Charles Wheeler and Herbert Graham Oral History
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Female Speaker: February 26, [inaudible] historical collection is presenting the conversation by United States Bureau of the Fisheries, Dr. Charles Wheeler and Dr. Herbert Graham will be our speakers.

Female Speaker: We are terribly proud that we have our teachers speaking today. Paul --

Male Speaker: See, I am not running this either.

[laughter]

Male Speaker: First of all, I would like to apologize to Mr. Wheeler for calling him doctor. I noticed I made a mistake.

Female Speaker: [inaudible]

MS: I hope so. These conversations, as you probably know, are very informal. So, if you want to ask the speakers a question while I am talking, just do it. Now, I do not think I have to introduce the speakers. I think you know Mr. Charles Wheeler and Mr. Herbert Graham. But I do think that it is about time that the other two scientific institutions are put a little in the back row. Because, after all, the Bureau of Fisheries Laboratory is the oldest scientific institution here. Just because they do not make as much noise as we do, that is no reason for not hearing them. We have asked these gentlemen to come down and tell us something about the history of the Bureau Laboratory and then also about some of the highlights of the experimental work they are doing. You see, everybody knows about the aquarium and the sea lions, but they do not know about the institution itself. So, without any further wait, he is yours, Mr. Wheeler.

Charles Wheeler: Well, I've been elected to open (this morning to the panel?). Then Dr. Graham will continue with the more recent aspects of the Laboratory's work. Dr. Graham was director of the Lab from 1951 to 1970. So, he has this [inaudible] twenty years. So, he had a great deal of experience with the Laboratory, which we then called Bureau of Commercial Fisheries. It's gone through quite a few different phases. It started out as the Commission on Fish and Fisheries in 1871. It went to the Department of Commerce in about 1904, somewhere along in there. Then it went to Interior and then finally back to Commerce in 1970. So, it's been bumped around to several different organizations. So, I thought I'd just give a rundown on the – there's not much point telling people about the importance of fish. I think everybody here realizes how important fish are. If I was in Dayton, Ohio or somewhere in the Midwest, maybe I'd better talk about the importance of fish. But the main fact is that in every settlement along the seashore or on a lake or a river, there's always been some fishery associated with it. I think the lake dwellers of prehistoric days and all of the early settlements both here and in New York took advantage of marine and freshwater resources that were right at their front door yard. It was a lot easier to go fishing than to farm, raise cattle, that sort of thing, because the fish and the shellfish came free. All you had to do was work with them and harvest them. Well, for a long time, the big, great banks, Grand Bank, Georges Bank, all the smaller banks, all these folk saw very, very little fishing effort. There was very little exploitation. But in 1497, John Cabot discovered North America. Now, Columbus didn't discover North America. He just found some islands down in the South. But Cabot was the man given credit for actually discovering continental North

America. Very soon, after Cabot, fishermen started to come. In fact, there's been a good deal of speculation as to whether a good many of the Bretons, the Basques, the Normans, some of the West Country English fishermen did not precede Cabot. Because the Grand Banks cod fishery was something that was a great boon to Europe. Those are local fishing grounds for the [inaudible]. The fishermen were perpetually complaining about the shortage of fish. Well, in any case, around 1504 and thereafter, the fishermen of Western Europe began to visit the Grand Bank. They had two kinds of fishery they brought back to Europe. One was what they called dry fishery. This required them going ashore, setting up fishplates, and drying out cod. All of the fish was cod. Fish and cod were synonymous in those days. The other was the so-called green or wet fishery, which meant heavily salting fish and bringing it directly back to the port where it was processed and sold. It was a lot quicker to wet fish. You had to carry a lot more salt, which would go directly from the fishing bank back home. Dry fishing went to one of the shores. Very often they had two crews, one of which stayed ashore and tended to the fish that the other crew caught. So, both of these fisheries were carried on right up into the middle 19th century. Now, cod for Massachusetts, of course, has had a special significance. The sacred cod in the State House, back at the speaker's seat, was set up there in 1784 at the request of one of the people in the legislature at that time. It followed and went up into the new State House after that. It was before they had the new State House. But it's been in this place almost two hundred years now. The cod fishery of Massachusetts has been a very important fishery. Now, in colonial times, there were a good many ports that figured in this fishery. Newburyport on the North Shore, Beverly, Salem, Boston, and the South Shore Port, which is situated in Cohasset, Plymouth, and Provincetown on the Cape. There were many Cape ports that contributed to the fishery, but Provincetown was one of the most important, and they had a good many vessels at sea. At one time, she had a three-mast schooner on the banks, which was one of the biggest vessels ever for cod fishing. At that time, again, the triangular trade was set up. Fish to Europe, manufactured goods from Europe back to the West Indies, and then rum and sugar and molasses to New England. There was a lot of sugar and molasses that were made with rum in New England. That was what it brought to the fishery. At this time, fishery was not what you'd call on an even, stable keel because there were so many wars and conflicts that went along in the 18th and 19th centuries. Every time they had a war, the fishery suffered. As an example, the war with France in the New World in the 1740s just removed most of the New England fishing vessels in the bank. The [inaudible] will be captured by the French privateers and other warships. Later on, during the Revolution, the fishery declined to nearly nothing because of the competition with the British fleet. After that, when the new countries began operations in 1790-91, in order to encourage the fishery, there was a bounty on tonnage and also a subsidy on tonnage of fish caught. So, the fisheries from then on, until Jefferson's embargo in 1807, had a renewed period of operation, and it really expanded. Well, probably in 1807 when they reached their peak, nine hundred to a thousand vessels went out every summer to the Bay of Chaleur in Labrador to the Gulf of St. Lawrence, to the Grand Bank, and some of the smaller banks. The millions of pounds of fish were brought back by the relatively small vessels using just handlines. So, this was a very important situation. Well, the thing that really brought the Fisheries Laboratory to being was a situation in the 19th century related to shore fisheries. These shore fisheries were largely pound nets, fish traps, weirs, this sort of thing, that caught fish seasonally from early spring to late fall. There were also a good many seines and other types of nets operated along the shore. But the numbers of fish weirs and traps reached such a tremendous quantity in the 1850s, the periods before and during the Civil War, that shortages of fish began to

be noticed, and the fishermen began to complain. Even as far as Eastport, the majority of fisheries of cod in and around the islands there noticed a decline. Well, fortunately this time, a man named Spencer Baird, whom all of you have heard of, came into the scene. Baird was quite a remarkable person, (strictly?) a 19th century man with a command of all the sciences known at that time. He knew geology. He knew entomology. He was a good fisherman. He was a fisherman. He was a collector of birds. In fact, he wrote with several other people a most important bird book, *The Birds of North America*. There wasn't any aspect of natural history that Baird wasn't at least somewhat confident in. He was the first assistant secretary of the Smithsonian in 1850. He was selected to serve under Joseph Henry at that time. He later became secretary when Henry died in 1878. But Baird was not only a scientist, he was also an administrator and an organizer. His expedition to the sea during the summer, his collection of fish in New Jersey, here in Woods Hole, before the fisheries were established, and elsewhere, made him realize over almost twenty years that certain species were declining. The scup, sea bass, trout, herrings, anadromous fishes generally, were not as numerous in 1869 as they had been in the 1850s when he first got into collecting. This coupled with complaints. There was a complaint that stated – yeah, complaints by fishermen, but not all are complaints – from Eastport all the way down to Connecticut made him realize that something should be done about it. There should be some sort of a formalized setup to study the fisheries, find out what was wrong with them, and institute some corrective measures. So, he, knowing several congressmen in Washington, and being of very persuasive characteristics, having been there as secretary for about twenty years at this time, talked to a number of people and finally got the proposal accepted by Congress in January of 1871 to create a Commission on Fish and Fisheries. Now, Grant was president at that time, and he agreed to this. Now, I always thought that this was probably one of the cheapest beginnings of any government organization or agency that ever happened because all they had asked for was $5,000, which was very expensive for the Commission for the first year. He didn't want any pay for himself. He'd made no provision for paid personnel, and he just decided that he'd operate on a shoestring. Also, unrealistically, he thought that the whole problem could be ironed out in a few years. He founded like a comprehensive study of the fisheries and the cost of the decline, and maybe in two or three years he'd have all the answers and [inaudible]. So, that's what he started out to do, but it turned out quite otherwise. Well, he came to Woods Hole in 1871 for the first time as commissioner, and being familiar with Woods Hole, he spent the summer collecting fish, talking with people, trying to find out what the picture was here. So, then, knowing that the whole story of the fishery, the whole picture, would have to be resolved over a wide area, he began in 1872 at Eastport, Maine, spent the summer there, and learned a good deal about the fisheries way down east. The following summer of [19]73, he was at Peaks Island just outside of Portland, Maine. So, he began the Maine fishery. The following summer, he skipped Woods Hole and went south and west to Noank, Connecticut where he found out more about the Southern New England Fishery. In 1875, he was back at Woods Hole. I think by then, he had his ideas pretty well-formulated. A temporary headquarters was established, and some students were to come and begin studies at the Lighthouse Port building down here at Little Harbor. The following summer was the centennial, and this was taken up at Philadelphia. I guess everybody in government service was dedicated to the celebration of the centennial for the country in 1876. But after that, in 1877, he went to Gloucester and made some studies up there. But I think by that time, his [inaudible]. It was really a choice between Gloucester, Newport, Rhode Island, and Woods Hole. But he found that Narragansett Bay was somewhat polluted. There was freshwater runoff from the land.

There was a good deal of sediment, which would have interfered with the hatching of fish, which was one approach that he recommended to restocking the oceans, restoring fish numbers to what they should have been. Gloucester had somewhat the same drawback. There was a good deal of sediment, again, land runoff. Woods Hole, with its tidal circulation, stable salinity, absence of runoff, general characteristics of very good seawater, a deep harbor, and the railroad, which in 1872 pushed all the way down to Woods Hole Harbor. So, considering everything, Woods Hole was finally decided upon as the scene of the new laboratory, the site of the new laboratory. Shortly thereafter, before the lab was built, two vessels were constructed. One, *Albatross*, the original *Albatross*, which was a big 242-foot vessel, which in those days cost $147,000; and *Fish Hawk*, which was a floating fish hatchery, 156-quarter, but cost considerably less than *Albatross*. So, they got two big seagoing vessels for all maybe 10 percent, 15 percent of what *Albatross IV* cost in 1962. It probably cost $4 million bucks today. [laughter] $2 million in 1962 and probably double that today. So, they got their floating stock, their vessels going, before the shore-side facility was established. So, the lab was finished and opened up for the first time in 1885. The general plan then was to invite people from various colleges and universities to come to Woods Hole and study their particular specialty. They offered lab space, tables, and facilities generally for people who would then tackle the major problems facing the fish and the fishing industry. What they did the first few years was to make a very thorough survey of all of the invertebrates and fishes of the Woods Hole region. This was a big period of taxonomy and classification. This was done with the help of the *Fish Hawk* and also later a boat called [inaudible] which was a steam launch, although originally a yacht. With these and various other vessels, they made very thorough surveys of all the benthic farm, the fish food, and all the fishes of the region. They tried to concentrate on fish taxonomy, the habits of fish, their preferred habitat, the migrations of fish, anything to do with fish disease and parasites, and just about all of the various categories of fishery science that we think of today and think are hugely important. This period was (very wise?). The only thing that didn't pan out in the long run was the fish hatchery. This was made a very important part of the Laboratory. There was a fish culture association at that time which was rather strong on trying to do the same thing in the sea that they did with lakes and rivers. They did very well in lakes and rivers. You could have a fish hatchery that would produce millions of trout eggs. You could put them in a stream or in a lake, and it would bring back your population. You could hatch and reestablish populations of freshwater fish almost anywhere. But the sea was just too big, and it wasn't the place to try this, although fish hatching went along for many years. It was somewhat successful for the anadromous fish, the shad particularly. During the 1880s, shad were hatched. They were moved all the way across to the West Coast by rail. They would put small shad in tank cars and move them to the West Coast where they eventually populated some of the rivers of California and the Northwest. Well, the period from the 1880s up into the 19th, the 20th century, well along the 20th century, we saw pretty much the same approach to science as the initial one. Provisions were made for the workers to come to Woods Hole every summer, and they did. The vessels were used. *Albatross*, the original *Albatross*, was used offshore. They made several trips to the Pacific. They were used to study menhaden migrations and populations off the southern part of the country. *Fish Hawk* performed as a floating fish hatchery. So, a great accumulation of knowledge was gotten together at that time and published in the Bulletin of Reports of the Commission on Fish and Fisheries. The Commission went into the Department of Commerce when that was formed. I think it was in 1904. It continued with us until Roosevelt's time in the 1930s. But there were a number of core staff that did – a number of directors who pretty well

carried on the original notions of fish study. I think one of the things that I might comment on, I thought of the appearance of Woods Hole as it was varied during the years. One thing that struck me in thinking about how Woods Hole must have looked to Baird, it looked more like an industrial town than a laboratory town. Because in the late 1850s, the Pacific Guano Works set up a factory on exclusive Penzance Point. There were no labs there at all, but there was a great big smelly fish factory with a large chimney and all of the associated buildings. Fish were brought, menhaden particularly, from the nearby waters. Phosphate rock was brought from the Pacific and later from some of the islands in the Caribbean. This formed quite a large and thriving industry until it finally petered out in the late 1870s. I think probably some of the residents of Woods Hole were glad when it did finally go because the southwest wind being the prevailing wind, the smell must have been pretty bad even up on Crow Hill. [laughter] Well, I think that maybe – I'm wandering along like this – I would like to turn it over to Dr. Graham to continue the history of the Laboratory because it really changed quite a bit about just after World War II. This was when some of the more modern approaches to fishery science came along. So, if you want to take over from there, Herbert, if there's anything you'd like to fill in that I missed, well, go right ahead.

Herbert Graham: Well, thanks. Charlie has given you a very good review of the development of the Commission and the Laboratory at Woods Hole. I might just add one thing about Baird. He had a way of operating in the government which would be impossible today, an informality which we don't enjoy today. Two things came to mind as you were talking. One of them was the agreement which he thought he had with people and companies who had contributed money to purchase the land on which the fishery was located. I have here essentially a history of the lab, which is called *The Story of the Bureau of Commercial Fisheries, Biological Laboratory, Woods Hole, Massachusetts*. It was written by Dr. Galtsoff. When we dedicated the new buildings in 1962, I asked him to write up a little history on the appropriate time to have a history of the lab, and he did a very fine job, and this is available in the library. On the front cover, there's a picture of the lab as it was previously. I don't know exactly when that was taken, but it says 1885 to 1958. We demolished these buildings in 1958 and constructed buildings which are there now which are shown in this picture. The dedication was 1962, and this was written in 1962. Among other things, Dr. Galtsoff lists the companies and amounts that were contributed for purchase of some of the land. There were two sections of land. The other section was contributed by Joseph Fay. Here's the Old Colony Railroad, $2,500, John Forbes, $1,000, Alexander Agassiz, $500, Johns Hopkins University, $1,000, Princeton, 1,000, Williams College, 500, Isaiah [inaudible] 7,500. This is Robert Stewart, 250. Now, these universities, Johns Hopkins, Princeton, and Williams, and I think Harvard through Agassiz, I think that Baird had some kind of a verbal agreement that they had the privilege of sending one investigator to the Laboratory every summer. Well, there is apparently nothing in writing to this extent. The only thing in writing that Dr. Galtsoff could find was a couple of letters when universities were not given this privilege and they objected because they thought they had it. Baird said that they did, but there's nothing formal about it. As far as I know, what I've seen is one of these letters is that insofar as possible, there's a little loophole there. So, if any of the universities are listening, I hope they realize that they probably don't have this privilege. Although even when I came here in 1951, we tried to honor this as much as we could. Certainly, university people were quite welcome to come if we had the space, and in those days, we had lots of space, but it wasn't very adequate. The other thing that came to mind was the agreement which they apparently had with

the town of Falmouth. Water Street, or the main street in Woods Hole, used to run straight down to the beach. Then on what is now the aquarium on the other side, there's a street called Center Street, which [inaudible] is closed off now in this center Baird wanted to use this land at the end, this extension of Water Street. So, he said to the town that you give us that forty-foot strip, and we'll give you a forty-foot strip to build a dock and access beside Center Street. So, the town built the dock, and the government took this land down here and built a brick shop and a powerhouse across there. Well, when we were in the process of replacing the buildings, the Bureau was pretty well-organized by that time, and they were not about to do this unless they knew they had title to all of the land. So, they had a land man make a very nice survey, and I told him about this agreement, which I thought existed, and he couldn't find any record of it at all. There's no record of that. So, the government decided that they then would purchase that extra land, if they need it, end of the street. They got to look into it, and it's not a town street anyway. It's a county street. So, [laughter] they had to go to the county, and it was purchased for $1. So, the government now has a clear title for that, so I can assure you our buildings are all on quite legal ground. So, that was wonderful to be able to work like that. I remember coming across a letter of theirs that's in the file someplace where he himself, in longhand, wrote out an order for some local businessman to build a fence around some part of the grounds down there. Apparently, he either used a [inaudible] or carbon paper to keep carbon popular, but those were the days. [laughter] Another point I'd like to make is that up until the last war, marine biological research was pretty much a summer activity, at least the collection of the data. This laboratory, the Fisheries Laboratory, was set up as a summer laboratory. When you look at this, that large building was a residence hall. It was occupied only in the summer. In the summer, Spencer Baird and his office staff and a number of cooks, waitresses, and so on, all moved up to Woods Hole. People came in from universities, and they spent the summer there. Some worked on fish. Of course, there was a fish hatchery too, and that hatchery went on for a long time. But it was a great summer laboratory with most of the people living in this residence hall. Dr. Galtsoff, who went back a little farther than I did, said they had some wonderful silver plate and so on in that dining hall, and it was quite a thing to be invited there to tea on a Sunday afternoon. The Oceanographic Institution, which didn't get started until about 1931, was also a summer lab. Now, Dr. Bigelow, who had been very prominent in all of these activities, was instrumental in organizing the Oceanographic and the first director. He didn't want the staff to stay down here during the winter. So, year-round, they just go to sea. So, most of those who were at Harvard and other universities, they'd come only in the summer. The MBL, of course, was strictly a summer laboratory for a long time, and it was just not getting bigger programs going. The *Atlantis*, for instance, was active only in the summer in those early days, making surveys on Georges Bank. Well, the Oceanographic became a permanent lab as the staff moved down here and was expanded as a result of research that they were doing for the Navy in connection with the war. So, it was the war that brought that on. The fisheries had a very weak period there for a few years just before the war. The Navy took it over for the facilities during the war. Then just after the war, a permanent staff moved down here. Charlie has given you a nice little review of New England fisheries. They say that the fishery is never as good as it used to be. There are always problems, and the fishermen always want the government to do something about it. Well, back in the – actually, during the war, I guess. I don't know exactly when this started. By this time, haddock really had taken over cod as the great fishery in Boston. Of course, the fishing wasn't so good, and they were killing large numbers of small fish. They prevailed upon the government to start a research program on haddock. He invited this small group working on

haddock to use the Museum of Comparative Zoology at Harvard. So, they were housed there (under Bill Herring?) for several years. Well, as the program developed and there was more interest in doing more research even internationally, it was realized that the group should have a vote. This was just a little before my time, so I don't know what all the arguments were, but anyway, long story short, they decided to move down to Woods Hole where they had this facility. They winterized the building. Well, they're already winterized because the Navy has but anyway. Moved down to Woods Hole and obtained a vessel which been [inaudible] *Albatross III*, which is a [inaudible]. So, that became a permanent lab just a few years after the Oceanographic had a permanent staff. Of course, as far as local history is concerned, changes in structures and so on are always important, but someone suggested I give you a thumbnail sketch of the research that's been done at the Laboratory during the last ten years that I was there. I'll just say first that we moved out of these old facilities, which had been damaged in three hurricanes. 1938, they took out the boat basin, and then in 1944 there was another one. I came in [19]51, where I experienced the [19]54 hurricane. We were able to get funds to modify, and a breakwater there was raised and hopefully will give some protection for the next hurricane. The buildings were demolished in 1958. We moved to temporary quarters in [inaudible] in [19]58 to [19]60. The new buildings were completed. We moved back there in [19]60. The aquarium was completed in [19]61 and had the dedication in [19]62. The funds were obtained for constructing a new vessel since the *Albatross III* was not adequate. That was built a couple years later, and that pretty well takes care of the changes in facilities during my tenure. You'll see more vessels coming in there now because other laboratories have been brought in and joined in on other vessels, and the administration is somewhat different. Well, just to review the time that I was here, about the time that this group moved down from Harvard, there was a great interest in managing the fisheries of the Atlantic, and that could only be done in an international way because there were so many countries fishing up there. Charlie has told you about the early fishing in some of the European countries. Well, just after the war, the countries fishing in the area, in the Northwest Atlantic, the side of Greenland, decided to organize an international commission to manage those fisheries. This convention was held in [19]49. The first annual meeting was held in 1951. It was the year that I came to Woods Hole, so I participated in the first annual meeting and all the meetings since then until I retired in 1970. Well, it's hard to believe that so many countries were fishing there, but there were ten nations involved in this commission, which is called the International Commission for the Northwest Atlantic Fisheries, the acronym of which is ICNAF. Let's see if I can recite these going clockwise from the United States. The area of concern was from Rhode Island to the tip of Greenland since the Europeans already had organized ICES, which was supposed to cover over to the tip of Greenland for fishery management. You marine biologists know that ICES, International Council for the Exploration of the Sea, has done some of the most outstanding early work in marine biology, but it was organized as a prelude to organizing a management commission to manage the fisheries of the Northeast. So, the Northwest Atlantic Fisheries Commission was covered to the tip of Greenland. Well, the countries involved in the fishing in that area at that time were the United States, Canada, Iceland, the U.K., Norway, Denmark. Greenland came under Denmark. I'm sure it does. France, Portugal, Spain, and Italy. I think that's ten. Then five other countries came in later, USSR, Poland, Romania, West Germany, and Japan. Over fifteen countries finally joined this commission. This commission, having all the experience of the Europeans for many years, decided to have a management commission immediately and not wait to set up a separate biological commission. This was designed to manage the fisheries in the Northwest Atlantic.

They had a Committee on Research and Statistics to do the scientific work. The way it was set up, there would be no – although they could have their own scientists, they decided not to do that. They had this international – this ICNAF Committee on Research and Statistics would be composed of scientists from all the participating countries. That committee met immediately at the first meeting of the Commission and met regularly thereafter. I might say that practically all the work that I've done here with the scientists at the Fisheries Laboratory was concerned with this commission. Almost everything was because it was a – the Commission had a broad view, really very much like Spencer Baird, a broad view of fisheries. They didn't confine themselves just to studying the catch and the catch rates of the fishes and making some rough estimate of abundance, but they were interested in the whole biology of the fishes. So, the research done by the United States was done here at Woods Hole until many years after the Commission was organized through the Boothbay Harbor Laboratory, which is now combined with this laboratory, also participated. But primarily, it was all done here. Well, it was a very interesting experience for me to get in on the ground on an operation of this sort. Because here we have this entire area, all these countries fishing, and some of them doing biological work and some not. It was the responsibility of this scientific committee to make recommendations to the commissioners on the management of the fishes. Well, that's a pretty big order. In order to make a recommendation for management, you have to know something about the abundance of the fish. You have to know not only the species of the fish but the different stocks in the different areas. You have to know something about the population dynamics, how fast do they grow, what are the mortality rates, how much fishing can they stand, what is fishing doing to them, what are the fluctuations in abundance, and are the fluctuations due to natural causes or are they due to fishing. Well, the first thing was to do the classical thing, is to get the information on the catches of all these vessels that were fishing. So, the first thing this committee did was to divide up the Northwest Atlantic into statistical subareas, subdivisions, into the unit areas, so there was a grid over the whole area. Then the next job was to get every country to report annually the amount of fish species taken in each of these statistical areas. Well, some of these countries already had this system and had the staff. Some didn't. So, it was a matter of encouraging some of them to do this, and gradually working into a system where you could get all the information you needed. I think that many of the countries built up rather good staff simply from the stimulation of the Commission, because through the Commission, they were obligated legally to do this. Did I hear a question?

Female Speaker: What does N-O-A-A stand for?

HG: NOAA.

MS: NOAA.

FS: Yes, NOAA.

MS: Dr. Graham, what effect does the two hundred-mile limit had on these ships?

HG: Well, I think I'm going to let somebody else answer that. But just before I do that, when I go through the life of the Commission – I'll just make this as brief as I can – that a good statistical system was set up. Not only do you need information on the catches, you need

biological sampling, lengths of fish, ages of fish. The abundance of each of these has to be reported. There aren't many human-interest stories I can give you about this, but one of the things that did amuse me at one time was the measurement of herring. I discovered that the fishery biologists in Europe had at least three different ways of measuring the length of the herring. Of course, to get this information filtered into one body, it had to be done in a standardized way, and you finally had to decide on which of these lengths they were going to use. I think that Ireland and England are still measuring in different methods, aren't they, George?

MS: Two different ways.

HG: On herring. [laughter] You couldn't get them to agree among themselves. Well, of course, I think that the scientific work of the Commission was more successful than the management. The enforcement of the regulations that were put into effect were done not by the body itself – they had no power to do this – but by the individual countries. Each country had to enforce its own. Then the amount of fishing increased tremendously. See, when the Commission was organized, the connection area was divided into five areas. One of them was Georges Bank, which is a subarea of five, and there was a panel for each of these subareas. Only two countries joined panel five. There were only two interested in Georges Bank, the United States and Canada, and Canada wasn't fishing there. We did all the fishing in Georges Bank in 1951. Well, it was only a few years later that the Russians moved in there and all the other countries. I think there were probably fifteen countries fishing there just a few years ago. This was such a tremendous fishing effort that the various regulations that were put into effect didn't seem to be very good. They certainly couldn't convince the United States fishermen that they were affected. So, there was a lot of interest in the United States withdrawing from ICNAF, which it did in 1976, I think. That was six years after I retired. [laughter] My tenure here almost coincides with the United States affiliation with ICNAF. The fishermen wanted to run the foreigners off the banks, and the best way to do that is to add a two-hundred-mile fishing limit. So, the Fisheries Conservation and Management Act of 1976 was signed. It became effective, I think, in 1977. So, now, the United States has direct jurisdiction over all the fisheries out to two hundred miles, and they are managing it, somewhat to the distress of some of the fishermen who expected that they might have more free reign. But the only foreign vessels in there now are those that's there by the grace of the United States government. Many of the countries in the world are doing this. Now, getting back to your question, what effect does this have? I've got people here who have been associated with this much more recently than I have. Dick, would you like to answer that question? Dick Hammond who's in charge at the lab, and he's been one of the outstanding fishery biologists in ICNAF for just a few years, I think.

Dick Hammond: Now, you're wasting time.

HG: No, I'm not wasting my time. He understands fish populations and effective fishing.

DH: Well, at least you think so. I'll take the question. In 1976 [inaudible]. In 1977, I was at (CNA?). In 1975, I was working at CNA. The major effect of it was that when it passed at CNA, it was passed through the United States [inaudible]. It was very successful, but there were very few organizations [inaudible]. But it also had a provision for domestic [inaudible]. In

1977, the impact was remarkable. Six months later, I was the first [inaudible] two hundred miles [inaudible]. The other major change [inaudible] way to do it [inaudible] dominated by the government, funded by the [inaudible], and the United States has a representative [inaudible]. This is [inaudible] of both the United States and [inaudible]. As New England is more powerful, [inaudible]. This is a public body, and they are involved in managing plans with [inaudible] both in the United States and [inaudible]. This essentially changed. There are not many resources in the United States. So, I'm told, [inaudible] American, so be it. [laughter]

MS: Do you think the [inaudible] made their own ideas?

DH: By and large, yes. I particularly know too that [inaudible]. Now, one thing they're classifying [inaudible] particularly, and it looks like another one is possibly coming in. So, providing that they will be this moderate, it looks like we'll have it in a level certainly in a rare experience [inaudible]. [inaudible] is cyclical in a sense anyway. I've had them drawn up and down before. It's been (one hundred?) pounds. It's taken a lot longer [inaudible], but it does show some signs. By and large, they're starting. They're not too bad, I think.

MS: What effect do you think the oil drilling in the area may have on the situation?

DH: It depends on how they do it.

MS: Are there enough safeguards in current legislation?

DH: They're supposed to be in the new legislation. I haven't seen all of the safeguards. [inaudible] I gather. [inaudible] It's probably better to find out how they're doing it. I guess they don't have to file anything.

MS: Any more questions?

MS: I think that brings it pretty well up to date.

MS: I have a question. Was any thought given to rebuilding the old laboratory rather than tearing it down and building a new one?

MS: It was mentioned, but I don't think anyone ever gave serious thought to that. Do you like the old buildings?

MS: Sure. Twenty years later, that is the thing that everybody is talking about.

MS: Well, do not blame me for that one.

MS: I work in the new one. [laughter]

MS: You can all stay and ask your questions.

MS: I have just one short question. Dr. Graham, you mentioned *Albatross*, *Albatross III*,

Albatross IV. You skipped one.

HG: *Albatross II*.

MS: What is it?

HG: There's a picture of it in Galtsoff's book. Did you ever see her?

CW: Yes. I think I did when I was very small, but she was really a tugboat. It didn't last very long. Back in [inaudible] the *Albatross*, the first one was decommissioned in 1924. The *Albatross II* was operated just a few years in the [19]20s, and then she went off. She wasn't much of a [inaudible].

HG: No. It's funny. The first two vessels that the new Commission had were built especially with the purpose for which they were intended. The *Fish Hawk* and the original *Albatross*. Ever since then, until *Albatross IV* came along, it's been a makeshift.

MS: I found a box in Naples in the station there on Woods Hole, the founding of the fisheries. [inaudible] Do you know anything about that?

HG: Well, I think that both the MBL and the fisheries had Naples in mind when they organized and structured the Laboratory. Very much so. Yes. I think there were people who worked in both places.

MS: It might be interesting for you to be here in the next summer when the International Convention of the History of Oceanography will be at Woods Hole. There might be in the reading room of the MBL an exhibition of the archives of the Naples station. They want them to concentrate. They have a section there.

MS: A question is often asked, of what use is the Laboratory to the industry? The only way we can answer that is to have people like you come and tell us. But Sam Cahoon, you probably all remember, was once asked that question, whether the laboratory industry is profited by the establishment of these laboratories. He thought a while and then he said, "Well, yes. Before the laboratories came here, we used to throw away the dogfish, and now we sell them too." [laughter]

FS: Thank you both very much for coming. It was tremendously interesting. I am sorry for the people who are not here because they really missed the best. Thank you.

[applause]

[end of transcript]