

BLUE OR EDIBLE CRAB (*Callinectes hastatus*).
(Four-fifths natural size.)

8.—NOTES ON THE CRAB FISHERY OF CRISFIELD, MD.

BY HUGH M. SMITH.

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I.—THE SOFT-CRAB FISHERY AND TRADE.

A.—THE FISHERY.

1. *On the natural history of the crab.*—The species which is the object of the fishery at Crisfield is the blue or edible crab (*Callinectes hastatus* Ordway), (see plate XXXVI) which occurs on the Atlantic coast from Massachusetts to Mexico, and is abundant throughout Chesapeake Bay, ascending all the tributary streams to the limit of salt water.

Although the abundance of the crab and its extended distribution make it readily accessible to the biologist, and notwithstanding the fact that its commercial importance and morphological characters would seem to bespeak for it the close attention of the student, its life history has been only partially investigated, and scarcely anything has been published regarding its spawning habits and the conditions of its existence during the winter months.

Beyond certain somewhat narrow limits, the crab is very susceptible to extremes of temperature; and not being possessed of the ability or the propensity to make extensive migrations in order to overcome the untoward influences of heat and cold, it is obliged to accomplish the same ends by retiring in winter to the deeper waters near at hand, where, on the bottom or half buried in the mud, it is surmised that it enters into a condition of lowered vitality, returning to the shoaler water with the approach of spring.

Between the months of May and October, inclusive, the water in the vicinity of Crisfield is of a sufficiently high temperature to permit the crabs to leave the deeper retreats frequented at other times, and to remain in the more shallow water, where alone it is possible for the fishery to be prosecuted.

At certain periods, varying in frequency with the rapidity of growth, the crab sheds its shell, becoming a soft-shell or soft crab. Young crabs moult often, but it is thought that adults throw off their coverings only once or twice a year, usually immediately after the spawning season. A crab approaching the shedding process is variously known among the fishermen as a "peeler," "shedder," "buster," "comer," "long-comer," or "short-comer." A "peeler," "shedder," or "buster" is one whose shell has begun to crack, while a "comer," "long-comer" or "short-comer" is preparing to moult, and the shell is loosening, but has not yet split. This distinction is not everywhere observed, as the use of the vernacular names varies with the locality. In the Chesapeake region, "peeler," "shedder," and "buster" are the names most commonly met with, although the others are also heard.

It is a matter of considerable importance in connection with the fishery to be able to determine whether a crab has or has not recently completed the shedding process. Unless the crustacean is taken in hand immediately after moulting, it quickly becomes a hard-shell or hard crab, passing through the stages known as "paper-shell" and "buckler," and as such not possessing the market value of a soft crab, or one that

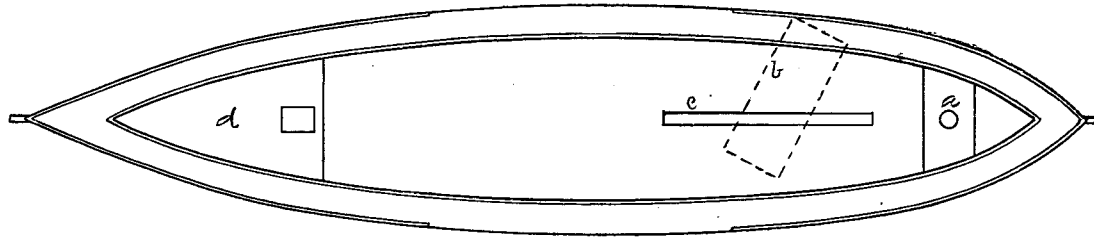


Fig. 1.



Fig. 2.

PLANS OF DUGOUT CRAB CANOE.

FIG. 1. Deck-plan : *a*, mast-hole in forward thwart ; *b*, culling board ; *c*, center-board box ; *d*, after-platform seat.
FIG. 2. Midship cross section, showing construction.

Drawn by H. M. Smith.

has not undergone moulting. The fishermen and shippers, as a rule, can determine with a facility and accuracy that is puzzling to the uninitiated, if a crab has recently changed its shell, and, if not, about how many days will elapse before such a change occurs.

2. *Origin and development of the industry.*—The practice of taking soft and “peeler” crabs, impounding the latter until after the shedding process and then shipping them to market, is of comparatively recent origin at Crisfield. It began on a very small scale about fifteen years ago. Mr. John Landon and a few others, who inaugurated this enterprise in order to utilize the large supply of crabs in this section, laid themselves open to great ridicule and acquired the ignominious title of “crab-breeders.” It was only a short time, however, before the business grew in popular favor, many more people became directly interested, and the fishery progressed uninterruptedly.

3. *Present condition of the fishery.*—Few persons outside of Crisfield are aware of the great proportions to which the crab fishery of that place has attained in recent years. Since 1880, when the yield of the entire State was much less than that of the present output of Crisfield alone, there has been a rapid increase, so that now the capture and handling of soft and “peeler” crabs is the most important occupation of the people during nearly half the year, affording steady, profitable, and inarduous employment to large numbers of persons who would be otherwise unemployed at this time. The limit of growth has not yet been reached, and it is probable that the near future will witness even a more extensive development than was made in 1888, when the increase over the previous year amounted to about 13 per cent. in the number of persons employed, 78 per cent. in the number of crabs taken, and 81 per cent. in the value of the catch to the fishermen.

4. *Fishing grounds.*—The Little Annessex River, on which Crisfield is situated, is the principal ground now frequented by the fishermen, although the waters bordering on the marshy land on either side of the mouth of this river are also visited.

So long as the supply is maintained the crabs will be taken in the localities nearest the market, and up to the present time the large majority of the crabbers have found but little occasion to go to very distant grounds.

A fair proportion of the crabs which are handled by some of the Crisfield shippers are caught in the waters adjacent to Tangier and Smith's Islands, where the crabs abound, but where there is no demand for them. They are therefore taken to Crisfield, either by the men who catch them, or, as is more frequently the case, in collecting boats sent out by the dealers.

Should the time ever come when crabs become scarce in the immediate vicinity of Crisfield, there will be no lack of suitable grounds at no very great distance. The marshy islands in Chesapeake Bay off Crisfield are available, as are other favorable localities up and down the shore. The Dammeron marshes, on the western side of the bay, immediately opposite Crisfield, should be mentioned in this connection. They are considered the best crabbing grounds in this entire section of the Chesapeake, but are seldom visited, owing to their distance from shipping centers. The few fares that have been taken there of late years have been very large, but there is danger of losing a considerable part of the catch, because of the liability of soft crabs to die when exposed in a boat for the length of time required to sail to Crisfield. It is thought that the introduction of a comparatively inexpensive class of small steam-vessels, as sug-

gested by Captain Collins in his paper on improved types of fishing-vessels,* will greatly advance the crab interests of Crisfield, as it must the other fisheries of the town and region, by making available new and productive fishing grounds, such as the marshes referred to.

5. *Fishing season*.—The season for soft crabs begins early in May and continues until the middle of October, when the oyster fishery becomes paramount. About five months of fishing are thus enjoyed, although the actual length of the season varies each year within certain limits, depending on the weather.

6. *Abundance of crabs*.—The sounds, rivers, creeks, and marshes in the vicinity of Crisfield may be said to teem with crabs. So great is the supply, in fact, that it seems almost inexhaustible. The fishery will probably never result in serious diminution of the species, for as it is now prosecuted only those individuals are taken which have come up into comparatively shallow water, while in the deeper water they are undisturbed.

All the testimony available goes to show that in 1887 and 1888 the supply was fully equal to, if not in excess of, that of any previous year.

7. *The crab boats*.—None of the boats used in the crab fishery are of sufficient size to be documented at the custom-house, the greater number being the small, open sail-boats of the style known throughout the Chesapeake region as canoes, corrupted to "kunnerns," in the vernacular of the fishermen (see plates XXXVII, XXXVIII). They range from 18 to 25 feet in length, are built of three pieces of timber, are round-bottomed, have wash-boards, and carry one or two sails and usually a jib. Board-built, flat-bottomed bateaux and skiffs are sparingly used, and three or four small sloop-rigged, decked boats are also employed (see plate XXXIX).

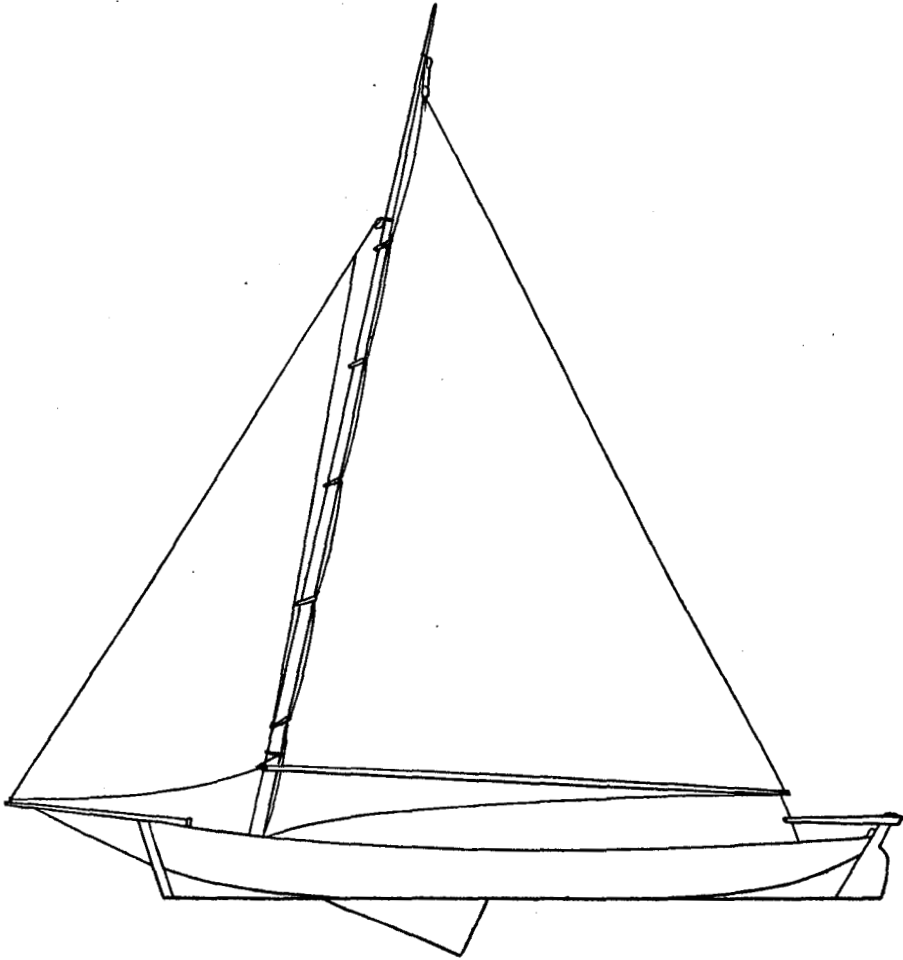
The boats vary in value from \$20 to \$150, the decked boats and canoes being the most expensive. Forty dollars would represent about the average value.

The crew of each boat consists of from one to three men, a large majority of the boats carrying only one person. After the close of the crab season the same men engage in oystering with the same boats.

8. *Apparatus and methods of capture*.—Two forms of apparatus are in use in the vicinity of Crisfield. One, made of iron bars, known as the dredge or scrape, much resembles the ordinary oyster-dredge in shape, but is lighter, and is provided with a pocket of netting (see plate XL). It weighs about 20 pounds, and costs from \$2.50 to \$4. Dip-nets are also employed in this fishery, these being most popular with the fishermen of the outlying islands, who do but little dredging; dip-nets are also used at Crisfield, but to a limited extent, and are chiefly fished from the unrigged, flat-bottomed boats.

One or two dredges are carried by each boat, to the side of which they are attached by a long rope. The method of using them is as follows: If a stiff breeze is blowing, the boat is brought well up to the wind, or put under reefed sails, or both, if necessary, and the dredge is thrown overboard and sweeps the bottom. At short intervals the boat is brought to and the dredge is pulled up to a small adjustable board platform provided for the purpose, extending somewhat obliquely across the boat in front of the mainmast and supported on the center-board box (see plate XXXVII, b). The contents

* "Suggestions for the Employment of Improved Types of Vessels in the Market Fisheries," etc. By J. W. Collins. Bulletin of the United States Fish Commission, Vol. VIII, 1888, pp. 175-192. Washington, 1890.



SAIL AND SHEER PLAN OF BATTEAU.
Drawn by Captain R. H. Milligan.

of the scrape are dumped upon the board, and the crabs are separated with the hand from the mass of mud and grass in which they have been rolled by the movements of the boat. With a moderate wind the boats can sail under full headway.

The use of the dip-nets is easily understood. The men use their oar as a pole, pushing the boats slowly around the edges of the marshes, and in other shallow localities, and adroitly handle the net when a crab is seen.

The opinion prevails at Crisfield that the crabs are most active during the night and that they then frequent much shoaler water in larger numbers than during the day. The fishermen usually make their best catches shortly after daybreak, and there is sometimes considerable rivalry among them in making an early start to reach the shallows and put out their dredges for the crabs that during the night have come up to feed and moult.

Generally long before sunrise the harbor of Crisfield and the adjacent creeks and marshes are alive with the crabbing crafts. At 6 o'clock on the morning of August 14, 1888, 215 canoes and bateaux were counted between Crisfield and the mouth of the short river upon which it is located. As the sun shone upon their glistening sails of uniform size the sight was a striking one.

It is not an uncommon thing for an industrious crabber to return home to an early breakfast, having taken enough crabs by that time to satisfy him for the day. Ordinarily, however, the men remain out until the afternoon, putting in to the shore once or twice, perhaps, to unload their catch.

9. *The yield in 1887 and 1888.*—The daily catch varies considerably at different times, depending on the weather. A stormy period will not only cause the crabs to remain in the deeper water, but will also prevent the fishermen from following the fishery to any great extent. Taking the season through, however, the average daily catch to a boat in 1887 and 1888 was between 75 and 100 crabs, the former year being a rather more favorable one than the latter. While a large majority of the fishermen probably never exceeded these figures, except on rare occasions, a few, possessing energy and tact, did much better and for extended periods during each season took as many as 1,500 crabs weekly.

The total yield in 1887 was 2,199,931 crabs, and in 1888 3,928,308 crabs, an increase of 1,728,477 crabs. The value of the catch to the fishermen was \$38,502 in 1887 and \$69,743 in 1888. These figures would represent an average annual catch of about 3,300 and 5,000, respectively, to a man, or 4,000 and 6,275, respectively, to a boat. Although these averages are correct, they fail to show the fishery in the best light, since, in computing them, it has been necessary to include a considerable number of men and boats that were not steadily employed throughout the crabbing season. If deductions were drawn based simply upon the men who devoted themselves more or less regularly to the fishery, the results would be nearly doubled as compared with the foregoing figures.

10. *Disposition made of the catch.*—The fishermen do not ship their own crabs, but dispose of them to regular dealers, who pack the soft crabs for immediate shipment and place the "peelers" in floats provided for the purpose until the shedding process is over. As the fishermen bring in their crabs the dealers or their agents count them in the presence of the crabbers, separating the soft crabs, the "short-comers," and the "long-comers," and paying for them at the time in cash, or, as is the more general practice, giving a ticket or check, redeemable at any time.

The men usually sell their catch to particular dealers, whom they agree to furnish during the season.

11. *Prices to fishermen.*—Crisfield, as a crabbing town, has considerable competition among the fishermen of the upper Chesapeake, of Indian River and other localities in Delaware, of the Shrewsbury and other rivers in New Jersey, and of other places in the Middle States; and a large and constant supply of crabs in the principal markets is thus insured.

This condition tends to keep the prices low and also to prevent any marked fluctuations in them during a particular year.

From $1\frac{1}{2}$ to 2 cents was the range of prices in 1887 and 1888. The soft crabs bring the same prices as those that are about to shed, while there is no sale for the hard crabs among the dealers in soft crabs. Soft crabs and "peelers" that die before reaching the hands of the dealers are of course unsalable.

B.—THE TRADE.

12. *Dealers, shipping-houses, etc.*—Twenty-five firms were engaged in buying, shedding, and shipping crabs at or near Crisfield in 1888.

The buildings occupied for packing crabs are plain frame structures, containing but one room, most of which are in the immediate vicinity of Crisfield, although a few are a short distance away, on the adjoining marshes. The houses vary in price from \$50 to \$500, about \$100 being the average value. Some of them are constructed on piles, but the larger number of them are on land, and many have dirt floors.

From two to eight men form the complement of each shipping firm, the number in each house varying somewhat with the season and the amount of business transacted.

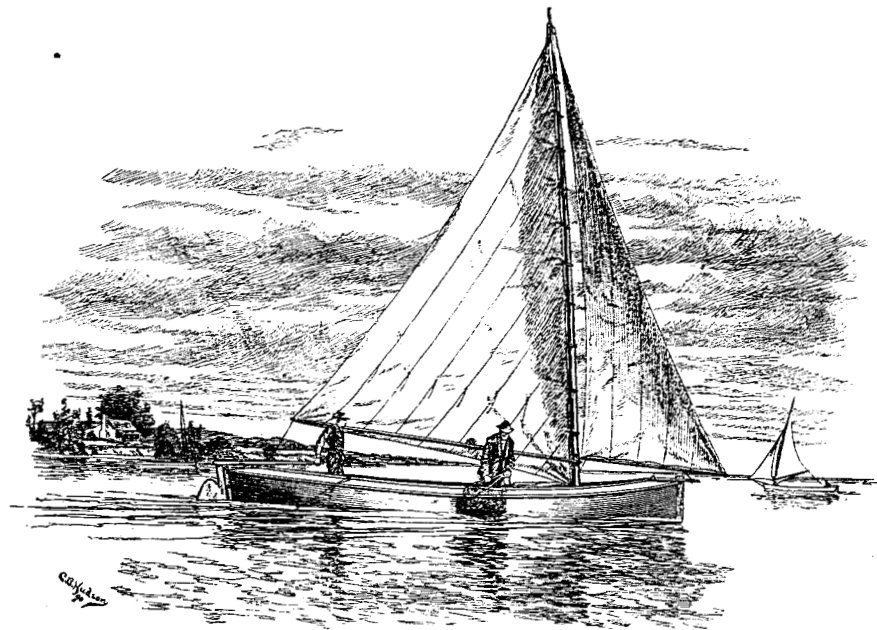
The outfit of the dealer is simple and the furnishing of the packing-houses are meager. All that is required to carry on the business are shipping-boxes, with trays; sea-weed and ice, in which to pack the crabs; and outside the houses, floats, in which the crabs are temporarily placed while shedding.

13. *The floats or pounds.*—These are made of light planks and scantling, with plain board bottoms and latticed sides. The size varies somewhat, but the largest number are 20 feet long, 3 to 5 feet wide, and 15 inches deep, with a projecting ledge at half their height, corresponding to the water-line (see plate XLIII). The average value of the floats is \$2.

About 25 floats, each with an average capacity of three or four hundred crabs, is the usual quota of each dealer, but as many as 60 or 80 are owned by some of the larger shippers.

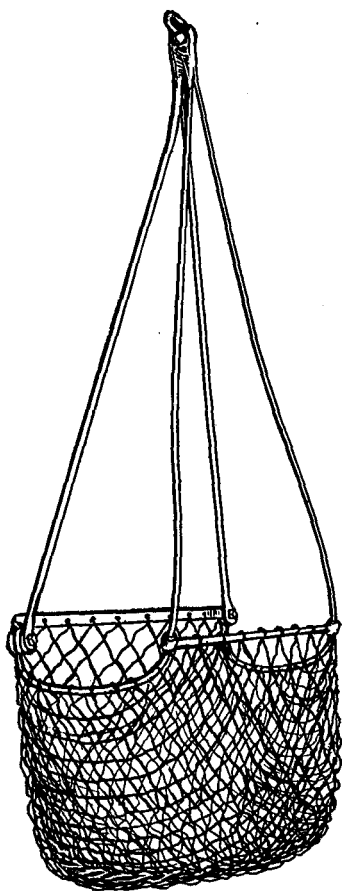
They are visited in boats three or four times daily, and the crabs that have shed since the last visit are taken out. The floats of each shipper are usually inclosed by a board fencing, which serves as a breakwater. This is considered necessary, as high waves would otherwise break over the pounds and swamp them. The inclosures of some of the shippers are an acre or more in area.

14. *Mortality of crabs.*—The one factor which, more than any other, tends to reduce the profits of the shippers, and indirectly the receipts of the fishermen, is the high death-rate among the impounded crabs. Owing to the injuries which many crabs receive in being caught and handled, and, in a measure, to the severity of the shedding process, a comparatively large number of crabs die after being purchased by the dealers, and are a total loss. As an illustration of the uncertainty of the business and of



DREDGING FOR CRABS. TYPICAL CHESAPEAKE CANOE. (See page 106.)

Drawn by C. B. Hudson.



CRAB DREDGE. (See page 106.)

Drawn by C. B. Hudson.

the risks which the dealers have to run at times, it may be stated that of 3,200 crabs purchased by a firm one day in July, 1888, no less than 3,000 died before shipment. This, of course, is an unusually great loss, and is not to be taken as a basis, although the individual dealers estimate their losses at from 10 to 30 per cent., and even as high as 50 per cent. during certain periods.

A few crabs die after leaving the hands of the shippers on the way to their destination, but this element of loss is being overcome by greater care and experience in packing the crabs prior to shipping them.

A comparison of the total catch with the aggregate shipments for 1888 gives a difference of 628,766 crabs, with a market value of about \$23,600, which figures represent the mortality and consequent losses. The death-rate in 1887 was even higher than in 1888, being 21 per cent., as against 16 per cent. in the latter year. It is impossible to determine with accuracy the number of crabs which die during shipment to market, and this item is not taken into consideration in the foregoing statements.

There seems to be no remedy for this state of affairs. Although the season of 1888 showed a small but gratifying improvement over the previous year, it can hardly be hoped that the mortality will ever be reduced below a somewhat high limit, owing to the methods of capture and handling, and to the normal vicissitudes of the moulting process, increased as they are by the unnatural surroundings and conditions to which the crabs are subjected.

15. *Preparing crabs for shipment.*—The crates in which the soft crabs are packed for market are about 4 feet long, 1½ or 2 feet deep, and the same in width. They are provided with neatly fitting trays, in which the crabs are placed between layers of crushed ice and sea-weed. The capacity of the crates is from eight to ten dozen.

Soft crabs possess but little tendency to move, and when once packed in position, with their legs well folded up and their bodies placed obliquely, so that the moisture may not run from their mouths, they remain quiescent for a long time. This fact permits of the packing of a large number of crabs in a very small space.

16. *Markets.*—The principal markets to which the crabs are sent are New York, Boston, Philadelphia, Wilmington, Baltimore, and Washington. The larger part of the crabs are shipped by rail, but considerable quantities destined for Baltimore go by steamer. There is also a small but increasing demand among the inland towns of Pennsylvania and other States adjacent to Crisfield.

17. *Prices to dealers.*—The crabs are generally sold on commission, at prices varying with the supply and the demand. From 35 to 60 cents per dozen were the ruling rates in 1887 and 1888, although the average price was considerably higher in the former year, being 53 cents against only 40 cents in 1888. The enhancement in value was about \$39,000 in 1887 and \$43,000 in 1888, these amounts representing the gross profits of the dealers.

II.—THE HARD CRAB FISHERY AND TRADE.

A.—THE FISHERY.

18. *Relative importance of the fishery.*—Although hard crabs can be taken at Crisfield in almost unlimited quantities, the fishery for them is of comparatively little importance, as will appear from an inspection of the accompanying statistical tables. The

fishermen think that soft crabs are more remunerative and more certain of a ready sale than hard crabs, and for that reason the fishery for the latter is completely overshadowed by that for the former.

Only twelve men were regularly engaged in this fishery in 1887 and 1888, and the capital invested in boats and apparatus amounted to but \$1,000, while the value of the crabs, at first hands, was only about \$2,400.

19. *Fishing grounds.*—These are similar to those frequented by the soft-crab fishermen, but, as a rule, are not so far distant from Crisfield. At the present time by far the greater part of the catch of the regular crabbers is made in the Little Annesmessex River, in close proximity to the town. Large fares are taken, and there has been no inducement to seek other but more distant grounds, which will be available should the supply nearer home become exhausted.

20. *Apparatus and methods of capture.*—While considerable quantities of hard crabs are taken with dip-nets and in the dredges of the soft-crab fishermen, the apparatus employed by the professional fishermen is set-lines, or "trot-lines," baited with tripe. The ends of the lines are buoyed or staked. In hauling them the men begin at one end and propel their boats along while carefully under-running the lines. The snoods to which the bait is tied are pulled up with caution, and the crabs which are clinging to the tripe are secured with a small dip-net. Usually but one man goes in a boat.

21. *Results of the fishery.*—The average catch of hard crabs per man is necessarily larger than in the soft crab fishery, owing to the more productive apparatus in use and to the greater facility with which the crabs are handled.

The total yield of hard crabs in 1887 and 1888 was 471,413 and 509,515, respectively, these being taken chiefly by regular hard-crab fishermen. Not an inconsiderable number were also obtained by irregular and soft-crab fishermen and sold to dealers, by whom they were shipped.

22. *Prices to fishermen.*—In 1887 and 1888 the price for hard crabs varied but little from 50 to 60 cents per hundred. This is not considered by the fishermen to be a sufficient inducement to abandon the fishery for soft crabs, for each of which from 1½ to 2½ cents are obtained. The principal hard-crab fishermen at Crisfield ship their own crabs, however, and are thus able to realize better prices.

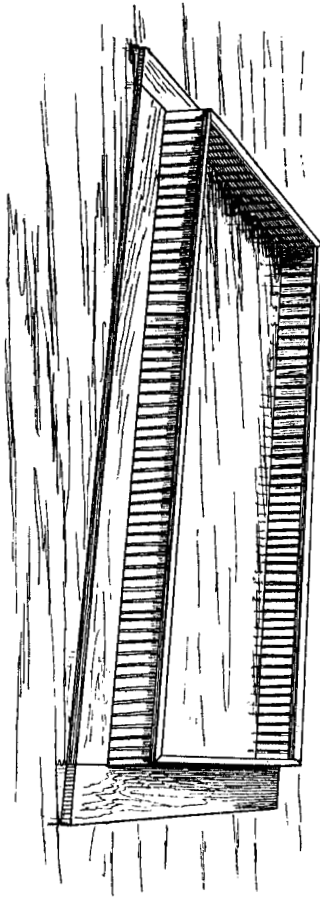
B.—THE TRADE.

23. *Extent of trade.*—The handling and shipping of hard crabs at Crisfield is only incidental to the general trade in fishery products carried on by four dealers, except in the case of the hard-crabbers who send their own catch to market.

24. *Methods of shipment.*—Hard crabs do not require the care in packing and shipping which soft crabs need. They are simply crowded into large boxes and barrels, covered with wooden strips or sack-cloth, and shipped to their destination, usually without the use of ice or moist sea-weed. The mortality amounts to practically nothing.

25. *Markets and prices.*—Hard crabs are sent to the same markets to which the soft crabs are shipped. Owing to their hardness they can also be sent for longer distances to many of the interior cities of the country. The average gross price received in 1887 and 1888 was 65 cents per hundred.

CRAB FLOAT OR POUND. (See page 108.)



III.—THE PREPARATION OF CRAB MEAT.

26. *Description of the process.*—Two of the fish firms already referred to are concerned in extracting the meat from the hard crabs and in shipping it in bulk to market, where it is chiefly used in hotels and restaurants.

Although of no great importance, it seems desirable to refer to this branch of the business in order to make the subject approximately complete.

The crabs are boiled for a few minutes in some large receptacle suited to the purpose, and when cool their shells are cracked and the meat is extracted by means of a small knife. From 60 to 75 crabs are usually required to yield a gallon of the meat, although as few as 47 or 50 large crabs are sufficient. The meat is packed in tin buckets and shipped in ice.

27. *Persons employed.*—The crab-pickers are employed only at odd times and in no definite numbers. They are usually women, who hold themselves in readiness when the shippers have orders to fill. They become quite expert in the business, and strip a crab of its meat in a remarkably short time. They are not on wages, but are paid in proportion to the amount of work done.

28. *The yearly output.*—The demand for crab meat is as yet not extensive, and the quantity prepared annually is small and usually on contract. In 1888 about 27,000 crabs were utilized in this way, yielding 395 gallons of meat, valued at \$1.20 per gallon. In 1887 the output was about 8 per cent. less than the following year.

IV.—STATISTICS.

The following tables show in detail the extent of the soft and hard crab fishery and trade at Crisfield in 1887 and 1888. The data were obtained by personal investigation and from actual records contained in the books of dealers and fishermen.

29.—The fishery.

Character of fishery.	Number of fishermen.		Boats.			
			1887.		1888.	
			1887.	1888.	No.	Value.
Soft and peeler crabs	685	773	548	\$22,400	626	\$31,300
Hard crabs	12	12	12	900	12	900
Total	697	785	560	23,300	638	32,200

Character of fishery.	Value of apparatus of capture.		Crabs taken.			
			1887.		1888.	
			1887.	1888.	No.	Value.
Soft and peeler crabs	\$1,800	\$2,100	2,199,931	\$38,502	3,928,308	\$69,743
Hard crabs	120	120	*471,413	2,359	*509,515	2,386
Total	1,920	2,220	2,671,344	40,861	4,437,823	72,129

* Including the crabs used in the preparation of crab meat.

30.—*The trade.*

Character of trade.	Persons employed		Value of shore property.		Floats or pounds.			
					1887.		1888.	
	1887.	1888.	1887.	1888.	Number.	Value.	Number.	Value.
Soft crabs	88	82	\$2,925	\$3,200	502	\$990	578	\$1,060
Hard crabs	3	4	250	250				
Total	91	86	3,175	3,450	502	990	578	1,060

Character of trade.	Boats.				Crabs shipped.			
	1887.		1888.		1887.		1888.	
	No.	Value.	No.	Value.	Number.	Value.	Number.	Value.
Soft crabs	49	\$867	50	\$935	1,821,528	\$81,754	3,299,542	\$108,758
Hard crabs					416,413	2,883	482,515	2,973
Total	49	867	50	935	2,267,941	84,637	3,782,057	111,731