

USE THIS IN THE BOOK

AS AN

INDEX SHEET

To divide off the work
in different studies

OR

as a

FILING COVER

To bind, with the fasteners,
all work worth keeping for review.

For use in the

National Notebook

Patented by E. W. Hill, July 5, 1898.

SUBJECT OF STUDY:

To index the book, write below on the margin, the name of the study



Butter 27

26

27

26

25

♂ ripe
♀ hard.

Have up 4.20 Am. July 19
light S.E. breeze - fog.

Sta 10340 5.30 Am
28 fath, ^{to} 6.30 Am
calm sea heavy. light S.
50 m.

0 53.5 WS

25 6.7 @ 18 R 149

50 5.4 @ 16 R 153

20 net 0 sparse

1/2 m " 0 F Eggs + Cal.

1 m net 30-0 Rich cal, Y.F. 4sq.
3 large amelia

1/2 m quant. 45-0 rich cal.

3 miles S by E from Eastern Pt.

$$\begin{array}{r} 48 \\ 18 \\ \hline 344 \\ 48 \\ \hline 8.24 \end{array}$$

48 York

$$\begin{array}{r} 55 \overline{) 480} \quad (.87) \\ \underline{440} \\ 40 \end{array}$$

Sta 10341 July 19 9.15 AM
 Light. 10.50 AM
 S S W. calm clear.
 48 fath.

83 m.

42° 48' 30"
 70° 27' 30"

0		61.5	WS
25	148	5.35 @ 17.5	WS
50	149	4.15 @ 16.5	WS
80	153	3.9 @ N.5	WS cont.

1/2 m net quant 80-0 m Rich cal,
 20 net surface 1/2 hr. rich micro
 1/2 m " " 1/2 hr. very scant
 Bottom net 83-0 1/2 hr. very rich
 cal + 4f + saq
 Meter net 30-0 20 min.
 Rich Cal + 4f.

over

Sorted Bottom net haul,
about 3 qt (solid) $\frac{1}{2}$ cal $\frac{1}{2}$ sagittae,
with a few shrimp + many
y.f. Saw no eggs. preserved
fishes + $\frac{1}{3}$ of the rest

$$\begin{array}{r} 183 \\ 33 \\ \hline 549 \\ 549 \\ \hline 60.39 \end{array}$$

Sta 10342 July 19.

fresh S. breeze, clear, smooth sea.
1.30 P.M. 2.20 P.M.

33 fath = 60 m.

Race Pt St Sky ENE 4 1/2 miles

0	63		WS
30	#149	7.95 @ 19	W.S.
60	#148	6.40 @ 18	WS.

20 net surf	1/2 hr	fair micro.
1/2 m. "	"	Rich fish eggs
1/2 m net quant 55-0		<u>Rich cal</u> + 4.f.
Bottom net	1/2 hr	Rich cal, 129 + 4.f.

Did not use meter net on acct
excess Calanus, & bottom net
gave good sample

10343 July 20

Provincetown Mass

See Log - Tows only.

July 21 Sternbound of
Provincetown.

65 fishing vessels in
for refuge - mostly
seines - 62 seines, the
rest power

July 22

Cloudy, fresh S breeze
Under way 5.30 A.M.
Surface temp in hr. 66°

At Race Pt ran into fog,
with light S.W. breeze

mm m, www

- : - mm

mm
mm
mm

73.15
14.63

87.88

Sta 10344

Off Highland light.

July 22. 9.15 AM to 10.45 AM

Mid fog, smooth sea, light SW breeze.

Position 6 miles ~~SW~~ by NE by E H.S.

Depth, 48 fath = 88 m.

0		60.5	W S
25	149	5.2 @ 20	W S
50	148	4.4 @ 20	W S
80	153	4.5 @ 20	W S

1/2 m vertical 80-0 very rich cal yf.

1/2 m. ○ 1/2 hr Rich eggs, few cal.

20 net ○ 1/2 hr Rich micro + eggs

meter net 40-0 15 min Swarm cal

Bottom net Bot-0 20 min bpts cal + yf.

Sag. yf + few cal.

$$\begin{array}{r} 146.3 \\ + 3.6 \\ \hline 150 \end{array}$$

Sta 10345.

July 22 3.15 P.M. 4.30 P.M.

Thick fog. SSW breeze smooth sea

82 fath

150 meters

		50	W 3
0	R.107		
50	R.149	4.44 @ 13.5	WS
100	148	4.05 @ 13	WS.
150	153	4.23 @ 13	WS.

3.55

1/2 m net. ^{N^o-0} fair cal.

20 net 0

1/2 m net 0

meter net 100-0

1/2 hr Rich micr + 295

" Rich calanus + 2991

" fair cal + 4/4.

6 P.M.

Surf 52

10.5-5

10.5-5

10.5-5

10.5-5

10.5-5

10.5-5

10.5-5

10.5-5

10.5-5

10.5-5

10.5-5

10.5-5



10346 July 22 10.15 P.M.
Fog. S.W. smooth, rain 11.30 P.M.

br sand + shells

34 fath = 62 m
41°27 69°22

0		40 = 7.22	W.S.
30	148	6.5 @ 10	W.S.
60	153	4.6 @ 11	W.S.

Quant. net	62 - 0	rich Calanus bit bolton
20 net 0	20 _{min}	rich cal + some micro
1/2 m 0	.	Rich cal?

1 m. 30-0 m 20 min. Rich cal(?)
some yf
Micro cal? or young?

Water firing considerably
Large Str. passed on starboard hand

$$\begin{array}{r} 7311 \\ 548 \\ \hline 785 \end{array}$$

10347 July 23

7.15 Am to Am.

43 fath (uneven) = 78 m.

log. SW. fresh smooth

0 5.2.5 W S

30 151 10.98 @ 15 -

60- 153 9.7 @ 15 W S

1/2 m vert 60-0 1 yellow fish
micro green

meter net 50-0 1/2 h

1/2 m .. 0

20 net 0

haddock, 16

5.7 6.2 3.8

3.4 4.7 3.5

4.5 4.1 41 06

4.5 5. 68 51

5.5 3.6

4.4 2.6

4.7 4

10348

July 23 1 P.m. 3 P.m.

28 fath to clear = 57 meters
Fog + sun - smooth

0		53	W.S.
25	151	11.55 @ 22	—
50	153	11.38 @ 17	W.S.

1/2 m quant 45-0 mostly micro

20 net 0 1/2 hr " "

1/2 m net 0 " After some way Skanty

meter net 30-0 sample saved 3 gal jelly fish @ 22 small haddock

Otter trawl 20 min 1 ~~haddock~~ 3 skates 1 flounder

Bottom net filled with sand

40° 49
68° 21

10700 Simanda

10701	} Skates
10702	
10703	

$$\begin{array}{r} 182.9 \\ + 18.3 \\ \hline 201.2 \end{array}$$

10349 July 24 5:30 AM

110 fath. to 7:30 AM

S light clear smooth

$\frac{190}{201}$ meters

0		63.5		W.S.
30	148	10.59	@ 20	WS
80	149 151	7.4	@ 20	WS
130	148	6.98	@ 17	WS
180	153	7	@ 21	WS.

Killed swordfish

$\frac{1}{2}$ Vertical

20 mt 0

$\frac{1}{2}$ hr

Rich Cal.
fair - red, micro

$\frac{1}{2}$ m 0

"

Scanty, 1 small
salf

Helgoland 130-0 $\frac{1}{2}$ hr + Bezoar, Entomus to
Calanus + fish eggs

meter 60-0 " lost by cutting -

another sword sighted,

Sword-fish ✓

- Total length 325
Tip sword to eye 106
" " to base dorsal 140
" " to tip mandible 93
" " " end maxillary 122
Base dorsal 30
Height " 53
D to finlet 96
Base finlet b length same 10
Finlet to base caudal 12
Spread of caudal 90 (upper 36 | lower 55)
Base to fork " 25
Length caudal keel 28
Breadth across both do. 34
Base caudal to finlet 17
" finlet b length do 8
" to anal 26

Anal base — ray to ray 16

" length 30

" to base pectoral 70

Pectoral base 10

" length 43

Sword to opercle. 143

Depth.

Diam orbit $\uparrow 9 \rightarrow 8$

" eye $6\frac{1}{2}$

" pupil $3\frac{1}{4}$

Interorb 19.5

Tip D to tip P. 125

Back & fins slaty black

Belly silver

Iris sea green

Pupil blue black

Stomach full (1 bucket) of silver

hake & squid & ovaries

very ~~at~~ immature,

9 Am Stopped to set trawl in
65 fath. 1 tub. finished
setting, 9.20 Am.

Started hauling 10.20 Am

Entire catch

2 squirrel Hake

1 silver hake

1 dogfish.

11 Am box away

Sta -

40 15

68 05

Set 40 23

68 15

1035-1 July 24 4.30 PM
to

Cloudy smooth S. light,

182 m.

Water blue - 2 whales
greenweed

0		60°		W.S.
30	151	10.8 @ 18		W.S.
80	151	4.93 @ 11 (2 shots)		W.S.
130	148	6.15 @ 18		W.S.
180	153	7.3 @ 19		W.S.

20 net 0 1/2 hr scan micro + Cal

1/2 m net 0 " fair Cal.

1 P m net 160-0 " fair cal
Eutima
+ Beroe.

40 07

68 5-7

10352 July 24

8 PM to 9 PM, 11.30 PM
Cloudy, smooth sea, SW light

0		62.5	WS
50	148 149	4.65 @ 18 (1 hr later) 5 @ 18	WS
100	148	7.8 @ 18	WS
200	153	7.8 @ 18	WS
300	149	5.9 @ 18	WS
400	148	5.3 @ 18	WS
500	153	4.25 @ 15	WS

10.50

1/2 m net - quant. 500-0 m.

20 net 0 mostly salf

1/2 m net 0

~~1/2 m net 450-0~~

1 meter net 500-0

Shrimps, mysid, + some huge
pyrosoma-like species, whose fragments
filled 2 buckets - one section 19" diam

July 25 fog. 3 buys
Smooth sea. All ready at
4 AM to set trawl, but found
ourselves up in 55 fath. Ran back
5.30 AM passed large school
of grampus.

5.45 AM. started to set
trawl in 60 fath. fog open
& shut.

Sta 10353 July 24 { 6 AM.
finished set 6 AM. { 8 AM

Surface temp 59°

2 squids } total
2 white hake. }

tow on surface with 1 ft net
mostly small. Euthemisto, a few
Animalicera + Calanus

40. 14
69 08

$$\begin{array}{r} 73.15 \\ 36.5 \\ \hline 109.65 \end{array}$$

Sta 10354

40 26

July 25

69 24

Fog. S. breeze smooth

10.45 AM 12 m.

42 fath = 76 meters
no y.f.

0		56.5	WS
30	148	8.92 @ 18	WS
70	153	6.3 @ 18	WS

1/2 m vert 70-0 fair Cal + sq.

20 net 0 Red micros

1/2 m net 0 Scanty cal

meter net 60-0 Rich mixed
also cal Euth

~~Other haul.~~ sag + shrimp

~~Shad net~~

Small sword + large shark seen

~~6.20~~ 6.55

Sta 10355 July 25

6 P.M. ^{Fog} Rain smooth light,

7,30 "

20 fath. = 36 m. Unseen to 16m
gy sand,

0 53.5 WS.
30 R 148 11.08 @ 15 WS

~~1/2 m net,~~

Water 16-0 20 min

20 net 0 1/2 hr

1/2 m net 0 1/2 hr.

Sled net bottom 20 min } 1 bucket
jelly fish
3 haddock
2 puffers

many fish eggs.

3 young haddock taken with
jelly-fish. In the two previous
stations where haddock were taken
were swarms of jelly-fish in same
haul. At this sta the meter net
got no jellies - no haddock.
more than a coincidence.

Sta 10356 July 26
12.2m eductor
~~11.55~~ P.M. → 1.10 AM

fog; smooth SW light

18 fath = 32 m.

0 61° WS
30 R. 148. 12.3 @ 18 WS

Towing slowly

1/2 m net surface	1/2 hr	Rich cal, saq + fish eggs
20 net	1/2 hr	Rich red micros
Meter net 30-0 m	30 min	Rich saq + eggs
11 " 10-0 "	20 "	Rich cal saq + eggs

water firing brightly

$$\begin{array}{r} 18.29 \\ \underline{109} \\ 290 \end{array}$$

10357 July 26

7.25 Am

S.W Cloudy light Smooth

16 fath 29 meters

0 64 W.S.

~~25~~ R 148 14.4 @ 18 W.S.

Water net 20-0 20 min ^{swarm} ^{eggs} some 4f

20 net 0 abundant ^{red} micro

1/2 m net 0 " fish eggs

55 40° 43' 69° 53'

56 40° 57' 70° 18'

57 41° 11' 70° 44'

$$\begin{array}{r} 1822 \\ \times 11 \\ \hline 1822 \\ 1822 \\ \hline 20042 \end{array}$$

1035-8 July 27,

9.30 Am.

11 fath = 20 m.

0	64.5	WS,
18	148	18.18 @ 18 48

$\frac{1}{2}$ m net. 18-0 m.

1 m. 0-0 m.

$\frac{1}{2}$ m 0

20 net 0

10359 July 28

South of Newport R.D.,
11.15 AM

①

W.S.

Water net	Rich fish eggs + red micros
20 net ①	" Rich red micro
1/2 m net ①	" Rich fish eggs

Clear water - fresh smooth

10360 July 28 6:45 PM

A.J. Sd. off ~~New London~~ Gardiner Bay.

Clear E, ^{light,} smooth

⊙ 65.5 WS.

meter net

1/2 m net

20 net

10361 July 29

5:30 AM

3 miles W from Stratford Shoals

15 fathoms = 27 m

Heavy NE light smooth.

0 68 W.S.

meter net 20-0 m.

20 net

1/2 m net

$$\begin{array}{r} 18 \\ 7 \\ \hline 25 \end{array}$$

10362

Aug 1st

40° 22'

73° 38'

N.E. fresh smooth, ~~light~~ clear.

- fath = meters

9 Am. 10-30 Am

25 m.

0 m

70

W.S.

22 m.

148

12.40 @

19. W.S.

Sled net bottom 0 1/2 hr Rich 4 ft

Water net 10-0 " " "

20 net 0 " scanty.

1/2 m net 0 " "

Scallops dredge 15 min.

1 silver drake

6 sand dollars

water under

$$\begin{array}{r} 18.2 \\ 14 \\ \hline 32.2 \end{array}$$

10363 Aug 1. 3 PM - 4 PM

Clear, smooth calm.

Depth = 32 m. $40^{\circ}13'$
 $73^{\circ}20'$

Bottom: shells & sand.

0 69 WS.

30 148 8.32 @ N- WS.

$\frac{1}{2}$ m vertical 30-0 fair haul Calanus

Bottom net $\frac{1}{2}$ hr 32-0 Rich Cal
Suth & Schiz.

Meter net " 20-0 fair Cal Suth

20 net " 0 fair haul micr.

$\frac{1}{2}$ m net " 0 almost nothing

Clam dredge 10 min a few
sand dollars

~~Scallop dredge.~~

Between this & next station passed

2 large schools bonito 20 or 30 sharks
& 1 hammerhead. Had on board 1 barn
swallow & 1 m. thal.

$$\begin{array}{r} 36 \\ 9 \\ \hline 45 \end{array}$$

18364 Aug 1 7.15 PM
to 8.30 PM.

Clear calm. Smooth

25 fath = 45 meters.

0 71.3 W.S.

40 148 575 @ 15 W.S.

20 net 0 1/2 hr Rich micro

1/2 m " 0 " Scanty

meter net 40-0 " Swarm Calanus
many y.f.

Scallop dredge. 10 min

19 large scallops

6 small

1/4 bushel sand dollars

1 skate

1 small flounder (kept)

$$b) \frac{18.2}{3}$$

Nearly calm all night
at 4.30 Am Aug 2, while
hardly drifting, put over
scall of dredge in 60 m

Hardly dragged at all, but
brought up 6 large scallops, 4
small ones, 2 large + 1 small
quchog.

Put over quchog dredge 5:30 Am
dragged 10 minutes, 1 quchog
2 scallops Many quchog +
sea-clam shells,

$$\begin{array}{r} 54 \\ \underline{7} \\ 61 \end{array}$$

10365 Aug 2, 6.45 Am.

7.45 Am

34 fath, = 61 meters,

Clear calm, smooth

0		68.5	WS.
20	149	14.08	@ 22 WS.
40	148	5.28	@ 21 WS
60	153	5.10	@ 20
"	148	5	@ 13 WS

10 min fast

20 net 0 $\frac{1}{2}$ m very scanty
 $\frac{1}{2}$ m " 0 " " "
Meter net 50-0 " Red feet swarm
Vertical $\frac{1}{2}$ m. 60-0 fair calanus

Rahwaq

2.30 pm

Particulars

10366 Aug. 2 240 PM
SSE light smooth clear.

50 fath. gm mud + sand 1

9k m.

Set for telefish 1.

0		67		WS
30	149	17.7	@	23 WS
60	148	6.2	@	20 WS
90	153	6.08	@	20 WS.

Trawl, 6 lines
1 squid baker
1 small ul.

Water too cold here
on bottom?

90 164

100 182

110 200

120 218

0
30
50

0 130
30 150
50

0 150
50 200
100

182
18

200

182
36

218

10367 Aug 2,

8.30 P.M. 9.15 P.M.

S. light partly cloudy smooth.

136 fath (drifting towards bank

= 239 m.

~~Tray~~ 200 m.

0

67.5 (19.72) WS.

50 =

148

8.25 @ 15 WS.

100 =

149

11.04 @ 17 WS

150 =

148

10.83 @ 18 W.S.

200 =

153

8.12 @ 20 WS

No nets

10368 Aug 2, 10.45 PM
S by E fresh slight chop.

		CG:	WS:
100	148	11.42 @ 20	
200	153	8.8 @ 20	WS.
300	149	Tent. lost.	WS.
400	148	5.50 @ 20	WS
500	153	4.94 @ 18	WS

Water net 450-0 ^{1 hr} (scanty micro)
20 net @ 1/2 hr (very scanty)
1/2 m net @ " fair haul (krill
& gulf St stuff)

10369 Aug 3

Wann clear SE light wobble

5.15 AM Sounded 75 fms.
= 137m.

Put over scotter dredge 5.30 AM

Surface temp 65°

Hove to, dragging very slowly, $\frac{1}{2}$ hr.

Bottom blue clay with green
mud + sand, starfishes + shells +
a few pebbles

6.30 AM set trawl for tele.

9.0 m. R 148 8.17 @ 16

Bottom net $\frac{1}{2}$ hr. Cal fair

$\frac{1}{2}$ m surface 20 min

Scanty, but fair no of
telefish eggs

hard ♀	16	Kilo	108 cm
Ripe ♀	7	K	81 cm
"	8½		88 cm
"	7½		84
"	7½		85
"	8		86
"	7		80
"	8		77
"	8		83
"	7½		86
"	7		82

11/150/160
 20
 56

No sharks

92

2
 184

Poor bait - just fooling
 with it - hooked in lip.

plenty fish here
 plenty Physalia

109
9

118

10370. Aug 3

1.45 Pm. - 4.25 Pm.

Clear smooth light. SE

65 fath. = 118 m.

0 71° WS.

25 149 9.3 @ 27 WS.

50 148 5.45 @ 27 WS

100 153 9.82 @ 27 WS

20 net 0 15 m Scanty.

1/2 m net 0 " nothing

Sled net 118-0 1/2 hr. Swam cal

meter net 50-0 20 min " "

Otter trawl.

4 flounders
crabs
stars
Quahog shells

4 spot
TT
10747

Flounders	35	cm	280 g
	37		450 g
	32		207 g
	29		190 g

got eggs.

Large Hammerhead
at end of Sta 1

10371 Aug 3.

SSW light smooth, clear.

6.30 PM - 7 PM

46 fath = 84 m.

Green sand

Surface temp. 72

1/2 m net ^{20 min} ○ very

Otter trawl. 20 min

~~3~~ ³ ~~shells~~ / large scallop
many starfish & crabs

10372 Aug 3 9.45 PM
10.45 PM

41 fath = 75 m

SW light smooth clear

Scale of dredge 15 mm

8 small

33 med to large

1 large mussel

Many scallop shells

a few stars + crabs

Otter trawl 1/2 hr. slow

67 5 of them small TT 10706

4 Poblancos 3♀ 1♂ npt 10707

1 squirrel hake TT 10705

$$\begin{array}{r} 5486 \\ + 731 \\ \hline 6217 \end{array}$$

10373 Aug 4. ^{1 AM} 2:15 AM
SW. Clear smooth light.
36 F = 62 m.

0 70 WS
60 #148 4.7 @ 13 WS

gr mud + sand

1/2 hr 0 20 min very scanty

20 net 0 20 min Rich micro

Sled net 60-0 1/2 hr Cal. swarm

Scallop dredge 10 min

14 large scallop

1 small

1/2 bush dead shells +

sand dollars

1 silver hake,

36
10

10374 Aug 4 5 AM
SW by S. light smooth ^{5.30} clear

26 fm 46 mi

Scallop dredge 15 min
2 bushels sponge &
sand dollars.

Measurements of Hammerhead.

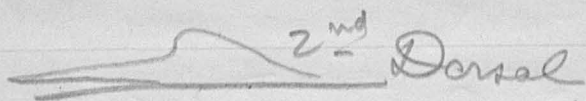
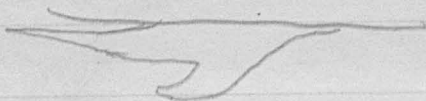
Length over all	302	cm
Width of head	63	
" " eye stalks	12.5	
Snout to D	83	
Base D	29	
Height D	43	
D to 2 nd D	70	
Base 2 nd D	10	
Height 2 nd D	11	
2 nd D to Caudal base	21	
Caudal base to tip upper lobe	89	
" " " " lower "	34.5	
" " " fork "C.	21	
" " " A	19	
Base A	15	
Height A.	13	
A to Nentrals	29	
Base "	17	

C.
Tip to notch
17

Length claspers	29
Height ventrals	15
Ventrals to pect	60
Pect base	18
Length feet	37
feet to rear angle head	32
" " snout	57
Diam eye	3.5
Depth body	50
Width between nostrils	51
" " eyes	68
Snout to upper lip	14
" angle of jaw	25.5
Width mouth	19

Upper parts head, body + fins
lead gray
Lower parts of same greyish white
Tips of feet black & other fins dark

Shape of Anal



10375 Aug 4
8 AM 8:45 AM
Clear. Calm, smooth

23 fath = 41 m.

0 71.5 WS
40 m. 148 6.38 @15

Bottom net Bot - 0 1/2 hr. Rich Col
1/2 m. surface 20 min. Cuts + 4F
20 net " 20 min " "

10376 Aug 7, 2-3.0 PM

Cape May Harbor.

Surface temp at vessel 78°

" " " inlet, just
of the ebb. 76° W.S. Surface

Sled net	5-0 m.	20 min	swarms ctenophores
20 net	0	"	very scanty
$\frac{1}{2}$ m net	0	"	swarms ctenophores.

10377

all bearing from
cold spring light

Aug 10. up at 5.30 AM

Hayy NE. light smooth

Went to Merrays shoal buoy

7.20 AM. 5 1/2 to 7 fms.

7.30 - 7.35. A hrd.

Star, dead shells, conch
s by W 4 1/2 miles
of 1st
sea clam

B. 7.45 - 7.50 Soft.

2 dead conch shells

s by W 1/8 W 4 miles

C & Am - 8.05 hrd.

few dead sea clam shells.

S 3/4 W 1 quohog shell.
3.3 miles

D. 8.15 - 8.20 hrd. & soft

s by W 2 1/2 m. bllk mud

many quohog & sea-clam shells