

DISCUSSION

General Session

Discussion Leader: F. G. WALTON SMITH

Discussion Panel: E. A. FIEGER, JOHN ROBAS

The Effects of Chlortetracycline on Fish Freshness

M. C. FIRMAN, A. A. ABBEY, M. A. DARKEN, A. R. KOHLER AND S. D. UPHAM

- Q. Fieger: What criteria did you use to judge quality other than the bacterial count?
- A. Firman: We looked into all of the chemical tests that had been reported for quality of fish as an index of spoilage, and we felt that none of them was reliable enough or gave a constant enough figure for us to use as a mark of quality. In addition to bacterial counts we tested for odor, feel, appearance and sometimes taste. As we advanced along in this work we feel that we became a little better at judging.
- Q. Fieger: Does Chlortetracycline have any effect on enzyme activity?
- A. Firman: CTC slightly retards enzyme activity, but not to as great an extent as it is a bacteriastatic agent.
- Q. Sturgis: Has your company done any work with menhaden, herring or other fish which sometimes come aboard at a rate of two or three tons per minute?
- A. Firman: We have done work with menhaden and herring. We have come to the conclusion that on small lot work we can do a lot of good for the menhaden and herring industries. Our problem at present is one of engineering, of how to apply our material to 5,000 fish per minute coming aboard a menhaden boat. We are convinced from our laboratory work that we can do the job that is required. We are now in the process of attempting to work out the application.
- Q. Robas: On the aureomycin work done on the menhaden around Fernandina in conjunction with your company, we noticed a pronounced golden color on the menhaden which were treated with aureomycin. Does this same golden color show on your edible fish, and if so how is the marketability of fish which show this golden color?
- A. Firman: The color of CTC is in itself golden yellow. When we treat edible fish we do not use as great a concentration as this. There have been only occasional cases where one could see a slight yellowing of the fish. In most instances we have landed fish where the normal color is more pronounced. On cooking we destroy the aureomycin and therefore destroy the yellow color.
- Q. Robas: What is the official attitude or policy towards the use of aureomycin in fishery products for human consumption?

- A. Firman: At the present we have indications from Washington that they will permit us to do this in the not too far distant future.
- Q. Brawner: If a commercial ice plant should adopt the method of putting the CTC in the ice to begin with would there be the possibility of getting too much of it and harming human beings who use the ice for other purposes?
- A. Firman: Our intention, if we sell CTC to an ice plant, is to make ice only for fish, not for anything else. When the fish is cooked the aureomycin is destroyed.
- Q. Brawner: How much will the amount of aureomycin for a 300 pound block of ice cost?
- A. Wiley: The present cost can be expected to be \$2.00 a ton more at 4-5 parts per million.

Use of Indole as an Indicator of Spoilage in Fresh Shrimp

JAMES E. ALEXANDER

- Q. Fieger: Can indole be determined rapidly enough to be of value to the buyer?
- A. Alexander: The total length of time should not exceed 90 minutes.
- Q. Strasburger: Did you find that it was not necessarily the length of storage of the shrimp which was associated with an increase of indole but quite often such elements as exposure to heat prior to icing?
- A. Alexander: In our experiments the shrimp were beheaded, washed and iced within a period of 20 minutes to a half an hour, so the exposure to heating was the same for all samples. I would expect that improper handling which accelerated spoilage would be reflected by a rise in indole count, independent of the time in ice storage.

Underwater Television in Commercial Fisheries Research

REIDAR F. SAND

- Q. Sturgis: Is there any chance in the future that aircraft might be able to spot fish in masses, either at mid or deep levels, through the use of television cameras?
- A. Sand: At the moment we are interested in underwater television purely as a research tool to give us a more complete information on the fishing gear, bottom conditions and behavior of fish.
- Q. Robas: Has anyone watched a purse seine being fished with underwater television?
- A. Sand: To my knowledge, no. It is one of the things we plan to do. I do not believe that it would be much different from watching any other type of gear from a technical standpoint.

- Q. Robas: Can the sound of shrimp be heard over the sound of propellers and if so is there any possibility that a shrimp vessel on the fishing grounds might be able to determine the presence of shrimp over the noise of propellers?
- A. Sand: Not with the present forms of instrumentation.

The Occurrence and Taxonomic Relationships of the Atlantic Blue Marlin (*Makaira ampla*) in the Pacific Ocean

LUIS R. RIVAS

- Q. Fieger: What are the possibilities of a commercial fishery on marlins in this country?
- A. Rivas: The only part of the western Atlantic where marlin have been exploited is off Havana, Cuba. The possibilities of marlin becoming a commercial fish are very great. The Fish and Wildlife Service during their exploratory trips in the Gulf of Mexico and the northern Caribbean have been catching them in great quantities with long lines.
- Q. Robas: Are these fish being caught for sale in Cuba as fresh fish?
- A. Rivas: Yes. This has been going on for over a 100 years.
- Q. Anderson: Do you have enough figures to give us a comment on the relative sizes of the blue marlin in the Pacific and Atlantic?
- A. Rivas: There has been a great deal of controversy concerning the sizes reached by blue marlin both in the Pacific and Atlantic. The world's record blue marlin from the Atlantic taken by rod and reel is 743 pounds. Catches of blue marlin in the Atlantic run far above 1000 pounds in weight. With some commercial fishermen in Cuba years ago, a flag line was used and a blue marlin was captured weighing 1100 pounds. They have been caught in the commercial fishery of Cuba weighing up to 1500 or 1600 pounds. I have seen photographs of such a fish, and have measured the tail, which was saved. This enabled me to guess within 50 or 100 pounds the maximum size. As far as the Pacific Ocean is concerned, apparently the same sizes appear there. I believe one blue marlin was captured which weighed close to 2000 pounds, according to POFI.
- Q. Hoover: What is the total volume of the fishery in Cuba? Also, what qualities does this fish have to the Cubans that make them pay 80 cents a pound for it?
- A. Rivas: No official figures exist concerning the annual catch of marlin in Cuba. As to why it is so popular, there is no mystery in it. You can get a big steak from it which tastes very good. The marlin is a delicacy in Cuba and other places.

Long-Line Experiments for Tuna in Bermuda

LOUIS MOWBRAY

- Q. Fieger:** What is the availability of bait for tuna off Bermuda?
- A. Mowbray:** This is a problem, since Bermuda is an oceanic island. The bait is seasonal in abundance. If we find that almost any type of small bait will do for this job, then we shall have no further problem, for there are several species that would be suitable.
- Q. Robas:** Is there a possibility that we may have a potential long-line fishery for yellowfins for vessels leaving from ports along the U.S. coast, since Bermuda is only about 550 to 600 miles east of Charleston, South Carolina?
- A. Mowbray:** There is no reason to believe that a long-line fishery would not be good along a considerable length of the U.S. coast.

The Seagoing Requirements of Fishing Vessels

FRANCIS MINOT
(READ BY JOHN ROBAS)

- Q. Fieger:** Would you comment on the stability or seaworthiness of steel vessels versus wooden vessels?
- A. Robas:** There is no reason why well constructed and well designed steel vessels should not be as seaworthy or stable as a wooden vessel. The advantage of steel construction is that water tight bulkhead construction is much simpler in a steel boat. I would think that for a given amount of money a far more seaworthy vessel could be constructed of steel from the standpoint of water tightness.
- Q. Wilmott:** Do the larger New England vessels prove any better risks from the insurance standpoint than the smaller shrimp vessels operating off shore at present?
- A. Robas:** One surveyor does not see all of the boats nor does he hear about all of the losses, and Underwriter A who has six losses in a given period is reluctant to swap this information with Underwriter B. The present day shrimp vessel does not meet the demands of the situation. For instance, to my knowledge, 99% of these vessels have no watertight bulkheads. They are also still using pumping equipment which was designed for our inshore fleet back in 1945. We are sending 67 foot boats valued at 40 to 70 thousand dollars a long way from home with two pumps. They have one pump running off the main engine and a gasoline auxiliary pump. The gasoline auxiliary pump does not get very much use, the captain normally using the one running off the main engine because it requires no effort on his part to crank it. He rarely uses his gasoline auxiliary until an emergency arises, and

by that time the pump is a block of rust and will not crank, therefore he has neither pump. In an emergency his engine is frequently killed and so he may lose his vessel in a very moderate sea.

Q. Wilmott:

Do you not believe that it is time for the industry to go to some technical advisory committee to develop a vessel that is suitable for operations further away from home ports?

A. Robas:

About three or four years ago the Southern Shipbuilding Corporation, a division of the Gibbs Corporation in Jacksonville, decided to build some super shrimp vessels. These would be constructed to the specifications of the American Bureau of Shipping, would be surveyed as they were constructed, and if their construction and materials met the surveyor's approval they would be certificated. Provision was made for annual inspections and renewal of the certificate. They were constructed with double planking, watertight bulkheads, all diesel engine room with no gasoline auxiliaries and exceedingly strong construction. They were \$45,000 to \$47,000 at a time when a contemporary model shrimp boat could be bought for \$30,000. They were sold readily, but the first two vessels were almost lost on their maiden voyages. They were grounded on a reef and were salvaged with difficulty, and brought home for rebuilding. The underwriters at that time took a short sighted view, and to my knowledge have never made any concession to these vessels in the way of insurance premiums; they have never given them a discount because they were safer vessels. They had an opportunity to encourage better vessel construction but did not do so. Subsequent to the initial two strandings, the loss record on these vessels has been quite good. Most of them, I believe, are still in service. Had the two vessels that went aground not been constructed with watertight bulkheads and with extra heavy construction they would have died on the reef, because they would never have been able to get them off and certainly would not have been able to tow them across 600 miles of open water to a safe port in Jacksonville.

Q. Whiteleather:

From your experience as a marine surveyor, could you tell us what two watertight bulkheads in a present day shrimp boat fore and aft the engine room costs in addition to vessels not constructed that way? If it is only a few dollars difference percentage wise in the cost of a \$40,000 vessel, why do they not put in the watertight bulkheads?

A. Robas:

The extra cost of making present bulkheads watertight and keeping them up to standard pressure of water, would certainly not exceed \$1,000 per bulkhead. The amount of wiring and piping that runs through those bulkheads is relatively small and all the pipes, connections and wirings have to be watertight as well, where they go through the bulkheads. This does not seem a prohibitive amount. The owner, at the time of placing his order, has to figure where he is

going to benefit from this and unless the underwriters are going to give him a little discount on his insurance or some encouragement, very few owners will expend the additional capital. If the owner would start it and the underwriters encourage it, eventually this would be standard procedure in the fleet.

Q. Taylor:

The writer of the paper suggested that all of the captains, mates, engineers, and I suppose the deckhands too, should be licensed. If that were done how long do you think the American fishing fleets would operate?

A. Robas:

I think that sometime in the next ten years it is going to be almost mandatory, because when you read some of the survey reports of statements made by captains and crew members, you wonder what that man was doing aboard the vessel which he lost. His lack of judgment, lack of skill, lack of elementary consideration for the rights of his owner, make it amazing to me that some of these people even find their way home. The underwriters, for example, have been advised that a certain vessel has been lost at sea and that the crew has been rescued. It is not uncommon in the Gulf of Mexico fishery for the underwriters to be prepared to pay off a total loss when the vessel has been found floating safely in the middle of the Gulf, with perhaps a foot of water in her engine room. The crew became alarmed at something in the middle of the night and just bailed out and left her and got aboard another vessel and left her drifting in the middle of the Gulf. Such men are not mariners, and some method should certainly be found to screen them. We have intensive control over the sport fishing captains who hire their vessels to sport fishermen—it is true that the license examination hinges upon the ability to fill out the application, but there is some control. I do not want to see the Coast Guard or any branch of the Federal Government come in and police the industry, but I believe that sometime in the next ten years someone is going to have to set up some standards as to what constitutes a captain of one of these vessels. I agree partially with what Mr. Minot says about the necessity for licensing of personnel, although I think that the licensing should be tailored strictly to commercial fishing.