

Walter Blogoslawski: Today is August 20 [2015]. I'm at the Frank M. Flower shellfish hatchery in Bayville, Long Island, and I'll be speaking shortly with Joe Zahtila, who has worked here –

Joe Zahtila: Since 1965, or '66, I can't even remember. [laughter]

WB: Wow. [laughter] And who will describe some of the history of this hatchery. So I'm going to put the tape recorder down. Well, maybe put it closer to here.

JZ: Sure.

WB: There. That's good.

JZ: All right. Where do you want to start? When I first started here?

WB: Yeah. I got just a few questions.

JZ: Okay.

WB: The history of the hatchery.

JZ: Okay.

WB: Some of the reminiscences you might have of Butler Flower. What do you see for the future of aquaculture?

JZ: What do I see for the future? A lot of good questions. And a lot of thought. Well, the beginning? Butler Flower was a great man. There was nobody like him. He was very inventive and very optimistic about everything. And no matter how many times things didn't go right, he just kept being so optimistic – said, “Just keep on trying.” Just gave Dave [Relyea] and I the full run of the hatchery and said, “Keep on trying to get the thing working.” We started running the hatchery probably – I started in '65. I think Dave started in '64 or '63. We both started just as hatchery technicians, doing general maintenance and everything else. One was working with the shellfish. Back then, we used to set oysters on shells. And then gradually, probably sometime in the '70s, early '80s, we started using a smaller cultch, getting me more single oysters. We also started growing clams probably in the '70s and fooling around with them, and they turned out to be successful. So, they're growing up to a hundred million clams a year now, and we aim for like fifty billion oysters a year now. And aquaculture? Butler was very optimistic about growing algae. He always wanted to grow algae, so he thought of a – one time when he was living up in a house here near the hatchery, he was digging a well for his freshwater and found out that eighty feet below the surface was beautiful clean saltwater. So, he remembered that for

the hatchery and figured this is the greatest thing to do to grow algae in, along with oysters. We tried to grow oysters along with all different types of algae, and it worked out for a while. But something was still missing, so that's why now we supplement the bay water with the algae that we grow in the well. What else is there? Want me to just go from there?

WB: I'm trying to think in terms of – what time do you start your hatchery?

JZ: Yeah. We start the hatchery – generally, we bring our brood stock in right before Christmas in December. And algae starting prior to that, probably in the beginning of December, late November, and take our firstborn in January with oysters, and we continue with the oysters spawns until probably March, and then we start spawning clams in April.

Dave Relyea: Hello.

JZ: There's Dave now.

DR: How are you doing?

WB: Good. I'm just recording some of Joe's observations about the hatchery. We wanted to include you, too. I asked Joe when he started here, what he was involved with, and a little bit about the early stuff that Butler did for the hatchery. So, I just wondered about you, too.

JZ: You started, what, in '63, Dave, or '64?

DR: '64.

JZ: '64, okay.

DR: So, let me get these boots off.

WB: Sure. Of course.

JZ: See that? [inaudible] Dave's story is boots. [laughter] [inaudible] boots on. Right, Dave?

DR: No, don't say that.

JZ: Those were the old [inaudible]. I was telling Dave I was watching the other day – with [James] Stewart and John Wayne – *The Man Who Shot Liberty Valance*. You ever see that?

DR: Yeah.

JZ: Jimmy Stewart made sure that the guy in the box had his boots on. Do you remember that?

WB: Anyway, this is Dave Relyea of F.M. Flower shellfish hatchery in Bayville, Long Island, New York. We're just here to discuss a little bit of the shellfish aquaculture business, which, really, this is the largest hatchery in the northeast, as far as I know, that does both oyster and clams. Dave's been here since the very beginning with Butler Flower and then Franklin Flower. So Dave, if you could just tell us a little bit about your involvement?

DR: Well, I started here in 1964, and that was two years after the hatchery was built. I worked as an after-school job when I was in high school and then as a summer job and also a summer job when I was in college. You learned the basics of the hatchery. I went to college, and Joe ended up going to Vietnam and the service. We both got out about the same time; I think it was 1969, wasn't it, Joe?

JZ: Yeah, somewhere around there.

DR: Butler didn't have anybody to run the hatchery at the time, so he asked Joe and I if we would give it a try. And we've been here doing it ever since.

WB: What are some of the obstacles you faced over the years? For example, growing either oysters or then clams.

DR: Well, starting out with the basics and not knowing much more than that, we had a lot to learn. We kept plugging at it, trying different things. We found methods that worked, and we improved on them over the years. From the 1970s on, we were able to produce a valuable amount of shellfish to keep the company going. But the history of how the hatchery started is a whole other thing. It started back in the 1920s when [William] Wells and [Joseph] Glancy had the first New York State oyster hatchery on the Bayville Bridge. Butler Flower was working with his brothers and his father at the time. Butler became friendly with Wells and Glancy and learned, as they did, how to grow shellfish under artificial conditions. The experiment worked out well. It was successful, but at that time, they were getting enough natural sets in Oyster Bay that they didn't need to use the new technology, so it was put on the shelf for a while. And the good shell-fishing lasted in Oyster Bay for quite a long time until the 1950s, when things went downhill. The number of oysters and clams in the bay were very low.

WB: Do you ascribe that to overfishing, disease, or possibly you don't know?

DR: It could have been any one of those things. That was before my time.

WB: Right.

DR: They were moving oysters from where they set to harvesting beds and then letting them grow to a mature size there. That method didn't work out anymore. A lot of the oysters weren't doing well. Probably had something to do with MSX. MSX was probably a factor, but nobody knew what it was at the time. Took a lot of research to figure out what was going on.

WB: MSX is a disease that affects oysters. It's been studied for years, but the transmission is still not known – [*haplosporidium*] *nelsoni*.

DR: So, the stocks on Frank M. Flower's leases in Oyster Bay were very low, and they were in danger [of] going out of business. So, Butler Flower decided that maybe it was time to use that technology that was developed back in the 1920s and try to repopulate the bay with oysters and, eventually, clams.

WB: How many acres does the Butler Flower Company own in this [inaudible]?

DR: We don't own any land. We lease it from the town of Oyster Bay. Right now, we have eighteen hundred acres. At our highest point, we had – I think it was about 2400. So, in 1962, Butler built the main part of this building, the hatchery, and started experimenting with growing oysters in tanks under artificial conditions. That was in 1962. A couple of different people ran the hatchery in '62, '63, '64. Jimmy (Caranisi?) was here for a long –

JZ: I feel like Jimmy said that he quit in '67.

DR: So Jim (Caranisi?) ran it for a number of years. Joe and I worked under him and learned how to do most of the things that are done in a hatchery. There wasn't a lot that was known at that time, but enough to see that there was potential there.

WB: In other words, it was learn as you go. You learn from your mistakes and develop the technology for algae, for feeding, for stocking.

DR: Well, it was very basic when it started. We would take water from the bay, centrifuge it, place it in tanks in the hatchery, and let it bloom. We would add fertilizer to it, and it would bloom. We would bring in shellfish and then spawn them in the hatchery. There were several methods once they were set. Originally, we used whole shells to set shellfish on to set oysters on. Then, the shells were held on floats until the oysters got big enough to clamp on the bottom. It was successful. We were able to do it. We planted oysters out, and they did grow to maturity, but really not enough to be financially viable. So, we needed to make some changes to make it profitable. So, starting in 1969, Joe and I ran the hatchery the way that Jimmy (Caranisi?) did

with whole shells, and we decided that we had to try something different. So, we started using smaller and smaller pieces of shell, like an inch or so.

WB: This is for setting the oysters?

DR: Setting the oysters. The problem with the whole shell was we were getting up to a hundred or more set on one shell, put it in the bag, and brew it. We'd end up with a cluster, and a very small percentage of that one hundred were able to live. It may be ten on a shell, so we're losing ninety percent of the oysters just in the setting process. So, we went smaller. We went to an inch. We were less set on the shell [inaudible] survival rate – worked out better. We still use the bag method, but we decided that we wanted to go smaller, so we went down – eventually went down to quarter-inch pieces of shell used as cultch, and the difference being that we couldn't use bags anymore; we had to grow the oysters in trays. We designed our own wooden trays with plastic mesh to hold the oysters.

WB: This is for the grow-out procedure?

DR: For the grow-out. We set the oysters on quarter-inch pieces of hard clamshell. That seemed to be the best cultch for the way we were doing it. And once the oysters were set on the quarter-inch cultch, we put them in the trays – two and a half by four-foot trays that we had built for them – and suspended them [inaudible] floats when they were big enough [inaudible]. We processed them. Once every two weeks, we would bring them up, screen them, and clean them. A quarter-inch cultch was the breakthrough in making money with oysters. We'd get maybe anywhere from one or two up to ten on a piece, and there was a good chance that a high percentage of those were going to survive to market size. So, we did that for quite a while, and we got the company back on its feet and put out large numbers of oysters, which had a good return. So, that's when we knew that the hatchery was going to be able to keep the company going. That was in the 1970s. Want to break there, or you want to continue on [inaudible]?

WB: No, just a small continuation with regards to clams because I know –

DR: We didn't get to the smallest cultch and the [inaudible] systems and that sort of thing. You want to go through that?

WB: Yeah, if you feel you can. We take a break now, though. Whatever is comfortable for you guys.

DR: Well, I'll continue on with the setting process to the present, and then we'll go to clams.

WB: Again, the history is what I'm trying to learn, not so much the technology, which is very important, but the fact that you were in on the ground floor of all of this. Both of you developed a lot of this technology yourselves because there was no book; there was no person who described how to grow oysters in Oyster Bay or clams in Oyster Bay. Each hatchery seems to have its own set of rules based upon its particular environment.

JZ: Location.

WB: Location.

DR: So, as I mentioned, the quarter-inch piece of cultch, that was the answer to making money at the time. The only problem is that we ended up with lots of small clusters of oysters, which eventually had to be broken apart, and we ended up losing some of the oysters in the harvesting process. So, we decided, well, maybe it's time to go a little bit smaller and try to get single oysters. We tried several ways of doing it, which didn't work. Then we decided to use a much smaller cultch, which was almost as small as [inaudible]. We would get one to two oysters to attach to each piece of cultch. That way, we have a good chance that both of those oysters would survive, and overall, you would get a higher survival rate. But in order to do that, we had to go to a new system of setting and holding, and that was the upwell/downwell method. Now, I forget who originally developed that.

JZ: What's that? The upwell/downwell? Actually, we copied that off of Stan (Czisch?), but I think he copied that – they were doing it in Europe, the upwell and downwelling stuff. I think that's where he got it from.

DR: Well, through the grapevine, we heard about the upwell/downwell method. That involves using a screen-bottomed cylinder, and you would put the cultch, and that was the very small cultch that I mentioned, on the screen, and then put the larvae in that cylinder and pump water into it. Put a million larvae in it. Feed them [inaudible]. We didn't get into feeding – we were feeding algae, so we had algae [inaudible] at that point. I haven't gone into the algal culture at all.

WB: Yeah, Joe mentioned algae just briefly, the fact that you used the centrifuge to originally get the cultures.

DR: We'd get a bloom, and then we'd hold on to it as long as we could.

JZ: We had no heat exchange or anything. [laughter]

DR: So, it was just a purely [inaudible] operation. The natural blooms of algae worked with [inaudible] oysters and clams [inaudible] Oyster Bay. After that, we decided that maybe we should try culturing algae, and that's when we went to Milford and [inaudible] basic techniques for algal culture [inaudible]. We were able to start successfully culturing algae and adding it to the filtered bay water. Filtration originally was with centrifuges. Then, when filter bags were invented, we started using filter bags to filter the bay water and then add the cultured algae through the bay water. That was a really good combination, worked well, and made the hatchery more successful.

WB: During this period of time, you had the support of Butler Flower, who encouraged you to do this, and then, after that, Franklin Flower.

DR: Right. Most of the time, it was Butler Flower. Into the late '80s, early '90s, he was in charge. As he aged, his son retired from Rutgers University and came up there and helped him run the business. So, we worked with Franklin for about ten years, Joe?

JZ: Pretty close to ten years, yeah.

DR: Butler and Franklin together for [inaudible].

WB: If you describe a little bit about Butler – Joe did briefly – because Butler seems to be the person who wanted to do this [inaudible].

DR: Yeah, he was the key to it. He learned the techniques back in the '20s. His two brothers were not so sure that that was going to be the way, but they were willing to try. The father had passed away in the meantime, so it was just the three brothers. Butler took the lead and developed the hatchery system. It worked. It took a long time, but it worked. I would say it took a good ten years before we started seeing any profit.

JZ: Yeah, it was the mid-'70s when oysters really started pouring out of here. Then, in 1980, we had enough money to buy the [inaudible].

DR: And we had already bought the (Bayliss?) Company in the '60s.

WB: Could you describe the (Raydell?) and (Bayliss?) companies just briefly?

DR: They were traditional oyster companies that would shell in setting areas over in Connecticut.

WB: Wild set?

DR: Wild set. The shells would get a set, and then they would – after the larvae grew – after the set grew on the shells for a while, then they would go over and dredge them up and bring them back to Oyster Bay. That’s the way that system worked. It worked well for quite a number of years. Everybody was making money with oysters. But then, in the ’50s, as I mentioned before, the harvest dwindled to almost nothing due to a number of factors, probably including MSX.

JZ: That was in the ’50s. Is that when Butler [inaudible]? Do you remember the date on that?

DR: Around 1960, I think.

JZ: Was it 1960? Okay.

DR: Yeah, somewhere around there.

JZ: Because when (Bayliss?) sold to Butler, he thought he had a million dollars of oysters out there. After the transaction went through, found out all the oysters were dead.

WB: Oh, my.

DR: He thought he was buying a fortune in oysters, [telephone rings] but it didn’t work out. So, the company existed on naturally-set clams and mussels for about ten years while the oyster technology was being developed.

WB: So, there was a brief period when the hatchery had to go out and get wild-set wild oysters, wild clams, wild mussels because the technology wasn’t there?

DR: Not the hatchery, but the harvesting business.

WB: Yeah. Because you’re fully integrated from egg to adult. You sell the adult oysters and clams?

DR: Right. That’s the way it is now. That briefly covers the oyster – the progress of the oyster culture. We still continue to use what we call micro-cultch, a very small cultch that gets one or two oysters on each piece of cultch. Every once in a while, we tweak the system to make it a little better, but that goes back – then we go back to the ’80s again, and we had some trouble with disease with oysters back then. So, we had some [inaudible] in our floats – wasn’t that, Joe – that was the JOD [Juvenile Oyster Disease] time.

JZ: JOD time was the ’90s.



DR: '90s.

JZ: Yeah. We started fooling around with plans in the '70s, just trying them out [inaudible].

DR: That's right.

JZ: [inaudible]

DR: We experimented with clams, and it worked out experimentally, but we didn't know if we were going to be able to make money [inaudible]. So, we were forced into getting into a bigger scale of clams in the '90s when juvenile oyster disease wiped out our hatchery oyster production. So, we had lots of room in the hatchery system, and it was available for clams. So, we concentrated on clams. At that time, we learned the technology of growing clams in a hatchery.

WB: *Mercenaria mercenaria*.

DR: Right. It showed pretty good promise. We used the natural [inaudible] variety of clams [inaudible] that came from Oyster Bay. We gathered our rootstock from [inaudible] Oyster Bay Notata. We bred them and continue to breed them to this day.

WB: Do you breed them for disease resistance, fast growth, whatever?

DR: Well, when you grow them in trays, whatever survives [inaudible] –

JZ: [inaudible] with the Notatas was the one you were growing [inaudible] to begin with and wanted to see if it was good if we were really doing anything because [inaudible] natural sets, too. So, we started with Notatas to see if what we planted was really actually [inaudible].

WB: Yeah, Notata occur in the wild about ten percent.

DR: No, not even. Less than one percent.

WB: It may be less than that.

DR: Less than one percent.

WB: Okay. So, when you planted the Notata clam, which has color lines in it, you could, when you harvest, know that you were having an impact on the number of [inaudible] –

DR: That was the reason we did the Notata.

WB: Notata. Although, there seems to be some resistance by the community that buys clams about the Notata [inaudible] harvest from the South and refrigeration.

DR: Yeah, all the clams in the hatchery systems down South are Notata variety. They are not as good quality clam as we grow, but we were being associated with those Southern clams, which turned out to be a disadvantage for a while. Once people learned that our Notatas were different and they had better results with our Notatas, the marketing now is not a problem.

WB: The fact of the matter is they will produce a significant number of Notata clams during the time when they're also working on oysters.

DR: Right. So, when oysters came back from JOD, when we figured out how to work around JOD with the help of Milford and the other labs of the National Marine Fisheries Service, we learned how to work around JOD. We got back into oyster production. But we decided not to put all our eggs in one basket, and we continued to culture clams. It got to a point where we were doing about fifty percent oysters and fifty percent clams. That's what we do up to the present.

WB: Sounds like a good place to break if you want. Joe had mentioned that Franklin was still around.

DR: Franklin still lives up in Mill Neck, up in Butler's old house.

JZ: Do you think he would give – offer any good information on the history?

WB: Five minutes of his time?

DR: Franklin?

JZ: Or do you think he would [inaudible] –

WB: I don't want to bother him.

JZ: I know his health is not too good right now.

DR: No, his health is not good.

WB: No. Then it's not an option. I appreciate the fact that you [inaudible] –

DR: Franklin worked for the company back in the '60s.

WB: This is Franklin Flower.

DB: Franklin is Butler's son. He decided that he wanted to go his separate way and work for Rutgers University back in the '60s. So, he left the company back then and had a successful career at Rutgers. I think he was involved –

JZ: He's a professor of solid waste management.

DB: Solid waste management [inaudible] expertise. So, he didn't come back in the picture until he retired from that career and came back. That was in New Jersey where he was [inaudible]. He came back to the area when his father needed help running the business.

WB: Well, I also appreciate the fact that you did mention the Milford Lab and the name of Rene Ukeles, who did algae; Arlene Longwell, who did genetics; and myself, Walter Blogoslawski, who did some microbiology – was able to assist you during some of the period of your development.

DR: Oh, absolutely.

WB: We've always tried to promote aquaculture. That was one of the last questions I was going to ask. What do you see as the future of aquaculture? Do you think it's really going to be [as] pervasive as we think in the Fisheries Service? What is your outlook on this?

DR: I think it's already there. There's so many operations now, successful operations. The ones on the West Coast are, in general, bigger than ours. But, for the East Coast, I would say we're still probably the largest hatchery. But there are lots of hatcheries on the East Coast [inaudible] clams and oysters. So I think that will continue.

JZ: [inaudible] fish farming and shellfish farming is definitely the future. [inaudible]

WB: Wild harvest is [inaudible]

JZ: [inaudible] see that.

DR: Well, they're trying to get a sustained yield from it, but it's coming to –

JZ: It doesn't keep many people in business, though.

DR: True.

WB: Yeah, we've seen the wild fishery decline as new methods of harvest are getting better at catching every last fish or the very last shellfish. With aquaculture, you plant shellfish every year, and then you recover those shellfish. So, there's a relationship between planting, survivorship, and harvest.

DR: Right. Well, the natural oysters and clams can make it if the pressure isn't too hard on them. But there's only a limited amount of pressure that that industry can take. And there's really – it's up and down, but there's really no room for expansion because, like you said, they're efficient enough to [inaudible] the product [inaudible] if it's not controlled.

WB: And disease, of course, plays a role. Some of the work you've used has been able to harvest – or not harvest but manage around diseases by using oysters or clams that are resistant to some of those diseases due to the breeding that you've done over the years.

DR: Right. The shellfish that we raise here are the survivors of exposure to different difficulties in culture. The ones that survive continue to be better as time goes on.

WB: Yeah, I think that's a pretty well-done area, so I think we'll stop this recording for now. It's again August 20, and I'm at the Frank M. Flower shellfish hatchery in Bayville, Long Island, New York, speaking with Dave Relyea and Joe Zahtila.

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Transcribed by Fantastic Transcripts 10/13/2023

Reviewed by Molly Graham 10/14/2023