

# Cape Cod Canal Activity Book

Written and illustrated by  
Sheila Smith and Lynn Townsend

# Acknowledgements

This project was completed through a cooperative effort between Bridgewater State College Elementary Education Department and the Army Corps of Engineers Cape Cod Canal Field Office for use in the Cape Cod Canal Educational Outreach Program.

The authors and illustrators are Sheila Smith of Natick, Massachusetts and Lynn Townsend of Mendon, Massachusetts. Lynn and Sheila are Elementary Education Majors of the class of 1982 at Bridgewater State College.

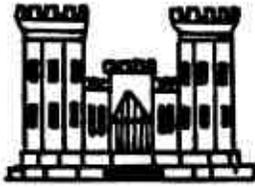


**US Army Corps  
of Engineers**  
New England District

U.S. Army Corps of Engineers  
North Atlantic Division  
New England District  
Cape Cod Canal Field Office







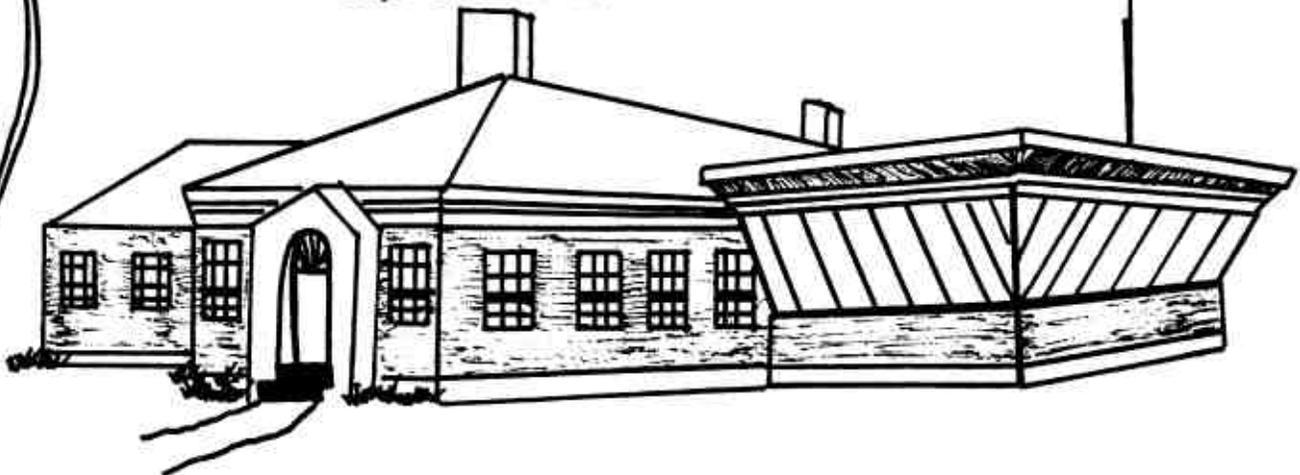
# The U.S. Army Corps of Engineers

Cape Cod Canal is one of the major navigation projects built, maintained and operated by the Corps of Engineers. The District Engineer, New England District, and his representatives supervise the entire operation.

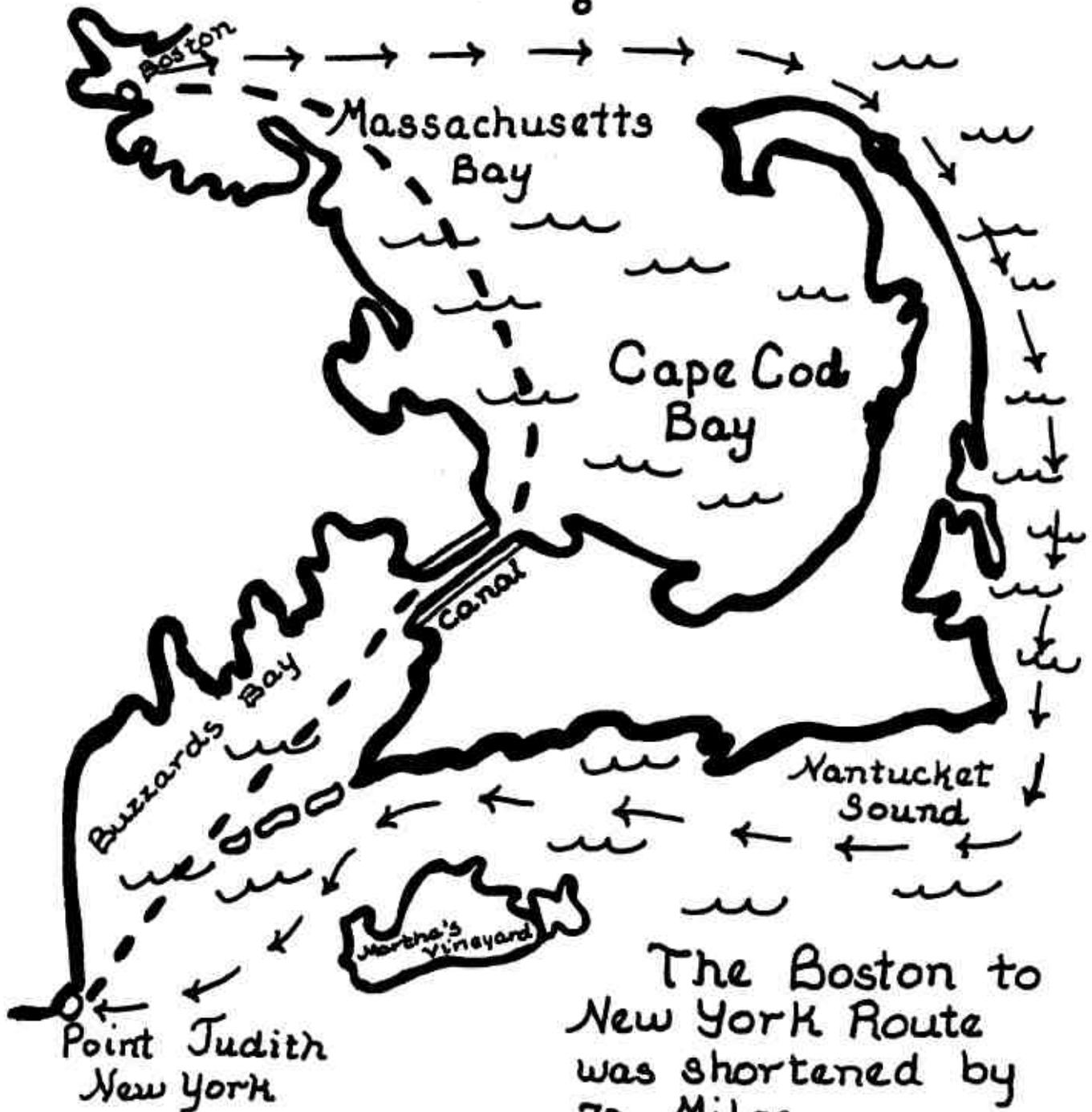
The Corps of Engineers Headquarters for the operation of the canal is located on the north side of the channel in Buzzards Bay. At the Headquarters, there is a wharf for small craft, a boat basin for canal service craft, shops, garages and a marine railway for removal of small craft that require repairs and service.

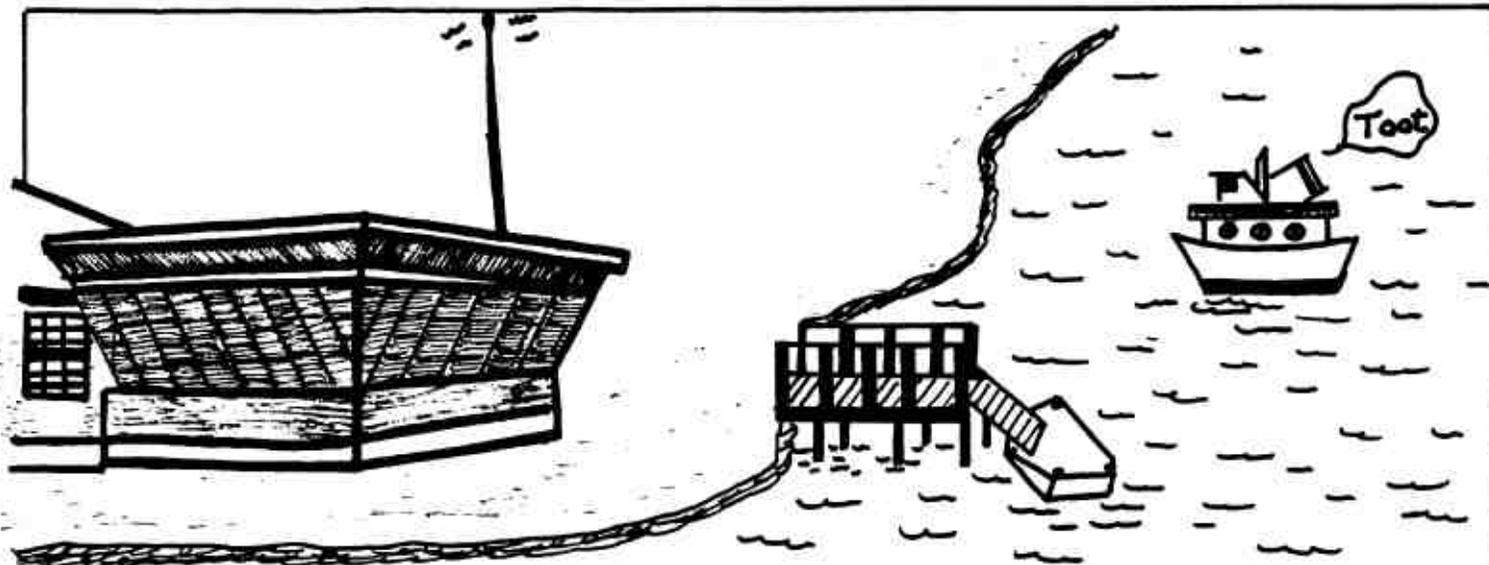
Under the direct supervision of an Engineer in Charge, there are many trained and experienced people who operate and maintain the Cape Cod Canal.

The U.S. Army Corps of Engineers is looking forward to showing you around the Cape Cod Canal.



# Why the Cape Cod Canal?





## TRAFFIC CONTROL

The Cape Cod Canal is open, toll free, for passage by all adequately powered vessels, properly equipped and seaworthy, of sizes consistent with safe navigation as governed by the depth and width, and clearances of the bridges over the Cape Cod Canal.

The Cape Cod Canal saves vessels using this intracoastal route from 65 to 150 miles depending on the routes which otherwise might be used, and more important, permits avoidance of the hazardous route around Cape Cod.

Traffic is continually moving through the Cape Cod Canal, 24 hours a day and 7 days every week.

Traffic is controlled from the Corps of Engineers Headquarters by means of an integrated traffic control system which consists of radar, closed circuit television surveillance, and multi-channel VHF - FM radio communications for the 17.4 mile canal. This system promotes safe and efficient navigation for all the commercial and recreational ships using the Cape Cod Canal.

Army Engineer patrol boats maintain a constant watch along the canal and the channels outside the land cut. By their use it is possible to acquire commercial statistics from each vessel, including its name, destination, cargo classification, and draft. The patrol boats assist smaller boats in distress, and in ship accidents, enforce speed regulations, remove floating debris from the canal and outer channels. These boats are also used in enforcing fishing rules.

At the Buzzards Bay Headquarters are two tug boats which assist deep-draft vessels when they encounter difficulty while passing through the Cape Cod Canal.

“While visiting the Army Corps of Engineers at the Cape Cod Canal, find the names of:”

the Controller: \_\_\_\_\_

a Park Ranger: \_\_\_\_\_

a Tugboat Captain: \_\_\_\_\_

the Chief Engineer: \_\_\_\_\_

an Oiler: \_\_\_\_\_

Deckhands:

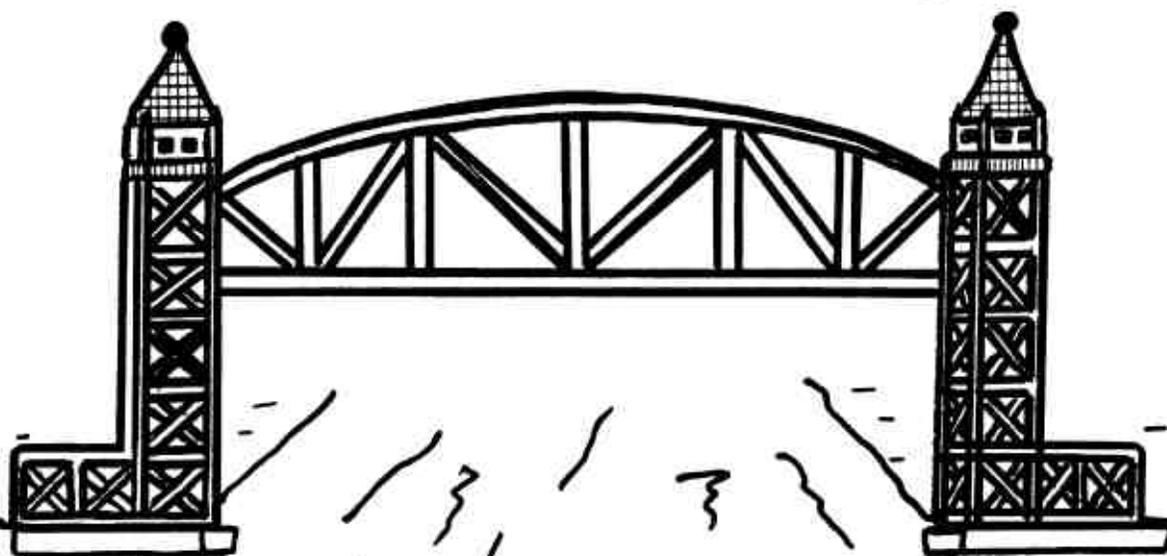
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Maintenance:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

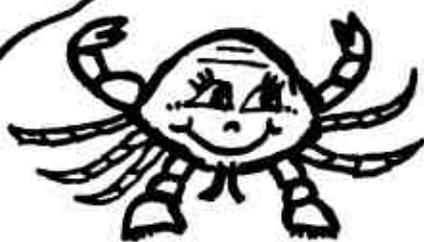


# The Canal Bridges



The 'vertical -lift' railroad bridge in Buzzards Bay has long been a landmark for people traveling to and from Cape Cod. It is the only way trains can carry goods from the mainland to Cape Cod. Years ago the trains also carried passengers over the Canal. Today, transportation planners are talking about making it possible for people to once again take the train from Boston and New York over the Railroad Bridge to the Cape.

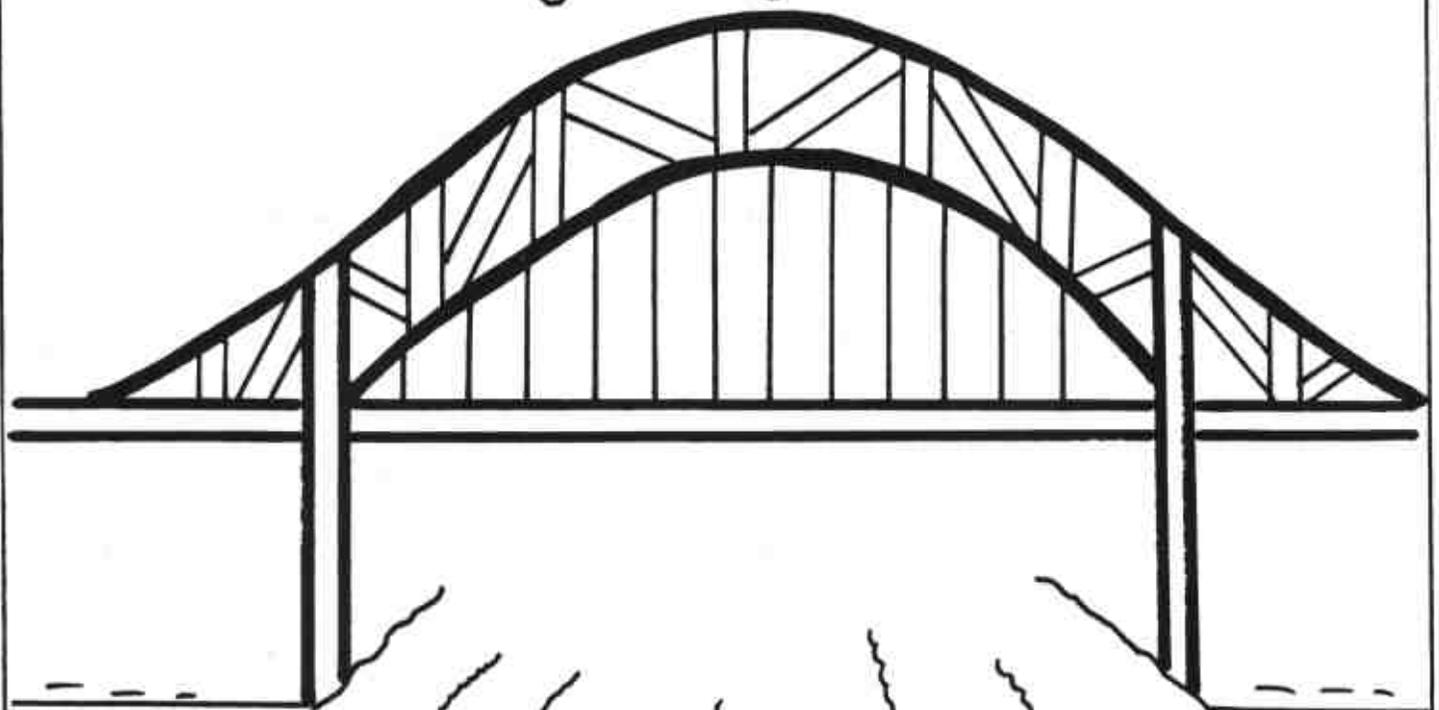
The middle part or 'span' is lowered by the bridge operator until it locks in place just seven feet above the waters of the Canal. This means all ship traffic must stop until the train goes over and the 'span' is raised back up. When the vertical-lift railroad bridge was completed in 1935, it was the largest bridge of its kind in the world.



## CLYDE'S FUN FACTS:

1. How many minutes does it take to raise or lower the bridge?
2. What transportation company operates the bridge?

# The Highway Bridges



There are two highway bridges that cross the canal. One is at Bourne (Bourne Bridge) near the west end of the canal, and one is at Sagamore (Sagamore Bridge) near the east end of the canal.

The Bourne Bridge is 2384 feet long, and the Sagamore is 1408 feet long. The bridges are 135 feet high, so most all large ships fit under the bridges.

The bridges were built during the years 1933-1935. When they were finished, they won the 1935 Class A Award of Merit for "Most Beautiful Steel Bridges" from the American Institute of Steel Construction.



## GLYDE'S FUN FACTS:

3. How much money did the bridges cost to build?



# SAGAMORE BRIDGE

How many words can you find  
in "Sagamore Bridge"?

More

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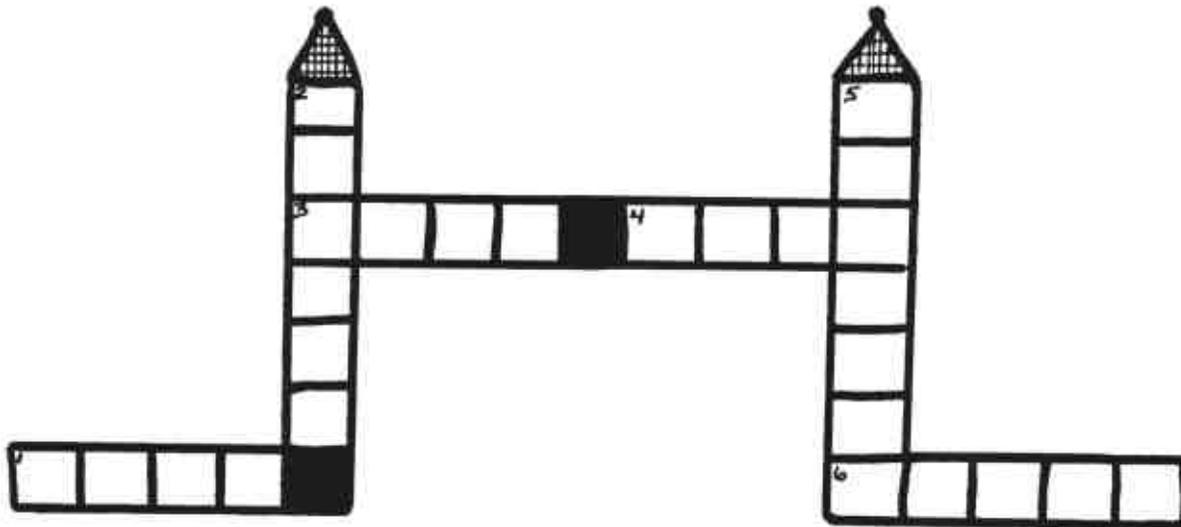
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# CANAL CROSSWORD

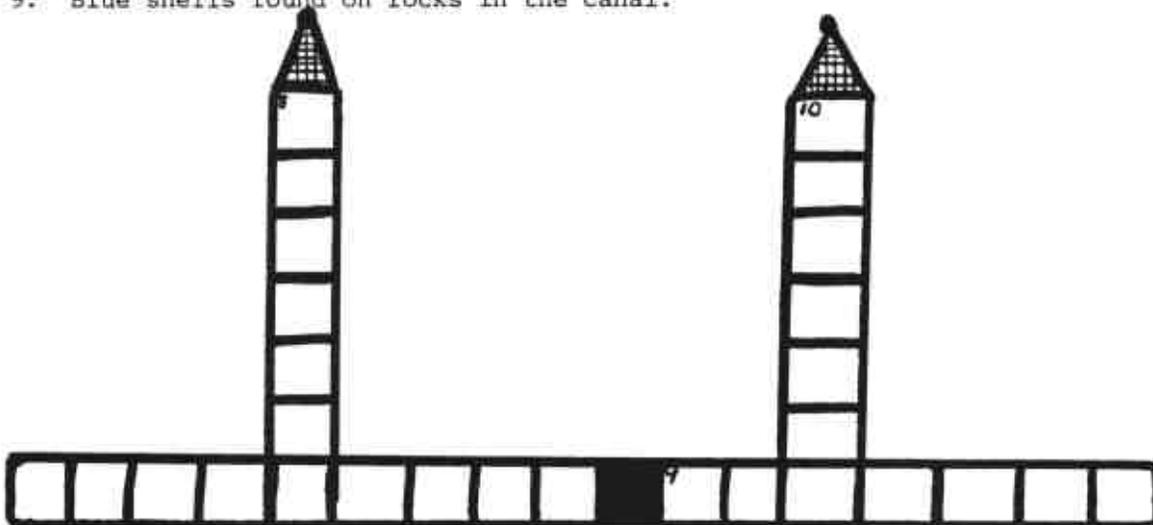


## ACROSS

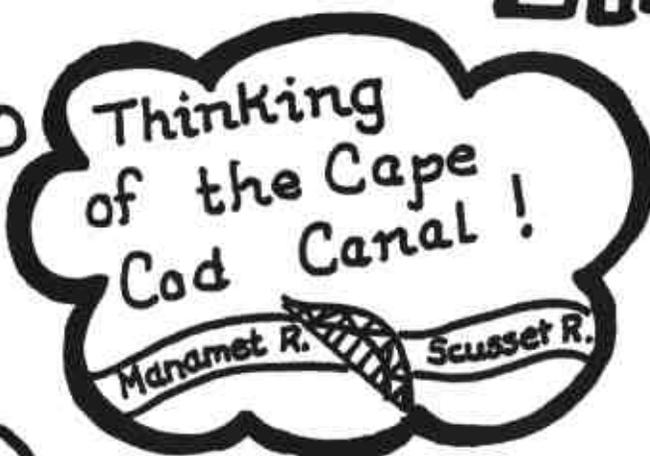
1. This uses the Canal.
3. Protected Canal on Sagamore Hill
4. Catches wind to move ship.
6. Crosses this bridge.
7. The New York Boat was one.
9. Blue shells found on rocks in the canal.

## DOWN

2. First name of man who paid for the canal.
5. Last name of man who paid for the canal.
8. First name of man who planned canal.
10. Last name of man who planned canal.



# THE CANAL'S STORY



## MYLES STANDISH

Thoughts of building the canal, began as early as 1623 after the Pilgrims landed in Plymouth.

Myles Standish had thoughts of connecting the Manamet River to the Scusset River to make a waterway for trading with the Dutch. The trading post, Aptucket, was twenty miles from Plymouth.



## GYPE'S FUN FACTS:

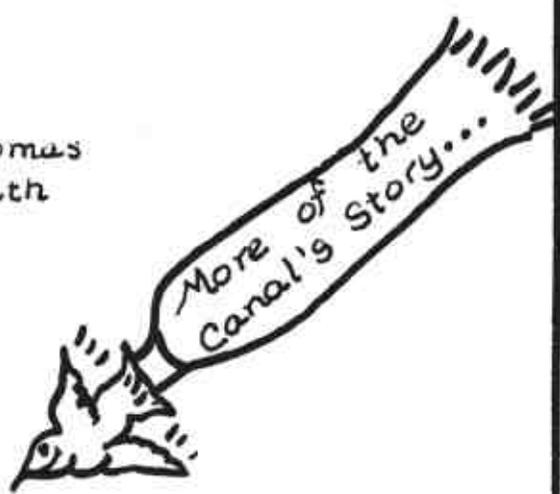
4. What was the Manamet River known as later?



Mr. Thomas Smith

Mr. John Otis

Capt. William Bassett



1627 - 1909

# Years of Hopes and Failures...

The first official action came in 1697, when the Massachusetts General Court ordered that Mr. John Otis of Barnstable, Captain William Bassett and Mr. Thomas Smith of Sandwich view the area. They were to report to the court whether a canal could be made. That order lasted two hundred years.

During these two hundred years, there were many problems that stopped the work on the canal. George Washington asked Thomas Machin, an engineer, to survey the canal in 1776, but the plans were stopped because of the Revolutionary War and the lack of money. Plans were started again, but were stopped because of the War of 1812.

Finally, in 1883 there was an attempt to build the canal. This was called the Lockwood Dredge Project. Frederick Lockwood paid for the project that began in 1883 and ended in 1890. The Lockwood Dredge was a large machine that dug out the canal. It always broke down, but the Lockwood Dredge still dug out 7,000 feet of the canal.





## Still more of the Canal's Story!

In the year, 1907, August Perry Belmont, a famous financier, bought the rights of the land and options of the Cape Cod Canal.

August Belmont had the money and the will to build a canal, but he could not build it alone. So, he hired a chief engineer, William Barclay Parsons. Belmont had the money to build it and Parsons had the "know how" to build a canal. Together they seemed to be a promising team, but still people would not believe that the canal was finally being built.

People began to believe in a canal when dredges, boat machines used for digging, were found all over the canal area. By the end of the summer of 1911, there were 25 vessels working the canal area and 10 were dredges. Although there were many problems in building the canal, the canal opened July 29, 1914.

Belmont owned and operated the Canal for eighteen years. During this time, there were many shipwrecks and boat accidents.





# United States Takes Over! 1928

These problems occurred because of poor navigation of the canal and poor construction of the canal. Belmont charged nine dollars per vessel to travel one way through the canal, which during this time was a large amount of money to have to pay. On December 9, 1924, Belmont died and left behind his crumbling dream, The Cape Cod Canal.

On March 31, 1928, the federal government's Army Corps of Engineers took over the Canal. The Army Corps of Engineers knew the canal needed improvement, mostly a deeper and far wider channel. With the federal government taking over, the two highway bridges were completed along with the railroad bridge by 1935. The canal was made 17.4 miles long from Belmont's canal of 13.0 miles long. The new canal has a depth of 32 feet and a channel width down the isthmus of 480 feet. The Canal required 40 million yards of material removed.

With the United States taking over, better lighting, relocations of roads, mooring basins on either end, and a branch from the main channel to Onset Bay so small crafts could use the Bay for refuge, were some of the many things done to improve the New Canal.

# "New York Boat"

Marjorie Bassett was a resident of the Cape Cod Canal area during the time Belmont owned the Canal. She loved the famous "New York Boat" which traveled the Canal daily. A popular postcard on the Cape carried the poem that Marjorie Bassett wrote.

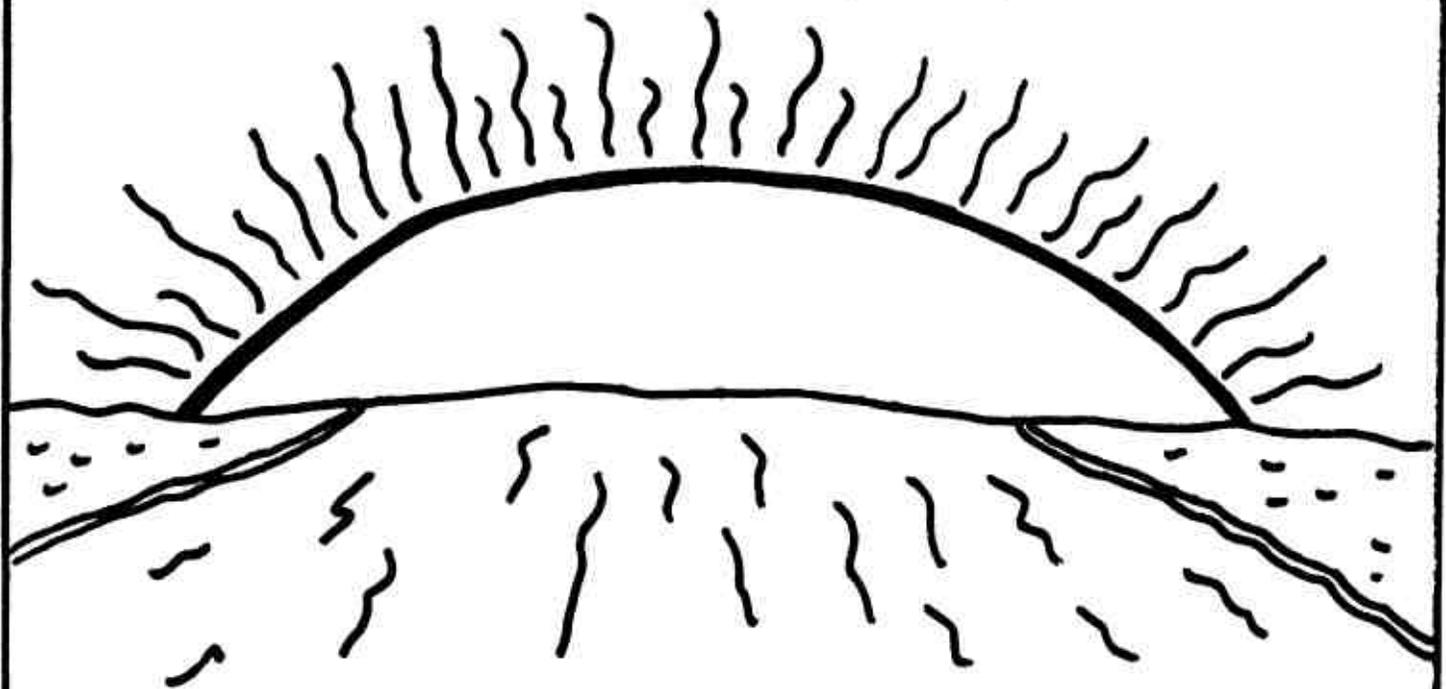
## "The New York Boat"

Have you ever been down by the Cape Cod Canal  
When the New York boat went through?  
Of all the sights I love so well  
That one is ever new.

It's fun to ride along awhile  
Then to stop by the bank to wait.  
It's fun to watch the folks arrive  
Some early and some late.

Now if you've never been there  
To see that boat go by,  
You've missed a sight beyond compare,  
I'm going to tell you why.

At dusk the old Cape Cod Canal  
Takes on a glamorous hue  
And 'tis a glorious spot at which to dwell  
While the New York boat goes through.





# CANAL STORY WORDSEARCH

M	C	A	P	E	C	O	D	S	R	E	O
S	A	T	O	M	M	A	C	H	I	N	R
N	K	N	F	A	D	U	A	L	V	U	N
O	H	T	A	V	I	G	N	W	E	W	M
S	S	A	S	M	Y	U	A	A	R	E	Y
R	I	O	T	G	E	S	L	R	S	R	A
A	D	B	N	L	T	T	E	S	S	A	B
P	N	K	E	D	N	B	A	N	D	M	S
M	A	R	R	R	N	E	D	D	S	E	D
A	T	O	R	E	O	L	N	I	M	R	R
I	S	Y	U	D	T	M	T	E	I	I	A
L	S	W	C	G	S	O	A	S	T	C	Z
L	E	E	N	E	O	N	N	G	H	A	Z
I	L	N	M	A	B	T	R	T	A	N	U
W	Y	E	N	O	M	K	E	O	W	S	B
I	M	E	L	O	C	K	W	O	O	D	H

Can you find:

Manamet  
 Willian Parsons  
 Sagamore  
 Lockwood  
 Money  
 Wars  
 Currents

August Belmont  
 Buzzards Bay  
 Tom Machin  
 Bassett  
 Otis  
 Smith  
 Canal

Dredge  
 Boston  
 New York Boat  
 Myles Standish  
 Rivers  
 American  
 Cape Cod



# Rules of Boating

Every good sailor should know



1. OVERTAKING - PASSING: Boat being passed has the right of way. KEEP CLEAR!
2. MEETING HEAD ON: Keep to the right.
3. CROSSING: Boat on the right has the right-of-way. Slow down and permit him to pass.

## WHISTLE SIGNALS

- One long blast: Warning signal (Coming out of slip)
- One short blast: Pass on my port side.
- Two short blasts: Pass on my starboard.
- Three short blasts: Engines in reverse
- Four or more blasts: DANGER SIGNAL

← Port

Yield right-of-way to boats in your DANGER ZONE!



Starboard →

DANGER ZONE (Dead ahead to 2 points abaft your starboard beam.)

## STORM WARNINGS!



Red Flag  
Small craft  
(winds to 33 knots)



2 Red Flags  
Gale  
(up to 47 knots)



Square Red Flag  
Black Box  
(Storm)



2 Square Red Flags  
Black Box  
(Hurricane)





# Nautical Terms

knot - one knot equals one nautical mile per hour.

nautical mile - 6,080 feet or 1.15 miles

port - left-hand side of a boat or ship.

starboard - right-hand side of a boat or ship.

bow - front of a ship or boat.

fore - towards the bow (front)

aft - towards the stern (back)

keel - backbone of a ship, running full length on underside of ship.

ballast - material used to insure proper ship stability and propulsion; material used includes sand, rock, scrap iron, lead; ballast placed in the hold of a ship.

halyard - rope used to hoist flag or sails.

hawser - mooring or tow rope.

rigging - the particular arrangement and style of sail and masts indicating what kind of vessel it is.

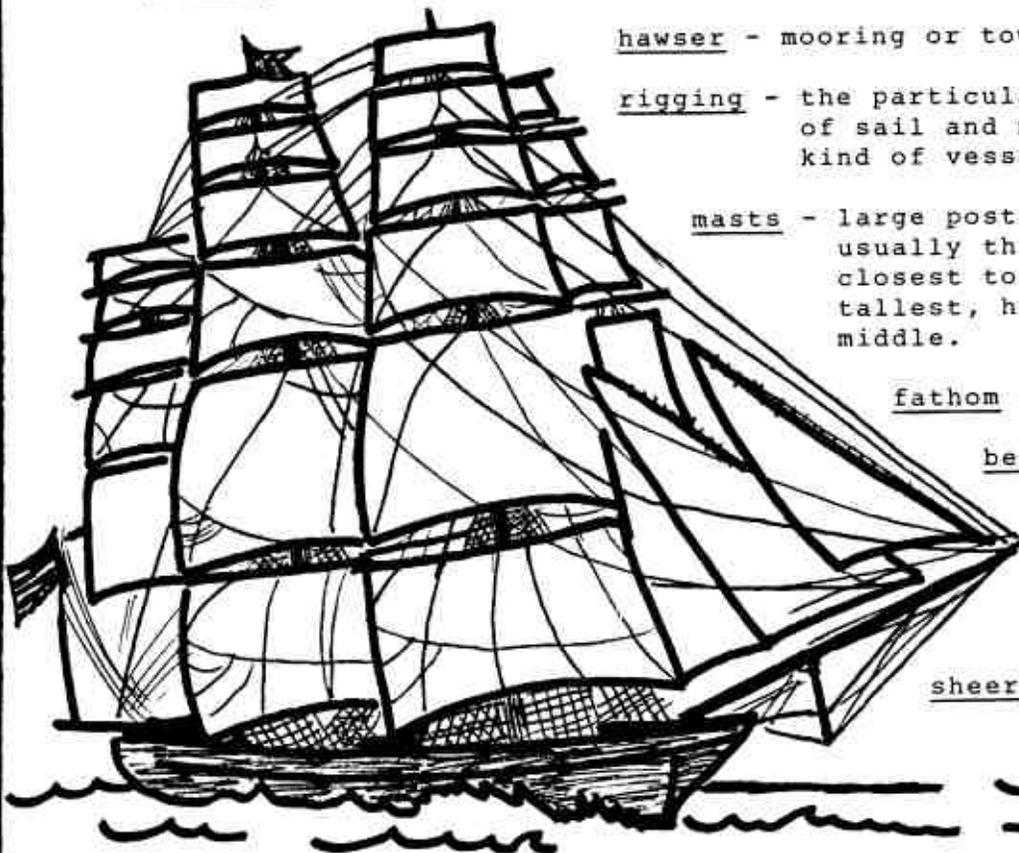
masts - large posts which support sails; usually three, foremast is the closest to the bow; mainmast is the tallest, heaviest mast in the middle.

fathom - six feet of water.

beam - how wide the ship is at its widest point.

shoal - an offshore sand bank less than six fathoms deep

sheer - heading off-course either deliberately to avoid an obstacle or accidentally.

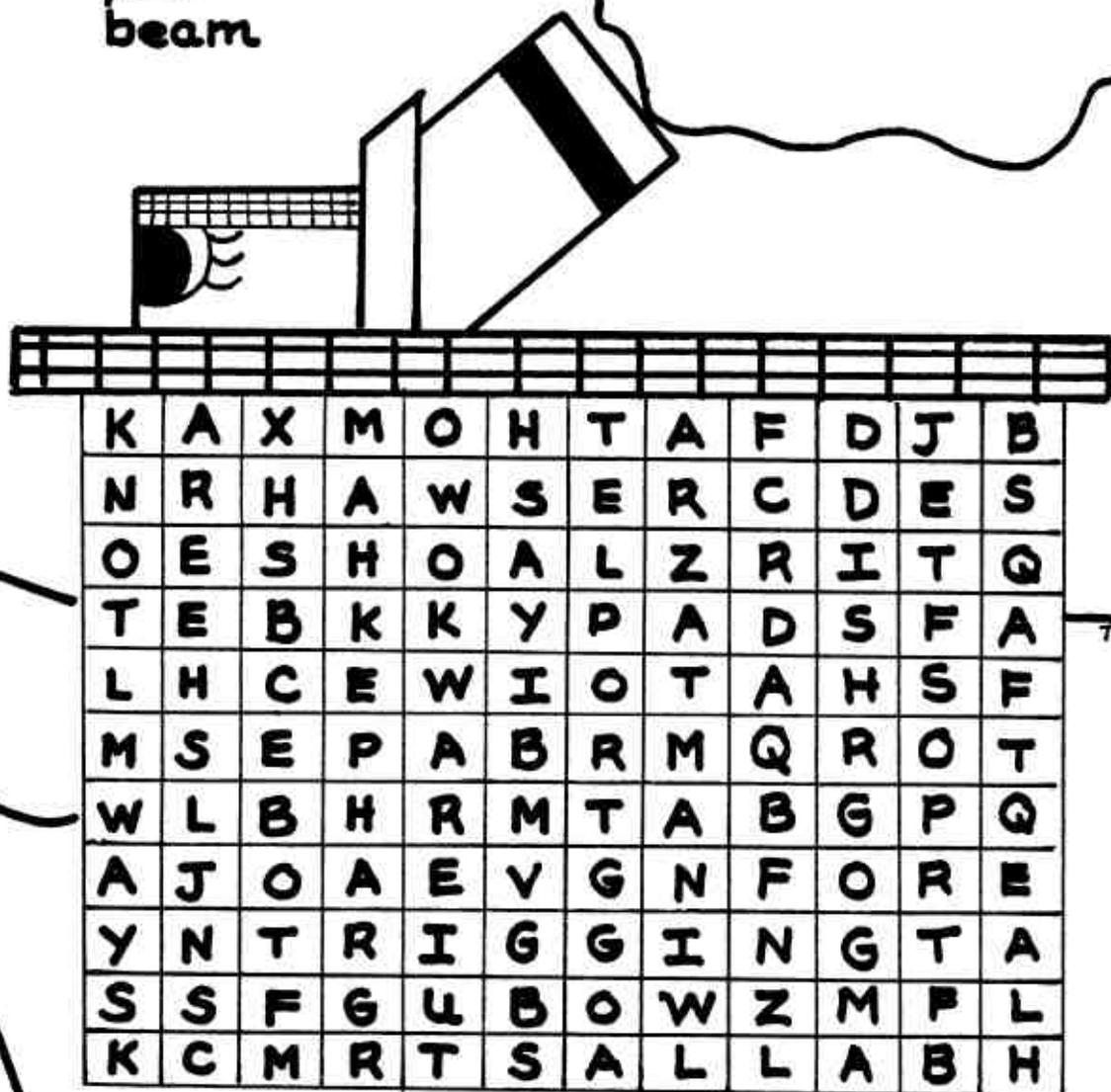


Find the words in the list by looking across, down, diagonally, forwards, and backwards.  
 Circle the words you find!

knot  
 port  
 masts  
 bow  
 fore  
 aft  
 Reel  
 shoal

starboard  
 ballast  
 hawser  
 rigging  
 fathom  
 sheer  
 yaw  
 beam

Tommy Tugboat's  
 Word Search



Tommy

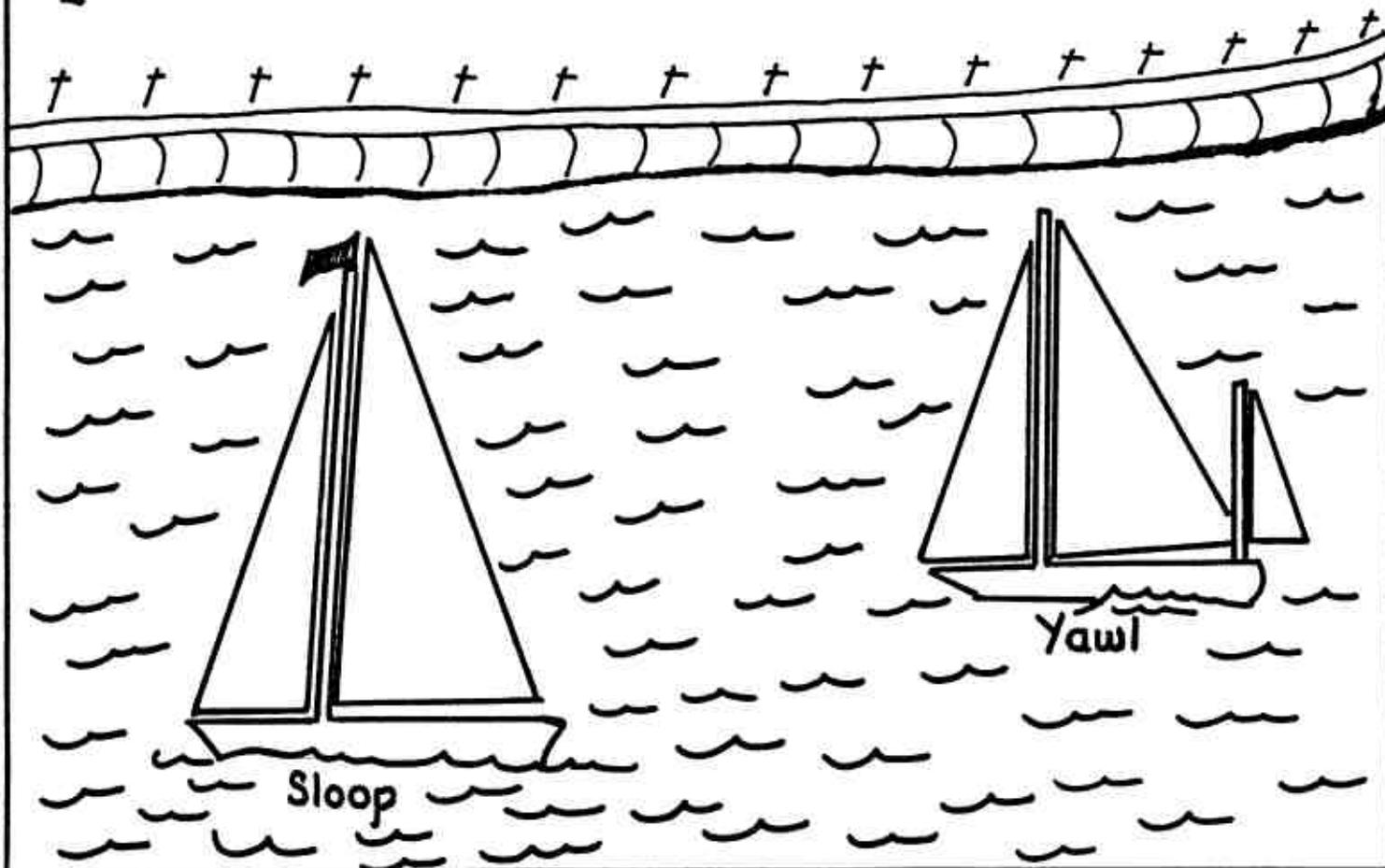
# Ships you might see at the Cape Cod Canal



There are many different types of ships that you might see going through the Cape Cod Canal. Some of the ships that you might see include; huge tankers, tug boats, (they might be helping the tankers) tour boats, patrol boats, and even some tall ships such as Schooners, Ketchs, Yawls and Sloops.



While you are at the Cape Cod Canal see how many different types of ships sail through the canal, and see if you can name what type of ship they are. Some of the types of ships are drawn here to help you name some that you may see.

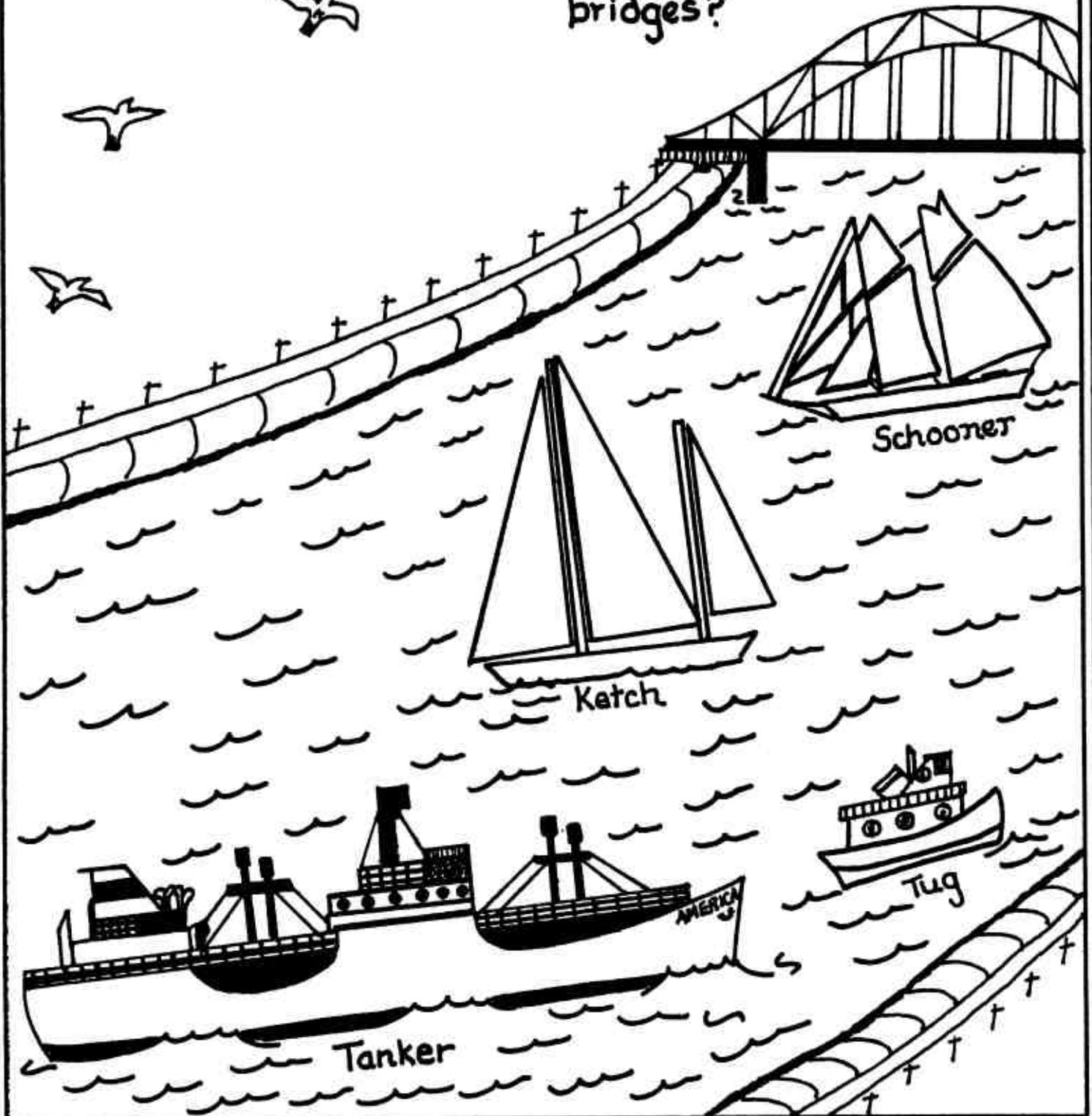




# CLYDE'S FUN FACTS :



5. Could all of the Tall ships  
fit under the canal  
bridges?



# Sea Chanteys

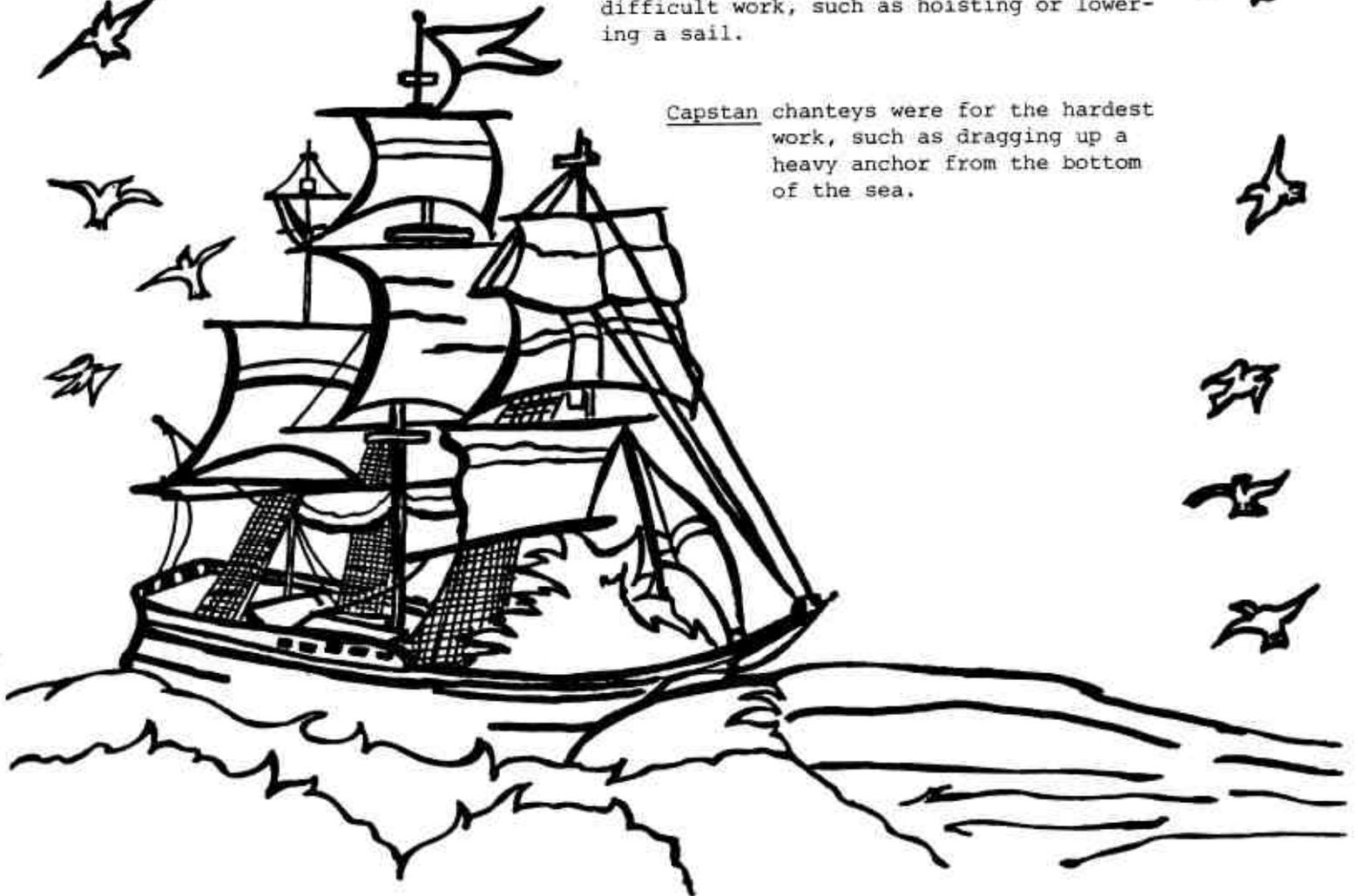
The life of a sailor on the old sailing ships was a hard one. To make the work easier, the sang songs called Sea Chanteys.

Chanteys were used while pulling ropes, lines, or chains. They were used with work in which everyone must move together in a regular rhythm. There were different kinds of chanteys for different kinds of work:

Short Haul chanteys were used for light work, such as pulling a gun across the deck.

Halyard chanteys were for more difficult work, such as hoisting or lowering a sail.

Capstan chanteys were for the hardest work, such as dragging up a heavy anchor from the bottom of the sea.





One of the best known sea chanteys is "Blow The Man Down". This version tells of life as a sailor on the Black Ball Line, the first packet ships, carrying mail and fine goods from England to America in the early 1800's.

CHORUS I'll sing you a song, a good song of the sea.  
And away, hey, Blow The Man Down  
And trust that you'll join in the chorus with me  
Give me some time to blow the man down.

1. It's when a Black Baller's preparing for sea  
And away, hey, Blow The Man Down  
You'd split your sides laughing at the sights you will see,  
Give me some time to blow the man down.
2. With tookers and tailors and soldiers and all  
And away, hey, Blow The Man Down  
That ships out as sailors on board the black ball  
Give me some time to blow the man down.
3. It's when a black baller is clear of the land  
And away, hey, Blow The Man Down  
The bosun then gives us the word of command.  
Give me some time to blow the man down.
4. It's landboard and starboard on the deck you will sprawl  
And away, hey, Blow The Man Down  
For sailor Jack Williams commends the black ball  
Give me some time to blow the man down.



Your class might find a record of Sea Chanteys and learn others, such as "A-Rovin'" or "Shenandoah"

CAPE COD CANAL

1. Oh the Cape Cod Canal is big and wide  
(Heave, Ho, don't you want to go?)  
You can see those boats from either side  
(Heave, Ho, let's all go)

Chorus: Cape Cod, Cape Cod Canal  
Cape Cod, Cape Cod Canal

2. Oh the water's blue and it's pretty too  
(Heave, Ho don't you want to go?)  
See those boats just a coming through  
(Heave, Ho let's all go)

Chorus

3. Oh the bridges stand both big and tall  
(Heave..... H...)  
I sure do hope they never fall  
(Heave.....)

Chorus

4. There's even a bridge that goes up and down  
(Heave.....)  
Just so the trains can come to town  
(Heave.....)

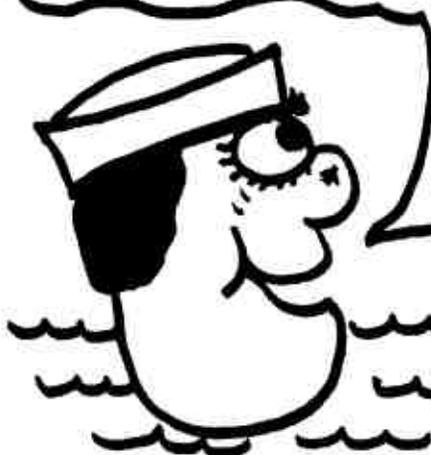
Chorus

5. The whole world comes right of these shores  
(Heave.....)  
I'm proud this canal is mine and yours  
(Heave.....)

Chorus

6. From the bridges you can see the great sun set  
The prettiest you've ever seen yet.

Chorus....



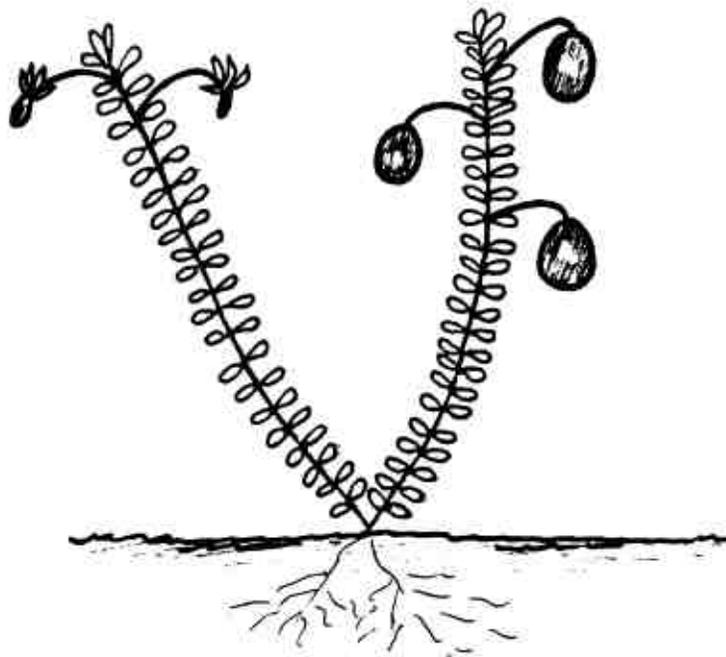
This is a Chantey  
that a fourth grade class  
of the Teaticket School of  
Falmouth wrote for the Canal.





## CLYDE'S FUN FACTS :

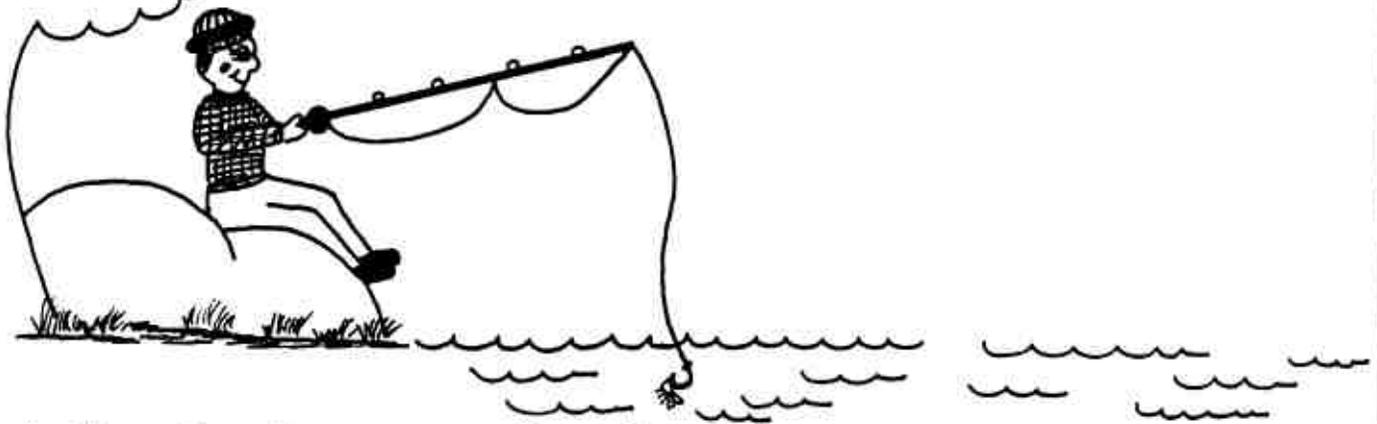
What kinds of berries grow at the canal?



**ALL KINDS!**

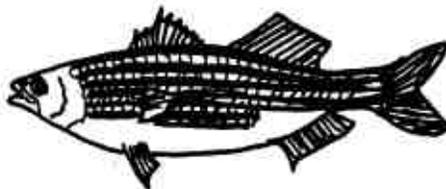
Among the delicious wild berries found at the Cape Cod Canal you'll find blackberries, strawberries, black raspberries, low-bush and high-bush blueberries, wild black cherries, wild grapes, beach plum, and the popular fruit pictured above, the Cranberry!

The Wompanoag Indians who lived in this area used cranberries and other types of berries to make pemmican, a mixture of meat, fat, and berries.



What kind of fish live in the  
Cape Cod Canal?

1) Striped Bass (*Morone saxatilis*)



Striped bass are one of the most important game fishes in America. They adapt to a wide variety of conditions and probably have the most extended geographic range of any American food and game fish.

Striped bass are mainly inshore fish found in the surf, along the estuary shore lines, shallow bays and rocky headlands. They are anadromous, coming into fresh and brackish water to spawn. There are many groups of striped bass which complete their whole life cycle in fresh water.

Adult striped bass vary in size from 12 inches in length to 50 inches in length and longer. They weigh from one pound to 50 - 70 pounds with several 125 pound individuals being the largest recorded fish. The back of the adult is dark olive green to blue, paling on the sides to a whitish belly. There are 7-8 close set, sooty stripes running along the upper side.

The Indians and the colonists used the bass as a food fish. But today there are not enough around to support a commercial fishery.

## 2) Mackerel (*Scomber scombrus*)



This small (one pound) fish is subject to wild fluctuations in abundance, being present in schools miles long one year, and then almost absent the next. They feed on pelagic Crustacea and their larvae, small fish and pelagic fish eggs- even their own. They are eaten by the striped bass, bluefish and other carnivorous fish and marine mammals.

## 3) Pollack (*Pollachius virens*)

A relative of the cod, pollack are good table and sports fish. As adults they average 4 -15 pounds and can be found at different water depths. They feed on pelagic crustaceans and small fish and eat great quantities of small herring, cod, and mackerel.

## 4) Bluefish (*Pomatomus saltatrix*)

The blue fish is considered to be one of the most ferocious and bloodthirsty fishes of the ocean. In the last 300 years, it has been subject to wide fluctuations in abundance in the Cape area. The larger ones average 10 -15 pounds in weight. The presence or absence of blues affects other fisheries because they drive away the other sought after fish, especially mackerel.



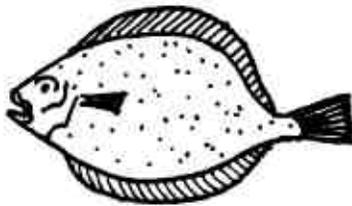
5) Cod (*Gadus callarias*)



Cod are probably the most favorite food of New England. The cod makes its home along the ocean floor. It averages 6 -12 pounds in weight and eats mollusks, squid, and various small fish.

Historically, cod provided the primary commercial fishery of the colonists. The cod is a winter spawner.

6) Yellowtail flounder (*Limanda ferrudinea*)



This right handed flatfish lives on sandy and mixed sand and mud bottoms. Averaging about one pound, it eats small crustaceans, small shellfish and worms. This fish makes up a large part of the fillet of "sole" sold in fish markets.

7) Tautog (*Tautoga onitis*)

This ungainly looking fish provides good sport fishing and good eating besides. It averages 2-4 pounds in weight and eats mollusks, being especially fond of mussels and crabs. In the Canal land cut, it frequents rocky ledges and is so local in distribution that a few feet can make the difference between catching one and going home empty handed!

# FISH SCRAMBLE

Unscramble these words to find out the names of some of the fish found in the canal!



eieaflw = alewife

odc = \_\_\_\_\_

guaott = \_\_\_\_\_

griehrn = \_\_\_\_\_

sleibfhu = \_\_\_\_\_

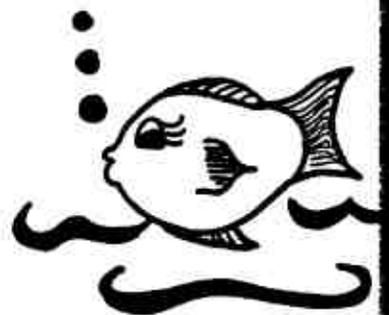
kloplac = \_\_\_\_\_

rakemcel = \_\_\_\_\_

Name some fish that you have seen!

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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\_\_\_\_\_

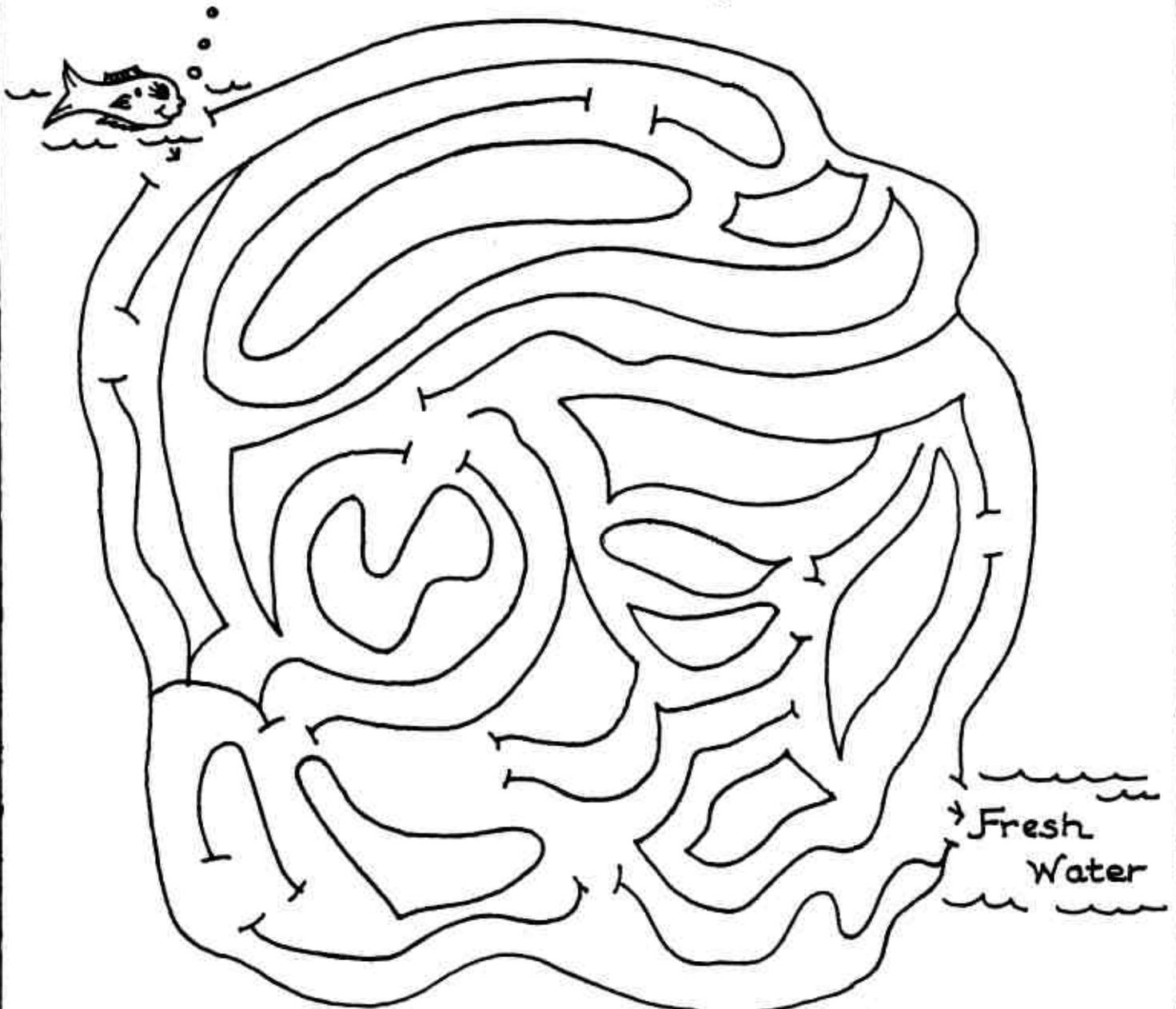


# The Alewife (Herring)

The Alewife is a small silvery fish with a large dark blotch found just behind the gill. There is a row of sharp, saw-toothed scales on the edge of the belly giving it the commonly used name of sawbelly. This fish is usually 10-12 inches long and 1/2 pound in weight. Alewives are a member of the herring family Cupeidae, but their cousins the true herring differ in that they spend their entire lives at sea. Despite this alewives are locally referred to as herring.

The Alewife is an anadromous fish spending most of its life in salt-water and coming into fresh water to spawn. Here at Cape Cod Canal, the Alewife migrate to the Herring Run to reach their fresh water spawning ponds in April and May.

Help the Alewife find its way to the fresh water!

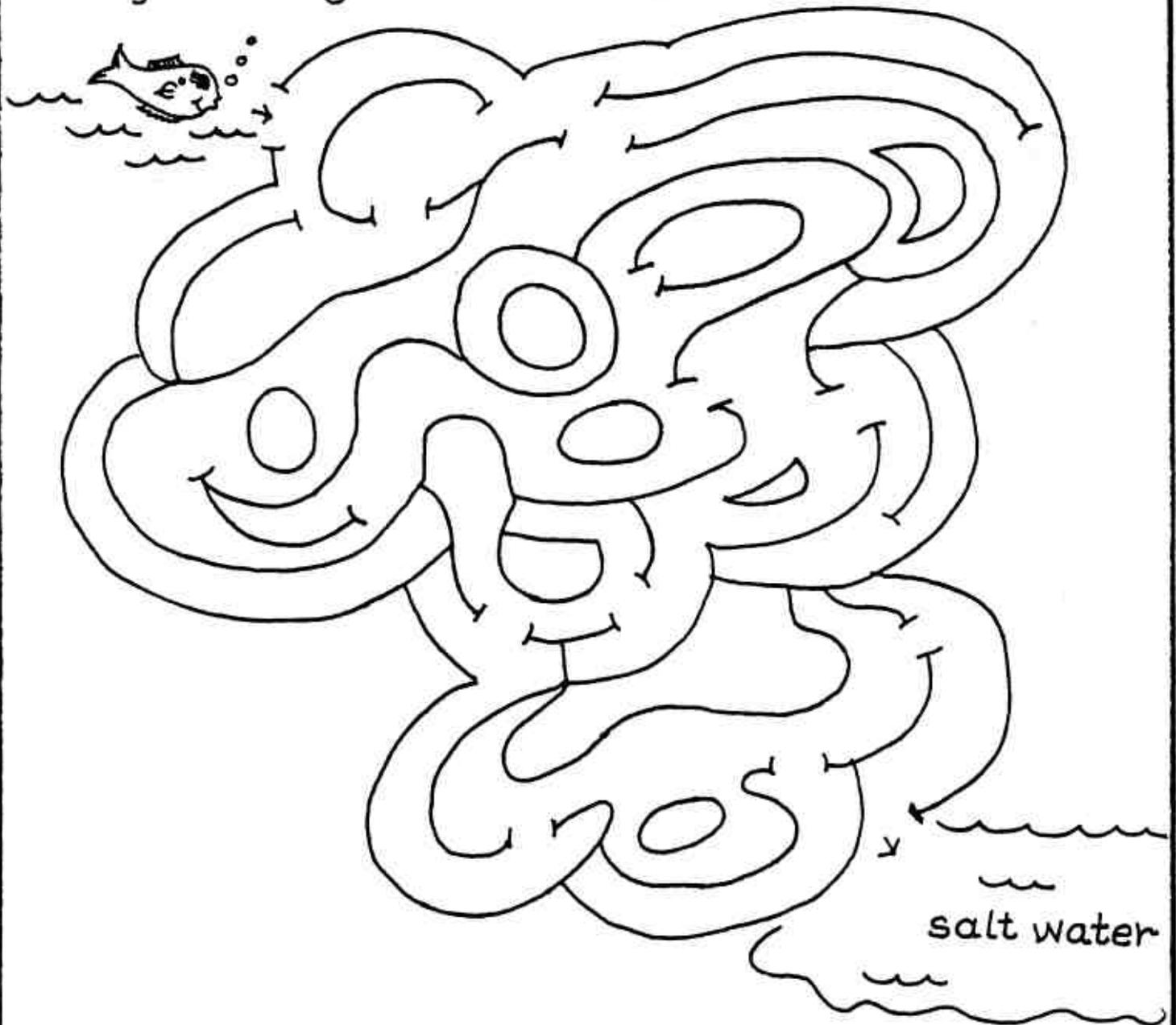


# The Alewife (Herring)

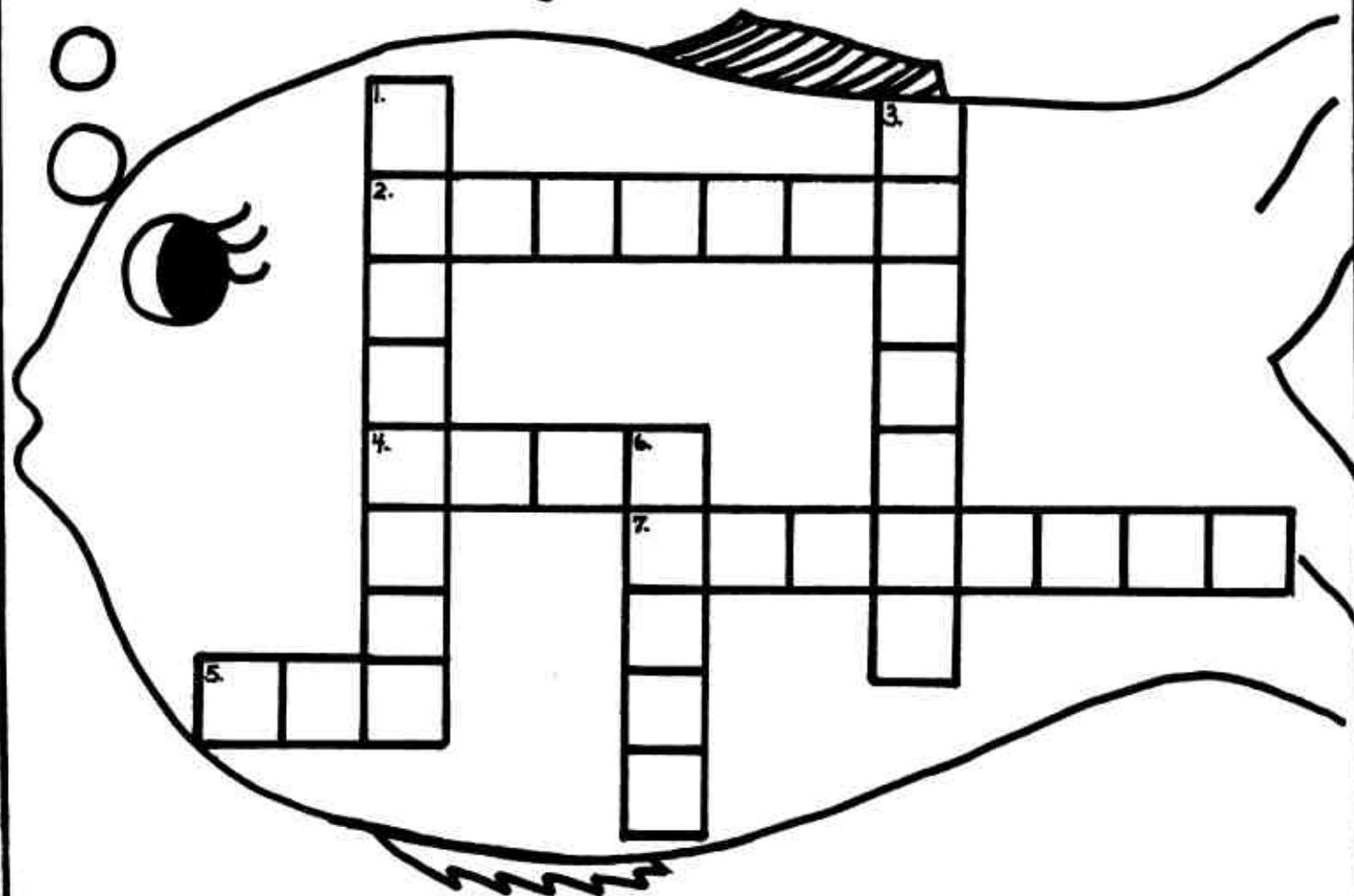
Once the spawning grounds are reached, each female deposits 60 - 100,000 eggs which are then fertilized by the male. The eggs sink to the bottom where they stick to underwater stones and vegetation.

Hatching takes place in about one week. The young (called Fry) remain in fresh water for some time, undertaking the journey downstream from mid summer when they are between 2 - 6 inches in length. The adults return to saltwater after they spawn with fry of different sizes. While at sea, alewives form schools of thousands. Alewives feed mostly on plankton. Pond suckers eat the eggs and freshwater game fish, eels, frogs and fish eating birds eat the fry.

Help the fry find its way to the salt water!



# Alewife Crossword



## ACROSS

2. The true name of the small silvery fish with a large dark blotch behind the gill.
4. \_\_\_\_\_ eat the little baby alewives.
5. The little baby alewives are called \_\_\_\_\_.
7. Alewives feed mostly on \_\_\_\_\_.

## DOWN

1. Because an alewife has saw-toothed scales on its belly it is sometimes called a \_\_\_\_\_.
3. Alewives are locally referred to as \_\_\_\_\_.
6. The Alewife migrates to freshwater to \_\_\_\_\_.



# GLYDE'S FUN FACTS ANSWERS

1. How many minutes does it take to raise or lower the bridge?  
(2  $\frac{1}{2}$  minutes)

2. What transportation company operates the bridge?  
(Conrail)

3. How much money did the bridges cost to build?  
(3,584,653.00)

4. What was the Manamet River known as later?  
(Monument River)

5. Could all of the Tall Ships fit under the canal bridges?

(No, some of the Tall Ships' main masts were too tall to fit under the bridges.)



# Answer Sheets:

## 1. SAGAMORE BRIDGE:

(Here are some of the words, but there are still more!)

ridge

made

said

game

soar

more

admire

roam

grease

rose

same

ride

side

bride

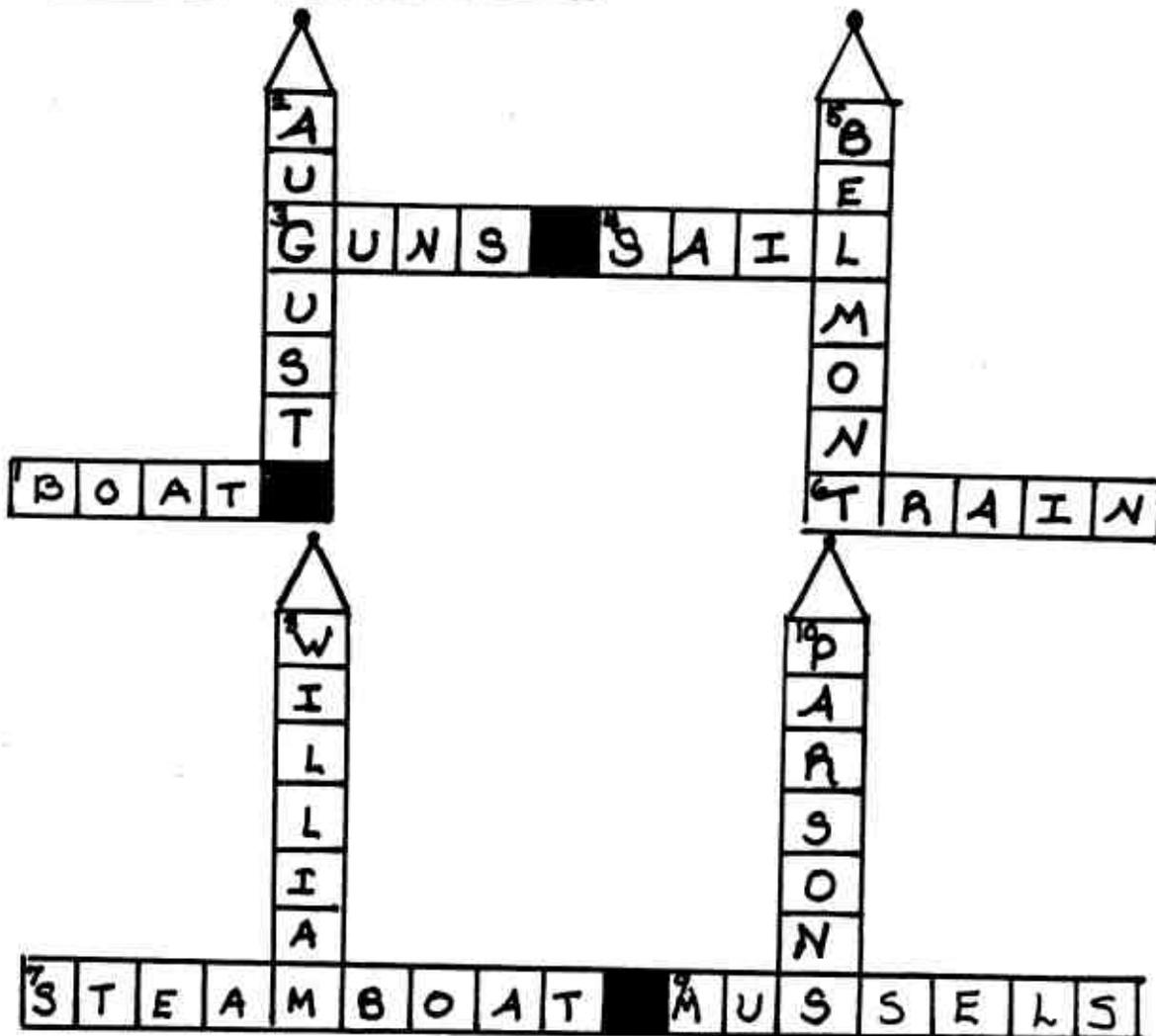
die

rare

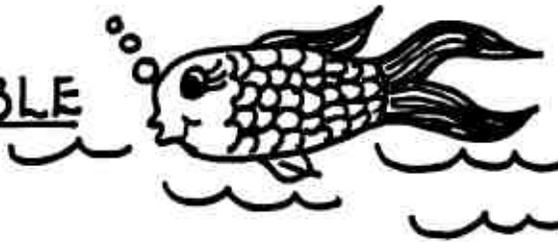
bag

brim

## 2. CANAL CROSSWORD:

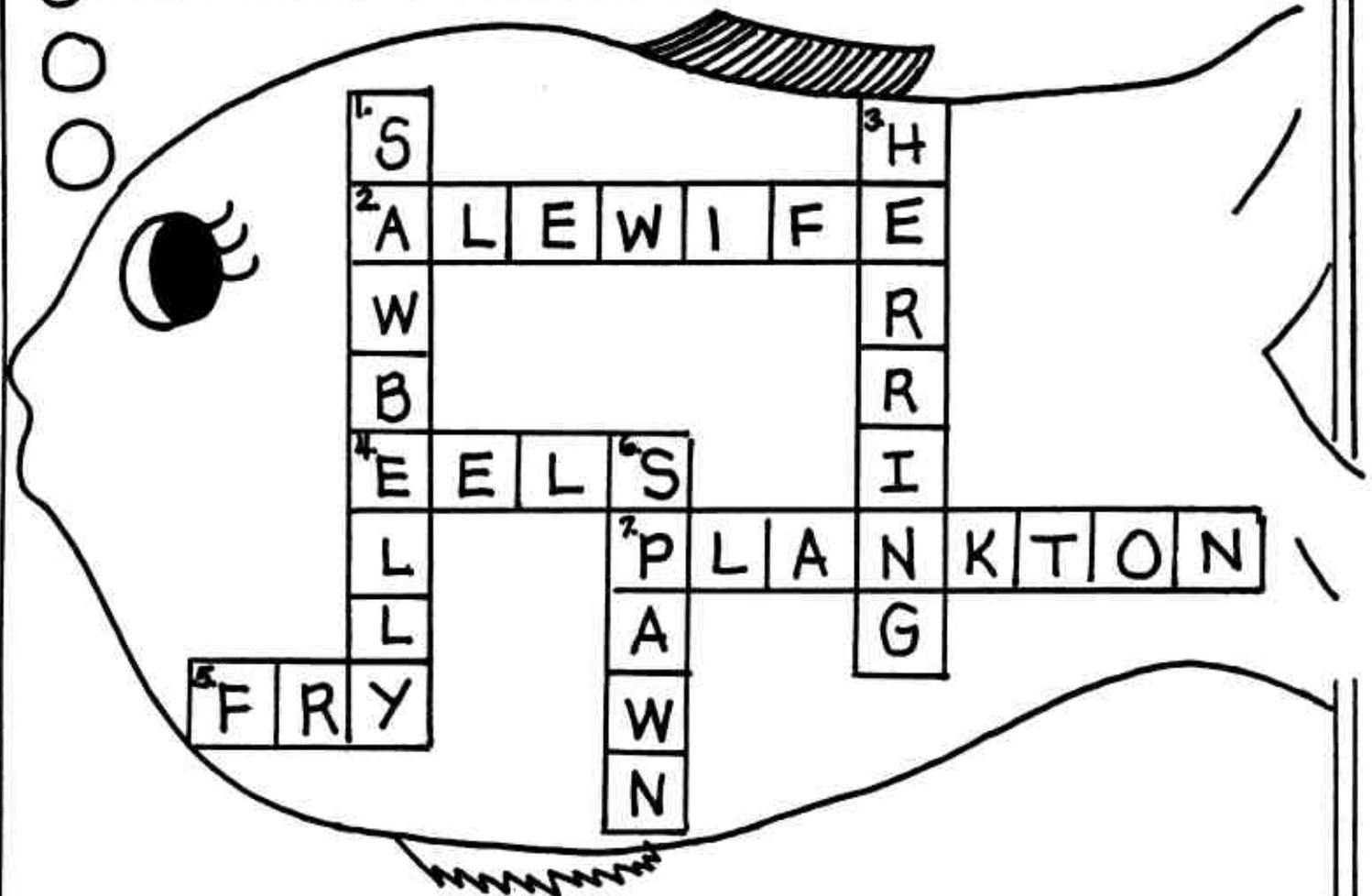


### 3. FISH SCRAMBLE



eieafiw = alewife  
 odc = cod  
 guaott = tautog  
 griehrn = herring  
 sleibfhu = bluefish  
 kloplac = pollack  
 rakemcel = mackerel

### 4. ALEWIFE CROSSWORD:





**US Army Corps  
of Engineers**  
New England District

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