THE NEW BEARCAT

EXERCISE BOOK

BIGGER AND BETTER

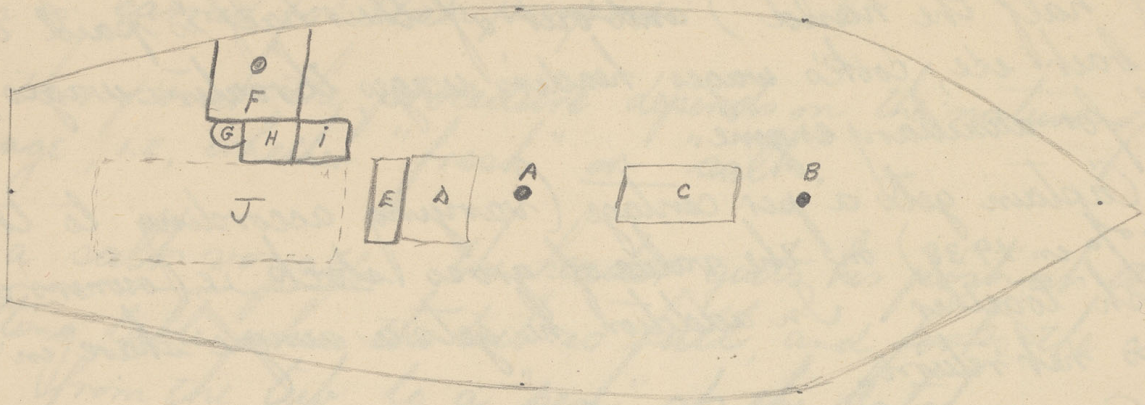
NAME Fishing. Sea. Nova Scotia

CLASS

SCHOOL

T. S. P. & Co., Truro, N.S.

Deep Sea (Bank) Fishery (period up to about 1939)



Set-up for cleaning fish:

A = main-mast
B = fore-mast
C = fore-hatch
D = after-hatch
E = fish pen
F = splitting table, with hole for livers. (Basket below catches livers)
G = fish tub
H & i = "Kids" for fish. Fish are forked from deck to (i), slit open by the throater, passed to (H), where the header takes them one by one to splitting table.
J = Cabin house.

The schooner owners fit out the vessel with food, dories, trawls, anchors and all other gear large and small except oilskins which the men must provide themselves. Owners also supply salt (150 hhds on average schooner). For their share the owners get one-half the catch. As most schooners are divided into 64 shares,

this means the net proceeds of the owners' half is split amongst 64 shares.

The crew get half the catch (this is called "fishing on a lay of half the hand") and out of their half is paid the cost of bait, ice, cook's wages, header's wages, throater's wages, fuel oil for auxiliary engine.

Captain gets a per centage (varying according to the times. 3% in 1938) on the value of gross stock, i.e. owners' and crew's fish together. In addition he gets a single share in the crew's net return.

An average vessel with auxiliary engine carries a crew of 20 dory-men (10 dories) 1 salter and the captain = 22 men sharing equally the crew's half of net returns. The cook ($75 per month) throater ($25 per month) header ($30 per month) are on straight wages and do not share in the catch. Neither does the flunkey, who must get his pay out of the cod-tongues and cheeks, which he sells (1938) for about 3d per lb.

The flunkey is usually a boy who makes himself useful in various chores such as catching dory painters when they arrive or leave the vessel. He cuts out the cod tongues & cheeks, salts them in bbls or ½ bbls, sells them for what he can get.

The throater cuts the throat of the fish with a single slash across, and slits the belly open.

The header removes cod liver and drops it through a hole in the splitting table to basket below; pulls out the rest of guts and snaps off the head.

NOTE Headers & throaters are sometimes called "the gibbers"

The splitter takes out the back-bone with a special short thick knife and drops the fish into a tub of sea water beside the table. This tub holds about 4 quintals of

cleaned fish. (1 quintal = 112 lbs dried fish = about 300 lbs of fresh split fish.)

Formerly the captain did the splitting, but nowadays a man is carried for that purpose.

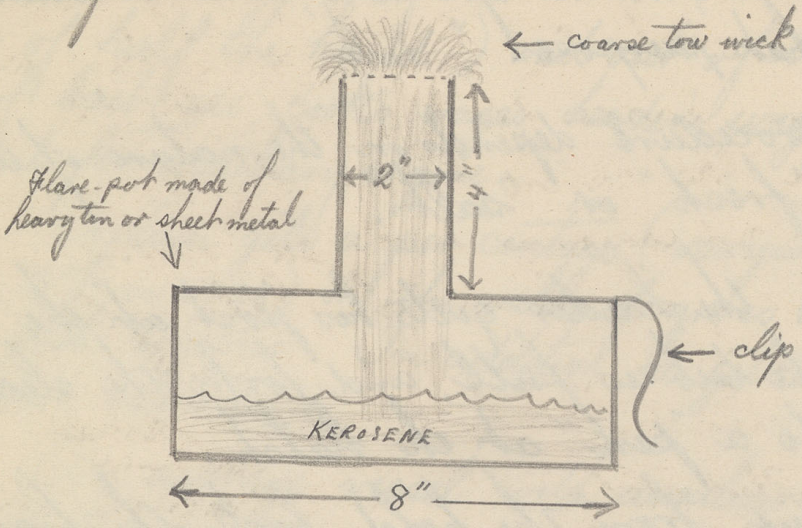
At this point the procedure depends on the nature of the voyage, i.e., whether "fresh" or "salt".

On a salt voyage the header quits his post at the splitting table when the tub is full, and forks the cleaned fish from the tub to a "pen" at the hatch.

The salter comes up from the hold, forks the fish from the pen to a portable wooden chute which slides the fish into the hold. Below again, he sprinkles salt with a special trowel upon the "face" of the fish. A light amount for "slack salting", more for "hard salting". (It depends on what the owners want, also on the length of the voyage.) The salted fish are then stowed by the salter, built up into tiers or "kenches" athwartships as far as the space between the deck and the curving side of the ship; there a special technique is required in order to make the most of available space. A space is left between the kenches to allow brine to drain into the bilges.

On a power schooner the engineer is also the salter.

The crew turn out before daylight. Deck is lit by clusters of electric lights when available; if not, with kerosene flares.



FLARE

The trawls have been baited the previous night, ready for the morning's fishing, if the trawls have not been set previously. When set, the trawl is re-baited at the same time it is overhauled for fish. OTHERWISE Baiting is usually done on deck. Special "bait-boards" are fastened permanently along the top edges of the cabin house so that the chopping of bait will not injure the woodwork. After a voyage or two these bait-boards are grooved and worn by the incessant chopping of the knives. Procedure is to slit a herring in three long strips and then chop rapidly across; this gives 15 or 20 baits to a herring. In summer these herring are fresh, preserved by crooked ice; at all other seasons the herring are frozen and they cut neatly like a dory soft wood.

After breakfast the dories are dropped overboard while the schooner jogs slowly along the selected course of the "set".

Dory-mates always stick together; one is "bow man" and does the rowing; the other is "after man" and in

charge of the dory. Each dory takes 4 tubs of trawl — six lines to a tub.

The after-man gets in the dory, the flunkey passes the painter aft where the trawl-tubs and gear are waiting. The bow-man passes the tubs down to {the after-man}. He then picks up from the cabin house his 2 moorings, 2 anchors, 2 buoys, boat compass, water jug, horn, sail, mast and gaff, and oars. In the meantime the after-man has shipped his thwarts.

The bow-man then takes the painter & jumps in. They row to their allotted station. These stations are usually drawn by lot — tickets marked "starboard bow", "starboard beam", "starboard quarter" "main boom" "port quarter" "port beam", "port bow" — picked out of a hat.

If wind permits they sail to their stations with the small lug-sail. The "inside" buoy is moored about 1000 feet from the vessel, and trawls are set like spokes of a wheel with the vessel as the hub. Each trawl is about 1 mile long & is moored on the outer end with the second buoy. They then return & the vessel & cut more bait. Then out along the trawl line again, taking off fish & re-baiting. One round trip along the trawl takes about 3 hours. They average 3 trips to the trawls each day.

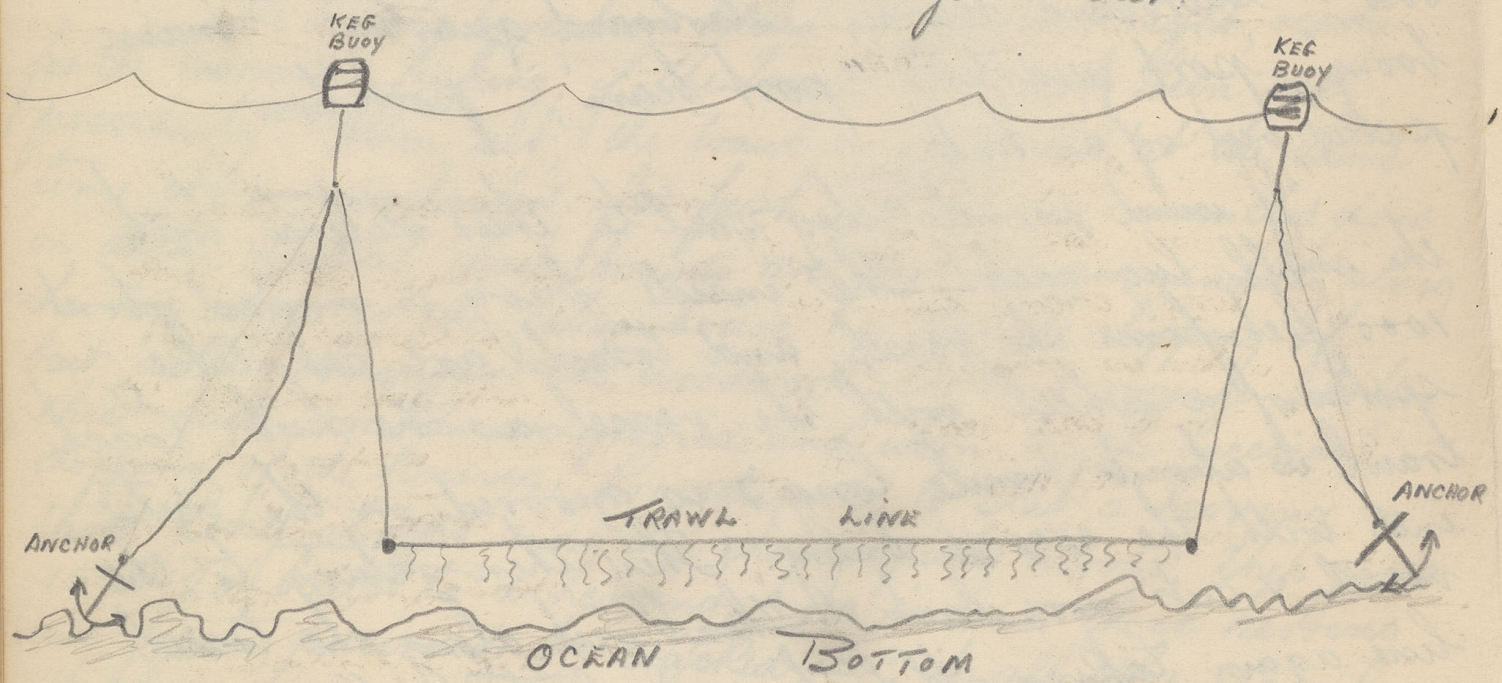
As each dory draws alongside the vessel, the fish are forked from the dory to the fore deck, and from there to the throating-kid aft. At the end of the last trip, all hands helps to split, head, throat and salt the

6/ fish — often running 3 dressing tables.

The captain says who is to split, who to head, throat etc and the men follow these appointments throughout the voyage. With the deck clear for the night, the deck is washed down, the dories hoisted in. Then comes the 4th meal of the day. (There is a meal before each trip to the trawls)

The forecastle table seats about a dozen, so there are two table settings for the average crew.

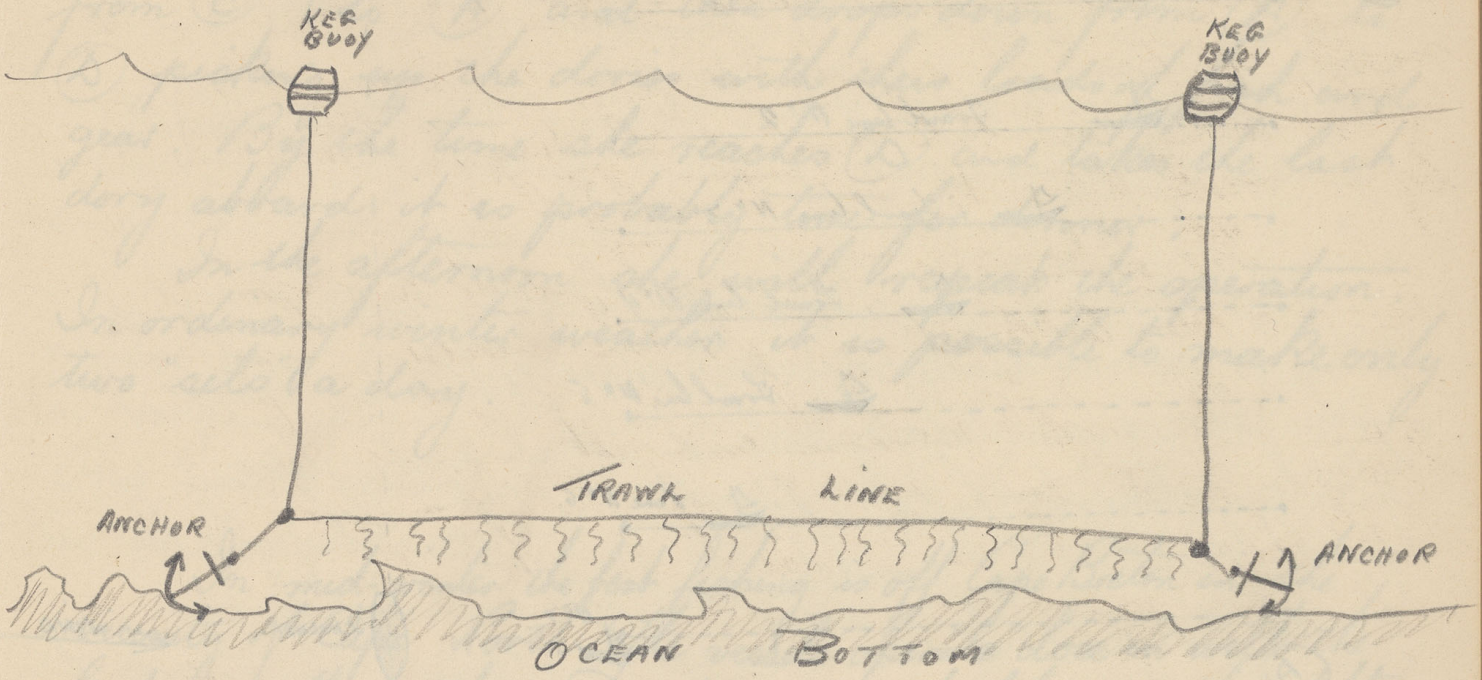
The night watches are set. An anchor watch between 9 P.M. and 4 A.M. consists of one man on deck alone, each man's watch being 1 hour.



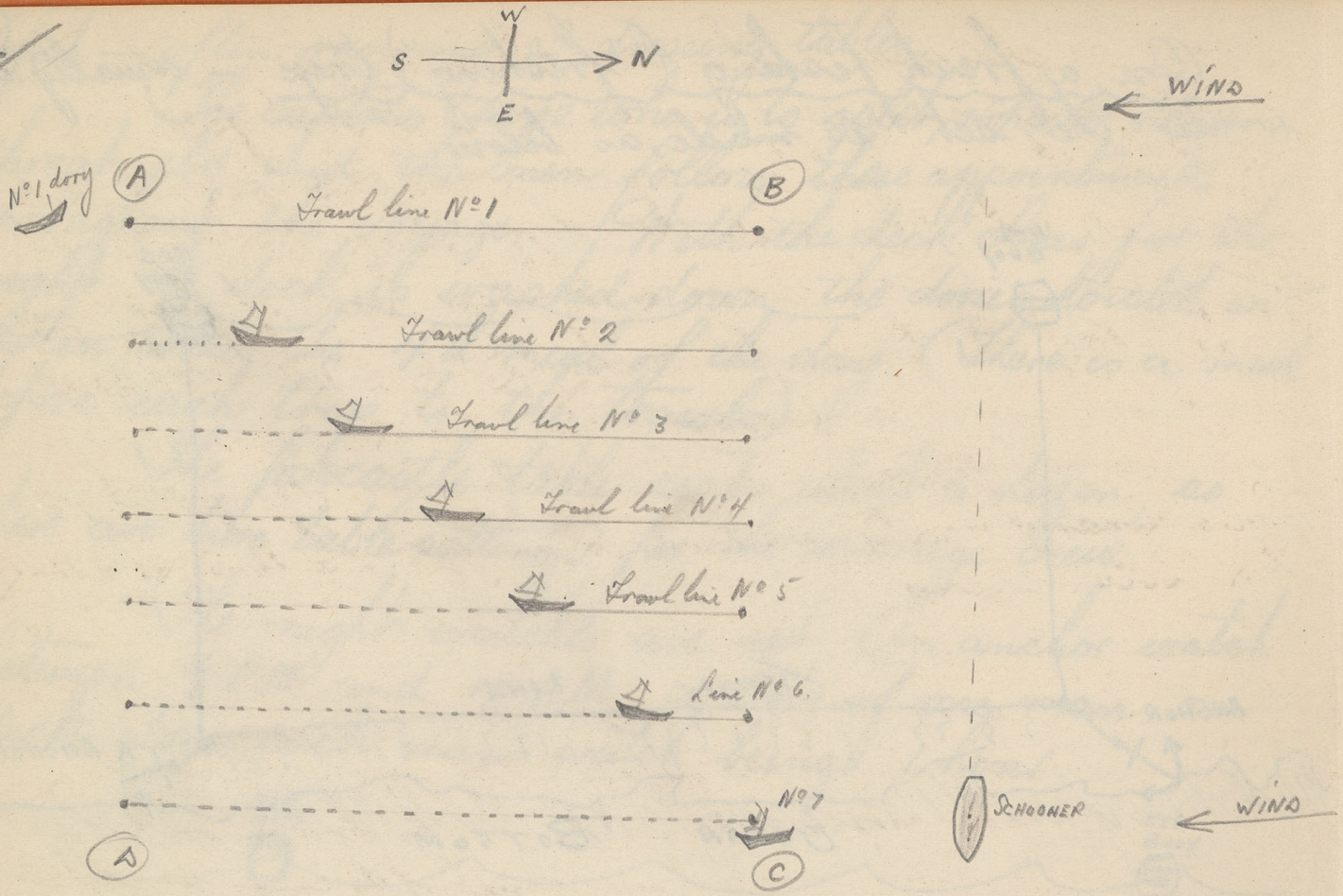
Above sketch shows set of trawl for salt (summer) fishing. With this rig the trawl can be drawn to the top and "underhauled" (fish taken off and hooks re-baited) without disturbing the anchors.

Trawl line holds 24 hook-lines (called gangings) spaced 42 inches apart, each hook-line holding 80 hooks.

On a fresh fishing ("freshing") trip - usually in winter, the "set" is made as below.



Above sketch shows set of trawl for winter fishing. With this rig the anchor is hauled up and gear taken into the dory every time the trawl is relieved of its catch. This is because sudden winter storms make it risky to leave the gear set over-night or even for long periods during the day. Customarily in winter fishing one "set" is made in the morning, another in the afternoon. See page 8 for sketch of vessel's manoeuvres during a "set."



Above sketch shows a typical "set" in winter fishing. Schooner has dropped her dories on a west-to-east course, sailing across the wind in order to give the dories a straight sail down-wind setting their trawls as they go. She has just dropped her last dory (No 7) By this time No 1 dory has set its trawl & is now waiting at its south buoy to be picked up. The schooner will now turn and sail S W to point (A) where she will pick up dory No 1. By that time No 2 will be set and waiting at its outer buoy also. Thus the schooner makes another west-to-east run from (A) to (D) picking up the dories as she goes. As the trawls may be set a mile apart this takes time. It is now nearly mid-morning. She now sails N W from (D) to (B), then tacks and sails once more from (B) to (C), dropping the

dories as she goes. This time the men take in their north anchors and sail south, taking in both fish and trawl as they go. The schooner wears once more & sails from (C) to (A) and then drops down from (A) to (D) picking up the dories with their loads of fish and gear. By the time she reaches (D) and takes the last dory aboard it is probably time for dinner.

In the afternoon she will repeat the operation. In ordinary winter weather it is possible to make only two "sets" a day.

In mid-winter the best fishing is off Cape Breton in the vicinity of Cape North. The vessels operate close in with the land, usually on the coast east and south of the cape, for shelter from the prevailing westerlies of winter.

Bait

Frozen Bait Trips uses frozen bait, herring and mackerel. This trip usually begins 1st March.

Spring Trip Uses fresh herring. This trip usually made in May.

Summer Trips. If going to Newfoundland they plan to get capelin from the shore fishermen there. Capelin arrive in Newfoundland about mid-June. If they plan to fish off Nova Scotia they take squid, frozen, if procurable at all. In former days it was possible to catch squid right on the Banks, but squid have got scarce in recent years. Squid is the ideal bait for cod.

On the summer trip, which usually begins in June, the bait has to be stowed in the bait-pen in alternate layers of ice (cracked) and bait

Squid is still (1939) to be had in Newfoundland where it arrives about July, & some of the Nova Scotia fleet go up there for fresh squid bait and then fish on Grand Bank with the Newfoundlanders. Cecil Spindler told me that as late as 1918 he had been in a Lunenburg schooner and caught squid for bait on the banks. "You put over your jigs the first thing in the morning & sometimes you'd get half a dozen squid on a single pull of the jig, one or two hooked and the rest hanging on with their suckers. You'd bait your trawls right then and there, lower dories and row off, and set. That was fishing, the way it was meant to be done! Nowadays there's no squid this side Newfoundland, and we have to use herring."

A Halibuter

Schooner "Bessemer" of Lunenburg, Captain Tom Himmelman, in Liverpool for bait and ice, Sep. 11, 1937.

She was a two-master, short rig, with diesel engine. Crew of 26 including captain, engineer, cook, flunkey, and 22 fishermen working 11 dories.

Each dory took 4 "skates" of trawl. The halibut trawl lines are much heavier than for cod, with a ganging every 8 feet or so, each ganging 2 or 3 feet long with a hook on the end. Keg buoys and anchors as in cod fishing.

Two spar buoys were lashed in the main rigging, one each side; these were used to mark "a good patch of fish". These buoys consisted of a 15-foot pole thrust through a keg from side to side, with a mooring ring on one end and a small red flag on the other.

The men (a mixture of Lunenburgers and Newfoundlanders) said they preferred halibuting to salt fishing because the gear was simpler, requiring less overhauling and bailing; and because there is no night work of splitting, salting etc.

Payment is on a share basis. At the (1937) price of fish these fishermen were getting $50 or $60 each for a three-week trip. The cook and engineer got $1 per day plus a certain share of the cash net receipts. They had been fishing on the Grand Bank.

I watched their ice being taken aboard. It comes in motor trucks from McCleave's ice-house, beside a

small lake in the woods behind the town. It is in cakes roughly 2' × 1' and perhaps six inches thick — thickness of course depending on last winter's weather. McClean has a small ice-chipping machine on the wharf. The blocks are fed into it from the truck and the ice-fragments pour down a galvanised iron tube into a compartment amidships.

The frozen herring comes in long shallow wooden boxes from the cold storage plant nearby. The contents are tipped out — a solid block of grey, wood-like fish — and thrown aboard, the boxes being returned to the cold storage plant. It was a muggy September afternoon. The men were sweating in their oilskins. The frozen fish, and the bright stream of chipped ice, gave off little clouds of vapour in the sunshine.

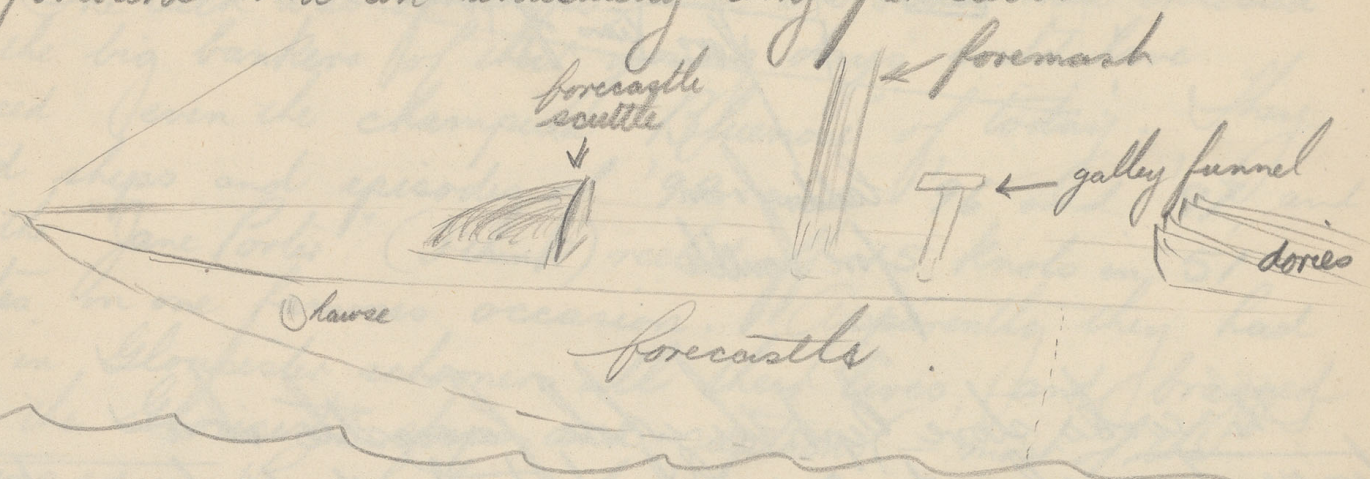
FISH By-PRODUCTS

March 12, 1940. I saw a Barrington motor vessel at Nickerson's wharf loading fish-skins for a glue manufacturing firm in Gloucester Mass. She was a small double-ended boat forty feet long, fully decked, with a short mast, cabin & pilot house, diesel engines — one of many such craft now plying the coast. Jerry Nickerson told me the skins of cod and cusk are best for glue. These skins are a by-product of his fish-fillet department. Skins used to be dumped in the harbour.

14.

Aboard the "Adventure II"

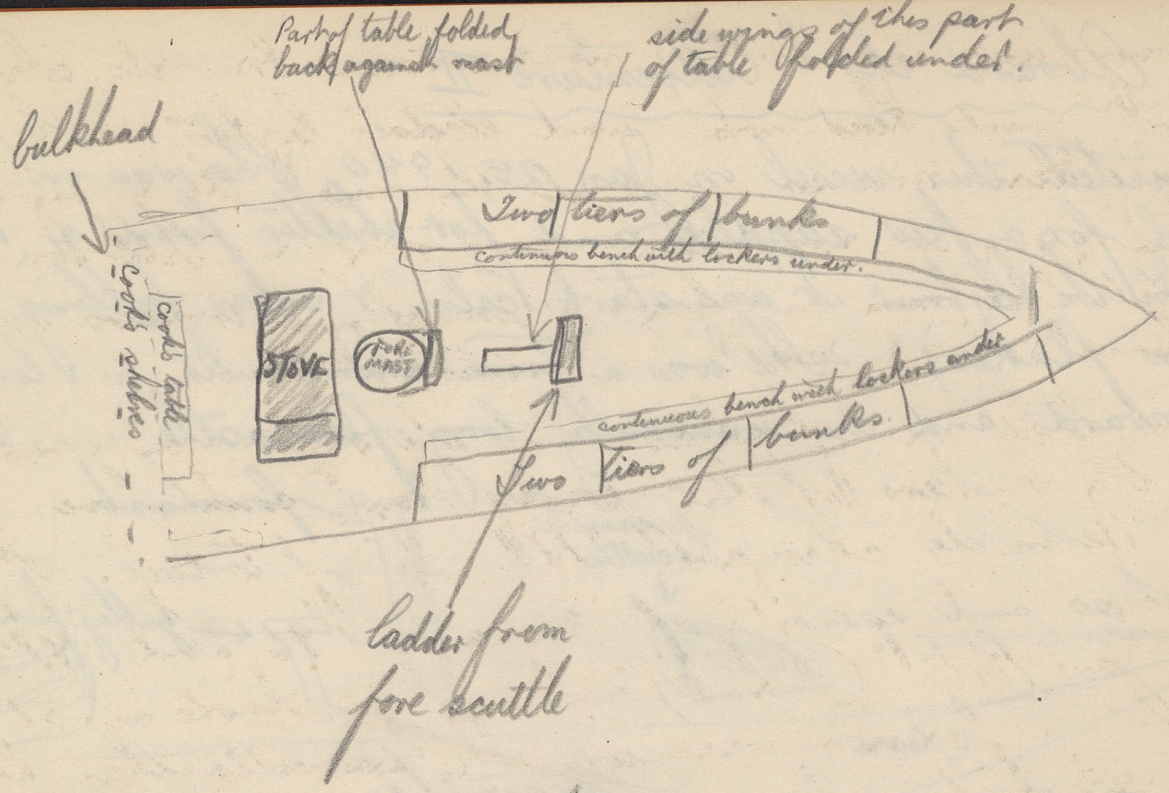
I visited this vessel on Jan. 25, 1940. She was in Liverpool for a few supplies and for shelter from a N.E gale. (In the harbour it was stark calm, & snow falling in big slow flakes.) She was a trim thing with a long sheer forward and an unusually long forecastle.



Her whole fore deck was cased in ice, likewise the fore parts of the dory nests (six a side) amidships, and her hawse-holes were filled with massed icicles.

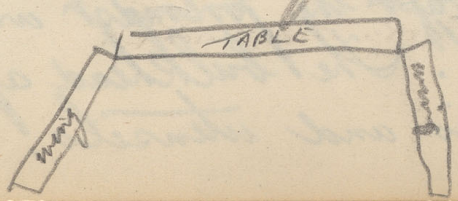
To enter the forecastle I backed into the scuttle & climbed down a short vertical ladder with the aid of iron hand-rails.

She was an American vessel but most of the crew seemed to be Pubnico Acadians, stocky jovial men with big voices and fond of talk. The cook was a slim man in white trousers and shirt with grey socks pulled up over the trouser ends to keep the wind from blowing up his legs when he went on deck. He wore glasses (and had a Newfoundland accent). His stove, an ordinary kitchen range with an iron rail (to keep the pots from sliding off in a seaway) stood just abaft the foremast with its back six inches from the mast (steel). The bulkhead aft was fitted with shelves for his supplies and utensils.



The cook's stove kept the whole forecastle at a temperature close to 80° Fahrenheit, I judged; temperature on deck was about 20° Fahrenheit. Some of the crew were ashore, some sat & talked, some slept. Average age about 40, some young men, some quite old. Several of the sleeping heads were entirely grey. Space between upper and lower bunks was about two feet, the lowers projecting 8" or a foot beyond the uppers due to the sharp tumble home of the bows.

The cabin table was an ingenious affair in two parts, each with folding wings on hinges. The after part could be swung up against the foremast when not in use, and its two wings folded against the sides of the mast. The forward part was stationary, but its two wings could be folded under. When in use



these wings are supported by stout wooden brackets, also hinged. There was good head room, and electric lights. The place was very clean, and so appeared the men; the younger ones coming and going in shore clothes, very neat, and all smoking cigars; the older men in frize or mackinaw trousers, rubber boots, flannel shirts, sweaters or wind breakers.

The talk was of ships, and the older men insisted that the big bankers of their young days could have outpaced even the champion "Bluenose" of today. They quoted ships and episodes of '92 and '96 and '97 and said the "Jane Porter" (I think) reeled off 15 knots in 51 minutes on one famous occasion. Apparently they had sailed in Gloucester schooners all their lives, (and) bragged about the Gloucester ships and captains (— most of the captains were Nova Scotians also!)

One of the fastest modern schooners was the Oriole, they said, and added that it was common belief in the fleet that Oriole could have beaten the Bluenose in anything but light airs. They mentioned another fast schooner with an exceptionally long main boom — 90 feet — exactly the height of her mainmast.

Of their own vessel they were proud. She was built in an Essex Mass. yard in 1909, and had been a famous sail-carrier in her day. Now like all the fleet she carries no more than staysails on her short rig, and relies chiefly on the big diesel engine whose exhaust funnel protrudes 3 or 4 feet above the deck just before the pilot house. She still looks very well kept and with her slim lines seems a comparatively new ship

She is called "Adventure II" a two-masted schooner of 132 tons. About 115 feet overall. Average "trip" is about 80,000 lbs of fish though she can hold up to 130,000. Has a 150 h.p. diesel engine, and sets jib foresail & mainsail. On the fishing ground the mainsail is replaced by a big triangular storysail called the riding sail.

From the pilot house aft I descended into the after cabin, a small square space lined with bunks and benches with an anthracite stove and radio telephone outfit. A door in the forward bulkhead opened upon the engine room, the top of the big diesel about level with the cabin floor.

Here the fishermen were having a drinking party, each man nursing a bottle of gin or more rarely of cheap sherry. At intervals each pulled the bottle out of his shirt front & tipped back his head, swigging the stuff neat. There was much loud talk of fish and women. A well built man of 35, Leo Surrette with a dark pleasant face, rather bald, began to dance in mid floor singing a French song. I sat with D'Entremont the engineer, who told me it was an old Acadian song called The Girl With the Raspberry Lips. (I caught the word "framboise" — Leo's pronunciation "fra'boy")

An amiable German named Welzow (the men called him Wilgon) told me a long drunken story of his life beginning with his arrival in Canada in 1913 (aboard a Norwegian barque the "Bonaventure" (it sounded like that) out of Narvik. Two of the Lubrico men engaged in a voluble wrangle about the United States Constitution and the Bill of Rights. And somebody settled it by fishing a World Almanac out of a bunk and turning up the Constitution: it ~~was~~ listed ten amendments to the Constitution as "the so-called Bill of Rights" — which seemed to prove something or other, and settled the argument.

In 1913 I was in the "Governor Foss" leaving Gloucester for Booth Bay Maine. (We went there for ice and bait because it was cheaper there than in Gloucester. You could get ice for $2.00 a ton, and big measure, big ice. Bait was always cheaper there — $3.00 a thousand pounds in Gloucester, $2.50 in Booth Bay.) It was in the middle of July. We were bound for the banks on a cod fishing trip. The "Oriole" Capt. "Little Dan" MacDonald left Gloucester with us, also to get bait & ice at Booth Bay. "Oriole" was going to the Banks on a halibut trip. Fresh wind at NNW after about 30 miles the wind hauled NNE, so that we had to make long and short tacks to make good our course NE to Booth Bay. On the last half of the passage the "Oriole" walked away from us, and she had 20 tons of ice aboard when we got in. She beat us by an hour and a half on an 85 mile trip from Thatcher's light (off Gloucester) to the wharf at Booth Bay. In our company was the "Elsie" the same "Elsie" which was afterwards selected to race the Bluenose — yeh the "Governor Foss" beat her to Booth Bay — and the "Oriole" beat both of us.

On that trip, "Oriole" made ~~her~~ her voyage to the Banks, got a 70 000 lb. trip of halibut (in 35 days) and was back in Portland Maine landing her fish in 21 days. Coming back she found the Belle Isle Straits thick with fog, and a north easter blowing & "Little Dan" put away around Newfoundland.

Albert Amirault (whose anecdote this was) is a member of the crew of "Adventure II" He believes firmly that if the Americans had selected "Oriole" as the american racer, the champion Canadian Bluenose would have been beaten.

~~"Adventure" is an auxiliary schooner of 132 tons. About 115 feet long overall. About 130,000 lbs of fish would fill her. Average trip 8,000 lbs.~~

Captain Michael O'Hearn of the "Adventure" is a fine figure of a man, about 35, six feet one or two, with a broad thick torso. Blond hair of a brown-yellow tint, a long face with a short broad nose and large flat cheekbones, short mouth, good teeth, square jaws, eyes round and grey and set quite close together. Pleasant, hail-fellow-well-met, the idol of his crew: but shrewd, determined, not a man to be crossed lightly. Newfoundland-Irish, a tough breed, and sea salt in the blood. Wears grey duffle-cloth breeches tucked into a pair of hip rubber-boots that are folded below his knees. Flannel shirt, grey duffle wind-breaker matching the breeches, a black Brighton cap.

Albert Amirault is a dory-man, Acadian from Pubnico, has been fishing in Gloucester and Boston schooners for more than forty years. About 5'8", sixty years old or so but looking younger, getting bald, but hair more brown than grey. A weatherbeaten hatchet face, a sunken gold-toothed mouth, sharp chin and a great high hooked nose sweeping down from a wrinkle between a pair of twinkling blue eyes. Wore grey-green duffle cloth breeches tucked in a pair of red rubber knee boots, mackinaw shirt in red-and-black chequers, a round black water-proof hat. Talked volubly in a strong Acadian accent, and his talk was salty. "Speaking of a race to the banks," the two schooners closed till they was no more'n a tub and a ha'f of trawl apart" i.e about a hundred and fifty feet.

"The wind come abeam, and we eased her sheets a bit

and gave her a rap-full".

"Twenty fleshermen can produce more food in twelve days than twenty farmers in twelve month"

"Thees vessel has her foremast stepped on the end of the straight keel (i.e. — ) and the result is she don't spank in a head sea like some o' them vessels that has the foremast stepped on the forward rise".

ITEMS

For hauling cod-fish trawls the dory-man uses a wooden pulley of about 4 inch diameter, fitted in the forward gunwale like a rowlock; usually set in the starboard gunwale since most men are right-handed. The woodwork immediately below the pulley (on the seaward side) is grooved by the constant scrape of hooks. The men wear woollen "nippers" to protect their hands from the chafe of the lines as they haul in or pay out.

For hauling halibut trawls, with their heavier gear and catch, the dorryman uses a hand-crank clamped to the gunwale. This is called the gurdy. When a big halibut comes up, the man strikes him fair between the eyes with his gob stick to stun him. (Gob sticks vary from 15" to 2' long, are usually made by the men to their own taste; the end is notched for twisting the hooks out of fish) Then the two dorymen bear down on the starboard side till the gunwale is almost touching water, the bow-man takes firm hold of the ganging (pronounced "gan ging") and they shift their weight to port and haul. In this way even a 100 pounder or bigger can be slid into the dory very easily, especially as halibut are a rather slimy fish.

At this time of year (January) fish are scarce on Georges and Brown's banks. They are not there in quantity till March. The best fishing at this time of year is in the Sydney bight between Cape North and Scatarie.

The "Adventure" made a couple of sets on Brown's with no luck & then the glass dropped "out of sight" and she made for the shelter (and hospitality) of Liverpool. There is no liquor store between Liverpool and Yarmouth. The Liverpool girls are complaisant and they hold parties in one or another of the shacks on the back streets, with fiddles for the dancing, and all the girls smoking the fishermen's cigarettes and drinking the fishermen's liquor. A fine town say the fishermen, with the most accommodating girls on the shore.

The glass is rising & tomorrow they leave, planning to set on The Ridge, about 18 miles off Liverpool, hoping for a haul of hake and cusk. These fish are reckoned poor in Canadian markets; but in Boston they command a far better price than cod.

In port, "when we are just laying around all day", only two meals are served each day. Breakfast at 8 and dinner at 2.30. This is to give the cook a rest from his constant four-meals-a-day labours at sea. It is also economical for the owners. For dinner while I was on board one afternoon they had fried cod heads — tongue, cheeks and all, just split and fried. "Ah, very sweet" they say. "The best part of the fish."

"The Channel" a deep water funnel lying between Georges Bank and Cape Cod used to be a favourite fishing ground for the Boston men, with quick trips and fish marketed fresh. "But the beam trawlers ruined it."

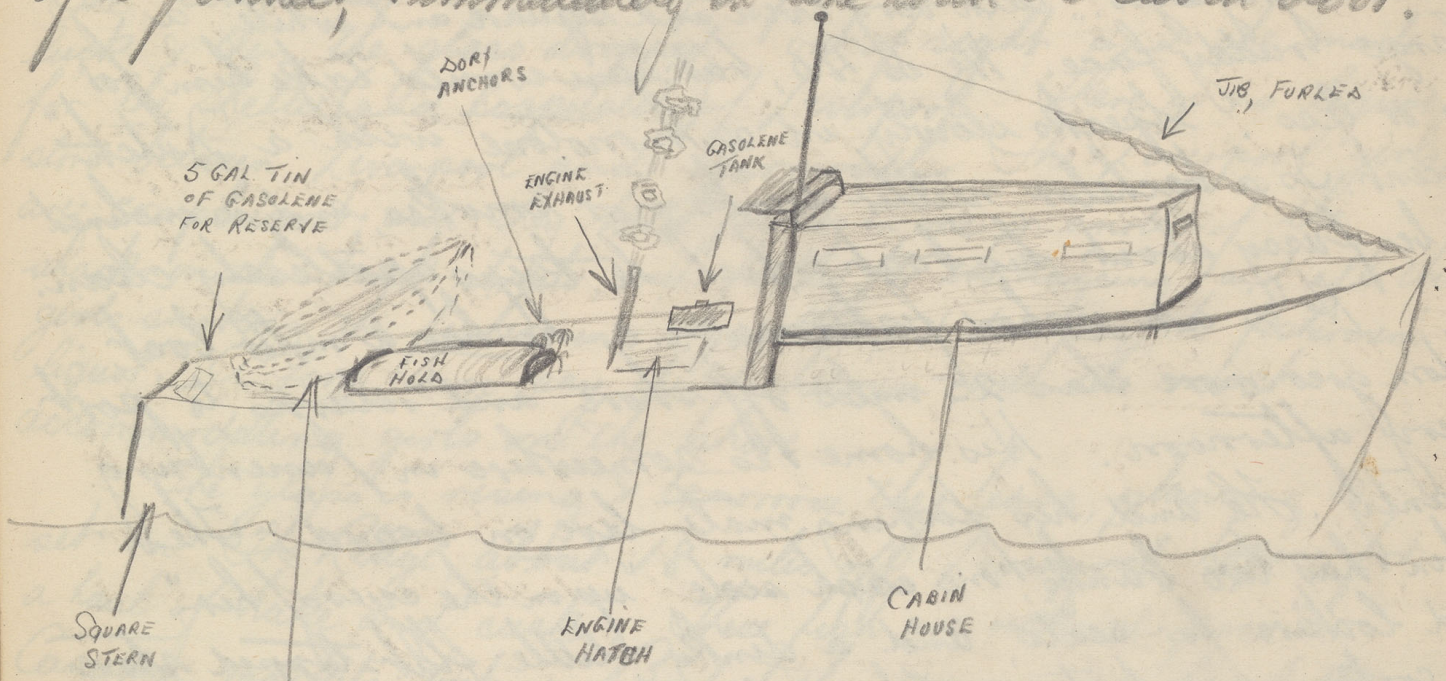
CECIL SPINDLER'S STORY

Spindler is a magnificent physical specimen, about 5'10", with broad shoulders and thick muscular arms. A long head, with curly brown hair, short eyebrows very thick and black, pleasant grey eyes, teeth very even and square and white, a large ruddy face. He is 40, but you would take him for 30 or less. Speaks slowly in a monotone, with a "Dutch" accent. Is a bachelor, neither drinks nor smokes, and is inclined to be fussy about his boat which he keeps spotlessly clean.

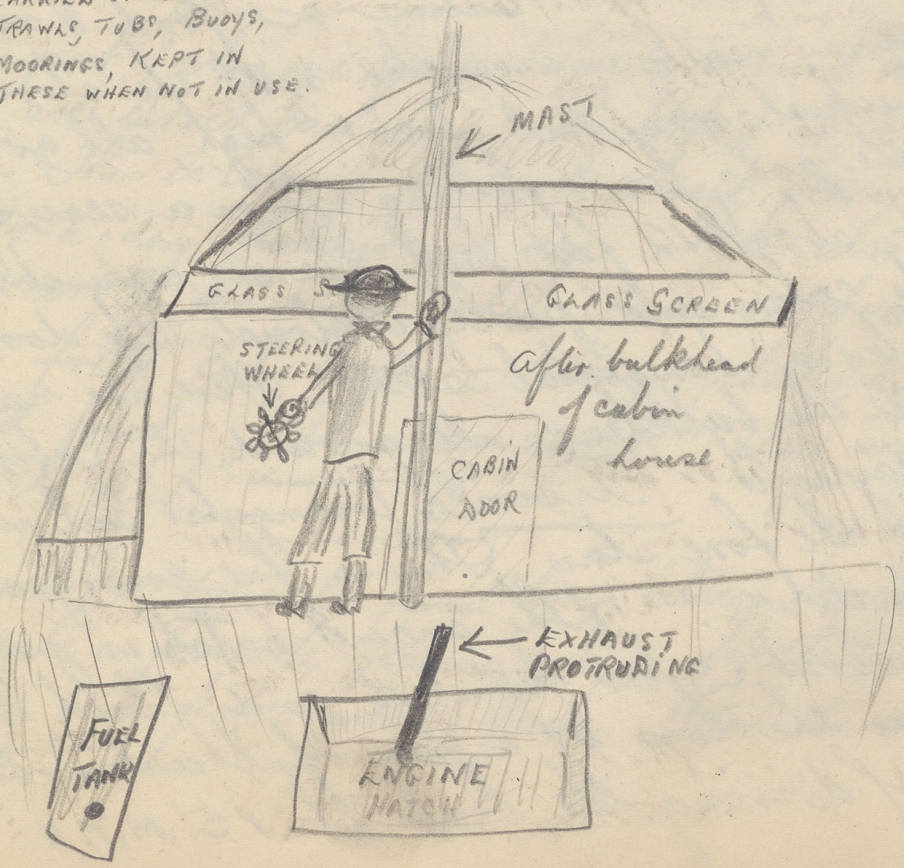
He is an inshore fisherman i.e. he has a motor boat, seldom goes more than 25 miles off shore, and returns to port every afternoon. His home is somewhere in Lunenburg County. He and his fishing mate live on board. The cabin has two bunks, one each side "up in the eyes of her", and lockers for seats, and a dinky little flat-topped stove for cooking and heating. The coal is kept in a pair of buckets on the floor. The dishes, pots and cutlery - and food (mostly fish) are stowed away neatly in a locker next the stove. The stove has the usual iron rail, about 4" high, all around the top to keep the pots from falling off in a seaway.

The mast, about 12 feet high, stands against the after-wall of the cabin and partly obstructs the doorway, which is closed by a horizontal slide. There are narrow glass lights set in the bulkheads all around the cabin, which admit plenty of daylight. A small triangular sail is kept neatly furled on the fore stay. This is for emergency, when the engine breaks down. The engine hatch is just abaft the cabin slide, about 3 feet from it, and flush with the deck you see the top of a powerful automobile engine capable of driving the boat at 15 M.P.H

24. Two or three feet further aft is the big hatch of the fish hold which occupies all the after space of the boat's hull. The engine exhaust pipe sticks up a couple of feet straight in air, like the caricature of a funnell, immediately in line with the cabin door.



TWO DORIES CARRIED ON DECK. TRAWLS, TUBS, BUOYS, MOORINGS, KEPT IN THESE WHEN NOT IN USE.



Looking forward from the main hatch.

Cecil has had many adventures; he was aboard a trawler that was rammed and sunk by a French liner one foggy night, and managed to get aboard the Frenchman & had a trip to France; he was struck by a boulder flung up by a rock blast where a breakwater was under construction, the rock falling into his boat a quarter mile away and breaking several of his ribs; he has had the second finger of his right hand amputated for blood poisoning; he has been overboard many times. But his narrowest escape was in January 1940, aboard his staunch little motor boat.

"I got a notion to make some sort of shelter for the steersman. We used to just stand on the deck looking over the cabin roof, with the wheel mounted on the after wall of the cabin itself. But that was bad with a head wind and rain and spray flying over the bow, specially in winter. I put up with it for several years, then this winter after Christmas I made a sort of wooden hood on the after wall of the cabin house. It projected aft about two feet, so the steersman had cover for his head, and was protected from the wind on both sides

A wind aft didn't matter — or so I thought. But it did!

We put out from the Liverpool wharf one cold January morning about 4 A.M. The wind was NE — that is, on the port bow going out to the fishing grounds. The new screen worked fine, and we wondered why we hadn't rigged it before, my mate and I.

We went out to The Ridge, which is the first

soundings off Liverpool, about 18 miles to the east of the harbour. We anchored there, set our trawls, and hauled again towards noon. At 1 o'clock I cooked a bit of dinner while Nelson, my partner, swung her head for Liverpool, running at low speed to save gasolene. That brought the wind aft, of course. I noticed then that the exhaust blew in under our new hood, and the hood in turn acted as a funnel which brought the smell of burnt oil and gasoline through the cabin door. Even with the slide closed it came in. Well, we'd always had to put up with the stink of the exhaust, so I didn't pay any particular attention. I got my dinner, then set out Nelson's and pulled open the cabin slide to relieve Nelson at the wheel. And that's the last thing I remember for several hours.

One or two of the other boats, coming in from the grounds, noticed my boat going slowly in a wide circle off to the eastward. In fact my boat went on making those wide circles for hours on end. They thought I was looking for a lost trawl and went on into the harbour.

Well, when I lost consciousness it was 2 o'clock in the afternoon. At 7 by the cabin clock I came to, with a terrible pain in my arm. I had collapsed in the starboard locker with my right arm under me, and I'd lain on it for 5 hours — and I'm a heavy man. My arm was one big pain, and I couldn't use it at all, not then, nor for several days, and I didn't

regain the full use of it for weeks.

Well, it was full dark, a bitter January night. The engine had stopped. She ran till the gasolene got low in the tank and then a roll of the boat took the fuel away from the feed pipe and she died. I didn't know that of course. I was dazed, like a man coming out of a heavy sleep. I thought, "We must be tied up at the Liverpool wharf, for it's night". I tried to get on my feet but couldn't. The cabin slide had been open all that time. The stove was out. Bitter cold. I managed to crawl on my knees to the doorway & looked up, expecting to see the wharf lights, but there was nothing but the stars and the sea. Not even Coffin Island light to be seen. We were out of sight of land of course, even by daylight. By night it was worse. I knew the engine must have run till the tank went dry and there was nobody at the wheel. That reminded me — where is Nelson? I crouched there in the doorway stupidly, and wondered if he'd fallen overboard. I called his name, and my voice was like the rustle of sandpaper but got no answer. I don't know how long I crouched there but the air revived me slowly. I guessed, after a time, that some disaster had befallen, but whether it was from what I'd eaten or the exhaust, I couldn't decide. I was used to the smell of the exhaust & never got more than a headache from it before. Well I began to crawl about the deck, dragging my useless right arm under me, and I came upon Nelson lying between the engine hatch and the fish hatch. I shook him and called his name but he gave no sign of life. I tried to raise him up but each time I fell on top of him. I knew he would freeze there if he wasn't dead

already, and I couldn't seem to think of anything but getting Nelson into the cabin and making a fire in the stove and getting warm again. But I couldn't move him, and would you believe it, I said "Your dead, Nelson" and lay down and cried like a baby because I was so helpless.

The wind was still N.E. & not much sea. I crawled back into the cabin — a terrible job getting over the weather-board — and managed to sit back on my haunches and reach up with my good hand and pull a quilt off one of the bunks. With this I crawled out again and wrapped Nelson up; I still thought he was dead but I wanted to keep his body from freezing hard in that hunched-up position.

Then I got hold of the mast and dragged myself upright. I knew the engine must have run till the tank was empty — the tank was hollow to my rap — and that the boat must have travelled blind all that time; but I also knew the boat wouldn't go on a straight course without a hand on the wheel; she'd carry a bit of helm one way or the other and travel in wide circles. The wind was still NE — an on-shore wind. Finally I made out a light and recognised it for the faint reflection of the Port Medway light-house on the sky. The light itself is only visible 10 miles. Well, that was a relief. I knew where we were, anyway. My course for Liverpool lay S.W.

I staggered aft to get the spare gasoline, a 5-gallon can under the transom. To do this I had to crawl over the trawls, tubs & other fishing gear all piled in the little space between the fish hatch and the transom, and the rocking of the boat in the swell nearly threw me overboard. What a journey, that 13 feet from the transom to the

engine tank with that can of gasolene! I nearly went overboard, can and all, several times, and when I reached the tank I had to wait a long time for strength to lift the can & pour the gasolene in. But I did it somehow. Then I tried the engine with the electric starter. No go. I didn't want to run the battery down so I worked at her with the crank. All this with my right arm hanging useless and throbbing with pain, and my mouth parched and a head-ache fit to split me right between the eyes. Finally I turned to the electric starter again, and she caught, she spluttered, she began to run, not very well, but she ran. The fact was, I'd left the cover off the fuel tank hole, and the air pressure was flooding her and choking her. She kept turning though, and I headed the boat S W at about 4 or 5 miles an hour — all she would do.

After what seemed half the night I raised Coffin Island light. That looked good to me, I tell you. Then the engine died completely, flooded of course, & for a time we drifted there under the very flash of the lighthouse. I made another attempt to get Nelson inside the cabin out of the cold, but had to give it up. But suddenly I thought of the fuel tank cover. My mind was still stupid. That simple thought came to me like a revelation, something wonderful. I screwed the cover on & tried the engine again & she started, first go, and ran like a charm. I speeded her up to 12 m.p.h. and made the rest of the journey in quick time. There was nobody on the wharf but the watchman was waiting in the office, with the lights on; everybody thought I'd gone in to Port Medway for some reason, but the watchman had a hunch something was wrong and kept a lookout. He came running out at my hail. The tide was low, and my deck was six feet below the level of the wharf. I managed to throw a line up to him and sung out "Nelson's dead, get a doctor quick!" He

made the boat fast with the line & ran into the office to phone. I felt very faint. It seemed like I'd managed to screw up my mind to some sort of awake-ness, knowing I'd got to get the boat in or die, and now that the boat was in, nothing more mattered. Men came. I remember telling them to take Nelson first, then I was hoisted up to the wharf, and the next thing I was lying on the office floor with the electric lights hurting my eyes, and the doctor working hard over Nelson beside me, and Nelson's face blue under the lights.

They got the oxygen apparatus from the first-aid room at the paper mill, and worked on him for an hour before he gave a groan and came to. I remember the doctor saying "Carbon monoxide" and "you fishermen are too careless about your exhaust pipes."

Well, we had a narrow squeak. I wasn't able to fish again for six weeks, but now Nelson & I are at it again. But we have an extension on the exhaust pipe now that carries the fumes overhead and forward of the steersmen's hood. The queer part of the whole thing is that neither of us suffered from frost bite.

Bill Wigglesworth's Story (A)

I went to sea in a fishing schooner when I was 14 and fished mostly in Gloucester schooners till I was a grown man. Most of the skippers and crews of the Gloucester schooners were Nova Scotia men. About the year 1900 I was in a Gloucester schooner fishing on the Quero Bank. It was April and cold weather. My dory mate was a Bluenose named Dick Burke from Main-a-Dieu, a good-hearted fellow but blasphemous and feared neither God nor man. A snow storm came up while we were at the trawls and we got astray from the vessel. We didn't try to make the land for the wind was against us, but just kept the dory head on to the sea and hoped to be picked up. There was a big fleet on the Banks in those days — Newfoundlanders, Nova Scotians, Frenchmen, Yankees — and you stood a fair chance of being picked up. For 3 days Dick blasphemed cursing the luck the schooner, the skipper and particularly the Lord for letting us in for such suffering. He would stand up in the dory with his face to the sky & shaking those thick fists of his and crying "You got me into this, Jesus, now get me out of it. Come down here and do something, you — " and then he would blaspheme. I tell you it scared me. I was young and it scared me. It was awful to hear a man carry on so. It was thirst that bothered us. We didn't mind the cold or the sea so much as that awful thirsty feeling. You know what they say about men dying of thirst and dreaming of taps running and fountains and all that — well it's true. I couldn't think of anything but a long drink of water.

On the fourth day we were pretty bad, both lying in the bottom of the dory. I lay in the bow. Dick had been blaspheming again and calling on the Lord to come down. It seemed to me he was going crazy. I heard him moving & saw him coming towards me with the bait-knife in his hand, a long thing and sharp as a razor. I didn't say anything & I didn't move. The trawl pulley lay beside me, a heavy wooden wheel with iron fair-leads and an iron shaft that fitted down into a socket in the gunwale when you were hauling trawls. The shaft made a good handle. You could hit a man a terrible blow with that pulley. When I felt him crawling over my feet, I raised a little and lifted the pulley into sight.

"What's the matter, Dick?" I said

He didn't say anything. He looked at my face, then at the pulley in my hand, then he threw the bait knife into the sea.

"I think we'd better pray" he said. That was a queer thing to hear a man say that blasphemed as much as Dick.

"It's too late for prayers" I said, "I guess we'll just stick it out now and see what the end's going to be."

He went back aft & huddled up under the thwart and said no more. And that afternoon I was dreaming about water — always about water. We'd fished in the Gulf of St. Lawrence the year before, and I kept dreaming about those high thin water-falls on the north coast of Anticosti, where the little rivers fall into the sea. I woke up suddenly and sat up, and saw sails; they were tan coloured and square, the topsails of a French barque, for those Frenchmen tan their sails. Drousèd Dick then, and took off my oilskin jacket and shoved an oar through the sleeves and

hoisted it as high as I could. She was going under all plain sail on the starboard tack steering by the wind. We were to windward of her. She saw us, for she came up into the wind with everything flatting, & we saw her yards fly round on the other tack. We rowed down to her. It was blowing half a gale and a big sea running. We were weak, too weak and stiff to climb up her side. They lowered life lines to us and we passed them our painter and they hauled the dory aboard after taking us up.

She was a barque out of St. Malo, salt fishing, with a big crew and her deck loaded with dories. The dories were painted red, I remember, and it struck me as queer, for I never saw dories painted anything but yellow. They were rough looking men, all whiskers and patched dungarees and those big wooden sabots, and not a word of English in the whole ship. They had to cut our rubber boots off for our legs were swollen. Then they took us to the captain's cabin, and we sat on the locker while captain thumbed over a big book — all French it was. It was a doctor-book and he was looking to see what to do. We'd showed, by fingers and opening our mouths & pointing out days on a calendar on his wall, that we'd been 4 days adrift without food or water. We could have eaten anything, I guess, but he treated us strictly by the book. He got a big chunk of beef and stewed it over the cabin stove and gave us the broth to drink, no more. Then he gave us each a small drink of brandy — it's called snig (SNIG) brandy, I think, anyway it's a cheap kind of brandy all those Frenchmen carry, of a purple colour, and the captain

got it from a cask in the corner of the cabin. It tasted mighty good to us. Then he motioned us towards the bunks and made signs for us to sleep. The bunks weren't open like in our vessels. They were walled off from the cabin itself by a thin wooden partition, and there was a round hole at each bunk end where you crawled through and lay like a rat in a cupboard! No blankets. Just straw and a bolster of straw for a pillow. I crawled in and fell asleep at once and didn't wake for sixteen hours.

This barque had lost her anchors riding out a gale on the banks and she was on her way to St. Pierre for more. The Frenchmen gave us each a pair of sabots to wear and one of those little tasseled hats. Those sabots are heavy things and awkward when you're not used to them. It made my mouth open to see those Frenchmen go aloft and furl sail with those things on their feet. You'd look up and see the foot-rope lined with those big wooden toes and wonder how they managed. They lived in a pretty crude way and their cooking was pretty frowsty. I've seen the cook pick up cod-heads off the deck without cleaning them of anything and split them and fry them for supper. But they were good hearted men just the same. The cook was called Moose.

We told them to keep the dory for their trouble. It was a new one, and cost $48 in Gloucester the trip before. The captain was pleased, and had it painted red like the others right away, so there'd be no question about it when we got in St. Pierre, and lashed it on the fore house.

In St. Pierre we went to the American consul and got passage back to Gloucester and some extra clothes and scraped shoes for our feet. He asked us what happened to the

dory, but we were afraid he'd want the Frenchman to give it up, so we said it swamped as we came alongside the barque & was lost.

Twenty years afterwards, when I was managing a small marine slip in Liverpool N.S. a fishing schooner came in to go on the slip. One of the crew looked familiar & I went up and said "Aren't you Dick Burke?" And he turned and gave me a long look. "Is that you Wrigglesworth?" he said, "It's been a long time," and shook hands. Then he asked me if I remembered our forest days in the dory.

"Will I ever forget 'em!" I said

"Do you remember me coming for you with the bait-knife?" he said

"Yes" I said.

"You know, I'd gone out of my mind" he said. "It was just like a voice kept saying to me, Go and cut Wrigglesworth and drink his blood. It come of being so thirsty all that time. When you opened your eyes & picked up the pulley I seemed to wake up. But you wouldn't pray, would you?"

"No" I said. "Not then I wouldn't."

"Ah" he said "that cured me I tell you. I never blasphemed again. I've lived a Christian man these twenty years, and cut out the drinking, and got a wife and children, and a little house in East Boston that's half paid for."

I never saw Dick again. A couple of weeks after that I picked up a paper & read where he'd been killed, walking across an East Boston street and hit by a car.

Bill Wigglesworth's Story (B)

In the year 1902 I went to the Banks fishing in a Gloucester schooner, the "Independence I". The skipper was a big handsome man with black curly hair and a red face, named Bixbee. He was good hearted in port, though he loved to fight and drink; but at sea he was a proper hellion, a hard driver and no mistake. He had a great reputation for carrying sail, which was a great point with Gloucester skippers in those times; but he had lost several men one trip off the Banks and people held that against him, and he resented it. He slept in the after cabin, of course, and I had a bunk there, and so did my dory-mate a big able Newfoundlander that weighed over 200, name of Connors.

In that ship we didn't fish on even shares but on count. That's to say, each dory-crew got credit just for the fish it caught, on the actual count of the fish. The vessel was supposed to supply the fishing gear, but Bixbee was pretty mean in handing it out, and we were always having trouble to get trawl line and hooks. One day another schooner came along that belonged to the same Gloucester firm, and Bixbee sent me and Connors over in our dory to see if she had any news for us, for she'd left after we did. So we went aboard and had a gam, and just as we were leaving, the skipper gave us a packet of hooks that the owners had told him to give Bixbee if he met the Independence I. Well, Connors kept the hooks and said nothing to Captain Bixbee, but shared them up amongst the men in the forecastle. Bixbee found it out, somee way, and that evening when we were all

laying in our bunks, he told Connors he knew and began to call Connors all the names he could think of. Connors was not the man to take it kindly, and one thing led to another and the next thing they were out on the middle of the cabin floor, slinging away at each other by the light of the cabin lamp. I had a bunk under the steps that led up to the deck hatch & I looked out between the stairs & watched the fight. Six of us slept aft there, and the four of us lay and watched the other two fight it out, hoping to see the skipper get a licking. But they were pretty even, a pair of big slapping men! I don't know how long they fought, an hour anyway and perhaps two, and they cut each other's face to pieces and tired themselves out till they were puffing like horses. Then they upset the stove in one of their clinches and there was a smell of burning & we all had to scramble out and set up the stove and get the coals back into it. That ended the fight, but there was bad blood, as you can guess, for Bixbee knew we'd all hoped to see Connors knock him stiff.

Well we got a full face of fish and started for Gloucester with every stitch of canvas on her. The wind increased during the night to a howling nor'west gale, but the skipper wouldn't take in sail. Me and Connors was lashed to the wheel and everything battened tight.

I kept saying we ought to try and get the mainsail off her, but Connors said he'd be damned if he'd ask Bixbee to take in sail. And the men below knew from the way she was staggering that Bixbee ought to try to get the mainsail off her, and Bixbee knew too, but he was waiting for someone to suggest it, and nobody would.

The sea was running higher all the time, of course, and soon it was a question whether we'd dare to bring her up to the wind so we could get the main boom inboard. However Captain Bixbee crawled out of the cabin hatch and took my place at the wheel slipping the lashing over his own shoulders. He wouldn't speak to Connors.

"Bill," he said, "see if you can get for'ard & rouse the men out of the fo'cscle. We've got to get the mainsail off her." And you could tell from his voice how he hated to say it, and how he hated all of us for keeping our mouths shut when just a word would have saved his pride for him.

I watched my chance & ran forward. When I got abreast of the mainmast a sea boarded her and I jumped on to the lee rail and caught hold of the main peak halliards. She stuck her bowsprit into the sea like a harpoon and the sea came aft the length of her. I hung on and it came to me then that I should cut the peak halliards and let the mainsail come down by the run, but I was afraid of what Bixbee would say. If I'd known the terrible thing that was to happen I'd have cut them, Bixbee or no Bixbee, but a man can't see the future. I got for'ard & hammered on the fore scuttle, and by and by the men waited for a chance and came tumbling aft.

Captain Bixbee spoke to Connors then.

"I can handle the wheel" he said, "You go and lend a hand with the sail."

He put the schooner up into the wind, everything roaring and flatting, and we got the boom inboard and lowered the gaff damned quick. We got the gaff fastened to the boom with the selvagee strop and were making some headway at furling the sail on the boom. It looked as if it was going to be all right.

Captain Bixbee shouted, "Ah, you sons of bitches!

Scared, weren't you? But you wouldn't say so — not you! Well, you'll be scared to death before I get through with you! Jack Bixbee's the boy to scare you! There'll be crepe on some' your doors when we get to Gloucester again!"

He often said things like that, nothing unusual, and we were working too hard to pay much attention, but we thought of it afterwards I tell you! For just at that moment a mighty big sea came out of the dark and over the starboard quarter. It was well over our heads. The boom swung a little but the tackles held; but the water shot into the sail between the gaff and boom and blew it out the way you'd blow up a balloon. We were all standing on the lee side of the boom and the sail knocked us over backwards like a club, full of water as it was. I can see the men going over now, falling backwards and downwards with their hands flung out to grasp something, and all the water in the world thundering round us and over us. I fetched up in the scuppers with the breath knocked out of me and still under water, but my fingers brushed against a ringbolt in the deck and I hung on there, half drowned. I could feel men crawling and fumbling all about me, and one man was hanging on to my legs like grim death. It seemed an awful long time before she rose and shook herself dry. When she did and I got on my feet the mainsail was gone, and the gaff — nothing but the boom left. She was going off before the wind then, naturally, with the mainsail gone, and Captain Bixbee was still at the wheel. We got the foresail off her all right, yes, and even the jibs; we

stripped her, and she drove under the bare poles. Then two men relieved Capt. Bixbee at the wheel and we went below and counted noses. There was four men gone. Connors was one of them. When we knew for sure they were gone Bixbee said "Four? No! Not four! What?" and he sat down and cried like a baby. A terrible sight he was, for his face was still bruised from his fight with Connors and the cuts only half-healed, and him blubbering. Nobody said a word. Not a word. We were all thinking of what he'd said before the wave struck.

Well, you know, that kind of sobered him. He wasn't so much of the bully-boy after that, and of course he had a kind of black name in Gloucester for all the men he'd lost. Men wouldn't sail with him if they could help it. But I stayed on. He was mighty good to me, I think because I'd been Connors' partner, and put a word in for me to get command of a small schooner, the Louise Something-or-other, that we called "The Lou", which belonged to the same firm. But I didn't want to command a vessel, even a little one, not just then. I stayed in the Independence I with Bixbee. And three years after that wild night south of Sable Island, the Independence I put in to the Humber Arm in Newfoundland for bait. We anchored off the shore. Captain Bixbee sat in his chair thinking-like, with his head propped on his left hand, and his left elbow on the arm of the chair. He sighed two or three times. Then he said, "Boys, put a dory over. I've got to see the shore doctor." When the dory was about 30 feet from the schooner he said, "Put back, boys. Put me aboard again." He went down to the cabin, & got in the chair, resting his head the same way, and by-and-by he gave a big sigh and died. Heart disease, the doctor said. It was 3 years — 3 years to a day.

GENERAL INFORMATION RE SEA FISH

(From Captain A. E. Calder, of the Dominion Fisheries Experimental Station's motor vessel "Zoarces". June 3, 1940)

Swordfish which are found in such numbers off the Cape Breton coast in July and August are believed to come straight across the Atlantic from the Mediterranean. They are therefore an entirely different migration from the swordfish which are caught in West Indian waters in winter and gradually work north as far as Georges Bank in spring & summer. (This contravents the theories of big-game anglers I have met, who fish for swordfish in the Bahamas, then off Long Island, then off Cape Breton, and assume they are following one migration.)

The "Mediterranean" migration strikes the Nova Scotia coast about the latitude of Halifax & moves north to Cape Breton. Calder said he had been 150 miles east of Port Bickerton (Guysborough County) & found the sea temporarily alive with swordfish, all coming from the east not the south.

SHAD

At one time a most valuable part of Maritime fisheries, especially in the Bay of Fundy. They began to get scarce and the fishery fell off. Doctor Leim, of the experimental station got his Ph.D. with a treatise on the "Life History of the Shad". He used to go up the rivers (shad spawn in the rivers in March) in spite of ice & wintry weather, & collect spawn and so on. He wrote a very complete treatise

those from Lahave Bank will be found along the South Shore; those from Sable Island Bank & Middle Bank will be found along the shores of Halifax County, those of Quero along the coast of Guysborough and east Cape Breton. This has been determined in two ways. First, by tagging fish on the Banks and seeing where they are caught; second by counting the vertebrae of the fish caught on each Bank and those caught along the shores. The latter is a particularly valuable method. Over a period of years it has been possible to work out tables showing the average vertebral count on cod and haddock inhabiting each of the Banks. The number of vertebrae varies roughly between 45 and 55 per fish. The Experimental Station had a big chart showing the Banks, and on each is marked (red for cod, blue for haddock) the average vertebral count of its fish. The spawning time varies according to the locality of the Bank, and as the fish are poor just after spawning there are definite times when each Bank should be avoided.

Calder quoted an interesting case. He was at the Halifax experimental station at the time. A schooner came in to the National Fish Company with a full fare of haddock. The skipper announced that he had got them off Ingonish, Cape Breton, and since Ingonish fish at that time of year are usually prime quality, the company bought his catch. Boutilier of the company management watched the fish being brought up the wharf. They looked lean and flabby. He questioned the skipper, who swore

once more that his catch came from Ingonish.
Just for a hunch (knowing something of the scientific side of it) Boutilier had 150 of the haddock put in a truck and taken to the Experimental Station. There Calder & others slit down the backs and carefully counted vertebrae, then took an average. The average vertebral count showed that the fish had come from St. Pierre Bank where the haddock were just past spawning. Confronted with this the fishing skipper blustered for a while & finally admitted, with a grin, that they had come from St. Pierre Bank. His remark was illuminating. "It's dam' queer. Here I been fishin' all my life, and you guys know more about it than I do."

These sea fish thrive best in certain conditions of temperature and salinity, and as these conditions may vary from time to time for reasons not yet understood, the fish may move off one of the Banks temporarily. This accounts for the occasional poor fishing to be encountered on one or other of the Banks. Calder believes it will be possible some day to predict these movements from tests of water temperature and salinity, and actually to direct the fishermen towards the best fishing.

LOBSTERS

Lobster spawn floats on the surface until the fish are about an inch long; then they sink to bottom and take up their normal submarine life. They are exposed to many enemies during this floating period but the spawn is in such quantities that enemies cannot greatly affect the species — except man of course. But storms

can and do play havoc, driving the spawn inshore from wide areas of sea and destroying it in the surf. Said Calder, "The Gulf of St. Lawrence is a huge natural home for the lobster. Tell me if there has been a heavy storm while the spawn was floating, and I will tell you what sort of lobster catch the fishermen will get two years from now."

The shores of Northumberland Strait are the best lobster fishing grounds in eastern Canada. Next best is the south tip of Nova Scotia. Man will never kill out the lobster. When prices are high there is intensive fishing in the areas where the fishermen live, with the result that the local LOBSTER population gets thinned out, the fishery falls off, and many quit fishing for a season or two. Then the area is re-populated with lobsters moving in from outside, and from spawn drifting in from unfished areas, and suddenly the fishing is good again.

Lobsters are affected like other fish by sea temperature and salinity. When conditions are not right they are sluggish and do not feed, & the fisherman hauling empty traps swears that "there are no lobsters."

Calder has invented a system of transporting live lobsters in tanks, with sea water constantly flowing through, which he thinks will one day revolutionize the fishery. Today the Canadian fresh lobster business is more or less in the grip of the Boston market — the nearest point to which lobsters can be shipped alive in ice. With Calder's system installed in special ships, it will be possible to transport live lobsters in bulk to any port on the

American coast. The Experimental Station has worked out charts of salinity & temperature for the waters all along the coast and sees no reason why the thing can't be done. He has formed a company with a capital of $5000 to control the patent. He holds 51 of the 100 shares. The rest are now owned, he says, in Halifax.

He got the idea from the tank in the hold of the "Zoarces", in which live fish of various kinds are transported to St. Andrews. New sea water passes through this tank in a constant stream, and since the tank is kept absolutely full of water, there is no movement when the ship rolls and the fish thus live in water motionless and cool and "fresh"

SCALLOPS

The scallop-dragging boats of Digby have built up quite a business in the past 15 years. For a time they had almost a monopoly in the rich Bay of Fundy beds. Within the past 2 or 3 years however, American fishermen, copying the dragging-gear of Digby, have been getting big hauls on Georges Bank, and the price has suffered in consequence. "Beds" is a poor term, according to Calder, who claims that scallops can and do swim, or project themselves by spasmodic "leaps" against the bottom. He has seen scallops, high and dry on the deck of "Zoarces", leap 3 or 4 feet. He considers that when dragging has disturbed their habitat they simply move away a bit.

The tonnage of a fishing schooner can be estimated roughly by allowing one ton for every foot of length. Thus a 142-footer would be approx. 140 tons

ADDITION TABLE

1 *and* 1 are 2	2 *and* 1 are 3	3 *and* 1 are 4	4 *and* 1 are 5	5 *and* 1 are 6	6 *and* 1 are 7	7 *and* 1 are 8	8 *and* 1 are 9	9 *and* 1 are 10	10 *and* 1 are 11	11 *and* 1 are 12	12 *and* 1 are 13
2 - 3	2 - 4	2 - 5	2 - 6	2 - 7	2 - 9	2 - 9	2 - 10	2 - 11	2 - 12	2 - 13	2 - 14
3 - 4	3 - 5	3 - 6	3 - 7	3 - 8	3 - 9	3 - 10	3 - 11	3 - 12	3 - 13	3 - 14	3 - 15
4 - 5	4 - 6	4 - 7	4 - 8	4 - 9	4 - 10	4 - 11	4 - 12	4 - 13	4 - 14	4 - 15	4 - 16
5 - 6	5 - 7	5 - 8	5 - 9	5 - 10	5 - 11	5 - 12	5 - 13	5 - 14	5 - 15	5 - 16	5 - 17
6 - 7	6 - 8	6 - 9	6 - 10	6 - 11	6 - 12	6 - 13	6 - 14	6 - 15	6 - 16	6 - 17	6 - 18
7 - 8	7 - 9	7 - 10	7 - 11	7 - 12	7 - 13	7 - 14	7 - 15	7 - 16	7 - 17	7 - 18	7 - 19
8 - 9	8 - 10	8 - 11	8 - 12	8 - 13	8 - 14	8 - 15	8 - 16	8 - 17	8 - 18	8 - 19	8 - 20
9 - 10	9 - 11	9 - 12	9 - 13	9 - 14	9 - 15	9 - 16	9 - 17	9 - 18	9 - 19	9 - 20	9 - 21
10 - 11	10 - 12	10 - 13	10 - 14	10 - 15	10 - 16	10 - 17	10 - 18	10 - 19	10 - 20	10 - 21	10 - 22
11 - 12	11 - 13	11 - 14	11 - 15	11 - 16	11 - 17	11 - 18	11 - 19	11 - 20	11 - 21	11 - 22	11 - 23
12 - 13	12 - 14	12 - 15	12 - 16	12 - 17	12 - 18	12 - 19	12 - 20	12 - 21	12 - 22	12 - 23	12 - 24

SUBTRACTION.—By reversing the above Table Subtraction is learnt, thus: instead of saying 1 and 1 are 2, say 1 from 2 and 1 remains; 1 from 3 and 2 remains.

MULTIPLICATION TABLE

2 *times* 1 are 2	3 *times* 1 are 3	4 *times* 1 are 4	5 *times* 1 are 5	6 *times* 1 are 6	7 *times* 1 are 7	8 *times* 1 are 8	9 *times* 1 are 9	10 *times* 1 are 10	11 *times* 1 are 11	12 *times* 1 are 12
2 - 4	2 - 6	2 - 8	2 - 10	2 - 12	2 - 14	2 - 16	2 - 18	2 - 20	2 - 22	2 - 24
3 - 6	3 - 9	3 - 12	3 - 15	3 - 18	3 - 21	3 - 24	3 - 27	3 - 30	3 - 33	3 - 36
4 - 8	4 - 12	4 - 16	4 - 20	4 - 24	4 - 28	4 - 32	4 - 36	4 - 40	4 - 44	4 - 48
5 - 10	5 - 15	5 - 20	5 - 25	5 - 30	5 - 35	5 - 40	5 - 45	5 - 50	5 - 55	5 - 60
6 - 12	6 - 18	6 - 24	6 - 30	6 - 36	6 - 42	6 - 48	6 - 54	6 - 60	6 - 66	6 - 72
7 - 14	7 - 21	7 - 28	7 - 35	7 - 42	7 - 49	7 - 56	7 - 63	7 - 70	7 - 77	7 - 84
8 - 16	8 - 24	8 - 32	8 - 40	8 - 48	8 - 56	8 - 64	8 - 72	8 - 80	8 - 88	8 - 96
9 - 18	9 - 27	9 - 36	9 - 45	9 - 54	9 - 63	9 - 72	9 - 81	9 - 90	9 - 99	9 - 108
10 - 20	10 - 30	10 - 40	10 - 50	10 - 60	10 - 70	10 - 80	10 - 90	10 - 100	10 - 110	10 - 120
11 - 22	11 - 33	11 - 44	11 - 55	11 - 66	11 - 77	11 - 88	11 - 99	11 - 110	11 - 121	11 - 132
12 - 24	12 - 36	12 - 48	12 - 60	12 - 72	12 - 84	12 - 96	12 108	12 - 120	12 - 132	12 - 144

DIVISION.—To apply this Table to Division reverse it, thus: instead of saying 3 times 1 are 3, say 3's in 3 are 1, or go once; 3's in 6 are 2, or go twice.

ARITHMETICAL TABLES

Numeration.

Units.....1
Tens.....12
Hundreds.....123
Thousands.....1,234
Tens of Thousands.12,345
C. of Thousands..123,456
Millions.....1,234,567
T. of Millions..12,345,678
C. of Millions.123,456,789

The number represented in the last line is read: One hundred and twenty-three million, four hundred and fifty-six thousand, seven hundred and eighty-nine.

Numerals.

ARABIC.	ROMAN.
1.....	I.
2.....	II.
3.....	III.
4.....	IV.
5.....	V.
6.....	VI.
7.....	VII.
8.....	VIII.
9.....	IX.
10.....	X.
20.....	XX.
50.....	L.
100.....	C.
500.....	D.
1000.....	M.

Cubic, or Solid Measure.

1728 Inches..1 Solid Foot
27 Feet...1 Solid Yard
42 Feet..1 Ton Shipping
128 Feet..1 Cord Wood

Long Measure.

12 Lines.....1 Inch
4 Inches.....1 Hand
12 Inches.....1 Foot
3 Feet.....1 Yard
6 Feet.....1 Fathom
5½ Yards..1 Rod or Pole
40 Rods.....1 Furlong
8 Furlongs.....1 Mile
3 Miles.....1 League
69½ Miles.....1 Degree
1760 yds. or 5280 ft..1 Mile
6075·81 ft. 1 Nautical Mile

Dry Measure.

2 Pints.....1 Quart
4 Quarts.....1 Gallon
2 Gallons.....1 Peck
4 Pecks.....1 Bushel
36 Bushels...1 Chaldron

Avoirdupois Weight.

16 Drams.....1 Ounce
16 Ounces.....1 Pound
14 Pounds.....1 Stone
25 Pounds..1 Quarter, C.
28 Pounds..1 Quarter, E.
4 Quarters..1 Hund'w't.
20 Hundredweight
2000 lbs., Can.... } 1 Ton
2240 lbs., Eng.... }

Paper.

24 Sheets.....1 Quire
20 Quires.....1 Ream

Time Measure.

60 Seconds.....1 Minute
60 Minutes.....1 Hour
24 Hours.....1 Day
7 Days.....1 Week
4 Weeks.....1 Month
12 Months, or 365¼ Days } ...1 Year
100 Years.....1 Century

Arithmetical Signs.

+ Plus, sign of Addition.
− Minus, sign of Subt'n.
× Sign of Multiplication.
÷ Sign of Division.
= Sign of Equality.
:::: Sign of Proportion.
√ Sign of the Sq. Root.
° Degree, ′ Minute.
″ Second, ∴ Therefore.

Troy Weight.

24 Grains..1 Pennyweight
20 Pennyweights.1 Ounce
12 Ounces.....1 Pound

Cloth Measure.

2¼ Inches.....1 Nail
4 Nails.....1 Quarter
3 Quarters..1 Flemish Ell
4 Quarters.....1 Yard
5 Quarters..1 English Ell
6 Quarters..1 French Ell
37 Inches...1 Scotch Ell

Apothecaries' Weight.

20 Grains.....1 Scruple
3 Scruples.....1 Dram
8 Drams.....1 Ounce
12 Ounces.....1 Pound

Square or Land Measure.

144 Sq. Inches.1 Sq. Foot
9 Sq. Feet..1 Sq. Yard
30¼ Yards.1 Square Rod
40 Poles.....1 Rood
4 Roods.....1 Acre
640 Acres.....1 Sq. Mile

Days in the Month.

30 days hath September,
April, June and November;
February has 28 alone.
And all the rest have 31;
But Leap Year coming once in four,
February then has one day more.

Measure of Capacity.

4 Gills.....1 Pint
2 Pints.....1 Quart
4 Quarts.....1 Gallon
9 Gallons.....1 Firkin
36 Gallons.....1 Barrel
63 Gallons...1 Hogshead

Land Survey Measure.

7.92 Inches.....1 Link
100 Links.....1 Chain
1 Chain.....66 Feet
10 Sq. Chains.....1 Acre

English Money Table.

4 Farthings....1 Penny
12 Pence.....1 Shilling
20 Shillings.....1 Pound

A Florin is 2*s*.....45c.
A Half-Crown is 2*s*. 6*d*.....60c.
A Sovereign is 20*s*..$4.86

Aliquot Parts of a Pound.

s.	*d.*		£
10	0	is	1 half.
6	8	..	1 third.
5	0	..	1 fourth.
4	0	..	1 fifth.
3	4	..	1 sixth.
2	6	..	1 eigth.
2	0	..	1 tenth.
1	8	..	1 twelfth.
1	3	..	1 sixteenth.

Of a Shilling.

d.	*s.*	*d.*	*s.*
6	is 1-half.	2	is 1-6th.
4	..1-third.	1½	.. 1-8th.
3	..1-fourth.	1	.. 1-12th.

Of a Ton.

Cwt.	*Ton.*	*Cwt.*	*Ton.*
10	is 1-half.	2½	is 1-8th.
5	.. 1-4th.	2	.. 1-10th.
4	.. 1-5th.	1	.. 1-20th.