

14

PROGRAM OF WORK

I. Oceanographic observations. (To be taken insofar as desirable).

A. Hydrographic.

1. Temperature and water samples at least once each day, surface, intermediate, and bottom, if possible at beginning and end of fishing operations.
2. Bottom sample taken and a generous portion saved.

B. Biological. ~~Surface, intermediate,~~ intermediate, bottom surface.

↳ bottles water.

II. Biological observations. (To be taken insofar as practicable).

A. Fishing operations.

1. Relative abundance (i.e., species and quantities) of:
  - a. Crabs.
  - b. Fish.
  - c. Associated fauna and flora (invertebrates and algae).
2. General character of bottom as shown in commercial net catches. In all cases save as generous a sample of animal and plant life as practicable.

B. Biology of king crab.

1. Measurements and weights of crabs of various size or age groups, including notes on condition, food, parasites, etc., as per separate schedule attached.
2. Tag crabs, as many of all sizes as possible.
3. Save samples and as many young and unused crabs as practicable.
4. Note any relations of king crabs to other animals.

Hammma Alaska Reff  
Ritter

---

McMulla Shred noon  
Ken Build U.W.

---

Auge Fille

Wile Pajipi  
greyhound

grey  
that ave

my P.S.'s

20

~~16~~  
6

~~16~~

~~14~~

3

3

8

10 weeks.

Ivan

①

Pavlov Bay +  
Unimak to Unga

④

②

Stepavak Bay  
Unga - Chishik.

④

④

Kodialak. Send

②

Chirikoff to east end Kodialak

③

Shelikof St to Seldovia

smallest  
used

Aug 15<sup>-</sup>

Sept. 15<sup>-</sup>

Oct. 15<sup>-</sup>

Nov. 15<sup>-</sup>

Dec. 15<sup>-</sup>

Plan for future work.

Oct. 11 divided S.E. + South Peninsula into  
5 areas, 1 boat to section an area.  
(for price of Juddley could have  
had 2-3 prospecting boats.  
gill nets, trawls, + traps.

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Oct. 21. 4 boats - 2 on each side Peninsula  
each with fathometer / no camera /

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Oct. 22 2 vessels with pots, alternating; one  
sets other picks up after a week, while  
waiting; both trawl, or make hydro-  
graphing and biological observations.  
Also have gill net, small motor boat  
aboard, set nets + pots

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~~See diary here page~~

Each vessel should have gill  
net boat, or <sup>small</sup> power launch per  
fitted that it could set + haul  
gill nets; (no outboard motor)

Recommendations: Get out canner info  
first number of people are  
interested in processing yield

Oct. 19 Turn investigation over to Sci. Dept. <sup>stimulate</sup> <sup>exploration of</sup> <sup>findings of</sup> <sup>occurrence</sup>  
Have demonstrated that crabs can be  
successfully canned, if obtained  
in sufficient quantity.

Oct. 21 Go away with camera & get 2 perfect  
boats with power gill net stuff &  
work both sides peninsula If cannery has to be  
taken, leave off of bearing  
till crabs proved sea  
in sufficient quantity.

Oct. 25 Various places that crabs <sup>have</sup> <sup>been</sup> <sup>reported</sup> <sup>should</sup> <sup>be</sup> <sup>investigated</sup>  
at times of year crabs are said to  
be there [not when they are not there, at  
least in the beginning of month gate]

Nov. 4 Shut down nurseries like canoe  
and Olga Bay.

Nov. 20 Try gullies in shelf of St. Ave  
boats rigged with gear & cable mull  
trawling (definitely & thoroughly) in 150-200  
fms.

Nov. 30 Have thoughts of this before circulating  
holding fishermen for records of king  
crabs. Times of year, place, depth etc.

~~Dec. 8~~ Post reward for tagged Alitak crabs!  
Leave Cannery + Nelson behind. write Dr. Fred Henton <sup>Portland</sup>  
Have Nelson turn in <sup>Judeley</sup>  
logs if any. + Schedule occurrence of  
crabs he takes his Washington remarks  
upon.

## Recommendations:

Where as this investigation has so to speak put the cart before the horse, - running before we know anything about life, age, habits and distribution,

The Bureau, should put small group <sup>at Olga Bay</sup> <sup>serviceable</sup> buildings and lab. facilities are available to study life history, movements, etc of that colony.

~~Likewise at~~  
Same sort of study should be undertaken at Canoe Bay (and perhaps somewhere in Bering Sea. At Canoe Bay temporary lab and living quarters would need to be constructed

Each of these study stations should have at least 2 motor boats, couple of skiffs or dorys available.

If we knew something about this crab in our waters, which nobody knows now we might be able to make some progress toward getting up commercial fishing or packing crabs or advising against it, at least on south side of peninsula and by any except small scale outfits.

~~Fondleyo~~

Marion Wallace is the man  
for this job

Needs sep. water pump

Can one break charter because not sea worthy enough for Bering Sea

Tondeley Landcraft, ed needs (1)

Oct. 13 with pile-floor and out board live boxes helm + <sup>his</sup> gunner must have a try without any swell what so ever; otherwise wrecks reef + cages, and crew wash overboard.

[ ~~Keep~~ <sup>Use</sup> wooden tank with ~~main~~ water on deck ]

Need deck tanks in Bering sea + sep. pump there fore to avoid having to avoid swells even though slight

See also Nov. 27 + Nov. 26

Oct. 29 \* Tondeley should have 400 h.p. horse, only 160. far too weak for size of ship. Her. aux. rated at 100 h.p. but delivers only about 40 to 60 h.p.

Can't make headway against 20-30 mile wind in Nuka Bay. Hardly got by Barren Ids

Oct. 29 Total Tondeley horse power 200. Nelson admits to 100 gal. \* Fuel each 24 hrs. [ May burn much more. ] \* Most of this sitting tight;

Oct. 29. { Blarott 270 + 12 h.p. <sup>main</sup> <sup>aux</sup> burning }  
{ 140 gal. each 24 hrs. }

Nov. 5. Tondeley can't pay her own way wages, food, fuel etc. out of limited capacity

Nov. 22. \* <sup>main</sup> Engine in deedly poor condition  
3 cracked cylinder heads.

Nov. 25. Needs septic tank so toilet can be used in rough weather!

Nov. 25. Considerable crew lost with plane  
Nov. 26. \* Had to run aux. to take generator load off main engine, could not make Nuka Bay before haulcraft + 1 a 2 after Nuka Bay + before getting la Touche.

Nov. 26 hardly weathered Barren Ids.

# Canoe Bay possibilities

Oct. 15

2-3 families might make a go  
of catching + packing crabs here on  
a modest scale.



Salt water  
supply

Separate wooden tanks on  
forward deck (three median + two lateral)  
can be built knock down. Can use  
as frequent hose to seal bays in  
which there are no wells. (Break up  
cages + causes loss of crabs!

Tanks need sep water pump so that  
water will not be contaminated with  
bridge water and oil

Fresh water  
supply

Separate pump so that  
salt will not get into drinking  
water.

Water room of same sort.

Getting fresh water one of most  
important things

~~Salts~~ Lack of <sup>F.W.</sup> water bigger  
problem.

There should be adequate  
pumping facilities; fresh water  
positively (absolutely) independent  
of salt water, so that there will <sup>no</sup> ~~be~~  
delay in getting water aboard. <sup>change of weather</sup>

Conditions, make this imperative —  
Every day but 21<sup>st</sup> Sept. weather  
interfered with getting water either  
in fore or afternoon only on 20 (only  
day of the port) did we have clear  
half day when we worked for 5-10  
gets water, at 10 waves got up  
too much to permit pumping, and  
water <sup>unsuspected</sup> contaminated by spray.

Mate says [on Endeavor at least]  
he could bring water out faster  
than pumps (aboard Endeavor) could  
handle it (boat hoist or line); that  
there great delay in getting water  
aboard expeditionally occurred.  
(over)

Gill nets  
are selected  
18 in mesh  
when out  
by 1922

Always so anxious to find crabs in  
shore, in bays I guess because  
Tondleys could not work or be  
anchored under present rig with  
pile floats anywhere where there  
is any swell at all. All more reason  
for boxes with run water on decks  
in Bering Sea needs a water  
scur, non to be had at Port  
Moller except with difficulty

add equipment

Tomdeley:

Proper launch

with in board motor

F. W. pump  
saw

Dip. nets

Salt pump

Tanks with  
running salt

Navigation equipment

No sexton

bron

chronograph

Salt tank

New  
Bilge pump

Water saw  
F. W. pump

Launch

Galley. stove

heaters  
needed

Trap lights

Sail

spar buoy  
search light  
storage bath.

butchers  
scales

life preserver  
davits

storage  
batteries for  
radio

400 H.P

Start with Tardelbyo

Flare + Rockets  
Life Ring with flare

Locked Storage

Searchlight

Batteries

Seepage

Navigation Equipment

Water capacity

Metering out

Pumps for fresh water sep from salt

Tanks on Deck

Water scoop + launch

Dip nets

Scales

Davits

Oars

Bilge Pump want operate

Galley Range

Leak of seals

Proper space for food

R

(1)

Can't claim enough to make  
 worth while or justify here  
 being taken. ~~Did not~~ Can  
 methods have been, satisfaction  
 + paper worked out as <sup>labeled</sup> fact  
 made will evidence

~~(2)~~

(2)

So made forward to be safe to  
 take up with 20 people in  
 about. | a —  $\frac{b}{c}$   $\frac{1}{2}$  hour.

(3)

Requadequale equipment.

a —  
 b —  
 c —

F.W.

John case.

2

(10)

Time of year from rest for  
 Benz could not ill or  
 ill chosen

Bering Sea

~~1 1/2 miles~~ 1 1/2 miles  
Bering

Apr. 15 — June 1

Amala

①  
② + gill net  
land

① Br.  
+ gill  
boat

Carve Bay

~~Kamakhjan~~  
① Bering

Mar. 1 Apr. 10

- a Panoof
- b Cold
- c Shumagin
- d Stepanov

A

Alidate →  
on Shelikof

Mar. 1 — Apr. 10

②

Carve Inlet

③

+ gill net boat  
Mar. 1 - April  
bet. Shumagin Bay  
and Alidate

Apr. 10 — May



Canning:

①

No cannery to Bristol Bay  
Expedition timed wrong  
for past year + next  
on too ~~4,000,000~~

Before you send cannery  
demonstrate crabs; cannery  
would take care of itself

Cannery

Inadequate

① Power

⑥ No navigation  
✓ in instruments, sextant  
100g  
chrom.  
sight bd.

② Light Radio =  
lack of storage batteries  
for break down

⑦ Heat

③ Light to study words  
or write after 12<sup>mid</sup><sub>nite</sub>

⑧ Bilge pump

④ No F.W. pumps

⑨ No change packs  
oil check or motor oil

⑤ No adequate life boat

⑩ No tools No saw  
for machine tools

⑥ No flare preserver

List of materials each boat should have at hand (things for Service to buy)

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Some lumber for work table somewhere aboard, with racks or battens to keep bottles from tumbling over in seaway; also for making cages for crabs - moulting studies.

1 saw (Pat has one)

1 hammer (" " ")

1 lot assorted sizes nails

1 oil can and light machine oil of good quality for oiling calipers.

1 (measuring) dial caliper<sup>10 inch capacity</sup> (there is one in Seattle; Pat has one).

? tin snips (Pat has mine)

Soldering iron and solder. May be with engineer each boat. {engineer may have iron; may need buy solder for sealing 5 gal. tins}

Notebooks, tablets, letterhead paper, envelopes. (In short, stationery supplies.)

Butcher's scales, such as we used for weighing crab meat on Tondeleyo up to 10 or 20 lb.s (? 20 or 30 on second and third revolutions)

1 small spring balance of type returned from last trip for ounces and fractions thereof. (Pat has one; 1 in Seattle.)

1 meter yd. stick (Pat has one; one in Seattle)

1 hypodermic syringe, of type returned. (Pat has two. A box of extra needles for these was left in Seattle; also 1 syringe.)

4 of those spring top, 5 gal. tins such as are used for livers (for packing specimens that have been pickled in tank.)

couple each small forceps and scalpels (now being mailed you this mail; sep. cover).  
Tags for crabs, wire for same, and 1 pr. wire cutting pliers.

20 gal. alcohol in 5-gal. tins.

2-3 gals. commercial formalin

6 Bureau towels.

4 25-cent (light weight) galv. pails (Pat has few; may need new ones; about 1/2 doz. left in Seattle).

2 large size galv. wash tubs (Pat has 2; 2 in Seattle)

Couple of dip nets (Pat has my old ones)

1 gal. (each boat) Bouin's fluid (fine for preserving samples of crab eggs for later examination)

flu medicine

Empirin (such as you give Joe)

Chenactin compound with codeine

Brown mixture tablets, with trace  
of narcotic (get for 'Put health')

Aspirin for cough & sore throat

Cascara pills (laxative)

Epsom salts, <sup>good stuff</sup> (I left one behind)

codeine

bandages

band aid

boric acid

some lanolin, got for chapped  
hands, etc.

Burns

All get Joe to take over  
this + ~~add a~~ ask him to  
suggest whatever else he  
find necessary

1-16 gal tanks (fuchs step in oil)   
 this in hbl.

~~1~~ - 8 gal tanks or 16 gal

1 box 8 oz bottles

1 box 4 doz 1/2 quart jars

will need the work  
Syringe part

1 of whole molar }  
1 bolt cheese cloth }

Bureau white  
Bureau  
Junk

1 bottle  
scales each

1 spring balance  
each  
boat.

1 box gal jars <sup>with</sup> alc.

2 <sup>(100000?)</sup> boxes vials and corks.

Tags +  
Wire for  
corks

reagent for  
corks

1 mud sampler each boat

2 balls cord

Blank labels

dipnets

5 gal buckets

20 gal  
formalin

<sup>pencil</sup>  
1 doz price list for  
dipnets

Bigg

White enamel pans.

Canvas or gumlin  
(cheese cloth sacks)

small  
shears

Sieve? (for hlders 6 ft)  
Digging tool

direct  
sieve

4 each

large wash into each

2 lots Higgins index

2 3x5 note books each

3 long pencils

2 flat enamel pan.

4 round notes each

4 dry qts each.

1 1/2 mull beans.

1 saw  
1 hammer  
1 tin snips

~~ball of twine~~

4 spring tacks  
lines each  
board

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Nov. 10, 1940

Borrowed by C. J. Pertuit from National Museum,  
Waldo Schmitt, & Bureau of Fisheries  
Detailed at Alitak, Alaska

- + 2 scissors
- + 1 3/4 length stainless steel forceps
- + 1 bottle thymol
- + 1 box Denison tape
- 2 syringes B.F.
- 11 veterinary needles B.F.
- 1. Adapters B.F.
- + 1 pliers
- Charts (5) Nos. 8002, 8502, 8556, 8575, 8802 B.F.
- 1 Spring Balance B.F.
- 1 Air thermometer B.F.
- 6 pails B.F.
- 2 Wash tubs B.F.
- 2 bottles of Higgins ink, penholder & Pen
- 1 Geological hammer
- 5 long forceps
- 1 eye stick B.F.
- 9 doz. Vials & Corks B
- 2 dip nets - 1 fine & 1 coarse
- 2 flat enamel pans
- 4 round " "

(another page)

- X 1 tin snips
- X 3 doz. quart jars
- X 2 sieves (fine & medium)
- X 2 quarts Epsom salts
- X 3 lbs formalin
- X 2 gal. jars
- ⊕ 1 Weston Light Meter
- X 1 Cyanide bottle
- X 1 alcoholometer & testing tube
- X 1 flashlight
- X 1 4ft. piece of canvas
- X 1 jar lanolin
- 6 Bureau towels B.F.
- 3 5 gal. tins n.g.
- 2 life preservers (Ship)
- X 3 doz. cheesecloth bags
- X 6 yds. Cheese cloth
- X 1 small hand wire strainer
- X 1 hand lens (cover missing)
- 3 scalpels
- 3 small forceps
- 1 ball 40ply twine

B.F.  
 BF  
 1 gal jar full 95% alcohol  
 2 gal jars full alcohol



Mar. 10, 1940

Borrowed by C. J. Pertuit from U.S. Fish & Wildlife Service

Detained at Alitok, Alaska

- 1 Kodak Vignette 616 f. 4.5 ~~FF~~
- 1 doz. phs. of 616 film Paratomic X ~~FF~~
- 1 Portable Dynamite (Remington) ~~FF~~
- 2 Clam shovels ~~FF~~
- X 1 dissecting scissors
- 1 saw
- X 1 Hammer
- 3 cases of cans & tops
- 1 small monkey wrench
- 3 drums gasoline
- 5 gals. lube oil
- 1 drum of kerosene
- 4 boxes of water bottles (Oxygen & Salinity)
- 1 water bottle sample (Halibut commission)
- 3 thermometers (Heprith) (" " )

Tapping wire and 1200 tags

1 washboard

LIST OF BOXES AND CONTENTS  
FOR SCHMITT OUTFIT  
ALASKA  
July 27, 1940

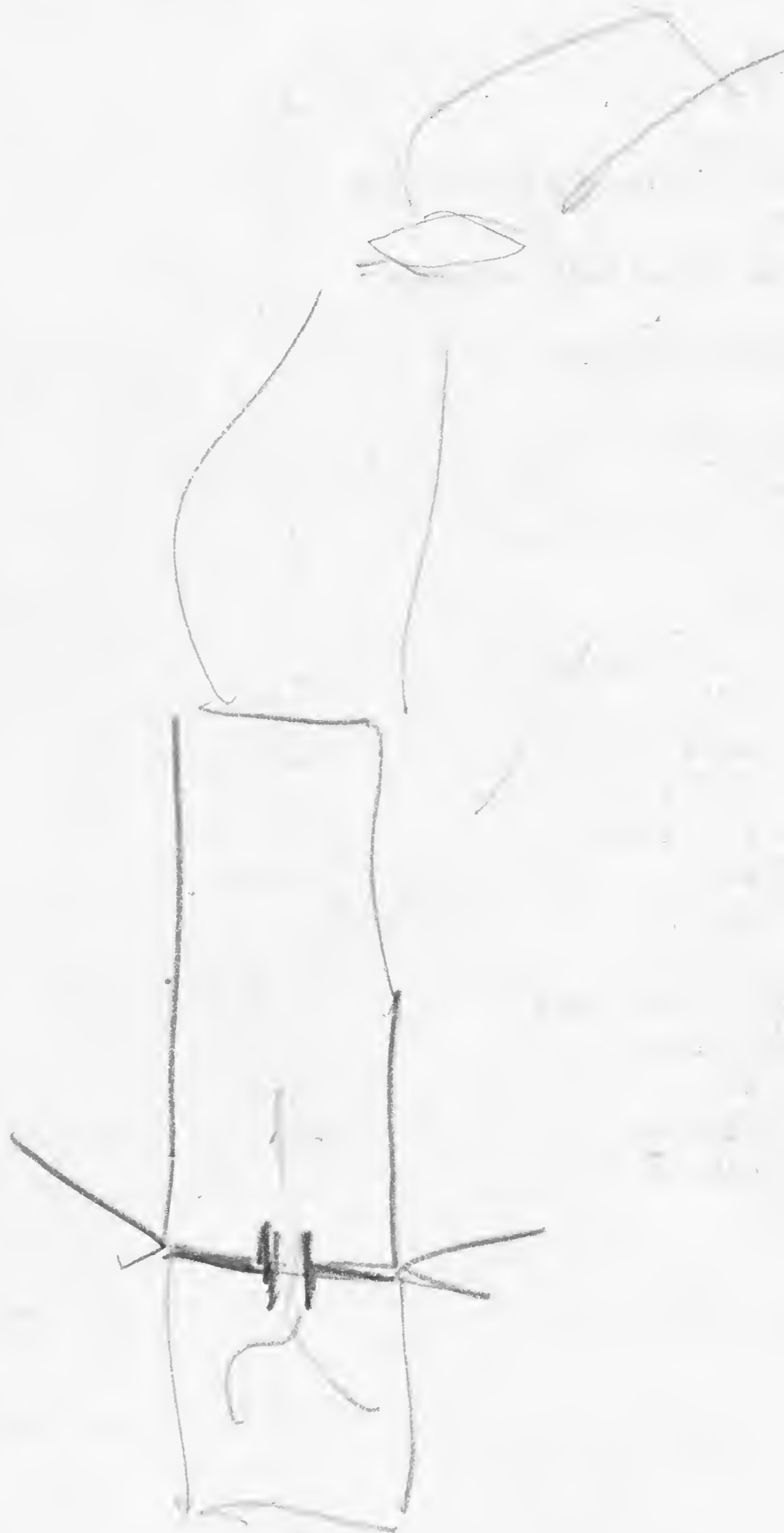
- |  |   |
|--|---|
| <p>#1 Wooden Chest containing:<br/>12 - 1 gallon jars of alcohol<br/><del>2 - 1 gallon jars of alcohol</del><br/>1 Jar Chloride of Lime<br/>1 Box Glass Vials<br/>1 Box Shipping Tags<br/>4 Sack Needles<br/>1/4 Bolt Cheese Cloth<br/>1 Padlock</p> <p>#2 Wooden Chest containing:<br/>12 - 1 Gallon jars of Alcohol<br/>2 Flashlights<br/>500 Shipping Tags<br/>4 Bottles Eternal Ink<br/>12 Flashlight Batteries<br/>2 Record Books, 3 1/2" x 6"<br/>3 Steel Tape Measures<br/>4 pairs Scissors<br/>1 Box Gummed Labels<br/>4 Balls Cable Twine<br/>1 Padlock</p> <p>#3 Bottle Chest containing:<br/>70 - 8 oz. glass jars (empty)<br/>1 padlock</p> <p>#4 Same as number 3<br/>Also 1/2 bolt Cheese cloth</p> <p>#5 Same as number 3<br/>Also 1/2 Bolt Cheese Cloth</p> <p>#6 16 Gallon size Tank Box containing:<br/>1 - 16 Gallon Copper Tank filled with alcohol<br/>1 Tank Key - 1 padlock</p> <p>#7 Same as number 6</p> <p>#8 Same as number 6</p> <p>#9 8 Gallon size Tank Box containing:<br/>1 - 8 gallon copper tank<br/>12 Bottles Formaldehyde<br/>4 Bottles (6#) Epsom salts<br/>1 Bottle Thymol<br/>1 Tank key<br/>1 Padlock</p> | <p>#10 8 gallon size Tank Box containing:<br/>1 - 8 gallon copper tank<br/>8 Bottles Formaldehyde<br/>1 Bottle Mercurous Chloride<br/>3 Jars (4 1/2#) Chloride of Lime<br/>1 Padlock</p> <p>#11 16 gallon size Tank Box containing:<br/>1 - 16 Gallon copper tank filled with alcohol<br/>1 tank key<br/>1 padlock</p> <p>#12 Wooden crate containing:<br/>3 - 5# tins Derris Root</p> <p>#13 16 Gallon size Tank Box containing:<br/>1 - 16 gallon copper tank<br/>16 gallons alcohol<br/>3/4 Bolt cheese cloth<br/>1 piece Rubber tubing<br/>1 Tank key<br/>1 padlock</p> <p><i>omit</i></p> <p>#14 8 gal tank / photo flash</p> <p>#15 crate opt</p> <p>#16 gear harmon etc<br/>vial blocks</p> <p>#17 book box <u>incubator #14</u></p> |
|--|---|

*Has in it  
some nice  
items include  
camera bag  
+ insect  
powder  
tablets*

*lytane  
Jett to be  
#14 tank in*

Biological Supplies

No.	Equipment	Amount	Source
1.	Plankton nets	3	B.F.
2.	line for same		"
3.	Dip nets		Ge <del>ar</del> man?
4.	extra fine mesh		



Biological Supplies, King Crab Investigation  
1940

No.	Equipment	Amount	Source
<u>Preserving cont.</u>			
33.	thymol	1/2 lb.	U.S.
34.	epson salts	10 lbs.	U.S.
35.	hyperdermics for injecting fish	3	Hilderbrand?
36.	extra needles for hyperdermics.	12	
37.	alcoholmeter	3	U.S.
38.	cheese cloth	2 bolts	U.S.
<u>Containers</u>			
39.	aquarium 10 gal.	1	
40.	watch glasses	6	U.S.
41.	galvanized iron wash tubs (nest)	4	
42.	kettle for boiling specimens.	1	
43.	white enamel pans two nest assorted		Schmitt U.S.
<u>Miscellaneous</u>			
44.	cable twine 2 thick, 12 thin		gear man - U.S.
45.	geological hammers	2	Schmitt U.S.
46.	pinch bar	1	"
47.	hand lenses		"
48.	Binocular microscope	1	Schmitt
49.	forceps 12"	12	
50.	disecting set - seafoote	2	
51.	first aid kit.		
52.	chloride of lime		U.S.
53.	small shears	2 pr.	U.S.
54.	wrapping paper several sheets		U.S.
55.	pipettes	1 doz.	U.S.
56.	weights for tow net		U.S.
57.	sash weights?		
58.	flash lights (3 cell)	2	U.S.
59.	extra batteries	1 doz.	
	rubber boots ?	2 pr.	Bureau of Fish.

? Lumber

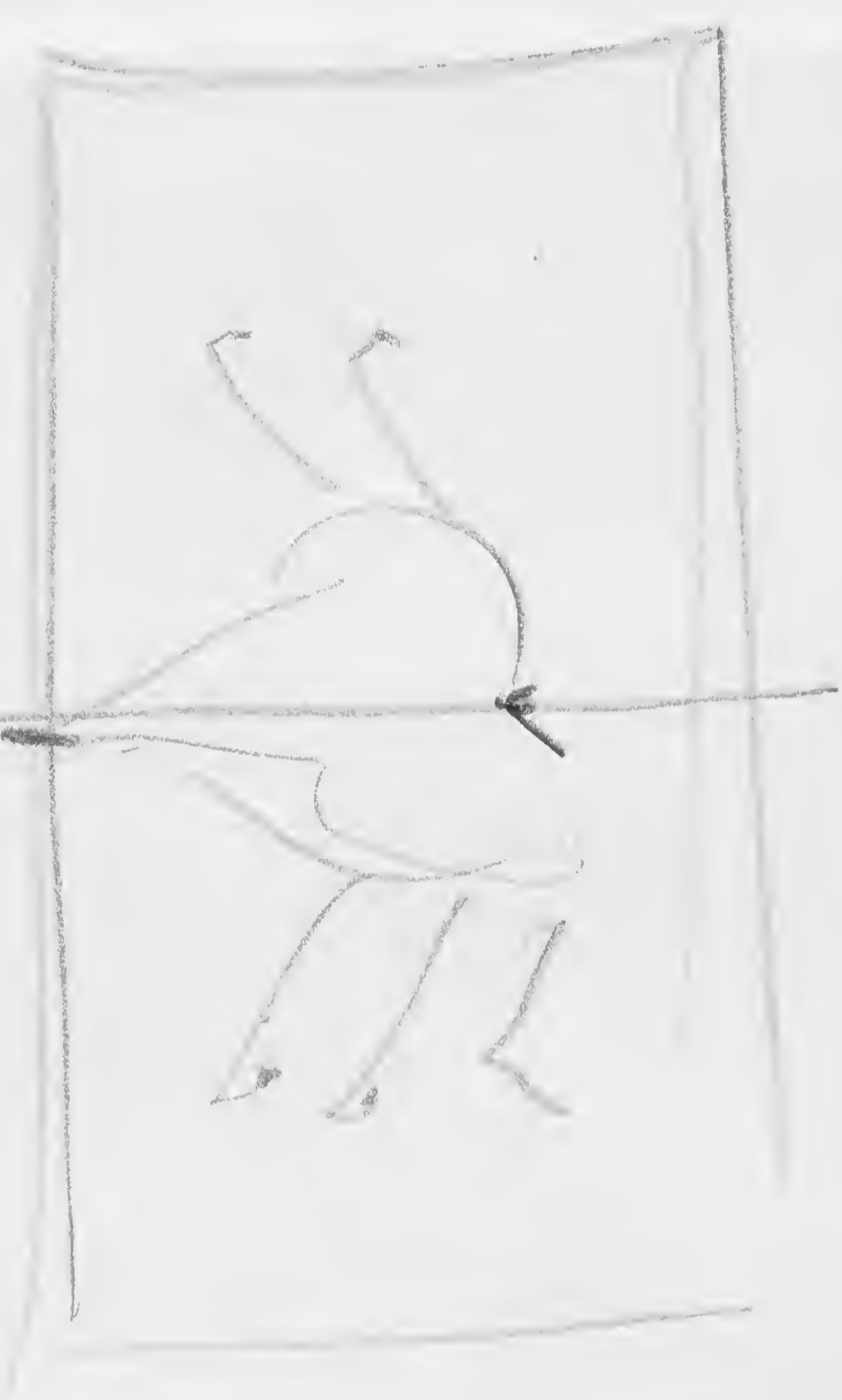
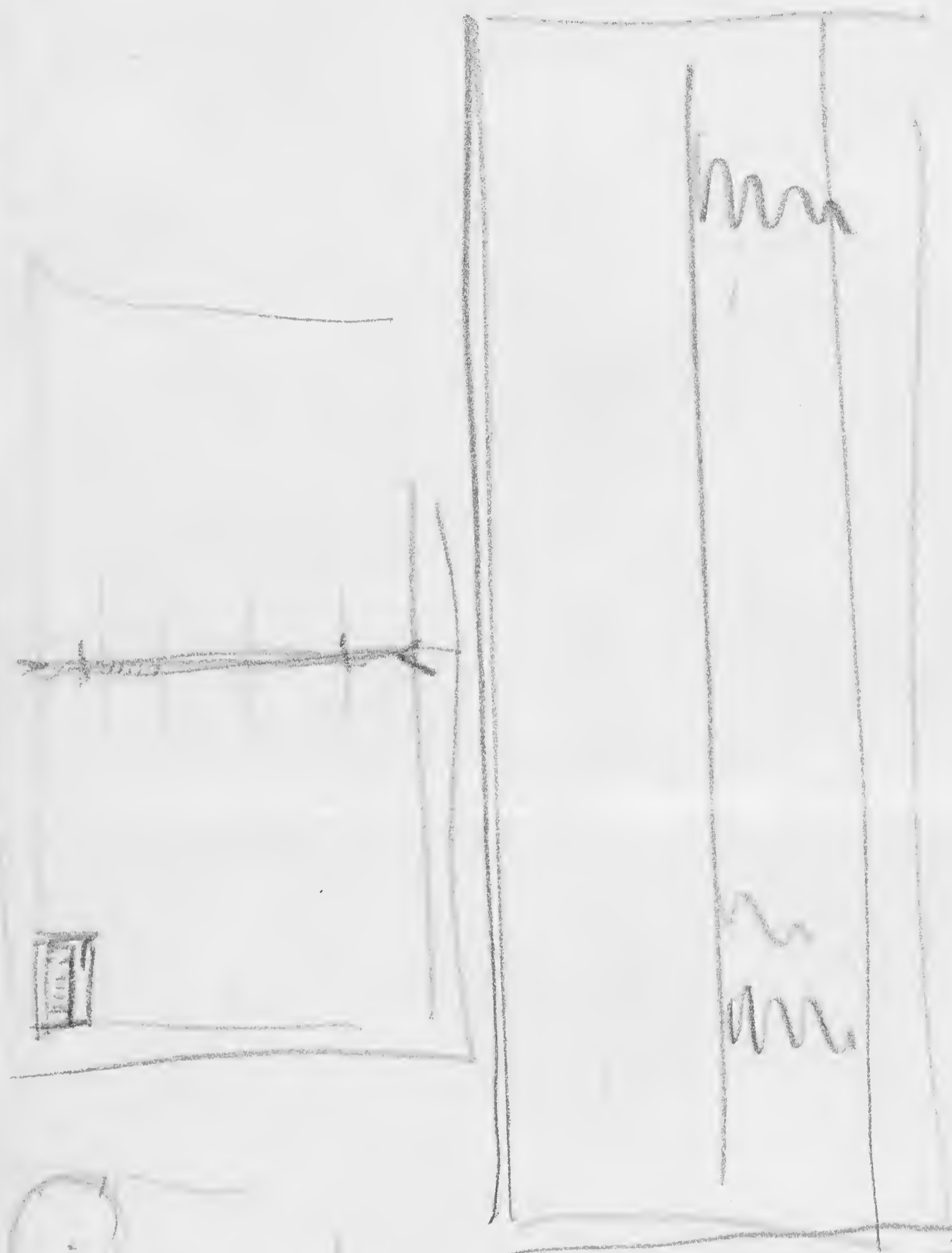
Ruled paper { ① 2 squares 1/4 tablets  
② sheet 11 columns

Bur Crab tags + wires | 1/2 in sq.

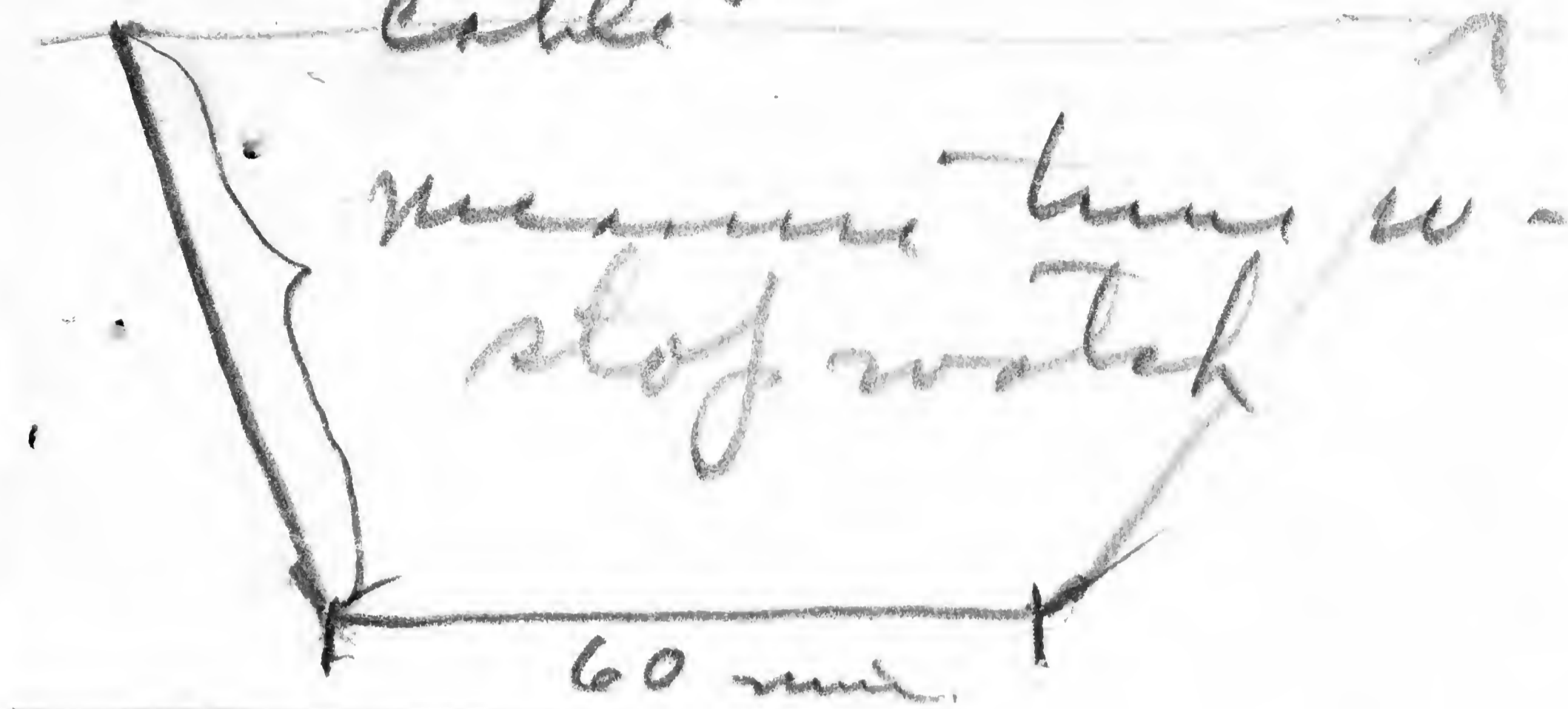
Biological Supplies for U.S.B.F. King Crab Investigation  
1940

No.	Equipment Collecting	Amount	Source
1.	plankton nets, #6	3	Bailey <u>Sands</u>
2.	line for same		" <u>Sands</u>
3.	dip nets		gear man?
4.	extra fine mesh for dip nets		" "
U.S. 5.	Bottom sampler (bulldog)	1	Schmitt U.S.
6.	water samplers bottles	6	Bailey? <u>Sands</u>
7.	sieves, nest of		Schmitt U.S.
8.	collecting chests 8 Oz. <del>(I)</del> bottles. (bottle in M.I)	3	" U.S.
9.	canvas bags for dried bot- tom samples.	1 doz.	U.S.
10.	cyanide bottle	1	Schmitt
11.	light weight pails, cheap make <i>gal. tub 4.</i>	1 doz.	<u>254 ea</u> purchase
<u>Recording</u>			
12.	Bur. calipers, very large, dial calibrations	4	<i>spring balance - purchase</i>
13.	Bur. 8x11 record books	2	
14.	Bur. 3x5 memO books	2	
15.	gum labels, medium about <del>2 1/2</del> 1' x 1/2'	2 doz.	U.S.
16.	M.I. printed labels identi- fying cruise	2,000	U.S.
17.	Bur. tin tags - <u>copper</u>		
18.	extra bag needles	12 1/2 box	U.S.
19.	mani#la tags, 1/4 x 2 1/2	2 gross	
20.	Bur. yard stick, inches and meters	2	
21.	small steel tapes	3	U.S.
22.	Sandy Thermometers	12	Bailey <u>Sands</u>
23.	Higgins internal ink	4 bottles	U.S.
24.	Bur. tagging equipment + wire	2 doz.	
60.	<del>Trust</del> Pencils no. 2		
<u>Preserving</u>			
25.	Bur. alcohol	50 gal. drum, Navy, Seattle	
25.	formalin	20 1 lb. bottles	U.S.
26.	chest gallon jars	2	Schmitt <u>U.S.</u>
27.	M.I. 1 quart, wide-mouth, whole fruit, jars. (terate)	8 doz.	" U.S.
28.	8 dr. no. 2 vials with corks	2 gross	" U.S.
29.	heating and drying equipment.		
30.	<u>Sands</u> citrate magnesia bottles	1 gross	Bailey
31.	8 gal. tanks <del>filled with</del>	2 empty	Schmitt U.S.
32.	16 gal. tanks alcohol besides drum	3	" U.S.

ruled  
sheets



pay out at rate of about  
2 min per 100 meters  
cable



paying  
time out - 1.0 min - ave.  
for 50 m.

haul time - 60 min

time hauling in -

1 knot  
35° - 45°

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10 m. less

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100 lbs. weight

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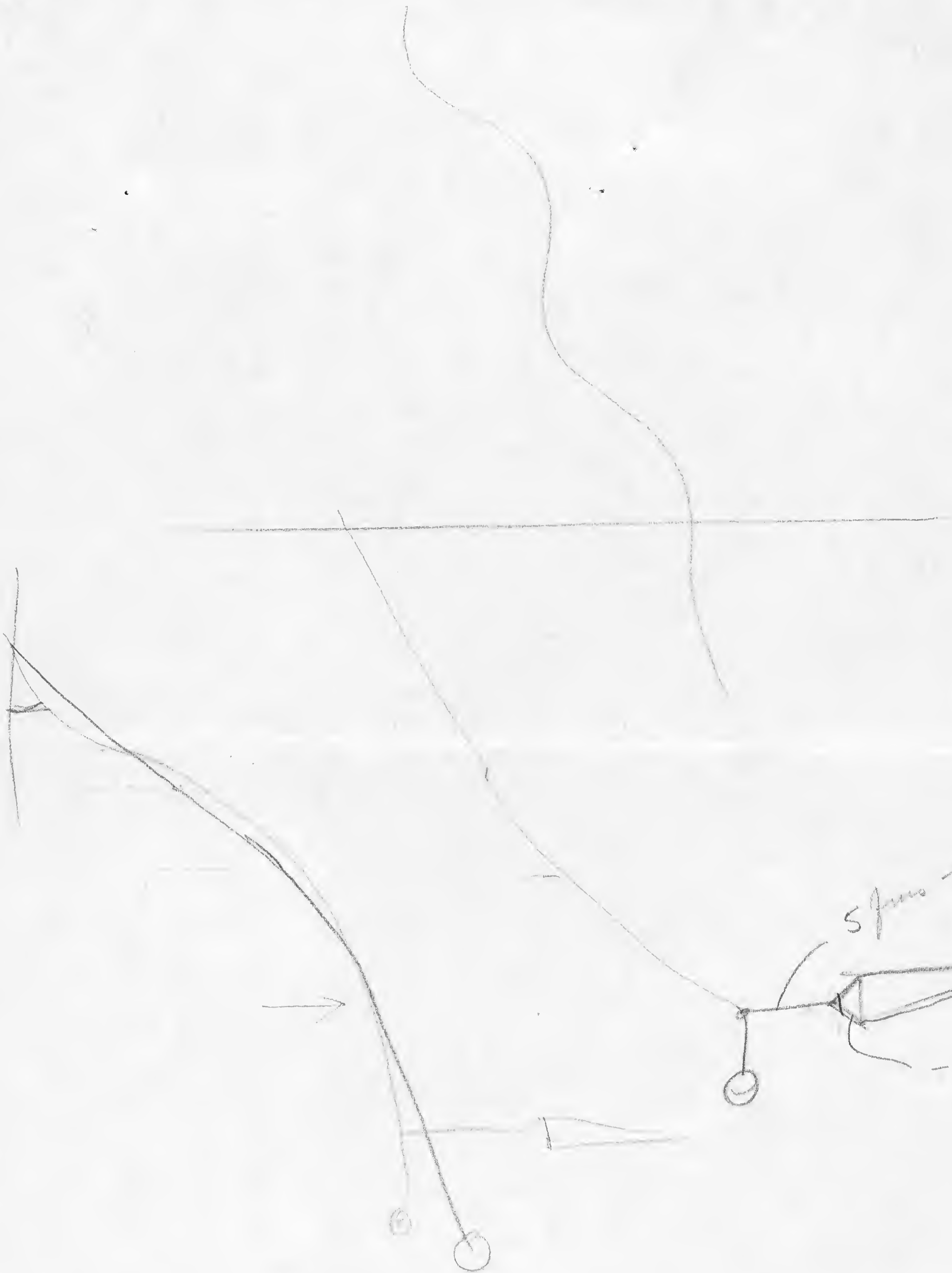
75% of depth

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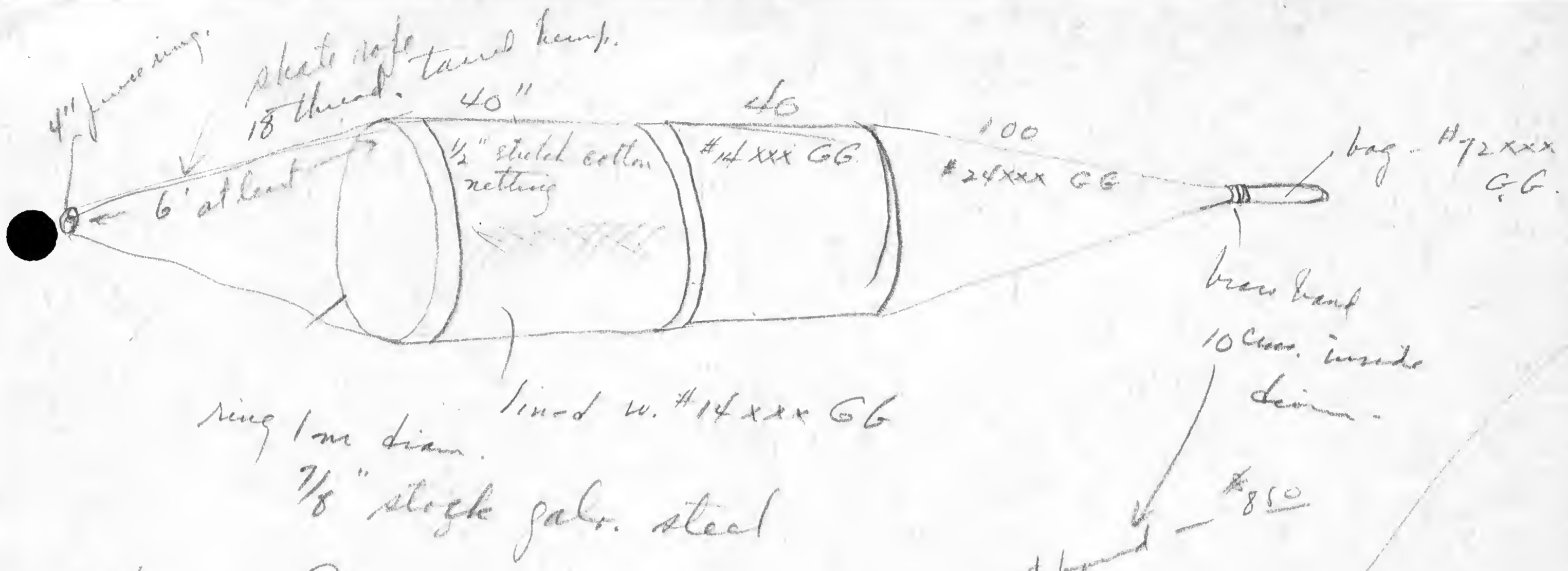
Stop watch





5 pins - 2 3/4" diameter pins

shale safe built  
4 rows



- | No.   | Item   |
|-------|--|
| 4     | 1 - net + equipment  |
|       | 2 - buidles + rigging  |
| 1     | 3 - 5/16" flow steel - yacht rigging - which<br>- det. size of cable   |
| 2     | 4 - 20 ft. to take end of cable down. 100 lb. to 200 lb.   |
| 6     | 5 - clamps to hold net in place on wire<br>- Atlas compound + ruff B -<br>- Brass cylindrical clamps. \$850 each |
| 4 doz | 6. #333 Bull Snaps - to fasten net to cable<br>scattle. H. we.<br>Cadmium plated                                 |
| 5     | 7. Lead rope - 2 3/4" manila.<br>(use 5 fms. long)   |
| 6     | 8 1/2" stock swivels put between bridle +<br>net or bridle + cable.  |

No. 24 ~~XXX~~ gut gauze

J. J. Ross Mill  
Manufacturing Co.  
Seattle

\$5.50 a yd. (40 in  
wide)

Alaska Crab Investigation

Borrowed from Halibut Commission Aug, 1940

- 2 meter townets
- 1 townet harness
- 1 150 lb weight
- 4 Hegeth's thermometers
- 2 Bigelow water bottles
- 2 messengers
- 2 townet bags
- 4 hooked on shackles
- 2 live weights (to hold net on cable)
- 1 nut wrench
- 2 shackles (?)
- 2 specimens of halibut

GRAIN ALCOHOL

UNALASKA HOSPITAL

~~03 1001 1-1-55~~ BP-514



~~177~~

~~177~~

~~Tagging~~

10 buoy keys  
3 coils buoy line  
+ 100 fth.

6 Flag poles  
17 stack wts

4 balls Beate Twine 20<sup>#</sup>  
51<sup>#</sup> sink Leads

169 - 4" corks  
20<sup>#</sup> 60<sup>ft</sup> Twine (cotton)

2 ball wire for traps

4 Dry anchors

3 doz 3" glass balls

7 pots

2 Life belts

Thermometer Alcyonide

Water sampler

1 Hog-pig

15  
96  
- 56

169  
---  
58  
26  
31

Graph lights for temporary  
light houses or range lights

---

Sealer butcher sealer

---

~~Inter~~

Campania

The Bureau must confess it was grossly misinformed as to the abundance and number of crabs to be expected 3. of June and their abundance that was claimed for them.

In view of this it is recommended that in place of the campania 102 perfectly boats be employed, for until a real and sufficient supply of crabs is demonstrated there is no use in buying and expending money around it just late up your investigation found both literally + figuratively



First we need to prevent  
 crabs, then & then only should  
 a company be dragged up  
 there. There are more reports  
 of the occurrence of crabs than  
 ever. These perfect boats  
 can perfectly replace, and  
 none at all ever in  
 Nelson's reputed experience  
 (as shown by this years performance)  
 that justifies taking any  
 company at all, and  
 least of all a company  
 that cannot pay its  
 own way. Let along that of  
 one perfect boat, even if  
 supplied with a thousand crabs  
 a day (the can only carry 30 crabs a  
 day maximum, which is <sup>much less than</sup> ~~less than~~ <sup>500</sup> crabs of suitable

can't rise

Ought to be vessels working both  
sides of peninsula, at same season  
~~for if crabs behave~~ to ascertain if crabs  
behave similarly on both sides.

# Recommendations:

If crabs are <sup>at all</sup> worth looking for on south side of the Alaska peninsula,

(1) a systematic search or prospecting system should be undertaken beginning in S.E. Alaska, about a beginning even south of Petersburg, and working north.

(2) That crab pots be <sup>primarily</sup> employed for this work

(3) with <sup>(trawlers)</sup> his vessels, working in company,

(4) <sup>each of these</sup> one larger vessel equipped as a commercial trawler, with carrying a accompanied by a good motor boat suitable for hauling gill nets (roller) and equipped with boom & hoist for expeditiously raising crab pots.

(5) Work <sup>to be carried</sup> right the coast by <sup>all</sup> inlets and also out over banks (5) vessels to be assigned to definite areas (of the area)

(6) Where crab pots <sup>reveal</sup> indicate presence of crabs, a record setting of pots be made to define <sup>area occupied</sup> by crabs, & the gill nets or hauls be ~~set~~ set to ascertain commercial possibilities or quantities.

(7) Vessels be equipped with radio phones to keep in close touch with each other & also fathometers, <sup>snuff</sup> hoists <sup>& cable for</sup> water bottles, <sup>turnets</sup> & other physical & biological oceanographic data, as may be deemed necessary.

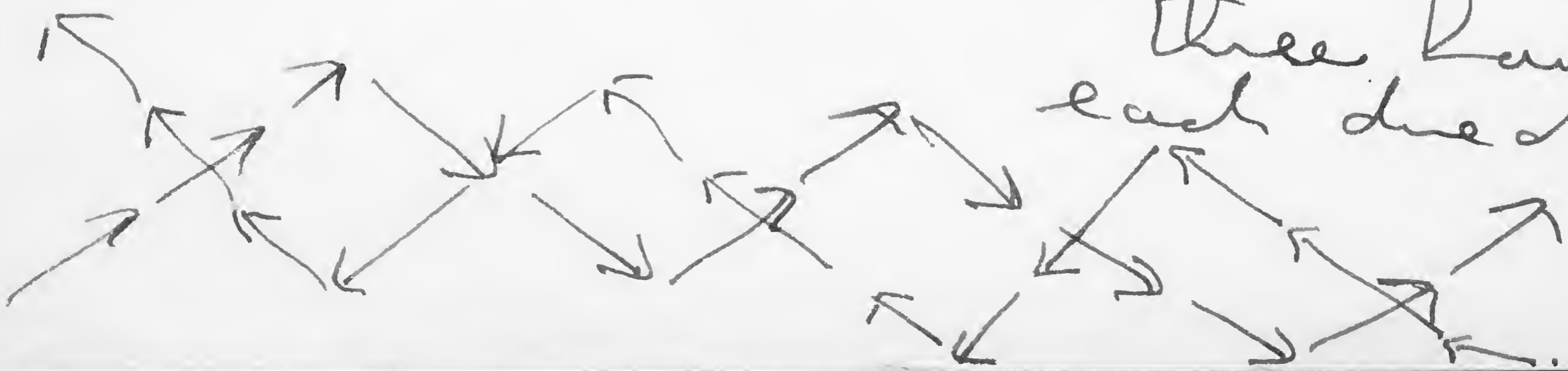
⑧ As much of territory <sup>as possible</sup> to be covered in investigated each month or each two months from a five vessels dividing ~~up~~ whole stretch of coast between them might be able to ~~do~~ <sup>cover</sup> a great deal <sup>of ground</sup> in an year.

⑨ Above all investigation not to be burdened with a cannery; if crabs can be demonstrated present in sufficient quantity over some adequate period of time any canner could figure his costs that much is known for almost any industry

⑩ one vessel with ports next a factory

If haul is done by  
2 vessels

criss cross  
line along N. side  
shelf N. <sup>two</sup> or  
three hauls in  
each direction



If we are to really  
learn something about  
king crabs for small but  
adequate cost field parties or  
stations at Comox Bay with  
or without should be placed  
in the field to study the life  
of the king crab at close  
range, and over a full  
calendar year. If only  
one party can be established  
it should be at Okeano Bay  
but it ~~is~~ true that a  
equally good if not better  
exists at Comox Bay. ~~It is~~  
not possible to establish a party  
at Comox Bay, but a party ~~could~~  
have to be provided ~~at~~ provided

~~adding to the~~  
~~adding to the~~  
adding to the ~~at~~ at ~~at~~ at

needs for next trip: 11

Oct. 11 Dathometer on each boat (except <sup>efficient</sup> ~~canary~~)  
most essential to protect & prospecting  
would enable profiling bottom over  
which drays were being made.

Oct. 23 Tanks or tunks on fish boats for keeping  
crabs alive for awhile at least for  
tagging or what not (if have no canary)  
should be fixed for running water. <sup>see</sup>  
pump?

Oct. 26 Couple of trah lights, and spar buoys  
to mark entrances to harbors used  
for bases and anchorages, would  
have saved lot of trouble\* at  
mist Aly, + Malina, + Kukul Bay.  
for anchors empty oil drums or  
such full of sand / \*Temp.  
light house  
so to speak

Oct. 28 } must have elect. sounder to atleast 150  
200 fms.  
} Bonus Bureau motor boat, one for each  
prospecting boat; (canary needs one  
wind too) something better, safer, + more  
reliable than outboard.

Oct. 28 Butcher scales for weighing crabs  
+ market fish <sup>upto 25-30 lbs</sup> + heavy balance for  
fish up to 100 lbs at least; one for each  
prospecting boat.

needs for next trip 2.

Nov. 25 at least 1 life preserver for each boat with flare that can be dropped if someone goes overboard.

needs for proper cruise

3 live tanks on deck

water scow + rehydrate water pump

proper little motor launch (outboard)  
to haul scow + set gill nets etc.  
one of these launches with each prospecting boat

!! Dipnets for handling crab in live boxes.

Shift a dory for shore landings

---

In many places holding ground is poor, - carry a mushroom and to settling  
make moving in place to which you must return  
a where you may be carrying live more or less  
permanent anchorage we had 22 canoe Bas diverst.

The bits - A comedy of errors, and  
of judgement - mostly a helmsman's  
sundays, sweeter little bit aft. <sup>bar.</sup>

Frank a piece of junk cook made the  
kitchen utensils n.g. buy one other  
he wanted a good sized 18 inch wire  
beater and butter, bought him a 10¢ store  
kind perhaps cost a quarter at  
most.

helm talk to convince himself

junk for <sup>type</sup> better to better  
depth to depth

buy to buy

<sup>at</sup> of my flashlight  
seems to have rails wife I  
gave longer. Didn't have towel, left him one.

On Sundays used my live box (really needed it)

quarters, " 200 ft. rope to bail out crew  
used my buckets, tubs, string, netting

dip nets to raise crabs

mine & Billie's tools to

do carpenter work had no saw of any  
description <sup>than engineer's back saw</sup> plane

Used Bureau lumber? for flag pole & printed desk  
little jack plane for smooth down.  
no flashlight! no air thermometer  
saw any one decent mirror which Bert got for  
us. no chronometer (used 2 light alarm clock)



Cart before

Trawler  
Launch with  
power sill net  
boat  
with each  
trawler

200

pot  
gill

Shallow  
water

trawler

deeper  
water

equipment.  
~~Bathometer~~

Plan.

No. Commeny  
extra prospecting boat or  
boats instead.

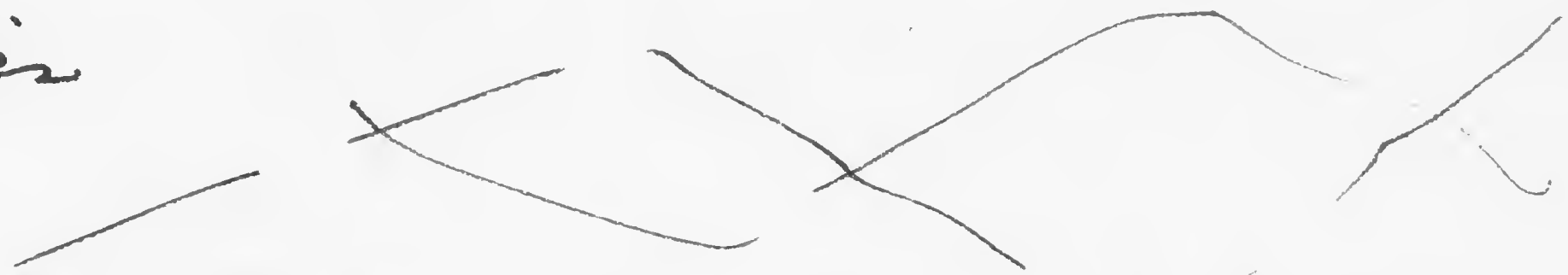
~~Investigate~~ <sup>all</sup> reports  
at right time or year

Sherrin

Sect. ≡ Questioner  
Nelson's

Remained, no Cannery

Bot lines



work both sides Peninsula

gill net boat or other power launch  
a shift

gillnets power boat

separate water pumps

No Cannery, more respect



→ If have to take Cannery, leave  
on south side till creek may  
have been proved on north side.

---

Indelgado

tanks on deck with running

water, + sep pump, would take care  
of shells + rough weather, now the  
gear of cannery

launch to low water scan  
water scan

sep. water pump, so we ~~can~~ not get salt  
water in ~~the~~ gill net  
getting water of more surface than  
getting crabs.

Gill nets are selective

Checked on 24<sup>th</sup> + 25<sup>th</sup>

was out range  
only made of heavy  
duty material in heavy  
+ before some parts  
to be used to

they were not suitable for  
most, they are also  
used in

where would Rubber

movement be if we  
had started to find

the regular  
relaxation of valves  
large work for some

they are in a  
of statements  
figures 300 c

16 cents each  
said they are  
then we caught

with + 3 more  
differ from the  
with the  
with the  
with the

In all an economic  
pinnacle or where but the  
you should not be in  
business to make a profit  
(or what will you have  
now.

If I do not carry on  
an object of a number  
years in ~~the~~ ~~area~~

We should have sent  
cannery + fish boats to  
an area where crabs  
were known to be in  
purging quantities

Alaska Bay ——— + kept  
here that but to come  
expensive vessel 19000 monthly  
20 men and + feed the whole  
there was no crabs

great trouble is poor Apples

ground, carry a mushroom  
to establish proper moving at base  
to which you return, or where you  
may get ~~can~~ <sup>can</sup> ~~net~~ <sup>net</sup> like lower end of  
canoe by <sup>near</sup> cabin  
on crabs

are as effective as ~~trawl~~

Trap lights ~~to~~ to be used  
as temporary light houses  
when based on difficult  
places & in out of way places  
where are no lights

Also a few <sup>small</sup> can a star trap

- ① get gages like Hancock  
for chart table
  - ② get two more prospect  
boats as only one for price  
of Bondeloy if can break  
\* charter or even the wh  
franchise of man & put  
three <sup>of Tompkins</sup> ~~of Tompkins~~ <sup>of Tompkins</sup> ~~of Tompkins~~ <sup>of Tompkins</sup> ~~of Tompkins~~  
prospect boats with divided  
wh crew of 4 or 5 men
  - ③ same number (full crew) on  
each boat; 2
  - ④ let me a two boats  
work north side of river
  - ⑤ small bottle with a one  
of boats on each side
-

Poppy Head -

8.03



#87-40

Oct. 23 This second deep haul

was more duplicate of first

Stylatura (lumina like mon-  
light or greenish lumina found  
(like the mon bow which Trafft also  
says showed no color <sup>boards</sup>)

Oct. 23 (24<sup>th</sup>)

Last night when we steamed  
blindly into head of St. George  
Bay, Nelson, who has been in here  
before (1936) was look out in bow  
we almost got up to shore when they  
decided to take a sound. 20ms  
"B'Jesus" (the boat only draws 13 feet  
as Trafft said ~~the~~ is telling  
about it next a.m.) The lead  
almost bounced back in the  
bow. (That was after I had said  
it must have hit side of bow  
a back of ~~gun~~ <sup>gun</sup> ~~crab~~ <sup>crab</sup>.)

At Kodiak a boat in the way  
 cut face of docks kept us from tying  
 up at fisheries docks so we proceeded  
 to S.O. docks where they let us tie  
 up. Just about that time on  
 our left side next dock was spitting  
 flames so thick you couldn't see, so  
 I rushed down to west & said him not  
 to be so mad "you want to hurt  
 me?" before I finished the way  
 Pete yelled "it off + the Arthur,  
 the d - thing was now spitting flames  
 (not burning) right against  
 a gas pump, could not have been  
 more directly trained on it if you had  
 tried hard to do it <sup>or</sup> exactly. Carl  
 says attendants face got white  
 Carl well it may have happened  
 Ja after long much ground trying to  
 find a bucket to slap one end of  
 pipe. Finally collected himself enough

Speeding of examination & matter answers  
& pictures Westley was up against  
his <sup>own</sup> dean's license, & asked to  
explain circulation of cooling water, &  
that involved a lot of writing, &  
then he asked examiner if picture  
would do he said yes & he posed  
too with a competent diagram

---

Minimal education & a broad  
minded examiner

---

In movie her with wife as night  
question night B5 a correct answer.  
Called Westley's kid's number. He said  
to wife that's your kid's, she is not  
your answer is OK. He acknowledged  
to interviewer

Oct. 25<sup>th</sup>

Steproad Bay area  
as indicated on chart  
Oct 23 by helm

was oblique meridian  
S. E. line from Cape  
Kupaeant to eastern  
margin of Shungu gulf

~~11  
30  
03  
Mr. Wm.  
F. 25~~

OCT, 26

With no compass  
no sudden  
decides to board  
for Alaska / a departure  
time I had not  
imagined last  
Sunday & he  
showed.

UNITED STATES  
DEPARTMENT OF COMMERCE  
BUREAU OF FISHERIES

To see one; there were half dozen II  
scattered along deck of ship here &  
there (one in the can done by). But  
the bag was not tight enough for  
I rushed down for an empty coffee  
can (maxwell) I knew where not  
keep them for I used them as speci-  
men tins) and gave them to Joe  
who was holding the fuel tank  
the pipe. The coffee can choked  
out flames as has had mean-  
while shut off engine.

Have completed current survey  
of Slop road area, no returns  
I need ~~Alital's~~ <sup>Alital's</sup> will

~~Thursday Oct -~~ to  
Sundays, please make  
~~an~~ feel we should

have ~~boat~~ <sup>gill net</sup> ~~made~~ for hand  
gill net, available here if  
we should want it. Please

~~that~~ consult P.A.F. <sup>without fail</sup> regards  
permission to use one of

~~the~~ diesel powered boats at  
their Alital's plant ~~we~~  
should <sup>we</sup> find one to our liking  
there, would only need it  
for one month.

Shelly will ~~make~~ <sup>copy</sup> for  
proper ~~list~~ <sup>list</sup> ~~showing~~ <sup>sw</sup>  
+ ~~Kodak~~ Kodak Id.

to East of here, but  
what Nelson wants to call  
Stephens Bay area, inclusive  
of Skumeyin we was not  
expected to fish a prospect  
(as per wash conference in Tiedler  
office) so we should have  
gill net boat available when  
we get to Alitak.



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
**DEPARTMENT OF COMMERCE**  
BUREAU OF FISHERIES

Oct. 4

383 crabs canned

Tell Royce about  
capacity see above

---

McLain to Olivia re  
J. M. Pen

---

Large size disaffection  
2 of the cars  
but as a reserve

---

Pondley's needs separate  
water pump or as not to get  
salt water in drinking water.

Write Program about  
papers how fine & much red

---

Ed Verberg's leave

---

Thanks for Redding data

should be ~~very~~ useful but  
not in print to me at digest  
it now

---

Settle more helpful, it's been a bit  
disconcerting at the end too

---

Must be in all cases in order alright

---

Marion Pettibone  
4842 6th Avenue  
Jackson, Wash.

Matter of canning dead crabs one  
of aesthetic value only (otherwise all  
meat we eat fish included is  
dead) True enough in crabs +  
like marine products they tend to  
be rapid spoilage, but freshly  
dead crab (not long dead crab)  
should be O.K. Gentle is  
defining the length of time a crab  
may be permitted to ~~lay~~ <sup>lie</sup> around  
dead before using. Point may  
be abused by packers <sup>handing in catch or with</sup> ~~handing in catch~~ <sup>permitted to accumulate</sup>  
and state <sup>more than can</sup> ~~handle~~  
of fresh live crab canned  
may be of great sales value  
certainly will make product and  
more attractive

Joe says  
Dead crabs  
yellow meat  
over

~~Yellow~~ Yellow color from searching  
remains in stomach

Have noticed passing out  
due to dead crabs  
remaining in water  
bottom crowded together

Nov 13

Revised Penguin D.H. suggests  
Seattle probably not safe with child  
reopening emergency operations have  
been advised not to request flight  
service which would delay trips  
therefore if you in contact with Penguin  
by radio phone not suggest Alaskan  
Marina Bay unless on their course  
and no delay entailed Pat can  
keep portable would appreciate your  
opinion as to advisability of exploring  
remaining areas as initial phase of  
spring expeditions and adjusting return  
date this expedition accordingly then  
making it possible to take advantage  
of Pat observation this winter

R.W. Hanson

Ask Brown if he  
had <sup>definite</sup> date for a pile

---

driver contracts, if we  
collect off in at low tide

---

Christie did Borneo by  
~~that~~ any point for  
Jandelayo - the bay  
or more + give short  
one

---

Christie Finsen is cost of  
the line, is cost of operation.

---

Pier 4 Seattle  
Trilene Supply Co



1. Wetmore re alcohol specimens

2. Royce Mary Lee &

3. he fourteen Vera

4. Al.

5. mel <sup>4 for doc</sup> <sup>5 for me</sup> Perrechnungen

6. Walter Weymouth.

7. Heath

8. Stalker

9. Brittel

per diem and  
even cover  
laundry about  
if you wanted to  
buy some food  
for it, about  
a ashore

I could have  
got it in days  
longer  
at least but  
no money

how hard  
long lasted  
maintain direct  
+ ask him if  
he could find  
things to eat in  
the area

best thing to do.

how you to the days  
leave any the  
west in Fredrick

Povstny

1845

at Ketchikan  
Squaw Whar.

2000

4400

2245

+33

140 gal for day

10 gal  
lube oil  
today

Trailer turned in for fuel  
capacity + consumption

Nelson + Sawyer figures made  
Dorothy looks expensive; her expense  
was Sunday. She certainly burned  
more than estimated because; there  
is nothing left at Squaw Whar  
to speak of + no approval has  
been this year. If growth  
had kept what would fuel  
for work have been

Nelson sold goat  
short on crab invest.

now left at Squaw Whar.

55 blks +  
+3 of lube  
left by Dorothy  
+1 blk coal  
at Squaw Whar.

94 +  
55  

---

149  
66 Sunday  

---

83

Jobs all  
out + rel'd  
20

Oct. 20 - 55 + 3 lbs + 1 banana  
 on Oct. 26 lbs 3  


---

 25 + 3 + 1 banana

Original 142 lbs <sup>dead</sup> 4 cube  
 Oct. 20 87 + 1 lb  
 Sept 55  
 Oct 26 30 + ~~1~~  


---

 Sept 25 + 3 lbs + 1 banana

Originally 200 lbs, left  
 94 lbs. dead

1940 Nov. 2 (selection to Kamin would have  
been committed to gill

By hiring gill net boat could  
have put Sunday crew to work  
while (expensive) trunk boat was away  
+ no make up for lads of a good  
trunk boat which will be a big  
point on alibi.

Idle Sunday  
crew could have done all gill  
net work for coals we did get  
that way.

make alibi for our make  
alibi

Re call. Buan  
Buneta + mrv  
Sunice

---

U.S.B.F. Know for year

---

Seattle:

21 mesh Hanna  
2 eyes

✓ Dredge table 1 1/2, 1, 1/4, 16 mesh (screen wire)

Shovel

Tow nets - Thompson - Pertuit

Meiter nets = Mr. Dunlop = wt. to over-haul.

~~Bovins fluid 2 qts? Glass Graduate~~

Halibut survey plankton samples. crab larvae

are  
O.K.

Nelson says few soft crabs Dec.

Yakutat Bay, go down Monti Bay from cannery  
to Ankan or Ankan Inlet.

~~Bedding~~

Where is Schaffer

Get Drach reference

McM

Fred Henton | Kodiak.

Black Bear

shirts

See bottom //

~~Townets - Friday have truck call for them~~  
~~be sure weight is with them.~~

~~Examine - Caliper~~

Winch + cable 1/4 inch? H.M. Dunlop initials + address

~~Stop watch?? Friction tape~~  
~~Shackles 1 1/4 1"~~

Fellows at Harrisons

? Forms mimeographed.

~~Water bottles + thermometers~~

~~Ask Van Cleve~~

~~Iodine~~

~~Dredge for mud sample~~

~~Wires for dredge table (only saw largest mesh)~~

~~Ankau or Ankan Inlet near Yakutat~~

~~Drach ref.~~

~~Fred Henton Kodiak~~

~~Ritter Enterprises~~

~~Fred Porter Petersburg~~

~~Dictionary (Faculty reduction!)~~

~~Look up Calif. Fish + Game Ref.~~

~~re tagging Cancer magister~~

~~Call State Fish + Game~~

Book Box #14

(Camera) Collect Chest # 7

Have shelves for bottles installed against forward bulk head above table

See Christey from deck to ceiling can put every thing on them

Suggest

~~(1)~~ you visit Thompson - Friday Harbor plus 400  
and see more about water bottles & thermometers

~~(2)~~ See Van Cleave about tow net  
— <sup>15</sup> Dunlop.

3 Dip-net

1 Pds. manifold tubes

~~Carbon tubes~~



# Biological Work.

1. ~~Forms~~
  - { 1 stencil (prepared) - 500 copies
  - { 1 stencil + prepare. 200 copies. } To be micrographed.
- 1a) ~~Hand Paper~~ - to be purchased.
2. - ~~10 gauge metal wire~~ - purchased and on hand.
3. ~~Water bottles~~ -
  - { 2 old style on hand borrowed from International Fisheries
  - { Tommy Thompson may lead us two new style.
4. ~~Thermometer~~ -
  - { cannot purchase.
  - { Tommy Thompson may lead us 2: 4
5. ~~Calipers~~ - are here -
6. ~~Drying~~ machine + spring balance. - are here
7. ~~50 gallons~~ of alcohol on hand.
8. ~~White bottle~~ - on hand  
~~Orange bottle~~  
~~Tags~~ for same - ~~must be obtained~~ shown to him.
9. ~~Tow net~~ - can borrow from International Fisheries → but must get weight - 150<sup>#</sup>
- 10 - { Sounding wrench } To be done.
11. - { wire for above. }
12. - Schultz boxes are on dock.
13. { Tags - are here  
Copper

1/2 a basket truck.

6 — 20 foot, 1/4 inch concrete  
reinforcing rods.

(or 12-8 foot and 12-12 foot  
pcs)

40 yds of galvanized fox pen  
wire

124 inches wide

(or if that is not  
available 30 or 36.)

~~120 feet~~

or 40 yds 8 gauge galv. wire

cutters suitable for cutting  
8 gauge and fox wire

hog rings + generous supply  
of rings

---

2 strings per truck  
— buoy line

---

2 mirrors 10-12 inch wide.

~~Shave Soap~~

Iodine

~~Camera lens~~

Dictionary

~~Slippers~~

Razor clam report

~~Tracing paper~~

~~Mirror~~

~~Haze filter (Eastman)~~

---

Collecting outfit -- U.S.B.F. Alaska crab investigation

- 3 collecting chest of 8-oz. bottles ✓
- 2 chests of gallon jars
- 2 8-gal. tanks, empty
- 3 16-gal. tanks filled with alcohol
- \* 8 doz. wide-mouth, whole-fruit jars
- 4 gross 8-dram vials with corks ✓
- 1 bottom sampler (bulldog)
- 1 nest sieves ✓
- \* 3 alcoholmeters
- \* 2 nests assorted white enamel pans ✓
- \* 1 binocular microscope
- 6 qt. jars chloride of lime
- 1/2 lb. thymol
- 10 lb. epsom salts
- 20 1-lb. bottles formalin
- \* 1 cyanide bottle
- 1 doz. canvas bags for dried bottom samples ✓
- bag needles
- 3 small steel tapes
- \* 6 watch glasses
- \* 2 geological hammers ✓
- \* 1 pinch bar ✓
- 2 8x11" record books
- 2 3x5" memo books
- 2 doz. gummed labels, about 1 x 1/2"
- \* 2000 printed labels
- 2 gross manila tags 1-1/4 x 2-1/2" ✓
- 4 bottles Higgins eternal ink

210

113 ft.  
29 beam  
5 knots

Labels  
Had  
Bullnet  
Derris root

4 balls cable twine (2 thick, 2 thin)

2 pr. small shears

wrapping paper -- several sheets

2 flash lights (3 cell)

1 doz. extra batteries.

List of materials each boat should have at hand (things for Service to buy)

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Some lumber for work table somewhere aboard, with racks or battens to keep bottles from tumbling over in seaway.

1 saw

1 hammer

1 oil can and light machine oil of good quality for oiling calipers.

1 measuring dial caliper (there is one in Seattle; Pat has one).

? tin snips

Soldering iron and solder. May be with engineer each boat.

Notebooks, tablets, letterhead paper, envelopes. (In short, stationery supplies.)

Butcher's scales, such as we used for weighing crab meat on Tondeleyo up to 10 or 20 lb.s (? 20 or 30 on second and third revolutions)

1 small spring balance of type returned from last trip for ounces and fractions thereof. (Pat has one; 1 in Seattle.)

1 hypodermic syringe, of type returned. (Pat has two. A box of extra needles for these was left in Seattle; also 1 syringe.)

4 of those spring top, 5 gal. tins such as are used for livers (for packing specimens that have been pickled in tank.)

Tags for crabs, wire for same, and 1 pr. wire cutting pliers.

20 gal. alcohol in 5-gal. tins.

6 Bureau towels.

4 25-cent (light weight) galv. pails.

2 large size galv. wash tubs.

Couple of dip nets.

TENTATIVE PROGRAM OF WORK

I. Oceanographic observations.

A. Hydrographic.

1. Temperature and water samples at least once each day, surface, intermediate, and bottom, if possible at beginning and end of fishing operations. Hoist should be provided, 6 bottles and 12 thermometers. (Ask for Sands.)
2. Bottom sample taken, generous portion saved. (Consult T. Thompson.)

B. Biological. Towsnet hauls, intermediate, bottom, surface. (Consult W. Thompson, also with regard to meter net and the young fish trawl?)

II. Biological observations.

A. Fishing operations.

1. Relative abundance of (kinds, numbers):
  - a. Crabs.
  - b. Fish.
  - c. Associated fauna and flora (invertebrates and algae).
2. General character of bottom as shown in commercial net catches. In all cases save as generous a sample of animal and plant life as practicable.

B. Biology of king crab.

1. Measurements and weights of crabs of various size or age groups, including notes on condition, food, parasites, etc., as per separate schedule.
2. Tag crabs, as many of all sizes as possible.
3. Save samples and as many young and unused crabs as practicable.

Ask Will Thompson  
re food habits  
+ for habit reports  
#1 - date #9  
especially

4. Note relation of king crab to other animals + vice versa