OYSTER INDUSTRY OF CHESAPEAKE BAY, SOUTH ATLANTIC, AND GULF OF MEXICO

By Charles F. Lee* and F. Bruce Sanford**

The Eastern oyster, known to biologists as Crassostrea virginica, once grew and thrived all the way from Maine to Texas. Huge piles of opened shells are evidence that oysters were plentiful in the area now known as New England and were relished by the Indians long before the Pilgrims landed.

Production of Raw Shucked Meats of Eastern Oysters

Growing Area	1960		1958		1950	
	1,000 Lbs.	Percent of Total	1,000 Lbs.	Percent of Total	1,000 Lbs.	Percent of Total
New England States (R.I., Conn., Mass.)	500	1.0	276	0.5	4,727	6.9
Middle Atlantic (N.Y., N.J., Del.)	1,154	2.4	4,296	7.8	18,170	26.7
Chesapeake Bay: (Md., Va.)	27,111	55.3	37,530	68.0	29,953	43.9
South Atlantic (N.C., S.C., Ga.)	4,119	8.4	2,651	4.8	3,034	4.5
Gulf (West Fla., Ala., Miss., La., Tex.)	16,098	32.9	10,408	18.9	12,292	18.0
Total	48,982	100	55,161	100	68,176	100

Reference: Fishery Statistics of the United States for 1950, 1958, and 1960. E. A. Power, Chief, Branch of Statistics, Bureau of Commercial Fisheries.

As recently as 1950, Rhode Island and Connecticut produced almost 5 million pounds of oyster meats, amounting to 7 percent of the total production (see table). For that same year the Middle Atlantic States of New York, New Jersey, and Delaware produced over 18 million pounds of shucked oysters, equal to 27 percent of the total, compared to 5 percent for the South Atlantic and 18 percent for the Gulf States. Chesapeake Bay produced 44 percent.

CHANGES

During the past decade, the fortunes of many of the oyster-producing areas have changed dramatically, and unfortunately, for the worse. Changing biological and ecological factors have usually combined to effect this widespread reduction in the oyster harvest. In some regions the growth of large waterfront

Fig. 1 - Most oysters are harvested with medium-size power dredge boats, though in Maryland, because of a State law, dredgers must still rely on sail power. Some dredge boats are very neat and trim.

Fig. 2 - Large plants employ larger dredge boats.

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communities and industries has overrun formerly valuable oyster-growing areas. Of greater importance are the multitude of biological enemies. Starfish, drills, mudworms, boring sponge, large predators such as drumfish and crabs, and, worst of all, several microscopic organisms have weakened or killed uncounted millions of oysters of all ages.

Fig. 3 - This plant has a dock conveyor system by means of which eight large dredge boats can be unloaded at one time.

Fig. 4 - Shown in the foreground is a rotary washer for the shellstock.

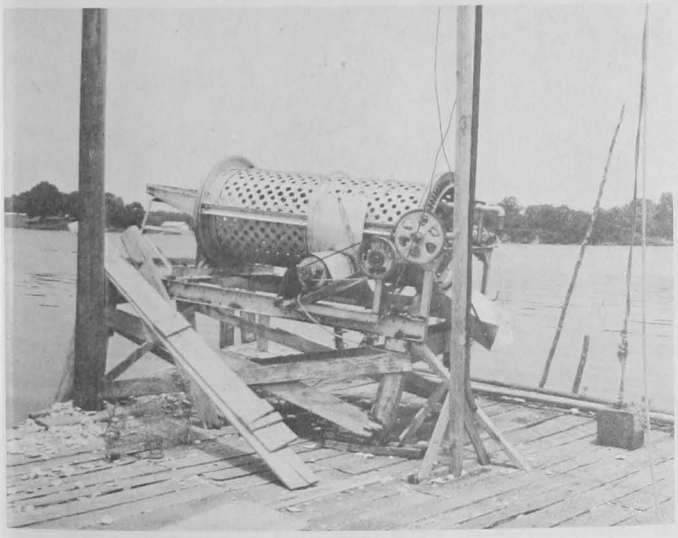


Fig. 5 - If a shellstock washer is used, much of the mud and debris can be removed before the shellstock is carried into the plant.

Fig. 6 - Portable conveyors are often used to move shellstock from boat to storage area.

Adverse ecological conditions have eliminated millions more. Hurricanes and lesser coastal storms, for example, have covered and destroyed hundreds of acres of marketable oysters, and less dramatic but almost as extensive damage especially in the Southern States, has resulted when the runoff following heavy rains has made the waters over the oyster beds

too fresh for oyster survival. Silting is another hazard, sometimes resulting from heavy run-off, and in some areas as a side effect of dredging operations.

Thus, the industry, particularly that of the Central and North Atlantic Regions, has suffered a continued decline in the harvest of oysters and the production of shucked oysters. In 1958, the last year for which complete records are available, New England produced only 0.5 percent and the Middle Atlantic 8 percent of the total quantity of shucked oysters. The most recent data available, for 1960, show that the production in the Middle Atlantic states was only 2.4 percent. In most areas, surviving oysters are so sparsely distributed that it is no longer economical to attempt their harvest. Indirectly, this may result in the development of a resistant stock and recovery of the oyster fishery.

Fig. 7 - This plant uses a hand truck and wire baskets to carry shellstock from storage room to shuckers' benches.

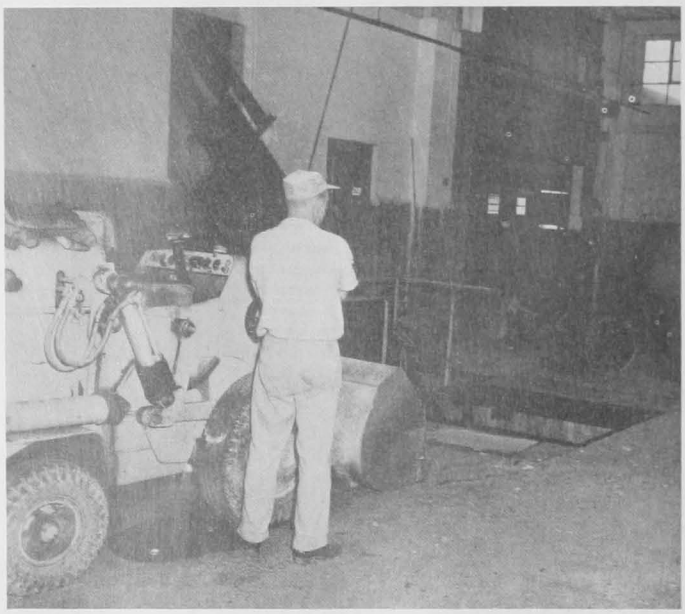


Fig. 9 - This plant uses a tractor to move shellstock into chutes feeding to the shucking room.

Fig. 8 - Floors in storage areas or plants are made of concrete.

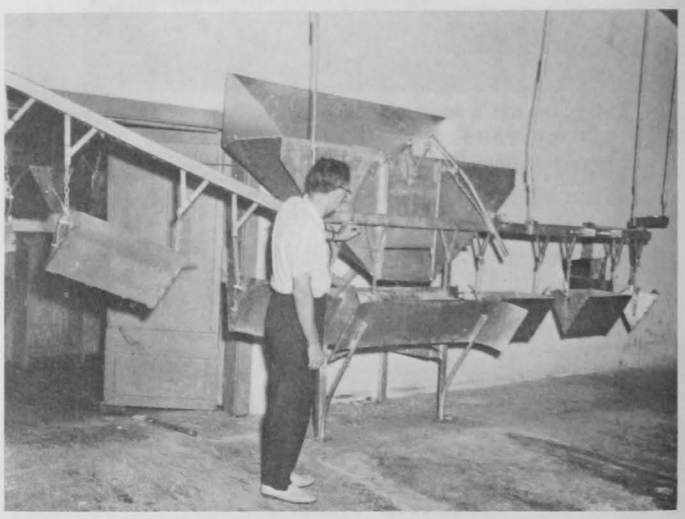


Fig. 10 - This filling hopper and the V-shaped "cars," which ride an endless track, make a conveyor system that was especially designed for maximum flexibility in moving the shellstock to the shuckers.

These drastic losses in production in the North have made the Chesapeake Bay, and more especially the South Atlantic and Gulf the principal source of supply of our "Eastern" oyster. As can be seen in the table, the oyster production for 1960 for those regions not only represents a greater proportion of the remaining production but the actual level of production has been raised to new high levels. The percentage of the total production coming from those two regions increased from 24 percent in 1958 to an unprecedented 41 percent in 1960.

Fig. 11 - The small steel anvil in the shucking block is used to crack the thin edge or "bill" of the oyster.

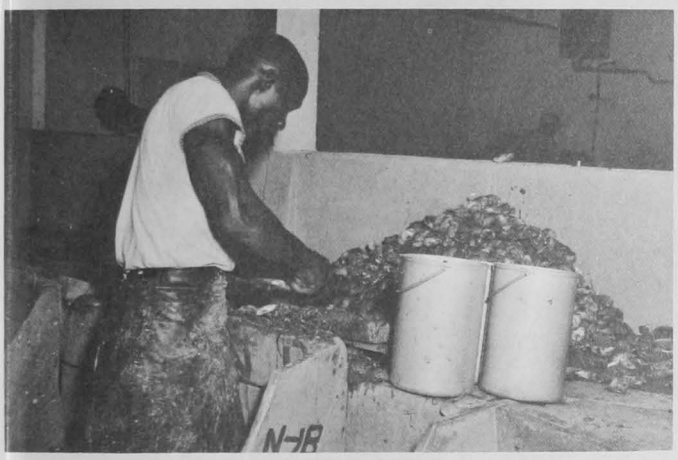


Fig. 13 - Science has yet to perfect a machine for opening raw oysters. The first step in shucking an oyster is to force the knife between the edges of the shell. The upper muscle is then cut loose.

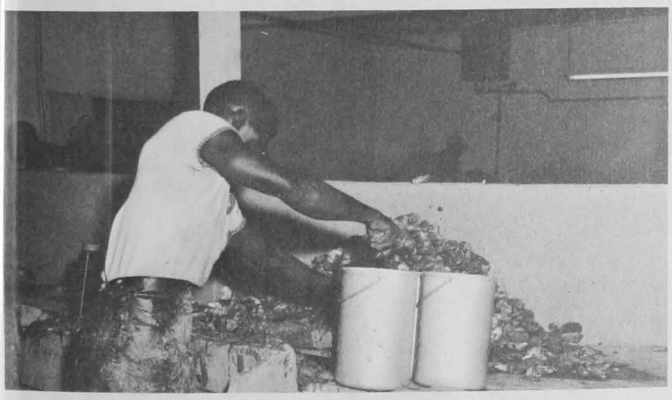


Fig. 15 - Another stroke of the knife cuts the muscle loose from the bottom shell, and the shucker then flips the meat into the shucking pot. In most Chesapeake Bay plants, each shucker has 2 or 3 pots for different sizes, and he does all grading for size.

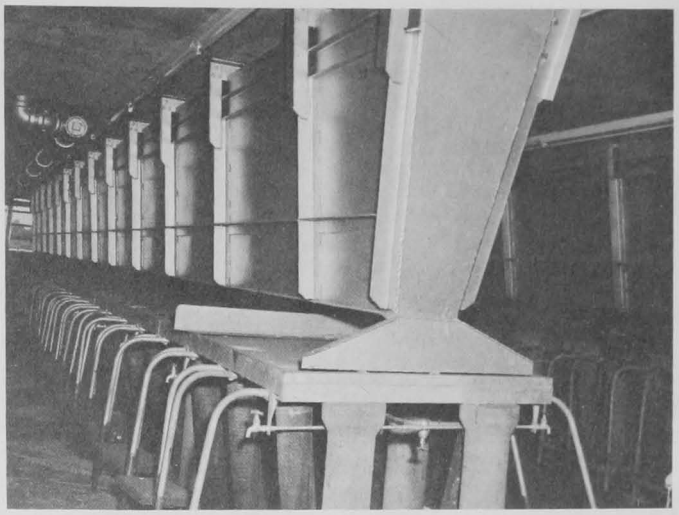


Fig. 12 - These shucking benches have overhead bins. Large rubber pipes under the bench carry empty shell to a basement conveyor system.

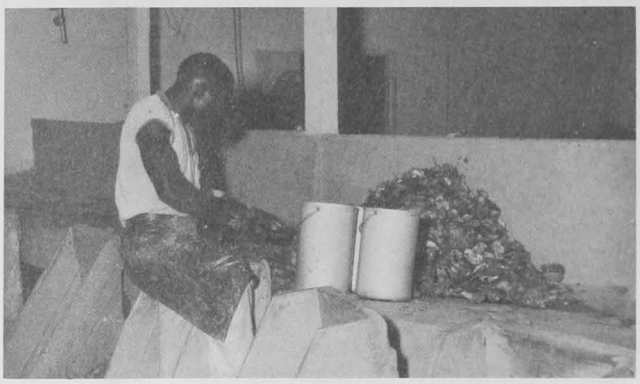


Fig. 14 - The upper shell now is wedged off by a twist of the knife.

Fig. 16 - In some areas, shell oysters are brought to the shucking plants in bags. Shuckers may be paid by the number of bags shucked rather than by the volume of shucked oysters--hence the compartmented benches.

Fig. 17 - Pail of shucked oysters is taken to the delivery window of the washing-packing room.

Fig. 19 - Chesapeake Bay plants use blowers to clean the shucked oysters. In this plant, blowers are mounted high enough so that they discharge through the open gate-valve directly onto the packing skimmer. Note the slotted collar to retain oysters during the overflow rinse period.

Fig. 21 - Oysters are bailed from the low-mounted blower tanks in this installation. Tanks may hold 20 to 40 gallons of oysters.

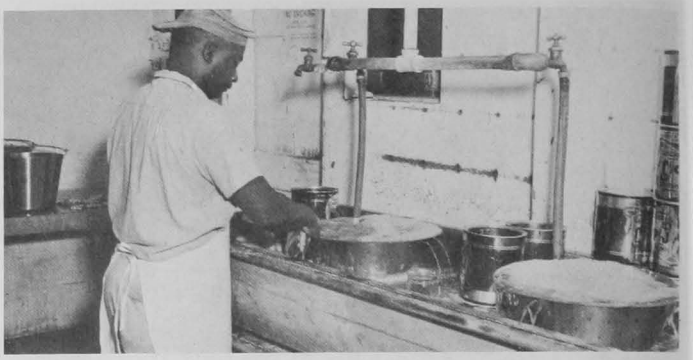


Fig. 18 - In many Gulf Coast plants, oysters are washed, 1 or 2 gallons at a time, in a dishpan with flowing water. The washing period is usually about 3 to 4 minutes.

Fig. 20 - Shown here is another high-mounted blower installation. These two medium-size tanks would handle oysters from 20 to 30 shuckers. Small plants employing up to 15 shuckers often have only one blower.

Fig. 22 - One worker empties the tank while the "skimmerman" fills a 5-gallon measure. Oysters are held in the 5-gallon cans (foreground) until they can be packed into smaller units. Often this repacking will be done in a large central plant.

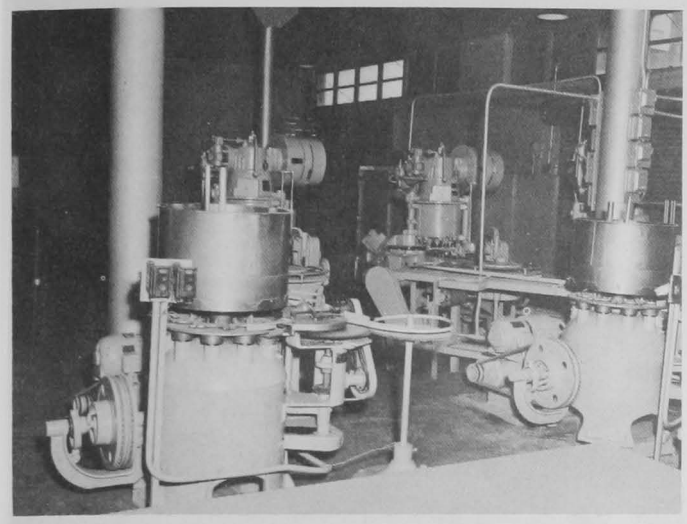


Fig. 23 - These are automatic filling machines for pint, 12-, or 10-ounce cans. Ten gallons or more of oysters are emptied into the top tank, and they finish up in hermetically-sealed small units.

Fig. 25 - A mechanically vibrated packing skimmer may also be used.

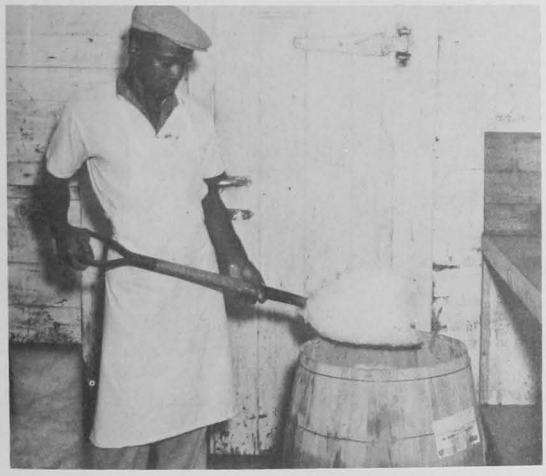


Fig. 27 - Cans are thoroughly iced before being shipped. A number of plants now have their own flake-ice machines to assure a plentiful supply.

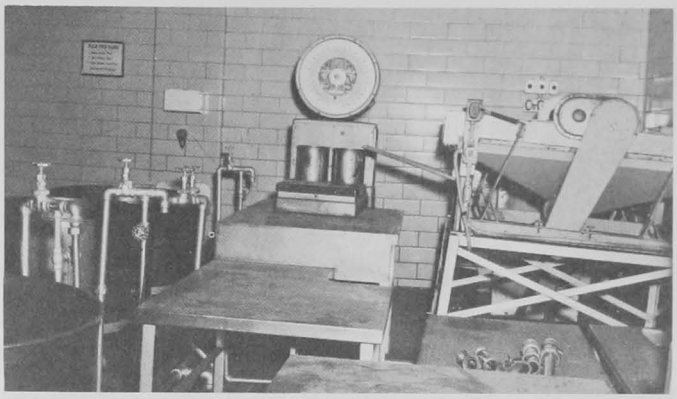


Fig. 24 - This plant uses a power-driven vibrating delivery skimmer and weighs the drained oysters instead of measuring the volume.

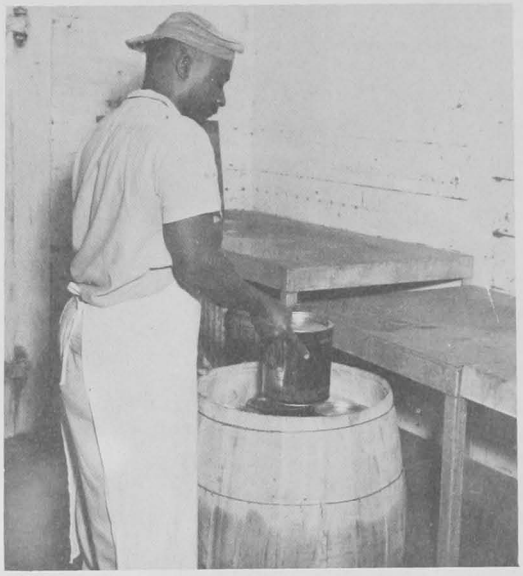


Fig. 26 - Plant operators ship their cans of oysters in wooden barrels or in fiber boxes. Gallons or retail-size units of a pint or less are the sizes of containers used both in the South and the East.

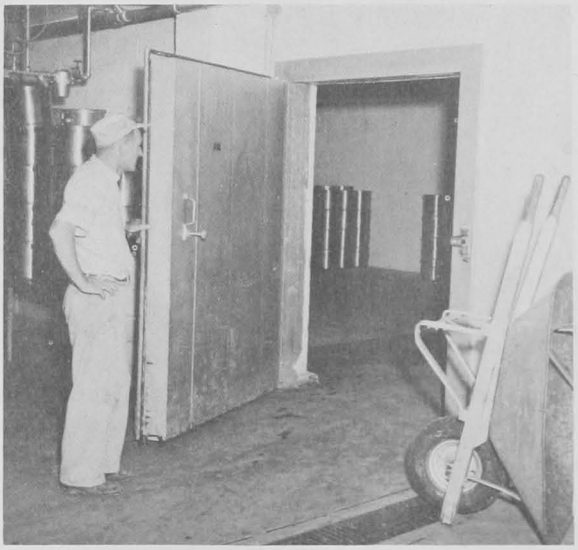


Fig. 28 - Many plants have large cold rooms for holding shucked oysters until they are shipped.

Fig. 29 - Some oysters are frozen in small cans. In this method of packing, the weight of oysters in each can must be checked on the scales because cans cannot be completely filled, owing to the expansion of the product when frozen.

Fig. 31 - Space is left between units to permit circulation of the freezing air blast.

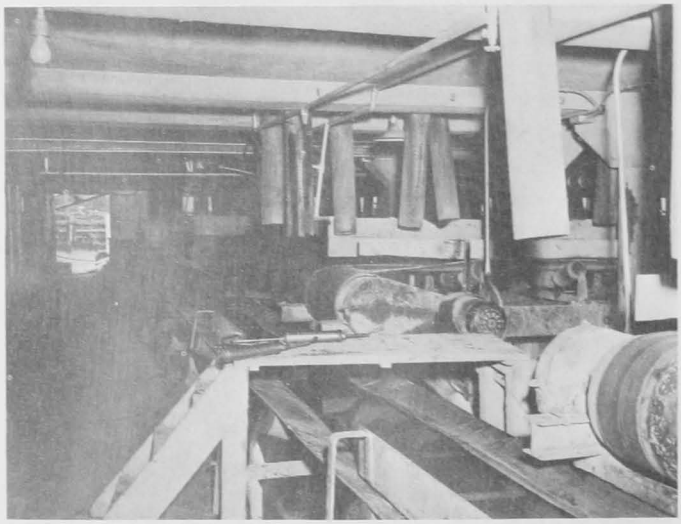


Fig. 33 - This plant uses a complex system of conveyors to collect the shell discharged through the pipes from the benches and to move the shell to the storage piles.

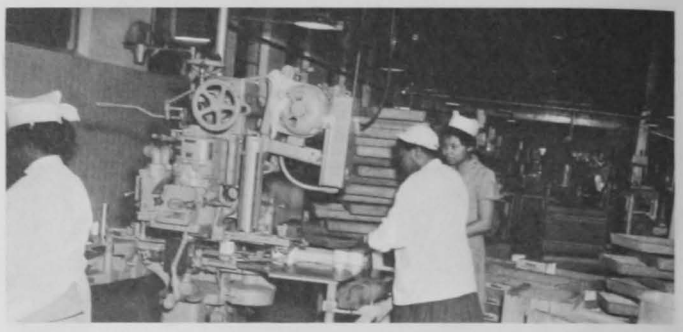


Fig. 30 - The sealed cans are packed into metal trays for freezing.

Fig. 32 - Large volumes of empty shell accumulate from the shucking operation. In some plants, the shell is moved by wheelbarrow to the shell pile.

Fig. 34 - During the summer, the huge piles of shell accumulated during the "R" months are put back onto the seed beds to serve as "cultch" for the young oyster spat. The crane is used to move the shell to a barge.

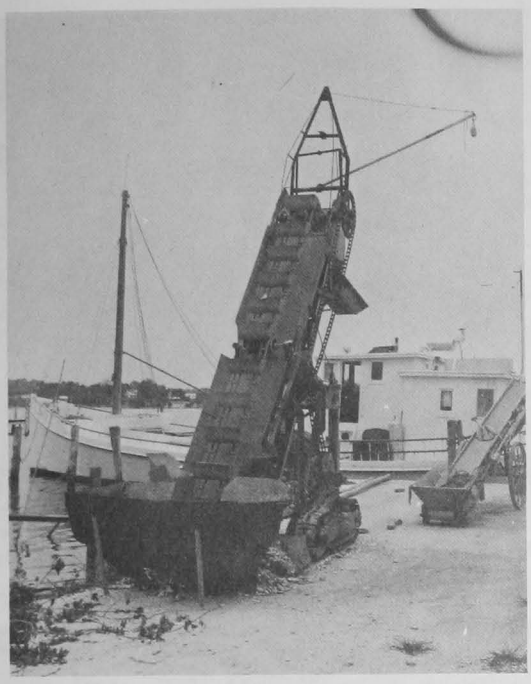


Fig. 35 - This self-powered conveyor-loader is also used to load shell into barges or trucks.

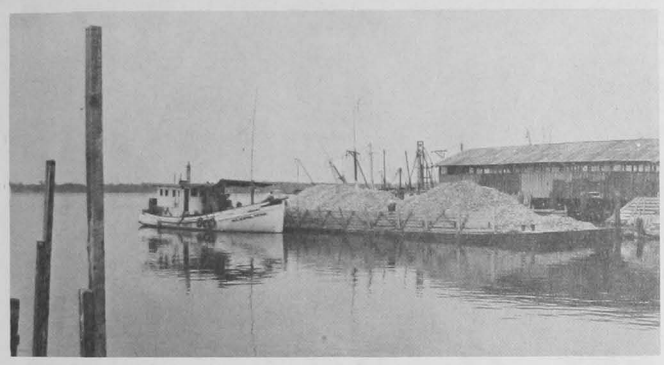


Fig. 37 - In some states, the conservation department buys shell to "plant" on and improve public growing areas. Here the Uranus, Mississippi Marine Conservation Commission Patrol Vessel, is tied alongside a barge load of shell intended for this purpose.

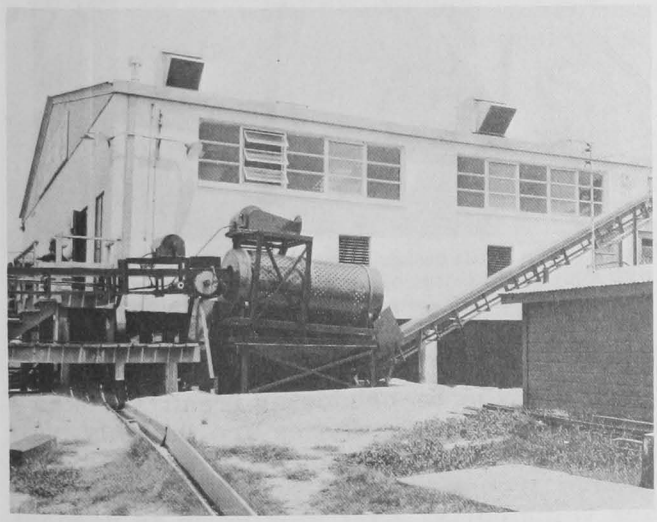


Fig. 39 - Canning oysters is an important industry in the South. Canneries start operations in the Spring when the yield per bushel of oysters is at its seasonal high. The shellstock is washed to keep mud and debris from the cookers.

Fig. 36 - The barge shown here is used to carry the shell to the seed-growing areas.

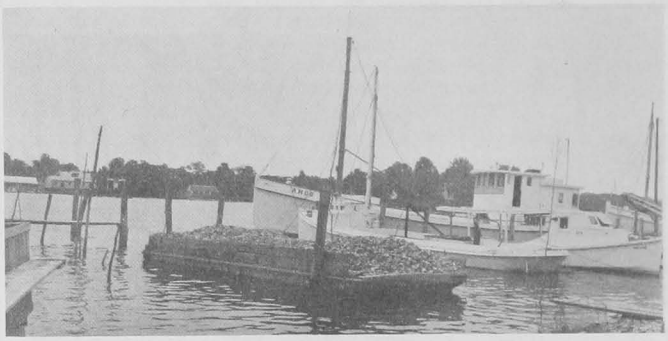


Fig. 38 - After the oyster "spat" (pin-head-size oysters) set on the clean shell, they are left to grow a year. They then are usually taken up during the summer and moved to areas where conditions are better for fast growth. This small barge load of 1-year-old or "seed" oysters is on its way to the growing beds.

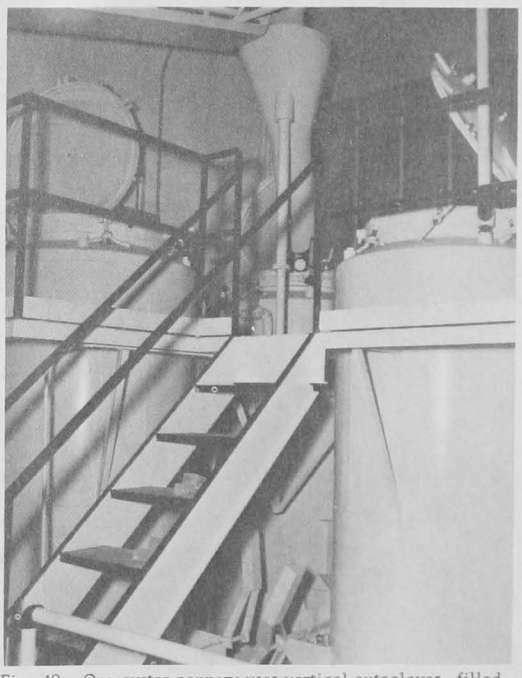


Fig. 40 - One oyster cannery uses vertical autoclaves, filled from overhead conveyors with the raw shellstock, for cooking the oysters.

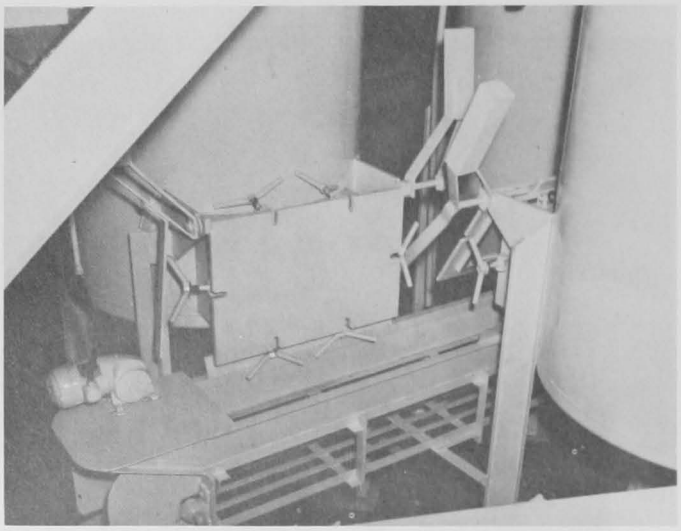


Fig. 41 - When the cook is completed, the bottom gate is unclamped, and the shellstock is discharged to a second conveyor. Conveyor belts have been removed during off-season painting and maintenance operations.

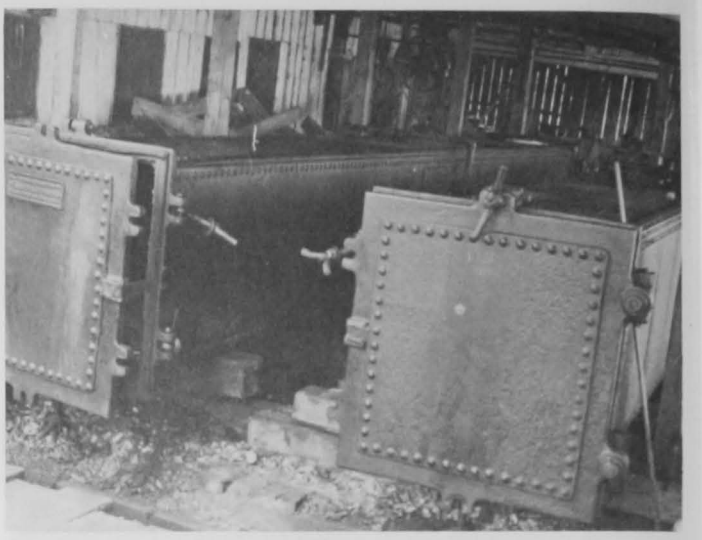


Fig. 42 - Most of the oyster canneries use low-pressure horizontal retorts for steaming the shell oysters.

Fig. 43 - Metal-slot cars hold the shellstock during steaming. On the left is a specially designed shellstock washer with mesh belt removed.

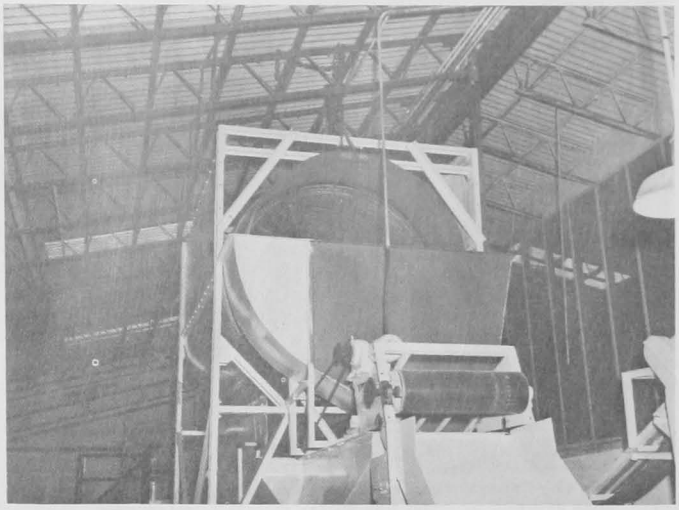


Fig. 45 - The shell passes through to a discharge conveyor (belt removed) and is carried out to the shell pile.

Fig. 44 - Almost all canneries now have replaced hand labor with some modification of the mechanical shucker shown here. The steamed shellstock is tumbled in this rotating cylinder. The meats are shaken loose and fall through the slots into the tank below.

In addition to producing fresh-shucked oysters, the Southern States are the only producers of canned Eastern oysters. In 1958, 29 plants processed nearly 270,000 standard cases valued at $3.7 million, down 46 percent in quantity and 47 percent in value compared to the pack of 1950, but still economically important.

VAST ENTERPRISE

Statistics, however, cannot convey a real picture of the vast enterprise required to bring oysters to the consumer. It is an industry of tremendous variety and of human as well as pictorial interest. Oyster plants range in size from a small family operation in the marshland with 3 to 4 shuckers to huge city plants employing a hundred times that many. Equipment ranges from the shovel and wheelbarrow for moving the live oysters in the shell (or shellstock as it is commonly known to the industry) and empty shell, to completely mechanized handling from boat to shucker and shucker to shell pile. Washing equipment may be one stainless steel dishpan or eight large blowers, each of which may clean 40 gallons of oysters at a time. Yet that one vital human link--the shucker--still holds his own.

The series of photographs gives a cross-section of the fishery. Typical Gulf Coast plants are included as well as several plants in the Chesapeake Bay region.

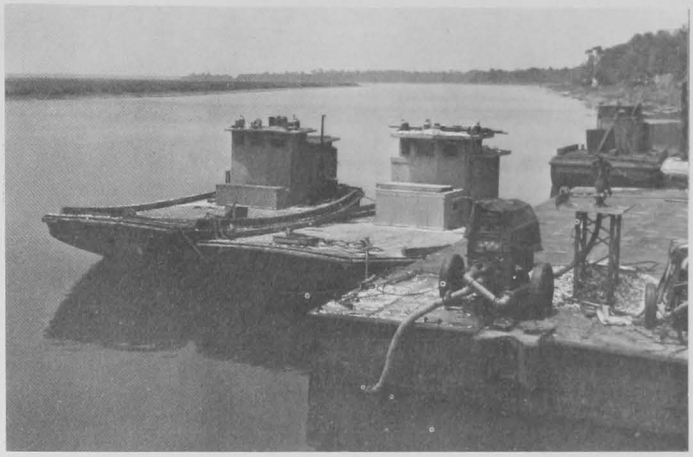
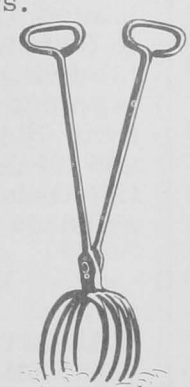


Fig. 46 - Canneries also replant the empty shell on seed beds. Note the portable gasoline-powered pump on the shell barge. This pump throws a powerful stream of water, which washes the shells overboard, and distributes them on the beds. In this manner, the cycle of operations necessary to bring oysters to the consumer begins once again.

Note: Acknowledgements: The authors gratefully acknowledge the cooperation of the oyster industry, the following members of which contributed directly to the production of the report: Joseph Jurisich, Popich and Jurisich, New Orleans, La; Chester Delacruz, Southern Shell Fish Company, Inc., Biloxi, Miss.; Mississippi Marine Conservation Commission, Biloxi, Miss.; C. A. King, Ocean Lake and River Fish Company, Beaufort, S. C.; H. C. Travers, Shellmore Oyster Company, McClellanville, S. C.; William Ballard, Ballard Fish and Oyster Company, Inc., Norfolk, Va; Frank Miles, J. H. Miles and Company, Inc., Norfolk, Va.; D. P. Elliott, G. T. Elliott, Inc., Hampton, Va.; The Hogg Brothers, Hogg's Oyster Company, Gloucester Point, Va.; Cranston Morgan and Raymond Morgan, W. F. Morgan and Sons, Inc., Weems, Va.; Harmon Treakle, Irvington Packing Company, Inc., White Stone, Va.

OYSTER GRABS

This is an implement used for taking oysters on the tidal flats of South Carolina and Georgia. It consists of a pair of jaws with a fulcrum close to the terminal end and is operated like a pair of scissors.



Oyster grabs.

Note: Excerpt from Circular 109, Commercial Fishing Gear of the United States, for sale from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., single copy, 40 cents.