

morpholine or cyclohexylamine in steam coming in direct contact with foods, except milk. Octadecylamine is still under consideration.

Many fishery products are used for animal feed and it may surprise some of you to learn that the Food Additives Amendment applies equally to substances added to animal feed. This happens because the basic 1938 act defines food to include any article used for food or drink for man or animals and components of any such article. Thus, when a product within the definition of a food additive is incorporated into animal feeds the provisions of the Food Additives Amendment must be met. And here we have a double concern, for not only must the food additive be safe for feeding to the animal, but if it results in residues in the edible meat or milk of the animal this too must be taken into account.

It is possible that in your research laboratories you are experimenting with the use of additives other than those I have mentioned, which you feel will improve the character of your products. Let me urge that, unless these are generally recognized as safe by qualified experts, you also proceed now to acquire the necessary information regarding composition, toxicity, minimum amounts required, and analytical methods, to support petitions for food additive regulations authorizing their use.

Where there is any question of possible migration of additives into food products from wrappers, coatings, boxes, labels, or from any other source, we urge you to get the facts before continuing to use the particular articles. In many cases, you will undoubtedly find that the matter has been investigated by the supplier or original manufacturer and certainly if there are any specific questions about the law, do not hesitate to get in touch with us. We realize that in making this offer we probably are only adding to the heavy burden of correspondence which we have had ever since the enactment of this amendment. We will, however, do our very best to comply with each and every request for comment when we are supplied with sufficient facts upon which to base an opinion.

The Economic Potential of the Calico Scallop Fishery -of the Gulf and South Atlantic With Special Reference to the East Coast of Florida

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THE LARGEST KNOWN SCALLOP BED in the entire world was recently discovered off the east coast of Florida by exploratory fishing personnel of the U.S. Bureau of Commercial Fisheries. First indications of the new seafood find were noted in January, 1960, during inshore explorations off Daytona Beach by the motor vessel, *Silver Bay*. Further explorations in April revealed that this bed extends from Daytona Beach south to Ft. Pierce—a distance of 135 miles. Commercial concentrations have been found over a 1,200 square-mile area. These same

Calico scallops have been found in commercial quantity off the coast of North Carolina, the upper west coast of Florida, and off the coast of Alabama.

The Calico scallop fishery obviously represents a potentially large commercial industry for the South Atlantic and Gulf seafood industry. What is the commercial potential and what problems are involved in developing this industry?

Let us proceed first with the commercial potential. We will confine our analysis to the scallop bed off the east coast of Florida. In early June, 1960, the *Silver Bay* made several demonstration trips for members of the seafood industry. Catches up to 20 bushels per one-half hour tow were made about 25 miles northeast of Ft. Pierce. Simulated commercial production, based on 16 experimental tows along the 20 fathom curve produced 135 bushels ranging from 1 to 13 per 30-minute tow for an average of 8.5 bushels or—about 4¼ gallons of scallop meats per drag. This production was realized with one 10 ft. dredge. The use of two dredges would normally double this rate of production.

There are two major problems retarding development of this potentially valuable fishery—developing means of mechanically processing the scallops and developing market outlets once this technological problem is solved.

The technological problem presently exists since hand shucking is slow because of small size, shape of shell, and the necessity of separating scallop meats from the viscera. There are several private firms presently conducting research on some mechanical means of processing the small Calico scallop. In addition, the Technological Laboratory of the Bureau of Commercial Fisheries in Pascagoula, Mississippi, is working on this problem. One type of mechanical oyster shucker is reported to open 250 bushels of scallops per hour but will not separate the meats from the viscera.

We have recently received word from a firm in the midwest that they have perfected a means of mechanically processing the Calico scallop. We don't know, as yet, any of the details of how this machine works and—for that matter—we don't know if it works.

Another firm here in Florida has recently developed a machine that will separate the muscle from the viscera at the rate of about one scallop per second. This amounts to about 5 gallons per hour. The beauty of this machine is that it is small and inexpensive and if the rate of processing needs to be increased, you need merely to install additional machines to obtain the desired rate. We have seen this machine in actual operation. It was recently taken aboard the *Silver Bay* by its inventors, Mr. Charles Renfroe, Mr. Lester Renfroe, and Mr. Ernest Wade of Jacksonville, Florida. The *Silver Bay* made a trip to the scallop grounds off Ft. Pierce and the machine was used to separate the muscle from the viscera. There is no doubt at all about the effectiveness of this machine—it will do the job. However, this machine is now dated, and the same inventors have come up with another machine that will process scallops at the rate of 1200 gal. per 8 hour day.

The next problem facing the industry will be that of developing markets for Calico scallops. This will not be easy. The scallop industry of New England is just recovering from an almost disastrous season characterized by record production, glutted markets and low prices. 1958 was a good year for the New England scallop industry, yielding nearly 19 million pounds of sea scallop meats. This was followed by a record production of over 24 million pounds in 1959 and the first five months of 1960 were even greater than for the comparable

period of 1959. Prices for scallop meats in 1960 reached the lowest point in many, many years. Florida buyers, for example, were quoted prices as low as 30 cents per pound, f.o.b. Massachusetts.

The severity of the depressed conditions in the New England scallop industry resulted in a joint industry-government promotional program beginning in August, 1960, and similar in scope to "Operation Shrimp" that was begun in the latter part of 1959. This joint program, as in the case of shrimp, resulted in moving the large excess stocks of scallops out of the freezers at the same time that greater than normal current production also was being sold to the trade.

The recent marketing problems of the New England Scallop Industry may actually be a blessing in disguise for future investors in the Calico scallop industry. Today, more people are eating scallops than ever before. This factor alone will make easier the job of introducing the Calico scallop to the consumer.

The logical question to be raised at this point is what marketing plans are being formulated for the future Calico scallop industry?

To begin with, it was felt that the first step should be to obtain as much publicity as possible on this new discovery, pointing out the commercial potential and, at the same time, the problems involved, in the development of this fishery. As of August 13, 1960, articles released by the Florida Development Commission alone reached over 2½ million readers of newspapers, business and scientific journals and various other publications. And this does not include those persons reached through the media of television and radio. Undoubtedly, the most important result of this publicity is that it challenged engineers throughout the country to solve the technical problems. As I have already mentioned, two different equipment firms in two entirely different parts of the country, Jacksonville, Florida, and Chicago, Illinois, have evidently solved this technological problem. Another important result of this advance publicity is that already there are many consumers anxious to try this "new delicacy from the sea."

Now, what else have we done, what are we doing, and what do we plan to do to create an effective marketing program necessary to develop this new industry? Before I proceed with these efforts, let me make it clear whom I mean by we. I mean industry and trade associations—I mean such organizations as the Florida State Board of Conservation, The Florida Development Commission, Florida Extension Service and the Bureau of Commercial Fisheries. All of these organizations have been active participants in this planned program:

1. Our home economist in Pascagoula, Mississippi, has been developing institutional, school lunch, restaurant and consumer recipes for Calico scallops. These recipes will, at the proper time, be distributed to institutions, public and private schools, restaurants, and food editors of the newspapers.

2. Working with the Florida Development Commission, we have already taken both black and white and color photographs of three different food dishes using Calico scallops in the recipes developed by our home economist. These pictures, along with the recipes and a fact sheet, will be distributed to the food editors throughout 15 southeastern and southwestern states as Calico scallops are introduced in these states.

3. We have been contacting the seafood processors throughout the country and keeping them current on the developments in this fishery. A large number

of these processors are most enthusiastic over the sales potential of this seafood item.

4. We have been contacting various frozen food distributors throughout our area and acquainting them with this new discovery. In many instances, we have arranged for future shipment of samples of this item for them to experiment with. As soon as industry is producing, we will make return visits.

5. We have been contacting food chain merchandisers with excellent results. We know that most of the food chain people contacted will do the merchandising job necessary to introduce this new seafood item to the public.

6. We have been contacting the media of radio, television and the newspapers and enlisting their future support in acquainting the consumer with Calico scallops.

7. Some of the restaurant associations have already been contacted and assurances of their future support received. This support will be in the form of distribution of recipes to member restaurants.

8. Arrangements already have been made for future distribution of recipes through the United States Department of Agriculture to institutions and private schools throughout the nine southern states.

9. We have discussed this program with personnel of the Florida Extension Service. Cooperation from this agency, with its 103 agents, in acquainting the public with Calico scallops has been assured.

10. Representatives of the Florida State Board of Conservation have been active in the development of this program. And those of you who know of the very fine work being done by their home economist also know that she will be instrumental in promoting these scallops once industry starts producing.

Now, I would like to discuss the methodology that we will use in the actual introduction of scallops to the institutional and consumer market. Again, bear in mind two things (1) This will be a joint industry-government program. (2) All of the agencies mentioned previously, and others, will be cooperating.

Perhaps the best way to illustrate the methodology would be to use a given city as an example. Since we now are here, let us use Miami as the example.

If there is any "certain key" to the success of this program, I would say that the educational media of radio, television and the newspapers will determine the relative speed with which this industry can be developed. We therefore will start with this media.

We will contact representatives of television and request placement of home economists on television during a certain period. We will do the same with representatives of radio. In the case of newspapers, we will approach the food editors of the *Miami Herald* and the *Miami News* with recipes, fact sheets and food photographs, requesting coverage in their food section. A picture of—shall we say—the Governor of the State of Florida tasting the first industry-produced Calico scallops should certainly make a good news item for these newspapers.

Assuming that we have been successful with the educational media, we then will contact the food chains requesting their assistance in introducing this item to the consumer. The fact that the educational media are cooperating is certainly an added inducement for the food chains and we would hope that they would follow through—not only by making the product available—but by advertising and merchandising the item.

Our next step would be to arrange for distribution of recipes through the Florida Restaurant Association to its members. Again, the cooperation of the educational media has whetted the appetite of the consumer to try Calico scallops in his or her favorite restaurant.

Through the U.S. Department of Agriculture, we would arrange for distribution of recipes to the various institutions which, of course, would find their way to such places here in Miami as hospitals, the University of Miami, sanitoriums, etc.

In the meantime, extension agents are also teaching the housewife how to prepare these scallops; they are promoting scallops on their radio and television shows, and they are writing about scallops in their newspaper columns.

We now can go to frozen food distributors and brokers and point out what is being done to promote Calico scallops. They, in turn, now are able to follow through and buy scallops with the knowledge that some of the groundwork has been laid to help them sell this item to retailers, institutions, and restaurants. And these brokers and distributors are the ones that bridge the gap between the producer and the retailer, and ultimately, the consumer. Industry, i.e., producers processors, brokers, distributors and retailers, are now in a position to form a coordinated advertising and promotional program for Calico scallops. The type of program developed by industry will determine the relative sales success of this item. Any efforts by U.S. Bureau of Commercial Fisheries personnel are meant *not* as a substitute, but rather to supplement and complement the efforts of industry.

As of this moment, we can sum up the history of the Calico scallop fishery in a very few words: discovery, technological development and some of the groundwork for a market development and market promotional program have all transpired in less than a year. Although a fishery with a short past, it is one with a long future.

A Progress Report on Experimental Fishing for Sardine - Like Fishes in the Gulf of Mexico

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THE GULF OF MEXICO pelagic schoolfish research, conducted by the U. S. Bureau of Commercial Fisheries, has been in progress for approximately three years. A summary of the first year of activities was presented to the Institute at the 11th annual session (Thompson 1958). Since that time, a number of interesting findings have been obtained, and it is the purpose of this paper to provide an interim report on the status of the research.

Midwater Trawling

A large share of the total effort expended on gear research throughout the world in the past ten years has been devoted to the development of commercially-operable midwater trawling gear. We have been able to profit