles - grayish about penis +
 from anus to flukes, the lower edge of the
 peduncle is white + "pepper + salt" - Roof of

mouth light purple - base slate-blue as
 is tongue - inside left ramus very
 light slate, almost white - left darker
 slate -

Pectorals Right - above - black, except at
 tip which is white + black, & looks as
 tho' flange had been dusted over it -
 Left - white below, tip + posterior margin
 edged with black - ant. margin white
 except on bunches which are black -
 a row of semi elliptical spots in center
 of fin running across it - to run in
 same manner ^{near} ~~at~~ end - Top surface
 left pectoral black except at tip which
 is whitish same as right -

Basicon - Bristles of antenna $\frac{1}{3}$ of row all
 grey-white - rest bare bases steel gray,
 the usual central band of lighter gray,
 + the tips brownish-gray & The coxals all
 shed imperceptibly into one another -

External Characters On the right side of
 body 4 fields run straight through from
 summit to end, without dividing - 12 short
 white hairs on the very top of mandibular
 symphysis .05 cent. long - Dorsal fin
 low + almost exactly like No 10 - Top of
 peduncle well creased - no hair on
 chin whatever - 4 no hair on top of head -
 14 bunches top of head on side - many
 barnacles - one furrow extends from

the corner of the mouth up over the insertion of the pectoral

Eye Two furrows above + below curving around eye - furrows are 20 cent. long their ends stand 8 cent. apart both anteriorly + posteriorly - from ant. corner of eye a crease 6 cent. long runs forward + down behind - lids thin - pupil black + iris brown, surrounded by a ^{narrow} ring of lighter; then comes a ring of dark brown 1 cent. wide - the eye is situated 22 cent. above the corner of the mouth + 15 " behind it.

Ear - Very small. .05 cent. + has a depression - just an elliptical hole -

Total length	10.55-
Car. of body	5.00
Summit to eye	2.00
" " blowhole	1.32
" " post. insert pectoral	4.25-
" " " dorsal	7.36
Eye to ear	4.8
Eye to eye	2.6
Opening of eye	7
" " ear	.05-
Flukes (notch) to anus	2.50
" " " penis	3.55-
" " " navel	4.30
" " " post. insert. dorsal	3.30

Flukes to base dorsal (posterior)	665
Pectorals (tip to head radius)	286
" " " " ant. insert.	339
" breadth (greatest)	86
Height dorsal	11
Flukes breadth (notch to ant. edge)	90
" ^{radius} Depth at insertion of flukes	65
Length right blowhole	28
" left "	30
Divergence anteriorly	7
" posteriorly	25
Height emur. above blowholes	8
Length anal opening	6
Anus to navel	170
Length row of baleen	240
Longest plate	58
Depth peduncle between notch & anus	85
Lower jaw beyond upper	30
Number throat furrows	19

No 12 Humpback ♂ June 1-08 Sechart B. C.

Color V of head sides, back all black - back of the pectorals all the folds of the belly have white edgings - Scattering white circles on breast to pectorals mostly on the sides - median line ^{of throat} white of its - from the middle of the breast to the pectorals is an almost solid line of white - 7 faint white circles about eye - penis to flukes is pepper & salt - Roof of mouth salmon purple flecked in median line with greenish-black - base slate blue as is tongue & inside right ramus ^{of mandible} - left ramus whitish in central area - white patch on underside of tip of rostrum - many white circles on anterior of right ramus & mandible. Below the stub of the flukes has a large white spot on the right side - on the left side, it is bleached streaked with white.

Pectorals - Above, light, black at insertion & in center nearly to tip - a large white band extends from tip along anterior edge to insertion - the whole fin much circled & washed with white - When surface this fin has a large black patch in center from body for $\frac{1}{3}$ distance - rest white, circled with black on both margins.

Barren - Bristles have bases all steel gray the rest of antenn $\frac{1}{2}$ all white - the post

one half has bases steel gray & tips
brownish gray; between tips & bases, bristles
are grey white.

External Characters - 24 hairs on very
top of symphysis - widest fold on belly
20 cent. at end - large bundle between pectorals
& anus on lower edge of peduncle - a
deep V shaped cut on the posterior edge of
the left pectoral about the middle -
top of peduncle only crenulated lightly
7 hairs on very tip of rostrum - 16 hairs
right side top of head (counting center line)
great mass of barnacles on throat
no hairs on any other portion of the
head or body

Length	1360
Cir of body	570
Snout to eye	405
" " ear	455-
" " blowhole	335
" " post. insert of pectoral	565-
" " base of anal	970
Eye to ear	61
" anal "	16
Open. of eye	7
" " ear	4
Notch to anus	335
" " penis	455
" " navel	575

Notch to postinsert, dorsal	398
" " " " pectoral	825-
Pecoral (tip to head base)	341
" " " " ant. insert,	405-
Breadth pectoral	107
Height of dorsal	22
Flukes (notch to ant. edge)	111
" thickness at midpt.	21
Dipl. peduncle at " of flukes	80
Length blade right	32
" " left	35-
Divergence anteriorly	8
" posteriorly	36
Emergence above blades	10
Length balancer row	310
" longest plate	83
Depth peduncle between flukes	126
Lower jaw beyond upper	30
Number throat furrows	20

no 13 Humpback ♂ June 1 - off Seal Cove B.C.

Color Black sides of body + tip of head black -

On right ramus of mandible many large white circles running from tip of snout to the back to within about 4 feet from the corner of the mouth - they go up close to the edge of the lips - Left ramus ^{white} circles extend to edge of lips but are not quite so thick as on right. On sides of breast ^{between} ^{midway} between pectorals + snout is a great mass of white dashes pointing obliquely toward the center - this mass of white runs up on the sides of dorsal not quite on a line with the insertion of the pectorals (see photo). The white is heaviest in the median line of pectorals ^{where it is almost solid} + extends back half way from fins to navel - it is dashed here with narrow black streaks - many barnacles on chin which somewhat conceal the white here. From pectorals to flukes the bottom of the peduncle is thickly peppered with white - There is a rather small white patch directly behind the left eye - There is a white anterior edge on the dorsal fin to the tip + a very little on the posterior edge - Roof of mouth delicate pink or flesh color - base blue-green - Tongue + inside of right ramus of mandible bluish slate left ramus a little lighter - There is a

white patch on the left side of the tip of the rostrum underneath - also on right.
 Pectorals Left, below, all white except a small black patch at insertion & at the very tip - Above black heavily circled with white along posterior edge & at tip - ant. edge mostly white

Baleen Base of all barrels steel gray the rest of the anterior one half of baleen row have barrels all white to tips - the posterior one half have bases steel gray, middle light gray & tips brownish.
External Characters

25 hairs white on tip of symphysis - 6 hairs on the 6 barbs on the anterior portion of right side of tip of head - no hair on beam - dorsal fin like others but low - peduncle well crenulated - Lips on the edge are rounded evenly - 2 furrows from corner of mouth, one running above base of pectoral & other below it - ~~The~~ 14 centi - from tip of rostrum to beginning of baleen

Total length	1325-
Cr. of body	5135-
Snout to eye	425-
" " eye	480

No. 14 ♂ Humpback June 1-'08 Sechart B. C.
 Color Back, sides, top of head & belly black - from
 pectorals to penis there is no white - on
 both sides of the pectorals just anterior to the
 insertion of the flukes there are a very few
 faint white circles - a few white circles
 on the sides of the flukes (beneath) which
 is black - extreme tip of dorsal fin
 is white - just a tinge on the edge -

On the rammary the mandibles
 there are many white circles; there ex-
 tend upward on the lips to the ex-
 treme edge & back to the beginning of
 the lower curve of the mouth -

The white circles run down on the
 chin & throat, ^{to throat} back nearly opposite
 the pectorals - the white on the throat
 is not heavy & is almost all in
 circles - few splashes or streaks -
 a few barnacles on chin & about
 penis; also on hump between flukes
 & arms below - The tongue of the
 whale is out of the mouth showing
 the underside which is light purple -
 above it is slate-blue.

Roof of mouth light purple shading
 into yellowish white just before the
 bare patch which is blue-green.
 Pectorals Left, below (supra) has
 a large black patch at insertion

The tongue is broad & white

The right fin above is black thickly spotted with
white circles from body to tip

for $\frac{1}{3}$ its length, which touches post-
erior edge but not anterior - along
the posterior edge, blackish & black
at tip also. Black patches about
center of fin near anterior margin
ant. edge black & white -

The inner side of the right fin is
like the left -

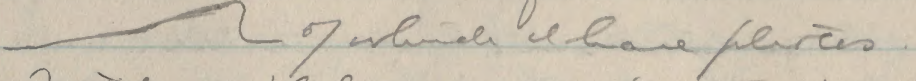
7 bundles ant. edge right fin
6 " " " " left "

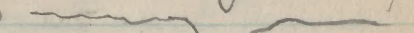
Baleen - Bristles dark gray at bases -
the extreme tip of the posterior $\frac{1}{2}$ like wire.
The remainder & all the anterior bristles
are white - I believe the bristles of this
whale are the whitest I have seen yet.

The number of baleen plates was 320 of
which the first 65 in the row are all
more or less whitish or light gray, the
beyond these 65, 180 other plates were streaked
these streaks were all rather light & all
in the ^{plate of the} anterior ^{half} of the row along
the inner (bristle-bearing) side, at the
bases

External Characters

The hump on lower edge of peduncle
between flukes & anus is very high & gives
the peduncle of the whale a peculiar stubby
appearance. - The top margin of the peduncle
from dorsal fin to flukes is not very heavily

crenulated - dorsal fin is like others


Notch of flukes deep + posterior edge heavily
 crenulated - notch like this 

A deep furrow runs from the corner of the
 mouth up over the base of the pectoral fin
 to a little beyond the posterior edge &
 then stops abruptly - another runs
 from corner of mouth to anterior edge
 & a little underneath fin, then ending
 abruptly - These two furrows seem to
 be constant in all the whales I have
 seen - the extent to which they run varies
 a little.

16 knobs on top of head right side
 counting median line from blow holes
 to tip of snout - There are six knobs from
 blow hole to snout - a row of
 9 knobs run from tip to opposite blow
 holes on edge of rostrum ^{there are 9} - This would
 make 25 knobs altogether on top of head -
 There is one knob just in front of blow
 hole between the center line & the side lines.

Each knob in the center line has a
 white hair in its center or top set in a
 little pit or depression; these hairs
 project .08 cent above surface & usually
 may be easily pulled out - when pulled
 out they are about 25 mil. long - four

knots in the double side rows bear hair & the single knot between center & side lines has a hair - ~~They~~ There are 25 white hairs on the extreme smooth tip of the mandible ~~at~~ symphysis.

The bunch of the chin is very prominent & about 7 inches high - the depression between it & the symphysis is deep & in the bottom of this depression there are six deep creases of varying lengths. On the right ramus of the mandible there are 9 small bunches of varying sizes six of them bearing tubercles.

In the median line the folds of the throat become greatly narrowed and meet the bunch of the chin in a series of Vs or inside the chin like this.

of the folds is these four folds



This arrangement is common to all From between

the pectorals the greatest

fold divide, & become much narrower. The folds back of the pectorals are at least twice as wide as those in front of them - four folds on the whole body run from snout to nard without dividing & none of them show a constant width throughout their entire extent - only 2 folds wide back of the

pectoralis except just at the navel
 to make room for this organ.
 Peduncle Thirty cent. back of the posterior
 insertion of the penis is an elliptical
 opening 17 cent wide at the top and large
 enough to insert one's finger - the ~~top~~
 opening is 6 cent. deep & these ends - I
 take it that this is the rudimentary
 test of the male. The tip of the dorsal
 fin is directly opposite this cavity
 or 30 cent. back of the point of insertion
 of the penis. The middle of the dorsal
 fin is ~~also~~ opposite to the center
 of the penis - 24 cent. in front of
 the arch is a transverse furrow
 30 cent. long. This crease marks the
 beginning of the peduncle - I suspect
 of this crease or furrow the belly
 swells out to form the penis bulge
 which is prominent in all these
 whales - behind it the peduncle narrows
 gradually to the flukes, its outline
 being broken 84 cent. behind the
 arches by the rounded hump or bump
 common to all this species - below
 the lateral expansion of the flukes
 the edge of the peduncle is ~~lost~~ about
 midway between the ~~notch~~ and
 ant. edge of the flukes. Above

from the dorsal fin back, the edge of the peduncle slopes rapidly downward to the flukes - the edge is usually crenulated more or less. The edge of the peduncle is lost on the flukes above a little posterior to the middle - somewhat further back than below - The center of the anterior edge of the flukes at insertion at body is 43 cent. from the top edge of the peduncle - It is 33 cent. from the venter edge at the same place. The center of the hump on the inferior edge of the peduncle is 84 cent. from the anus and 196 cent. from notch of flukes - The peduncle is 27 cent. wide just in front of the insertion of the flukes which is its narrowest place - The edge of the lower lip is 7 cent. thick + rounded.

The navel is a rounded hump 5 cent. high + 27 cent. long. There are 2 short furrows behind + in front of it, but they do not meet each other in center of navel - - it is situated in median line of belly at the end of the furrows. The tip of the upper jaw or rostrum is 11 cent. from the beginning of the whalebone - its edge is thick + rounded.

Gradually down to white line -
 Eye - The eye is 25 cent above + 40 cent
 behind the corner of the mouth - the
 furrows above + below it are 24 cent
 long + curve around; anteriorly the
 ends of the furrows about the eye
 are 16 cent. apart + posteriorly the
 same - The crease from the
 ant. edge of the eye opening is 7 cent
 long - no crease behind eye opening

Total length	1155
Cur. of body	510
Snout to eye	348
" " ear	386
" " blowhole	300
" " post. insert of pectoral	480
" " " " dorsal	871
Eye to ear	45
" above ear	15
Eye opening	7
ear "	6
notch flukes to anus	273
" " " penis	385
" " " navel	470
" " " post. ins. dorsal	345
" " " " pectoral	705
Pectoral (tip to ant. insert)	340
Greatest breadth	95
Height of dorsal	18

no 15 - Humpback ♂ June 4 - of Sechart B.C.
 Color Back, sides, top of head black - rest much
 white on breast - white circles on ramus of mandible
 but not heavy - very few white circles on dorsal,
 (on median line mostly) & almost none on
 breast - There is a white blotch on right side tip
 of rostrum underneath - (a white patch on one
 or both sides at this place seems to be pretty
 fairly constant in all the Humpbacks I have
 examined)

Rosy of mouth pink - base slate blue as tongue
 & inside of right ramus of mandible - inside
 of left ramus is light blue

Pectorals Left, below, has much black at insertion
 not touching ant. edge which is white for whole
 extent - post edge black to tip - fin is heavily
 marked with black & white especially near
 body - Right flipper below is same as left
 Both edges of dorsal fin have white on
 them - white between near bases & along
 inner edges both sides -

Baleen Bristles at bases dark gray - the
 tips of whole row are light brown - between
 bases & tips bristles have the longitudinal
 band of lighter gray - The general effect
 of the bristles at a little distance
 is rather dark -

External Characters

6 bunches on ant. edge of left pectoral -
 about 20 white hairs on symphysis on tip

dorsal fin is 7 alcaete - five bunches on the right ramus have hair on them - and one hair on each bunch - thickest blubber is 16 cent. - There are 11 knobs on the right ramus altogether - Top edge of the peduncle is well crenulated - peduncle is 35-cent thick at insertion of flukes -

Total length	1320
Curv of body	540
Snout to eye	330
" " ventral	254
" " front. ins. of pectoral	420
" " " base " dorsal	920
Eye to ear	65
" alone	28
Opening of eye	10
" " ear	.03
Notch of flukes to anus	305
" " " " " perian	405
" " " " " navel	550
" " " " " front ins. of dorsal	395
" " " " " " " " pectoral	860
Length pectoral (tip to head radius)	365
" " " " " " " " ant. insert.	400
Perianth pectoral	110
Height dorsal	16
Perianth flukes (notch to ant. under)	100
Thickness flukes at insertion	25
Depth peduncle at ant. insert. of flukes	86

Length right blowhole	37
" left "	38
Dorsal fin anteriorly	9
" posteriorly	35
Height fin. above blowholes	15
Length baleen row	310
Length plate	86
Depth peduncle between flukes & anus	120
Length jaw beyond upper	25
Number dorsal fin rays	20

No. 76 Humpback ♂ June 4 - of Sechart B.C.
 Color back sides top of head black - white on
 breast & throat as flashes breast in median
 line - large white spot below pectorals - only
 a few faint white flecks back of pectorals -
 on the left ramus there are a few white circles
 near center up to lips, not many near tips or
 corner of mouth - On sides of throat few white
 circles - short all streaks & flashes in median
 line of throat & breast - quite heavy - chin
 prominent - few faint white circles behind &
 near eye - On the right ramus the circles
 are thick for the whole ant. half - they run
 down on to sides of throat & breast in median
 line these give place to streaks & flashes -
 The streak of the flukes is black above - below
 it is black with a few white circles - white
 spots on the ant. edge - inner skin grayish blue

Pectorals Left alone, black strongly circled with white near posterior edge - also on the very ant. edge are white circles -

Right - alone is just like left - below is a black patch at insertion which does not touch either edge - rest of fin white with only a few black streaks & only one large circle near anterior margin - a little black at tip -

Baleen Bases of all busies steel gray - The busies of the ant. $\frac{2}{3}$ white to tips - the post. $\frac{1}{3}$ has tips very dark gray - the baleen busies are whitest of all -

External Characters

20 white hairs on top of mandibular symphysis - chin prominent - no hairs on bundles of left ramus - only 5 bundles of left ramus, mostly near tip - ~~from~~ top peduncle is well crenulated - hump between anus & penis high - deep transverse crease midway between penis & anus - deep longitudinal crease from penis to navel - 4 or 5 of dark humps on top of the head bear white hairs - dorsal fin falcate & narrow -

On either side from the eye to the middle of the back about 18 ridges behind the blowhole there is a shallow depression - also on the back just over

the superior edge of the scapula, there is a long low rounded ridge runs from three feet behind the posterior insertion of the pectoral forward till it meets the transverse depression from eye to middle of back. This low ridge marks the top of the scapula & consequently the top of the back is not round as one might suppose, but flattened somewhat between the shoulders -

One furrow runs up over the base of the pectoral from corner of mouth another runs to ant edge of fin & then slips - a crease comes round from behind & nearly meets it -

Length of jawbone curved = 340

" " " straight = 300

Fins -

Length right lobe (straight) = 143

Breadth at top " = 47

" " bottom " = 60

" both lobes at bottom ~~is~~ 115

Color yellowish white -

There are 302 plates in the baleen row of this whale - the 1st 40 are all more or less whitish chiefly on the inner side. Besides these 40, there are 88 other plates all in the anterior half of the row which are streaked to a greater

or less extent. Most of these 88 plates are white ^{or streaked} only at the very base + for but a slight ^{or} extent; however there are some 15- or 20 which are streaked with bands of white for $\frac{1}{3}$ of the whole length of the plate - In this row of balen there seemed to be no uniformity about the position of the streaked plates aside from the fact that they were all in the anterior one half - a plate which was heavily streaked might be followed by one without any noticeable markings, but in most cases the streaked plates were pretty well bunched - All the streaks were on the inner (bristle bearing) side of the plate. In this whale the bristles were very white indeed - I think whiter than any other I have examined.

On a whale previously examined (Whale No 13) out of 321 plates, 24 were streaked with white in varying degrees, but usually very little + always on the inner side + close to the bases of the plates. All the streaked plates were in the anterior one half of the row -

no 17 ♂ Humpback June 5 - 08 Sechart B.C.

Color Back, sides top of head ~~black~~ black - belly ~~black~~
back of pectorals has only a few fine white specks
along the edges of the folds + in the bottoms of
the furrows - the white of the throat is mostly
confined to the median line + is in streaks
in circles or white on left ramus excepting
at very tip - Right ramus has a few scattered
white circles (faint) on its whole length -
Roof of the mouth has a median line white
~~for~~ palated with light purple - on the sides
the two rolls ~~are~~ an all purple - base is
slate blue like tongue + left ramus ^{inside} - right ramus
inside lighter blue - There is a small
white spot on the navel - pepper + salt about
penis + ovaries - rest of peduncle black - streak
of flukes black below streaked + circled with
white - large flesh colored spot in center
of breast opposite insertion of pectorals -
White streaks + splashes in median
line of breast back to white spot

Pectorals Right is black above with scattered
large ^{solid} white spots on the 1/3 nearest the tip along
posterior border + tip mostly on edge white + black
Below right fin has a large black patch
from body halfway toward tip - patch does
not touch either edge - rest of fin white except
a few black marks at tip

Left fin is like right above + below
Baleen Bristles dark gray at base - the tips
of the baleen ^{2/3} also are same color -

tips of ant. $\frac{2}{3}$ very light gray as is ^{all} the remaining portion of the bristles

External Characters - notch of flukes is peculiar - shaped like this

22 white hairs on mandibular peduncle well crenulated - 5 knobs on right side, top of head bear white hairs - 9 white hairs on very tip of rostrum, 4 on bunches and 5 not - 11 knobs on top of head have long white hairs & also two small knobs beside blowholes on the right side. - Blubber is thinner on the belly & thickest on the edge of the peduncle above; just back of blowhole it is thick & also at dorsal fin - The hump on the lower surface of the peduncle is large - a deep transverse crease is before & behind anus.

Length	1220
Di. of body	520
Snout to eye	305
" " ear	370
" " blowhole	285
" " just in front of pectoral	475
" " " " " dorsal	830
Eye to ear	55
" same "	22
Depth of eye	7
" " ear	1

notch of flukes to anus	284
" " " " penis	395
" " " " navel	495-
" " " " prominent of dorsal	475-
" " " " " " pectoral	790
Length of pectoral (tip to head radius)	352
" " " " " " ant. insertion)	385-
Mouth	92
Height dorsal	24
Greatest thickness flukes (notch to post margin)	105-
" thickness flukes at insertion	21
Depth peduncle at insertion of flukes	82
Right bladder	34
Left " "	-
Diameter anteriorly	6
" " " " posteriorly	25-
Length anal opening	11
Anus to navel	210
Length row of baleen	290
" " longest plate "	75
Depth peduncle between flukes & anus	116
Lower jaw beyond upper	34
Number throat furrows	18

No 18 Humpback ♂ June 5 - 08 Sechart B.C.
 Color Back, top of head, sides + belly black -
 on the median line of the breast between
 & a little behind the pectorals is a
 great mass of white - in the area
 which this white spot covers the bottoms
 of the furrows are pink - anteriorly
 this white mass begins in the middle
 of the throat - on the sides of the breast are
 small white dashes - no white on
 throat except a few small flecks -
 throat is practically all black - some
 white on chin + snout - no white on
 left ramus except at very tip & then
 only a few circles - Almost no white
 on right side of throat + breast - only a very
 few small white edgings to the folds - right
 ramus has a few large scattering white
 circles all on its anterior one half - none on the
 posterior $\frac{1}{2}$ - Stalk of flukes below black
 at body with large white patches - no white
 from navel to penis - Roof of mouth
 light purple + base light slate blue like
 the inside of right ramus - Tongue
 darker slate blue - left ramus almost
 white inside -

Pectorals Left alone has on the half of
 fin nearest body a large black patch
 which does not touch either edge - rest
 of fin is all white with narrow black
 streaks thinly scattered over it -

the posterior edge is black - ant. black & white -
 Under side right fin all white - only a few scattered
 black streaks at insertion & at edge of wing tips -
 Balloon Pinnules all way white except the
 extreme bases of the posterior $\frac{1}{2}$ & ant. $\frac{1}{2}$ plates
 which are dark gray - all the rest of the pinnules
 are white including the tips of the posterior

$\frac{1}{2}$ External Characters - Each whale has on
 the under side of tip of rostrum just in front
 of beginning of shade two creases like this -



These creases are well marked in some
 whales & in others not so much so -

Blubber thickest on top edge of peduncle,
 back of blowhole & at dorsal fin - from
 blowhole to dorsal the blubber thins up
 a little - on side of peduncle blubber
 is thin - The rudimentary testis in this whale

is 2 cent. long and situated at the root of
 the penis - About 35 rather long white
 hairs on the symphysis of mandible -

there are 12 knobs on right ramus all of
 which bear ~~to each~~ a single hair in
 their center - Dorsal is ^{only} slightly falcate

Top of peduncle is very lightly cre-
 nulated - 6 knobs from blowhole to tip in
 center of head all bearing short hair - 2 white
 hairs on the two knobs beside blowhole on right
 side - 9 knobs top of head ^{right side} not counting center
 line from blowhole - The posterior insertion of the

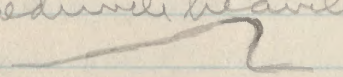
pectoral at the body is at the olecranon process
of the ulna

Total length	1260
Cir of body	520
Snout to eye	345
" " Ear	395
" " blowhole	280
" " post. insert. of pectoral	420
" " " " " dorsal	855
Eye to ear	55
" above "	21
" opening	7
Ear "	2
Fleches to anus	700
" " penis	390
" " navel	525
" " post. insert. dorsal	380
" " " " " pectoral	805
Pectoral (tip to heel of ulna)	318
" " " " ant insert. /	360
" " breathe	90
Height dorsal	20
Breath flukes (notch to ant margin)	105
Depth " at insertion	21
" peduncle " " of flukes	75
Height blowhole	31
Left "	31
Asymmetrical anteriorly	8
" " posteriorly	29
Env. about blowholes	6

Tongue anal opening	10
Arrest penis	95
Depth peduncle between flukes + anus	123
Lower jaw beyond upper	30
Width between furrows	22

No. 19 ♂ June 5--'08 Humpback Sechart, B.C.
Color Top of head, back + sides black - mud white
 in small of flukes, circles + dashes all over throat
 + in median line of breast to pectorals - right
 ramus of mandible thickly covered with small
 white denticles from tip to beginning of down curve
 of mouth white spot between pectorals in
 median line - In all places where white
 is the best + the bottoms of the furrows are
 pink - all folds of belly edged with
 white - pepper + salt from penis to flukes -
 a few faint white flecks back of pectorals for
 a short distance - Left ramus well marked
 with heavy white circles from corner of mouth
 to tip - a very few faint white circles on top
 of head from blow hole back to pectorals
 Base of flukes black above + below with
 white on ant. margin - Median line roof of
 mouth whitish - sides of roof ^{light} purple - base light
 slate blue as is tongue - Inside right ramus
 is dark slate blue - left is whitish or very light
 slate blue -
Pectorals Left below has black patch at body + rest
 of fin black + white circled - above left fin is black

heavily circled with white all over in irregular patches - Both fins same -

Baleen - Bristles of ant. $\frac{1}{3}$ are all white including bases - part $\frac{2}{3}$ dark gray at base & all the rest of bristles light gray including tips -
External Characters - Deep groove from nose to penis - this seems to be fairly constant in all the males - chin very prominent - 23 short white hairs on top of symphysis - none on right side top of head - back above eye much scarred by bangles top peduncle heavily crenulated dorsal fin like this  - no hair on left side top of head - Five fold 6 cent wide run up on left ramus - 2 creases above left pectoral - both pectorals were very heavily studded with bangles - on superior surface - Blubber on top edge peduncle is 25 cent thick -

Total length	990
Car body	440
Nose to eye	265
" " ear	302
" " O. hole	204
" " part. vent. pectoral	325
" " " dorsal	690
Eye to ear	40
" " " "	23
Open eye	7
" " ear	1

Notch flukes to anus	250
" " " penis	331
" " " navel	420
" " " post. end dorsal	300
" " " " pectorals	615-
Behind (tip to head rostrum)	265-
Breast to pectorals	80
Height dorsal	18
Flukes (notch to ant. edge)	90
Thickness flukes at insert	16
Depth peduncle at ant. " flukes	60
Right barrel	27
Left	27
Distance ant.	5-
" post	23
Em. about 4.5 holes	8
Anal opening	7
anus to penis	81
" " navel	170
Baleen row	205-
Longest plate	53-
peduncle between flukes & anus	100
Lower jaw beyond upper	20
Throat furrows	24
Ant. to post. edge of dorsal	90
Dorsal is on a well marked bench making it possible to measure its ant-post length	

no 20 Humpback ♂ June 5-'08 Sechart B.C.
 Clear black sides, top of head black - much
 white on center of throat but not in bottom
 of furrows which are black - white is
 only on fold - between pectorals is
 a large blotch of white & a white spot -
 many white circles on right ramus
 which extend in center up to the edge
 of the lips on a large patch - from
 eye to pectoral, right side, on white edging
 to folds - a white spot on right side
 top of rostrum below - Only white on belly
 are streaks in very bottoms of all folds
 where they end - peris to lukes pepper
 & salt - No white on sides of throat & breast
 except white - edging to folds & Stew of flukes
 has ant. margin white both sides - bottom
 surface black - white spots on navel -
 dorsal fin is heavily marked with
 white along ant. edge & on sides -

Pectoral - Right below at fast. insertion
 has a large black patch for $\frac{1}{3}$ length
 of fin - rest white marked with wide
 black patches on the $\frac{1}{3}$ toward tip -
 center $\frac{1}{3}$ pure shining white - with edges
 black - Left fin same as right

External Characters Top peduncle well
 crenulated - hump between anus & flukes
 is low - peris bulge high - notch of flukes deep
 & closed tight - edge crenulated -

dorsal fin thin - 28 white hairs on symphysis
 11 hairs on tip of rostrum all on bundles - on
 tip of head 50 cent. back of end of blow hole is
 a thick bunch of short yellowish hair, very stiff
 between blow holes at posterior end is another
 smaller bunch - The larger bunch is also
 a little larger than a dollar - Seven
 low bundles on right margin with hair on four
 of them

The pelvic bones of this whale measure as
 follows.

Left (straight) = 235 mil.

" (curved) = 255 "

Right (straight) = 250 "

" (curved) = 260 "

A hard prolongation of cartilage is on the
 end of each bone, (60 mil. long) this cartilage
 looks much like bone & can only be dis-
 tinguished from it when it is there - is
 covered by a little fat, by cutting. The pro-
 longation at the anterior end on the left
 bone is 50 mil. long. The anterior end of the
 bone is shortest & thickest ^{the posterior end} is attached by
 cartilage & ligament to the root of the penis
 at the joint at end of the bone, where a vesti-
 gal finis would be attached, no sign
 of it was to be found and as I cut the flesh
 away most carefully, it could not
 possibly have been missed. ~~no sign of it~~

~~to the extent of 90 degrees and a number of
 cartilage plates but by ligaments. The
 traffic in the pectoral girdle is
 sign. possible that can be seen in the
 The pectoral girdle is a slight projection
 to the posterior and is the first part of
 the pectoral girdle. The pectoral girdle
 is the first part of the pectoral girdle.~~

with considerable difficulty I stuffed the
 flubber from the right flapper and cut
 away the surrounding matter, exposing
 the various elements of the pectoral
 The formula for the phalanges is as
 follows (see photo) I 2 II 8 III 7 IV 3 } 20
 metacarpals 4 cl. lat. as the 1st digit
 the one nearest the anterior edge of the
 fin which would correspond to the human
^{thumb}
 index finger - as the flubber etc. was
 all cut away with a small kump there
 is not the slightest chance that any
 phalanges were missed.

The distances that the metacarpals are
 separated from the 1st phalanges of
 their respective digits are as follows -

I = 80 mil

II = 90

III 94 almost all the phalanges except
 IV 90 the very anterior ones near the
 tips are about 90 mil apart

The first large bunch (largest) on the ant.
 edge of the foot is caused by the distal
 end of the radius - the 2nd & 3rd large
 rounded bunches are at the distal ends
 of the 1st metacarpal & 1st phalanx of
 the 1st digit - The fourth (which is the
 next largest bunch to the 1st) is formed
 by the end of the 2nd phalanx of the 1st
 digit - the other bunches are caused
 by the 2nd, 3rd, 4th & 5th phalanges of the
 2nd digit

The radius is 1070 mil. long (straight in
 median line) The ulna is 565 mil
 width radius at distal end = 260 "

" " proximally = 160 "

" ulna distally = 170 "

" " proximally (including deca-
 non is) 140 mil.

width R + ulna in position proximally
 = 330 width R + U distally = 440

The carpus has no ossifications what-
 soever, no any indication of especial
 hardening of the cartilage composing
 the carpus

Total length	1290
Air body	560
Snout to eye	360
" " " Ear	412
" " " Ventrals	280
" " " post. insert of pectoral	505-
" " " " " dorsal	880
Eye to ear	58
" above "	25-
Opening of eye	9
" " " ear	1
Notch fin base to anus	315-
" " " " " peris	425-
" " " " " anal	534
" " " " " post. insert dorsal	420
" " " " " " " pectoral	820
Length pectoral (tip to head radius)	335
Greater " breadth	95
Height dorsal	22
Flebes (notch to ant. eye)	112
Depth peduncle at ant. insert of flebes	80
Length anal opening	11
Anus to peris	110
Length keel row	280
" length plate keel	65
Depth peduncle midway bet. flebes & anus	124
Lower jaw beyond	30
Number of number fin	22

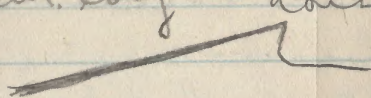
no 21 ♂ Humpback Sechart B.C. June 13-08

Color Back, sides, top of head, black - throat has scattered large white circles, which lie mostly in the median line + toward snout - sides of throat + breast has no circles - white spot between pectorals - white fleck-like edging to the forehead back of eye + about fin - furrows on belly have a few white flecks on edges - there is almost no white on left ramus - pectorals flukes jaffer + saet. white in bottoms of furrows from pectorals to navel - sides of flukes black below with few white flecks + circles - white spot underneath the tip of rostrum - roof of mouth palated light purple + white - base slate blue as is tongue - inside both ramus are very light + slate blue, in some places almost white - Right ramus (outside) circled with scattering white circles from tip to mouth - Pectorals left fin black above with white circles along posterior edge on the tip $\frac{1}{3}$ - Below fin is black at insertion + tip - center third is marked + spotted black + white

Baleen Bristles of extreme bases of all plates dark gray - of tip of posterior $\frac{1}{2}$ seal brown center of post. $\frac{1}{2}$ + all of ant. $\frac{1}{2}$ light gray -

External Characters

Top peduncle well crenulated - notch of flukes open + deep - 22 cent deep - edge strongly crenulated - 26 white hairs on the top of symphysis - or on two hairs

on left ramus - 5 or 6 hairs on the bundles of the
 count at symphysis. The opening of the rudimentary
 testis 15 cent - testis lie ~~only~~ side by side in here, bundles
 each other, 4 cent long. - dorsal fin low & straight
 with a sharp tip 

Total length	1335
Cir. of body	575
Snout to eye	352
" " ear	410
" " blowhole	270
" " post. ins. of dorsal	925
" " " " " pectoral	445
Eye to ear	60
" above "	17
Opening of eye	8
" " ear	2
Fins to anus	315
" " penis	435
" " navel	560
" " post. ins. dorsal	410
" " " " " pectoral	842
Length pectoral (tip to head ins.)	385
Greatest breadth pectoral	95
Depth dorsal	11
Greatest breadth pectoral (width to ant. edge)	107
" " thickness pectoral at insertion	22
Depth peduncle at ant. pectoral	80
Depth blowhole	35
Left " "	35

Divergence anteriorly	5-
" posteriorly	20
Height emb. above bladder	8
Length anal opening	14
Arms to penis	120
Balloon row	3/0
Largest plate	76
Pubic between plukes + arms	125
Lower jaw beyond upper	25-
Number throat furrows	24

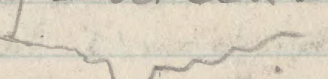
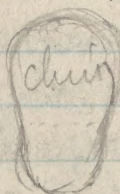
no 22 ♀ Humpback June 13 Sedart B.C.

skeleton taken fetus 14 inches long

Color Back tips of head sides + belly black - no white whatever. back of pectorals to navel - large transverse white spot between pectorals - bottoms of furrows here are pink + a small white spot in at center of navel - white on breast is mostly in small flecks + patches - ant. edge dorsal has a white patch ^{post edge white} white circles on right ramus on ant. 1/3 - none on post. 1/3 stub of plukes has ant. edge white - no white circles on sides of breast, but a few on throat, right side no white circles on left ramus whatever - a few scattering ones on left side of throat - none on breast from beginning of curve of mouth back - Roof of mouth has base light blue - slat as is tongue - roof

is light purple with a few small olive green flecks in the center of anterior portion - dorsal right ramus is slate - left ramus white/lighter -

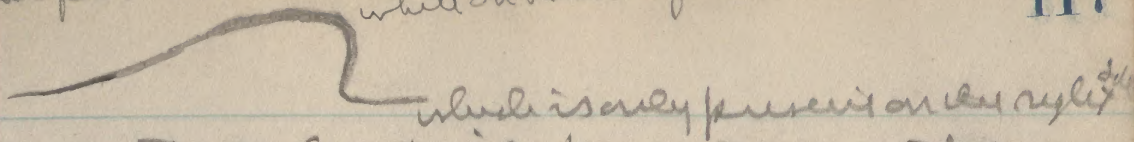
Baleen - Bases of teeth whale are dark in general aspect - bases all dark gray - ant $\frac{1}{3}$ to tip light gray - post $\frac{2}{3}$ has a narrow light gray area in center + rest to tip seal brown -

External characters - #. Teat extended is 4 cent. long - notch of flukes is 22 deep like this  The up, vertical diameter between $\sqrt[2]{24}$ lids, is 4 cent - this I think would be at its life - 28 white hairs top symphysis - 18 humps top of head right side (counting middle line) 12 bear hairs - all of middle line bear hairs - top peduncle well crenulated - bunch of chin is 45 - long x 15 high x double - begins 25 cent from tip of symphysis all in ant. $\frac{1}{2}$ - 5 bear hairs  7 humps right ramus each side symphysis - 4 humps on tip of rostrum to beginning of baleen || 11 humps left side top of head not counting center line - 3 furrows run up on fin half way, from posterior side - blubber on sides I think at top of pectorals laid back -

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There are 11 lumbar vertebrae unless the lumbar bearing

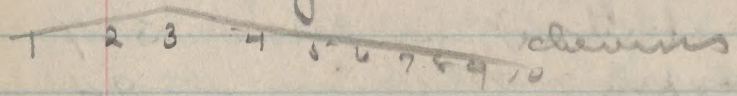
Dorsal fin like this ^{white on both edges}



The supplementary last rib, be not counted as a lumbar - Their formulae would be as follows

C 7 D 14 L 10 Ca
or C 7 D 14 L 11 Ca 21

There are 10 chevrons - the 1st is small & has no lateral spine ^{not joined distally} 2nd larger & joined at distal ends - 3rd is highest of series with longest spine - 4th is about same height as no 2 & they all decrease rapidly in size to last - I have noticed this same arrangement in all the Humpbacks so it may be considered constant



Length of articulated skeleton is 4 feet 5 inches. Supplementary last rib on right side only -

Ribs = Right 15 - Left 14

The terminal caudal is no bigger than a large pea but is fully ossified -

There were only 3 ossifications in the carpus - all in the proximal row & ~~the~~ none had reached the surface

Formulae for phalanges were

I 2 II 8 III 7 IV 2? } (verified from specimen)

Total length	1385
Cr. of body	560
Snout to eye	351
" " ear	406
" " blowhole	470

Snout to front insert of pectoral	480
" " " " dorsal	880
Eye to ear	60
" above "	25-
Opening of eye	8
" " ear	1
Flukes to anus	300
" " front edge of caudal ^{caudal}	320
" " narrow slit	350
" " navel	526
" " post. insert dorsal	415-
" " " " pectoral	850
Pectoral (tip to head ulna)	327
" greatest breadth	94
Height dorsal	25-
Flukes (width to ant edge)	106
" thickness at insert	23
Depth peduncle of " of flukes	83
Length right blade	29
" left "	30
Divergence anteriorly	7
" posteriorly	30
Emargination about flukes	9
Anal opening	6
Anus to tip, ulna	100
" " navel	225-
Length narrow slit	15-
Dist. between narrow	35-
Length pale row	286

Longest plate	75
peduncle between flukes & anus	130
Lower jaw beyond upper	20
width dorsal fin	20
Vulva - ant. part.	20
eye to ant. edge fin	100

No 23 Humpback ♀ June 15-'08 Sechart B.C.

Color Left side of body thinly flecked with white from pectoral to flukes - flecks are ~~most~~ thickest just back of pectoral & on sides of peduncle from vulva to flukes - from navel to flukes peduncle & belly are heavily marked with white in flecks - belly all white flecks heaviest along edges of folds - breast & throat heavily marked with white, which runs on sides up to insertion of pectorals - white is very heavy in median line - both edges of dorsal are strongly white - white circles on both rami from corner of mouth to tip - ^{heaviest on right ramus.}

Pectorals Left above, black heavily circled with thick white circles along posterior margin & on the $\frac{1}{3}$ of fin toward tip - these circles look "washed out" (underside, right, white with black circles at $\frac{1}{3}$ toward tip - these circles look "washed out" - both fins same - Baleen - Bristles base at bases all dark gray - all rest of bristles to tips light gray. Roof of mouth purple with small olive green

flecks in center - base olive green - inside
right ramus dark slate

External characters 5 creases run on
posterior edge of fin at insertion nearly across
to ant-edge. 30 white hairs on symphysis
11 burbs on left ramus none of which bear
hair - 18 burbs (with center line) left side top of
head nor hair on them - top peduncle strongly
crenulated -

Osteology

Skull

Length straight = 270

Breadth (aquanose) = 160

Jaw

straight 253

Curved 280

Scapula (cleaned)

greatest breadth = 900 mil.

" height = 670 "

Posterior fossa = 280 "

Total length

1080

Cur. of body

Inant to eye

290

" " ear

320

" " blowhole

245

" " post. inst. pectoral

360

" " " base dorsal

Eye to ear

47

" above ear

23

Ø jaw of eye

" " ear

2

Notch to anus

275

" " post anal distance

300

Notch to mammary slit	320
" " navel	465
" " post. inst. dorsal	
" " " " pectoral	670
Pectoral (top to head ulna)	265
" " " " ant. insertion	
" " greatest breadth	77
Height dorsal	
Breadth flukes ant. part. (notch or anal edge)	
Depth peduncle at ant. inst. flukes	
Length right blackhole	
" left "	
Divergence anteriorly	
" posteriorly	
Anal opening	4
" " to ant. tip ulna	84
" " " navel	190
Length mammary slit	16
Dist. between " " "	12
Length baleen row	230
" longest plate	65.
Depth peduncle between flukes & anus	
Lower jaw beyond upper	
Number throat furrows	24
Breadth of pectoral at insertion	73
Ear to ant. inst. pectoral	86

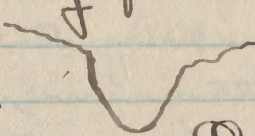
no 24 Humphback of June 15 = 08 Sechart B.C
 Color Back, sides top of head black - in center of
 throat + breast from a little back of snout
 to pectorals is a great white blotch - This blotch
 extends up on sides to within 18 inches
 from being on a level with insertion of
 fins - in some places the white is solid
 with no black streaks, but it is mostly
 streaked with narrow black dashes
 about 6 inches long - in very centers
 of throat + breast, a narrow broken
 band of black runs thru' the white nearly
 to pectorals - the bottoms of the furrows
 in this white patch are pink - also when
 they end on belly from one to two feet
 bottoms of furrows are pink - almost
 all the furrows have more or less
 white in their bottoms - just back
 of the very large white patch is another
 smaller one, separated from other
 by the black of its belly - There is
 little white about the genitalia -
 none from navel to genitalia except in
 bottom of median crease - white spot
 about navel - Many white circles
 on right ramus about tip of + on chin
 Stile of pectorals black below - outer margins
 white - Roof of mouth very light purple
 base light slate - inside right ramus
 very dark slate + ~~soft~~ ^{left} very light -

Pectorals Left, below, has base at insertion black - rest white barred & spotted with black - both edges black - Right, above, all black with some ~~small~~ rather faint white circles in $\frac{1}{3}$ toward tip along post. margin

Baleens - Bristles of all bases steel gray - in the post. $\frac{1}{2}$ of the row this steel gray goes half way up & rest is dark gray - the ant. $\frac{1}{2}$ has bristles with white band in center & tips dark gray -

External characters Top peduncle well crenulated - dorsal fin has hook at tip - tip seems to have been injured -

2 hairs just back of blowhole not on bunches, 14 bunches top of head bear hair, 7 of which are as those at tip of castrans - 37 thick white hairs on top of symphysis - only four bands on right ramus except at symphysis - chin very prominent notch of flukes 17 cent. deep & open like this



Blueber on top of peduncle
39 Chick

Osteology

11 Vertebrae present (sure)

Arrangement of chevrons same as in all others - 3rd being highest of series -

14 pairs of ribs (sure)

Skull

Length (straight) = 400

Breadth (squamosal) = 235

Jaw

straight

curved

380

425

The sternum does not articulate with the distal end of the first rib, but some distance up the rib on its inside edge. In this whole I removed the rib + attached sternum + carefully cut away the adhering flesh + sinew, (see photo) consequently being able to take measurements, etc with accuracy. The sternum articulates with the first rib on its inside edge, 230 mil. from the distal end of the rib. The space between the ⁱⁿ side edge of the rib + the arm of the sternum, ^{at point of articulation} which is filled with cartilage like that between the phalanges on the pectoral, is 59 mil. The ligaments + cartilage surrounding allow of little movement up + down, but considerable back + forth, or outward + inward. The bottom point of the sternum is 183 mil. from the distal end of rib (inside edge). The center of the rounded top edge of sternum is 370 mil from inside edge of rib. The distal ends of the two ribs, articulated to the sternum, would, by estimate, stand 180 mil. apart (inside edges)

Length of sternum (cleaved)	415 mils
Breadth " "	400 "
Length bottom point	68 "
" top "	190 "
Breadth arm (distal)	110 "

Rib

Length straight = 1290 mil.

" curved = 1430 "

Breadth distally = 140 "

Greatest breadth = 175 "

Breadth proximal end = 110

This sternum is strongly concave on its outer side + less strongly convex " " inner " Both arms are strongly curved inward -

Scapula (cleared) (see photo of no 23 & 24 scapulae)
Greatest breadth = 1400 mil.

" height = 960 "

Length glenoid fossa = 370 "

A careful comparison of this sternum with that of no. 23 failed to show me any marked differences - in fact the only difference I could detect was in the super-scapular border which in no 24 has not quite such a regular hemicircular curve as in no 23 - (see photo for more detailed comparison) The attachment of the sternum to the ribs is constant and found it in a number of others -

Total length 1550

Cir of body 680

Snout to eye 445

" " Ear 505

" " Blowhole 355

Snout to front. vert. pectoral	5.80
" " " " dorsal	1060
Eye to ear	65-
" above ear	20
Depth of eye	8
" " ear	1
Notch of flukes to anus	340
" " " " clitoris (post. end.)	370
" " " " Murrey slit	398
" " " " navel	605
" " " " post. vert. dorsal	430
" " " " " " " " pectoral	923
Length pectoral (tip to head ulna)	400
" " " " " " ant. vert.)	—
Greatest breadth pectoral	110
Height dorsal	19
Breadth flukes (notch to ant. edge)	130
Depth peduncle at insert. flukes	90
Length anus	9
Cent. anus to tip clitoris	80
Anus to navel	260
Length Murrey slit	21
Dist. between " " " " S	33
Length baleen row	340
Longest plate "	85
Depth peduncle between flukes to anus	150
Lower jaw beyond upper	30
Number throat furrows	24

On June 21st I left Sechart on the steamer "Tees" for Kyeguat B.C. reaching the station there on the morning of June 24th. When I arrived four Humphreys were on the slip, and at 5:30 the same afternoon the whaling steamer "St. Lawrence" returned towing a Sulphurbottom. Mr. Peck, manager of the station, kindly had the whole pulled out on the slip, & left until the next morning, thus giving me an exceptional opportunity for close study on the specimens.

No. 25 St. Sulphurbottom - June 24-08 Kyeguat B.C.
Color - Top of head, back half way to pectoral insertion, or about opposite ear, is dark blue-gray - throat, chin & lips, of same color - no spots on top of head - back & sides from ear to pectorals is a blue gray much lighter than the color on head - from eye to ear is a rather narrow band of fine, irregular specks & spots of ash color - larger spots with irregular edges & of all shapes & sizes (but for the most part ^{about} 2 or 3 inches long) cover the upper half of the sides & back to pectorals. The ^{markings} spots are small & very thick from eye to pectoral & above it, making an almost solid area of ash. The ~~st~~ markings sweep up over the base of the pectoral, their ^{obliquely} long axes turning ^{dorsward} beyond posterior

insertion of the fin, along the posterior edges
 of the furrows, ~~they turn~~
 & to the very median line of the sides; they then
 turn backward, the long axes being horizontal
 & run so to the pelves. The markings on the
 sides of the peduncle are larger & more
 scattered than those nearer the head-
 base in the very top line ^{on} of peduncle than
 their long axes turned slightly upward -
 from dorsal fin to pelves, the top edge
 of the peduncle & about a part down on
 either side has no markings - the markings
 extend on top of back from head to dorsal
 fin. As I have said, the throat down & lips
 back to pectorals are dark blue-gray like head -
 From pectorals to navel, the breast is a little
 lighter shade of blue-gray, shading into the still
 lighter gray from navel to pelves - a line
 of white flecks & spots run from lower
 insert. of pectorals on left side diagonally
 down to median line of breast - on
 breast between pectorals are scattering
 dark ash or dove colored blotches - a
 small mass of these dove colored markings
 on side of throat (left side) just below
 corner of mouth - thick lot of markings
 from corner of mouth to insert. of pectorals
 & just below it - no other blotches on
 throat or breast - No spots in
 median line from navel to
 pelves, but on sides of peduncle &

markings run down nearly to median line
Dorsal fin is very light gray along its anterior
margin - rest of dorsal same color as peduncle -
claw with ram of mandible has ant.

$\frac{1}{2}$ white - part $\frac{1}{2}$ very light gray - Roof of
mouth indigo - Sides of flukes dark slate

gray blue or gray like head, above - below to
very light gray blue with fine darker wavy lines
running antero-posteriorly curving inward
& not quite reaching the posterior edge.

Pectorals Left above dark gray except
at tip, where it & the ant. & post. margins
from for one foot back are cream
white - under side all cream white
to insertion - The right fin like left above

& below except that the white anterior margin
extends half way to insertion - Both
fins have had the tips injured; they look
as tho' they had been chewed off - Mr.

Ruck says many are in the same con-
dition.

Baleen - indigo ~~blue~~ both plates & bristles -
baleen bristles meet in front by a thin line -

Roof of mouth is indigo & is 17 cent. wide &
sides are parallel - half way back the sides


begin to ^{curve} ~~curve~~ outward - The median ridge
is low & begins half way back - baleen begins
19 cent. from tip of snout.

The epidermis peels off very easily &
below the dermis is very light slate blue, which

soon becomes darker on exposure to air.

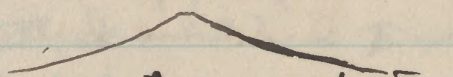
The whole whale has a very distinct bluish cast - it looks as tho it had had a thin wash of blue all over it - I noticed that two hours after the whale had been pulled out on the slip, it was decidedly darker than when first frames taken from the water.

External Characters There are 24 white hairs on the rostrum / cent long - these hairs run in two ~~parallel~~ vertical lines 8 cent apart from top of rostrum down - 13 hairs on top of head scattering - 3 are on side opposite the blowhole - others are on the side of top of head half way from blowhole to snout -

Eye The eye is ~~situated~~ ^{to a little back} 23 cent. ~~above~~ ^{at} the corner of mouth - 7 cent above eye there is a deep furrow or crease 26 cent long & curved - between eyes this long crease and 3 other shorter creases from 12 to 5 cent long. 3 cent below eye is a long crease 26 cent long corresponding to one above & curved - the ends of these long creases stand 11 cent apart anteriorly & gap posteriorly - the creases run in a  shape from front of eye forward 14 cent.

Ear 4.4 cent wide & elliptical in shape its long axis points diagonally toward post. insert. of fin -

Four long creases run out of corner of mouth nearly to insertion of pectoral - two other shorter ones run parallel above these, but they do not come from mouth or reach fin.

Dorsal Fin is low & triangular - the posterior border has ~~same~~ same slant as anterior - the extreme tip has been injured.  The top of the peduncle from dorsal fin to pectorals is thin & rounded.

Pectorals - Top edge of peduncle is 56 cent from the center of the anterior margin of the pectorals - bottom edge is 46 cent. ~~These~~ Pectorals are placed at a slight incline upward - notch of pectorals 19 deep - edges of notch overlap - On the pectorals below the edge of the peduncle disappears 25 from notch - above 31 from notch -

Folds - are widest near navel where they end - here width is 12 - Point of greatest development of folds is between pectorals - They are narrowest at throat. Folds are wide where they run upon ramus, are dorsal & between pectorals they are very narrow (4 was average width in dorsal) and as they go backward widen out gradually, so that those of belly are much wider than on throat & fore-breast - The

furrows are 2 deep - vittas are same color as top of folds, & the skin looks like coarse crepe paper - *

Peduncle From dorsal fin back for 200 cent. The top & bottom edges are almost parallel - then, at anteroventer the edges slope abruptly to the flukes till they are lost on the lateral expansion of the tail - the top 31 cent from the notch & the bottom 25 from notch - The bottom edge, where it begins to slope up to the flukes is more gradual & straighter than the top edge - Flukes are placed with vent. edge a little closer to bottom edge of peduncle than top - ∴ at a little angle to the plane of the body -

On the underside tip of rostrum are the same sort of depression or marks as observed in the skin flukes, only a little larger

(1) Balen begins 19 cent from tip of snout - the balen row is 27 cent. from the edge of snout on the sides

Six creases run from underneath peduncle up on ~~the~~ superficial surface half way to ant. edge. Posterior edge of fin is very thin as is post. edge of flukes - lower edge of peduncle is not nearly as thin as upper - Penis has 4 creases of varying lengths on either side of the median line - creases vary from 30 to 50 cent. a crease of varying

depth runs from navel to penis - Penis (extended) is light brown at base & for $\frac{1}{2}$ its length distal $\frac{1}{2}$ is slate-blue.

The eminence in front of & on sides of blowholes is 177 cent. in ant-post. diameter.

Osteology

Skull Length (straight) = 525 cent.

Breadth (squarous) = 260 "

Jaw Length (curved) = 540 cent.

Straight = 490 "

Ribs 15 left side

16 right side - the 16th rib is short & very slender, ^{& almost straight} - it is 46 cent long & is, of course, rudimentary.

Vertebrae C7 D15 L15 Ca27 = 64

or
C7 D16 L14 Ca27 = 64

Fourteen lumbar were present, but if the ~~15th~~ vertebra bearing the 16th rudimentary rib is counted as a lumbar & not as a dorsal 15 will be present.

There are 27 caudals the terminal being about the size of a pea or hazel nut, it was composed of pure white cancellous tissue & would have been lost had I not been watching for it. These caudals were put in a tank & boiled separately so the ~~formula~~ formula is positively correct.

The bottom of the 1st caudal was ^{chan-}nelled, there being two prominent knobs

all the bones which I have described were boiled separately & it is not so that they have perfectly clean when measured.

These humps were 87 mil apart (inside edges)

on the posterior end for the articulation of the 1st chevron. These humps (see plots) were so far apart that the inferior median carina must have been ~~to be~~ ^{to be} divided on the next to the last lumbar.

Measurements of 1st Caudal (cleaned)

Tip of spine to lower edge centrum	950 mil (posterior)
Greatest breadth (bet. trans. pores)	910 " "
Depth centrum.	350 " "
Breadth "	390 " (anterior)
Height spine	470 " (anterior)

Chevrons There are 16 chevrons present & between the 17th & 18th caudal, on the left side one half of another small chevron - so that 17 might be counted. This half chevron was 6 mil long & 5 mil wide, concave externally & concave internally, it had the regular shape & form of a chevron, it was embedded in the ligament & at first one would have said there was nothing there, but I cut it out very carefully so that I could not possibly have missed the other had it been present - The 16th chevron (the last complete one) is composed of two laminae irregular circular in shape, which are not joined distally except by cartilage. The right one is 108 mil in greatest ~~breadth~~ length & 95 mil. greatest breadth. This chevron is directly between

the 16th + 17th caudals + articulates to both by ligaments. The remainder of the chevrons so far as I could see were joined by ~~the~~ at the bottom. The 1st chevron is small + free distally, the ends standing about 20 or 30 mil. apart. The 2nd chevron is joined distally + is considerably larger than the 1st - 3rd is much larger than 2nd + 4th the largest of the series; back of fourth they descend gradually in height to last - chevrons in position may be represented like this

Scapula The scapula has a large acromion + well developed coracoid process. The acromion is very long + strongly curved ~~inward~~ ~~outward~~ it projects downward. It is wider distally than proximally - distal end is rounded.

The coracoid process projects downward + is parallel to the acromion - it is rounded distally -

The scapula is concave externally but only slightly convex internally - The ~~interior~~ surface has 7 low ridges or veins ~~and~~ radiating outward from a little above the glenoid fossa - they reach the suprascapular border. The pectoral fossa is well marked. The suprascapular

border is 40 mil. thick at ant. end, thinning down to 10 mil. in the center & thickens again to 50 mil. at posterior end. This border is flattened and the central portion & does not have the rounded border characteristic of the Atlantic's *Sulphurellator*; it resembles *S. in back* more closely in this respect.

Measurements of *Scapula* (cleaned) see plate


Greatest height (q. fossa to sup. scap. edge central)	840 ^{mil.}
" breadth	1390 "
" glenoid fossa	300 "
Length acromion (median)	360 "
" " (lower edge)	330 "
Breadth " distally	180 "
" " proximally	160 "
Length coracoid (median)	140 "
" " (lower edge)	90 "
Breadth " distally	70 "

Cervicals

Atlas Neural Arch rises in a thick triangular crest having a blunt spine 30 mil. high on the summit. The transverse process rises from the upper half of the body; it is thick & is directed upward & backward. The base of neural arch on either side seems a horizontal foramen 35 mil. in diameter, into the neural canal.

Greatest breadth	750 mil
" height	440 "
Breadth articular sur. for occ. condyles	390 "
Length transverse process	180 "
Breadth " " distally	160 "

Breadth of open space between articular surfaces for acc. condyles. at top is 100 mil. - at bottom 40 mil.

Axis. Upper & lower transverse processes are joined distally on both sides forming a large wing like process ^{enclosing} a wide oval opening which is 220 mil. long diameter, & occupies a little more than the proximal one-half of the process. The laminae ^{of the neural arch} are heavy & meet to form a massive triangular crest having a blunt ground tip. This crest has ^{irregularly} perpendicular anterior wall, but posteriorly the surface slopes from the tip downward & backward forming an angle like this  This surface is deeply concave in the median line. Two foramina, one a little above the other, perforate the neural crest in its ant. part. direction connecting with the groove in the posterior surface.

The parapophyses is wide & heavy, flattened inferiorly & much thicker & heavier than the diapophyses - The two project strongly backward & somewhat downward -

Axis Measurements

Greater breadth	= 1130 mil.
" height	= 530 "
Height of body	= 280 "
Breadth "	= 450 "
Length of transverse processes	= 420 "
Breadth distally	= 300 "

Third Cervical - Has the dia- & parapophyses united distally by a rather narrow margin enclosing a wide oval opening 260 mil in long diameter. Both processes are much more slender than those of the axis & the margin distally ~~is~~ is much narrower; the diapophysis is more slender than the parapophysis. The two project backward & somewhat downward. The laminae of the arch are wide & flat, directed strongly backward, & united mesially in a blunt spine 30 mil high.

Fourth Cervical - has the 2 processes united distally like the 3rd, but by a narrower margin. The ~~of~~ diapophysis projects downward, & very slightly backward. The laminae of the arch are not united mesially, there being a space of 15 mil. between their inner edges.

The parapophysis projects backward & downward.

Fifth Cervical - The two processes are not united distally having a space of 40 mil between their ends. The diapophysis projects downward & very slightly backward; the laminae of the arch meet mesially in a low blunt ridge.

Sixth Cervical - The upper process is long slender, & projects downward & strongly forward. The lower is very short wide & flat, projecting downward & strongly ~~forward~~ backward. The laminae accrete to form a low sharp ridge.

These whole 7 cervicals with free

Total length	2085
Ar. of body	1040
Snout to eye	530
" " Ear	140
" " blowhole	460
" " prot. nuch. pectoral	805
" " " " dorsal	1630
Eye to Ear	112
" above "	19
Aperture of eye	10
" " Ear	4
Notch to anus	550
" " penis (center)	700
" " navel	885
" " prot. nuch. dorsal	460
" " " " pectoral	1324
Length pectoral (tip to head hump)	275
" " (" " ant. insert)	265
Greatest breadth	65
Depth dorsal	10
Greatest breadth flukes (width to ant. edge)	107
Depth peduncle at insert. of flukes	105
Length left black hole	64
Diameter posteriorly	38
Eminence about blowhole	15
Anal opening	7
Anus to center of penis	140
" " navel	330
Length between rows	450
" longest plate	100
Number of plates	Right 827 - Left 826

Depth peduncle between flukes & arcos	190
Lower jaw extends beyond upper	30
Number throat furrows	68
Length pectoral (tip to head ridge)	2051

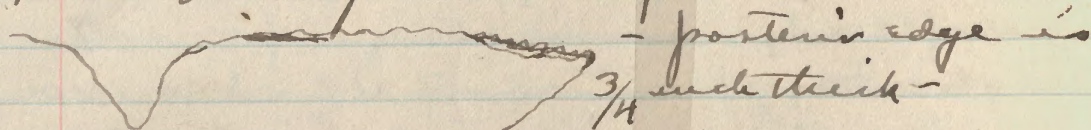
No 26 ♂ Humpback Kyeport B.C. June 27-'08
 I did not take detailed measurements of this
 whale - one lobe of the flukes, the left, had
 been left on

Total length 1368

Length left lobe flukes axially = 2451

Greatest breadth (ant. - post.) = 112

Left lobe of flukes has base at insertion
 black - rest of flukes shining white except
 a narrow black edging on posterior margin
 + some ^{black} on anterior. The other lobe is
 like the left, so far as it is preserved -
 pbase fluke is black with a small irreg-
 ular white patch in center ^{at} posterior
 edge. The posterior edge is scalloped with
 short deep emarginations - these
 crenulations are longest & shallowest
 near proximal base of fluke; distal half
 has the scallops short & tips sharp -
 notch is deep & V shaped like this



Bristles of baleen have extreme
 bases all dark gray - rest of
 bristles of ant. 1/2 part white to tips

post. $\frac{1}{2}$ has tips dark gray & rest white -
 all the plates of the ant. $\frac{1}{2}$ are streaked
 with broad bands of white, which in the
 very ant. ones show from outside -
 This balen looks almost like Fairback, it
 is so white -


No 27 Humpback ♀ June 27-08 Myquod B.C.
 Color Top of head, back, sides to dorsal black
 from dorsal fin to flukes sides are flecked
 with white - Large white circles on left ^{trunc}
 & white marks - Much white on throat &
 breast to a little back of pectorals heavier in
 median line - belly & sides ^{of head} to fins ^{to} under
 flecked with white - Under side from under
 to anus heavily marked with white in
 patches & spots - sides of flukes below
 heavily circled with white. Bases of
 fin rays are most where white is heaviest
 are white pink

Left Pectoral above ^{blotch} heavily circled
 white white along the posterior edge of the
 distal portion - ant. edge black & white
 Right fin below white marked with black
 streaks & spots mostly in distal one half
 black patch at insertion -
 Dorsal fin falcate, with white on both
 edges -

Balen - bristles at base are dark gray
 rest of ant. half white to tips - Posterns

half are gray at tips - between tips & base
 bundles are soiled white -

Tongue light blue ~~slate~~ slate

External characters Eye is 20 behind
 corner of mouth & 23 above - the dorsal
 fin is false & situated on a prom-
 inent hump, which is 95 in antero-
 post. diameter - 20 white hairs on
 suprapleural, arranged in two patches
 on areas opposite each other, like
 this  - there is a slight depression
 between them - 17 bristles on the left
 side top of head (counting median line)
 12 of which bear hair - top peduncle
 is well crenulated

This whale contained a ♂ foetus No 27a
 There is a deep crease between the blow-
 holes which runs up on top of the
 eminence in front of orifice.

Total length	1760
in body	590
snout to eye	360
" " ear	415
" " blowhole	265
" " post. int. pectoral	820
" " " base dorsal	855
Eye to ear	535
" above "	30
Ø of pupil of eye	9
" " ear	35

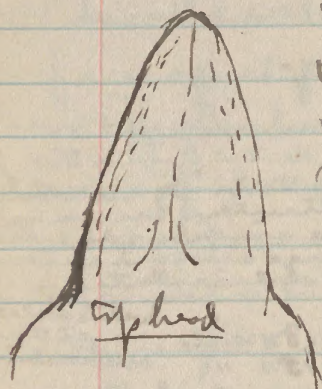
Notch flukes to anus	300
" " " infra (post. end)	330
" " " mammary slit	348
" " " navel	540
" " " just base dorsal	410
" " " " " pectoral	870
Length pectoral (tip to head infra)	825
" " (" " ant. insertion)	390
Breadth pectoral	95
Height dorsal	21
Breadth flukes (notch to cut edge)	95
Depth rough peduncle at insert. of flukes	80
Depth bladderly	35
Sept "	37
Diaphragm anteriorly	6
" posteriorly	29
Even. about bladder	8
Anal opening	6
" " to ant. end detrus	107
" " " navel	243
Length mammary slit	18
Dist. between " " 's	22
Baleen row	295
Target plate	70
Depth peduncle between anus & flukes	130
Lower jaw beyond upper	33
Number throat furrows	22

No 27a ♂ Humpback Foetus Mother No 27 June 29

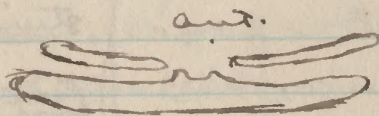
Eye is situated 13 mil behind + 23 mil above corner of mouth - it is on a rounded swelling - 2 well marked creases, above + below - On top of head were 27 small knobs - those of the median line (composed of 5) were largest. None of the sides could be easily felt but hardly seen on distal half of rostrum -

Rostrum is in a V shape having the sides slightly bowed outward + the tip blunt + rounded - 20 mil behind posterior end of blowholes the sides of the rostrum abruptly widen out to form the swelling which contains the eye - The blowholes are a little below the general level of the summit of the head; in front of them is a higher triangular bump rounded on top which slopes away rapidly toward the snout forming a low rounded ridge on the median line of the rostrum - This ridge bears 5 low knobs which make a series of shallow depressions or emarginations for its entire length - The edges of the rostrum are thickened, + bears a double line of alternating knobs - This leaves a shallow depression between the median line of the rostrum + the sides - The top edge of the peduncle from d. fin to flukes show the crenulations plainly

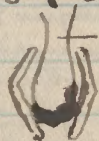
Rostral fur flattened - sharp at tip - borders on
 ramus of mandible plain - The tongue is
 large filling the whole mouth cavity -
 its tip is broad slightly crenulated & divided
 in median center.



The stylohyals are found to the
 base of the skull by their ant. ends.
 The post. ends lie in front of
 basihyal, being a short distance
 from the knobs on the ant.
~~edge~~ edge of the basihyal -
 like this



I carefully dissected this foetus and
 found the vertebral formula to be
 $C_7 D_{14} S_{11} Ca_{20}$. I am positive that
 this is correct - There were 14 pairs of ribs
 There were 10 chevrons - 1st. free distally &
 small, 2nd. larger & joint distally &
 3rd largest of the series - the last chevron
 could be just distinguished but was ~~perfect~~
 perfect. I found the pelvic bones well
 formed in this foetus - they lie with
 the short ends anteriorly & curve around
 the root of the penis like this



A short hair was present
 on nearly all the dermal
~~ref~~ tubercles on top of head.

Factors measured		Osteology No 28 ♂ (cont.)
1	- 1140 mil	The scapula, part of the caudals etc were boxed separately -
3	225 "	
5	180 "	The three last caudals were only -
6	390 "	lost, forming a triangular bone
7	805 "	which vertebrules shared the
10	9 "	surfaces plainly.
12	300 "	First Rib Has no head or neck - much
13	395 "	compressed in its distal 1/3 - in the prox-
15	500 "	imal 2/3 a cross-section is an elliptical
16	353 "	part above the articular surface for
17	715 "	the sternum the inner edge has a
19	254 "	thin plate fringe curved distward -
20	65 "	rib is widest at distal end with
21	15 "	sternum ^{plate} length straight = 1130 mil. width distally = 190 "
22	260 "	" curved = 1150 " " at sternal articulation = 160 "
23	90 "	Sternum - has normal shape -
24	174 "	length 400 mil. breadth 400 mil
25	170 "	First Caudal - has the paired superior edge
27	80 "	of the articulation of the 1st. chevrons well
28	25 "	pronounced - this vertebra would really
29	29 "	be the 2nd caudal had the normal
30	10 "	small, it chevrons were prominent -
31	32 "	greater height (part) = 730 mil Height body = 350 "
33	4 "	" breadth = 710 " breadth = 380 "
34	90 "	Scapula breadth = 1370 mil. length of coracoid
35	105 "	process = 900 " (from tip of lower
41	25 "	border of gland fossa = 360 " edge of gland fossa) is
42	21 "	361 mil.
43		Scapula has a marked depression in its center
		where it is very thin - probably an injury.
		The suprascapular border is convex, its height
		nearly equal to its breadth in center -
		Atlas has a thick trans. process projecting
		antero & slightly upward from the upper
		half of the body - the laminae of the arch
		meeting a lofty sharp ridge - the two horns
		forming above the base of the arch are present.
		Axle's The axle has a dia. & diapophyses -
		the latter is heavier than the former -
		these do not join distally - the neural
		arch is low & massive
		The 3rd & 4th Cervicals have a dia. - pro-
		cesses not meeting distally - the lower
		process of the 4th is very short -
		The 6th has a diapophyses & on the left side
		a small knob representing the lower
		process - this is not present on the
		right side.
		The 6th & 7th have only an upper process.
		All the vertebrae are free and
		have the laminae of the arches united
		above - The 6-7th have the highest spine
		of the series

No 28 ♂ Humpback July 27-08 Kyupur B.C.

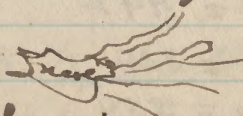
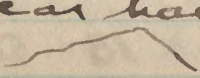
Color Back, sides, top of head & belly black -
 Breast almost lacking white except a few
 small flecks on median line + 5 large
 solid white spots on the folds opposite
 to each other, between the pectorals -
 a few of the fins when they end on
 belly have deep pink bottoms for about
 1/2 foot of space and. No spots or white at all
 on left ramus + only a few white spots
 + circles on left side of throat -

On right ramus are a few small white
 flecks + faint circles along whole length -
 Pectoral bulge is enclosed by a white ring
 on either side - only white on lower
 edge of peduncle is in middle

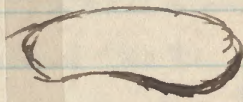
Pectorals left, alone, black - studded with
 barnacles - below is black at insertion
 rest of fin white circled & marked
 with black on dorsal half -

Baleen Bristles at base are all gray - rest
 of ant half white to tips - post 1/2 has
 bristles at tips red brown - rest light
 gray -

External characters 18 white hairs on top
 of rostrum's 5 crescent spread out
 in a fan shaped arrangement from
 nose backward - like this

8 hairs left side top of head - four 
 knobs on side left ramus bear hair
 dorsal fin just like No 26  (see photo)
 7/26/08

both edges dorsal white - I had the fin of this whale weighed + the scales registered 767 lbs. One of the testes was taken which weighed 20 lbs + measured as follows Length 6.20ⁱⁿ cir. of large end 5.80ⁱⁿ it was shaped like this



Osteology

Skull Length = 356
 Breadth (squamous) = 207
Jaw Length straight = 340
 " " curved = 380

Ribs 14 both sides (same)

Vertebrae C 7 D 14 L 12 Ca 22 = 55 (same)

Chevrons ~~Only~~ chevrons were present the usual small one ~~at~~ at the beginning of the series being absent - I cut the remaining fish away most carefully with the assistance of Mr. Ruch, so that it could not have escaped our notice.

The two last chevrons (the 10th & 11th) were both very small + did not completely join - I found slightly over present the series would have been 17 which is most unusual I think.

The chevrons, ^{series} thus had the 1st large + joined distally, + the 2nd the largest of the series -

Measurements of whale

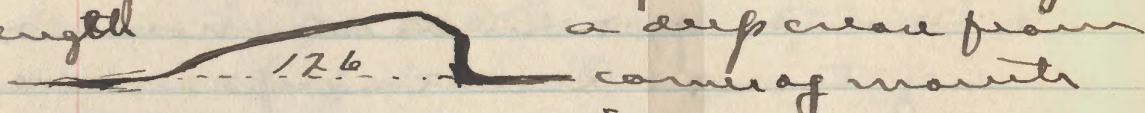
1 = 1390	8 = 67	16 = 405	26 = 23	38 = 320
2 = 630	9 = 33	17 = 865	27 = 95	41 = 130
3 = 385	10 = 10	18 = 355	28 = 40	42 = 39
4 = 447	11 = 3	19 = 395	29 = 38	43 = 24
5 = 310	12 = 320	20 = 110	30 = 6	
6 = 550	13 = 440	21 = 24	31 = 32	
7 = 1000	14 = 585	22 = 170	33 = 17	
			34 = 130	

No 29 Humpback ♂ June 29-08 Kyuguet B.C.
Color Top of head, back, sides, + belly black -
fins huge enclosed by white - white in patches
from pennis to flukes - navel to pennis without
white - white spot on navel - No white on
sides of throat + breast except in bottoms
of the folds - large heavy circles + spots of white
on throat in very median line from symphysis
then continue to pectorals but not so heavy.
The solid white spot between fins is present
but rather small + half in bottoms of the
funnos - considerable white in bottoms
of funnos where they end - no white from
pectorals to navel except ~~in~~ in bottoms
of folds - ~~top of~~ dorsal fin has up and
posterior edge white - There is no white
on left ramus - a white patch on either
side tip of rostrum below - tongue rather
dark slate blue (died + think to being out of
water over Sunday) Roof of mouth is
pink colour - base light slate blue - Stria
of flukes black above + below - blowholes
have white edges + the deep median
crease -

Pectorals Both fins alike - all black
below except for a long white patch
which runs from ant. edge at insertion
along ^{longitudinally} fin for $\frac{2}{3}$ its length

Baleen - bristles have bases of ant. $\frac{1}{2}$ dark gray -
post $\frac{1}{2}$ bases light gray - tips of all " "
median portion throughout white -

External characters Top of peduncle well crenulated in long waves, beaver near flukes; tip of dorsal blunt - it is situated on a prominent hump 12.6 in ant.-post. length



runs up over fin a little beyond posterior edge - another runs ant. edge + stripes - 21 raised white hairs on ^{tip of} symphysis in two patches opposite each other ~~with~~ 8 tubercles on left narrow all ~~are~~ $\frac{1}{3}$ of fin toward tip - the wide shallow transverse depression on base of top of head from eye to post. ends of blowholes is well marked; this meets with the longitudinal depression over scapula - taken begins 15 from snout - 5 tubercles on either side of symphysis - notch of flukes 17 deep -

From narrow all measurements will be taken from the tip of the upper jaw.

1 = 1295	13 = 410	29 = 33
2 = 595	15 = 540	30 = 8
3 = 320	16 = 408	31 = 35
4 = 380	17 = 838	33 = 6
5 = 230	18 = 339	34 = 125
6 = 486	19 = 366	35 = 245
7 = 880	20 = 106	38 = 305
8 = 59	21 = 24	39 = 75
9 = 22	23 = 95	41 = 140
10 = 9	24 = 22	42 = 32
11 = 105	27 = 85	43 = 20
12 = 300	28 = 34	narrow = 35

No 30 Humpback ♂ June 29 - Kyegeest B.C.

Color - Top of head, back, sides & belly black -
no white left ramus of mandibles - right
ramus has a few large white circles
on ant. one-half. - White is in streaks on
median line of breast - on throat white is
in spots & splashes - none on sides -
the white spot is between fins, - none
back of pectorals except a little grayish
or soiled white about finis - a small
white spot on snout

Fins black above & below except at very
tip where there are some white circles on
top & ant. edge. - tip of pectorals falcate
& part. edge deeply scalloped - many
barbules on ant. edge distal $\frac{1}{2}$ portion

Pectorals black above with few large
scattering white circles along posterior
edge of distal $\frac{1}{3}$ - below - black patch
at insertion - rest white with 3 black marks
in center of distal $\frac{1}{3}$ - posterior edge black &
tips also.

Roof of mouth pink - base blue - green -
blue-green patches in center line - tongue
~~light~~ slate blue

Baleen has base bristles gray & tips of part $\frac{1}{2}$
real brown - rest light gray - baleen begins
12 cent. from tip of snout

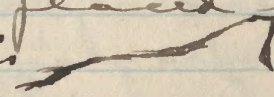
External characters Dorsal fin has tip blunt &
crenulated - part edge white
lightly crenulated

top of pectorals

no. 31 Humpback ♀ June 29 - 08 / Deptford B. C.
 Coar. Back, sides, belly black - no white from
 pectorals to perianthium below except a few
 scattering flecks on edges of folds -
 Large heavy circles of white on throat from
 ramus to median line - on breast median
 line circles, + between pectorals a large
 patch of white streaked with black - this
 patch extends a little further back
 into the usual white spot between
 fins - circles on right ramus ^{on}
 almost whole length, heavier toward tip -
 only a little white from anus to flukes
 below - Roof of mouth flesh - slate blue
 base as are inside of both ramus +
 tongue -

Pectorals Right alone is black heavily
 circled with white along post. edge + at
 tip - 3 white circles near insertion - Left
 fin below has large black patch at insertion
 + for $\frac{1}{3}$ fin rest white heavily marked
 + circled with black -

Basal Bristles at bases dark gray - post.
 $\frac{1}{2}$ bas tips real brown + rest light gray -

External Characters Hump on which
 dorsal is placed is 96 and - post. dorsal
 is like this  - post. edge almost straight

hump prominent

~~14~~ 14 pers. ribs

9 chevrons - probably one more
 in piece that was cut off

© Steadley

Skull

Length 385

Breadth 205

no 31

~~no 31~~
 1 - 1080
 2 - 540
 3 - 260
 4 - 305
 5 - 215
 6 - 400
 7 - 730
 8 - 46
 9 - 19
 10 - 8
 11 - 1
 12 - 285
 13 - 310
 14 - 330
 15 - 485
 16 - 355
 17 - 705
 18 - 321
 19 - 353
 20 - 92
 21 - 22
 23 - 92
 26 - 19
 27 - 69
 28 - 30
 29 - 29
 30 - 4
 31 - 26
 33 - 6
 34 - 92
 35 - 202
 36 - 17
 37 - 25
 38 - 246

no. 30

1 - 1285
 2 - 600
 3 - 320
 4 - 375
 5 - 240
 6 - 500
 7 - 875
 8 - 58
 9 - 19
 10 - 7
 11 - 1
 12 - 320
 13 - 430
 15 - 542
 16 - 440
 18 - 370
 19 - 405
 20 - 100
 21 - 22
 greatest breadth of lobe ant - just - 110
 25 - 105
 24 - 240
 26 - 22
 27 - 85
 28 - 34
 30 - 9
 33 - 12
 34 - 126
 38 - 307
 39 - 70
 41 - 130
 42 - 35
 43 - 70

39 - 65
 41 - 110
 42 - 30
 45 - 22

no 32 ♂ Sulphurbottom June 30-'08 - Kyuguet, B. C.
 Color Top of head, chin, throat & lips as far back
 as eye dark slate blue - from eye to insert.
 of fin & above on back & upper sides to a
 point opposite the pectorals, almost solid
 light blue gray, marked in only a few
 scattered places with, elliptical ^{dark} spots having
 irregular margins - on lower half
 of sides to pectorals the ground color is ~~of~~
~~the~~ blue-gray (not so dark as head nearly) marked
 with irregular ~~spots~~ patches of the light color
 of the upper sides - the patches or markings
 are about 6-8 lines long diameter.

They begin at the posterior insertion of
 the pectorals, turn downward along the
 edges of the furrows to ~~the pectorals~~ where
 not meeting in the median line from
 pectorals to navel to pectorals which is
 clear gray. From pectorals back the peduncle
 is almost entirely light gray blue which
 is marked with darker in only a few
 patches on the lateral median line - from
 dorsal fin to flukes the top edge of the
 peduncle & about a foot down on either
 side is darker blue gray & unmarked -
 just in front of the pectorals ^{root} there is
 a patch of dove colored markings -
 below pectorals symplegias to eye, throat is
 dark ~~of~~ slate-blue like top of head & has
 no markings whatever - from eye to
 pectorals on the sides of the breast to the

median line are a few scattered dark colored spots - from fins to navel there are many white markings on sides - there do not reach median line except in one place - from root of pectoral a thick mass of white markings run backward & downward obliquely not reaching mid ventral line - on sides of the furrows just above & in front of navel are many white spots - Pectoral fin above, ~~has~~ proximal $\frac{2}{3}$ dark brownish gray - distal $\frac{1}{3}$ light gray except the ant. edge which is white - below fin is white

Dorsal fin is light blue gray - almost white on the ant. sides & edge to within about four inches of the tip - ~~the~~ tip & post-edge is dark slate-blue. The whole dorsal is marked with fine vertical curved lines of darker gray; these run vertically from ant. edge downward, nearly to base & then curve backward along the ~~post~~ edge of the peduncle, where they are lost a short distance behind the fin.

Flukes Right has an acuminate slightly recurved tip - the ant. edge is only slightly concave & is rounded - the posterior edge is almost straight proximally & very slightly concave in the distal $\frac{1}{2}$ just before the tips - the post-edge is only 3 mil. thick & is slightly uneven - the tip of the left lobe

Tongue light slate blue - same color as Hump -
^{back of tongue -}
 has been tapered + is blunt + irregular -
 Above the flukes are dark slate blue, finely
 lined with lighter; these lines run from
 median line of ant. edge across fin not
 quite reaching post edge - they curve inward
 at the tips and are lost in the darker
 color of the post edge of flukes.

Below the flukes are very light blue-gray
 almost white except at tips + post. ~~edge~~ edge
 which are darker - whole underneath lined
 with fine wavy dark lines running
 from saddle of ant edge nearly across
 fin as on upper surface.

Balloon plates black with a bluish tinge - bristles
 dark + black throughout - Roof of mouth
 black - inside right ramus dark slate upper
 half - lower half milk white - balloon begins ^{9.23 from side -} 19 from front

External Characters - Transversal row of 22
 soiled white hairs on symphysis - scaly
 hairs on top of head - thickness, blubber on
 top of peduncle is 42 - 5 creases at base
 of penis sheath - median crease from nard
 to penis - Blubber 25 - between eye + fin - The
 shoulder blade does not lie horizontal to
 the axis of the body (see photo) + the posterior
 end is lower than ant. end making the
 long axis of the scapula slightly oblique
 to that of the body ^{N.B.} (so in all the other *Duf-*
phenotrichus) The folds between pectorals are
 36 mils in width - on throat 27 mil - just is


front of navel 65 mil. wide - a median crease 27
long between black lines runs from ant. ends
not quite to post. ends - no color in black holes -

1 - 2170	9 - 20	23 - 112	34 - 145
2 - 1000	10 - 10	24 - 270	35 - 341
3 - 450	11 - 3	25 - 217	38 - 438
4 - 560	12 - 610	26 - 26	39 - 102
5 - 410	13 - 757	27 - 111	41 - 198
6 - 740	15 - 950	28 - 50	42 - 47
7 - 1655	16 - 500	30 - 8	43 - 82
8 - 119	17 - 1445	31 - 32	Length penis slit = 110
	21 - 22	33 - 23	" navel = 30
	27 - 440		

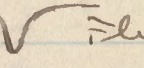
No 33 Sulphurbottom Sex ♀ June 30-08 Ryuguest B. C.

Head, top, dark slate back to opposite the insertion
of fin - back + upper sides to anus blue gray -
~~from~~ from pectoral to eye a line of small
thick light gray spots - in front of & just
above fin the light gray is solid - sides of peduncle
from anus back is almost solid light blue gray
from fin to anus on sides much more light
color than dark, in same places the light
color being solid - Throat & breast to pectorals
dark slate like head - no markings to fins on
throat or breast - from fins to navel lighter
slate blue - many dark colored markings
on folds on sides of breast & belly from fins
to navel - from navel to genitalia many
light bluish gray markings which do not quite
meet in center ventral line - the light gray
markings come down along the post. ends of
the pectorals & turn backward just before they
reach the median line - on sides long axes of
spots are fore & aft - On sides of peduncle just in

front of pectorals ~~is~~ a narrow band of dark gray markings.
Pectorals above ^{pectus} dark slate - ant. edge of dorsal and
 half left grayish - tip white - Below pure white
 the dark color of the proximal end of anterior
 edge extends a little way over onto the underside
 of fin - left like right, only tip has been injured

Dorsal - dorsal low + falcate - ant. edge is
 light gray - almost white - darker at tip +
 posterior edge - fin is marked with fine
 curved light lines 

Baleen - begins 17 from tip of snout - baleen is
 black as are bristles -

Flukes notch 22 deep + like this  Fluke is
 light slate above finely lined from ant. edge -
 post. edge from notch to tip is dark slate -
 Below same as in no 32 - post. edge a little
 ragged or uneven - in shape just like
 no 32 - Epidermis falls off very easily

Roof of mouth - black - tongue light purple -
 inside left ramus very light blue - almost
 white

External Characters One hamule on flukes
 below just at the side of the notch - 13 hairs
 right side top of head - chin is 95 long + 17 wide;
 it is a ~~long~~ long oblong patch of smooth skin
 from symphysis downward for 95 ant. clt
 has a low median ridge - 41 solid white hairs
 on symphysis - none on ramus -

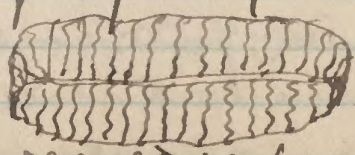
Mammæ The skin containing the mammæ are
 only slightly raised above the general level of the
 membrane below - Each mammæ crease is 17 long

+ on the outside of each is a crease or furrow
30 long - distance is 40 from anus + very slightly
behind vaginal opening -

navel not raised above level of body - a shallow
depression runs from navel to anus -

1 - 7030	12 - 595	25 - 276	48 - 180
2 - 1050	13 - 630	26 - 24	42 - 37
3 - 430	14 - 640	27 - 105	43 - 78
4 - 530	15 - 915	28 - 54	
5 - 390	16 - 490 ?	30 - 7	
6 - 1540	17 - 1360	33 - 7	
7 - 700	18 - 298	34 - 93	
8 - 106	20 - 77	35 - 325	
9 - 22	21 - 19	36 - 17	
10 - 8	22 - 460	37 - 251	
11 - 3	23 - 100	38 - 435	
	24 - 270	39 - 100	

No 3H Fairback ♂ June 30-'08 Kyugwa B.C.

Color ^(top side) Top of head and back, to a point opposite
the navel is very dark slate - the ~~very~~ elevated
edge of the right side top of broad back to eye +
from eye to blowholes is light French gray;
this light color extends from eye to fin + joint
above fin ^{possibly} - from anus to flukes the whole pe-
duncle except the very median line below
is light French gray - On the sides of the ped-
uncle ^{from navel to flukes} are narrow markings which look
exactly like the graining of wood - these
spots have a central ^{white} line running far + aft
+ the light gray wavy lines radiate from it
like this:  These spots seemed
perfectly healthy + I am sure
are not the result of parasites' attachments

Below the median line + lower half of sides of body from symphysis to peris is pure shining white - the bottoms of the furrows of the lower half sides of thorax + breast ~~are~~ ~~and~~ of the are dark slate, but the folds are white - the ventral portion of the thorax + breast to peris has the folds pure white + the hollows of furrows ^{left} pink or flesh color - from insertion of fin diagonally backward + downward extend two long prolongations of ^{dark} color. The upper half of left side of ^{thorax} ^{as axis} ^{+ all of left ramus} from chin to insert. of fin is dark slate almost black - from fin on upper sides almost ^{opposite} to ^{vent} the dark slate of the back shades off into a very dark sepia. This in turn shades off into the light gray of the peduncle -

From ^{opposite to peris} ^{vent} the light gray comes of the sides comes down farther + farther toward the ventral median line making this ventral line of white narrower + narrower.

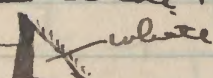
Right side has top of head (as described) + entire right ramus light French gray - rest of right side is like left -

Roof of mouth light violet - tongue light slate blue - inside left ramus upper half white - lower light gray - inside right ramus dark slate

Furrows Below white, post. edge + anterior is dark brown - some dark slate - the notch is 17 deep + the sides overlap each other -

Dorsal Fin is high & strongly falcate - it is dark gray or slate like back

Pectoral Fins Above fins are dark slate like back - ant. edge white and fin below all white. The front edge of fin is very thin & loose; it curves over. (See photos of fins)

Baleen ~~Left side~~ ^{with a patch of lead color} - outer edges of baleen plates lead color, ^{the lead color extends in a longitudinal} band from base to tip of plate & along outer edge & is about one inch ~~wide~~ ^{wide} - rest of plate is yellowish white. 

Right side The anterior portion of the baleen row has the plates all white - the rest of this side is like the left. The length of the anterior white portion is 81 - The bristles throughout are pure white - baleen begins 15 from tip of snout.

External Characters

Blubber on sides 8 thick. Perisudge has two creases extending backward from the posterior end, but not reaching the anus - anus is an elliptical opening 24 long.

The navel has a space the width of four folds & long in front which is smooth. The furrows of the belly end abruptly just opposite the middle of the navel.

The two concave ~~mark~~ depressions on the under side of the tip of the rostrum just in front of the beginning of the baleen were present - like this) (

The center of the eye is 11 behind corner of mouth - a median crease extends ant.-post. between the

blowholes - it is exactly the length of the blowholes.

Osteology

I counted 12 chevrons + one or possibly two more should be added in the few caudals which were cut off with the flukes - the 1st chevron is very large - its haemal spine is the widest (ant.-post.) of the series but is not the highest. The spines of the 2nd + 3rd chevrons as they lie in position are the highest of the series - the two are the same height - the spines of both are narrower (ant.-post.) than no 1

There were 14 pns. of ribs present. 16 lumbar + 12 + caudals

C₇ D₁₄ L₁₆ Ca₁₂ + (this is certainly correct)

Flukes

Skull

Length (straight) = 410

Breadth (squarround) = 206

Jaw

straight = 400

curved = 420

When the vertebrae were being torn apart by the steam wrench as the carcass was cut up, I noticed that several of the terminal epiphyses of the vertebral bodies ~~were~~ came off apparently easily; this would indicate that the whale was young.

Sternum The sternum of this whale has a V-shaped bone process + two transverse

processes each bearing on its upper edge a high rounded emurced or lobe - between these lobes is a deep, horseshoe shaped opening - The sternum articulates to the distal ends of the 1st pair of ribs - the ends of the ribs fit in to the angles formed by the lower sides of the transverse processes and the ventral spine or process. The end of the ribs is 50 mil. from the sides of the ventral process & end of the sternum and the upper side of the distal end of the ribs is 20 mil. from the lower edge of the transverse process - (These measurements were taken shortly after the whale was ribs was taken out of the whale) The ribs is tipped with cartilage, but articulation to the sternum is by ligaments & not by cartilage as in the Humpback.

Sternum greatest breadth = 550 mil.
 " height = 490 "

The first rib is flat for its entire length & strongly curved having a simple pointed head, a long slender neck, & a ~~small~~ ^{divided} tubercle - ribs is widest at the distal end

Ribs length straight (tubercle to end) = 983 mil.
 Curved (ditto) = 1114 mil.

Breadth at distal end (greatest) = 150 "

Scapula The acromion & coracoid project almost straight outward

Height (g. fossa to edge above) = 650 mil. length acromion (lower edge) = 260 mil.
 Breadth " glenoid fossa = 1110 " length coracoid = 160 "

First dorsal Has a ^{high} spine directed slightly backward just at the side of the anterior zygopophys is a prominent tubercle on either side - the transverse process projects backward and downward

1st dorsal Height = 880 mil. Height body = 190 mil.
 Breadth = 350 " Breadth " = 285 "

First lumbar (measurements on posterior end)

Height = 690 mil. Depth body = 210 mil
 Breadth = 1020 " Breadth " = 290 "

First caudal (measurements on posterior end)

Height = 690 mil. Depth body = 270 mil.
 Breadth = 700 " Breadth " = 310 "

The inferior carina of the first caudal is widened posteriorly and practically obsolete anteriorly; the tubercles for the articulation of the first chevrons are small.

Atlas Has a transverse process which projects outward & ^{slightly} upward. The laminae of the arch meet in a spine 20 mil. high
 Height: 360 Height body: 255 The base of the
 Breadth: 580 Breadth " = 270 neural arch on either side is perforated by a horizontal foramen as in the Humpback & Sulphur bottom

Axis has an upper & lower process which ~~meet~~ ^{unite} distally by a wide margin enclosing an oval foramen or opening which occupies a little more than the proximal half of the process. The lower

process is much thicker & heavier than the upper. The laminae of the arch meet in a wide square crest which is grooved on top in two places forming between them a low ridge - The two transverse processes project strongly backward & very slightly downward.

The 3rd, 4th, 5th & 6th cervical have an upper & lower transverse process which are joined distally by a narrow margin - the arches of all these have a low spine.

The 7th cervical above, has only a wide flat diapophysis & no parapophysis -

1-1670	8-83	17-1120	28-42	39-83
2-750	7-13	18-223	29-40	41-150
3-350	10-9	19-209	30-4	42-40
4-430	11-4	20-48	31-25	43-58
5-385	12-470	21-39	33-24	
6-560	13-600	22-87	34-135	
7-1300	14-755	23-87	35-310	
	16-395	27-115	38-335	

No 35 Sulphurbottom ♀ July 3-08 Kyngnut B.C.

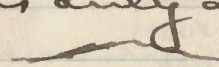
Color a very light whale, Top of head to eye light slate eye to flukes on back ^{4 sides} all light blue gray, almost solid; there are a few darker markings which show plainest on lower edge of peduncle & on sides just below dorsal - Belly & breast is blue gray marked with the lighter of the back & sides - From fins downward & backward on belly folds, not meeting in the median line are narrow dark colored markings - there are a few of these markings on the breast (center) opposite the eye - The spots which come down along the partner's ends of the

furrows meet in the lower median line
from navel to pectorum

Tongue blue - inside both ramii upper half
white - lower half light blue gray - roof of
mouth black -

Baleen black including baricles - baleen begins
20 from tip of snout

Flukes ^{left edge is} above blue gray finely lined with darker
lines do not reach post. edge
which is dark & very thin - the
end of the ~~post~~ fluke is blunt - has been injured
~~Below~~ Below fluke is light, finely lined with
darker -

Dorsal Fin is blunt - has been injured -
it is only a knob or bump & looks like
this 

Pectoral Fins, ^{Left} Fin above like head - has
a few spots or markings on proximal
half - dorsal fin is flesh colored with
many gray markings on proximal third
these markings mostly take the form of
fine lines running from post. edge
half way across fin -

Pelvic fin same above - below
flesh colored, with long narrow long-
itudinal gray lines mostly near
the anterior edge and all distally -
the dark color of the upper surface runs
over below as the ant. edge proximally -

External Characters The usual vertical row

of white hair on symphysis - blubber very fat & soft - two marks) (on tip of snout)
 Folds on throat are 40 mil. wide, between fins 55 mil. wide & at end on belly 85 mil. wide. furrows are 30 mil. deep. - one humped scar on right lip - This whale contained fetus no 35a ♀

skull Length = 610 jaw length straight = 595
 Breadth = 297 " " curved = 645

There are 16 ossified chevrons - the usual first chevron is not present, & is represented by ~~two~~ a nodule of cartilage on each side, only - there is no ossification whatever in it - The first ~~of~~ chevron of the series is large & not joined distally; the two laminae forming this chevron are not opposite each other - the one on the right side is half its length behind the one on the left -

The 2nd chevron has a well marked spine; the 3rd & 4th are the same height as they lie in position, & the highest of the series. altho the spine of the 4th is no longer than that of the 3rd, it is much broader ant. posteriorly. Only 14 pairs of ribs were present - I examined both sides most closely when I discovered this, so that there is no possibility of mistake - the last pair were long, the usual short terminal pair being the ones which were missing

Cy D₁₄ L₁₅ Ca 28 = 64 (sure)

1 - 1930 mil.	11 - 1 mil	23 - 140 miles	37 - 35-
2 - 870	12 - 640 "	24 - 290	40 - 193
3 - 325	13 - 660 "	25 - 290	41 - 15-
4 - 450	14 - 680	26 - 40	43 - 69
5 - 260	15 - 924	27 - 125	
6 - 630	16 - 540	28 - 40	
7 - 1400	17 - 1270	29 - 125 ⁴³	
8 - 120	18 - 300	30 - 8	
9 - 9	20 - 70	31 - 35-	
10 - 15	21 - 25-	33 - 3	
	22 - 390	34 - 60	
		35 - 290	
		36 - 10	

No. 36 Seepherbottom ♀ July 3-08 Hyeguest B.C.


A light whale - The top of head to forehead ear is light slate color - from ear to flukes on back & upper sides ground color is light blue gray - just above fins ^{a line going} forward to eye is a mass of very light gray markings, small & very thick; in some places this mass is solid - These markings sweep up over the base of the fin & turn downward along the edges of the furrows to a point about three feet beyond the tip of the fin laid back, where they end. Rest of lower half of sides to flukes is light blue gray, marked only in the following places ~~is~~; in scattered places with darker blue gray; from a little behind anus on sides there are very few darker markings & these cease altogether ~~at~~ about 3 feet in front of insertion of flukes - ~~the~~ from the chin, lip & throat & vulva back on sides of peduncle there are some of exactly the same markings as were on the Finback

which look like the knots of wood - from
 nose to snout below are small irregular
 markings, very light gray, almost white.
 Throat + breast + lips, to about three feet
 behind fins is light slate like head - rest
 of belly is like peduncle, light blue gray -
 from the insertion of fins running obliquely
 backward + downward, toward but not
 meeting air, the median line are scattering
 dark colored markings, with now & then
 a ~~the~~ white one - there are a very few
 dark colored ones on the breast just
 in front of insertion of fins

From dorsal fin to flukes top edge of
 peduncle is entirely solid color - no
 markings whatever

Flukes - light blue gray below, lined with
 lighter lines, almost white. Above color of
 head (light slate) lined with lighter ^{notch 13 deep}

Pectorals Above slate; ant. edge white for
 distal $\frac{1}{3}$ - 4 markings on top at insertion
 Below fin is milk white

Dorsal fin is only a rounded ridge
 like this 

bottoms of furrows from a point opposite
 tip of fin back, all pink - rest of all
 the furrows same color as flukes -

External Characters notch of flukes
 13 deep - median crease between lower -
 lobes only 38 long. The tail is 5 long - its
 tip is divided into small fringe like processes

the opening is large enough to admit the end of my little finger - there are 19 hairs on the scapularis in the two ventral rows - the navel is 17 long.

Osteology

skull Length = 560
breadth = 280

Scapula inner surface has seven prominent veins radiating from opposite lower edge of acromion upward. The suprascapular border is flattened in the central portion & dips sharply downward to the ~~gl~~ glenoid edge posteriorly - the dip to the coracoid edge anteriorly is not so abrupt or so long.

The acromion projects only slightly downward; it is broadest distally; it is curved inward only very slightly.

The coracoid projects downward & strongly inward.

The suprascapular edge turns outward very slightly thus making the outer surface of the scapula a little concave - Suprascapular edge is 20 mil thick posteriorly; 15 mil in middle & 50 mil thick anteriorly.

Scapular measurements

Height = 930 mil.

Breadth = 1500 "

Length acromial (median) = 470 mil. Breadth glenoid fossa: 370 "

" " (lower edge) = 490 " Prerapular fossa and

" coracoid " = 130 " spine well marked -

6:10:20

A preliminary arrangement of data in re-
gard to period of gestation of Humpbacks

On May 22 took a foetus 2 inches
long from a Humpback - on the 1st of June
a foetus 8 inches long was taken - on
June 13 a foetus about 18 inches long
was taken - on June 27 a foetus 45 inches
long taken - The calf must be from 10 to
12 feet long when born, according to the
size of the uterus - ^{not} supposing that
the whale which contained the foetus
2 inches long, was about the first of
April; from April to July is 3 months
The growth from April to July is
45 inches which makes 15 inches per
month - supposing the calves to be 144 inches
long when born then the mothers would
carry young for about $9\frac{1}{2}$ mo.

This rate of growth is probably a
little too rapid, making the period of
gestation about 12 or 14 months.

On June 16 a calf 25 feet long which
was still suckling was killed with
the mother. This calf must therefore
have been born the year previous.

measurements of no 36 ♀ Sperm.

1 - 2370	11 - 3	29 - 63	greatest breadth of flukes ant. to first eye is 129 The lower jaw fixed was closed tight over upper jaw and could get the measurements of its length from its tip to tip of lower jaw absolutely correct
2 - 1070	12 - 640	30 - 7	
3 - 530	13 - 690	31 - 45	
4 - 650	14 - 710	32 - 32	
5 - 450	15 - 1030	33 - 10	
6 - 830	16 - 505	34 - 119	
7 - 1815	17 - 6	35 - 370	
8 - 120	23 - 122	36 - 38	
9 - 16	26 - 24	37 - 37	
10 - 9	27 - 190	41 - 200	
	28 - 65	42 - 36	
		43 - 80	

Humpback ♂ July 14-08 Kyuguet B.C. Length = 1200
This whale had a very short upper jaw or rostrum -

Humpback ♂ July 14-08 Kyuguet B.C. Length = 1260
Throat + breast nearly to navel pure white, only
one or two black dashes in this white area +
one on forehead a median line is black.

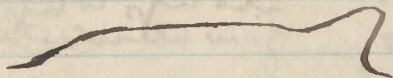
Osteology

Ten chevrons - the first small + free distally
the 2nd very large & almost as high as 3rd which
is highest of the series - last small + free distally
14 presacral vertebrae C7 D14 L11 Ca 20 = 52 ~~vertebrae~~

The last caudal vertebrae to be composed of two arch-
ylosed portions but it is not certain enough
to count it as two. In all the whales I have
examined both Megaptera + Balaenoptera there seems
to be a frequent ankylosis of the terminal vertebrae
sometimes being ~~one~~, two + even three joined.

Humpback ♂ July 6 - '08 Kyeguat B.C.

Length 1330 Very little white on throat
+ breast except in hollows of furrows -
The hump of this whale was prominent & the
same fin peculiar - like this



Humpback ♀ July 6 - '08 Kyeguat B.C.

Length 1075 Back sides + belly black -
white only in median line of throat + breast
to pectorals - white spot between pectorals.

Humpback ♀ July 6 - '08 Kyeguat B.C.

Length = 1220 Much white in flecks below
from tip to flukes - white on sides of peduncle
in flukes + circles -

Humpback ♂ July 11 - '08 - Kyeguat B.C.

Length = 1165 - same fin like this

white on both edges

Humpback ♀ July 11 - '08 Kyeguat B.C.

Length = 1095 - This whale was mother of
no 39 (Scapula saved)

Skull Length = 295 -

Breadth = 170

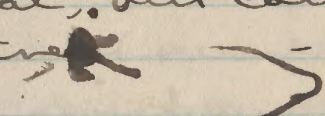
Jaw straight length = 286

curved " = 310

There are 10 chevrons present of which the 3rd

is highest of the series — 14 pres. of ribs +
12 lumbar —

Vertebral formula is

C₇ D₁₄ L₁₂ Ca₁₉ = 52 (This is absolutely seen)
A terminal knob of cartilage was present
with the complete form of the terminal
caudal, but containing no ossification
whereas  — form of terminal cartilage

Humpback ♀ July 11-'08 Key West B.C.

Length = 1160 (Contained a foetus of 1 long
the foetus had 22 pectoral furrows —)

Snout Length = 320 jaw length straight = 310
Breadth = 190 " curved = 335-

10 chevrons present — 3rd largest of series

14 pres. ribs

C₇ D₁₄ L₁₁ Ca₂₁ = 53 (absolutely seen)

terminal caudal the size of a pea but fully
ossified —

Scapula

Height = 76

Breadth = 1110

" dorsal face = 290

Length coracoid = 50

The inner surface is strongly concave and the

→ outer much less strongly convex — the
super scapular border is evenly convex, the
highest point being nearly in the center
The coracoid is represented by a ~~hook~~ well
marked knob or projection directed
strongly downward & inward.

July 1 - 08 - Kyequut

Humpback ♀

Length = 1340 (contained a foetus)

Flukes (tip to tip) = 373

Left lobe = 217

Right .. = 217

Humpback ♀ July 1 - 08 - Kyequut

Length 1090 - Flukes above & below black with a few white oblique markings along part. edge & at tip - Also a few on ant. edge of dorsal $\frac{1}{3}$ - Ant. edge is convex especially toward the tip - part. edge convex from notch nearly to tip which is convex - edge irregularly scalloped

Humpback ♂ July 1 - 08 - Kyequut

Length = 1290 ~~Size~~ This whale is entirely black below except for a little faint white in bottoms of folds where they end - there are 4 white circles on the very chin -

Humpback ~~♂~~ ♂ July 1 - 08 - Kyequut

Length = 1420

A very heavy whale - little white on throat & almost none on breast & belly

Humpback July 2 - 08 ♀ Kyequut

Length 1145 - very black - only a very little white on median line of breast & throat - white spots between fins -

Sedgwick B.C.

Whale's frame painted - to May 16 - 07

177

covered with the oil per whale - 256 gallons
to the tin - $9\frac{1}{2}$ lbs per gallon

Humpback no 31a ♀ June 29-08 Kyequod
A calf about 28 feet
long with a very short head - Pectorals
above & below pure white - above have
a small black patch at insertion.

Humpback no 31b. June 29-08 Kyequod B.C.

Length = 1350 - ♂ White crests on chin
& throat, but only a little white in median
line of breast - white spot between fins -
no white on left ear - top of head, back, sides
& belly black - dorsal fin a prominent
hump 170 cent long - dorsal 30 cent high - both
edges white -

I had the whole mass of flesh ~~cut~~
about the penis removed from this whale
and cut away the surrounding fat and
flesh from the penis & pelvic basis, taking
care not to injure the attachments
of the latter - The interior view of the
penis base (the surface lying toward the
back bone) shows two great ligaments (very
tough) which branch from near the
~~of the~~ base of the organ. These branches
are 320 mil. in length, their posterior
ends stand 500 mil. apart, and the
ant. ends where they start to branch
from the penis are 20 mil. apart -
in the median line of this surface of the
penis, extending clear to the root & fetter.
The two branches is a rounded ridge which
marks the course of the urinary canal -

at the posterior end of these branches on
 either side & connected to them by ligament
 are the pelvic bones - There is a knob of
 cartilage at each end of the bones which
 makes them seem much longer
 than they really are - The pelvic bone
 is only connected to the penis by
 ligament at its very posterior end -
 the remainder of the bone is embedded
 in the fat & flesh about the penis, but
 has no ligamentary attachments -
 The bones do not lie quite horizontally
 in the body, but have the short ant-
 erior ends somewhat further in to-
 ward the spinal column than are the
 posterior ends - Thus they lie a little
 obliquely to the general axis of the
 body - Both the ant. & post. arms of the
 bones are slightly curved anterior & dorsward
 viz: toward the outside of the body - The
 posterior ends of the pelvic bones as
 they lie in position are 540 mil. apart.
 The ant. ends are 600 mil. apart.

June 7-08. Sechart -

The Ocean today brought 6 whales -

5 ♂ + 1 ♀ -

+

no 1a ♂ - Sides, belly black - on belly
back of pectorals also no white whatever
Both horns of the mandible curved
heavily with white - from the snout
to between the pectorals in median
line. particularly above is much
white - on the throat the white is small
pads & patches, but on breast it is
long streaks - the white ends in
a large spot directly between pectorals.

Pectorals all ~~of~~ shining white below
except a small black patch at in-
sertion - the posterior edge and
tip have a narrow black edging -

anterior edge white - Both flippers
are the same below - Throat purple
and 22 in number

no 2 ♂ Sides of body black - throat & breast
back to about 3 ft. from navel is
white dashed with broad black streaks
Left pectoral has the usual black
patch at insertion below which
extends $\frac{1}{3}$ length of fin - rest of
fin below dashed with black along
anterior edge & tip chiefly - both edges
black - Right fin black above & below.

circled with white along posterior edge -
the white circles are mostly confined to
the $\frac{1}{3}$ of fin at tip - white from arms
to flukes - 10 floss

no 308[♂] Sides of body & belly black - 2 white
spots at navel - Shiner chit throat & breast
is not heavy - mostly in flecks & patches

The white ends in a large V shaped
patch between pectorals in median
line - point of V is backward - in
the bottom of the furrows the arms
of this V are salmon color on top of
fold it is pure white -

Right pectoral above has no white
or is indistinct but is the skin
studded with barnacles - Left
fin below has a large black
patch at insertion - rest of
fin is white heavily marked
with spots & dashes of black -
black is absent along top and
posterior margin -

no 400 ♀ Belly black back of pectorals
dark but scattering white flecks
on the edges of some of the folds -
lower edge of peduncle black -
Sides of body black not much white
on throat & breast - mostly confined
to circles - Right pectoral above is

black along posterior edge for whole length of fin - black extends to middle & is heavily crossed with white - anterior half of fin for whole length is white circled with black -

no 507 Throat & breast to pectorals are heavily marked with white in streaks & patches mostly - in bottom of furrow the light colored streaks are salmon color - belly to penis is heavily flecked with white along edges of the folds - great mass of barbedes about penis.

Right pectoral black above heavily circled with large white circles along posterior edge -

no 607

Sides black - belly black except for a few small flecks of white along edges of folds - on sides of throat & chin many large white circles - there run down on center of breast ^{when} pectorals but not on sides of breast except in a few places - Right pectoral white below with a few black circles on the $\frac{1}{3}$ toward tip - peduncle from penis to flukes pepper & salt - Left pectoral black above heavily circled

with white on the $\frac{1}{3}$ of the tip —
 20 throat furrows

June 16 - 08 Sechart B.C.

Today three whales were brought in which I did not describe & measure. They were all females, two old & one very young. The calf was 25 feet long & was still suckling as we found the milk glands well developed & full of milk in one of the females.

The calf was very fat & had thick blubber; its baleen had the buttons of the extreme bases of the plates dark gray & all the rest from ant. to post. pure white, without any gray shading whatever. The excrement was unlike that of the other whales. It was a light brown — probably due to its diet of milk.

The milk glands of the female lie along either side of the ventral line of the body, but are not parallel — the anterior ends are much further apart than the posterior. The glands lie anterior entirely to the mammary slit ^{opening} & joining this slit at the posterior end. The anterior ends of the glands lie 77 cent. apart,

which ran freely when the gland was pressed. The milk is white & looks exactly like very rich cows milk - I tasted & found it sour & a little acid - & had a decidedly whale like flavor - I can best express it by saying that it tastes exactly as ^awhale smells - and I don't want any more of it.

Out of the last seven whales six of them have been females - quite in contrast to a short time ago when we got most all males. As Capt. Balcom tells me that mostly all the whales for a week or two at a time are killed from the ^{same} school it would appear that at certain times in the year the males & females separate & herd by themselves. When the whaler has killed all the whales from a school or frightened them away they hunt up another herd. The other large female had a foetus in her, as large as one I took from No. 22 - I about 18 inches long.

June 17-'08 Sechart

Five whales today all females -

June 18-'08 Sechart

Four whales today - 2 males 2 females
one of these females measured
51 feet -

June 22-'08 Sechart

Five Humpbacks today - four
♀ & one ♂. Two of these had a
great number of white flecks
about the eye of a half dollar
scattered over side of fin
to flukes - One animal had a great
amount of red-pink in the
bottoms of the furrows

These last ¹⁴ whales were all
from a different school than
the others which I measured -

1907 season's Catch - Sechart B.C.
 Humpbacks (Feb to Aug month) 76.24.70
 Sperm (any, till Feb 11) 15.26.70
 Humpbacks (at any time) 8.71.70
 Sperm (March) .29.70

3 Sperm year before
 Total catch 341 whale

alcoholic

no

I Eye of whale no I

2 Blup from fetus throat just below chin
with Barnacle attached.

3 Barnacle with attachment from
throat of no 6

4 Ditto

12 Foetus from no. 10 Humpback -

" " " 22 " "

" "

End of Humpback tongue

23 Sulplumbatum eye no 32

24 Finback " " 34

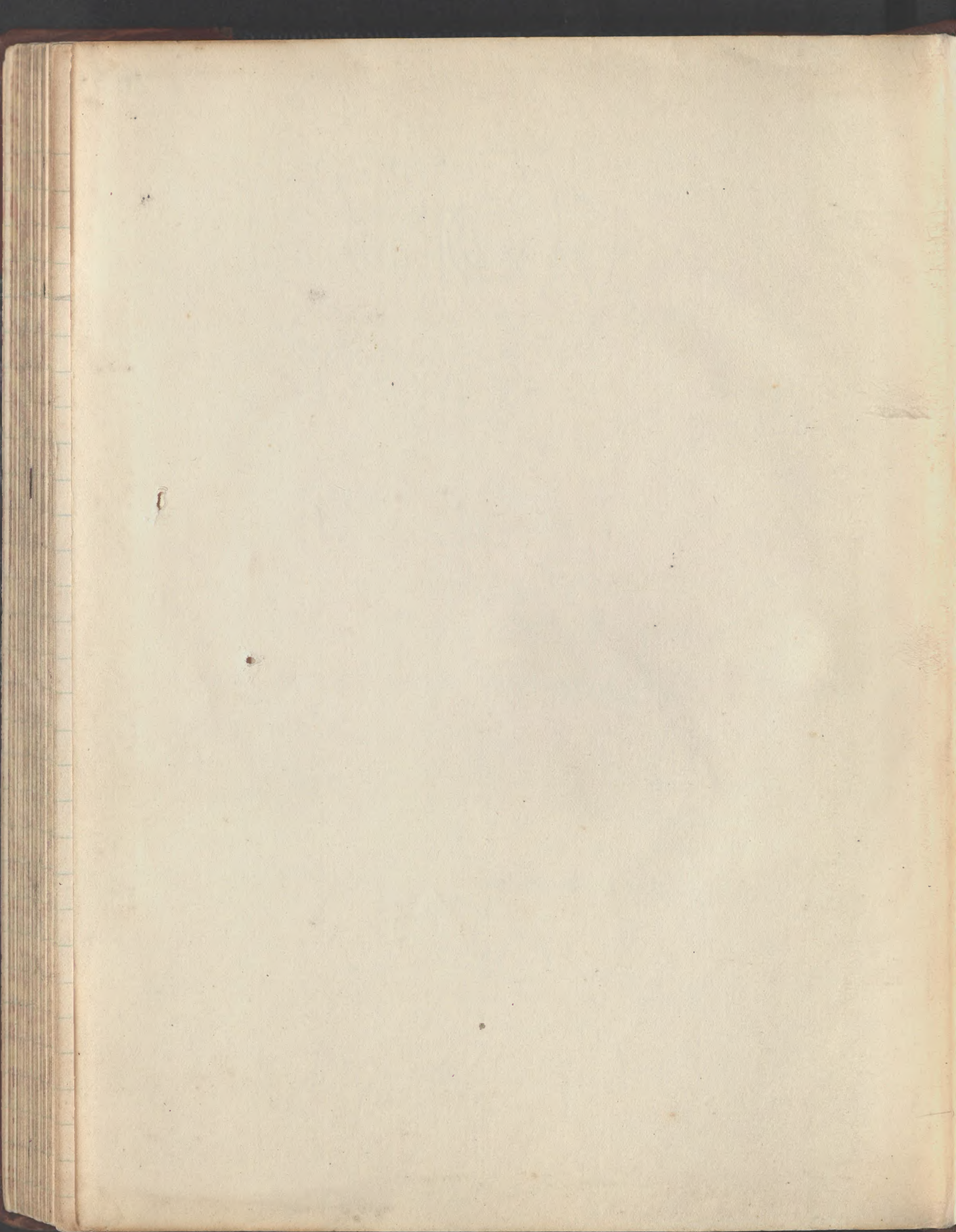
E. H. Junton
 Seal Cove
 Bonaville Bay
 Newfoundland

F. N. Denson
 626 Superior
 Montreal Q. Can.

Murray & Co
 Gault's
 Newfoundland

names of mandibles of Squalus
 just long weighed (cleaned) 850 lbs.
 1 pectoral fin of Humpback weighed
 905 lbs.
 1 pectoral fin of Humpback 1390 cent. long
 weighed 767 lbs

Faint, illegible markings or bleed-through from the reverse side of the page.



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