

# The **LODE STAR**

Charting the course of fisheries development today.

Alaska Fisheries

Development Foundation

Volume III Issue 4, Autumn 1985

## News to Use

Autumn is the season for getting serious. It's evident that those who would be part of the Alaskan surimi industry are getting serious about its future, and their participation in it.

Alaska Pacific Seafoods is getting serious about new technology development, and has installed a number of new innovations in its surimi plant on Kodiak Island. **See "Project update" section, page 2.**

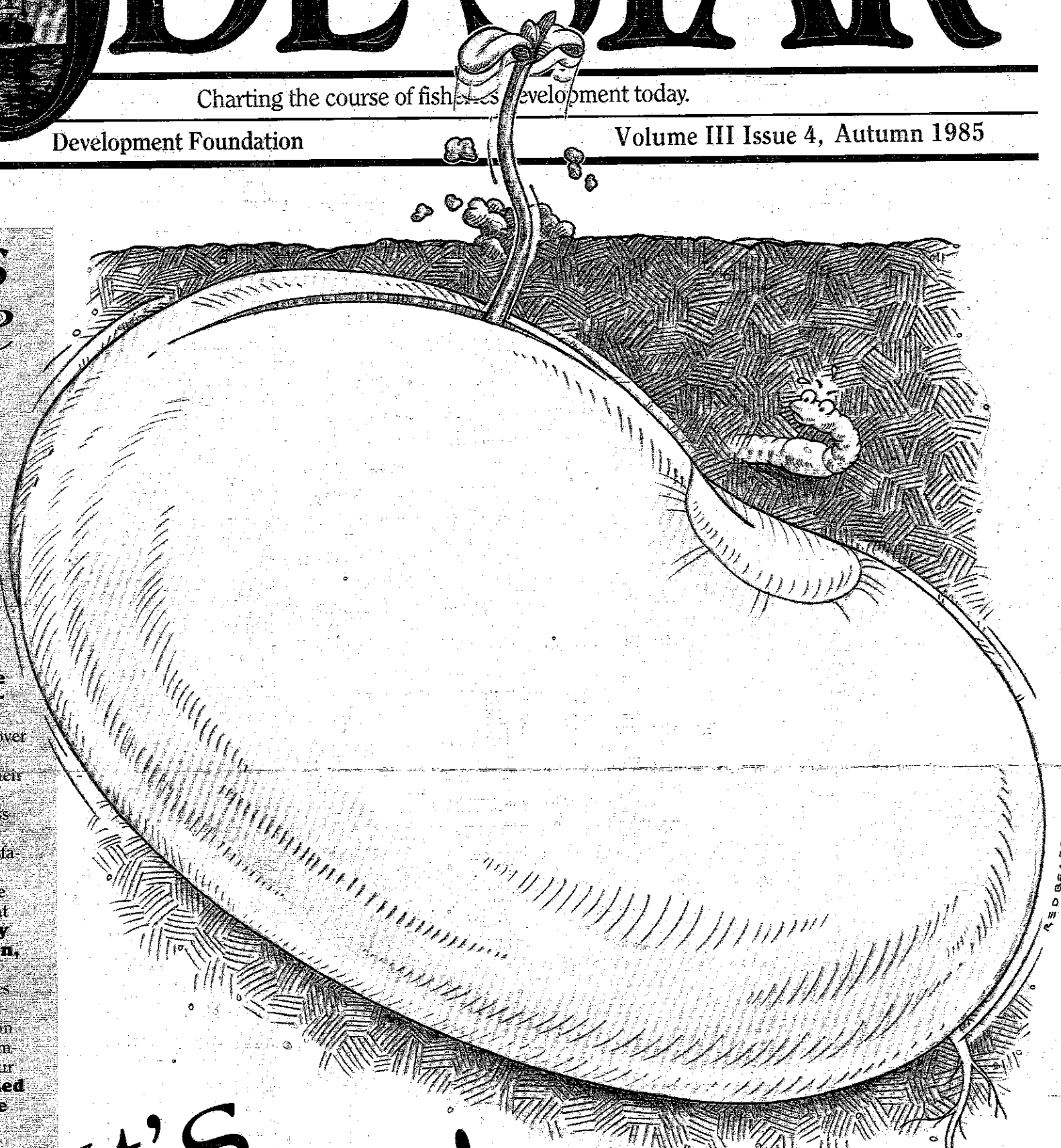
Alfa Laval seems elated over results of experiments done earlier this year applying their specially-adapted decanter centrifuge to the wet process stage of surimi production. Results were so positive, Alfa Laval developed the surimi decanter commercially. The MRX-309 is now in place at APS. **See "Technology development" section, page 4.**

Two large food companies are serious about their skinless, boneless canned salmon products which are now competing for shelf space in your supermarket. **See "Canned Salmon is Now in the Pink," page 4.**

...and don't forget

The AFDF annual meeting is scheduled December 6, 1985 at the Anchorage Westward Hilton, in the Katmai-Dillingham room. The meeting will be from 8 a.m. to 4 p.m.. All AFDF members are encouraged to come to the meeting.

AFDF will reserve a block of rooms at the hotel for members of the board. Special room rates are: \$60 single, \$75 double, plus 8% tax if you mention you're attending the AFDF meeting. Please make your own reservations. For more information about the meeting, call AFDF: (907) 276-7315.



# It's Alive!

Like the silence before the Big Bang, the industry now seems to be catching its breath before breaking the news: a strong, profitable surimi industry has taken root in Alaska.

It may be small now, but just watch it grow.

Three conditions are required for a surimi industry to flourish here: technological expertise; a favorable economic environment; and a strong market for surimi products in the U.S. In this last quarter of the year all three conditions have been met.

AFDF designed its pollock project to create an environment in which an Alaskan surimi industry could prosper. In 1982, the Board of Directors identified pollock processing and product development as the principal opportunities for AFDF, and the staff set out to pursue them. In early 1983, AFDF approached the U.S. food industry with information

on surimi and minced pollock, and was deluged with responses and requests for samples for surimi. That year the Foundation published "Pastries to Peanuts," at that time the leading publication on surimi production.

In the fall of 1983 AFDF held the first surimi seminar, gathering nearly 200 people in Seattle to discuss the potential of surimi, and that's when the project began to gain momentum. People exchanged business cards, shared ideas, and got each other enthused about this new industry.

By fall of 1983 AFDF had issued the first request for proposals for a surimi production contractor, and awarded the contract to Royal Alaskan Seafoods. The National Food Processors Exposition in Washington, D.C. asked AFDF to sponsor a segment on surimi in February 1985, and it was a standing-room-only event. Word was out that AFDF had a good thing going: free information, free technology, and a nationwide network that plugged companies to customers in a way that no federally-funded project had ever done.

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# Project Update

## High Tech Surimi Processing Promises High Returns

Alaskan shore-produced surimi is now higher quality and more consistent, better tested, and may even be less expensive than ever before.

AFDF surimi operations started up at Alaska Pacific Seafoods in Kodiak in late September after a four-month hiatus while pollock were in spawn. During the fall start-up, some significant changes were added to improve the quality of the product, the accuracy of quality testing, and the economics of plant operations. The most important of them were:

- Wash tanks were replaced with an in-line washing system;
- Tank agitators were replaced with a food-grade motionless mixer;
- Experiments were conducted using a Beehive deboner to increase yield from pollock frames;
- AFDF purchased an Alfa-Laval 418 surimi decanter centrifuge which is expected to increase protein recovery by 25%; and
- AFDF instituted a new quality testing system designed by Food Science Professor Dr. Tyre Lanier.

"Things are happening here that are going to make the industry sit up and take notice," said Jerry Babbitt, NMFS lab director in Kodiak. "We're increasing the recovery by significant amounts. The (quality) numbers we're getting now are just as good as SA grade."

Babbitt said that the higher quality of raw fish in the fall, compared to fish quality during the early spring start-up, is one consideration. Pollock usually are in better shape in the fall, when they're thinking about eating,

The AFDF/APS plant, designed after the traditional Japanese surimi production line, consisted of three 5 X 15-foot stainless-steel wash tanks with paddles inside, which agitated the water/meat mixture while moving it from the front of the tank to the rear, where the mixture was pumped up into screens for dewatering.

Wash tanks have been standard equipment in surimi plants for decades. However, they can cause difficulties if they are not perfectly balanced to handle continuous flow. Unless the paddles are adjusted to the perfect angle, they cannot ensure that the first meat into the tank will be the first out. Some product may float to the top of the tank, become water-sodden, and ruin the overall quality of the surimi.

This fall, the three wash tanks were replaced by a continuous in-line washer, which is standard equipment in many U.S. food plants. The washer is comprised of 200 feet of 2-inch stainless steel pipe with tri-clamp fittings, designed in a switchback form, with a Komax motionless mixer installed at the entry (see illustration).

The in-line washer was about one-half the cost of the tank wash system it replaces, and takes up less than 10 percent of the floor space—two feet by ten feet.

The advantage of the in-line washer is that it allows absolute control over the amount of time the product spends in the washing stage, a major factor in maintaining high quality of the end product. There is also less meat in the line at any given time, which means

recovery from round fish by 5%. The meat had kidney material in it which stained the surimi it was made into, and degraded the proteins. But, McFarland said, if the kidney material could be removed in the process, the meat could be usable in low-quality surimi. The meat would also be ideal for pet food, McFarland said.

Though the initial results of the frame meat experiments have been disappointing, other experiments indicate that the Beehive separator has other uses, which may be more significant yet to future surimi production economics. Hooked up to the waste chute of the Fukoku refiner, the Beehive was able to recover 85% of the wasted meat and render it usable in high-quality surimi.

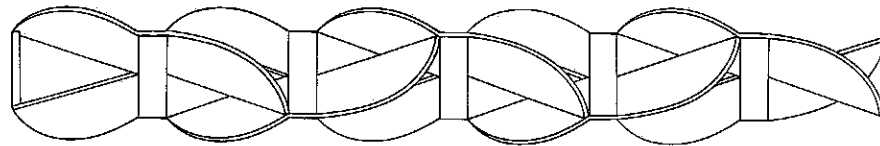
Chris Riley said the Beehive was also tried in place of the Fukoku

through a microscope in the interests of establishing quality specifications for each lot.

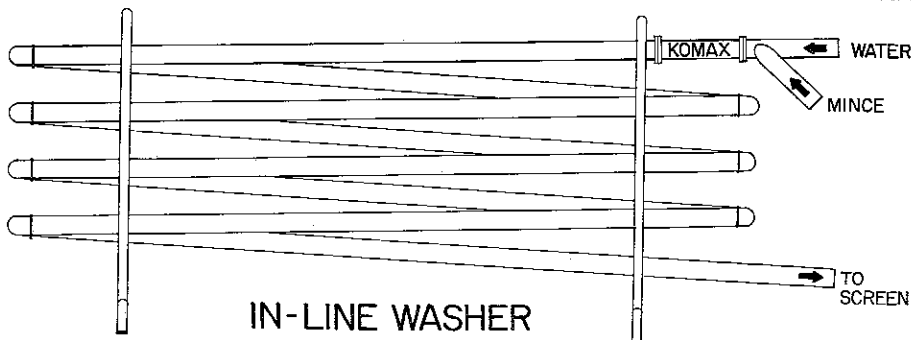
These quality tests are being done by Scott Edson, a biologist on contract to AFDF, who is working with the NMFS lab and the FITC in Kodiak.

Edson also is evaluating the commercial use of Dr. Tyre Lanier's torsional method of surimi quality testing. Lanier designed the testing system during an AFDF-sponsored project (see "New Specifications Give Surimi a Better Bite on Industry," The Lodestar, Summer 1985).

Lanier's research indicates that the torsional load test is a better way to evaluate the strength of a surimi gel than the traditional "punch test" widely used in the industry. Lanier's system could make it far easier to predict—and therefore control—the



KOMAX MOTIONLESS MIXER ELEMENT



IN-LINE WASHER

than in the pre-spawn season, when they're thinking about other things, Babbitt said.

"The surimi quality is excellent this time," he said. "Using this new technology, we have both the moisture content and the protein levels consistent. And the important thing is that all these changes can be adapted into a plant right away. All the new technology is easy and available."

None of the product tested this fall has produced quality figures lower than Japanese SA grade surimi (See box).

### Better wash system

Chris Riley, AFDF production director, said that the in-line washers are making a significant difference in product quality. "I think these washers will make the traditional tank washers obsolete for continuous surimi production," he said.

the system responds better to changes. It is easier to start up and shut down an in-line washer when problems arise. For a continuous production system, where product consistency requires a sensitive balance of all process variables, quick response is very important.

### Meat recovery increases yield

Techniques from the meat industry are helping improve surimi production, and the help comes through the hands of Beehive Machinery CEO Rae McFarland.

McFarland hooked up a Beehive AX503 separator to recover usable meat off frames from the Baader 182 pollock filleter. The machine accepted the frames and minced the recoverable meat which was analyzed for use in a variety of products.

The separator achieved 60% recovery from the frames, increasing overall

refiner, and achieved a 95% recovery rate in processing the primary product. The highest recovery rate achieved by the Fukoku refiner in surimi production is 75%. This experiment proved that the Beehive could improve yields considerably, making surimi production more efficient and less expensive in future plants.

### Centrifuge increases efficiency by 25 percent

Recovery levels achieved during the first surimi production at APS in early 1985 peaked around 21 percent. Standard recovery figures throughout the Japanese industry are about 22.5 percent.

APS, using techniques learned during Phase I and capitalizing on the experience of the work crew, was able to achieve 19 percent recovery out of the starting gate of Phase II. But with the addition of an Alfa-Laval surimi decanter centrifuge, which AFDF purchased for the plant in August, recoveries were expected to jump by at least 25 percent. The centrifuge was delayed in Denmark until the end of October, and was installed at APS the first week in November. (For detailed results on extensive experiments with the Alfa-Laval centrifuge, see page 4.)

The centrifuge is expected to be the single most significant innovation to result from the AFDF project.

### Quality assurance tests leap forward

By the time AFDF/APS surimi is packaged in its baby-blue poly liner and packed into a cozy SeaLand freezer van, hundreds of random samples will have been punched, torqued, twisted, dried, pressed, and gazed at

texture characteristics of finished surimi products.

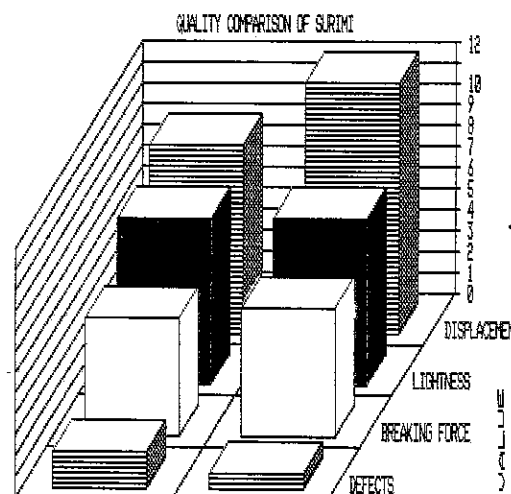
As each new load of surimi is sold, AFDF will send out results from both the torsional load test and the standard punch tests, and let the industry evaluate both sets of results.

Edson predicts that the torsional load test will be more accurate and useful, but may be more labor intensive than previous methods.

### Best-yet U.S. surimi now available

Alaska Pacific Seafoods will produce 650,000 pounds of surimi during Phase II of the AFDF surimi production project. This surimi is for sale at a price competitive to any other surimi on the market. As in the past, samples of surimi are also available to U.S. food companies interested in using it to develop new products.

For more information, for samples, or to get in touch with a surimi broker, call AFDF at (907) 276-7315.



# Market Development

Colin Wylie, president of Food Ingredients USA, purchased a large quantity of surimi from AFDF surimi broker Bob FitzGerald in September. Food Ingredients USA dried the product for a client on the West Coast who is now gearing up to introduce a new line of surimi-based health foods.

This is a story about the pursuit of a niche for surimi on the world protein market. It begins with this conversation between Wylie and Lodestar editor Krys Holmes. Next issue, the story will continue with an exclusive interview with the food company now farthest ahead in developing surimi-based foods for the American market.

**Your biggest project right now is providing dried surimi for several new products that are about to break on the market. Is that the only use you're exploring for dried surimi right now?**

No...but it's the only one at the point of commercial take-off. We're working on a number of other products both here and overseas. Our specialty is protein in dried form. Our expertise lies in working out functional values (of proteins) and how to use them.

That's what led us into working with freeze-dried surimi. Now we're going to put up our own operation where we'll be doing both freeze drying and spray-drying. **How does surimi compare to other proteins you've used?**

It has very interesting functional characteristics. It has good gelling ability - it clots well, which means that it can be made to stabilize emulsions like sausages and products like that.

Surimi is low in cholesterol and high in protein. The quality of the protein is very high. There's so much said about protein today, you know. Fingernail clippings are high in protein, too, but it's keratin protein which we can't metabolize. It's the percentage of amino acids in the protein which determines how valuable they are to us humans.

**Is surimi dried by the same process as milk and vegetables? Or is there a process adjustment?**

Yes, you have to put a bit of fancy technology in. Otherwise, in spray drying, you may end up with a product that is so cooked it isn't worth anything—fish powder, really. And you have to be very careful with your temperature control to get a product that's usable.

**Why is dried surimi better to use as a food ingredient than wet surimi is?**

Most food companies handle dried ingredients. When you have a frozen ingredient, you've got to have freezers. Most food processing companies don't have elaborate freezer facilities because they don't need it. A dried ingredient also is much more flexible, and it's a fraction of the volume and weight. Most food companies blend their ingredients as dry mixes, because it fits in with their program.

It's giving surimi an ability that it otherwise would not have. I think the interest in surimi has been a bit narrowly focused on just selling frozen product. I think the future lies in producing not only dried products, but in blending the surimi with other proteins, so that we can say to a food manufacturer, "You tell us what characteristics you want in your product, and we will build something that will give you those characteristics."

**In drying surimi, do you need the raw product made according to certain specifications?**

We'll be drawing up some rather special specs that we'll require. I don't think we'll need a lot of the additives (cryoprotectants), because the product will be dried fairly quickly and it won't need that protection.

**Are you now working to blend surimi with other proteins?**

Not only to blend them, but to produce them in a way that will retain their functional capability and their nutritional value. That's where our expertise in handling these animal proteins over the past few years comes in. This is where I see a very, very strong export market.

**In the dried form, could surimi be competitive or compatible with any protein now on the market?**

In many respects it's superior to most other proteins on the market. What you compare surimi to depends on how purified the product is, and what you're going to do with it.

A lot of the problem with some vegetable proteins is that they have a taste that hangs in the back of your mouth after you've swallowed. You can pick it out. No one has found out a way to totally deodorize or de-flavor soy protein.

I think we've figured out a way to deodorize and de-flavor surimi without damaging it, which is another little bit of fancy technology we've been playing with.

**How does dried surimi protein compare in price with other proteins?**

Surimi in freeze-dried form is considerably more expensive. But we're also working on other methods of drying, which we think will give us the same quality at a much lower price.

**So you believe there's a stable market for surimi in the U.S., aside from seafood analogues? I think there's still some doubt about that in the seafood industry.**

Yes, but that's because they're looking at it from a narrow viewpoint. They're looking at it in terms of having blocks of frozen surimi in Alaska, and they think the world's going to come knocking on their door and ask them, "Please can we buy some?"

I don't think that's the way to go with it. They (analogues) are copy-cat products. Turkey ham and chicken frankfurters are cheap copies of the red meat industry. There's nothing original about it. And all right, they've got the advantage of price, but they're not really creating their own market. They're just following along and trying to pinch a piece of someone else's market.

We just don't act like that, we don't think it's the way to go. Perhaps it (creating new products) requires a degree of sophistication that maybe hasn't been available. We're coming at it from a completely different angle.

I can understand their skepticism. They want to make this product go, and everyone's making copycat products like crab sticks, and certainly there's a market for that. But what we're trying to do is to create a completely new market. And this (dried product) is where we think it lies.

**What's the greatest potential you see for dried surimi?**

Surimi is an interesting ingredient in sausages and other products that are heat treated. The fact that it is such a high-quality protein I think will lend itself to inclusion in other products that at the moment take meat or poultry protein.

The nutritional and functional characteristics of the product lend itself to be used in dietary foods, you know, low-fat foods. People are getting very health conscious, and fish protein has got a good image.

**Is the fact that surimi is now produced in the U.S. an influencing factor for companies here? Would you have gotten involved with surimi if the only product available were Japanese?**

No. Probably not. I think the fact that it's produced in this country, and that it's available here, and we're not vulnerable to the whims of somebody thousands of miles away, that makes a great difference.

**On the other hand, is it a limiting factor to the industry that we now have only one domestic producer?**

I'm sure it is in a way. But as the uptake of surimi increases in one form or another, more and more people will come into the market—not only in Alaska, but down on the Gulf Coast and here on the East Coast....It builds up a momentum of its own.

*Food ingredients USA is a New York company engaged in the manufacture and distribution of specialized food ingredients. Food Ingredients offers expertise in protein technology; they also market phosphates for B.K. Ladenburg.*

## Alaska Japan Join in Surimi Ventures

Gov. Bill Sheffield of Alaska has signed a memo of agreement with the Overseas Fishery Cooperation Foundation and the Japan Fisheries Association asking Japanese help in setting up several at-sea and shore-based surimi processing plants in Alaska.

The agreement was announced on October 23, 1985.

Sheffield and officials from the Alaska Department of Commerce visited Japan and Korea in October to strengthen trade ties along with Pacific Rim, and to press for more Alaskan participation in those fishing industries now dominated by the Japanese.

The Governor said his objectives behind the surimi agreement were to put more Alaskans to work, to capture added value from Alaskan seafood resources, and to continue the mutual association between Japan and Alaska.

Under the agreement, Japan would lend money and technical assistance to U.S. companies to build at least one processing plant—in Kodiak, most reports said—and to train Alaskan fishermen and processors in producing surimi from Alaska pollock. State funds and private money would also be involved, according to the governor.

The governor also signed agreements with the Japanese industry relating to future aquaculture projects in Alaska.

Reports said the Japanese ended the meetings by complaining that their industry cannot bear the higher fishing fees, lower allocations, and pressure from whaling and salmon interests they now face.

Sheffield replied that the Alaskan seafood industry demands that the Japanese stop killing salmon in their high-seas drift nets, and is pressing for a greater share of the profits from seafood resources within the U.S. 200-mile limit, especially from pollock.

# Technology development

## Boost yield, increase profits with surimi decanter centrifuge

It has been compared to discovering a whole new fishery resource of several hundred thousand tons.

T C Swafford and Tomas Zetterling of Alfa-Laval have developed a method of recovering up to 40 percent more usable protein in surimi processing. The method, using an Alfa-Laval NX-309 decanter test centrifuge adapted to surimi processing, has been proven to increase yields, contribute to product quality, and materially benefits protein functionality.

The results will be higher profits for surimi processors, and more efficient use of the pollock resource.

Traditionally, Japanese processors have considered 22 percent an acceptable level for recoveries in surimi processing. Most of the protein losses occur in the wash-rinse stage, where the mince/water mixture is pumped into a series of large agitated tanks and then dewatered in revolving screens. Of the protein that enters the conventional wash system, approximately 34 percent is lost through screens to the wastewater.

The second culprit is the dehydrator drain pan, where about 3 percent of the potentially usable material is pressed through the dehydrating screen and is lost to the process and left to deteriorate.

Swafford and Zetterling worked with Jerry Babbitt of the NMFS Lab in Kodiak, Landon Asakawa of Alaska Pacific Seafoods (APS), and Chris Riley of AFDF during the first phase of surimi production at APS in early 1985.

Their purpose was to compare traditional tank washers with screen drainage to an in-line washing system; to compare the centrifuge to the traditional de-watering screens; to experiment with protein recovery throughout

the line; and to study the effect of these experiments on the proximate composition of the surimi.

"Actually, the results were rather revolutionary," said Swafford, who was in Kodiak in October to install the production-size version MRNX-418 centrifuge into the main system.

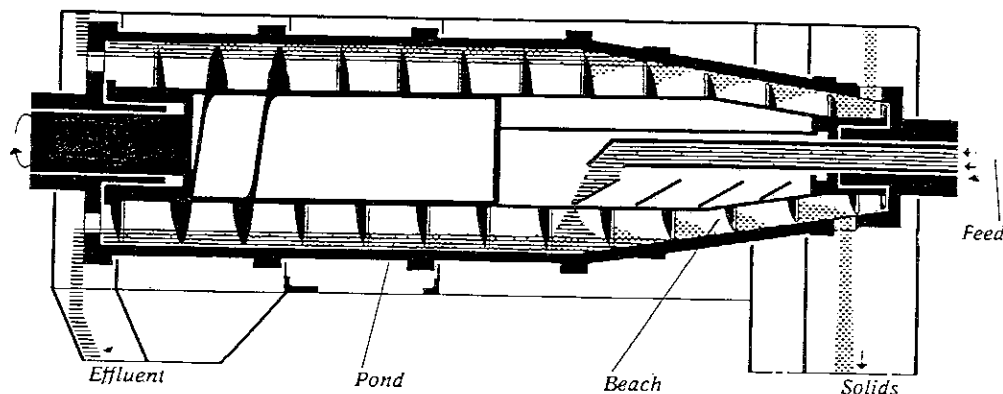
Protein recoveries within the wet process stage increased from about 66 percent in the conventional washers to as high as 95 percent when using the in-line washer and Alfa-Laval centrifuge. In addition to higher recoveries, overall quality was also boosted. Strain measurements increased an average of 11 percent with the use of in-line washing; color of the product was improved as well.

Using the centrifuge on material from the dehydrator pan, Swafford and his research team recovered up to 80 percent of the otherwise lost suspended insoluble solids from the wash water. This material could be either recombined with the surimi, or sold as a separate profit-making product.

Certain of the studies compared a line incorporating the test development NX-309 centrifuge to the full-scale surimi processing line. Product from both processes were compared for results. The centrifuge was applied at several different stages in the process, targeting those spots in the production line where protein losses were greatest.

Consistently, all results showed increased protein recoveries with the centrifuge, and higher product quality measured in moisture content, color, stress and strain measurements. According to Swafford, surimi processed through the NX-309 decanter measured 49 percent higher in stress measurement than surimi made by the conventional system.

Swafford said one target for protein



Cutaway drawing of the generic decanter centrifuge. The centrifuge bowl rotates at a high speed, generating a force which separates fish protein on the inside surface of the rotating bowl. An internal flighted conveyor transports the protein to a discharge port to the right of the centrifuge bowl. The centrifuge was adapted to surimi with some unique characteristics not shown here.

recovery was to decrease the amount of time the mince sat in water during washing. It had, on some days, been a hundred minutes. "My premise was to shorten the entire washing time," he said. "I think this fiber (the mince/water mixture) is more durable than anybody gives it credit for, as long as you minimize the contact time with water." The in-line process resulted in wash time of less than 12 seconds.

The result one of these experiments was encouraging, if not a little baffling.

"The product looked odd, very unusual," Swafford said. "I'd read one of (food science professor Tyre) Lanier's papers, which said something about translucency in high quality product. You could take the block of

this surimi, cut it about an inch thick, hold it up to the light and you could see your hand through it."

"With a more efficient system, they can make more product from the same amount of raw material," Swafford said. "The same is true of the reverse: Suppose you want to make 230,000 tons of surimi. The more efficient you get, the less fish it will take you to make it. The lowest we figure is about 650,000 tons of harvest."

Results from the experiments were definitive enough that Alfa-Laval has developed a commercial decanter centrifuge adapted to surimi processing. AFDF has purchased an MRX-418 decanter for inclusion in the APS surimi processing line.

## Skinless, boneless canned salmon is now in the pink

They said it couldn't be done.

For years now, many in the Alaskan seafood industry have said that the idea of turning the lowly pink salmon into a high-priced, skinless, boneless canned pack was kin to making a silk purse out of a salmon's ear.

Now two of America's largest food companies, Ralston Purina and Hormel, have turned the unthinkable into the irresistible. And their cans of premium skinless, boneless Alaskan pink salmon are finding success on the market.

Hormel introduced their first pink salmon pack this year. Ralston, marketing under the Van Camp "Chicken of the Sea" label, introduced its product nationwide just this month. The two products are different; Ralston's 6½- and 12½-oz. cans are prepared using a tuna pack, which includes a

second cooking stage. This product tastes milder than most canned salmon. Hormel is producing a traditional 6¾-oz. salmon pack in regular and smoked flavors. Together the two products may change the direction of the Alaskan canned fish business.

The two products appeared on the scene just as the Alaska State Office of Commercial Fisheries Development (OCFD) began evaluating its Pink Salmon Utilization Project, an effort to introduce new pink salmon products to the American food industry.

The project, supervised by Paul Peyton, was designed to seek new marketable products that could be made out of the plentiful pink. The OCFD contracted with Alaska Fresh Seafoods in Kodiak to produce 7,500 pounds of high-quality salmon blocks last summer. Fourteen U.S. food com-

panies now are evaluating its use in various products for commercial sale.

"The fact is," Peyton said, "we had a tremendous pink run in Alaska this year—the highest on record—and people have got to come up with a way to market that product, otherwise the price will fall out of sight."

The Alaskan seafood industry traditionally has resisted moves into skinless, boneless canned pink salmon. One processor, in a letter to the editor of the Anchorage Daily News in 1984, wrote that producing skinless, boneless salmon would drive the price too high for consumers. An industry official testified at the North Pacific Fisheries Management Council several years ago that putting 20 percent more fish in the can would make the product economically unfeasible. Others complained that without the skin and

bones, the flavor of the product would be lost.

The OCFD hopes that once Gorton's, or Mrs. Paul's, or Van de Kamp's, or Hormel, or Van Camp's becomes interested in processing high-quality pinks—without skin and bones—Alaskan processors will rush to fulfill the demand, as is occurring with surimi processing.

Peyton is enthused about the response from those and other food companies now testing his product. At press time, none of the companies experimenting with the demonstration product was ready to discuss the results of their activities. But the fact that both Hormel and Van Camp—two important labels—have leapt into the market with their products is expected to make the industry sit up and take notice.



Thanks to Newton, we can predict with precision the movement of the stars and planets as far into the future as we like. But we cannot come closer to predicting tomorrow's weather than to say: "There is a 70 percent chance of snow."

It is easier to make grand predictions than minute ones. I am told that a major earthquake could destroy 65 percent of Anchorage. But what would happen to the mail box outside my home?

Predicting the future of the seafood industry is hard enough on a general scale. Add to the quantum confusion by asking yourself: How will the future affect me, precisely? How can I help bring about its betterment? Accounting for given uncertainties, how close can we predict?

This survey is an effort to draw a sketch of the future of the Alaskan seafood industry.

Please fill out the answers below. If you disagree with the choices given, write in your own. Send them back to us before December 15, 1985. Let's not let the future happen without us.

**Fact: Domestic landings of pollock totalled 24 million pounds in 1984.**

**1. How many pounds will be landed by domestic fishermen in the year 1990?**

- a) less than 24 million;
- b) between 24 and 100 million;
- c) between 100 million and 1 billion;
- d) more than 1 billion.

**2. Of domestic pollock landings, how much will be landed to floating rather than shore-based plants?**

- a) 100% to floaters;
- b) 75% to 100% to floaters
- c) 50% to 75% to floaters

**"What we most want to know about the future ... is most securely sealed off from us." —Horace Freeland Johnson**

**What Next?  
An AFDF Survey**

- d) 25% to 50% to floaters
- e) less than 25% to floaters

**3. What percentage of dollar volume will each product represent?**

- \_\_\_% fillets;
- \_\_\_% surimi;
- \_\_\_% roe;
- \_\_\_% blocks;
- \_\_\_% mince;
- \_\_\_% meal and oil.

**4. What will be the percentage of domestic owned and foreign-owned processors operating in Alaska?**

- \_\_\_% foreign owned;
- \_\_\_% domestic owned;

**5. What percentage of sales, in volume, will go to foreign destinations, and what percentage to domestic destinations?**

- \_\_\_% foreign;
- \_\_\_% domestic;

**6. Plant size: The typical shore plant will process (in round weight):**

- a) under 15,000 tons/year;
  - b) 15,000 to 25,000 tons/year;
  - c) 25,000 to 40,000 tons/year;
  - d) over 40,000 tons/year.
- 7. The typical floating processor will process (in round weight):**
- a) under 15,000 tons/year;
  - b) 15,000 to 25,000 tons/year;
  - c) 25,000 to 40,000 tons/year;
  - d) over 40,000 tons/year.

**8. Technology development: What is the greatest obstacle to full development of the pollock fishery today?**

- a) lack of processing technology;
- b) lack of modern fishing technology;
- c) lack of domestic markets;
- d) lack of foreign markets;
- e) lack of cooperation between industries of all nations.
- f) other

**9. Of the pollock that is sold domestically, what percent will be consumed:**

- a) in the home \_\_\_%;
- b) frozen \_\_\_%;
- c) in institutions \_\_\_%;

**Some information: I am:**

- a) a fisherman
- b) a processor;
- c) a food technologist;
- d) an engineer;
- e) a broker;
- f) a marketer;
- g) in government or resource management;
- h) other (please say what it is.)

Please return either this page or a photocopy of it, with your answers and any other comments you'd like to include, to: Lodestar Survey, c/o AFDF, 508 West Third Ave., Suite 212, Anchorage, AK 99510. Attn: Krys Holmes.

**SURIMI  
TARIFFS  
PROPOSED**

Sen. Frank Murkowski, R-Alaska, has drafted a bill to impose a 6.5 percent tariff on imported surimi in blocks over 15 pounds.

The Japanese government now imposes a 6.5 percent tariff on cod and pollock products, excluding fillets, which are imported into Japan, said Doug Humes, Murkowski's fisheries aide. Murkowski's bill would set the same tariff for Japanese product entering the U.S., and would decrease to as the Japanese tariff is decreased.

There is currently no tariff on surimi blocks imported to the U.S.

Humes said the proposed tariff was "not out of line with existing U.S. tariffs on other pollock categories." Flaked pollock in airtight containers, for example, falls into a 6 percent tariff category.

Humes said the proposed tariff would not hurt importers of Japanese surimi, but would be an indication to the Japanese government that the U.S. will no longer be open to the Japanese industry in areas which are closed to U.S. companies, such as the importation of surimi.

This bill does not address the import quota barrier," he said. "Instead, by matching tariffs, this bill sends the message that we want reciprocity in trade, and implies that we may address the import quota barrier in the future."

**VAN CAMP PRESIDENT'S NEW PRODUCT STORY**

Van Camp Seafood Company, a subsidiary of Ralston Purina Co., was the first to petition and receive a temporary marketing permit from the FDA to produce a skinless and boneless pink salmon product packed in springwater. Van Camp was also the first food company to place the product in test market.

Most companies as large as Ralston Purina are very protective of their "family secrets." The following is an exclusive interview with Don Rupprecht, president of Van Camp Seafoods Company.

**Why did Van Camp decide to enter the skinless, boneless canned salmon business?**

Van Camp Seafood Company is well represented in the tuna category. In an effort to expand our scope in the canned seafood category, we began to explore the second largest category available, canned salmon.

Consumer research indicated that the single biggest negative associated with traditional canned salmon was the presence of skin and bones. In order to provide consumers with a differentiated, value-added product and fulfill a strong consumer need, we

pursued a skinless, boneless pink salmon.

**But isn't the domestic canned salmon market on the decline?**

We saw the canned salmon market rebounding after the botulism incident. At the time we looked at it, the market was growing. This year it did a reversal and declined somewhat. The total market was approximately 5 million cases a year. Consumer research, however, shows that skinless, boneless product with a milder taste is appealing not only to the traditional user but is also attracting new groups of consumers to the category.

Another factor is that it was the practice of the industry to put into cans what they can't freeze, or what they estimate they can sell. We're not sure whether the peak sales numbers were ever realized, or aggressively pursued before.

**In your market studies, did you see any age differentiation? Any evidence that the younger people won't accept canned tuna as well as the older people?**

The age group who uses the traditional pack is older, which definitely reflects a decline in markets for the traditional pack, as a result of people dying and new people not entering the mainstream. The younger consumers are resistant to the traditional pack. They don't expect the skin and bones to be there.

We haven't done any post-test market studies on that question yet. But the market studies clearly and strongly indicate that the consumers want skinless, boneless canned salmon.

**Why did you choose the tuna-style preparation (which includes an additional cooking stage) over the salmon preparation?**

Consumer research indicated that the convenience and milder taste of the tuna style pack was preferred over the traditional pack.

**How will retail prices of your product and traditional canned salmon compare?**

Chicken of the Sea Skinless, Boneless Pink Salmon is slightly higher priced than traditional canned salmon due to the higher quality of the fish

used, and the extra cost in handling and processing the fish. I can't tell you exactly what the price difference would be for any particular part of the country.

**In conjunction with this product, are you producing any salmon meal or oil?**

At the present time, no.

**When did test marketing for this product begin?**

Test production began in November, 1984. Test marketing began in February, 1985 in Kansas City, Pittsburgh, Houston, Miami and Buffalo. To date, test market results have met expectations. Plans are currently underway to introduce the product on a national basis in November, 1985.

**What are your projections?**

We feel quite confident that Chicken of the Sea skinless and boneless pink salmon will be a successful addition to the second largest category of canned seafood. Our enthusiasm comes from the feedback we're now receiving from our customers.



# Opinions

## VIEW FROM HERE

By Chris Mitchell

Production of surimi has begun again in Kodiak after a bitter recess for salmon, halibut, and all those money fish. And during that respite, the Foundation and APS planned for and instituted some operational and technical improvements.

This second start-up proceeded with a lot more internal calm than the first time, but the difficulties seem more frustrating the second time around. Examples of frustration are: first, fish availability and fishable weather don't seem to want to coincide, so for the first couple of weeks production was on-again, off-again.

Secondly, even though we had the Baader 182 modified to accept larger pollock, the two and a half to three pound fish caught the first week or so caused all sorts of havoc with the machinery. Those problems affected yield because the fish were just too big to process efficiently.

Last spring's production demonstrated radical improvements in yield with the use of a decanter centrifuge to recapture insoluble proteins lost in the wash system. The construction of an actual surimi decanter was delayed due to factory constraints in Denmark, thereby holding up final trials and cutting both profit and yields for APS.

Fourth, surimi testing and acceptance sampling requirements were taken over by Scott Edson and the University of Alaska's FITC to allow APS technicians to perform more on-line production control and monitoring.

Apparently APS surimi now has a track record—or is gaining one—and is now at least a known entity on the international surimi market. The domestic market now is clamoring for purchases of product from Phase II before APS can even sell it to the Foundation.

Both AFDF and APS expect to achieve far better surimi quality the second time around. And despite the frustrations, we must remember to be pleased as well. What if we still had all 400,000 pounds of surimi from Phase I still unsold? or had not yet proven that surimi can be made in the U.S. successfully? What if we had only tested conventional technology, and discovered that even by matching Japanese yields we couldn't match their competitive prices?

Neither of these is the case. In fact, we have sold all available APS surimi; we have proven that surimi can be made in the U.S.; and all signs are good for the development of the industry in Alaska. There are new non-crabstick products under development, the domestic market is going gangbusters, and two additional large surimi plants are planned for Alaska's shores.

Though AFDF can't take credit for all of the above, we can say we have a few things to be proud of.

By Kryst Holmes

One of the things that makes meaning out of noise is language. One of the things that makes language meaningful is the set of laws we call grammar. Language that imparts meaning becomes information. And one of the laws of information is that it requires that we be ready to learn, that is, uncertain of what will happen next.

"In an ordinary conversation," writes Jeremy Campbell in *Grammatical Man*, information is conveyed when the speaker says something that changes the listener's knowledge. This means that the listener is in a state of uncertainty as to what message he will actually hear...."

And so are we all, when engaged in discovering new things about the world. Uncertainty is the incubator of discovery. Uncertainty is the force by which chance is invited to have its way with the orderliness of the world, and in the backwash of disorder, to create a new idea.

In this, the Information Age, we should embrace uncertainty for its

## OFF THE CUFF

"The universe, and all the living forms it contains, are based on chance but not on accident."

— Jeremy Campbell

potential profitability. We should welcome that precious state of pause before learning something. But we don't; we avoid it the way we avoid other disorders in our lives. Uncertainty is exhausting and bothersome, and it can be frightening.

By imposing order on our slightly disorderly world; by remaining ever vigilant over procedure and protocol; by never allowing rules to be broken or policies to be relaxed; by discouraging chaos and clutter and capriciousness, by measuring the minutiae and missing the mystery, we suck the world dry of its creativity and meaning.

And so we must remind ourselves to seek out the kind of uncertainty that comes just before learning something.

To find meaning we must brave disorder. To discover new things we must embrace the slightly chaotic. In business, in finance, in politics, in science, in S-K projects—even in journalism—we must trust that the same set of chances that got us where we are will shove us one step beyond.



## Letters to the Editor

Dear Editor:

Dr. Regenstein's letter of rebuttal in the Summer issue of *The Lodestar* is a very poor response to questions raised in my letter printed in the Spring issue. He adroitly failed answering my statement regarding the distinct possibility that structured food could be nutritionally superior to natural products. I am living proof of this fact, as I have been advised not to eat mayonnaise, whole milk, eggs, and marbled meats.

He maintains that some segment of our population eats imitation shellfish to provide them a normal portion of their protein intake and as such these products should also provide them with corresponding amounts of vitamins and minerals.

I seriously doubt that 99.9% of the population including nutritionists know what the protein, vitamin, and mineral content of various species of shellfish are and, in the context in which Dr. Regenstein presents his argument, could care less.

As one who has devoted the greater part of his career to get the American population to eat more fish, it would be my fondest wish that the consumption of fish and these imitation pro-

ducts would reach levels that would provide Americans with a significant level of protein, vitamins, and minerals. Should this happen, the protein, vitamin and mineral argument would of its own self-destruct.

Insofar as fish in frankfurters, the amine problem was recognized by this laboratory at least seven years ago. The problem can be easily solved by washing the flesh free of trimethylamine oxide but yields are reduced. Our problem is no different than that of the meat industry with bacon, and recent research indicates it can be solved in the same way, i.e., the addition of alpha tocopherol to inhibit nitrosamine formation.

Incidentally, when was the last time you advised people to stop eating bacon and broiled steaks and friend hamburgers that are heavily laden with the carcinogen benzopyrene?

Last, Regenstein's concern of image when fish is mixed with meats i.e., fish would be regarded as an extender, has no basis in fact. Fish has a somewhat higher protein efficiency ratio than meat, a much lower fat content, and therefore fish frankfurters should be regarded and would be promoted as

being superior to those containing meat or meat and poultry.

Joe, I respect your concerns on some of the issues you raise, but at this point I believe you're "nit-picking" on this subject. "Imitation" shellfish products at this stage are still to be considered first generation and, irrespective of our opinions expressed in this column, both the organoleptic and nutritional properties of these products will improve in the future.

**John Spinelli**  
NMFS

Dear Editor:

I just wanted to drop a short note with regard to the latest (Sept 28, 1985) issue of *The Lodestar*, which we just received here at Intek.

Thank you very much for mentioning our operation in the above-mentioned issue; this type of publicity is a very great help to us. If any leads result from this, we will think kindly of our friends up in Alaska.

**Bruce G. Tolin**  
Intek International Food Products, Inc.

THE WALL STREET JOURNAL THURSDAY, OCTOBER 10, 1985

# Free-for-All Fishing Depletes Catch

By S. FRED SINGER

The present system of managing marine fisheries is headed for destruction on the public-policy reefs. Most fishing grounds are operated on an open and free access basis; anyone can buy a boat, obtain a license and take fish. An increasing number of commercial fishermen are chasing after and threatening a limited supply. Thus, despite legislation that hopes to maximize fish yields over a long period of time, we are inviting over-fishing and long-term shortages. The best way to both preserve our fishing resources and slow down the rising price of fish is to privatize U.S. fishing grounds.

Counterproductive federal policies contribute to the problem by encouraging even more fishermen to enter—with each one catching a smaller fraction of the allowed annual fish quota and wasting his capital and time. One consequence of these policies is that fish, once a cheap source of protein, is now one of the most expensive—as many restaurant patrons and homemakers can attest to. Paradoxically, fish is expensive because it is free—i.e., without private owners.

## The Fairest Way

Thus, we should learn from the "tragedy of the commons" paradigm: Free access to a common grazing meadow encourages each herder to increase the size of his herd, and eventually destroys the resource base through over-grazing. The fairest way to limit access is by establishing transferable property rights for quantities of specific kinds of fish caught in each important fisheries region. Instead, most of the fishing industry, with political support out of proportion to its economic importance, is asking for more subsidies, and for more restrictions on fish imports and on fish caught in U.S. waters by foreign fishermen. At best, such policies would delay the inevitable crisis by a few years, but cost the consumer and taxpayer a boatload of money.

The government should also phase out subsidies that encourage the entry of more fishermen: low-interest federal loans for the construction of additional commercial fishing vessels, zero-interest deferral of federal tax payments, subsidies for insurance against the loss of commercial fishing gear, and no-cost marketing assistance.

What was once an inexhaustible resource is no longer so. Thanks to modern technology, a single fishing vessel using radar, sonar, spotter planes, sea surface observations from satellites, advanced catching gear, onboard processing and refrigeration can do the job of a hundred older boats—and in less time. For some species the entire fishing season lasts only a few hours! Clearly, fewer resources are wasted if, to take a hypothetical example, one ship and crew catch fish 100% of the time, as against building and operating 100 ships to harvest the same total amount, with each ship operating at 1% capacity.

The problem is that U.S. laws and institutions have not kept pace with advancing technology. Current law, namely the Magnuson Fishery Conservation Management Act of 1976, appropriates the fisheries in the Fishery Conservation Zone (FCZ) out to 200 miles from the U.S. The act has been administered as if the resource belonged to fishermen, in that U.S. fishermen are charged nothing for the right to fish. But, as with offshore oil and gas, the resource should be considered the property of all U.S. citizens. Imagine the storm of protest if oil and gas worth \$2.4 billion were given away to energy companies every year!

In contrast to fisheries, offshore oil and gas resources are now allocated by an equitable and efficient method of auctioning leases. If one disregards the debate over how fast to sell leases, the principle becomes quite clear. The auction extracts a "rent" that goes to the Treasury and, therefore, to all U.S. citizens.

Of course, fisheries, being both mobile and renewable, present a more complex management problem than hydrocarbons, or even timber or oysters. Because fish are renewable, the annual amount taken of each species has to be limited. If it exceeds the value set by scientific considerations, then over-fishing will destroy the resource. On the other hand, if the full amount is not taken, the resource is wasted. Setting the correct amount every year for each fishery is not a point at issue here; determinations will continue to be made by scientific experts.

*Fishing resources should be considered the property of all U.S. citizens—not just fishermen. Imagine the storm of protest if rights to offshore oil and gas worth \$2.4 billion were given away to energy companies every year!*

Limiting access by creating transferable property rights is a worthwhile solution to the problem of over-fishing. Such rights could be allocated in a number of ways: by lottery, by prior right, or by auction. (Rights would expire after a period of, say, one year, and could not be carried over.) Much could be learned from the example of other countries and of states like Alaska, where entry is limited for some fish resources and where licenses are transferable.

No matter how the fishing rights are assigned or distributed, they must be transferable so that fishermen who wish to withdraw from fishing can sell their rights to others who can then operate their equipment more efficiently and make greater profits. This would establish a market in which the current waste of capital and working time would be eliminated, lowering costs to fishermen and prices to consumers.

The efficacy of transferable property rights is well illustrated by the oyster fisheries of Chesapeake Bay. On the Virginia side, about half of the oyster beds are under private control and managed like farms, using modern production and harvesting methods. On the Maryland side, oyster grounds are predominantly under an open-access regime. The overfishing problem is solved by lowering the efficiency and reducing the catch per unit effort—essentially by a reversal of technology. Not only are the oyster periods limited, but the methods are kept antiquated: The "skipjack" boats use sails, not motors, and the oysters are taken largely by hand methods to further lower the efficiency—a heavy price to pay for being picturesque.

A separate policy issue involves foreign fishermen who wish to fish in the Fishery Conservation Zone. They should still oper-

ate under a general nation-to-nation agreement with the U.S. But once past the political hurdle, they too should be required to bid for the right to specific amounts of specific fish, thereby letting the market decide the value of the resource and at the same time increasing income to the U.S. Treasury. Currently, foreign fishermen pay nominal fees that cover only a portion of the full costs of management and enforcement, about \$170 million a year.

The present system is breaking down—more rapidly in some areas than in others. Some U.S. fishermen enter joint ventures, transferring their catch to foreign factory trawlers that use less expensive, fully amortized vessels manned by cheap labor. The processed fish is often sold in the U.S. market at a good profit. Other U.S. fishermen have invested in expensive American-built vessels in order to gain priority in the allocation of fishery resources under the 1976 act. The amounts are not small: A group of Alaskan fishermen bought vessels costing \$200 million in the last five years and now finds it difficult to compete—even though aided by public funds. Not surprisingly, the Alaskan fishermen would like to limit foreign fishing, as well as the joint ventures and the import of cheaper fish.

The current trend is to pile further restrictions upon the existing ones, encouraging further subsidies to fishermen and tariffs on imported fish. The consumer pays the bill several times over—as usual. New England's commercial fishing industry has recently petitioned the International Trade Commission to impose a 10% to 20% tariff on imports from Canada so that the "treasured way of life" of the region's fishermen can be preserved. The situation is classically unstable, as ever higher prices for fish attract more entrants whose costs eat up their potential profits. But this cycle must stop when consumers stop buying higher-priced fish.

## Used for Mischief

The fact that foreign fishing rights are determined by politics rather than economics means they will be used for political purposes—and, thus, often for mischief. Thus we find large quotas for Poland and, inexplicably, for East Germany, while the European Community has to make do with a small allocation. (West Germany's modern fishing fleet is in deep trouble; without further state subsidies, its ships will have to be sold to South Korea and China.)

Also, in the 1980 amendments to the Magnuson Act, Congress linked foreign fishing allocations to whaling issues. As a result, a federal appeals court has just ruled that the U.S. is required to impose sanctions against Japan for violating international whaling quotas—a ruling that could complicate delicate trade relations between the two countries.

All of this could be avoided by privatization of fishing resources, whereby foreign fishermen would submit bids or purchase fishing rights from the U.S. owners of such rights.

Our nation's bountiful fishing grounds can be preserved, but instead they are now threatened because the federal government has bought one of the oldest fish stories—that you can continue getting something for nothing.

*Mr. Singer, a former deputy assistant secretary of the interior, is a visiting eminent scholar at George Mason University in Fairfax, Va. He serves on federal government committees advising on ocean issues.*

## POLLOCK-TICS IN ALASKA

Alaska's resource managers are taking a hard look at the Pacific pollock stocks before allocating fishing rights for 1986. The pollock resource in the Gulf of Alaska, the Aleutian Chain, and in the Bering Sea is on the declining side of its natural cycle, and is expected to bottom out in 1986.

The North Pacific Fishery Management Council (NPFMC), which sets recommended harvest levels for Alaska's commercial fisheries, in October proposed to lower next year's harvest limit for pollock to "no greater than 100,000 metric tons for 1986," less than one-third the harvest in 1985.

All recommendations are now up for public review until the December 10 NPFMC meeting in Anchorage, when a final recommendation will be drawn up and submitted to the State Department.

The Council also recommended that a 4,500 metric ton joint-venture allocation of pollock in the Gulf of Alaska be awarded to the People's Republic of China and its joint-venture partner, Pacific Rim Operations, of Anchorage. If ratified, it would be the first joint venture fishery operation in the Gulf of Alaska involving China.

However, the proposed joint venture was not welcomed in Kodiak. Days after the recommendation was announced, the Kodiak City Council passed a resolution opposing the Council's move. The resolution cited declining pollock stocks and the difficulty of competing against foreign processors with significantly lower labor costs. It called for applying unused pollock allocations from 1985 to the Domestic Annual Harvest category for 1986 in light of declining resources, and protested establishing a brand new joint venture relationship at a time when domestic fishermen and processors are trying to gain a foothold in the industry.

Copies of the resolution were sent to the council and the U.S. State Department.

The NPFMC now is accepting comments on these and other issues up for discussion at the December meeting. Contact the NPFMC at P.O. Box 103136, Anchorage, Alaska 99510, (907)274-4563.

*What do you think? Should America's seafood resources be privatized, and fishermen charged a harvesting fee? Let us know what you think about this and other issues. Write a letter to The Lodestar. (This article was reprinted from The Wall Street Journal.)*

continued from page 1

Later in 1984, Royal Alaskan was unfortunately closed by its parent company, Castle & Cooke, before full-scale surimi production could begin. The staff was discouraged; other processors lost their enthusiasm, and some food companies came close to saying, "Call us when you get work." But already the momentum had begun to build. And AFDF went to work on another RFP.

Then when Alaska Pacific Seafoods (APS) started to produce surimi for AFDF ten months ago, three important things happened: First APS proved that surimi could be made onshore in Alaska, and it was easier than expected. Second, food companies were assured that raw surimi was available in the U.S.. Third, all the constituents AFDF had been trying to reach—seafood processors, bankers, lawmakers and food manufacturers—paid their own way to Kodiak to see the surimi production line.

The project now faces new challenges in market development, technical improvements, and industrial encouragement. But there is now proof that the three conditions of a healthy industry now exist for surimi. This issue of *The Lodestar* focuses on that evidence.

New technologies in the Alaska Pacific Seafoods plant in Kodiak have made U.S. surimi processing more efficient and more economical, and have ensured consistently better product than the traditional Japanese plant. Alfa-Laval, a Swedish-based process engineering company,

revealed results of tests done during last spring's surimi production that showed increased protein recovery in the surimi line of 25 percent. Protein recovery by decanter centrifuge could increase profits by 20 percent.

The state of Alaska and the Industrial Bank of Japan have announced a preliminary agreement to invest in a new \$30 million surimi plant, probably to be built in Kodiak. Further agreements to build more floating and shore-based surimi processors for the growing Alaskan industry are under way, but are not yet signed.

The strength of the U.S. market for surimi-based foods has long been a source of skepticism. This month, a brand-new and strongly-backed food company prepares to launch a new line of food products nationwide, including three new surimi-based products—none of them seafood analogues. The company is a serious entrant into the market, and represents one giant step for the surimi industry in America. It is also an indication of the bright future surimi faces in the food industry as a mainstream ingredient, as a health food, as a source of high-quality protein.

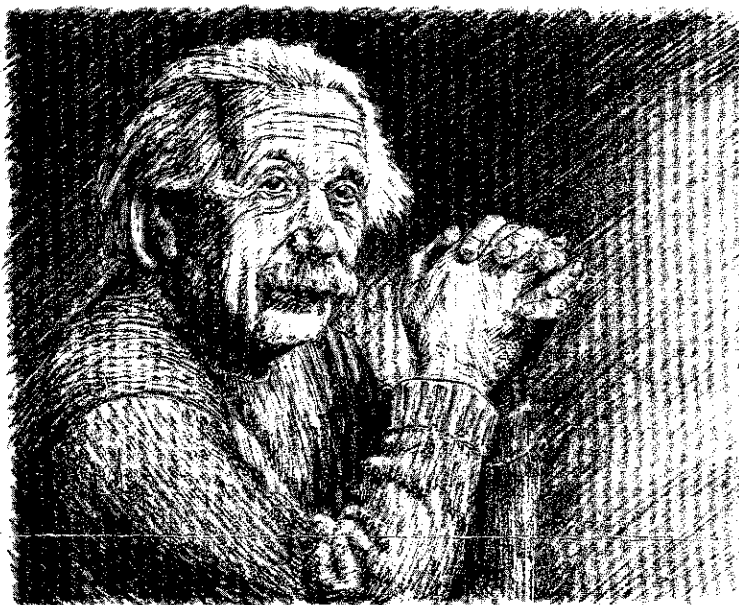
Physicists speculate that before the Big Bang there must have been an extreme and sudden silence. There is a similar silence now among the main constituents of the surimi industry, which may indicate that what comes next will be worth talking about.

#### NEW MEMBERS JOIN AFDF

At the AFDF annual meeting Dec. 6, the Board of Directors will welcome two new members and ratify memberships for 17 companies who joined during 1985.

R.J. Rhodes of R.J. Rhodes & Associates applied for a 1986 associate membership; Richard Rhoda of First Alaska Surimi, Inc. joined as a voting member.

The Board will also ratify 17 memberships for 1985: Ralph Wilkinson, Grain Processing Corp.; Steve Smith, Kemp Pacific Fisheries, Inc.; Robert Slade, Baader North America Corp.; Max Malavanski, St. George International; Paul Schilling, Alaska Gourmet, Inc.; Dr. Neill Webb, Webb Foodlab, Inc.; Ronald Pauley, Oceanrawl Corporation; William Diedrich, Van de Kamp's Frozen Foods; H.A. Larkins, Marine Resources Co. International; George Pigott, Sea Resources Engineering, Inc.; Dr. Arnold Roseman, Jerrico, Inc.; Frank Kawana, JAC Creative Foods, Inc.; Thorne Tasker, Alaskan Joint Venture Fisheries, Inc.; Dr. Richard Roop, Central Soya Co., Inc.; R. Craig Wilson, Frigoscandia Contracting, Inc.; Greg Baker, Office of Commercial Fisheries Development; and Jaison Yoon, Pacific Giant, Inc.



"Concern for man himself and his fate must always form the chief interest of all technical endeavors, concern for the great unsolved problems of the organization of labor and the distribution of goods — in order that the creations of our minds shall be a blessing and not a curse to mankind."

Albert Einstein in his address to the graduates of California Institute of Technology

Concerned about your endeavors? If the future of seafood resources is one of your great unsolved problems, you can't afford to be without *The Lodestar*. We give you usable information about the latest in surimi technology, thought-provoking pieces about what top companies are working on next, and a forum to exchange ideas, opinions, controversial views.

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